HP SCITEX LX600/LX800/LX820/LX850 and HP DESIGNEJET L65500 Service Manual

For HP Internal Use Only

Edition, May 2013

Warranty

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WARNING

The procedures described in this manual are to be performed by HP-qualified service personnel only.

Electrical Shock Hazard

Serious shock hazard leading to death or injury may result if you do not take the following precautions:
- Ensure that the ac power outlet (mains) has a protective earth (ground) terminal.
- Disconnect the Printer from the power source prior to performing any maintenance.
- Prevent water or any other liquids from running onto electrical components or circuits, or through openings in the enclosure.

Electrostatic Discharge

Refer to the beginning of Chapter 4of this manual, for precautions you should take to prevent damage to the Printer circuits from electrostatic discharge.

Safety Symbols

General definitions of safety symbols are given immediately after the table of contents.

WARNING

The Warning symbol calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a Warning symbol until the indicated conditions are fully understood and met.

CAUTION

The Caution symbol calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a Caution symbol until the indicated conditions are fully understood and met.

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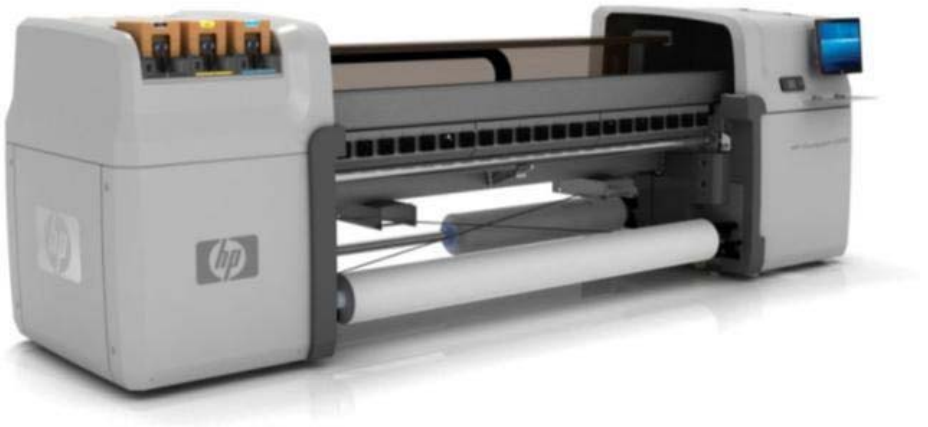
HP DESIGNJET L65500/LX600/LX800/LX820/LX850 Printer series Service Manual



Service manual

Table of Contents

Using this Manual

Purpose

This service manual provides the procedures and information necessary to troubleshoot mechanical faults and image quality problems, perform diagnostic tests and calibrations, and service:

- HP Designjet L65500 Printer
- HP Scitex LX600 Printer
- HP Scitex LX800 Printer
- HP Scitex LX820 Printer
- HP Scitex LX850 Printer

For information about using these printers, refer to the corresponding User Guide or Maintenance and Troubleshooting Guide.

Chapters

1 Printer Systems

Use this chapter as a reference for technical information about the subsystems, components.and how they work together

Of particular importance are the diagrams included for each subsystem of the printer. They can be useful for both troubleshooting and disassembly.

2 Safety

This is an industrial printer with high voltages, and it can be hazardous to service the printer. The safety chapter covers all the guidelines and checks you need to perform in order to service the printer.

3 Troubleshooting

Whenever a printer is not functioning correctly due to a fault, use the Troubleshooting chapter for step-by-step diagnosis until you arrive at the solution, which may include replacing a part.

The Troubleshooting chapter covers two kinds of faults:

- Faults that cause a system error code to appear
- Image quality problems

Troubleshooting always begins with one of those two problems, so when you enter the chapter, navigate to the proper section and find the troubleshooting steps for the problem you have found.

This chapter does not cover the procedures for the diagnostic tests you must perform while troubleshooting, or the replacement procedures you must complete to fix the problem.

4 Tests, Utilities, and Calibrations

Use this chapter whenever you need to perform a diagnostic test, service utility, or service calibration. This chapter is meant to provide procedures and relevant information, not troubleshooting information. For troubleshooting information, navigate to the Troubleshooting chapter.

These procedures are described in full, so that you know any relevant values for the test, as well as information about what the printer is actually doing during the test.

The goal of diagnostic tests is to locate the root cause of the problem and the corresponding system error code or message that will provide you with logical steps to resolution.

Some diagnostic tests or calibrations must be performed after removing a component.

5 Service Parts

The purpose of this chapter is to detail all of the available service parts of the printer. This information is presented in tables, organized by subsystem, and includes the following:

- Official service part names
- Part numbers
- Graphics of the service parts

Use this chapter whenever you need to order a service part.

6 Removal and Installation

The purpose of the Removal and Installation chapter is to provide procedures for removing and installing service parts. Each service part has a removal procedure detailed in this chapter, and installation procedures and notes are included as needed.

Useful information like access notes and screw types (head sizes) are provided to help you work efficiently.

Whenever you remove or replace a component, check the Service Calibration Matrix at the beginning of the chapter, which tells you the tests, utilities, and calibrations that must be performed after removing or replacing a component, and in what order.

7 Preventive Maintenance

Maintenance alerts appear on the HP Internal Print Server whenever maintenance needs to be performed. While most of these alerts can be resolved the customer, some require a service engineer.

Use the preventive maintenance chapter whenever you need to perform a preventive maintenance procedure due to an alert the customer receives on the HP Internal Print Server, or to get reference information on life counters and preventive maintenance that must be performed by the customer.

8 Remote Support

This chapter describes the functionality of the Remote Support tool: Callme@HP.com. This is a tool which the customer can use to obtain support remotely without the need of a customer engineer visit.

9 Move the Printer

The printer is large and depending on the scenario, will require special actions in order to move it. This chapter covers the four primary moving scenarios:

- Within the same site, over flat ground
- Within the same site, over ramps or stairs (the printer must be lifted)
- To a different site, with no possibility of freezing
- To a different site, with possibility of freezing which can damage the tubes, creating ink leakages (the ink must be removed, as it is water based and can freeze).

10 New Printer installations

This section describes hints and tips when installing the following models:

- HP Scitex LX600/LX800 Printer with LX610 Inks
- HP Scitex LX820/LX850 Printer with HP 3M LX600 Specialty Inks

11 Drawings of Cables

- The information in this chapter is to help in case of any doubt on any cable. A minimum knowledge of reading cable drawings is required. This information should NOT be used to manufacture cables locally, it is important to use parts from the support parts (coming from fully approved vendors).

Readership

The primary readers of the service manual of the HP Designjet L65500/LX600/LX800 Printer are HP Service Engineers, although secondary readership may include resellers. All procedures must be performed by HP Service Engineers, except those clearly marked otherwise.

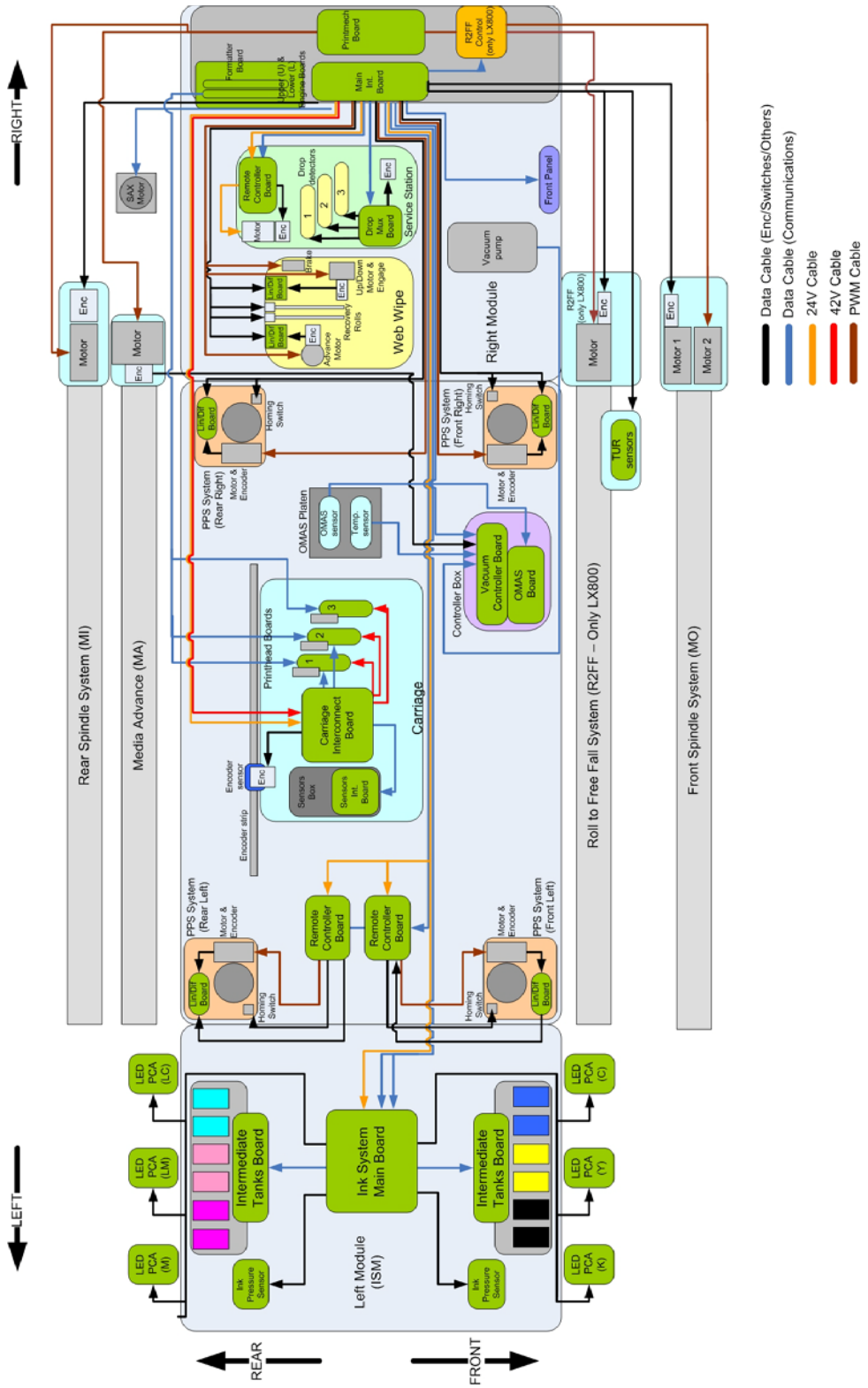
1 Printer systems

Electrical system

The electrical system is primarily housed in the electrical cabinet, inside this is the electronics box.

Electronics overview diagram

The following diagram explains the connections between components and electronic boards, the voltage, or the type of data line.



Ecabinet

The ECabinet located on the right side of the printer and is the enclosure where the main electronics (Electronic Control System, E-box) and all the power electrical components of the printer are located. The system if fed via two power lines, one single phase line and another tri-phase line see the Installation Guide and Site Preparation guide for specifications.

The E-Cabinet responsible for distributing all the power lines to the functional areas, it includes the active power elements of the heating and curing subsystem. It also performs safety cut-outs when any of the four emergency stops are pushed

Some of the components inside the e-cabinet are independent units isolated from the electronics therefore diagnosing any issues via Firmware is not possible.

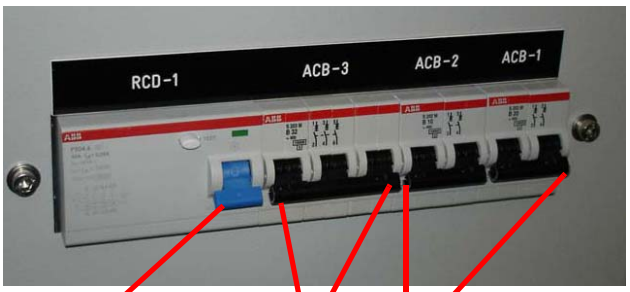
To diagnose most electrical issues, voltage and continuity checks are required from the Service Engineer by using multi-meter tools (Voltmeter, Amp meter, resistor meter, continuity checks)

Components

The Ecabinet contains the following components:

- The Ebox
- Secondary 24v Power supply
- Secondary 42v Power supply
- Circuit breakers & Residual Current Circuit breaker (RCCB)
- Contactor (Heating and Curing)
- Fuses (Heating and Curing)
- E-Box system (which includes a main power supply delivering ATX tensions and also 24V and 42V)
- Safety relay
- Fan
- Scan Axis break resistor
- Vacuum system transformer (110v)
- Main switch
- Power Enable button
- Light indication for Phases
- 3 Phase Line filter
- 1 Phase Line filter

The ECabinet

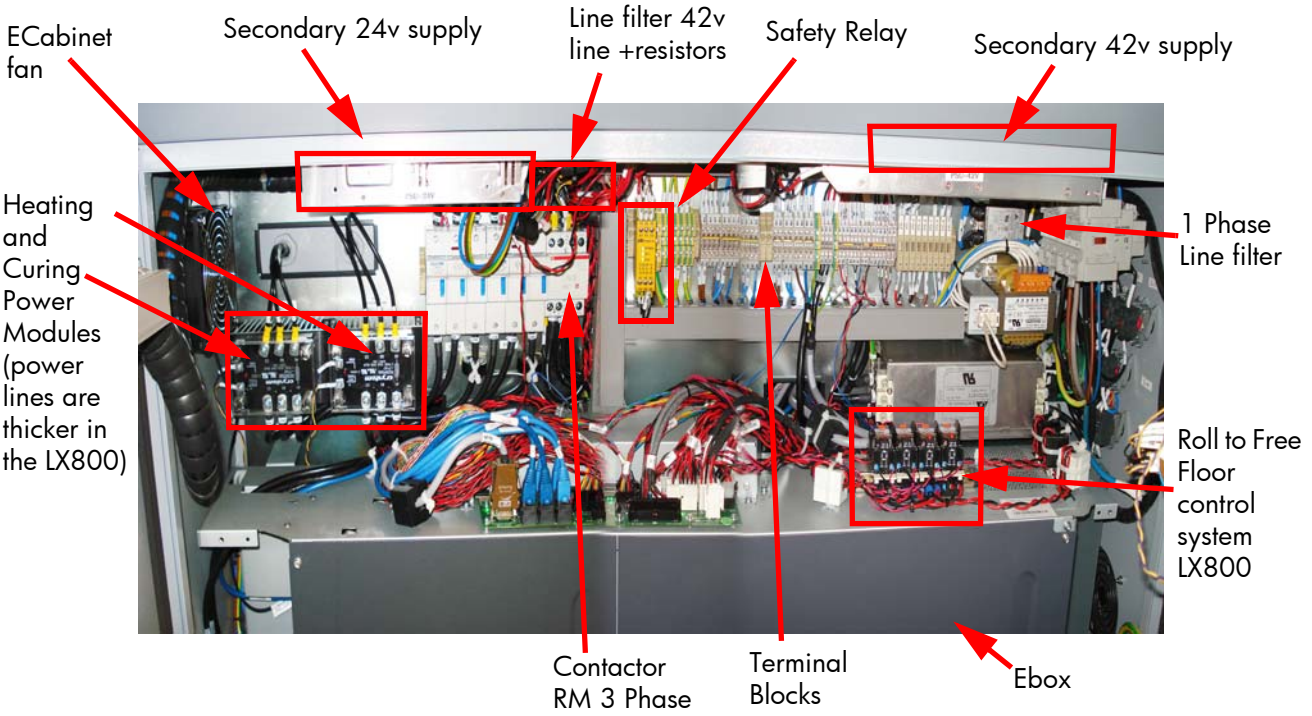


Residual Current Circuit Breaker (RCCB)

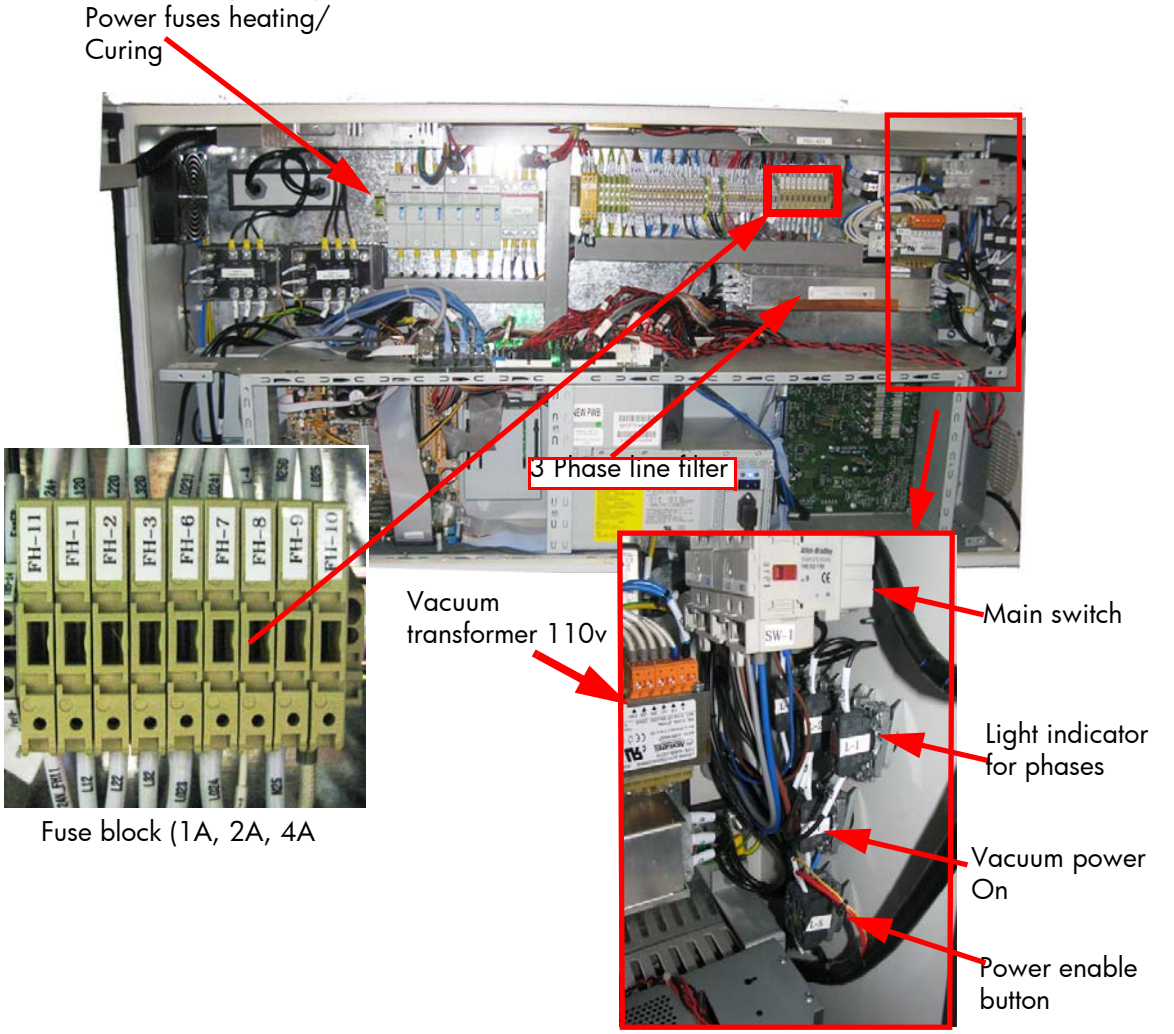
3 phase Circuit breaker

Single phase Circuit breaker

Inside the ECabinet (1 of 2)



Inside the ECabinet (2 of 2)



Fuse block (1A, 2A, 4A

Ecabinet Fuse blocks

Fuse Application

- Fuses: 1,2,3 (1A) Indicator Lamps
- Fuses 6, 7 (1A): PID controllers
- Fuse 8 (2A): Phase 110 from Trafo to Pump
- Fuse 9 (2A): Neutral 0V from Trafo to Pump
- Fuse 10 (4A): protects 110V transformer
- Fuse 11 (2A): 24V from Main interconnect to e-cabinet

Functionality

1. The E-Cabinet is the power distribution centre for the whole printer

It is the central point where both input power lines (Single and tri-phase) are connected and then distributed to the different power components.

Single Phase components powered through ACB1

- Heating Controller Module
- Curing Controller Module
- Secondary 42V power supply (SAX motor, Media Path Motors)
- Secondary 24V power supply (Curing Fans)
- Vacuum Fan
- E-Box

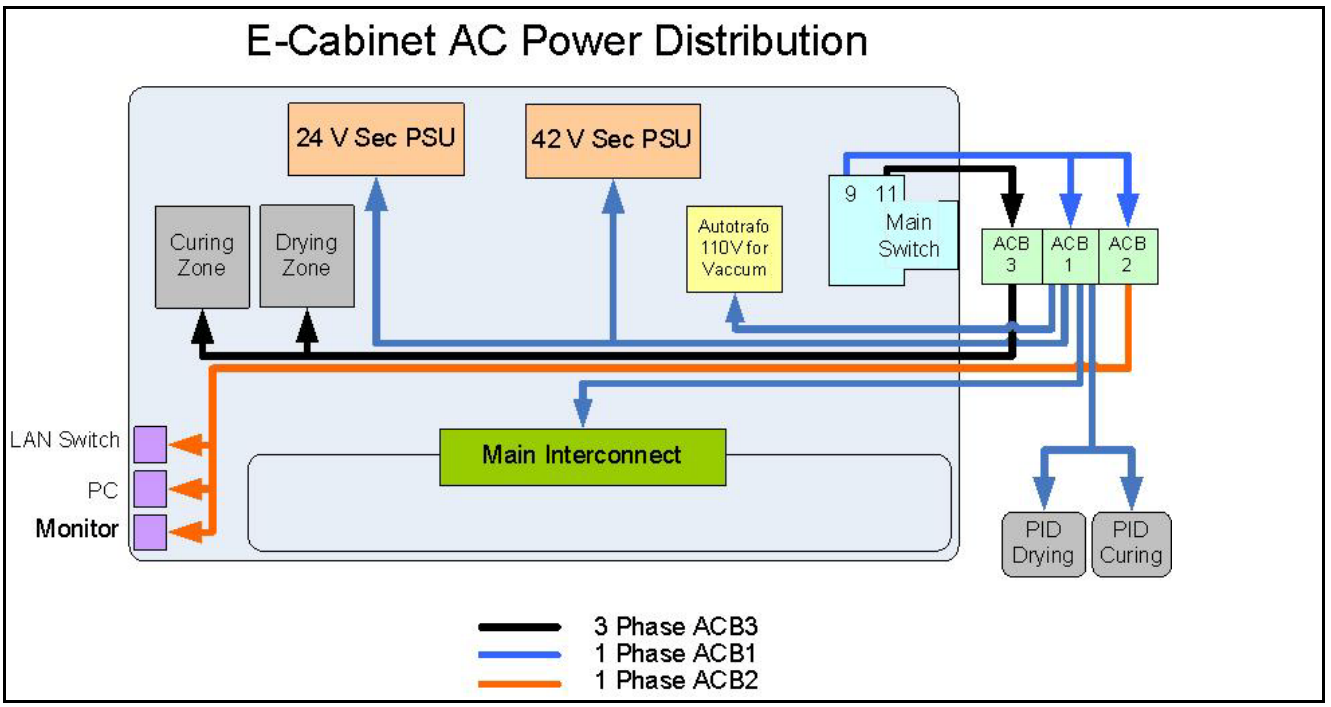
Single Phase components powered through ACB2

- Printer PC (Windows, IPS)
- Printer Monitor
- Printer Switch

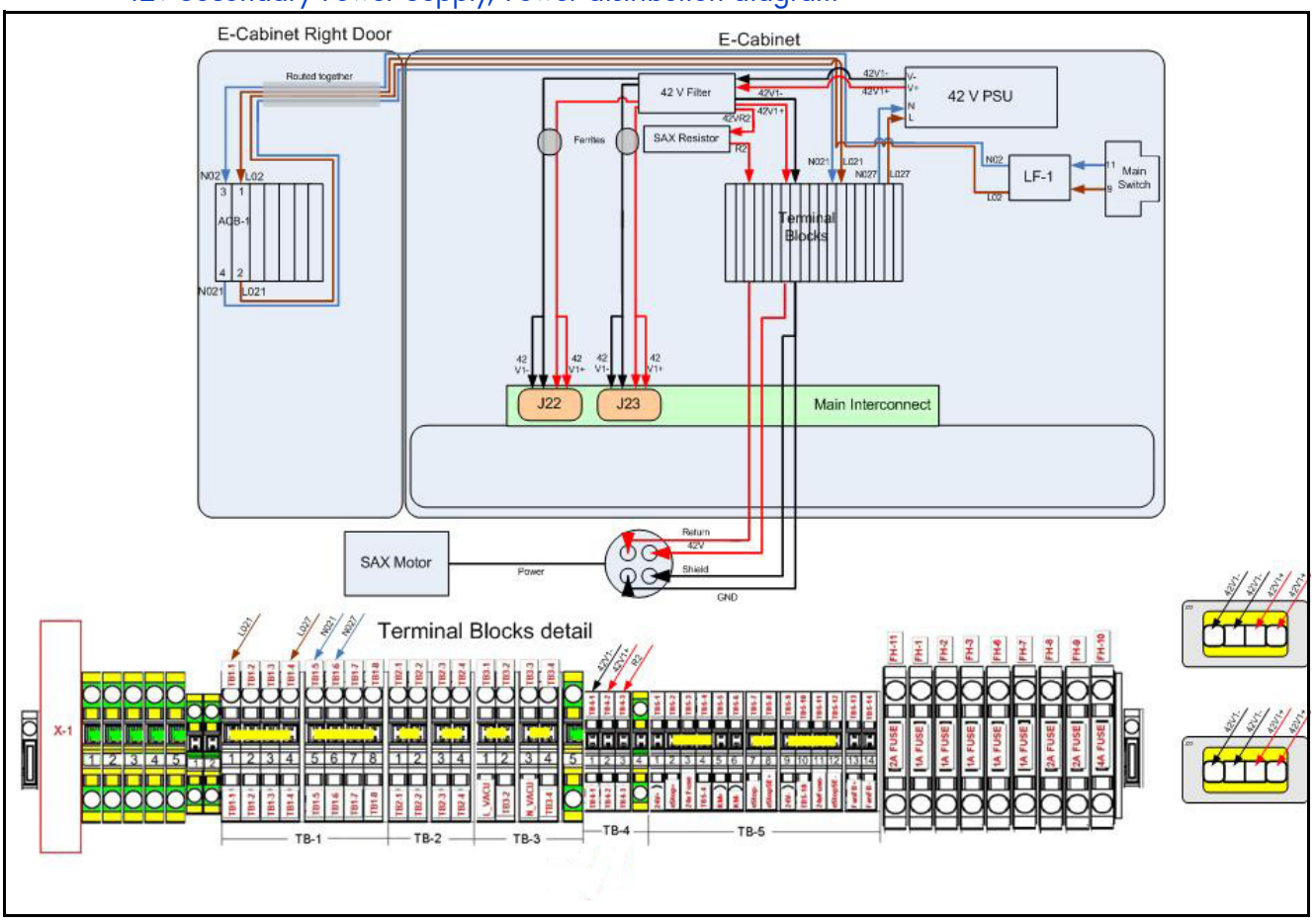
Tri-Phase components powered through ACB3 and RCCB

- Heating and Curing Power modules – Heating and curing lamps
    - Contains the Ebox
    - Emergency stop mechanism for the machine.
    - Heating and curing control and power distribution.

ECabinet electrical overview

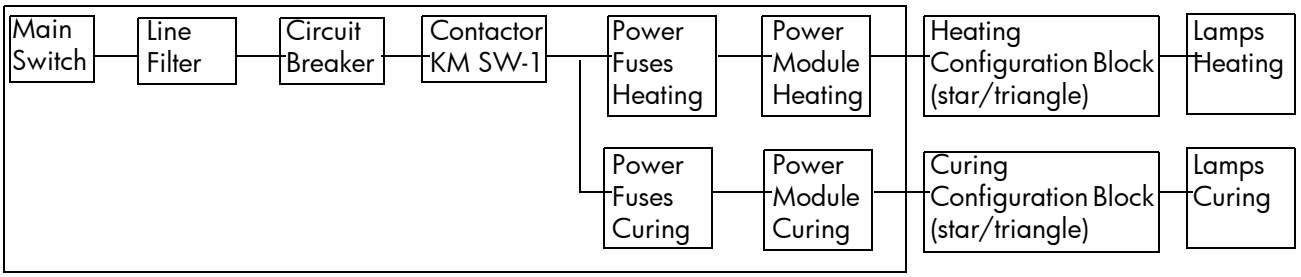


42v Secondary Power Supply, Power distribution diagram



Functionality interlinked between diagrams

A 3 phase power supplied to the Heating and curing Modules through the power fuse blocks (FH4, FH5):



B Single phase power distribution.

C 42v secondary power supply actuation (by safety relay)

D Power modules control signals from PID controllers.

E Safety line connections (cuts connector of the 3 phase line).

F PWM signal and fault from curing fan array to Main Interconnect (24v power is directly supplied from 24 volt secondary PSU).

G 24v fault signal to the Main Interconnect (this line is used to detect if the 24v secondary power supply is providing 24v or not).

H E-cabinet internal fan fault signal to Main Interconnect (fault reported when fans do not rotate when powered).

I 24v fused line arrival to the e-cabinet from the Main Interconnect.

J E-stop 24v power line (these 24v activate the safety relay).

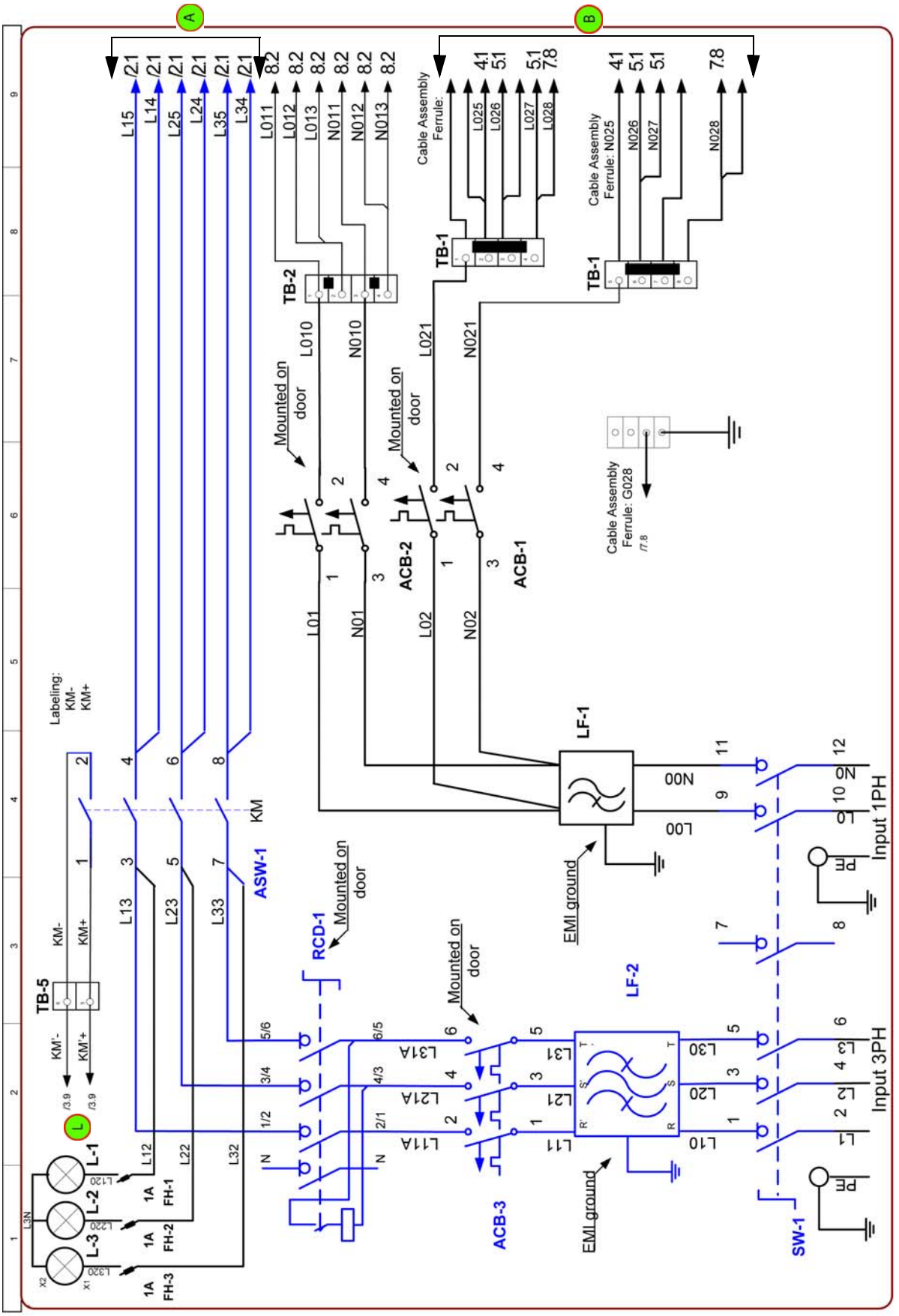
K Feedback to the Main Interconnect safety relay is active (with negative logic). This indicates the printer is armed from the circuit breakers.

L KM Contact active (closed). Feedback to the Main Interconnect.

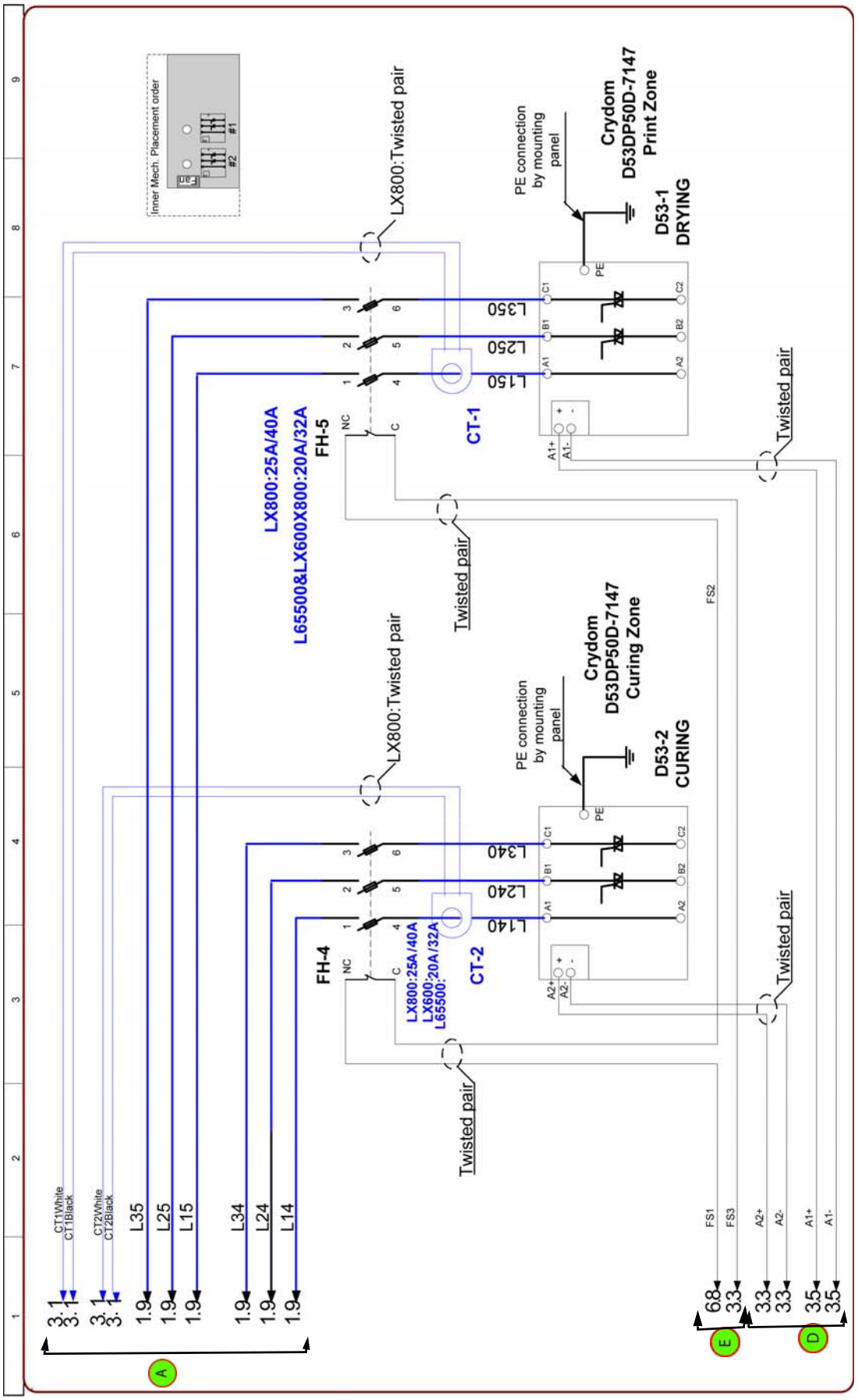
In the following pages are the printers circuit diagrams. Refer to the circled numbers and letters to jump from one circuit diagram to another.

ECabinet Circuit Diagrams

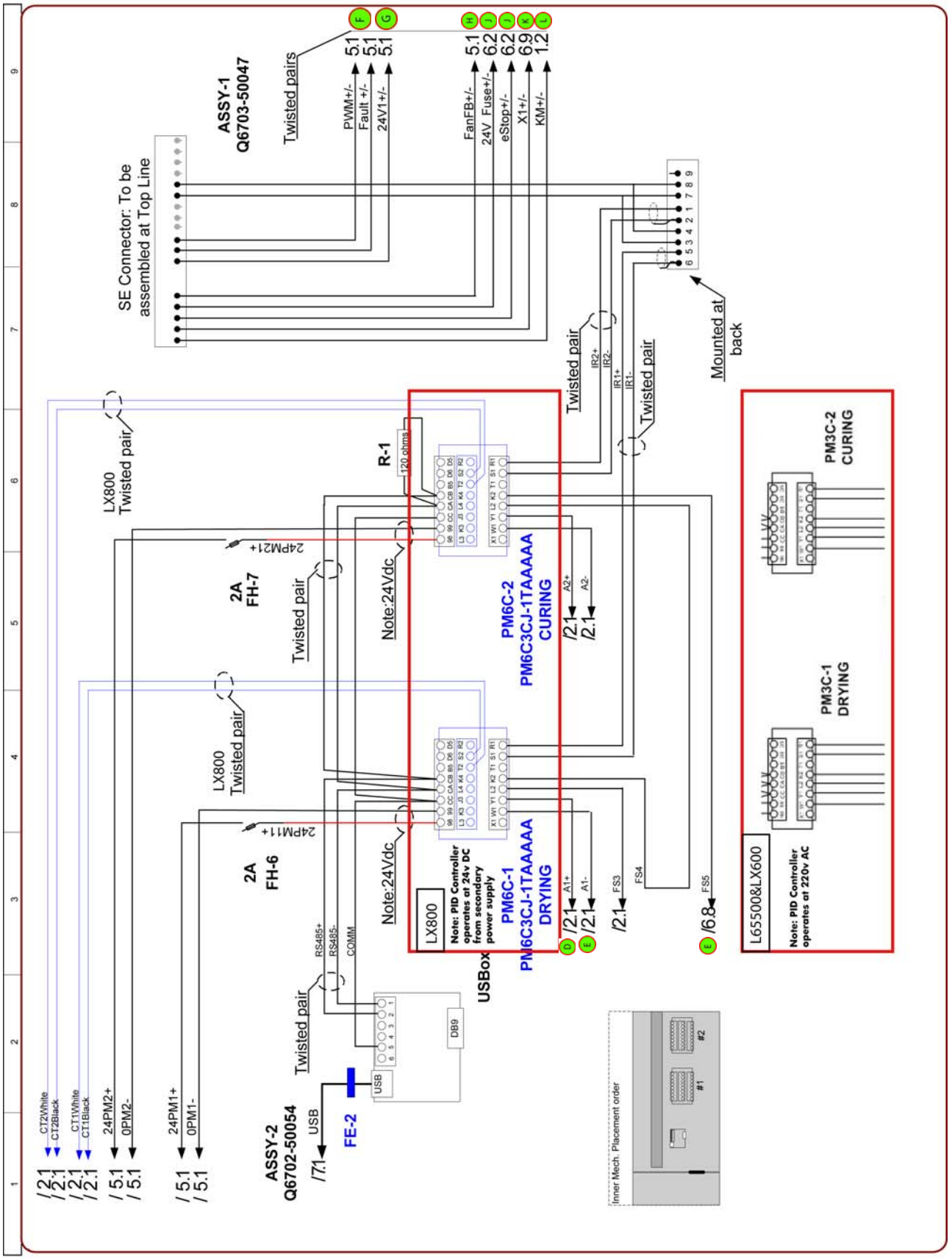
Circuit Diagram 1: Power in distributing



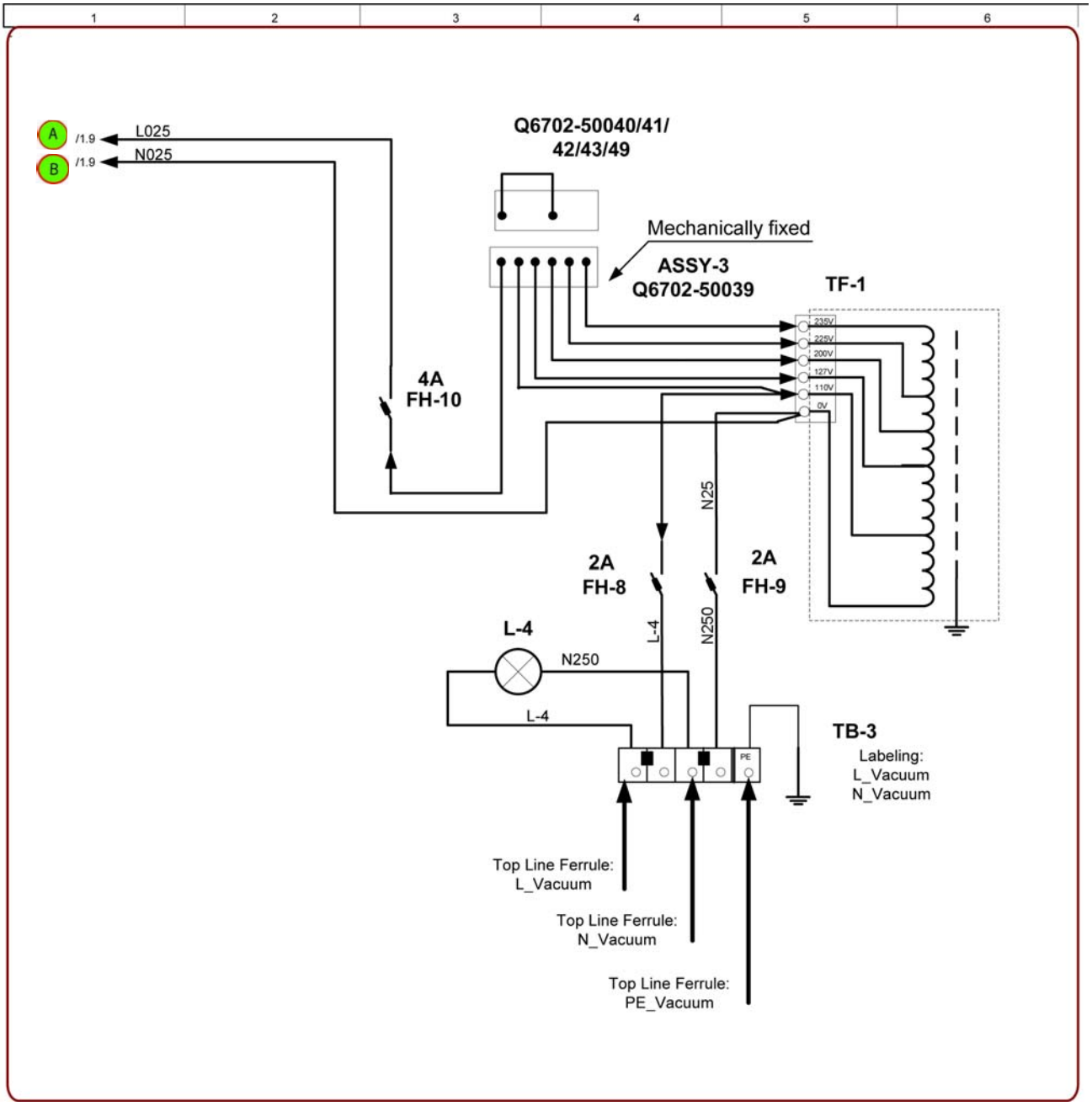
Circuit Diagram 2: Power modules, power control lines



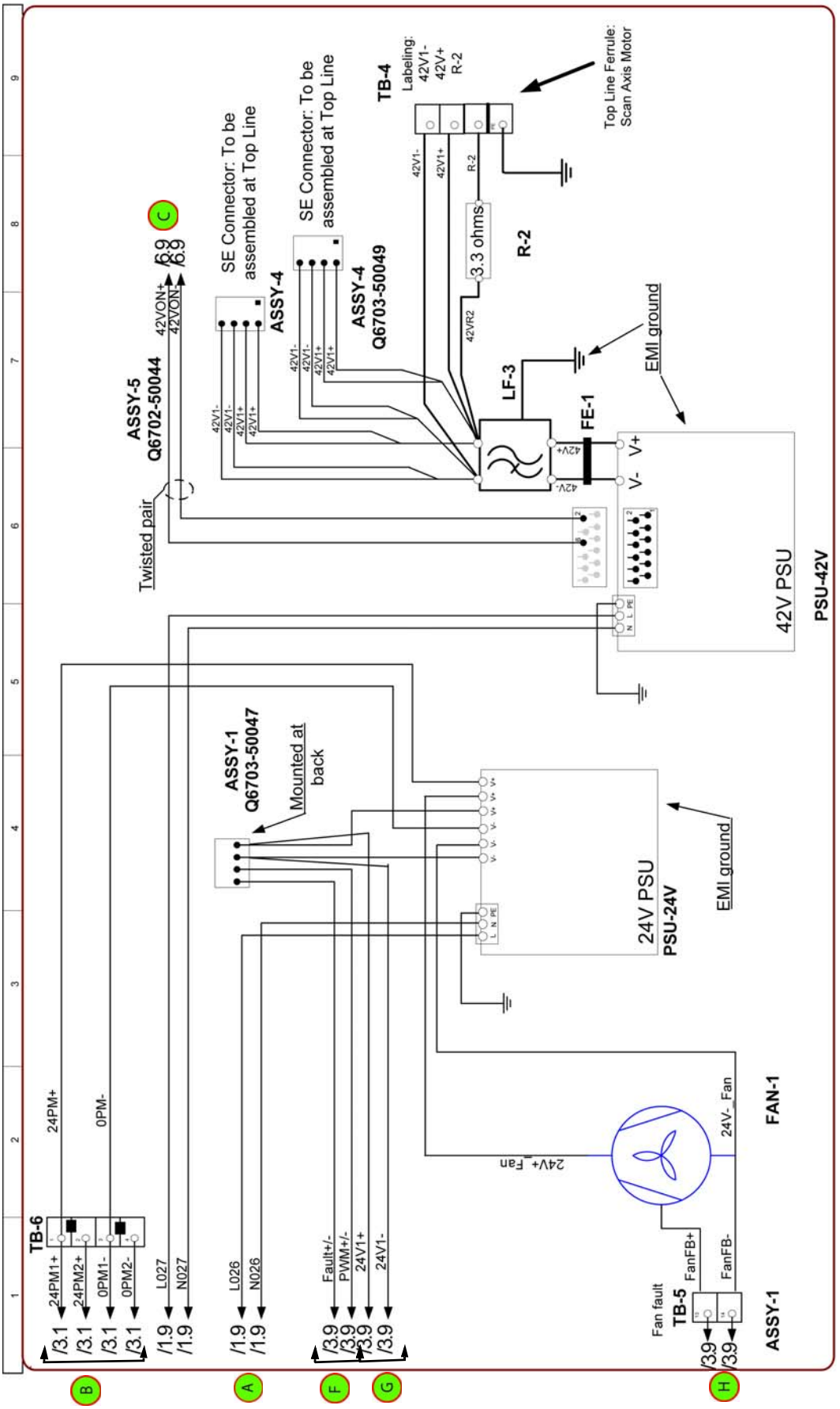
Circuit Diagram 3: Temperature Controllers



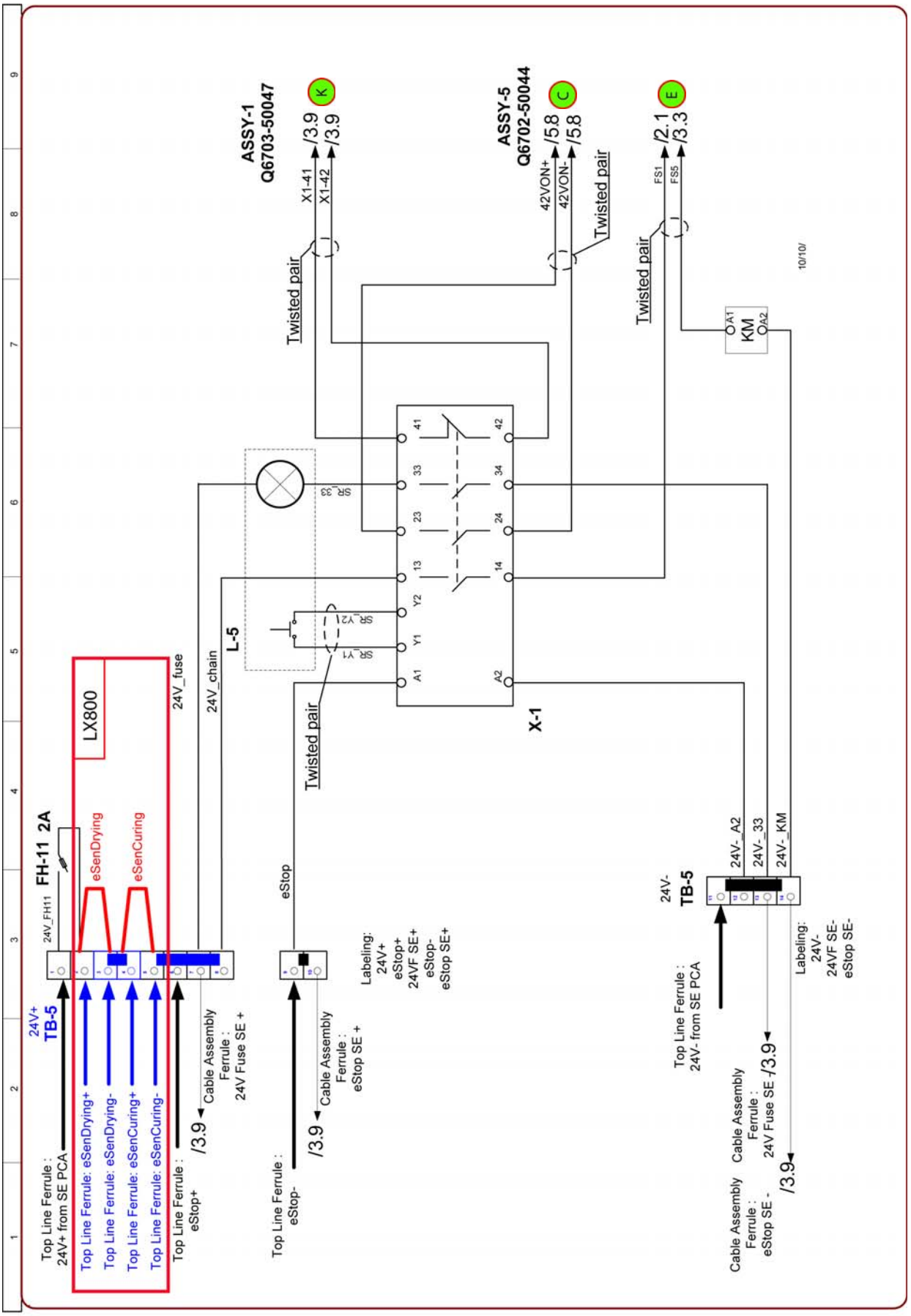
Circuit Diagram 4: Vacuum Transformer



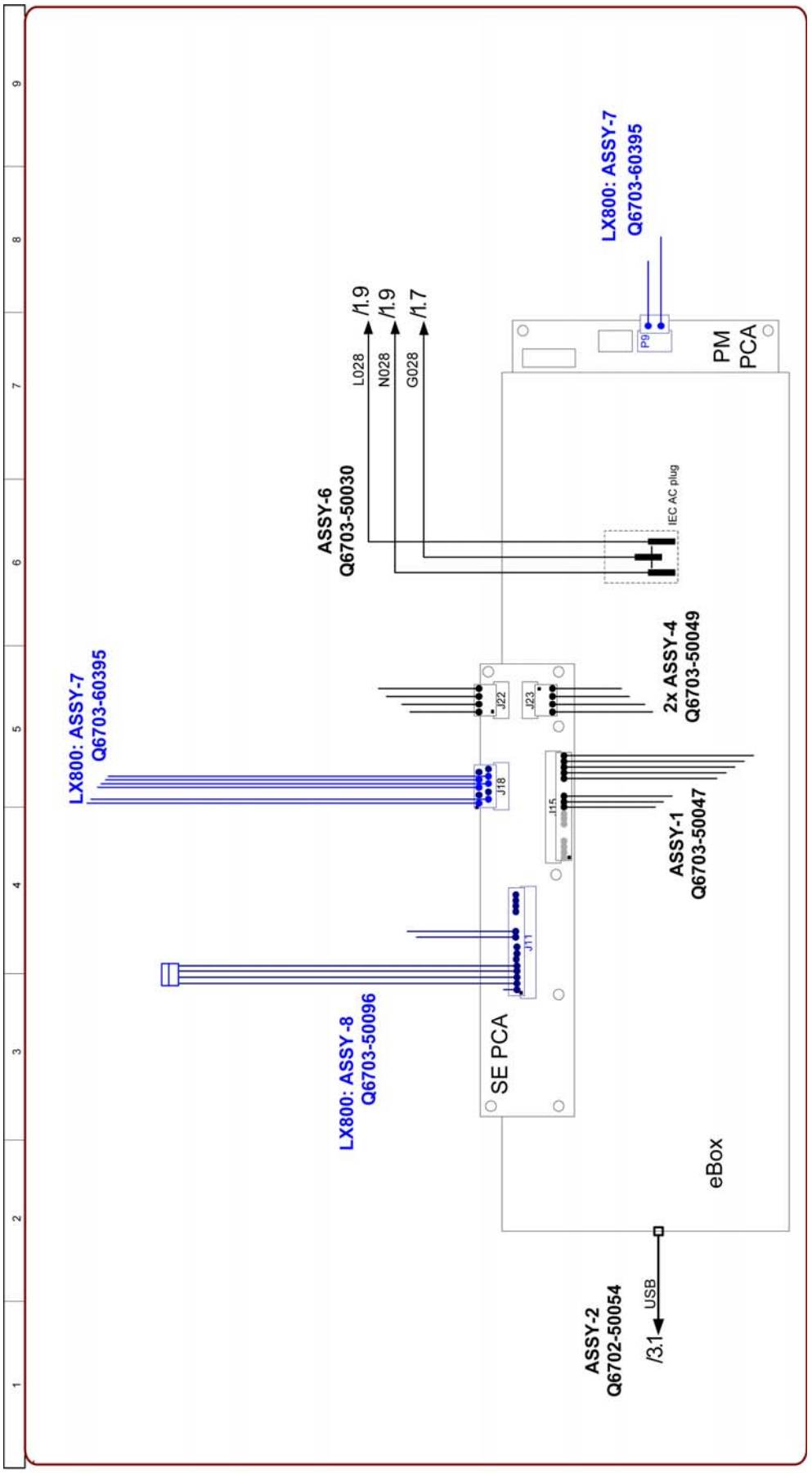
Circuit Diagram 5: Secondary Power Supplies and Internal Ecabinet Fan



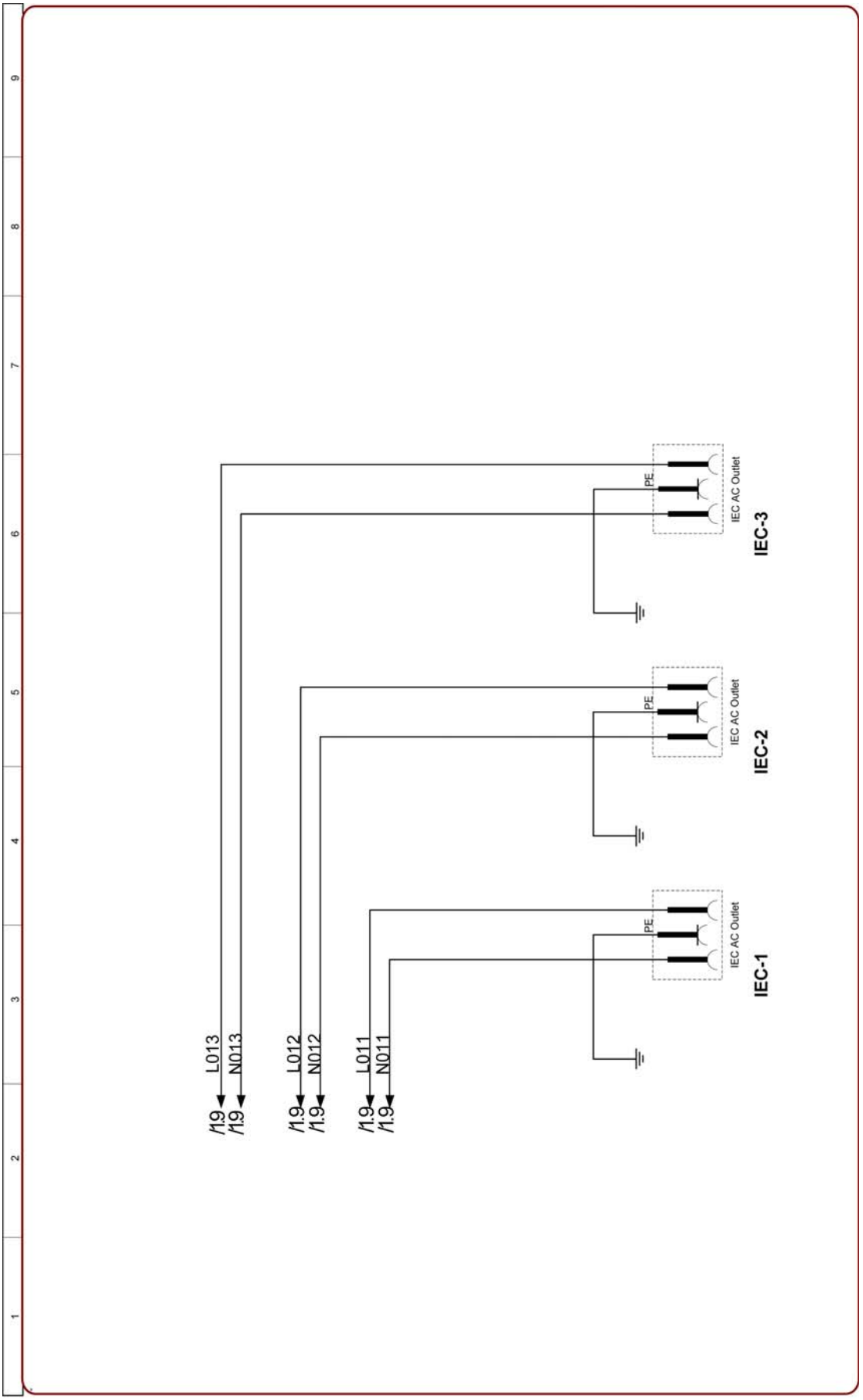
Circuit Diagram 6: Safety Control system



Circuit Diagram 7: Ebox Connections



Circuit Diagram 8: PC Monitor Switch power connections



Related tests, utilities, and calibrations

- Electrical cabinet diagnostic test ⇒ Page 370.

Service parts

- Electrical Cabinet ⇒ Page 533.
  - Circuit Breaker
  - Internal Fan
  - Secondary Power Supplies
  - Power Fuse Holder Block
  - Safety Relay
  - Scan Axis Brake Motor
  - Vacuum Fan Power Transformer
  - Main Power Switch
  - Heating and Curing Temperature Sensor
  - Power Fuses
  - 3 Phase line filter
  - Main Power Breaker
  - Heating and Curing Power Module
  -

Removal and installation

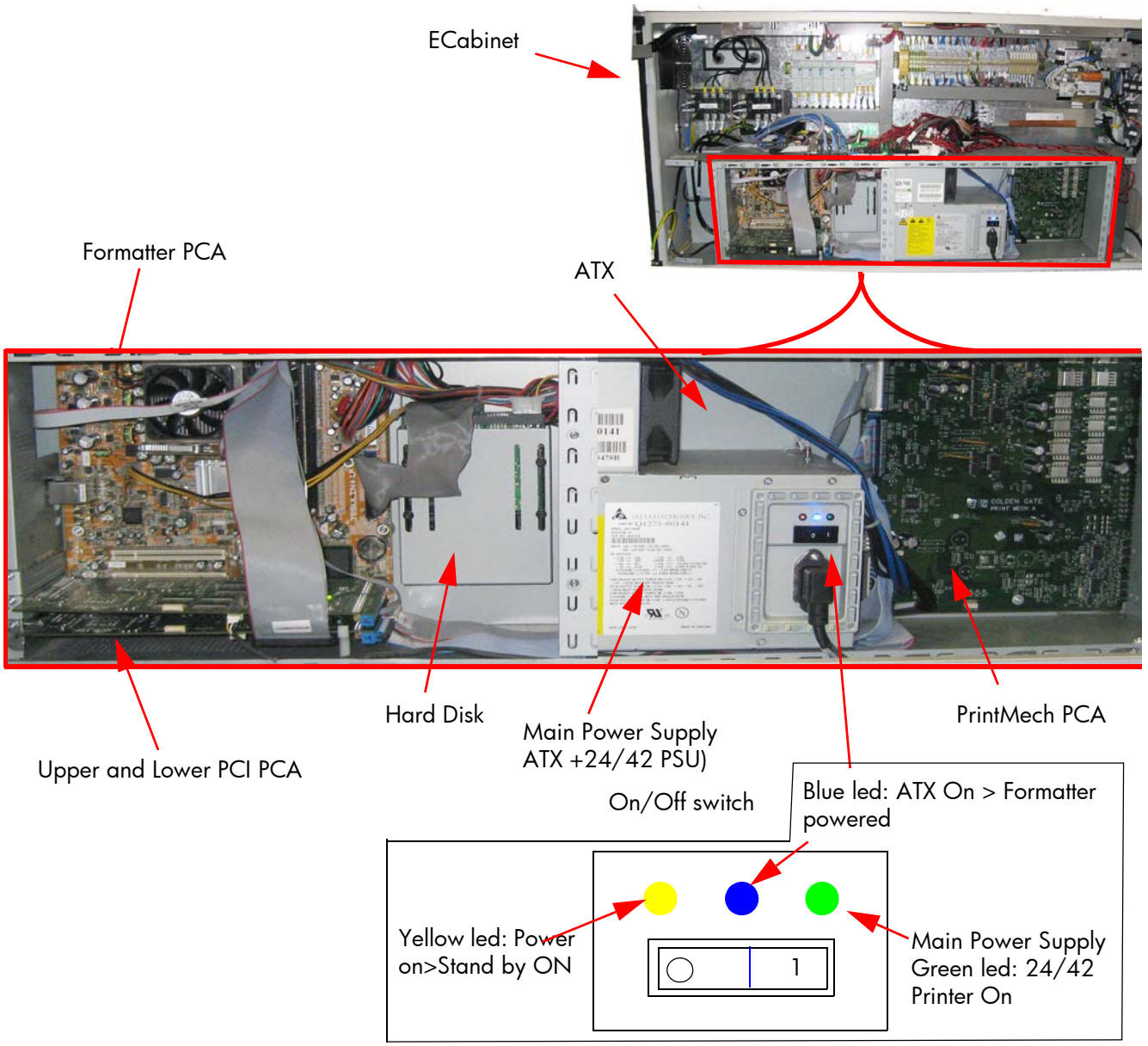
- Electrical Cabinet ⇒ Page 604.

E-Box

The Ebox contains the main electrical control system in the printer. The e-box is the main processing and control element of the machine where all main electronic units are comprised.

Components

The Ebox is inside the Ecabinet and contains the following components:



- Orange ON: System is powered (ACB 1 ON), System with Stand by power in the formatter waiting for the Front Panel power ON button to be pressed to start up the system.

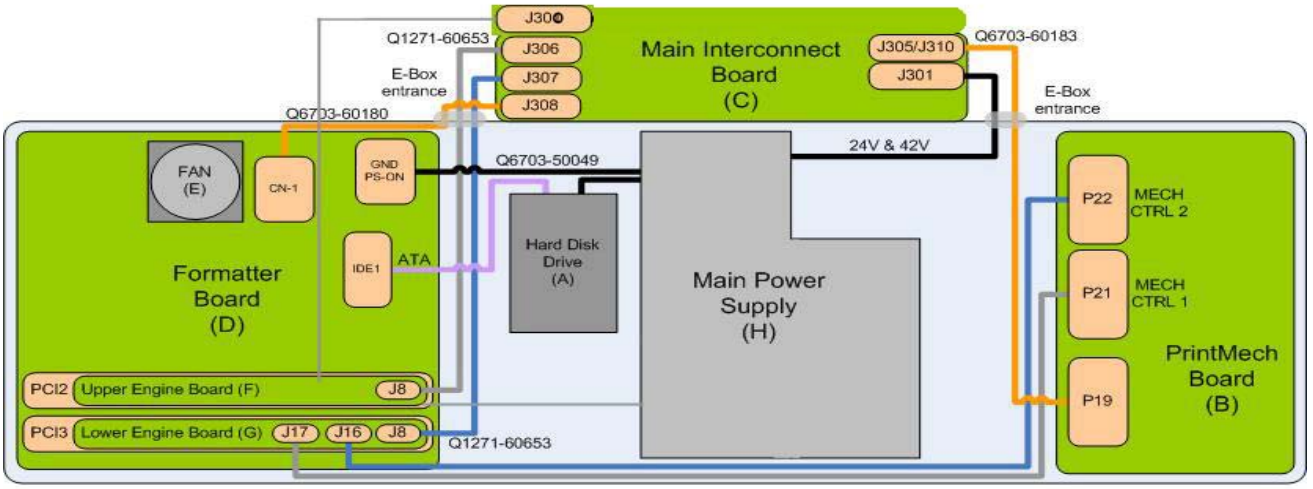
  Check this led when the printer is not powering on by pressing the front panel button to ensure the failure is not in the main power supply. If the led is Off AC power is not arriving to the main power supply or Main power supply switch in the main power supply is off or the Main power supply is faulty.

- Blue ON: Formatter Power system (ATX) Active.Internal computer system running
- Green ON: 24/42V of the second part of the main power supply activated. These 24 Volts are the main source for the complete system to work. Without these 24 Volts the e-cabinet electrical system will not work and the system will be impossible to be armed.

Functionality

The E-box contains the primary electrical systems of the printer in one area.

Circuit Diagram: PCAs in the Ebox



PCA Boards and connections

Components

Formatter PCA

The formatter is the motherboard of the printer, with an Intel microprocessor of 256 MB RAM memory runs the operating system of the printer.

Hard disc drive

The HDD contains the main Firmware of the printer.

- The operating system is based on Montevista, an HP developed system.
- All calibration values, product number, serial number etc, are stored on the Hard Disc Drive. In order to make sure that this information is not lost in the case of a failure of the HDD, a backup is made:
  - In the Main Interconnect Board for all the other information (other calibrations, total ink consumption etc).
  - In the ISM board for information related with the ISM area (calibrations of the ink sensors, level of ink in the intermediate tanks, etc).

NOTE: In order to prevent the loss of calibration values, never replace the Hard disc system and the ISS Main Board or the Hard disc system and the Main Interconnect Board at the same time.

NOTE: The HDD on the HP Designjet L65500 Printer was a standard IDE (=PATA) connector. But the support part and the HDD in the LX series are all SATA HDD (a type of serial connector, pins, instead of the standard parallel IDE port). But to be fully compatible, the support HDD comes with a SATA connection + a conversion board SATA to PATA/IDE.

Upper and Lower PCI Boards

These two boards are the main controllers of the printer. They are responsible for all real-time processing and are the ultimate controllers of all electromechanical systems.

The Lower PCI Board controls all substrate path components (Drive Roller, Spindle Motors, OMAS, etc.), and the link to the following controllers: Controllers of the PH cleaning roller (situated on the main interconnect board). The one connected to the remote controller board controlling the capping station movement motor. Both controllers are connected through the same bus (MICC).

The Upper PCI Board controls all non-substrate path components (carriage, scan axis motor, scan beam height/PPS, PH cleaning assembly, service station, etc).

Printmech Board

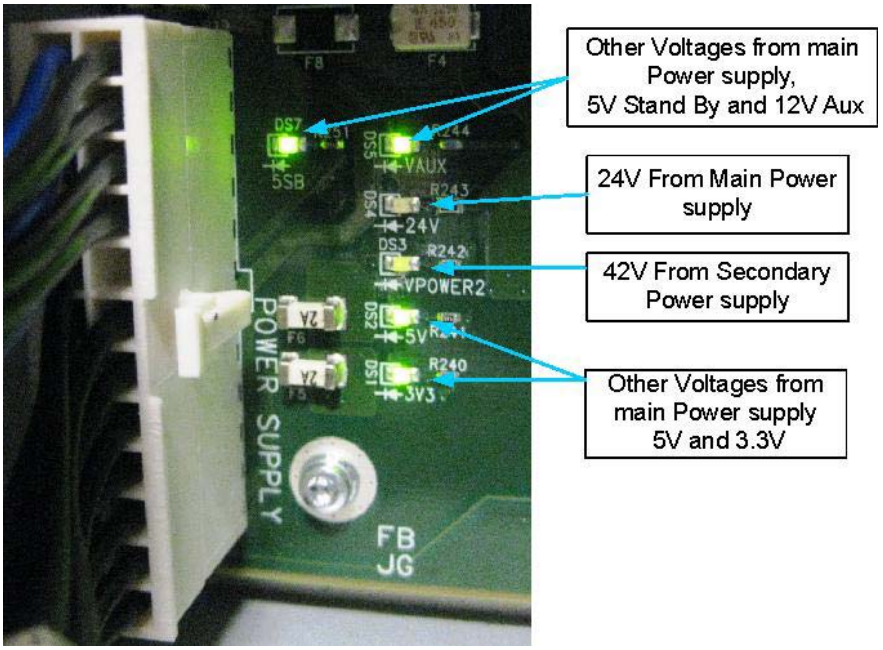
The Printmech Board is mainly used to drive the four substrate advance motors.

- 2 Front Spindle motors (connected in series)
- 1 Rear Spindle motor.
- 1 Media advance motor (the drive roller motor)

NOTE: The motors are driven by 42V obtained from the secondary power supply which is located inside the electrical cabinet.

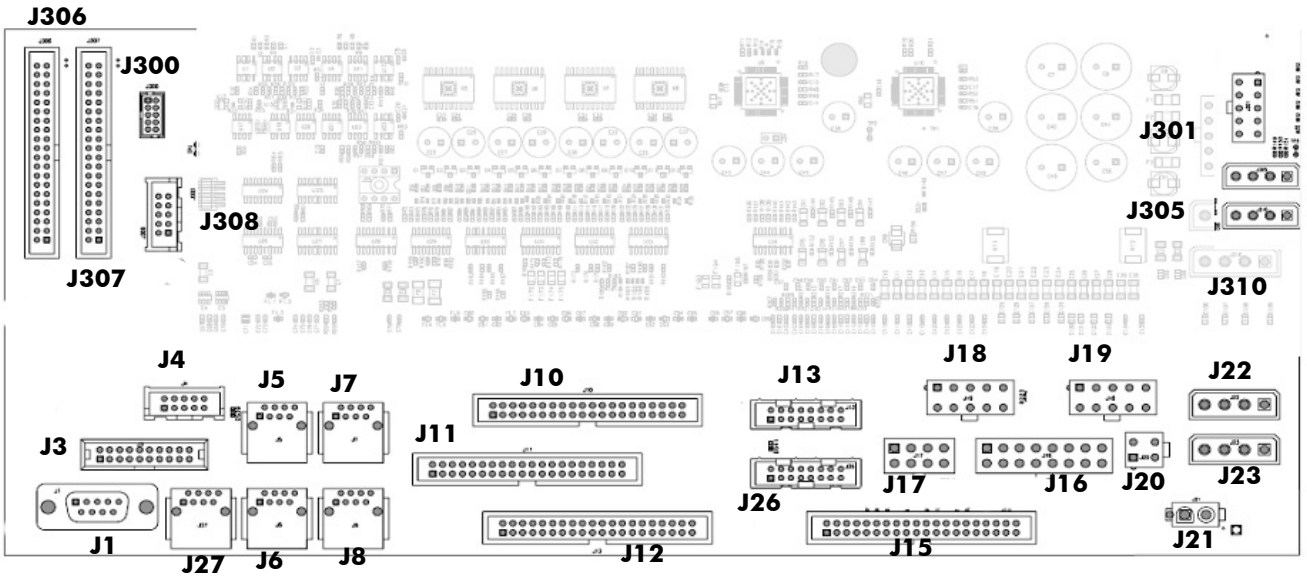
NOTE: To check that the 42V power supply arrives from the secondary power supply, see the **V Power 2** LED located on the Printmech Board.

Printmech leds



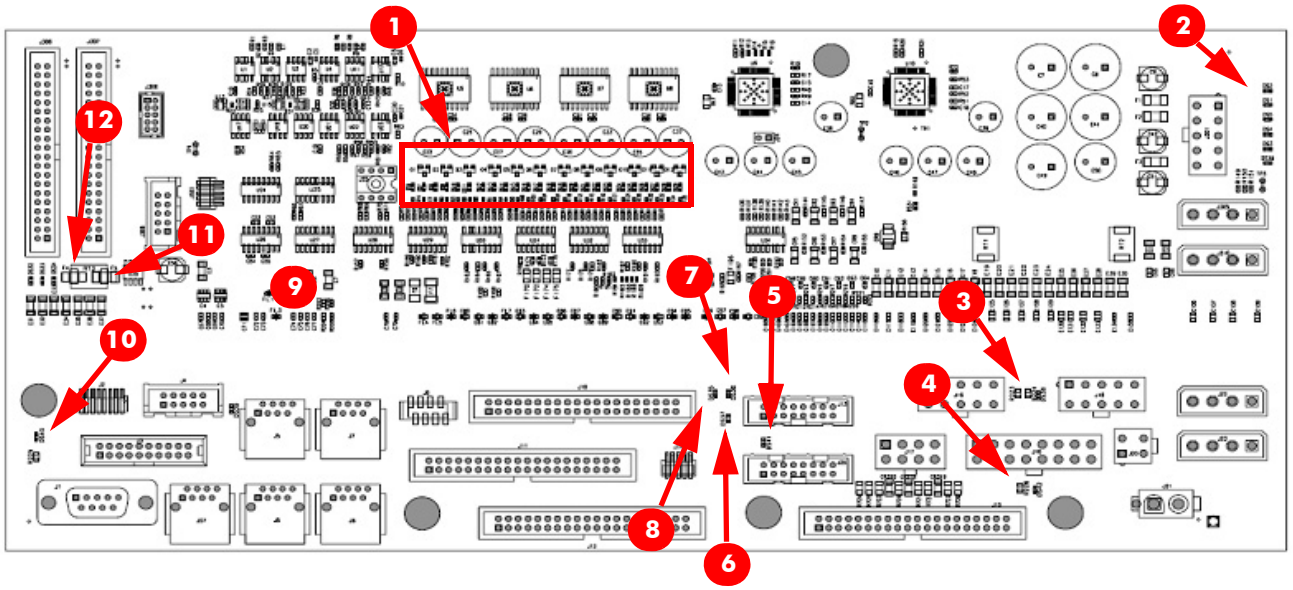
Main Interconnect Board connections

Most of the signals to or from the electronics box pass through the interconnect board. All of the cables connected to the Main Interconnect Board have labels indicating to which connection it should be connected.



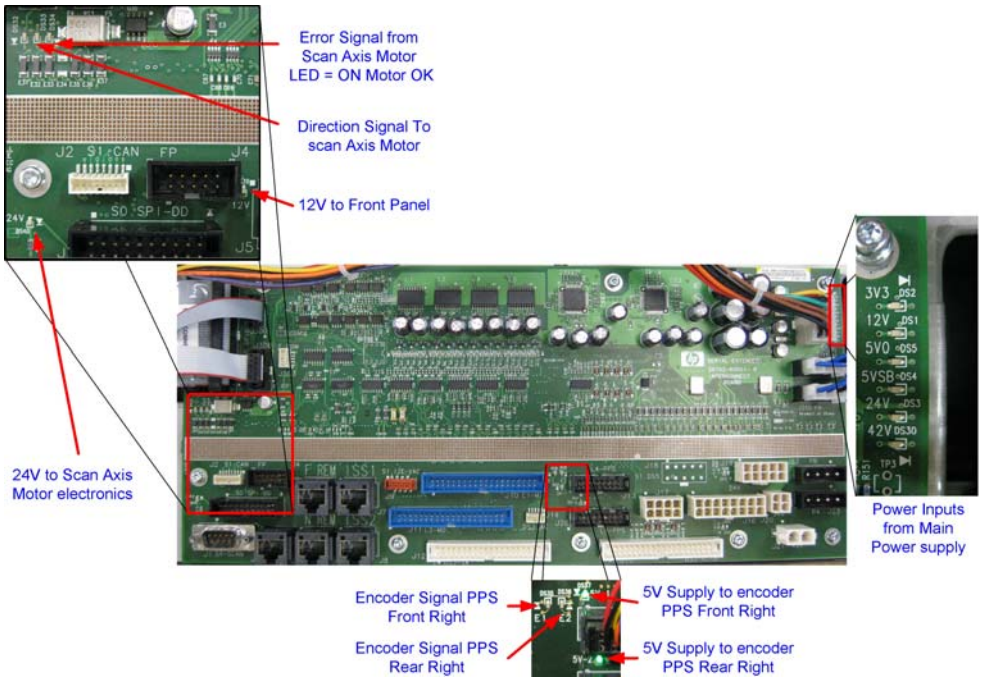
J Plug	Description	J Plug	Description
J1	Scan Axis Motor data	J16	Power& Control for PPS rear right motor PH Cleaning Roller motors & Capping Station 24v power to remote controller
J3	Drop Detector	J17	Power & Motor control for PPS front right motor & vacuum controller (24v & 5v)
J4	Front Panel	J18	Roll to Free Floor Control/power
J5	Remote Control Board (PPS)	J19	Power 24v (E-Cabinet, PPS, ISS)
J6	Remote Control Board (Service Station)	J22, J23	From secondary power supply 42v
J10	Media Input (Rear Spindle System)	J300	Encoder readers from the Printhead cleaning Rollers to the Upper PCI board
J7	ISM 1 (Ink system Module: data 1)	J301	42v from secondary 42 v power supply to PrintMech
J8	ISM 2 (Ink system Module: data 2)	J306	To upper PCI Board
J12	PH Cleaning System data (Encoders)	J307	To lower PCI Board
J13	Front Right PPS (data) Encoder+switch	J308	Front Panel Intermediate cable
J26	Rear Right PPS (data) Encoder+switch	J305/J310	To Printmech 42v
J15	Ecabinet Faulty Signals	J20	Power supply to Carriage 24v
J11	Media Output (Front spindle system Encoder)	J21	Power supply to Carriage 42v
		J27	OMAS/Vacuum control data

Main Interconnect Board LEDs

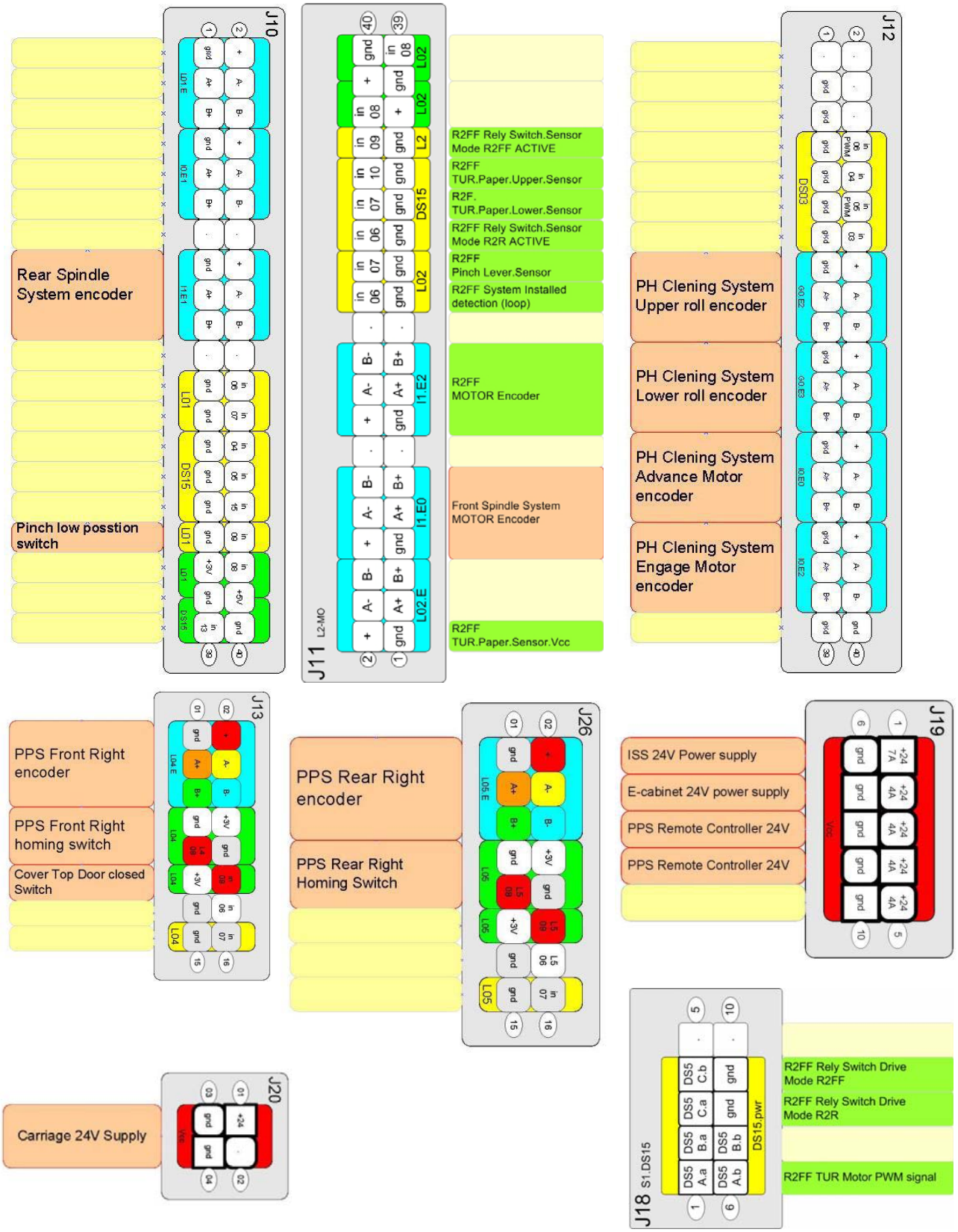


Number	Description	Number	Description
1	24 LEDs (DS6 to DS29)	7	From PPS encoder (rear, right)(DS36)
2	ATX from Main Power Supply+12v, +5 (including 5v stand-by)	8	From PPS encoder (front, right) (DS35)
3	Not used	9	12v from main power supply going to Front Panel (DS39)
4	Power temperature sensor	10	24v to Scan Axis motor (DS40)
5	5v for the PPS encoder (rear, right)(DS41)	11	Scan Axis motor comms signal (DS32-33)
6	5v for the PPS encoder (front, right)(DS37)	12	From Scan Axis Motor (DS34)

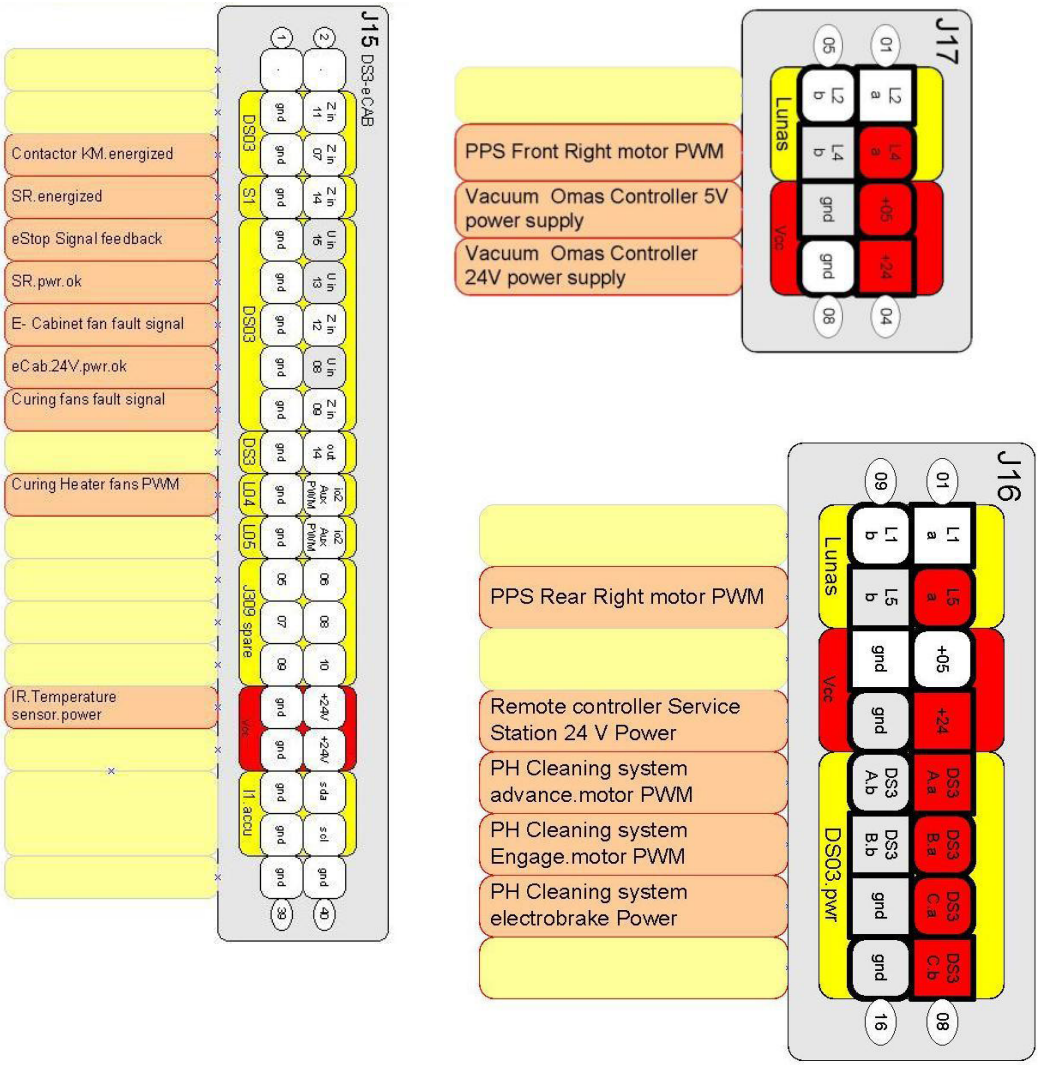
Photo detail of Main Interconnect



Pin outs of the Main Interconnect

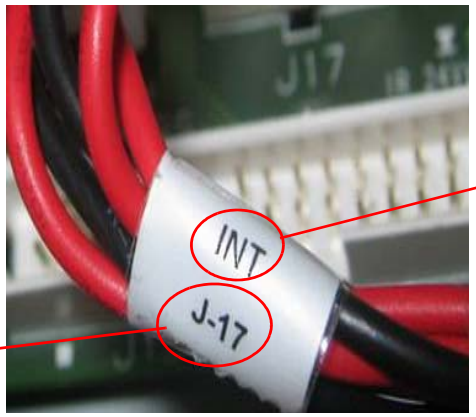


Pin outs of the Main Interconnect



Labels on the cables

Labels are attached to the cables to identify where the cables go to, and in some cases identify the functionality of the cable.



The **'INT'** on the label signifies Main INTerconnect Board, which this cable is connected to

The**' J17'** on the label identifies the J17 connector on the Main Interconnect Board.

Label abbreviations

Related part	Abbreviation on label
Switch	SW
Encoder	ENC
Power	PWR
Lan	LAN
Cover	CV
Main Interconnect Board	INT
Upper PCI board	ENG 0
Lower PCI board	ENG 1
PrintMech board	PM
Hard Disk Drive	HDD
Main Power Supply	PWR
Power Cabinet	PWR CAB
Secondary 24V Power supply	PWR CAB SEC 24V
Secondary 42V Power supply	PWR CAB SEC 42V
E-cabinet 24V intermediate connection	PWR CAB 24V Out
IR temperature Sensor - Left (Curing)	SAX TS - LEFT
CUR IR temperature Sensor - Right	SAX TS - RIGHT PZ - H
Print zone lamps power	SAX PZ - H PWR
Curing lamps power	SAX CURING PWR
Curing fans	CURING FANS
Front Spindle Motor	FSM - T/B (Top/Bottom)
Rear Spindle Motor	RSM
Drive Roller Motor	MA (media advance)
Carriage Lid Switch	C Lid SW
Printhead Board	C PH1/2/3

Note: SAX=Scan Axis

L65500/LX600 Power lines specifications: 3 phase line

	High Voltage system	Low voltage systems
Input voltage	3 x 380-415V~ (-10%+6%)	3 x 200-220V~ (-10%)
Circuit Breaker	20A	32A
Input frequency	50Hz	60Hz
Power consumption	12kW	12kW
maximum load current (per phase)	32A	32A

L65500/LX600 Power lines specifications: Single phase line

	High Voltage system	Low voltage systems
Input voltage (phase to neutral)	3 x 220-240V~ (-10%+6%)	115-127 V~ (-10%) (Japan 200 V~)
Input frequency	50Hz	60Hz

	High Voltage system	Low voltage systems
Power consumption	1kW	1kW
maximum load current (per phase)	10A	10A

LX800 Power lines specifications: 3 phase line

	High Voltage system	Low voltage systems
Input voltage (line to line)	3 x 380-415V~ (-10%+6%)	3 x 200-220V~ (-10%)
Input frequency	50Hz	60Hz
Power consumption	15kW	15kW
maximum load current (per phase)	30A	50A

LX800 Power lines specifications: Single phase line

	High Voltage system	Low voltage systems
Input voltage (line to line)	200-240V~ (-10%+6%)	115-127 V~ (-10%) (Japan 200 V~)
Input frequency	50Hz	60Hz
Power Consumption	1kW	1kW
Maximum load current (per phases)	10A	10A

Related tests, utilities, and calibrations

- From diagnostic mode: Electronics ⇒ Page 353.
- Service Utilities: Electrical system ⇒Page 353.

Service parts

- Electrical Cabinet ⇒ Page 533.

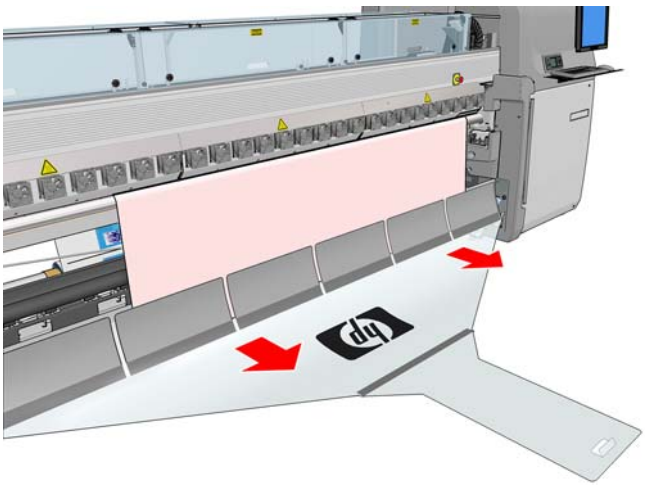
Removal and installation

Electronics ⇒Page 591.

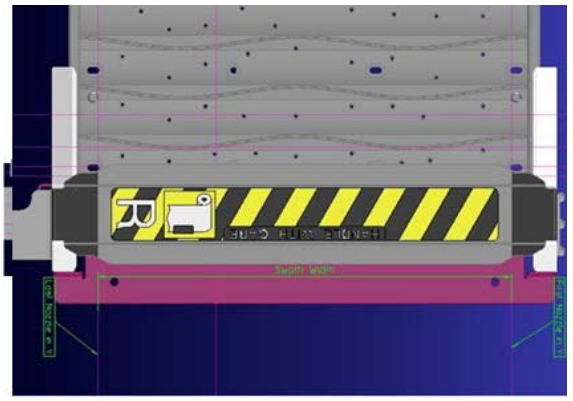
Substrate path

With the introduction of the HP Scitex LX820/LX850 comes improvements in the workflow along the path of the substrate.

- Dynamic printing adjustments can be made as the printer process a job. Customers can now make adjustments to the printer's setting 'on the fly', seeing in real time the affects that the adjustment have on their job (there is a slight delay, depending on the job).
- A new media loading tool is also available to save time while loading media. It can easily be used by one person to load wide substrates, and it cuts time significantly as the Carriage Beam does not have to be raised or lowered to load media.



- The printer can now print automatically Double-sided in rows of images on both sides of the substrate:
- Double-sided printing functionality is a process to guide you when printing a substrate in both sides.
  - Double-sided Printing can be used to print the same image or different images in each side.
  - The functionality automatically compensates for any registration errors, of the position of the plot along both axis (along the media width + media advance) to minimize any errors.
- To enable Double-sided printing, new Media Edge Holders have been introduced.



Substrate Path Overview

The media roll is mounted on the rear spindle and is collected on the front spindle. Media goes from the rear spindle over the drive roller, over the print platen, over the diverter and onto the front spindle.

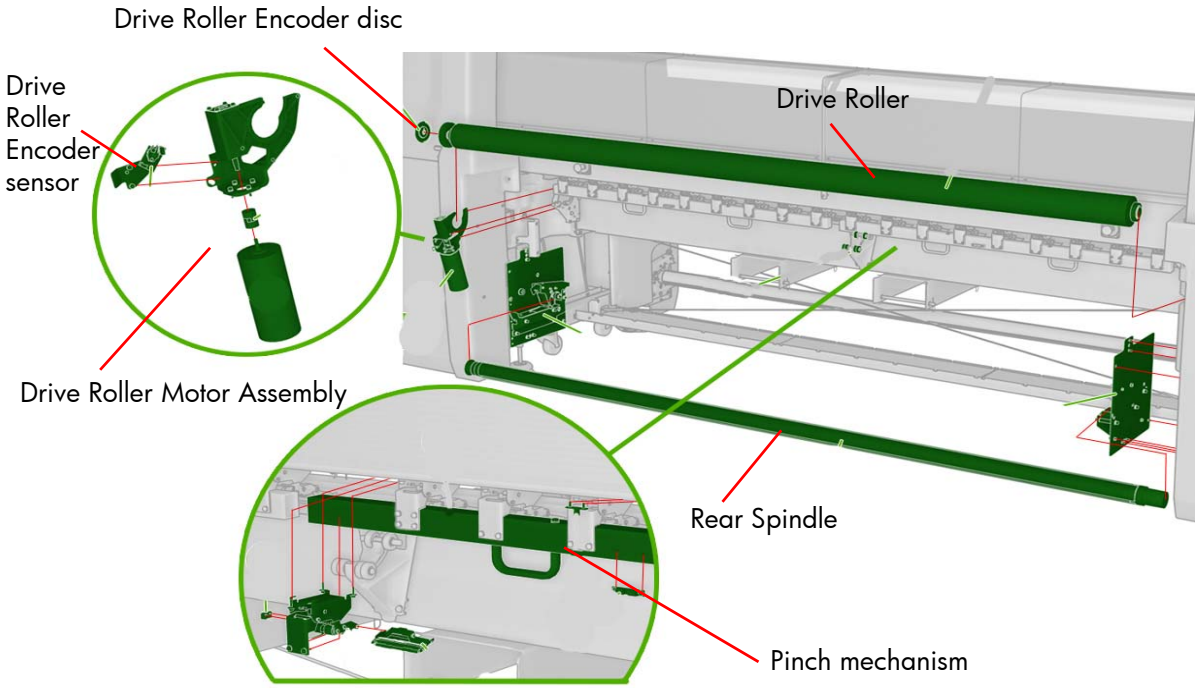
Each of the spindles has its own motor system. Vacuum is applied at the level of the print platen to keep the substrate flat.

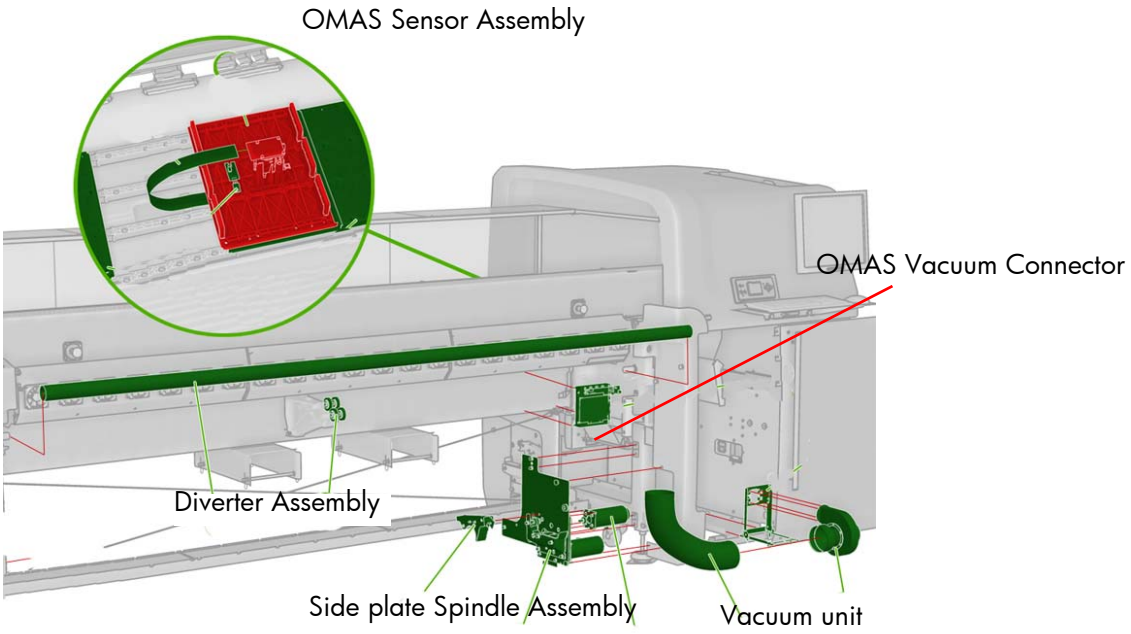
The advance of the media is applied by the motor of the drive roller. There is a pinch mechanism to prevent the substrate slipping against the drive roller.

The accuracy of the substrate advance is controlled with two components:

- The Driver Roller Encoder disc.
- The OMAS: This is an optical sensor which works like a camera taking pictures of the media's fibre, the pictures are then compared, measuring actual distances during movements in order to apply small corrections in the advancement of the substrate.

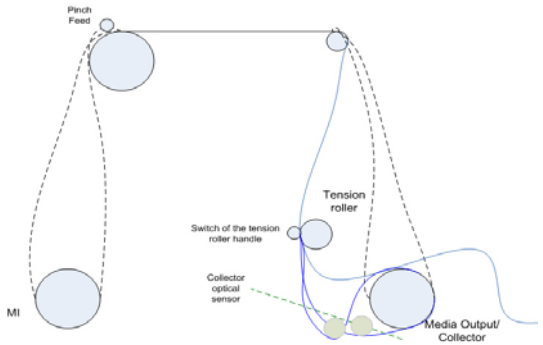
Components



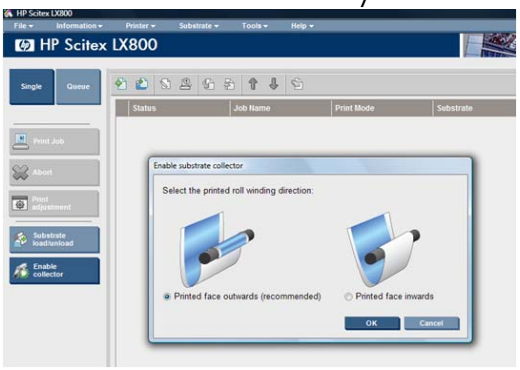


LX800/LX850: Roll to Free Fall Assembly functionality

This is a feature which comes with the LX800, it provides the user a method to be able to collect media and cut it as the printer prints dynamically.

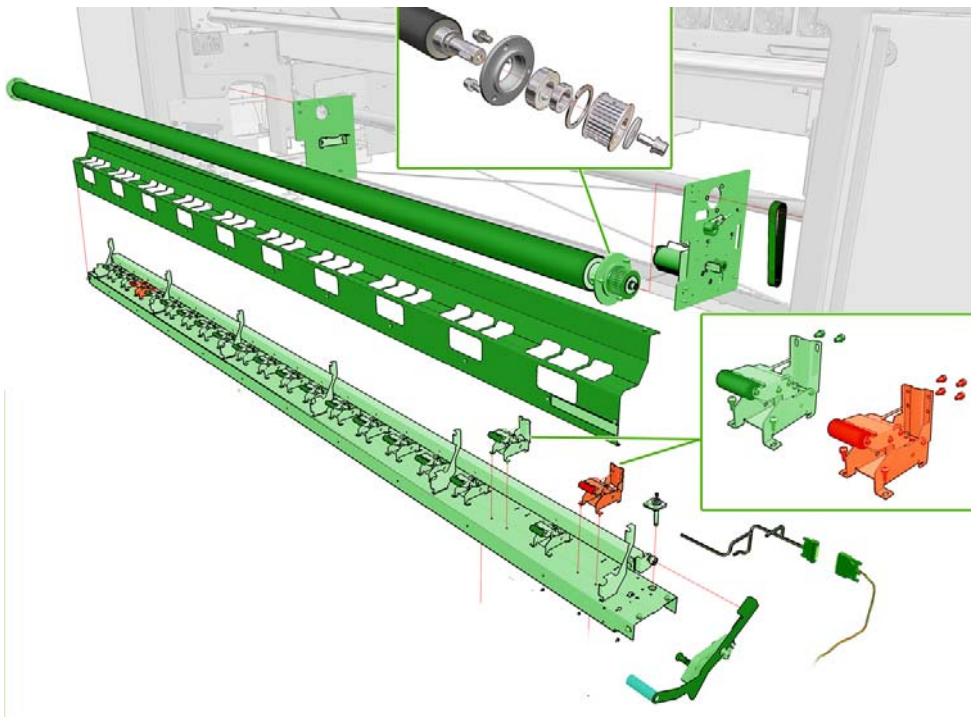


In addition to the Roll to Free Fall there is also a Media Collector (front spindle). The added functionality can be activated on demand by the user.

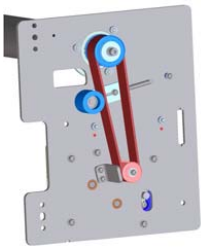


LX800LX850: Roll to Free Fall Assembly mechanical system

The Roll to Free Fall assembly is located on the front of the printer between the Diverter and the Front Spindle assembly. The whole assembly is held in place by left and right plates, secured to the structure of the legs.



The drive plate of the Roll to Free Fall is located on the right side of the printer and operates in an analogue system to the Front Spindle with a drive motor and encoder system. The motor transmits the torque directly to the roll to Free Fall roller via a transmission belt.



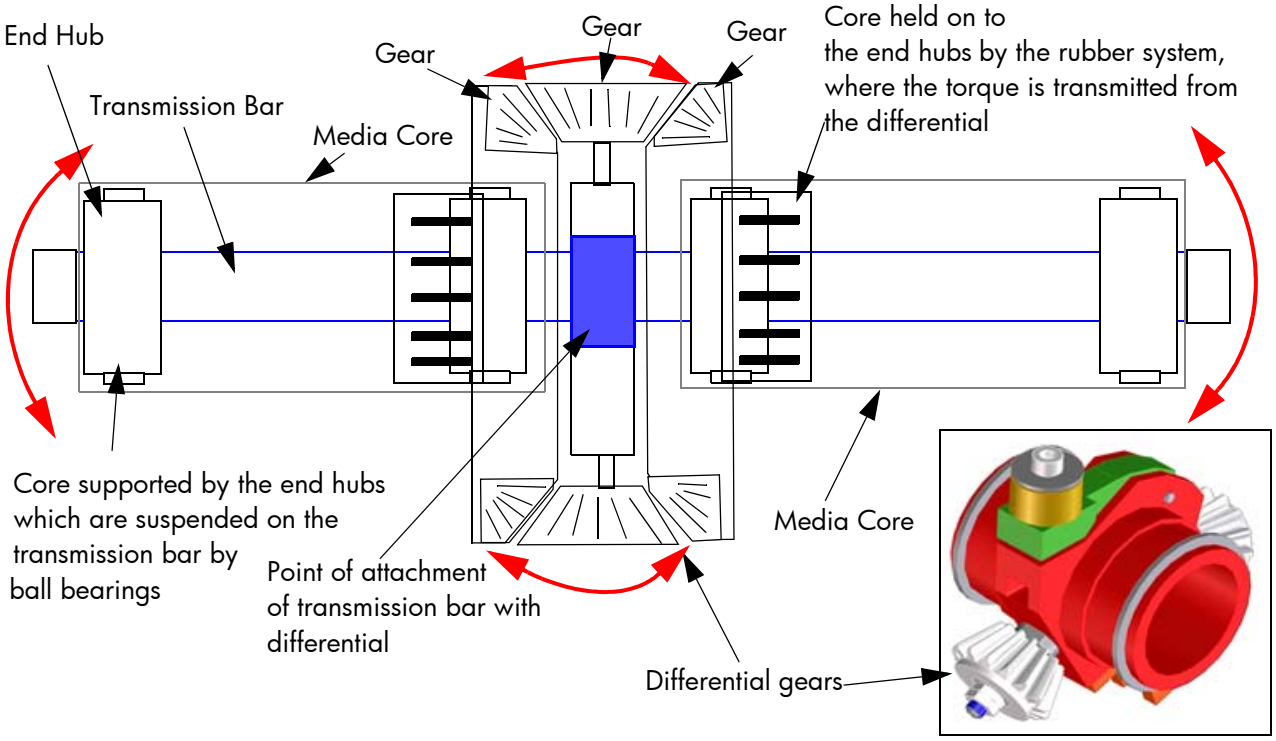
Dual Roll Functionality (LX800/LX850)

The dual roll enables the printer to print on two different rolls of substrate at the same time, significantly improving the productivity of the printer.

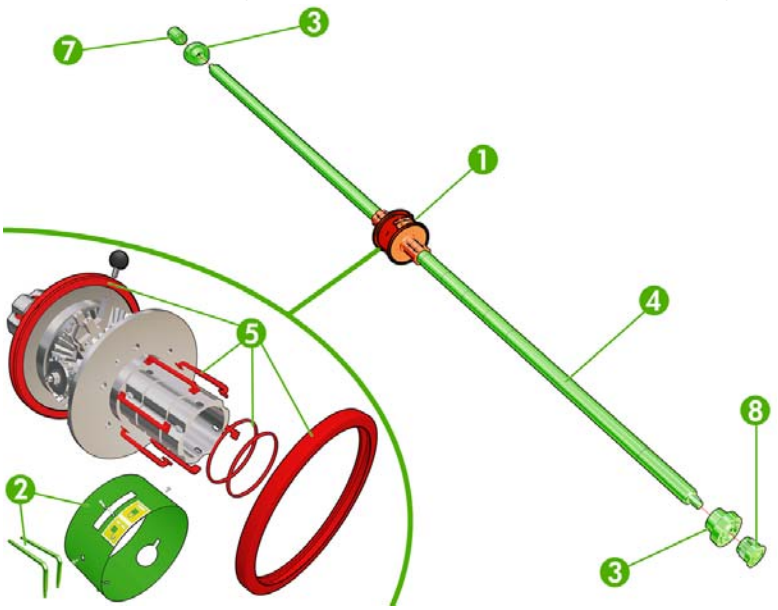
Note that the Dual Roll feature is available as an accessory for the LX820.

A differential mechanical system is used to keep the same tension in both rolls of media mounted on the same spindle, regardless of the type of media or diameter of each roll. The gear connection allows

movement until torque on the both sides is the same. This allows the usage of different diameters of media rolls.



The left core is linked to the right core via the differential. The whole assembly is mounted on the spindle via ball bearings, this enables the assembly to turn on the spindle easily, but at different rates, while maintaining the same tension between the left and right sides.

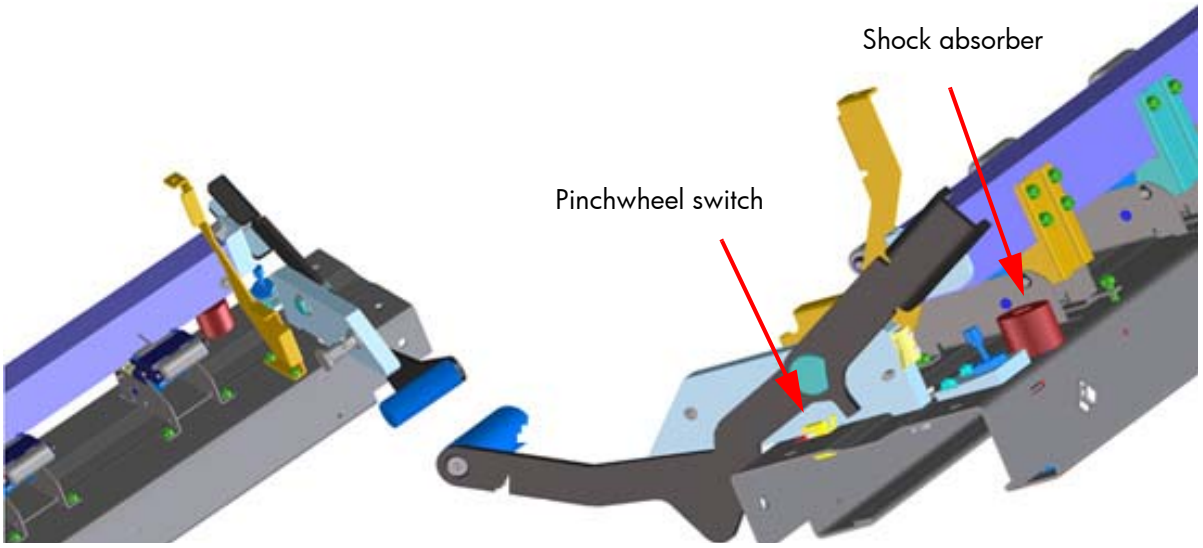


1. Dual Roll Gear (Differential)
2. Dual Roll Tool and Screw Protection kit
3. Dual Roll End Hub
4. Dual Roll Spindle 104
5. Dual Roll Rubber Kits
7. Dual Roll Cap Left
8. Dual Roll Cap Right

Pinch Mechanism

The Roll to Free Fall beam holds an array of pinches. All the pinches are interlinked by a bar, which transmits any open or closing movement from the Pinchwheel lever, to all the pinches. Underneath the

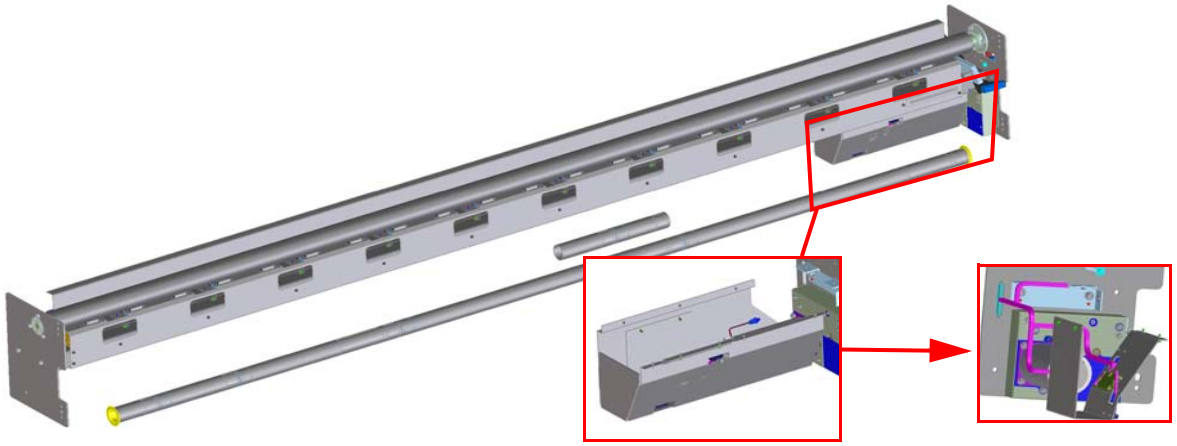
pinchwheel system is a sensor which detects the open and close state of the pinches. The system contains a shock absorber system which prevents damage to the printer and/or the media.



NOTE: There are two types of Pinchwheel mechanism: 18 inner and 2 outer types. The two outer pinchwheels act as reference points of the system.

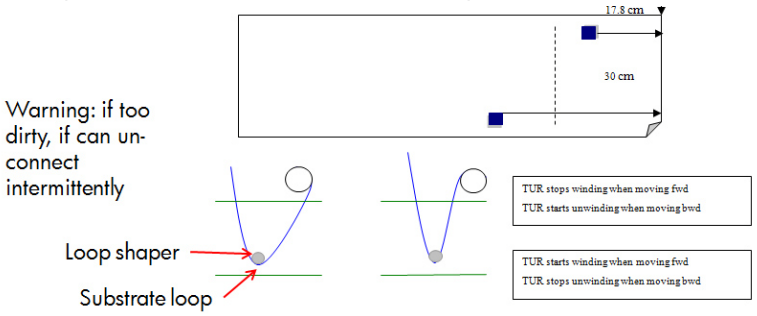
Media collector

On the front right hand side, underneath the Roll to Floor main beam is the media collector system. The system comprises of two sensor and a PCA in an enclosed U shaped structure. A cosmetic cover is secured over the whole system as further protection.



Media Collector sensors

The sensors are two distance detecting sensors which create a beam of infrared light on the media to sense the upper and lower position of the paper. The system will operate the collector motor (front spindle system) to keep the bottom area of the media loop within the area defined by the sensors.



The Loop shaper

The loop shaper is part of the media collection system and gives shape to the loop of media that hangs down from the media paper path, it also gives added tension to the media as its being collected. The length of the loop shaper can be changed by removing and/or adding sections to it in order to work with various widths of media.

Drive Roller Assembly

The driver roller system contains the following:

- Roller
- Pinch Wheels
- Motor
- Encoder Disc
- Encoder PCA

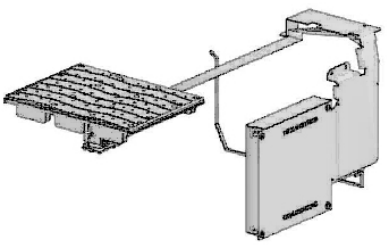
The Drive Roller system advances the substrate under control. The Encoder Disc and Encoder PCA provide feedback on the advance of the substrate. The Pinch Wheels ensure that the substrate does not slip and moves the same distance. There are separated into two modules that are manually opened and closed while loading the substrate.

Diverter

The Diverter Assembly makes sure that the substrate exits the substrate path correctly, and prevent the substrate from becoming damaged.

The OMAS

The OMAS consists of an optical sensor is located underneath the print platen. It has a dedicated controller board, which is connected to the Main Control board through a CAN bus.



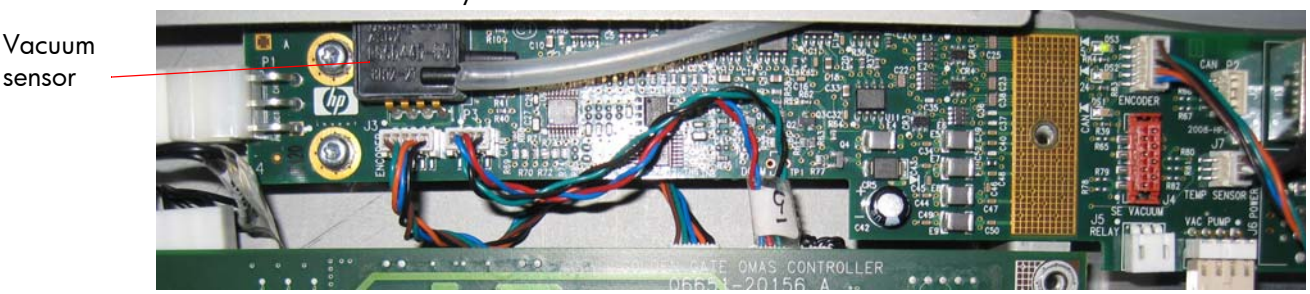
The optical sensor takes pictures of the back of the substrate as it moves across the platen. These pictures evaluate the precision of the substrate movement. The evaluations result in a set of values that describe the substrate advance error. The values obtained are then used to feed the substrate into the printer, correcting the movement, and making on-going precision adjustments that avoid any possible substrate skew.

The OMAS temperature sensor detects the heat around the OMAS sensor, which comes from the Heating and curing system, the system can then make small adjustments to compensate.

The Vacuum system

The vacuum is used to keep the substrate flat on the print platen. There are different Vacuum levels depending on the substrate used. The level of vacuum is determine automatically during the loading of the media.

The vacuum pump is a 110V pump. It receives power from a transformer in the power cabinet. This transformer need to be configured according the input voltage during the installation. The amount of Vacuum is measured by a sensor. The sensor is located in the vacuum controller PCA.

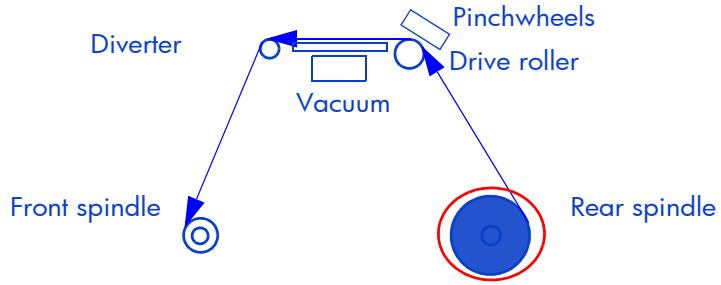


Functionality

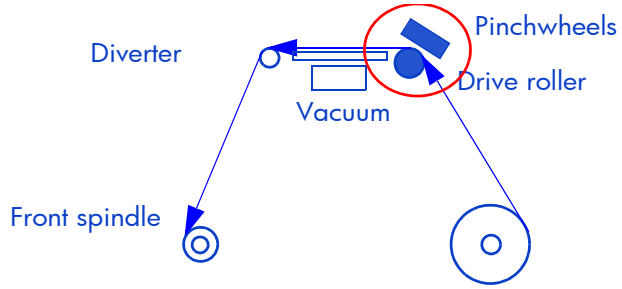
Substrate path workflow overview (Roll to Roll)

The following steps describe the substrate path workflow.

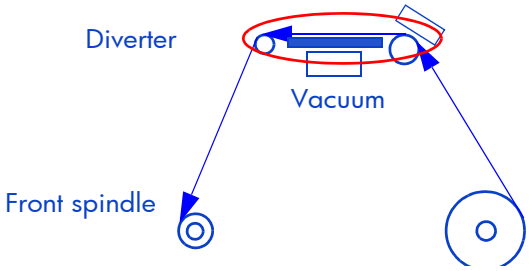
1. The substrate passes from the rear spindle, over the drive roller (and under the pinches), over the diverter, and is collected on the front spindle.
2. The **rear spindle** system maintains tension on the media.



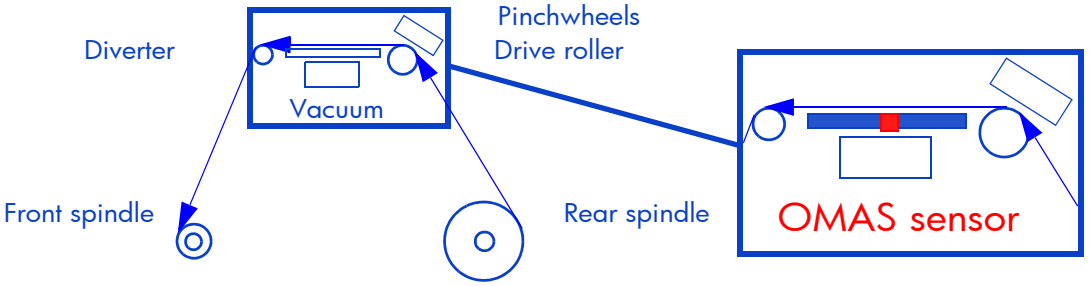
3. The **drive roller's** motor advances the substrate. The substrate is pressed against the drive roller by the **pinchwheels**, to ensure a correct substrate advance.



4. The **Print Platen** is designed for minimal resistance against the substrate's advance, and includes suction holes for the vacuum.

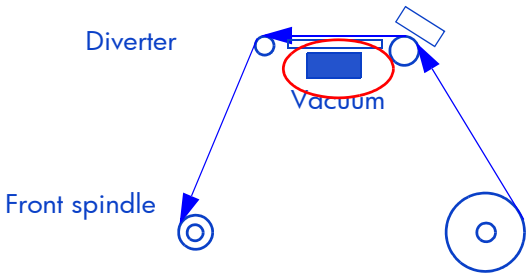


5. The substrate passes over the **OMAS sensor** which is able to detect very small errors in the advancement of the media. These advancement errors are communicated to the motors on the drive rollers and very small correction adjustments are applied to the movement of the substrate.

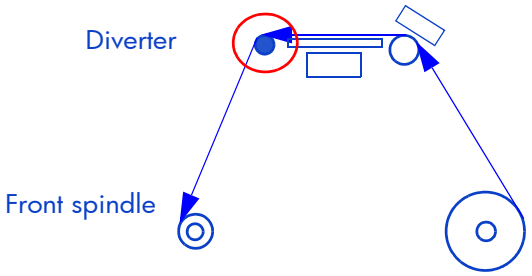


NOTE: The OMAS sensor camera cannot see the fibers on some substrates, such as transparent media or very dark substrates. In these cases, the OMAS sensor can be disabled. To disable the OMAS sensor ⇒See page 481.

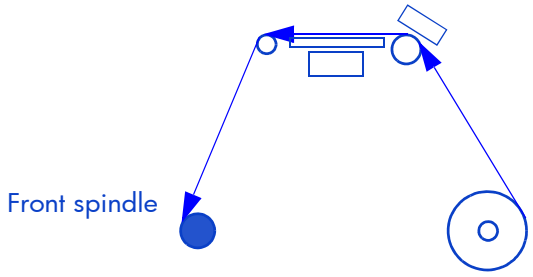
6. The **Vacuum** level is set according to the substrate type and print options, it sucks the substrate to the print platen, making sure that the substrate is flat.



7. The substrate exits the print zone and passes over the passive **diverter** (no motor), this enables the substrate exit correctly, undamaged, friction is reduced and controlled.

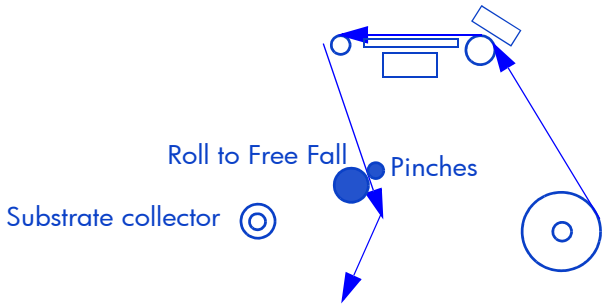


8. The **front spindle** has two motors that pull the substrate through the print path to maintain tension and to roll up the printed image.

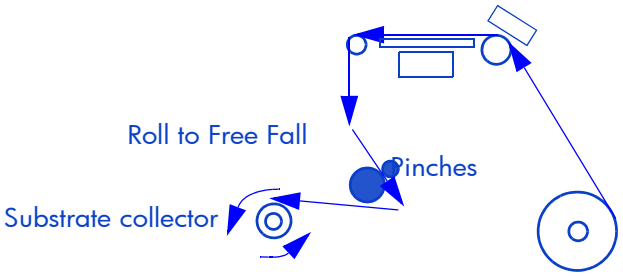


9. LX800 only:

   a. **Roll to Free Fall:** The pinches & Roll to Free Fall Roller keep the paper in tension while the end of the paper is free to pass over the Substrate Collector and fall to the floor, or be cut as the printer prints.



   b. **Substrate Collector:** The pinches & Roll to Free Fall Roller keep the paper in tension while the substrate collector rolls up the printed media as it prints.



Related tests, utilities, and calibrations

- Diagnostic mode
  - 2.3 Substrate path diagnostic test: ⇒Page 494.
  - 3.2 Front spindle diagnostic test: ⇒Page 371.
  - 3.3 Rear spindle diagnostic test: ⇒Page 373.
  - 3.4 Drive roller diagnostic test: ⇒ Page 375.
  - 3.5 Pinch switches diagnostic test:⇒ Page 376.
- Service utilities
  - 1.3.1 Turn drive roller service utility: ⇒Page 479.
  - 1.3.3 Enable/disable OMAS service utility: ⇒ Page 481.
  - 1.3.2 Enable/disable SCAPA service utility: ⇒ Page 480.
  - 1.5 Scan axis check: ⇒ Page 485.
  - 4.3.9 OMAS Visual Check: ⇒Page 506.

Service parts

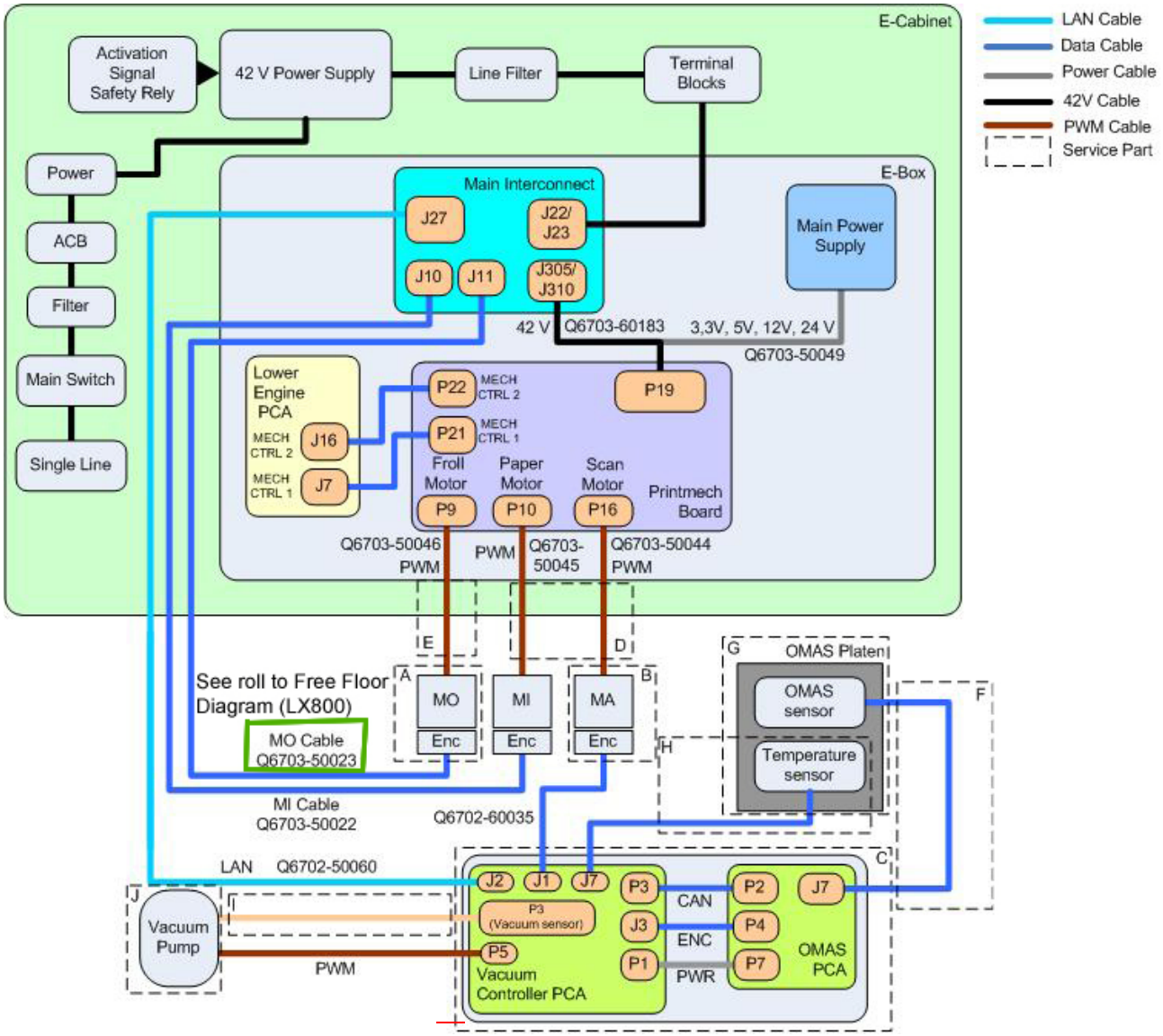
- Front Substrate Path (1of 2) ⇒Page 536.

- Front Substrate Path (2 of 2) ⇒Page 537.
- Rear Substrate Path ⇒Page 538.
- Rear Substrate Path ⇒Page 539.
- Dual Roll Assembly ⇒Page 540.
- Roll to Floor ⇒Page 541.

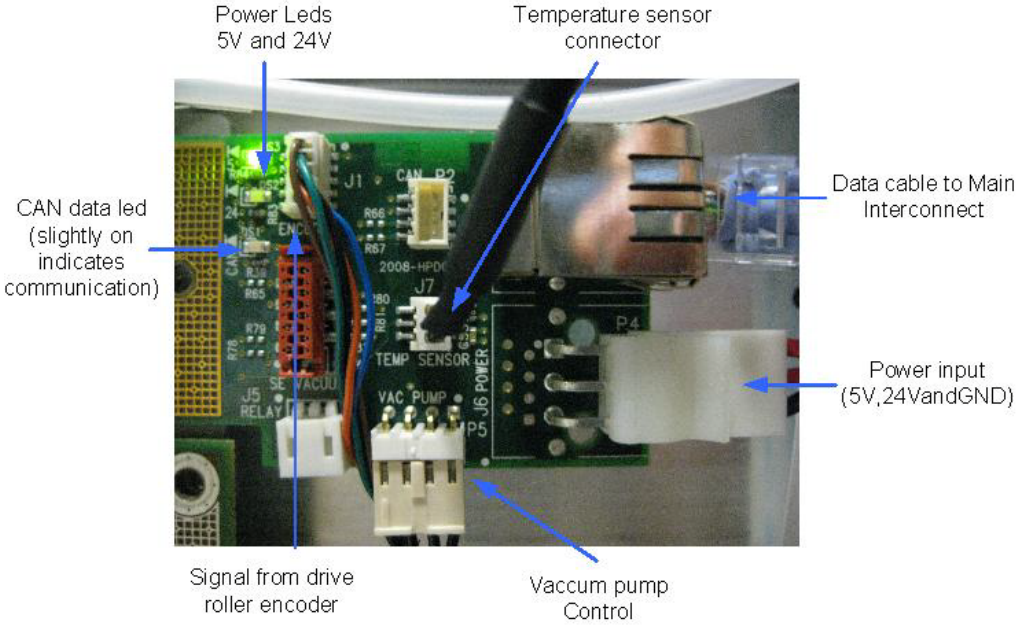
Removal and installation

- Substrate Path: ⇒ Page 631.

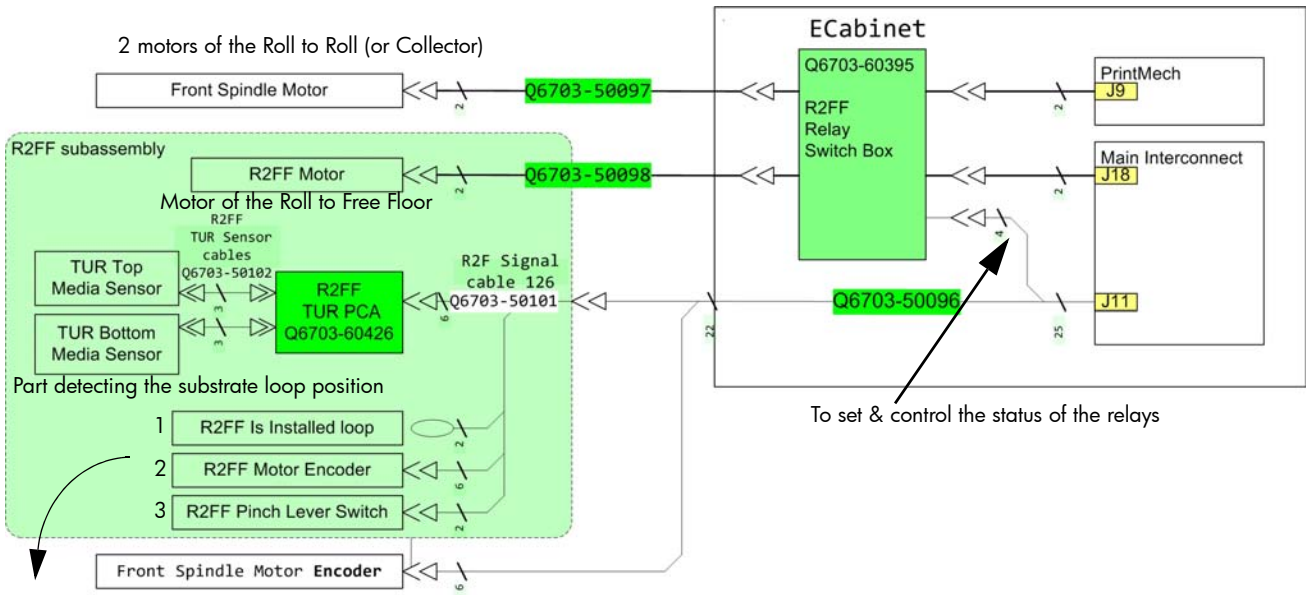
Substrate Path Circuit Diagram



Vacuum Controller Connectors



LX800LX850: Roll to Free Floor and Media Collection Electrical system



1. Cable detection, a way for the printer to check that the cable is correctly connected, if it is not a system error will display.
2. From the encoder reader placed at the back of the Roll to Free floor motor
3. The lever switch of the Tension Roller, detects if it is raised of lowered.

Ink System

The ink system is located in the left compartment of the printer (inside the left covers) and delivers a continuous supply of ink to the printheads. It can detect an ink leakage anywhere in the system, including inside an Ink Cartridge. It also tracks and determines when an Ink cartridge needs replacing.

In addition the system is designed to allow Ink Cartridge replacement while printing (Hot Swap functionality)

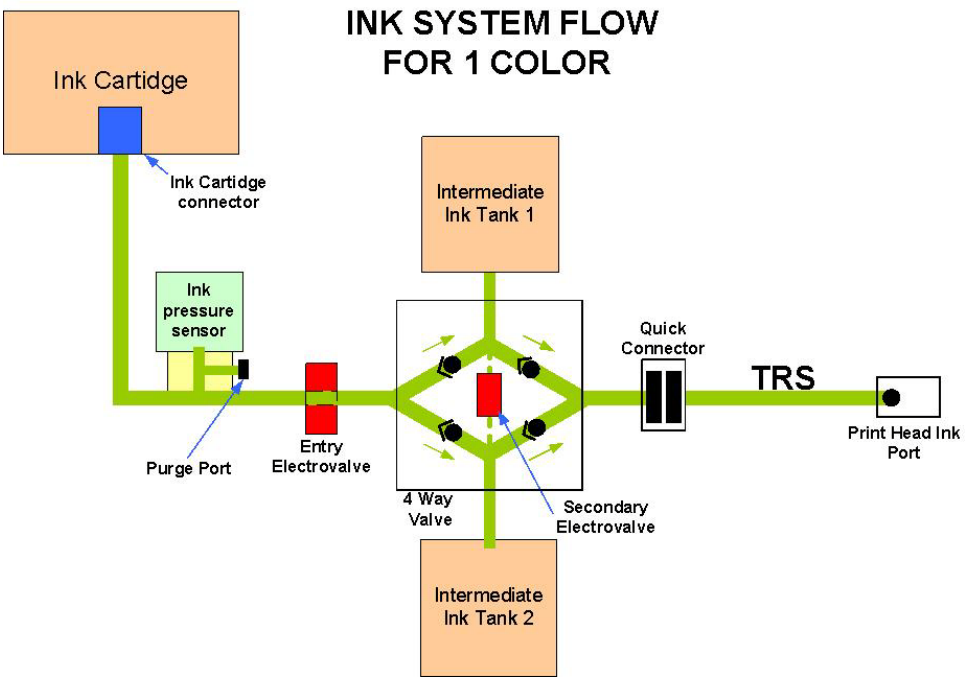
Components

- Ink Cartridges
- Printheads.
- **TRS**
- The twelve **Intermediate ink tanks** (two for each color), located at the bottom front and rear of the ink system compartment.
- The **ISM Air Circuit Module**, located on the first tray from the top, provides the air pressure needed to pressurize the intermediate ink tanks and send ink to the printheads.
- The two **Air Pressure Bottles** prevent cross contamination of ink when a broken bag occurs inside an intermediate ink tank. It also works as cushion device for the air pressurization system
- The **ISM Ink Circuit Module**, located on the lower tray, manages the flow of ink using a complex set of valves.
- There are two **Ink sensors boards**, each with three ink pressure sensors. Each board comes calibrated from the factory with unique values. New service parts require a service procedure to manually enter in calibration values. Ink Pressure Sensor Calibration: ⇒ Page 406.
- The **Ink Cartridge Connector Set** connects to the ink system to the ink cartridges. The ink connectors include read the acumen data from the cartridges, and also an internal switch to detect whether or not the connector is correctly inserted.
- The **ISS Main Board** controls the entire ink system.

Functionality

Ink supply hot swap

- The printer allows the user to change the Ink Cartridge while the printer is printing, as it is actually using the ink stored in the intermediate tanks.



Intermediate tank set swap

- While one of the Intermediate tanks is refilling, the other intermediate tank is pressurized to enable the correct ink flow to the printheads.
- Once the quantity of ink falls below a certain threshold, the printer calculates the amount of ink fired from the printheads and resupply the intermediate tank with ink, while at the same time swapping the amount of pressurization supplying ink from the other set of intermediate tanks.

Low ink carriage detection

The pressure sensor detects the amount of pressure of the column of ink above. When the column is low (empty cartridge), the sensor triggers the empty condition. The pressure of a fluid mainly depends on the height of the column of fluid.

Control of ink to the Intermediate Tanks

Once the main electrovalves open the ink falls into the intermediate tanks by gravity. When an intermediate tank is full, the ink flows stops, which generates a pressure difference which is detected by the pressure sensor.

Intermediate tank set swap

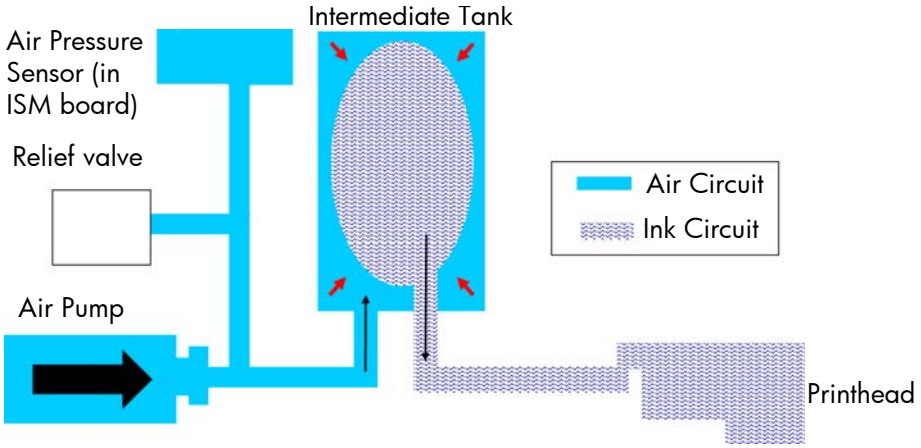
- While one of the Intermediate tanks is refilling, the other intermediate tank is pressurized to enable the correct ink flow to the printheads.
- Once the quantity of ink falls below a certain threshold, the printer calculates the amount of ink fired from the printheads and resupply the intermediate tank with ink, while at the same time swapping the amount of pressurization supplying ink from the other set of intermediate tanks.

Air System Functionality: The Intermediate tanks push the ink to the printheads

The system has two air pumps for each set of intermediate ink tanks (four total). The air pressure is distributed using an air pressure bottle (one for each tank set) with air tubes going out to the tanks.

Each tank has a bag inside which holds the ink. In order to send the ink to the printheads, the air pumps push air into the enclosed space of the tanks around the bags to pressurize them and force ink out.

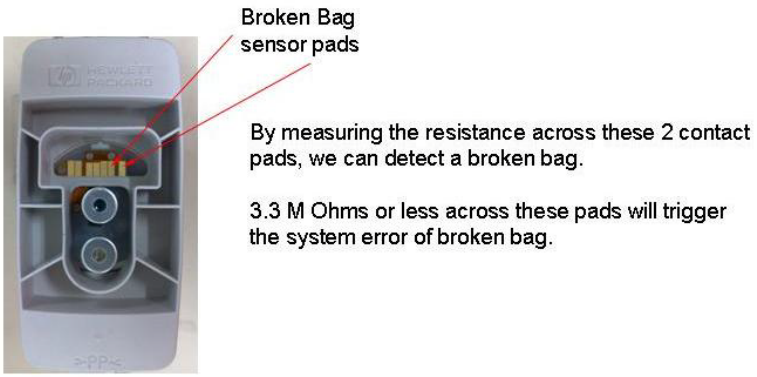
While one tank sends ink to the printheads, the other is being refilled. In this way, continuous printing is possible while changing ink cartridges.



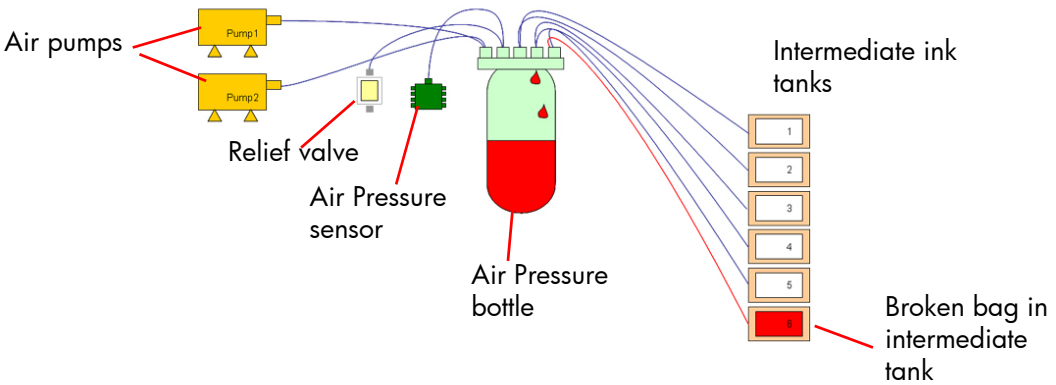
- Air pressure is constantly monitored by an Air Pressure Sensor located on the ISS PCA
- The system is able to depressurize with the relief valve located in the Air System.

Broken bag in an Intermediate Tank

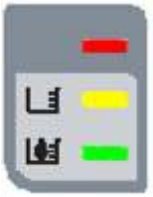
In the event of a broken bag in an intermediate ink tank, the ink system uses the air pressure bottle to prevent cross contamination of inks.



When a broken bag is detected by the sensor located inside the intermediate ink tank, the relief valve opens to release the air pressure of the system. The ink going through into the air system can at maximum flow and fall into the bottom of the bottle, preventing cross contamination of colors.



Ink Cartridge LEDs Indicators



- **Red:** Connector connected to the cartridge, but communication issue with the Acumen. Cannot use the cartridge.
- **Yellow blinking**: Ink Cartridge empty
- **Green blinking:** Filling intermediate ink tank or reading acumen. Do not disconnect!
- **Green:** Functioning correctly, no issue
- **No LED:** Connector not connected

Related tests, utilities, and calibrations

- Diagnostic mode
  - 4.1 ISS Electronics diagnostic test:⇒ Page 383.
  - 4.2 Air Pressure System diagnostic test:⇒ Page 384.
  - 4.3 Ink Supply Connector diagnostic test:⇒ Page 385.
  - 4.4 Broken bag recovery: ⇒Page 386.
  - 4.5 Ink System Leakage diagnostic test:⇒ Page 387.
  - 4.6 ISS Electrovalves diagnostic test.⇒ Page 388.
  - 4.7 Recover ink leakage:⇒ Page 389.
  - 4.9 Intermediate tank change: ⇒Page 389.
  - 4.10 Ink cartridge LEDs diagnostic test:⇒ Page 391.
  - 4.11 Ink Pressure Sensors calibration:⇒ Page 391.
  - 4.12 Ink pressure at Pen:⇒ Page 393.
  - 4.13 Force Filling Tanks:⇒ Page 395.
  - 4.14 No flow Error recovery:⇒ Page 395.
  - 4.15 ISS Test components Menu:⇒ Page 396.
  - 4.16 Flushing Menu:⇒ Page 400.
  - 4.17 Intermediate Tank Ink Life Cycles: ⇒ Page 403.
  - 4.18 Intermediate Tank Ink Amount:⇒ Page 404.
  - 4.19 Intermediate Tank Refill Time:⇒ Page 405.
  - 4.20 check Ink Supplies:⇒ Page 406.

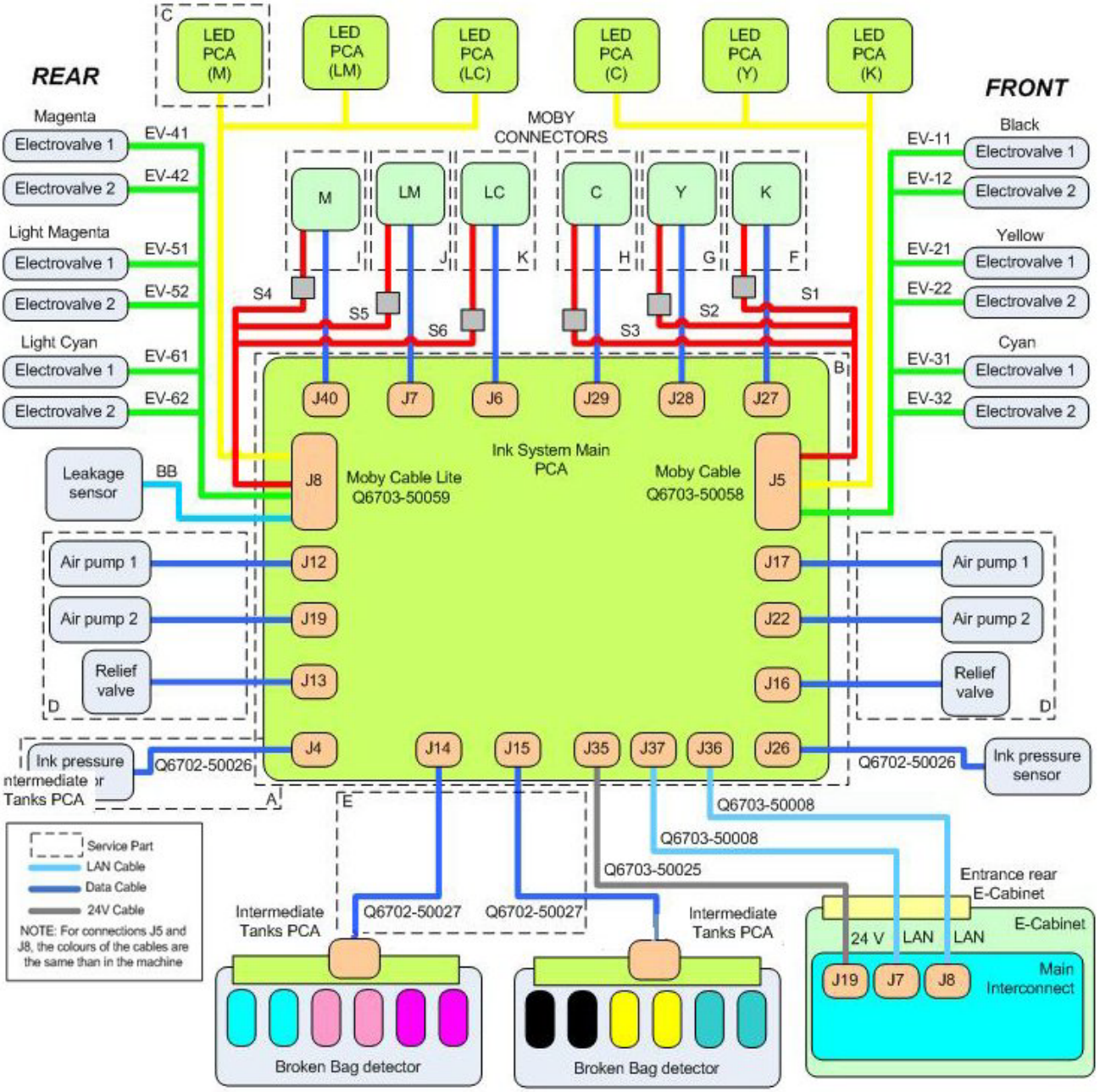
Service parts

- Ink System: ⇒Page 542

Removal and installation

- Ink system: ⇒Page 687

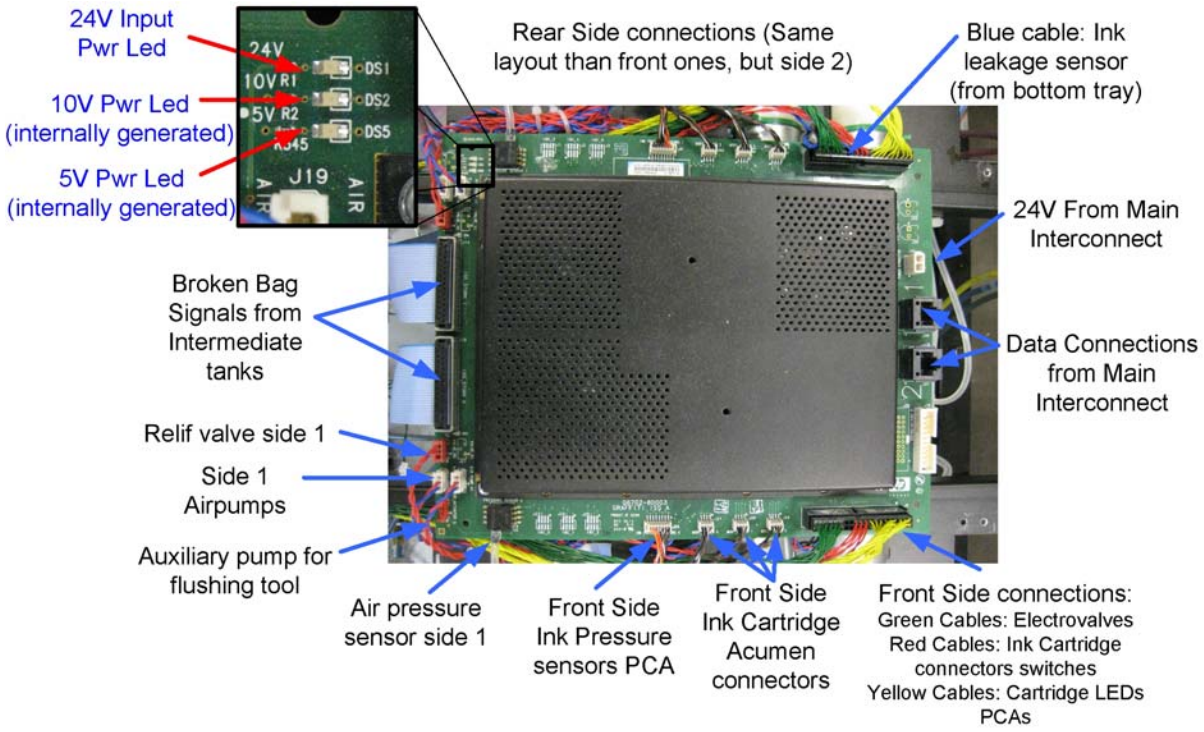
Ink System Circuit Diagram



Further information about the two 'LAN' cables linking the ISS board to the main interconnect:

- The cable linking J36 (ISS board) to J8 (Main Interconnect) contain the specific bus to communicate with the cartridge ACUMEN and one specific interruption line (the line is activated for some events, such as when a connector of a cartridge is disconnected or connected back). All the signals are moved down to the upper PCI board.
- The cable linking J37 (ISS board) to J7 Main Interconnect) mainly contain lines of an 'I2C' bus, that the printer can get the detailed status from the main elements of the ISS area (Ink Pressure Sensor, Air Pressure Sensor, Broken Bag) and can also set the main elements of the ISS area (Air Pump, Ink Electrovalves)

ISS PCA with leds and connectors



LX600/LX610 Ink types and different firmware versions

There are now two types of ink they are called LX600 and LX610. Each ink system has a unique firmware revision. They are not compatible.

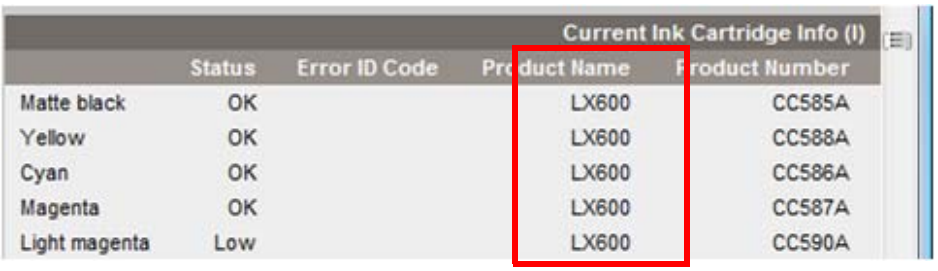
	LX600 Inks	LX610 Inks
Firmware	GF-BOB xxx (GF-GF.xxx: L65500 only)	GF-BOO.xxx

To change the setting of the printer from one to the other, go to the Diagnostic menu and set the following depending on what ink type (LX600 or LX610) is installed.

CAUTION: If the tubes have already been filled with a previous ink type, they must first be cleaned and the intermediate tank replaced.

- To set the printer to LX600, run the procedure: '0.11 Set ink as LX600'
- To set the printer to LX610, run the procedure: '0.10 Set ink as LX610'

To view which setting is currently active, view the Service Plot>Current Cartridge>Product name, as shown here:



Current Ink Cartridge Info (I)				
	Status	Error ID Code	Product Name	Product Number
Matte black	OK		LX600	CC585A
Yellow	OK		LX600	CC588A
Cyan	OK		LX600	CC586A
Magenta	OK		LX600	CC587A
Light magenta	Low		LX600	CC590A

Ink system supplies

The new LX610 Ink cartridges and printheads have the same lockouts as the LX600, but have different Acumen. It is possible that incorrect ink supplies can be installed into a printer, but because the Acumen is different, the printer will refuse to print with incorrectly installed ink supplies.

LX610 Ink Supplies

Order #	**LX610 Ink Supplies**
CN667A	HP LX610 Yellow/Magenta Scitex Printhead
CN668A	HP LX610 Cyan/Black Scitex Printhead
CN669A	HP LX610 Lt Mag/Lt Cyan Scitex Printhead
CN670A	HP LX610 3-Liter Cyan Latex Scitex Ink Cartridge
CN671A	HP LX610 3-Liter Magenta Latex Scitex Ink Cartridge
CN672A	HP LX610 3-Liter Yellow Latex Scitex Ink Cartridge
CN673A	HP LX610 3-Liter Black Latex Scitex Ink Cartridge
CN674A	HP LX610 3-Liter Lt Cyan Latex Scitex Ink Cartridge
CN675A	HP LX610 3-Liter Lt Magenta Latex Scitex Ink Cartridge

LX600 Ink Supplies

Order #	LX600 Ink Supplies
CC582A	HP LX600 Yellow/Magenta Scitex Printhead
CC583A	HP LX600 Cyan/Black Scitex Printhead
CC584A	HP LX600 Lt Magenta/Lt Cyan Scitex Printhead
CC586A	HP LX600 3-Liter Cyan Latex Scitex Ink Cartridge
CC587A	HP LX600 3-Liter Magenta Scitex Ink Cartridge
CC588A	HP LX600 3-Liter Yellow Scitex Ink Cartridge
CC585A	HP LX600 3-Liter Black Latex Scitex Ink Cartridge
CC589A	HP LX600 3-Liter Lt Cyan Latex Scitex Ink Cartridge
CC590A	HP LX600 3-Liter Lt Magenta Latex Scitex Ink Cartridge

LX600 Specialty Ink Supplies

Order #	LX600 Ink Supplies
CR260A	HP 3M LX600 3-Liter Cyan Specialty Ink Cartridge
CR261A	HP 3MLX600 3-Liter Magenta Specialty Ink Cartridge
CR262A	HP 3MLX600 3-Liter Yellow Specialty Ink Cartridge
CR263A	HP 3MLX600 3-Liter Black Specialty Ink Cartridge
CR264A	HP3M LX600 3-Liter Lt Cyan Specialty Ink Cartridge
CR265A	HP LX600 3-Liter Lt Magenta Specialty Ink Cartridge

Firmware incompatibilities

In this section we explain the possible combinations of ink system mis-matches which could occur in the field, between firmware, printer settings and ink system installations.

- Firmware version GF-BOB6.x or greater with ink setting LX610

  With this incorrect combination a system error 74.3:04 will be displayed with a message 'Mis-match firmware and ink configuration'. Check on www.hp.com to get the correct firmware version'. The printer will not be able to print with this configuration.

  With this error the most likely reason is because the customer has upgraded with an incorrect version of the firmware. The customer will need to upgrade with the latest version of GF-BOOxxx.

- Firmware version GF-BOO2.x or greater with ink setting LX600

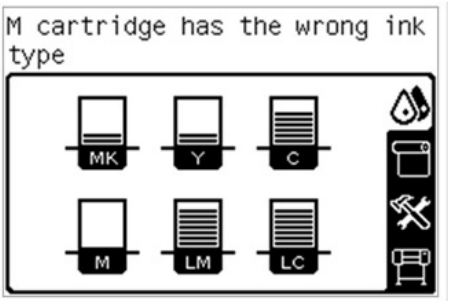
  With this incorrect combination a system error 74.2:04 will be displayed with a message 'Mis-match firmware and ink configuration'. Check on www.hp.com to get the correct firmware version'. The printer will not be able to print with this configuration.

  With this error the most likely reason is because the customer has upgraded with an incorrect version of the firmware. The customer will need to upgrade with the latest version of GF-BOB.xx.

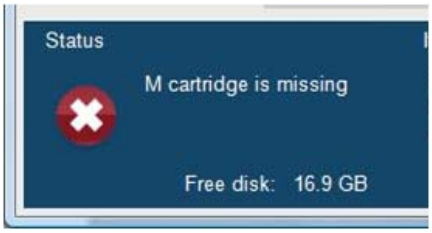
- Firmware version GF-BOB6.x with ink setting LX600, with an LX610 Ink Cartridge.
- Firmware version GF-BOO2.x with ink setting LX610, with an LX600 Ink Cartridge.

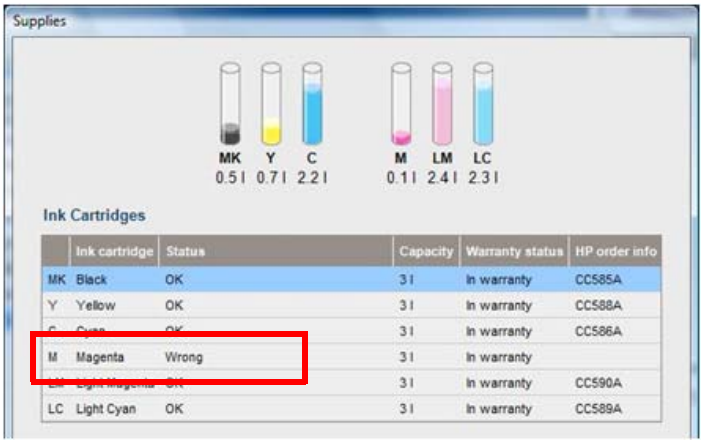
With this incorrect combination the following screens will be displayed on the front panel:

Press OK button>



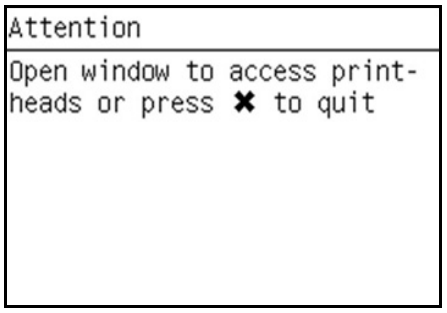
The IPS will display the following screen:





- Firmware version GF-BOB6.x with ink setting LX600, with an LX610 Printhead.
- Firmware version GF-BOO2.x with ink setting LX610, with an LX600 Printhead.

With this incorrect combination the following screen will be displayed on the front panel. There will be no message indicating an incorrect printhead has been installed.



The IPS will display the following screen:

Scan Axis

The Scan Axis system can be separated into three different subsystems:

- Carriage Impelling System (Carriage Movement)
- PPS System (Print to Paper Space)
- Service Station (Capping)

Scan Axis Impelling System

The Scan Axis Impelling System is designed to move the Carriage Assembly across the scan axis under control, for the purpose of printing and moving the printheads into a position where they can be serviced/maintained.

Components

Scan Axis Motor

The Scan Axis Motor, located on the right side of the printer, drives the belt that moves the carriage.

Scan Axis Impelling Belt

The Scan Axis Belt is connected to the carriage on both sides, and runs from the Scan Axis Motor to the Scan Axis Belt Tensioner. The motor drives the belt, which in turn moves the carriage back and forth.

Scan Axis Belt Tensioner

The Scan Axis Belt Tensioner, located on the left side of the printer, acts as a pulley for the Scan Axis Impelling Belt opposite the motor. Two springs mounted between the pulley and scan axis sideplate maintain tension on the belt.

Scan Axis Encoder Strip and Encoder Sensor

The Scan Axis Encoder Strip is a metal strip running the length of the scan axis. As the carriage is moved back and forth by the Scan Axis Impelling System, an encoder sensor mounted on the carriage reads the encoder to determine the speed and position of the carriage. This feedback is then used to control the Scan Axis Motor movements

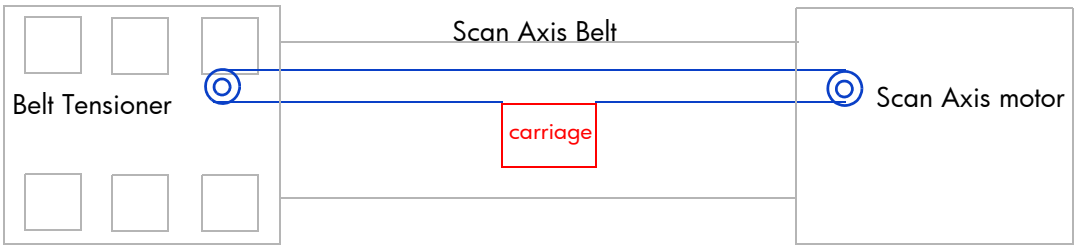
Carriage Chain Assembly (TRS system)

The Carriage Chain Assembly contains the ink tubes and trailing cables that connect to the carriage, it is designed using a 'chain system' that enables the Carriage Chain Assembly to bend while the carriage moves back and forth. The chain system also protects the ink tubes and data lines housed inside.

Functionality

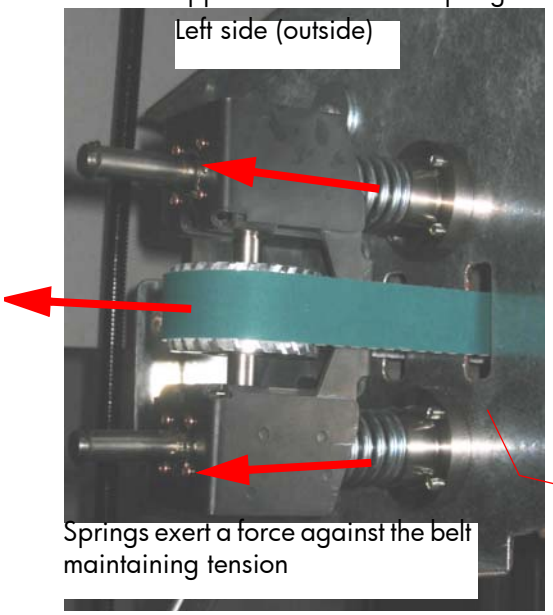
Carriage movement

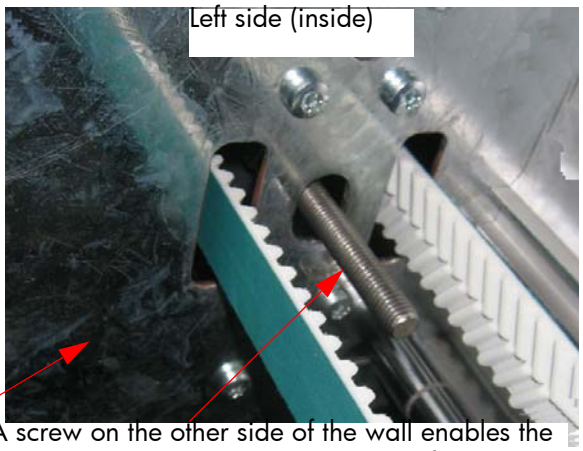
A belt is attached to each side of the carriage. The belt is driven by the scan axis motor mounted on the right side of the printer. On the left side of the printer, the scan axis belt tensioner acts as a pulley for the belt which uses a simple spring mechanism to maintain tension on the belt.



Tension of the belt

Force is applied to the belt via springs on the left side of the printer.





To ensure the correct tension of the belt, make sure the side face the tensioner is located between the two marks located on the tension poles

Related tests, utilities, and calibrations

- 5.1 Impelling system diagnostic test:⇒ Page 406.
- Move the position of the carriage.
  - 5.2.1 Move to home position:⇒ Page 409.
  - 5.2.2 Move to load position: ⇒Page 410.
  - 5.2.3 Move to Printing position:⇒ Page 411.
- 1.5.1 SAX Friction analysis.⇒ Page 485.

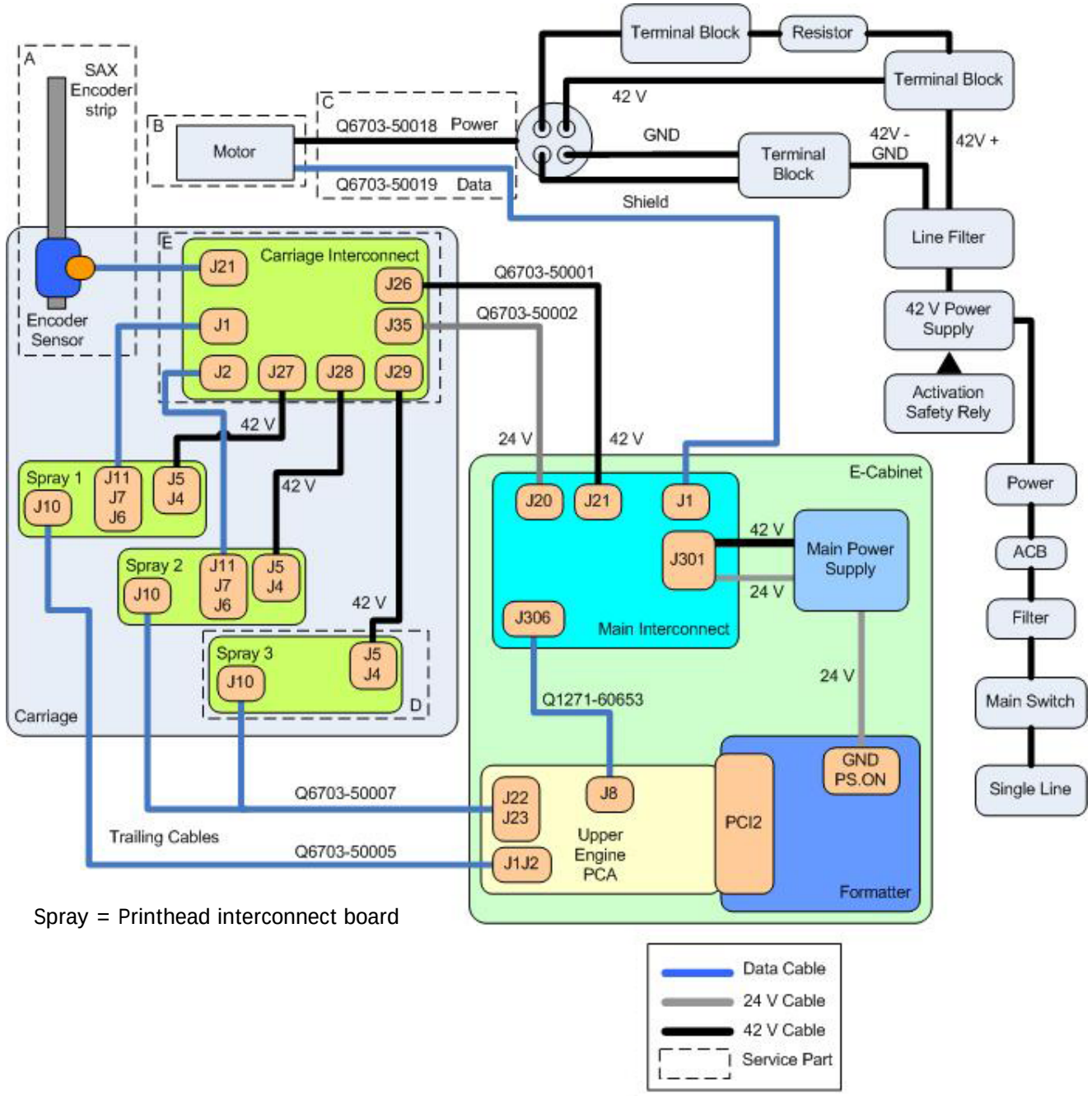
Service parts

- Scan Axis (A):⇒ Page 545

Removal and installation

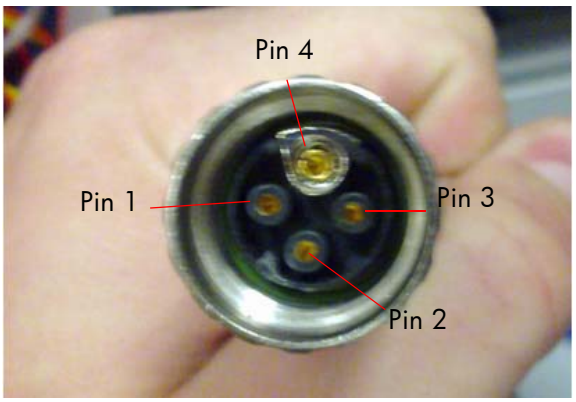
- Scan Axis Impelling System:⇒ Page 710.

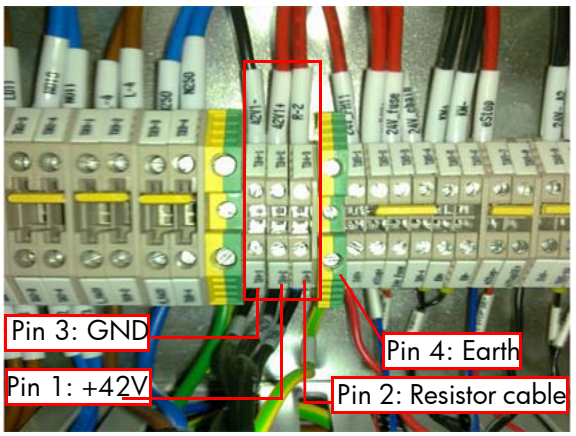
Scan Axis Impelling System Circuit Diagram



Spray = Printhead interconnect board

Identify the pins of the power cables from the Scan Axis motor.





The pins shown above go to the location on the fuse block in the E-Cabinet (after having identified them with an multimeter):

- Pin 1 connects to TB4-2
- Pins 2 connects to TB4-3
- Pin 3 connects to TB4-1
- Pin 4 connects to Earth

Scan Axis Service Station (capping and drop detection)

The Capping of the printheads is performed in the Service Station, the process seals them while they are not in use, to keep the printhead's nozzles in good condition while the printer is not printing. The assembly is located on the right side of the printer, beneath the carriage path. The Service Station also contain s the drop detector sensors which determine possible nozzles out, which then have the appropriate automatic maintenance routines applied.

Components

Service Station Motor

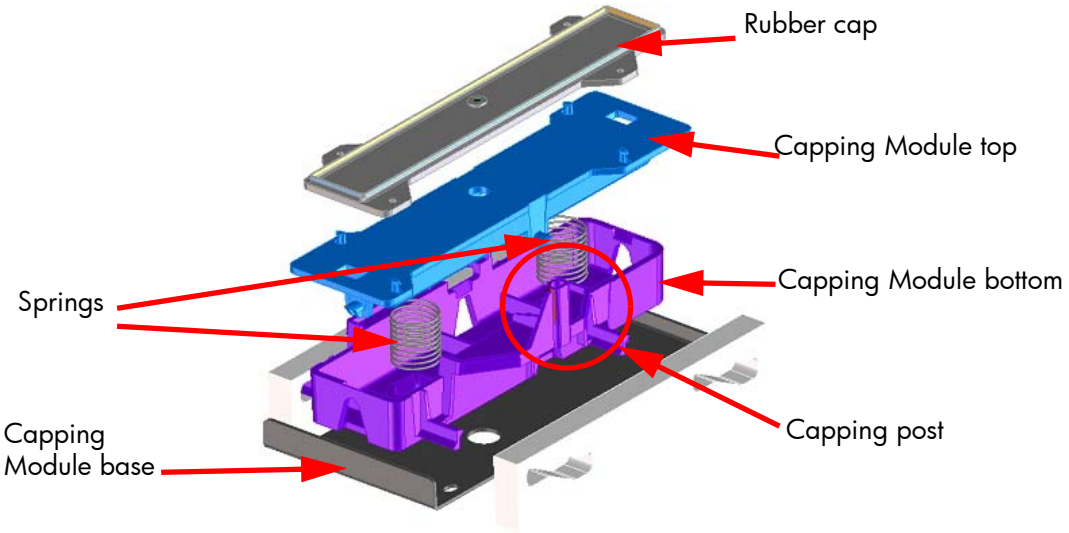
The Service Station Motor with its Encoder is mounted on the rear sideplate of the service station chassis. The motor drives the screw that moves the service station.

Service Station Screw Assembly

The Service Station Screw Assembly rotates by the action of the Service Station motor.The assembly includes a nut and pin system which is inserted into the shuttle.

Printhead Capping Module

The Printhead Capping Module is the mechanical part that seals the printheads.



NOTE: If the Carriage is moved while the Service station is in the capped position, the capping post may become damaged and the capping module will be unable to perform the capping procedure on the printhead. Image quality will begin to deteriorate and the life of the printhead will be affected.

Drop Detectors Set

There is one detector for every printhead. Drop detection: ⇒Page 62 for a detailed explanation of how drop detectors work.

Service Station Encoder Strip and Sensor

The encoder strip and sensor is used during drop detection to ensure that the drops of ink are fired in the correct place. The strip is located under the shuttle and from side to side of the Service Station.

Service Station Connection Board

The Service Station Connection Board links the three drop detectors and the service station linear encoder with the Main interconnect board. The board is located on the rear right corner on the top of the Service Station.

For more information refer to Service Station Connection Board: ⇒Page 63.

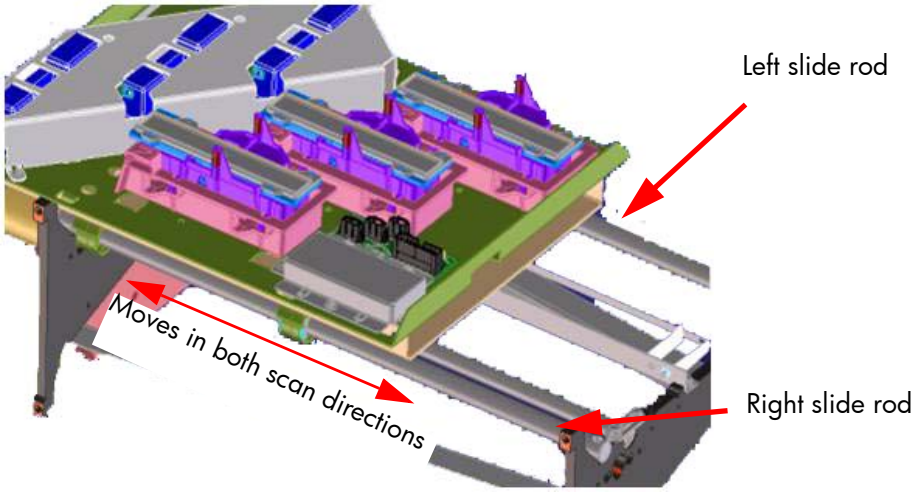
Service Station Remote Controller Board

The Remote Controller Board controls the movements of the Service Station Motor. It provides power to the motor and encoder. The Remote Controller Board is located on the back of the rear sideplate of the service station structure.

Functionality

Moving the service station

The bottom structure attaches the Service Station to the right structure of the printer, it includes the driver mechanism and the linear encoder strip. The top shuttle moves back and forth over the bottom structure, held by two bushings which are attached to the left slide rod and two support points over the right slide rod.



The movement is driven by the Service Station motor, which is located at the rear of the Service Station. This motor contains its own encoder, which detects and controls the movement. The motor signals and readings are managed by the Remote Controller Board, which is located at the back of the Service Station.

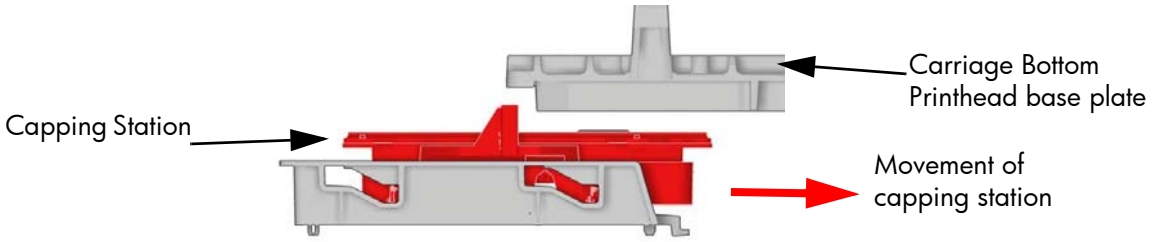
To maintain accuracy while performing the drop detection procedure, the Service Station also has an additional linear encoder, which is located underneath the Service Station shuttle.

NOTE: While the printer is turned off and the printheads are in the capped position, it is not possible to move the carriage. To uncap the printheads manually rotate the shuttle screw with a screw driver, this can be accessed from the front of the Service Station.

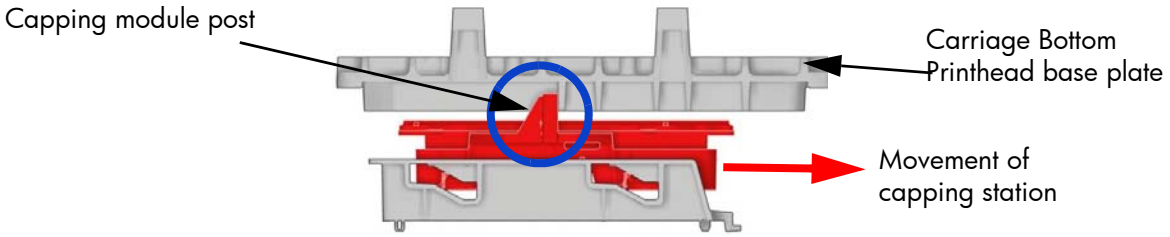
The Capping Procedure

The printheads must be sealed when they are not printing to prevent ink from drying and clogging the nozzles.

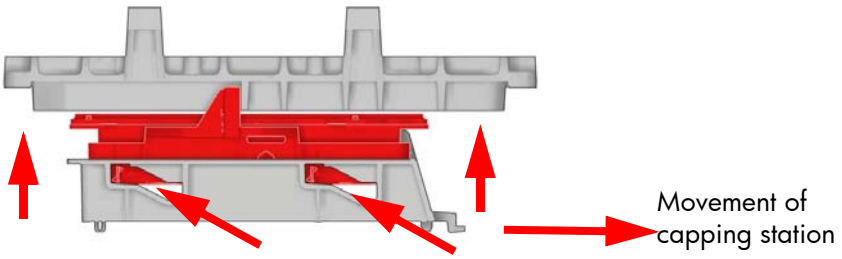
1. The Printheads are capped by moving the capping station into position underneath the carriage.



2. The capping station moves until the capping module posts come into contact with the carriage bottom base plate, underneath the printheads.



3. The upper part of the capping station raises into position (shown in red below), pushing the rubber caps up to seal the printheads. The Capping Station is forced upwards, capping the printheads.



4. The service station continues to move, pushing the capping head up to seal the printheads.

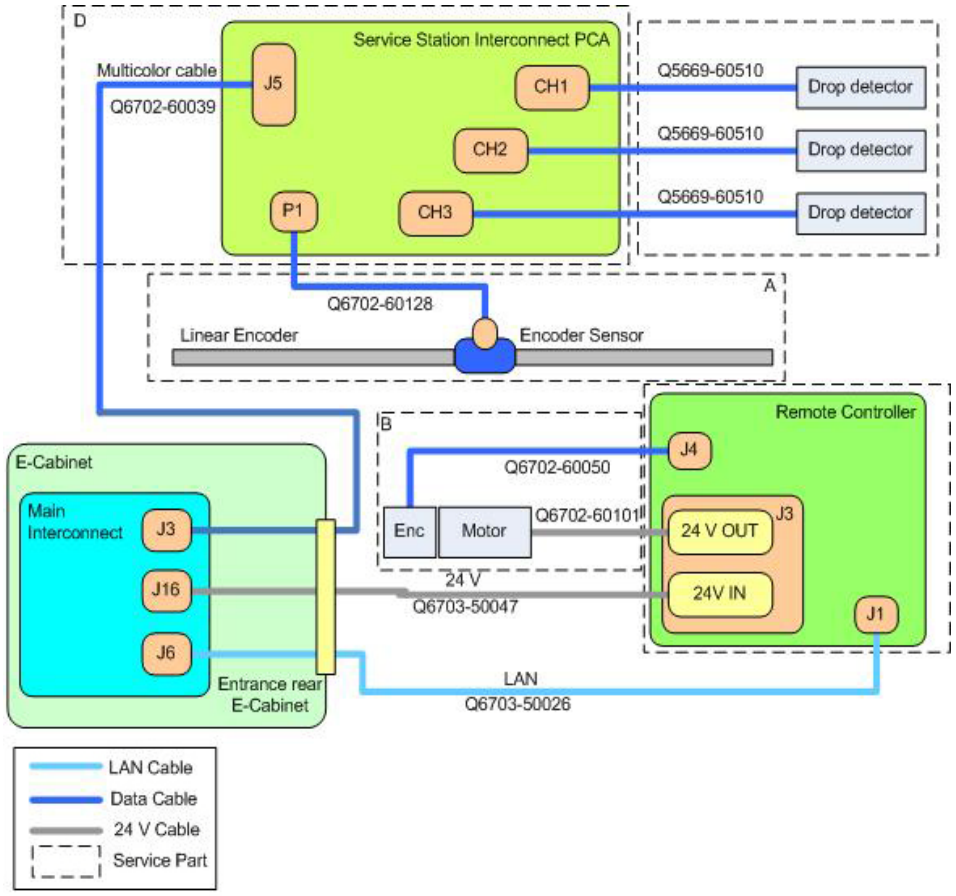
Drop detection

The Service Station system contains three drop detector modules, one for each printhead. Each drop detector has a window with a sender LED on one side and a receiver on the other.

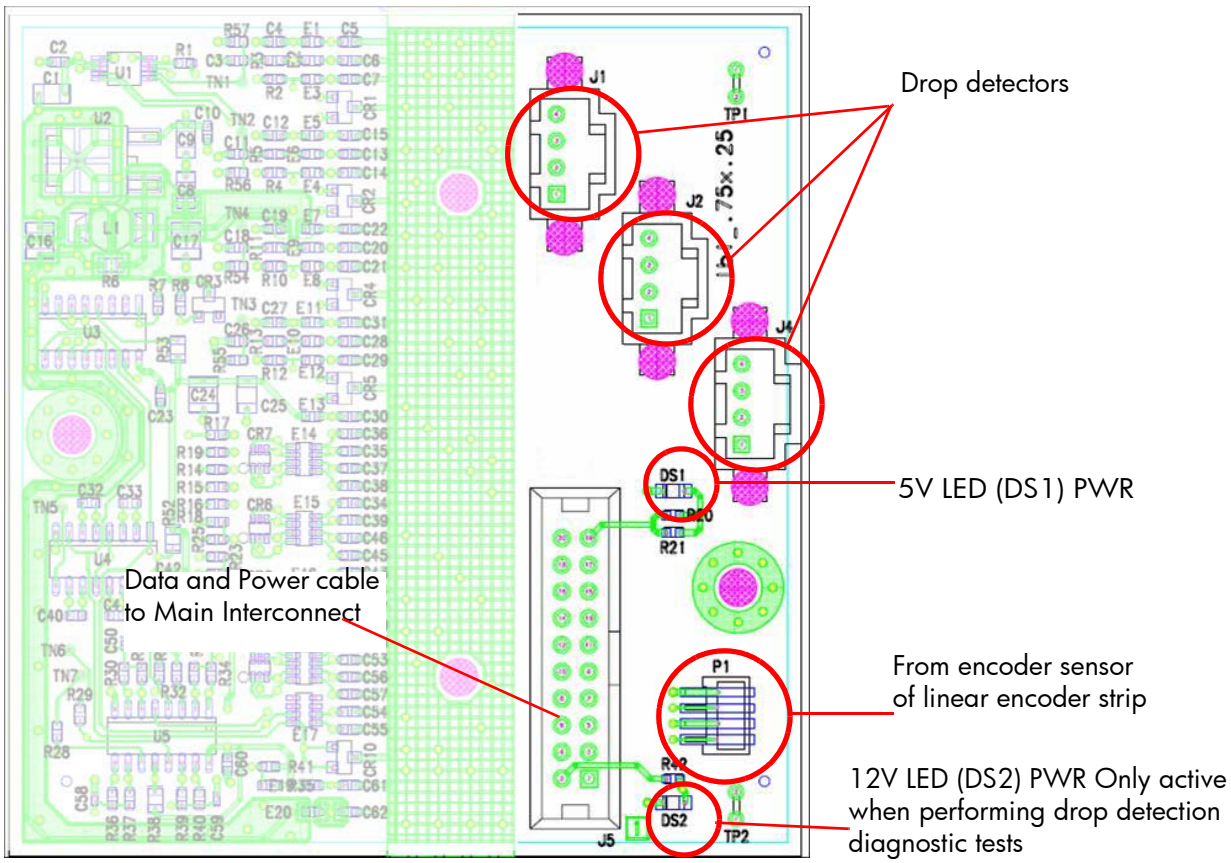
The printer fires sequentially drops of ink from each nozzle into the window, through the signal path. This generates a disturbance in the signal which detects if the nozzle was fired correctly.

Any nozzles that did not fire correctly are then disabled, allowing the printer to compensate and maintain print quality by using the other nozzles.

Scan Axis Service Station



Service Station Connection Board



Related tests, utilities and calibrations

- 3.5.6 Service Station Drop Detectors diagnostic test:⇒ Page 501.
- 5.3.1 Service Station Open Loop diagnostic test:⇒ Page 416.
- 5.3.2 Service Station Closed Loop diagnostic test:⇒ Page 418.
- 5.3.3 Drop Detectors diagnostic test: ⇒ Page 419.
- 5.3.4 Service Station Calibration ⇒ Page 421.
- 5.3.5 Drop Detector 12v On/Off ⇒ Page 422.
- 5.3.6 Drop Detector Signals ⇒ Page 423.
- 5.4.1 Drop Detector Calibration ⇒ Page 508.
- 4.5.2 Service station Compensation ⇒ Page 510.
- 1.5.4 Printhead Stability check:⇒ Page 489.
- 1.5.3 Ghost Drop Detection service utility:⇒ Page 487.

Service parts

- Scan Axis (A):⇒Page 545

Removal and installation

- Scan Axis Service Station: ⇒Page 725

Scan Axis Print to paper space (PPS)

The Scan Axis PPS system raises and lowers the complete Scan Axis, (the pinchwheels, carriage, service station, printhead cleaning system, and printheads). This increases the distance between the substrate path and the carriage assembly, enabling the user to load substrate and print on different types of substrate thickness.

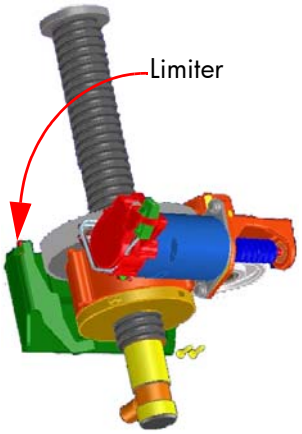
- PPS Standard height: 2.3mm (Printhead to Platen)
- PPS (Printhead to Platen).
- PPS Custom. To a user selectable height.

There are four PPS units which are all synchronized to move at the same time

Components

PPS Motor Assembly and PPS Motor Mount Assembly

The printer has four PPS Motors and motor mount assemblies, each located on a corner of the scan axis. These four systems always raise and lower the scan axis at exactly the same rate. If the motors were to raise or lower the scan axis at different rates, a system error will be generated.

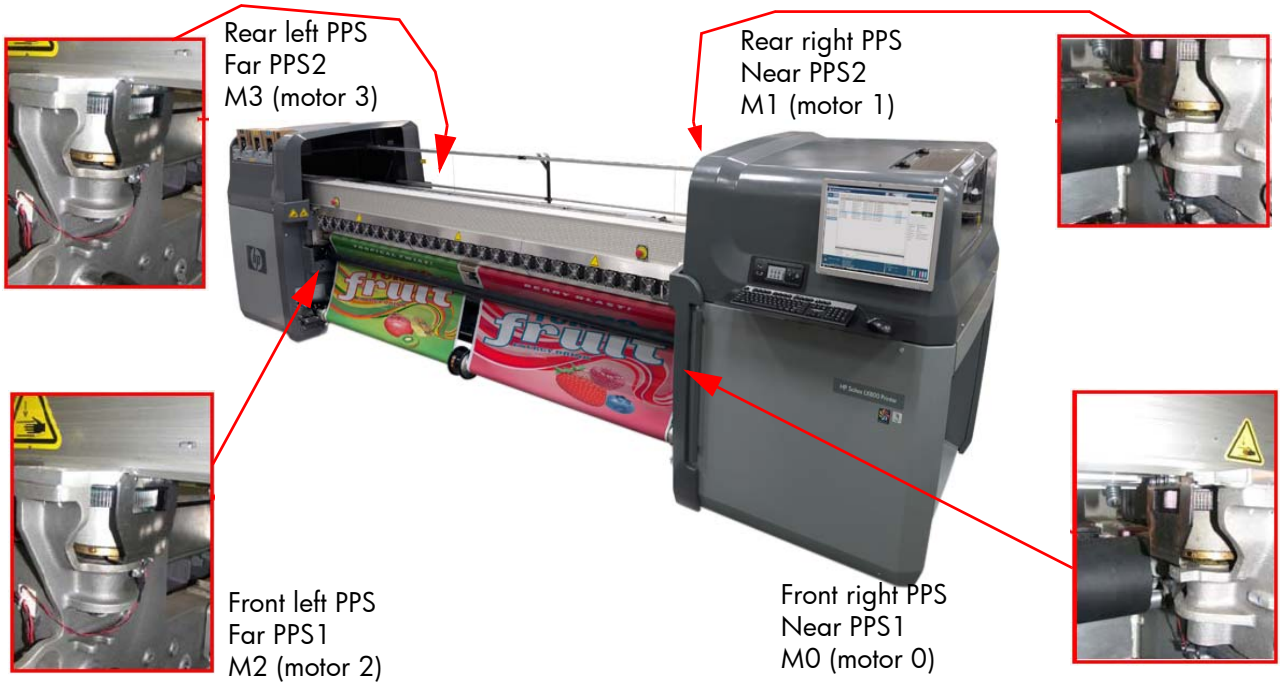


PPS Low Position Switch

The PPS Low Position Switch detects when its PPS unit has reached its lowest position. The switches are attached to the four side walls of the printer.

Remote Controller Board (PPS)

The two right hand PPS units are connected and controlled by the Main interconnect Board. The two left hand PPS units are connected and controlled by the main interconnect board via the Remote Control Boards (refer the PPS circuit diagram).



Functionality

The PPS Positioning

The PPS system has three positions in the printer:

- Print position: This is the nominal printing position and is calibrated and set at the manufacturing site at 2.3mm (0.09inchs). When the Scan axis is in this position the complete assembly is set onto the side walls.
- Custom print position: This setting is a high printing position, used for the thicker types of substrates, this is a customer selectable setting.
- Load position (highest position): This is used to load substrate. The default setting is 120mm (4.7inchs), this movement can be cancelled.

PPS Lowering Alignment

In order to maintain consistent movement and positioning of the PPS system, the PPS performs the following alignment procedure:

1. The four PPS units are lowered until they reach the PPS Low Position Switch.
2. The four PPS units are raised until they reach the scan axis.

When the motor reaches the scan axis, the system detects an increase the PWM (signal), which stop the movement

NOTE: When lowering the PPS, if any of the four low position switches fail, the affected PPS unit will continue to lower until it reaches a servo shutdown position, this will triggers a system error. This type of unknown position error can be solved following the procedures in the utilities and calibration section of this service manual.

Related tests, utilities, and calibrations

- PPS Diagnostics ⇒Page 409
  - 5.2.1 Move to Home Position: ⇒Page 409
  - 5.2.2 Move to Load Position:⇒ Page 410
  - 5.2.3 Move to Printing Position: ⇒Page 411
  - 5.2.4 PPS Motor check: ⇒Page 412
  - 5.2.6 PPS Shims Values:⇒ Page 415
  - 5.2.7 PPS Switch:⇒ Page 415

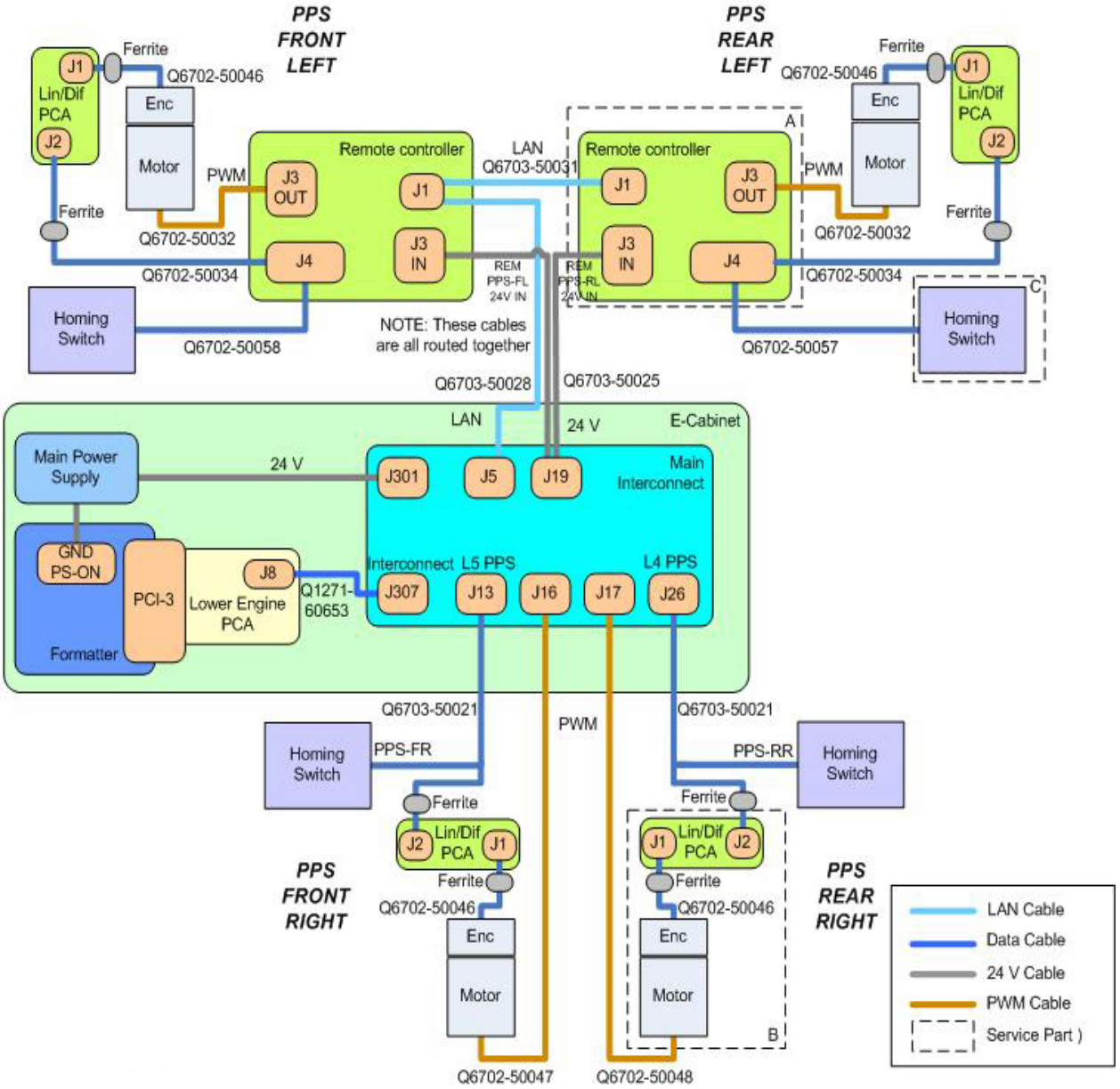
Service parts

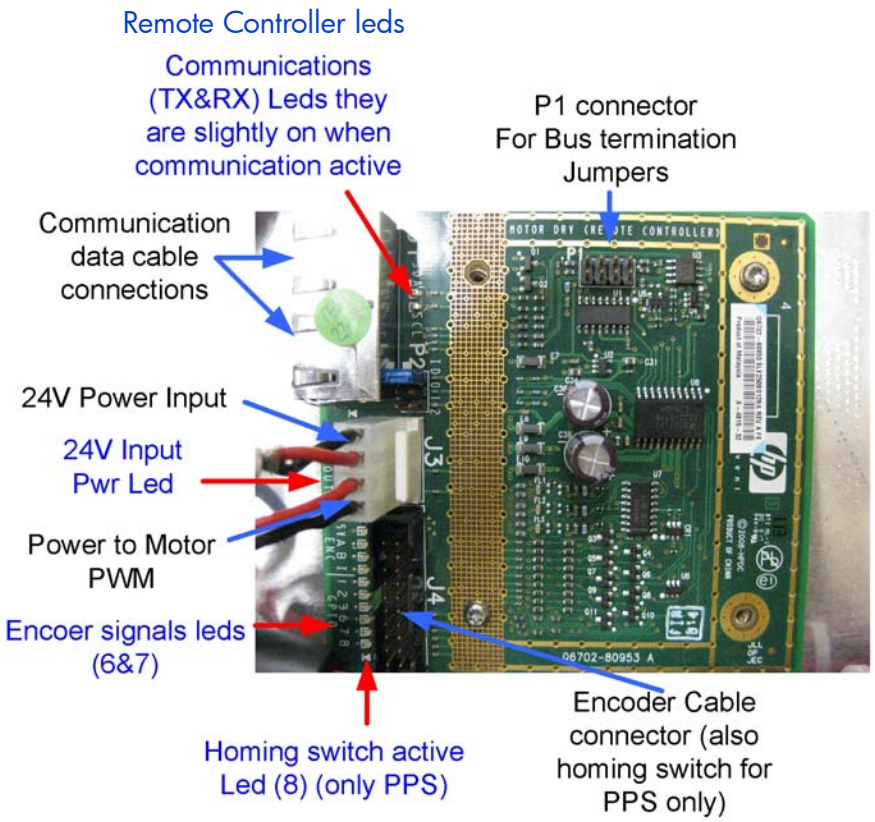
- Scan Axis (A):⇒ Page 545

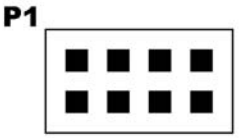
Removal and installation

- Scan Axis PPS: ⇒Page 739
- PPS Columns and Bushing ⇒Page 846

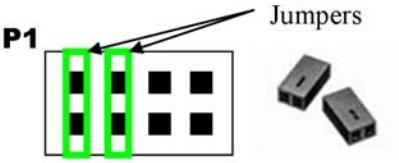
Print to Paper space (PPS) Circuit Diagram







Configuration for Remote controller board with TWO communication data cables connected



Configuration for Remote controller board with ONE communication data cable connected

Carriage

The carriage performs the actual printing of the printer. It contains the printheads, together with the printhead control electronics. the printhead primer system, two arrays of aerosol fans, the SAX encoder, and the sensor box which contains the Spectrophotometer, as well as a line sensor.

Components

Printheads

The printheads fire ink onto the substrate to perform the actual printing. The printheads are controlled by the dedicated Carriage Printhead Interconnect PCAs.

- Each printhead contains two colors
- Each printhead prints a maximum swath width of 4.25 inches (108mm).
- The printheads have five dies, and each die has 2112 nozzles (10,560 total nozzles per printhead). The dies are divided into two arrays of nozzles (1056 nozzles per array, one for each color.

Primer Assembly

Each printhead houses a Primer Assembly that is responsible for squeezing ink out of the printhead nozzles to remove clogging and maintain printhead health (for more information about priming⇒ Page 76).

Each primer assembly includes an air pump that pushes air into a bag inside the printhead regulator. When this bag is inflated, the ink channel is opened, the ink pressure received in the printhead pushes the ink out of printhead through the nozzles. This is called ‘priming’.

Carriage Printhead Interconnect

The three Carriage Printhead Interconnects receive signals from the Upper PCI Board and then finally control the printheads.

Each Carriage Printhead Interconnect receives 42 V power from the Carriage Interconnect Board. Additionally two of the boards have a data connection from the Carriage Interconnect Board.

- The Carriage Printhead Interconnect #1, controls the Y/M printhead, it processes signals coming from the sensor box (line sensor, color sensor and color sensor shutter) via the Carriage Interconnect Board. The sax encoder signal also passes through the two Printheads
- The Carriage Printhead Interconnect #2, controls the Lc/Lm printhead, processed signals that control the three Primers and the two Aerosol Fans via the Carriage Interconnect Board. It also has the carriage lid switch and the SAX encoder signals.
- The Carriage Printhead Interconnect number 3 controls the K/C Printhead

Carriage Interconnect Board

The Carriage Interconnect Board receives 24 V and 42 V power supply via the Main Interconnect from the Main Power Supply. The 42 V supply is relayed to the Carriage Printhead Interconnect s, while the 24 V is used to power the remaining components housed in the carriage. All control data for this board goes through the Printhead Interconnect PCAs as described above. The 3 primer pumps the two aerosol fan arrays are powered by this board. THe board is also interfaces for the Carriage lid switch, the sensor box and the sax encoder.

Sensor Box

- Carriage Sensors PCA

  The Carriage Sensors PCA is embedded within the sensor box and, relays data from the line sensor and color sensor and also controls the shutter motor for the Color Sensor. For more information, see the circuit diagram later in this section.

- Line Sensor Assembly

The line sensor has three different colored LEDs and one receptor. By shining these three LEDs into the print path, the line sensor is able to:

- Detect the edge of the substrate.
- Detect printed line positions in order to perform various calibrations:
  - Automatic Printhead Alignment
  - OMAS Calibrations
  - Service Station calibration

- SOL Spectrophotometer performs the Color Calibration.
-

Carriage Encoder

The Carriage Encoder Set reads the scan axis encoder strip to determine the position of the carriage on the Scan Axis, refer to the Scan Axis Encoder Strip and Encoder sensor:⇒ Page 57. The connection with the printer is through the carriage board + PH interconnect board of Y/M + trailing cable + upper PCI board.

These signals are not tested during the trailing cable test (on the PH interconnect board, the 2 signals from the encoder reader is converted to 4 lines, differential signals).

Carriage Lid Switch

The Carriage Lid Switch reads when the carriage lid is opened or closed in order to prevent damage to the printer by leaving the lid open. Connection with the printer is through the carriage board + PH interconnect board of Y/M + trailing cable + upper PCI board.

Aerosol Fans Assembles and Aerosol Filters

There are two arrays of five fans at both side of the printheads. The fans and filters remove aerosol (ink dust) from the print path to maintain good image quality and components health. Connection to the printer: This should transit through the carriage board -> PH interconnect board of the Light Cyan / Light magenta -> trailing cable -> upper PCI board.

Carriage Oiling Foam Retainers

The carriage oiling foams lubricate the rods and bushings that support the carriage. There are two units located at the front and rear of the carriage.

Related tests, utilities, and calibrations

- Diagnostic mode
  - 6.1 Carriage assembly diagnostic test:⇒ Page 427.
  - 6.2 Move the carriage to repair position from diagnostic mode: ⇒Page 430.
  - 6.4 Line sensor diagnostic test:⇒ Page 431.
  - 6.5 Aerosol fans diagnostic test:⇒ Page 432.
  - 6.6 Force Priming Menu:⇒ Page 433
- Service utilities
  - 1.6.1 Open/Close color sensor:⇒ Page 490
  - 1.6.2 Color sensor check:⇒ Page 492.
  - 1.6.3 Aerosol fans check: ⇒Page 493.

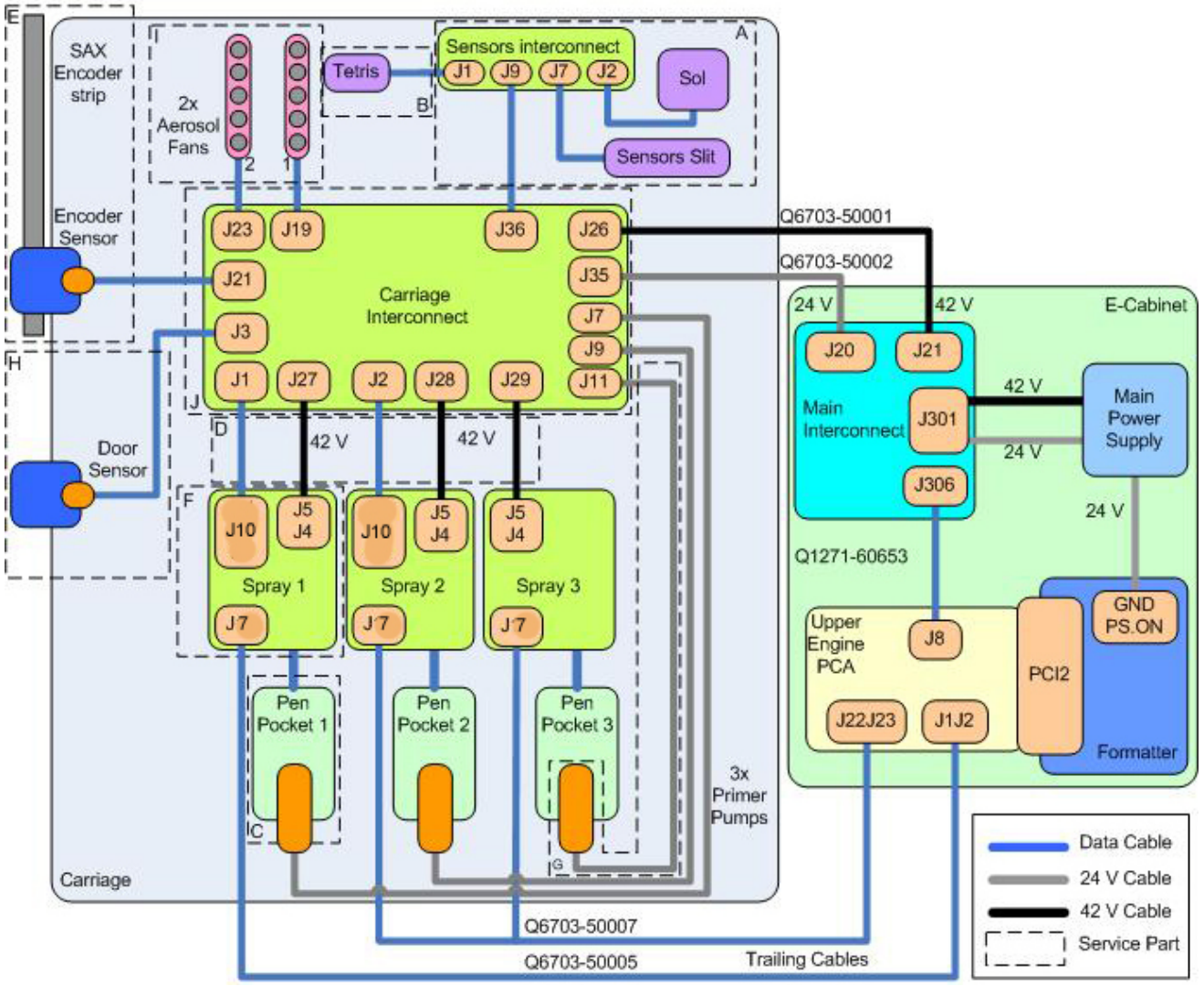
Service parts

- Scan Axis (B):⇒ Page 547

Removal and installation

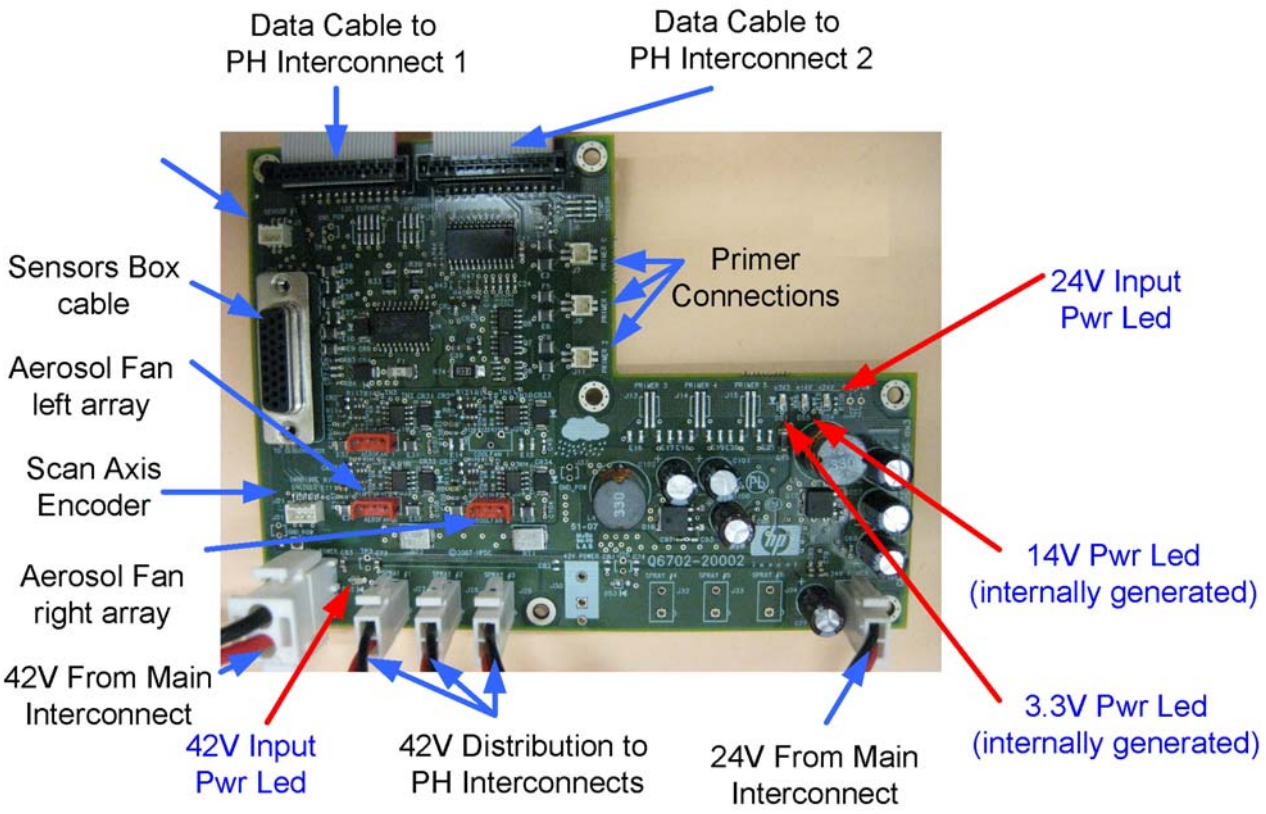
- Carriage:⇒ Page 745

Carriage Circuit Diagram



Spray = Printhead interconnect board

Carriage Interconnect Connection and leds



Printhead Cleaning System

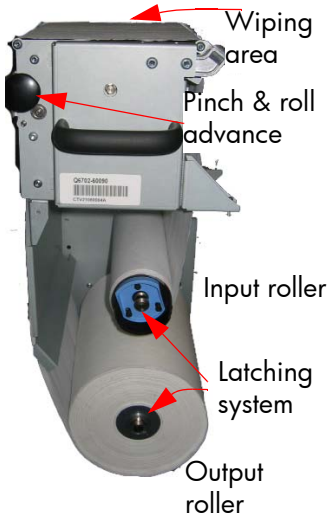
The printhead cleaning system is designed to clean the printheads and absorb ink during the priming and ink spitting procedures. The subsystem absorbs ink and cleans the printheads with a cloth roll that is impregnated with non-volatile PEG liquid. This roll is moved from an input (Top roller) to an output collecting roller (bottom roller), while the cloth is impelled by the advance of the delivery system pressed with the pinch roll, in a similar way to the substrate path.

Components

Input roll

The input roll holds the new printhead cleaner roll before it is fed through the roll path. The input roll is not powered by any motor, and instead uses an electromechanical brake to maintain tension.

The cleaner roll cores are easily fastened into place and removed using the blue lock at the end of the roller.



Output roll

The output roll receives the used printhead cleaner roll. The output roll is powered by the advance motor and belt system, and works together with the drive roller to pull the roll through the roll path.

The cleaner roll cores are easily fastened into place and removed using the blue lock at the end of the roller.

Input encoder

The input roll features an encoder that provides the feedback necessary to control the rolls (encoder counts tell the printer how much the roll is advancing). This feedback determines if the system is in a Jam condition triggering a system error.

NOTE: A jam condition system error is displayed when the Drive System is moving and the Upper Roller Encoder does not detect the appropriate cloth roll movement.

Electromechanical brake

The input roll includes an electromechanical brake to apply tension to the cloth, keeping it flat and under controlled tension.

Pinchwheel and Drive roller

The printhead cleaner roll is moved through the roll path by the output roll and the drive roller. The pinchwheel mechanism presses the roll against the drive roller to ensure good contact. The drive roller includes teeth that grip the roll to help pull it through the path. The Drive Roller is powered by the advance motor and belt system.

The pinchwheel mechanism must be opened and closed in order to load and unload a roll. It is critical to ensure that the pinchwheels are correctly closed to avoid the system displaying false substrate jams/crashes.

Advance motor and belts

A single advance motor and encoder controls the drive roller and the output roller using a belt system.

Rubber roller and roller up motor (engage system)

The rubber roller is a star shaped rubber wheel that moves up and down, lifting the cleaner roll to ensure that the printheads make proper contact with the cloth, in order to perform the Printhead cleaning.

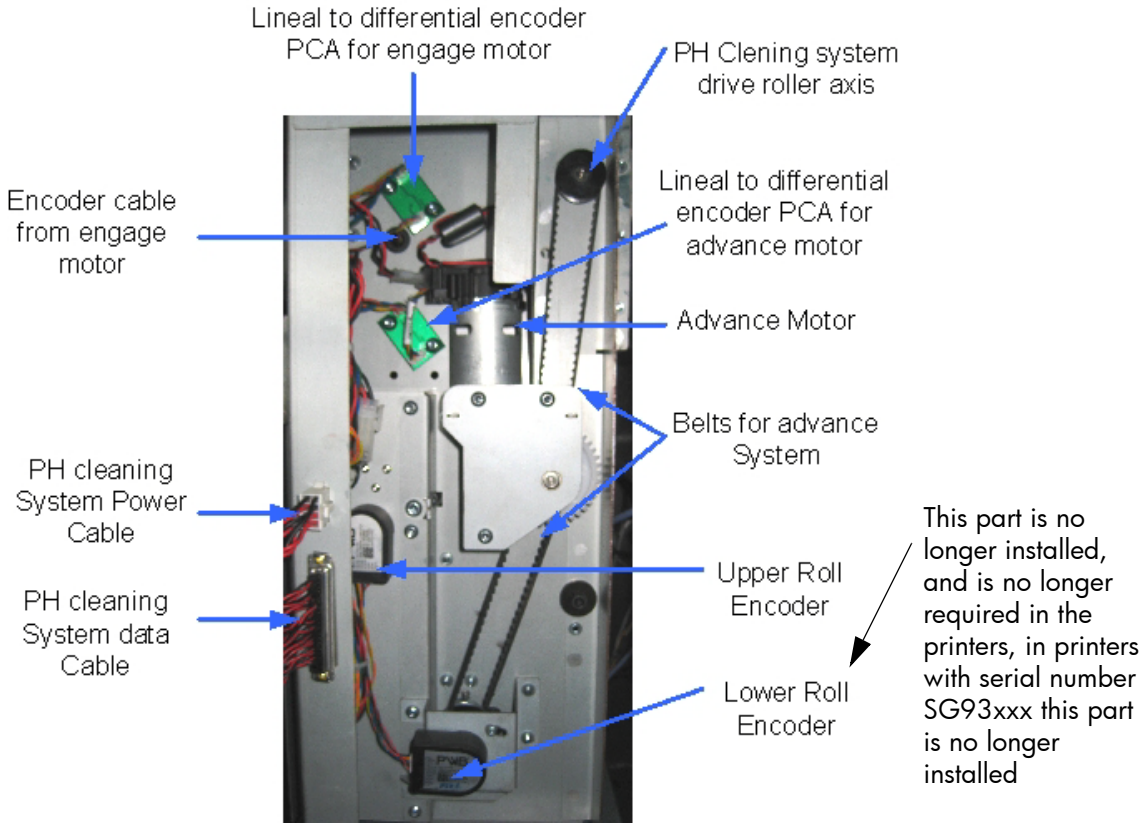
The up/down motion has two main positions. The engage position (is the upper position calibrated for correct Printhead Cleaning operation) and the disengage position, which is the lowest resting position of the rubber roller.

Electronic control

The Upper PCI Board controls the following Printhead Cleaning Assembly components through the Main Interconnect Board:

- Advance motor and Advance motor encoder.
- Rubber Roller up/Down motor and up/down motor encoder.
- Electromechanical brake
- Input Roller encoder signal.

Rear of the Printhead cleaning system



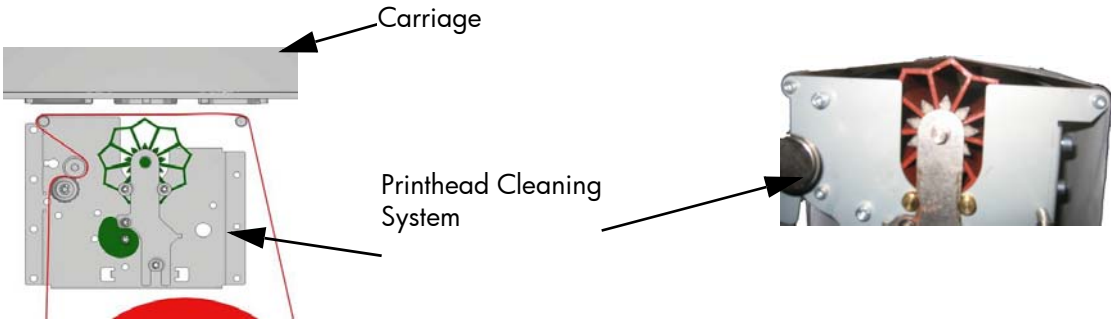
Functionality

Static wipe

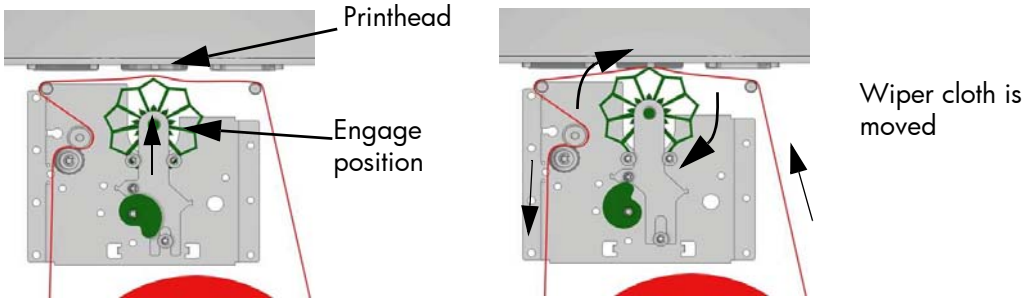
A static wipe is a printhead cleaning procedure which is performed when the carriage is not moving. The carriage is moved into the wipe position for each printhead, the rubber roller is set to the correct height, and the cleaning roll is advanced under the printheads.

The following describes the process:

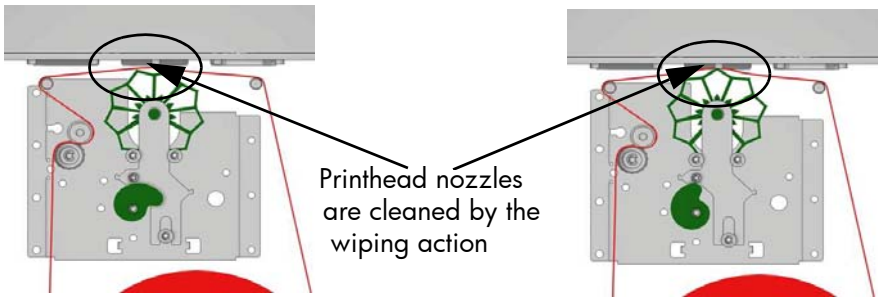
1. The carriage is moved into position below the cleaning system.



2. The rubber roller is moved up to the printhead and presses the cloth wiping over the nozzle area.

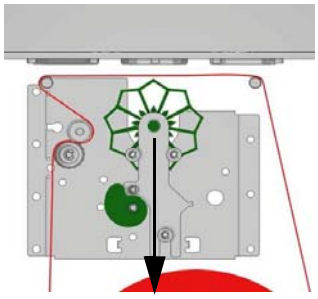


3. The cleaner roll is advanced performing the operation of cleaning the nozzles by friction. while moving the cloth.



4. The cleaner roll continues to advance until it reaches the end position, after having advanced a total o f 3.3cm.

5. The rubber roller is moved back to the down position (disengage position).

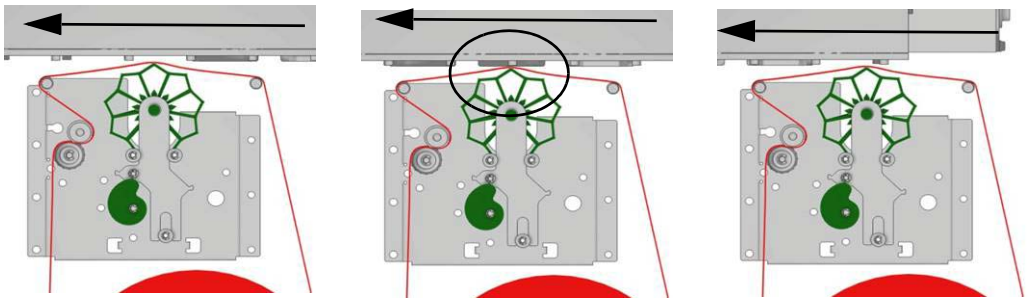


Dynamic wipe

A dynamic wipe is a printhead cleaning performed while printing. The rubber roller is set to the correct height, and the carriage passes over the printhead cleaner, from right to left, without stopping (but still making contact and being cleaned).

- If an image printing is larger than (152cm) (60 inches), a dynamic wipe is performed every 2 swaths.
- If image to print smaller than 60 inches, a dynamic wipe is performed every 4 swaths.

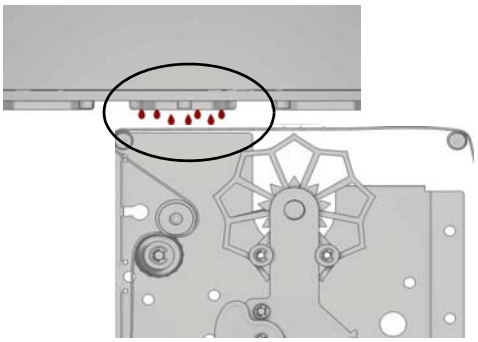
1. Carriage movement 2. Printhead is wiped 3. Carriage moves away



Spitting

In order to ensure the good health of the nozzles, the carriage is moved over the printhead cleaning assembly, and the system performs a spitting operation where all the nozzles spit a small amount of ink over the surface of the wiping cloth. There are two spitting modes:

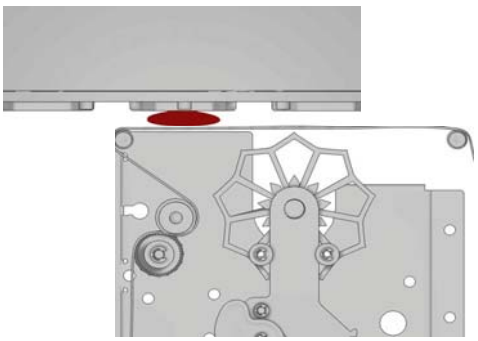
- One static spit, when the carriage stops over the cleaning assembly, and is performed while the heating and curing system warms to the target temperature and again before the first swath of each job.
- One flying spit is performed with every swath of the carriage.



Priming

Priming is performed in order to ensure good health of the nozzles and to prevent the nozzles from becoming blocked with dried ink. Ink floods out of the printhead onto the wiper cloth. This procedure can be performed by selecting the option in the IPS of the printer.

The priming procedure is also performed on new printheads once it is installed or a hard cleaning or clean and check is launched from the IPS.



Related tests, utilities, and calibrations

- 4.7.1 Printhead Cleaner Roll Height calibration: ⇒ Page 514.

- 4.7.2 Printhead Cleaner Horizontal Calibration ⇒ Page 515
- 4.7.3 Printhead Cleaner Measurement Tool ⇒ Page 516
- 7. Printhead Cleaner menu:⇒ Page 438.
- 7.1 Printhead Cleaner Roll Advance Open Loop:⇒ Page 438.
- 7.2 Printhead Cleaner Roll Advance Close Loop:⇒ Page 440.
- 7.3 Printhead Cleaner Roll End Open Loop:⇒ Page 441.
- 7.4 Printhead Cleaner Roll End Close Loop:⇒ Page 442.
- 7.5 Printhead Cleaner High Calibration Default:⇒ Page 443

Service parts

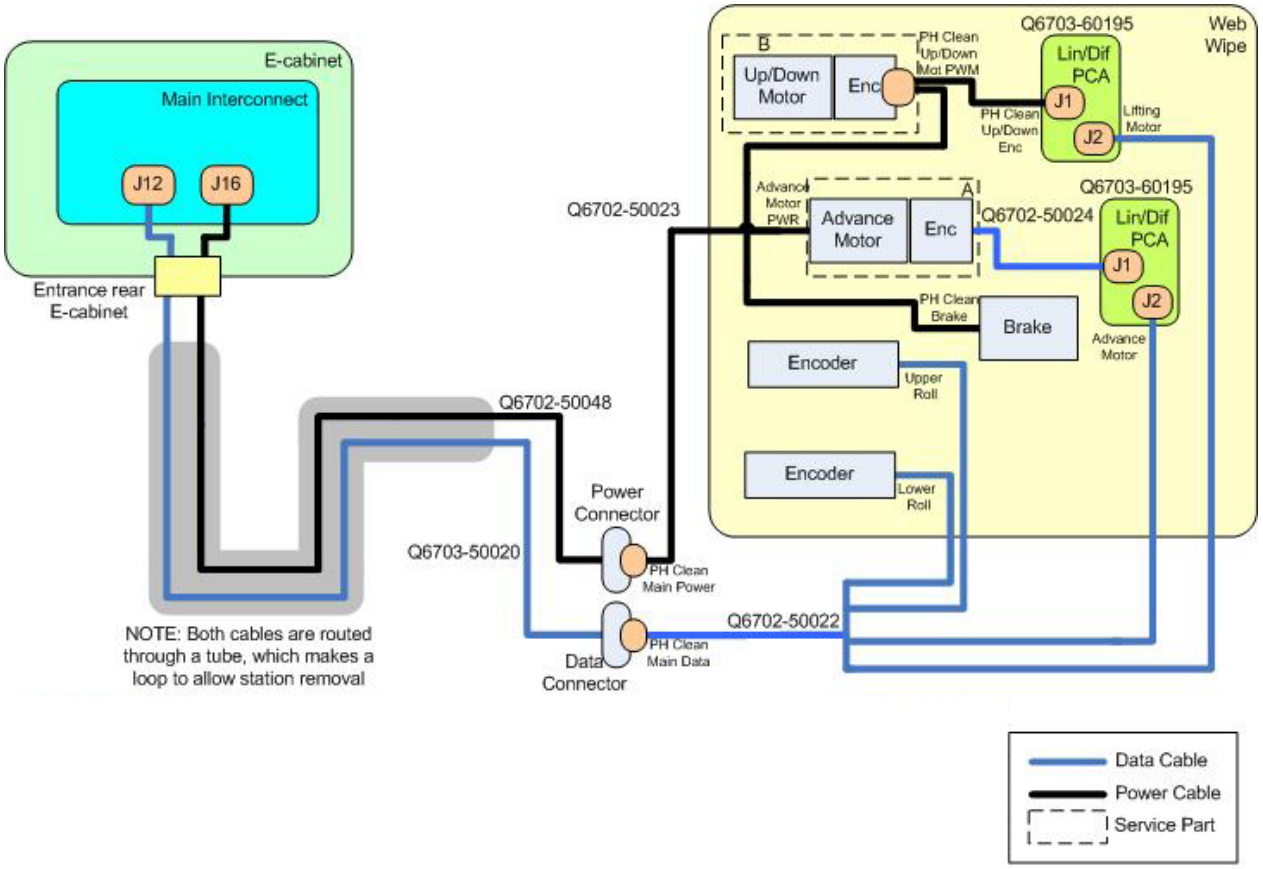
- Printhead Cleaning Assembly:⇒ Page 549

Removal and installation

- Printhead Cleaning System: ⇒Page 794

Printhead Cleaner Roll Circuit Diagram

The following diagram explains the power and data connections needed to control the active components of the printhead cleaning assembly.

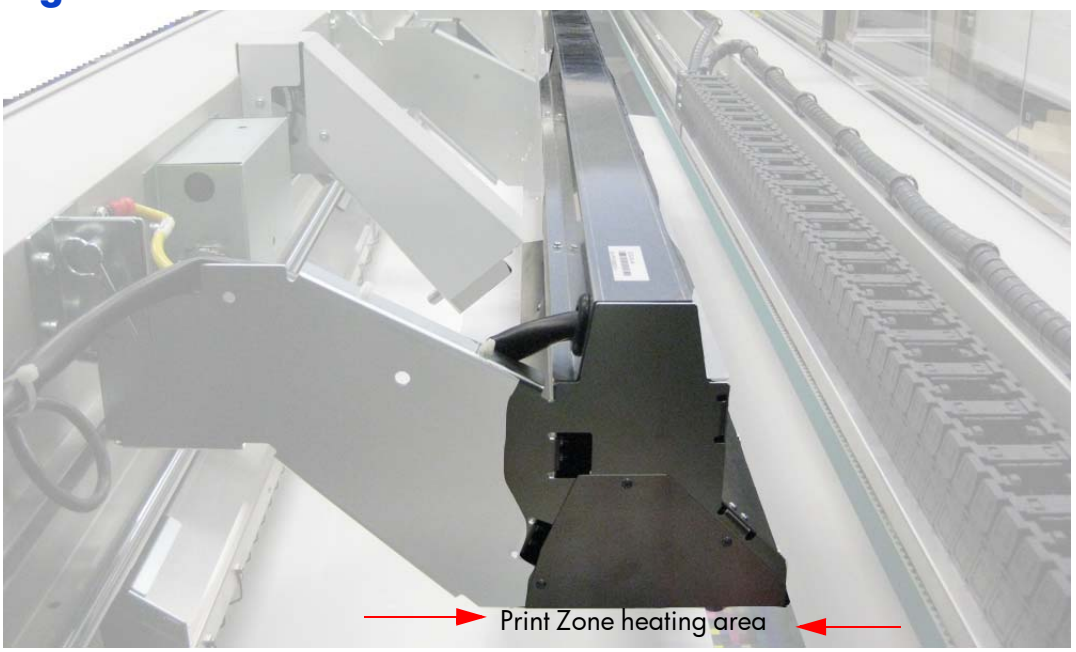


Heating and Curing

The heating (also known as drying) and curing system provide heat to the printing zone of the printer, this is used in conjunction with the HP Latex inks in this printer. This is done by heating two sets of metal lamps (resistors).

The 3 phase line is used exclusively to power this system

Heating



Curing

Components

- Three module support structure and reflecting plates
- One heating resistor for each heating module

- Thermal safety switches for each heating module
- Temperature sensors
- Fan Array System:

Functionality

The Latex Inks

The ink vehicle is a blend of water (~70%), co-solvents for aqueous inks (<30%), and additives. The heating and curing system is designed to work with the ink to make accurate, durable images.

Printing process

1. The printheads fire ink from the nozzles
   - An ink drop makes a colored dot on the media surface.
   - Ink vehicle softens vinyl for good film adhesion.
2. The **heating system** evaporates water from the ink vehicle.
   - Ink forms a thin liquid film on the substrate surface.
   - Pigment particles are dispersed throughout the film.
   - Dot is 'fixed' to prevent color bleed and dot coalescence.
3. The **curing system** causes latex particles to form a continuous film on the media.
   - Co-solvents evaporate.
   - Latex particles coalesce.
   - Pigments are encapsulated.

Curing System Fans

In front of each Curing module there is an array of seven fans which ensure the correct flow of air along the printing and curing areas. The fans distribute the air evenly, avoiding image quality issues. The fans also reduce the heat of the substrate once it is printed, avoiding any liquid condensation.

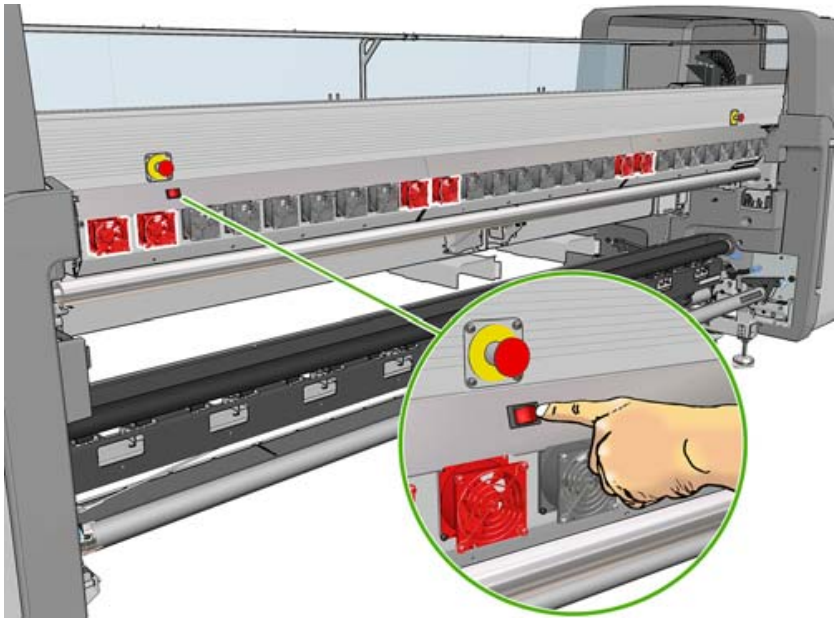
This air flow is required to:

- Improve the heat distribution of the lamps, which improves image quality (bleed/coalescence/banding).
- Quickly reduce heat in the substrate when the printer has finished printing.
- Remove any possible liquid condensation.

NOTE: One or two non-consecutive failing fans can be compensated for by the others, but when there are three, the customer will notice IQ issues in the area where the fans are not functioning.

NOTE: Blocking the air path of the fans can also cause some image quality artifacts. This can typically occur as the operations leans on the fans to see the PrintZone.

- LX8x00 printer: The curing fans have a switch off system located on the front of the printer between the curing fans and the left emergency stop. The switch turns on and off the two fans located on the left and the fans located between the curing heaters (marked in red). This switch should only be used when troubleshooting issues with the Curing.



The switch has three positions: Left-Center-Right

Right =On
Left & Center =Off

Due to the high risk of the customer using the switch in error and causing a significant increase in the temperature of the printhead without knowing it, the final implementation of this switch has been changed (refer to the support tips document available in the support zone for further information of this issue). The switch is now situated behind the metal protection bar (switch shown below). When opening the switch, the fault signal is cut switching off the power to the FAN cable, this cable goes to the 6 FANs described before.

Delta/Star Configuration

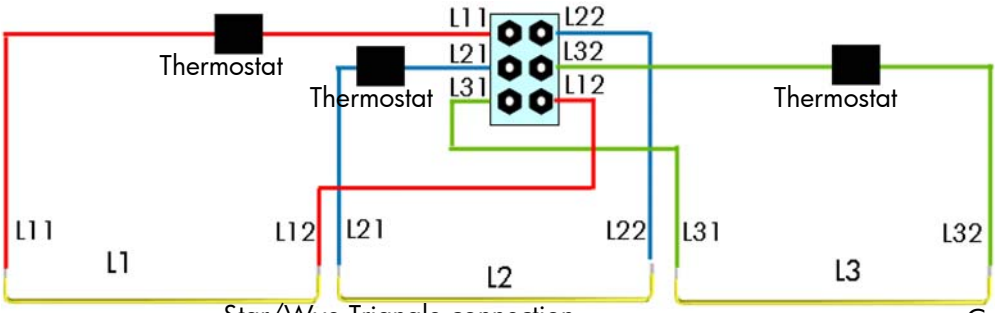
At installation the engineer must define the type of 3 phase connection, which will be based on the voltage supplied in the country.

This configuration distributes the voltage from the 3 phase power line among the heating and curing systems. If the set up is incorrect and the power is too high or not enough to able to provide sufficient heat, it can damage or reduce the life of the lamps.

Thermostats

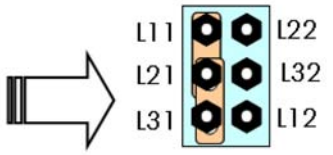
Each Heating and Curing module has a safety thermostat that cuts the power to the lamp if it exceeds a certain temperature.

For more information, see the *Installation Guide* or refer to the Delta/Star configuring in Removal and replace chapter: ⇒*Page 818*.

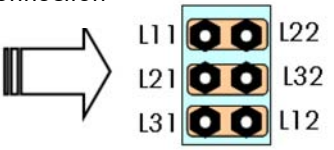


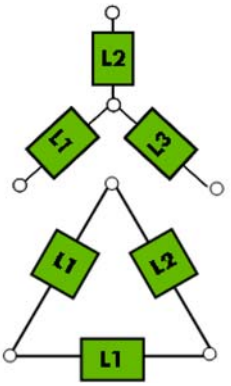
Star/Wye Triangle connection

Ensure line adaptors are in this side, otherwise the circuit will short-circuit



Delta connection



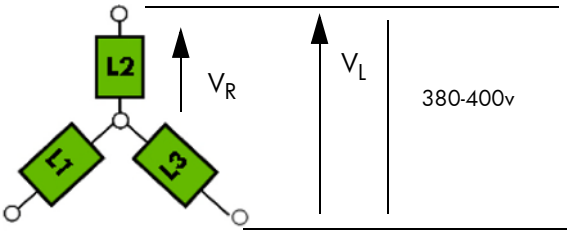


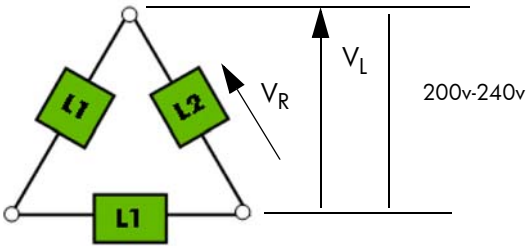
Countries with a high voltage configuration (Star)

Countries with a low voltage configuration (Triangle)

The tri-phase power cable is going from the static relay and connected to the star/delta configuration to the point L22, L32 and L12 (connected at the top of the cables going towards the resistance).

The lamps are designed to work at 200-240v, the 3ph configuration performs the appropriate setup to obtain this voltage to each resistor.





In Star configuration:

$$V_{R=} \frac{V_L}{\sqrt{3}}$$

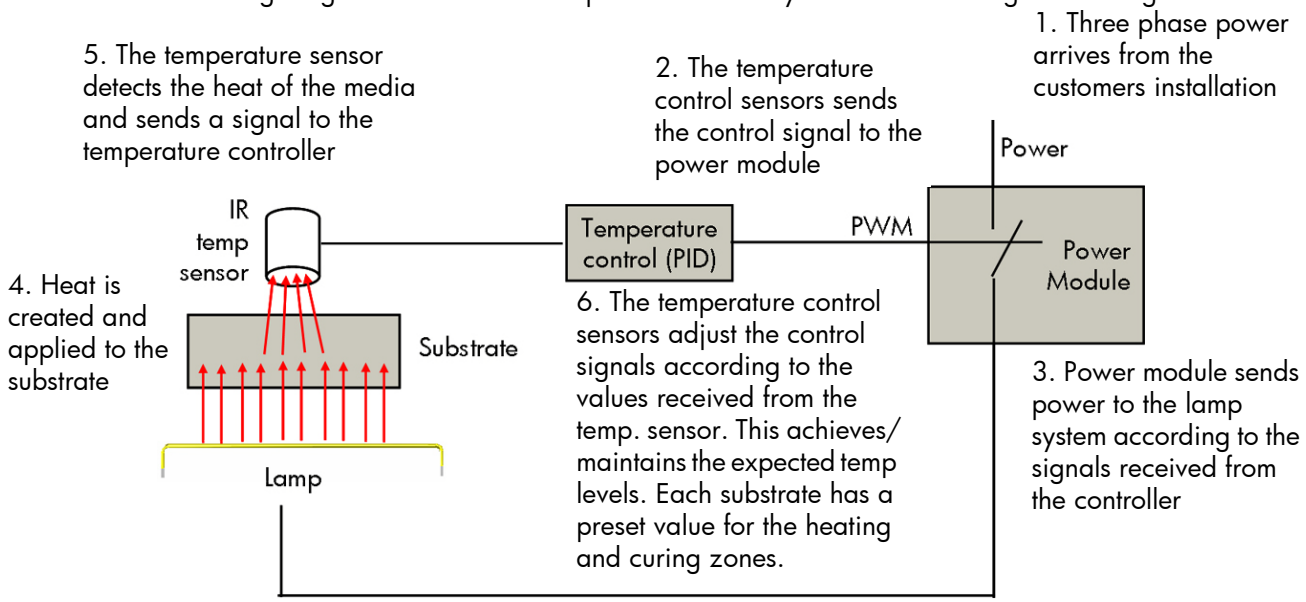
Example: $V_{R=} \frac{380}{\sqrt{3}} = 220v$

In Triangle configuration:

$$V_{R=} V_L$$

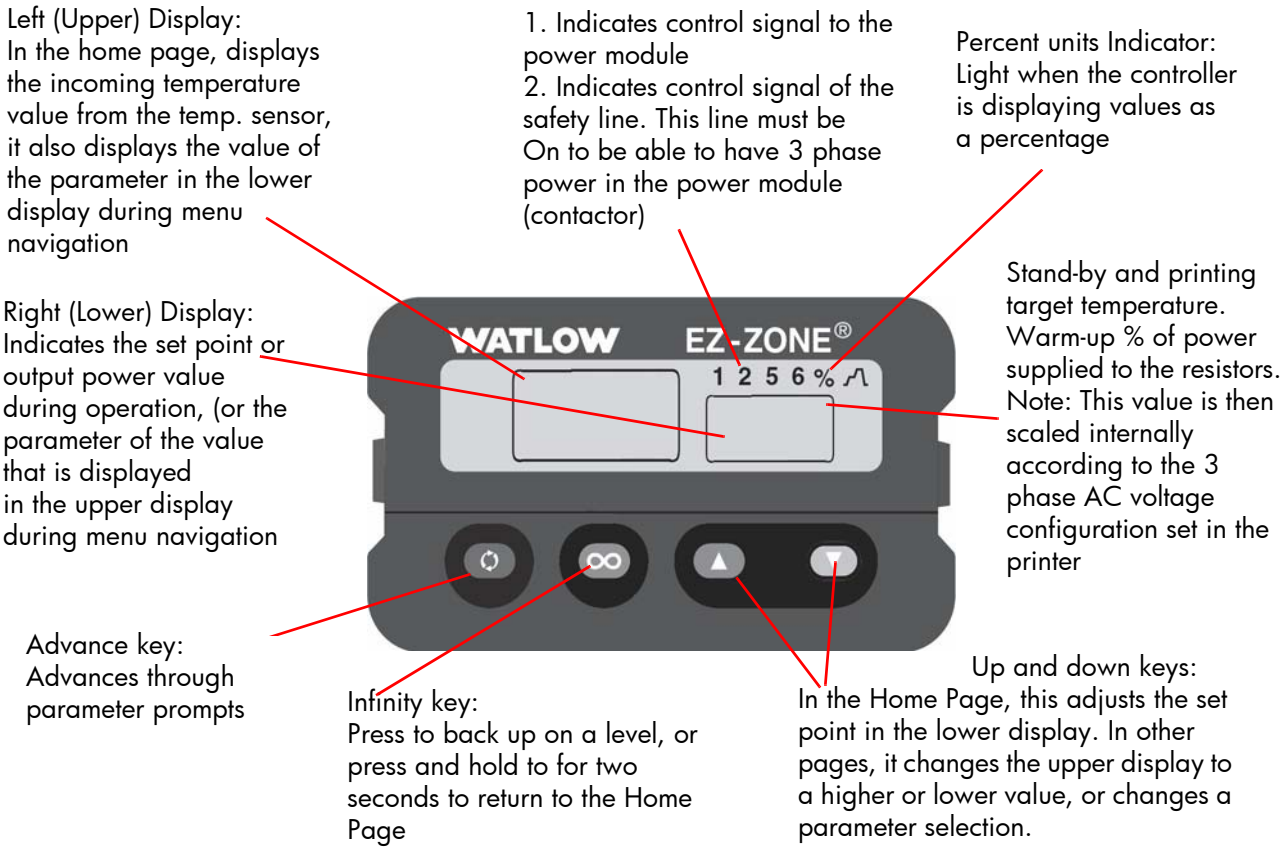
Control circuit

The following diagram describes the temperature control system in the Heating and Curing modules.



Temperature PID controllers L65500/LX600

The temperature controllers (PID Controllers) use the readings from the Temperature Sensors to achieve and sustain the target temperature. Whenever a PID controller is replaced, it has to be minimally configured to enable communication with the printer.



Important note: The PID Controllers operate at 220 volts AC directly from the e-cabinet

Temperature PID controllers LX800

The temperature controllers (PID Controllers) use the readings from the Temperature Sensors to achieve and sustain the target temperature. Whenever a PID controller is replaced, it has to be minimally configured to enable communication with the printer.

Upper display: In the home page, displays the process value, otherwise it displays the value of the parameter in the lower display

Percent units Indicator: Light when the controller is displaying values as a percentage

Temperature units: Indicates whether the temperature is displayed in Fahrenheit or Celsius

Output activity number LEDs indicate activity of outputs. A flashing light indicates output activity

Lower display: Indicates the set point or output power value during operation, or the parameters of values that appear in the upper display

Profile activity: Lights when a profile is running. Flashes when a profile is paused.

Communications activity: Flashes when another device is communicating with this controller

Zone Display indicates the controller zone
1 to 9 =zones 1 to 9

EZ key: This key can be programmed to do various tasks, such as starting a programme

Up and down keys: In the Home Page, this adjusts the set point in the lower display. In other pages, it changes the upper display to a higher or lower value, or changes a parameter selection.

Infinity key: Press to back up on a level, or press and hold to for two seconds to return to the Home Page

Advance key: Advances through parameter prompts

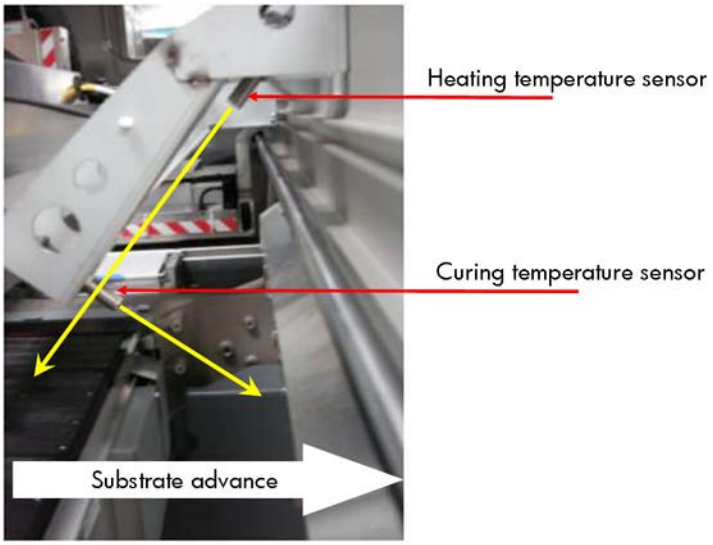
Important note: The PID Controllers operate at 24 volts DC from the secondary power supply

Configuring a new PID Controller

When a PID Controller is replaced the menu options must be correctly configured, refer to removing and installing a new Heating and Curing temperature controller:⇒Page 611

Temperature Sensors

The Temperature Sensors are infrared sensors located on the right side of the scan axis. They measure the temperature on the substrate delivered by the Lamp located on the right.



NOTE: It is possible, because the Temperature Sensors only measure the 1st resistors, that they will not detect a problem with the other modules.

NOTE: It should be noted that when there is no substrate loaded, the Curing Zone temperature sensor measures the air temperature.

Related tests, utilities, and calibrations

- 8.1 Heating system diagnostic test:⇒ Page 445.
- 8.2 Curing system diagnostic test:⇒ Page 447.
- 8.3 Heating temperature check:⇒ Page 449
- 8.4 Curing temperature check:⇒ Page 457
- 1.8.1 Temperature check utility:⇒ Page 494

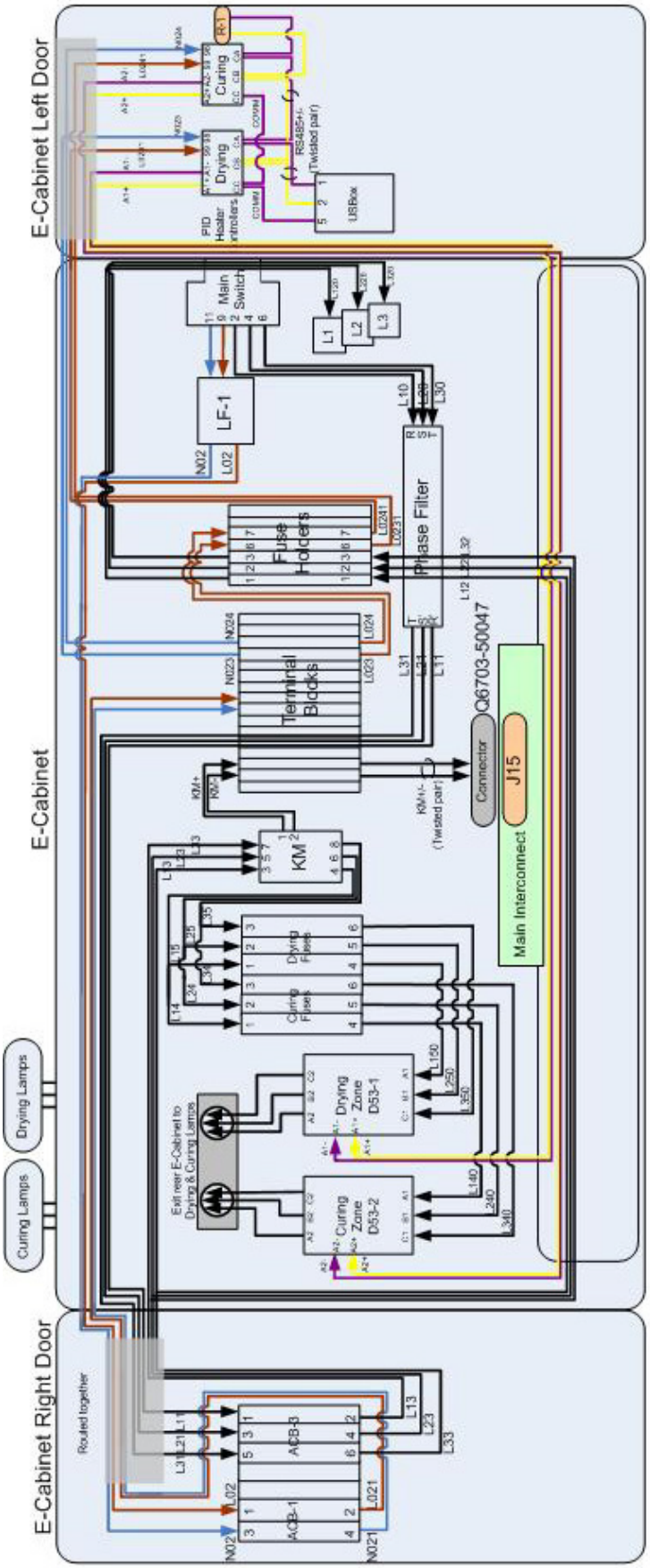
Service parts

- Heating ⇒ Page 550.
- Heating ⇒ Page 551.

Removal and installation

- Heating and Curing:⇒ Page 818

Heating and Curing Circuit Diagram

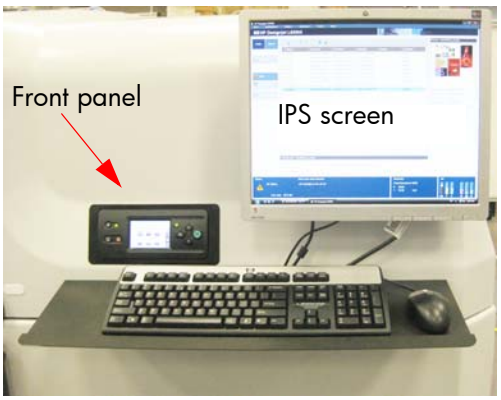


User Interface

Description

The User Interface is made up of two components:

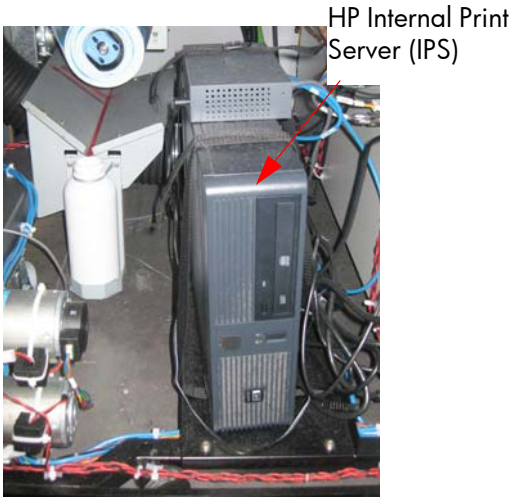
- HP Internal Print Server
- Front Panel



HP Internal Print Server (IPS)

The HP Internal Print Server (IPS) is a computer located inside the right-hand cover. This PC runs HP specific software on the windows operating system. The IPS has the following functions:

- Print job management
- Full printer status information
- Printer alerts
- Printer calibrations and adjustments
- Management and installation of substrate presets
- Printer firmware upgrades
- Access to the online HP Printing Knowledge Center



Front Panel

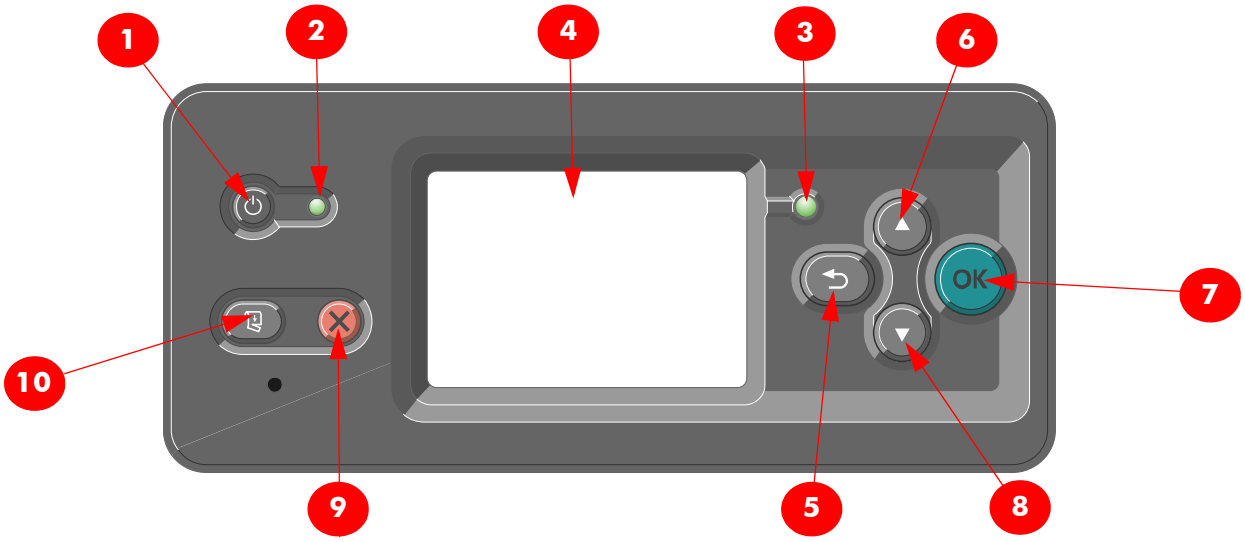
The Front Panel is a small screen display and array of button controls located on the front side of the printer, to the left of the Internal Print Server.

The Front Panel is used frequently by Service Engineers. Rule of thumb: most things requiring direct mechanical interaction with the printer, like tests or calibrations, are performed using the Front Panel.

The Front Panel communicates with the Formatter via the Main Interconnect Board.

Functionality

Front Panel Key functionality



1. **Power key** - To turn the printer off. See Turn the printer on and off on page 9.
2. **Power light** - Indicates the printer's power status. If the light is off, the printer is off. If it is solid green, the printer is on. If it is flashing green, the printer is in transition between on and off.
3. **Status light** - Indicates the printer's operational status. If the light is off, the printer is not ready. If it is solid green, the printer is ready and idle. If it is flashing green, the printer is busy: receiving data, processing or printing. If it is flashing amber, your intervention is required. If it is solid amber, a serious error has occurred.
4. **Front-panel display** - Displays error, warnings and information on using your printer.
5. **Back key** - To go to the previous step in a procedure or interaction. To go to the upper level, or leave the option in the menu, or when given an option.
6. **Up key** - To go up in a menu or option, or to increase a value.
7. **OK key** - To confirm an action while in a procedure or interaction. To enter in a submenu in the menu. To select a value when given an option.
8. **Down key** - To go down in a menu or option, or to decrease a value.
9. **Cancel key** - To cancel a procedure or interaction.
10. **Move substrate key** - To move the loaded substrate forwards or backwards, or rewind the roll.

Related tests, utilities, and calibrations

- Front Panel diagnostic test:⇒ Page 351
- IO Information diagnostic test (checks Internal Print Server communication with printer):⇒ Page 364.

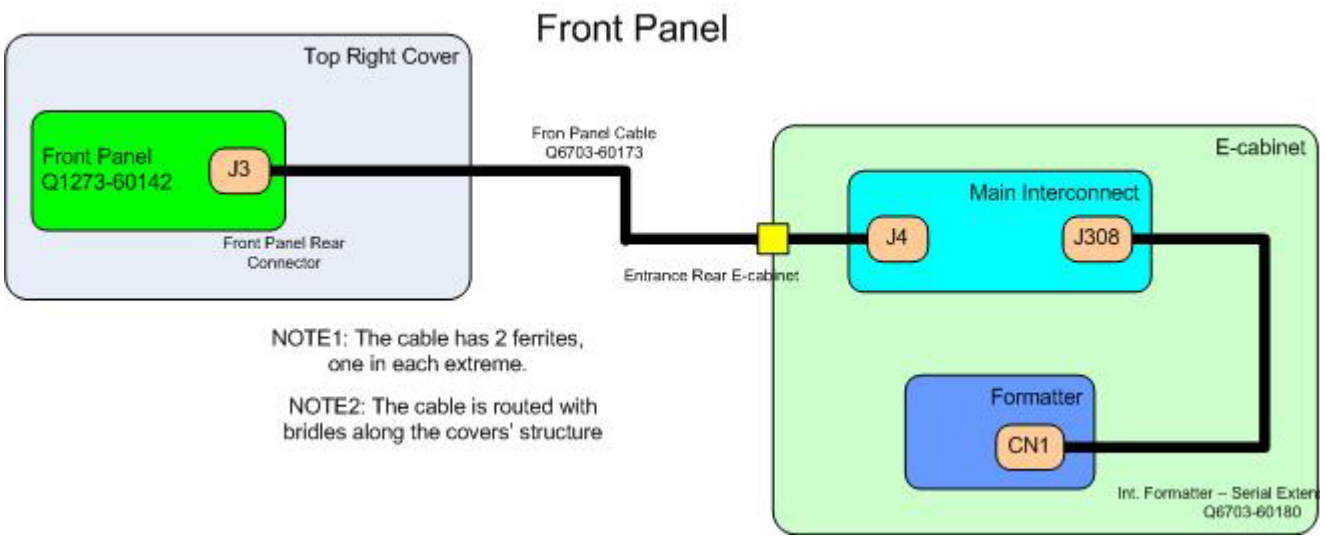
Service parts

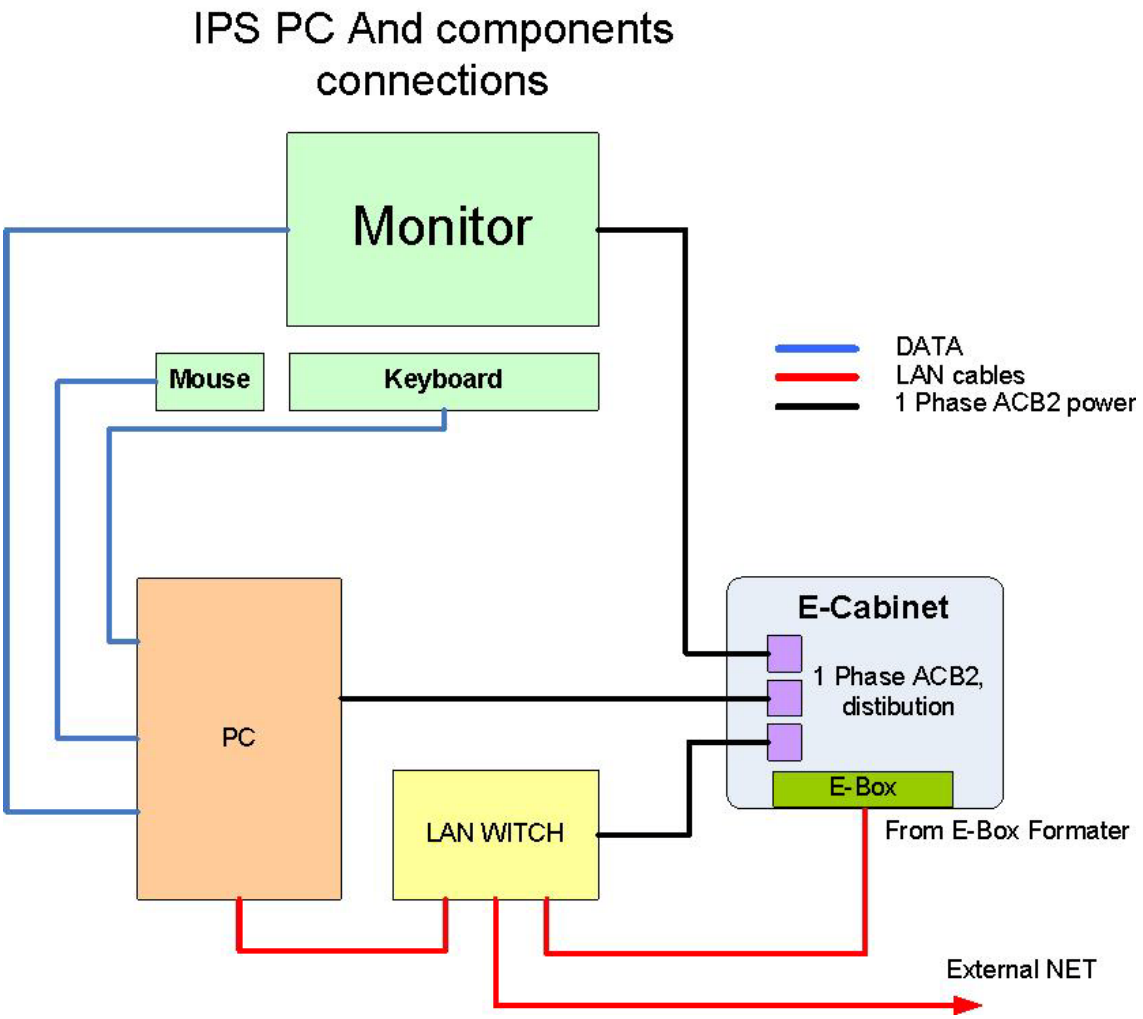
- User Interface:⇒ Page 531.
- InternaL Printer Server PC:⇒ Page 552

Removal and installation

- User Interface:⇒ Page 586
- Monitor:⇒ Page 586
- Internal Printer: ⇒ServerPage 586

Front Panel Electronics Diagram



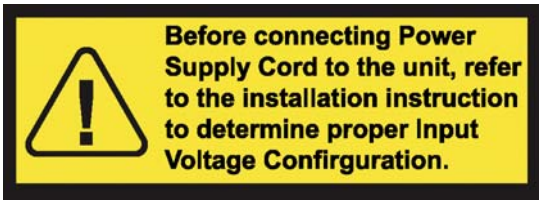
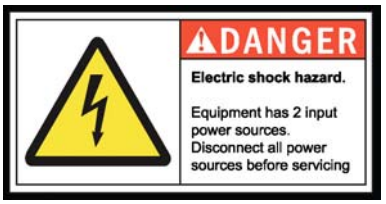


NOTE: The Main Interconnect supplies 12v standby voltage which enables the user to boot up the printer. The front panel is connected to the Formatter Board via the Main Interconnect board.The standby and reset line is what enables you to start the Main Power Supply from the ON/OFF button of the front panel.

2 Safety

Printer Safety Features

Warning Labels

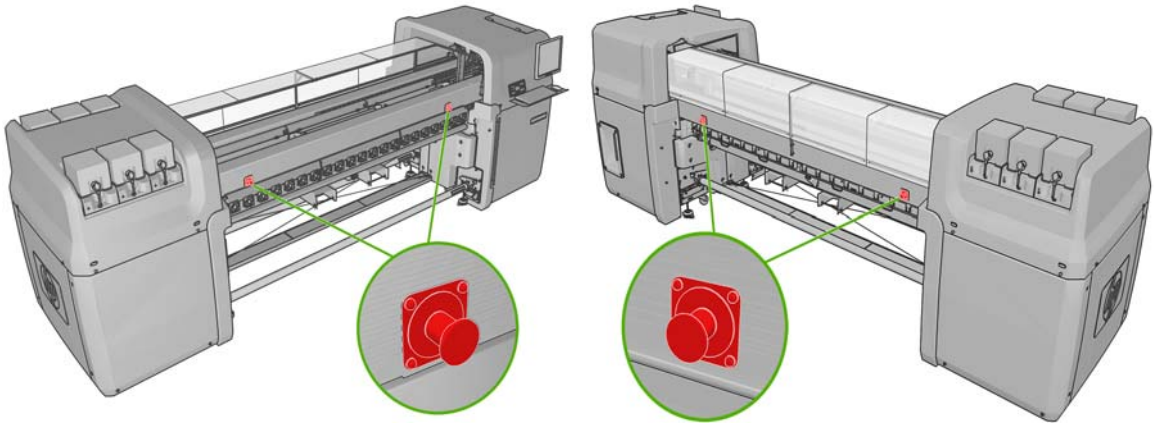
Label	Description
	Current leakage may exceed 3.5 mA.
	The printer can be connected to power supplies at different voltages.
	Identifies the main earth terminal.
	Danger of electric shock. Do not touch.
	Danger of electric shock. Do not touch.
	Danger of electric shock. In case of operation of the fuse, parts of the printer that remain energized may represent a hazard during servicing. Therefore, ensure that the printer is completely turned off before servicing.
	Printer parts may sometimes become hot. Do not touch.

	Use protective gloves for handling printer parts, supplies or waste.
	When substrate has been loaded, the carriage descends into its normal position, and could crush your hand or anything else left underneath it.
	Danger of crush hazard when the carriage beam is raised and lowered.
	Danger that your hands may become trapped between gearwheels
	Danger of cutting your hands on sharp parts.
	When the printer is printing, the printhead carriage travels back and forth across the substrate.
	Beware of this moving part.

Emergency Stop Buttons

The HP Designjet L65500 printer has four emergency stop buttons distributed around the printer. If an emergency occurs, simply push one of the emergency stop buttons to stop all printing processes.

When pressed, system error 14.8 is displayed on the front panel, and the Curing System Fans turn at maximum speed. Ensure that all emergency stop buttons are released before restarting the printer.



Hazards

Electrical shock hazard

Description

Internal circuits use hazardous voltage capable of causing death or serious personal injury. Power off the printer from the Power distribution Unit (PDU), by means of the Branch Circuit breaker

Particular attention must be paid to the Heating and Curing subsystem, which uses hazardous voltages. Even though the Heat and Curing subsystem is not operating, there will be parts of the electrical circuit still with hazardous voltage levels.

Best practice

- Always perform the Safety Check before servicing the printer: ⇒ see page 95.
- Fuses blown after being replaced may indicate malfunctioning electrical circuits within the system. Have the system checked by qualified service personnel, and do not attempt to replace the fuse again.

Mechanical hazard

Description

- When the PPS is lowered, it can crush body parts if they are in the way.
- When the Carriage moves, it can crush or cut body parts if they are in the way.
- Any moving printer components can potentially crush, cut, or seriously injure you.

Best practice

- Keep your clothing or body parts safe from moving parts of the printer.
- Avoid wearing loose clothing, jewelry like necklaces or bracelets, or any kind of hanging objects.
- If you have long hair, make sure that it is restrained.
- Take care that sleeves and gloves do not get caught in the mechanical parts of the printer.
- Always perform the Safety Check before servicing the printer: ⇒see page 95.
- Stay clear of the printer when lowering the PPS.
- Stay clear of the print path when the carriage is moving.
- Be aware of the location of the emergency stop buttons.
- Also make sure that there are no tools obstructing the operation of the printer.

Scan Axis Encoder Strip hazard

Description

The Scan Axis Encoder Strip is very sharp, and can easily cut your hands when you must work near it.

Best practice

- Always perform the Safety Check before servicing the printer:⇒see page 95.
- Wear protective gloves if you must touch the Scan Axis Encoder Strip.
- Do not wear loose clothing or jewelry.

Burn hazard (heating and curing)

Description

The components of the heating and curing systems get very hot and can seriously burn you.

Best practice

- Always perform the Safety Check before servicing the printer ⇒see page 95.
- Avoid working near the heating and curing modules.
- Be careful when you work near the print path.
- If you must work near the heating and curing modules, make sure that they are completely cooled off.

Lifting and handling

Description

Improper handling of heavy materials can lead to serious bodily injury.

Best practice

- When handling substrate rolls, care must be taken to avoid back strain and/or injury.
- Always use a forklift, pallet truck, or other handling equipment to lift substrates.
- Always wear personal protective equipment like boots and gloves.
- Follow any manpower instructions included in this service manual when you replace components. Many components, like the Drive Roller or the Right Side Top Cover require at least two people for removal.

Safety Check

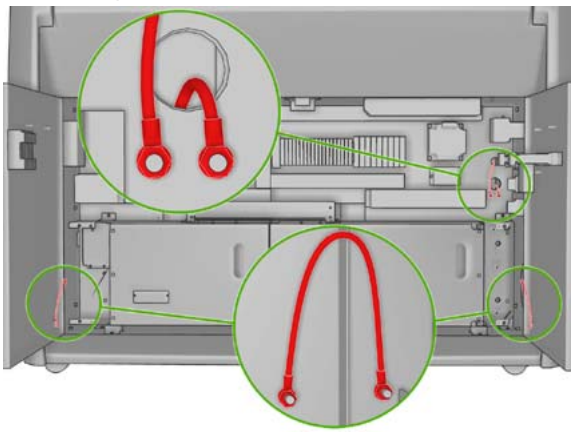
Description

The Safety Check must be performed before every service operation of the printer. From purging the printer to replacing a single component, this Safety Check must always be performed.

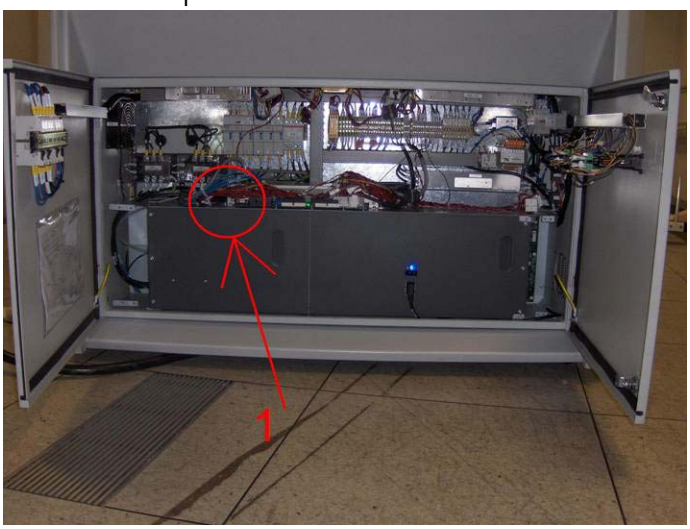
Procedure

NOTE: The Protective Earth Conductor is marked with a ⏚ symbol.

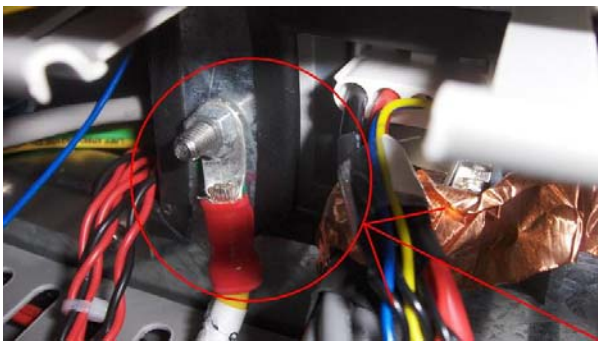
1. If you will remove any components of the heating and curing system, turn off the main power switch and disconnect the printer from the Power Distribution Unit (PDU).
2. Check that the Protective Bonding Conductor (green-and-yellow grounding cable) is well attached to the Electrical Cabinet doors.
3. Check that the Protective Earth Conductor for single phase and three-phase (green-and-yellow grounding cable) is well attached to the back panel of Electrical Cabinet.



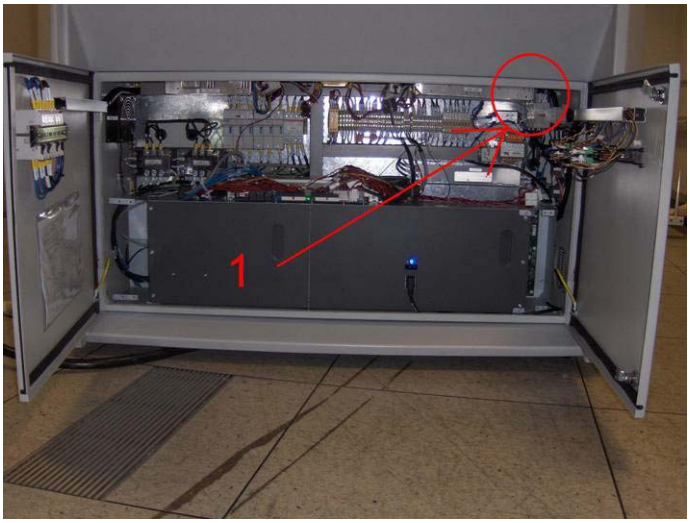
4. Check that the Protective Bonding Conductor (green-and-yellow grounding cable) is well attached to the back panel of e-cabinet.



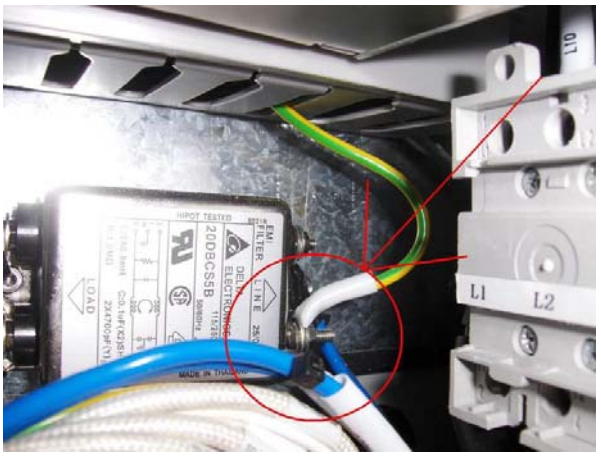
Detail



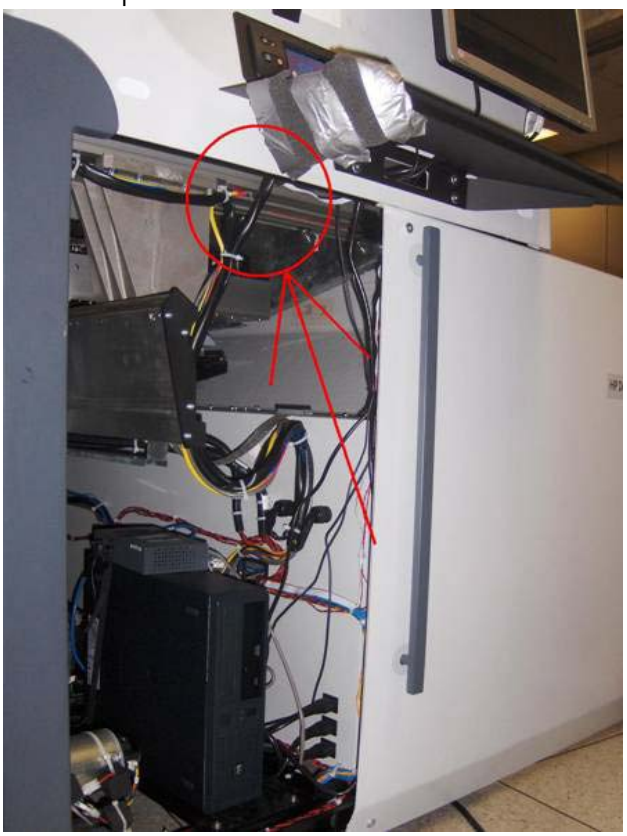
5. Check that the Protective Bonding Conductor (green-and-yellow grounding cable) is well attached to input single phase filter.



Detail

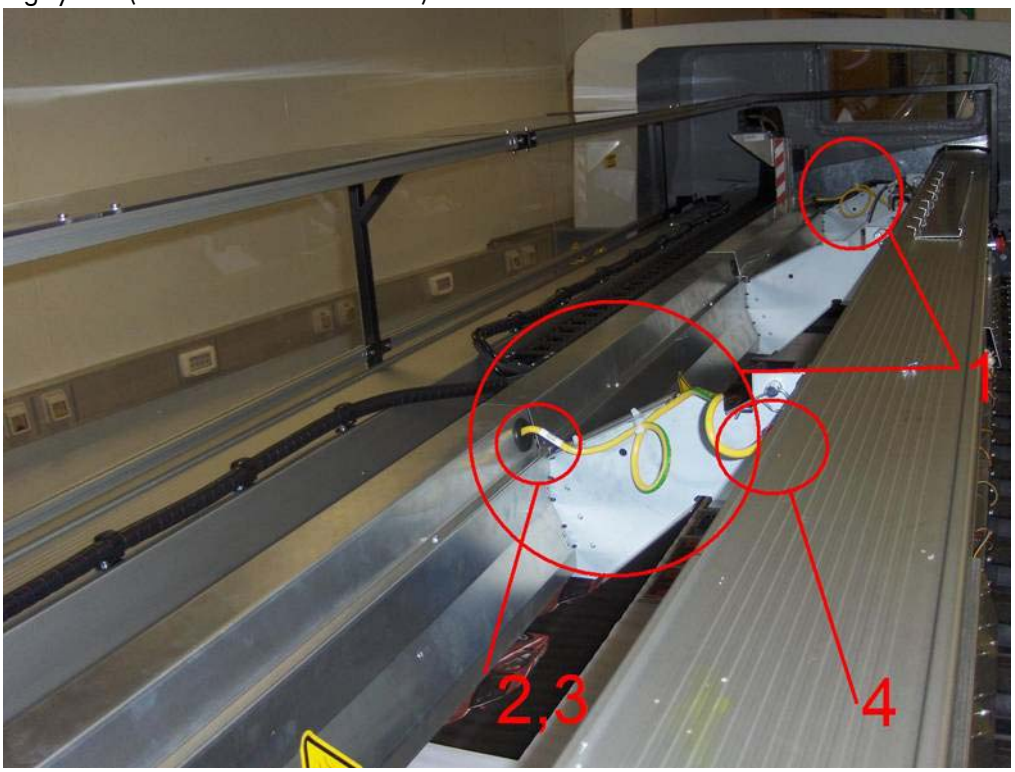


6. Check that the Protective Bonding Conductor (green-and-yellow grounding cable) is well attached to printer structure.

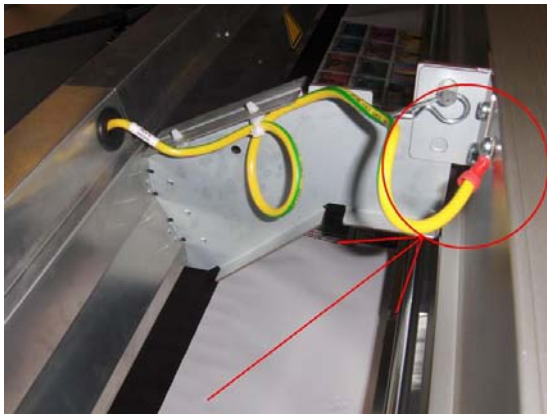


Detail

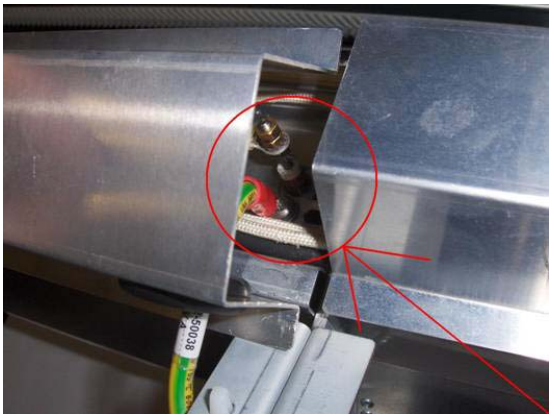
7. Check that the Protective Bonding Conductor (green-and-yellow grounding cable) is well attached to the drying system (at the resistor connection).



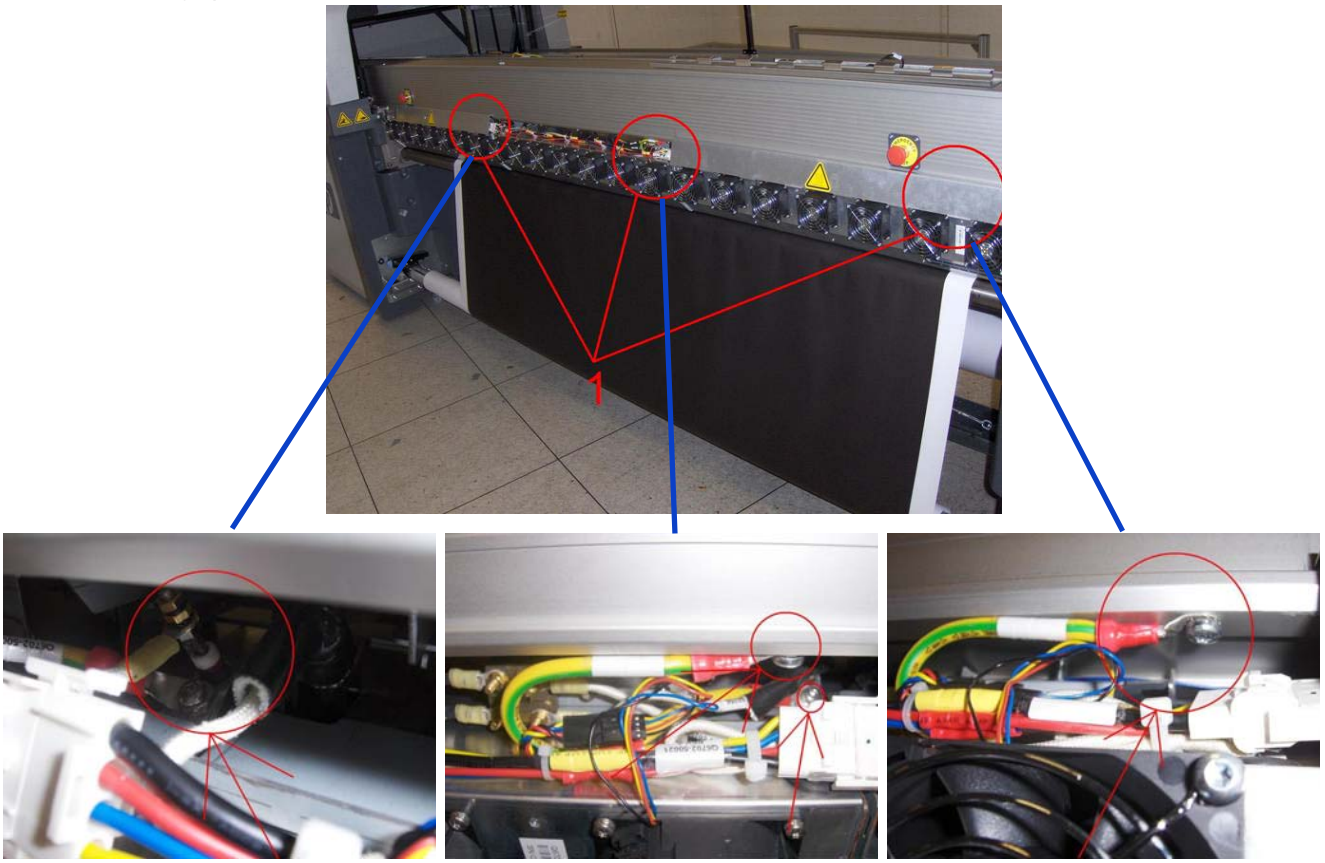
Detail, 1 & 4



Detail, 2 & 3



8. Check that the Protective Bonding Conductor (green-and-yellow grounding cable) is well attached to the curing system (at the resistor connection).



3 Troubleshooting

3.1 Troubleshooting system error codes

The HP Designjet L65500 Printer automatically detects problems with the printer system. Whenever a problem is detected, the Front Panel shows a system error code that allows you to identify the failing functionality and to proceed with the appropriate troubleshooting procedure.

Nearly every possible problem with the printer will be automatically detected for troubleshooting using the system error code. Use the following list of system error codes to locate a description and the procedures needed to further diagnose and resolve the problem.

If you have an error code which is not documented in this Service Manual or you have an error which you cannot resolve, then report the error to the HP Response Center or the nearest HP Support Office. When reporting the error, have the following information ready:

- Model and Serial Number of the printer.
- Which firmware revision the printer is using (Note below). Check firmware in Utilities / Statistics / Code rev.
- The complete error number.
- The Service Configuration Print.
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.)

NOTE: When reporting the System Error Code, make sure that you supply the full Error Code and the firmware version.

Understand system error codes

System error codes result when the printer automatically detects a problem, and are used to make troubleshooting easy.

System Error Codes display on the Front Panel (but can also be seen on the Information Page) and are expressed using the **XX.YZ**. or **XX.n:YZ.m** formats.

- **XX**: Service Part/Subsystem where the failure has been detected.
- **n**: Service Part Index (if more than one used in the product) - Optional
  - e.g. Identify the Ink Supply (color and number).
- **Y**: Who should perform the action (1 digit) - (0 for User or 1 for Service Engineer).
- **Z**: Action to perform (1 digit).
- **m**: additional actions/information to consider (1 digit) - Optional.
  - e.g. Non-authorized ink was detected, PM was triggered or Printhead in/out of Warranty.

The **YZ** portion of the error code tells you the recovery action, if any, and who is allowed to perform the recovery action.

Resolve a system error code

Some of the error codes are continuable, which means you can press **Enter** on the Front Panel and continue working with the printer. Non-continuable error codes do not allow you to continue working with the printer.

NOTE: Even though the customer can continue working with a Continuable Error Code, an on-site visit should still be planned to troubleshoot the problem.

SE Code: 01.0:10 - Upper/Lower PCI Boards critical error

Description

A critical error has been detected in either the Upper PCA. One of the boards may require replacement.

The Upper and Lower PCI Boards contains the main real time microprocessors and integrated circuits that control the printer with their respective memory and input output systems. This error is produced due to an unexpected state of operation on the board which can result in critical failures in the processors, memory access, internal short circuits, etc.

Both boards are connected to main Formatter board via PCI port, the failure could also be due to a total communication failure within the PCI board or even a failure in the Formatter PCA.

Problem causes in order of importance

A. Sporadic electrical failure

B. Failure in any of the connections of the Upper/Lower PCI Board

C. Failure in either the Upper or Lower PCI Board

D. Failed Formatter Board

Corrective action

Sporadic electrical failure

1. Switch Off the printer, wait 10 seconds, and switch On and restart the printer.

Failure in any of the connections of the Upper PCI Board

2. Turn the printer Off and check cables the cables between both the Upper PCI Board and the Lower PCI Board and to the Formatter Board.

3. Check the Upper and Lower PCI Boards are correctly installed Remove the boards if necessary and clean the contacts and plugs in the PCI slots, then re-install the PCI card ⇒ page 597.

4. Perform the diagnostics 2.2.1 Electronics Control ⇒ page 356.

Failed Upper or Lower PCI Board

5. Replace the Upper PCI Board ⇒ page 597.

6. Replace the Lower PCI Board ⇒ page 599.

Failed Formatter Board

7. Replace the Formatter Board, ⇒ page 591.

SE Code: 01.2:10 - Ink Supply Station Main Board critical error

Description

A critical error communicating with Ink System Main Board has occurred. The Ink System Main Board communicates via two lan cables with the Main Interconnect Board. This error is triggered when the Ink System does not respond as expected to the commands sent from the Upper PCI Board via the Main Interconnect Board.

This error can be displayed if a component on the ISM side has short circuited and then creates a failure on the ISM and on the Main Interconnect board.

Problem causes in order of importance

A. Sporadic Electrical Failure

B. ISS Communication data lines failure

C. ISM board failure

D. ISS power failure

E. Ink System Main Board failure

F. Main Interconnect Board Failure

G. Upper PCI Board failure

Corrective action

Sporadic Electrical Failure

1. Turn off the printer and wait 10 seconds and then turn on.

ISS power failure

NOTE: Restart the printer in diagnostics mode. Use utility 2.3 Main PSU on/off to power the printer to obtain the 24v to continue the troubleshooting

2. Remove the front IDS Left Cover and verify the 3 Power Led indicators(24v, 10v,5v) in the ISS board, refer to ⇒page 200 for a view of the LEDs.

   - If only 24v Led On (or only two of the LEDs are on); power is arriving to the board but there is an electrical failure inside the PCA and the PCA may require replacement. Before proceeding with the PCA replacement, check all ink supply connectors and ensure pins are ok with no obvious short circuit in the connections. Check the power feed to pumps and electrovalves and ensure there is not short circuit between power and ground at the component side. Repair any parts that have been found to have failed.
   - Check there are no failures of the Electrovalve, or blown fuses of the ISM board ⇒page 200
   - If the 3 power LEDs are off 24V is not arriving to the PCA. Check with a voltmeter and ensure 24V are not arriving from the cable (note: ensure 24V activated in the printer). If 24V are arriving, ensure the connector and pins are correct, replace ISS PCA, (in this case, on the ISS PCA, there is a high probability that the Fuse F1, under the metal cover and close to the 24V connector, is open, 4A fuse)
   - If power is not arriving, refer to ⇒page 52, check Power Output in the Main Interconnect Board. J19, Pins 1 (+24V) and 6 (GND). If power is not leaving the Main interconnect (note ensure 24V activated in the printer) ->The main interconnect requires replacement (in this case, there is a high probability that one of the following fuses under the Main Interconnect has failed: F307 and/or F306 (4A and 6.3A)). Before replacing the PCA ensure that the output line does not have a short-circuit, if the output is leaving the Main Interconnect, check the arrival of the current to the ISS Board on the connector side, localize and repair any short-circuits before replacing the PCA. If the LEDs are off, check the power output in the Main Interconnect Board with a multimeter.

ISS Communication data lines failure

3. Check the connections of the ISS LAN data cables that communicate with the Main Interconnect Board. Disconnect and connect the data cables, ensure they are not crossed in any way (check the labels). Check for any visible damage to the cables. Clean the cables or replace them if necessary.

ISS Power Failure

4. Check that the correct 24V power supply reaches the ISS Boards, and that all power LEDS are working in the in the Boards. Perform the Diagnostics 2.3 Main PSU/Off test to switch on the 24V line ⇒page 369, or Perform the 4.1 ISS Electronics diagnostic ⇒page 383.

ISS Communication data lines failure

5. Check all the connections of the ISS LAN cables that communicate with the Main Interconnect Board.

Ink System Main Board failure

6. Replace the Ink System Main Board ⇒ page 700.

Main Interconnect Board Failure

7. Replace the Main Interconnect Board. ⇒ page 602.

NOTE: For the purpose of troubleshooting, standard LAN cables can be used if the original part is not available.

Upper PCI Board failure

8. Replace the Upper PCI Board ⇒ page 597.

SE Code: 01.3:10 - Upper PCI Board (Sausalito 0) critical error

Description

A critical error has been detected in the Upper PCA. The board may require replacement.

The PCI Boards contain the main real time microprocessors and ICs that control the printer with their respective memory and input output systems. This error is produced due to unexpected states of operation on the board which can mean critical failures in the processors, memory access, internal short circuits, etc.

As these boards are connected to main Formatter board via PCI port the failure could also be due to a total communication failure within the PCI board or even a failure in the Formatter PCA.

Problem causes in order of importance

A. Sporadic electrical failure

B. Failure in any of the connections of the Upper PCI Board

C. Failed Upper PCI Board

D. Failed Formatter Board

Corrective action

Sporadic electrical failure

1. Switch Off the printer, wait 10 seconds, and switch On and restart the printer.

Failure in any of the connections of the Upper PCI Board

2. Turn the printer Off and check cables the cables between the Upper PCI Board and the Formatter Board.

3. Check the Upper PCI Board is correctly installed Remove the board and clean the contacts and plugs in the PCI slot, then re-install the PCI card ⇒ page 597.

4. Perform the diagnostics 2.2.1 Electronics Control ⇒ page 356.

Failed Upper PCI Board

5. Replace the Upper PCI Board ⇒ page 597.

Failed Formatter Board

6. Replace the Formatter Board, ⇒ page 591.

SE Code: 01.4:10 - Lower PCI Board (Sausalito 1) critical error

Description

Critical error with the Lower PCI Board. The PCI Boards contain the main real time microprocessors and ICs that control the printer with their respective memory and input/output systems. This error is produced due to unexpected states of operation on the board, which can mean critical failures in the processors, memory access, internal short circuits, etc.

As these boards are connected to Formatter Board via PCI port the failure could also be due to a communication total communication failure with a PCI board or even the failure be located in the actual Formatter Board.

Problem causes in order of importance

A. Sporadic electrical failure

B. Failure in any of the connections of the Lower PCI Board

C. Failed Lower PCI Board

D. Failed Formatter Board

Corrective action

Sporadic electrical failure

1. Switch Off the printer, wait 10 seconds, and switch On and restart the printer.

Failure in any of the connections of the Upper PCI Board

2. Turn the printer Off and check cables the cables between the Lower PCI Board and the Formatter Board.
3. Check the Lower PCI Board is correctly installed. Remove the board and clean the contacts and plugs in the PCI slot, then re-install the PCI card ⇒ page 597.
4. Perform the diagnostics 2.2.1 Electronics Control ⇒ page 356.

Failed Upper PCI Board

5. Replace the Lower PCI Board ⇒ page 597.

Failed Formatter Board

6. Replace the Formatter Board, ⇒ page 591.

SE Code: 02.1.1:10 - Carriage PCA communication failure

Description

Carriage PCA communication error. The Carriage Board does not respond to communication correctly. This error is detected in the printhead interconnect which is linked with the sensors board via the Carriage Interconnect Board.

Problem causes in order of importance

A. Carriage flat data cables incorrectly connected or sensor board interconnects failure.

B. Carriage Interconnect Board failed

C. PH Interconnect failed

Corrective action

Carriage Flat Data cables disconnected

1. Check PH Interconnect - Carriage Interconnect Board data cable connections, ensure correct connections, cable integrity and connectors integrity (all connections are correct and no cables are crossed) ⇒page 69.
2. Check the connections of the Sensor Interconnect and Carriage Interconnect.

Carriage Interconnect Board failed

3. Replace the Carriage Interconnect Board ⇒page 748.

PH Interconnect failed

4. To troubleshoot possible issues in the Printhead interconnect, exchange the boards and connections (the boards are identical, changing position and connections will change one board into another, if the failure is located in the board).

Sensors interconnect fault (sensors box)

5. If power arrives to the sensors interconnect, replace the Sensors Box and cables ⇒page 750.

SE Code: 02.1.3:10 - 24V Carriage Power failure

Description

There is a lack of 24V in the Carriage, this failure is detected in the Carriage Interconnect via a loop in the Sensors Box PCA.

Problem causes in order of importance

A. 24V carriage cable line connections.

B. 24V arrival to Carriage Interconnect Board.

C. A component powered by this 24V line is failing, this is creating a shortcut between 24V and the ground line for example.

Corrective action

24V carriage cable line connections

1. Check 24V cable connections in the Main interconnect and in the Carriage Interconnect Board.

2. Check cable sensors box - carriage interconnect connections and connectors and cable integrity.

24V arrival to Carriage Interconnect Board

3. Check if power arrives to the Sensors Interconnect (5v constant, 24v when activated. If power does not arrive, check if power leaves the Carriage Interconnect. Activate the 24v power line by performing the 24v system utility and check the 24v LED in the Carriage Interconnect.

4. If power does not arrive to the Sensors Interconnect and does not leave the Carriage Interconnect, replace the Carriage Interconnect ⇒page 748.

5. Ensure 24V arrival to the Carriage Interconnect Board (LED in the carriage interconnect) ⇒page 203.

6. If power does not arrive, check 24v leaves the Main interconnect Board.

   - Measure the voltage leaving the Main Interconnect (J20).
   - If power leaves, check cable connections, repair connections if possible, if not replace the complete TRS system and cables.

7. If power arrives replace the Carriage Interconnect ⇒page 748.

8. Identify the corresponding component by testing, from diagnostic mode, each component powered by this 24V line (spectrophotometer, line sensor, carriage LID switch, encoder reader of the carriage, aerosol FANs, primers etc).

SE Code: 02.2.1:10, 02.2.2:10, 02.2.3:10 - PH interconnect board critical failure

Description

Carriage Printhead Interconnect communication failure, where n=1.Left, 2=Middle, 3=Right

There is an critical error on the operation of the Carriage Printhead Interconnect, a board replacement may be required.

Problem causes in order of importance

A. Failed Carriage Printhead Interconnect

Corrective action

Failed Carriage Printhead Interconnect

1. Swap the failed Carriage Printhead Interconnect with another board, reconnect them, and check if the error occurs again with the failed board (the system error should change, to point to the other board).
   - If the error points to the other board, the PCA can be considered as faulty and replace.
   - If the error continues to be the same, the issue could be considered to be in the trailing cable, first replace the Upper PCI board and if the problem persists change the complete TRS system with the trailing cables.
2. Replace the Carriage Printhead Interconnect ⇒page 749.

SE Code: 02.3.n:10 - Print Head Interconnect Board Power Fault

The full list of system error codes:

- **02.3.1:10**= Left
- **02.3.2:10**= middle
- **02.3.3:10**= Right

Description

Carriage Printhead Interconnect Power fault.

Voltage in the Carriage Printhead Interconnect is out of range established between 40V and 45V.

The Carriage Printhead Interconnect s is designed to operate with a nominal voltage of 42V. This voltage is supplied by the Main Power Supply of the printer.

The voltage Path is:

Main Power Supply > Cable (Connector) > Main Interconnect Board > Cable (Connector) > Carriage Interconnect Board > Carriage Printhead Interconnect. refer to the electrical diagram ⇒page 18.

Problem causes in order of importance

A. Incorrect connection 42v cable in the Main Interconnect side.

B. Main Power Supply giving incorrect power

C. Carriage sensor incorrect connections / failure

D. Failure in the Carriage Printhead Interconnect

E. Failure of the Main Interconnect

F. Failure of the Main Power Supply.

Corrective action

Incorrect connection in the cable of the Main Interconnect Bad side

1. Check the 42V power connections on the Main Interconnect Board to make sure they are connected correctly. Repair any failed cables or connections. Check that the Main Power Supply is providing the correct voltage. Confirm with a multimeter the output voltage or 42v with the power supply on (refer to the utility 2.3 in diagnostics to switch on the PSU, with power supply on)

Carriage sensor connections failure

2. Check the 42V power connections on the Carriage Interconnect Board to make sure they are connected correctly, use the LED indicator in the Carriage Interconnect with the power supply On (refer to the diagnostics utility 2.3).

Main Power supply giving incorrect power

3. Check that the Main Power Supply is providing the correct voltage, if it is not check arrival of 42v to the Main Interconnect board from the Main Power Supply (on the Main interconnect Pin 1,2 J301). Note: Remove the Main Interconnect cover to access the connector.

   If the voltage arrives, but does not leave the Main Interconnect, go to the next step 5.

Failure in the Carriage Printhead Board

4. Replace the Carriage Printhead Interconnect ⇒page 749.

Failure of the Main Interconnect

5. Replace the Main Interconnect ⇒page 602.

Failure of the Main Power Supply.

6. Replace the Main Power Supply ⇒page 594.

SE Code: 02.4.n:10 - Print Head Interconnect Board Communication Fault

The full list of system error codes:

- **02.4.1:10**= Left (Yellow/Magenta, PH interconnect 1)
- **02.4.2:10**= Middle (Light Cyan/ Light Magenta, PH interconnect 2)
- **02.4.3:10**= Right (Cyan/Black, PH interconnect 3)

Description

The Carriage Printhead Interconnect s are directly linked with the Upper PCI Board via the trailing cables. This error means that there is failure in communicating with the Printhead Interconnect.

This error is detected by the Upper PCI Board.

Problem causes in order of importance

A. Trailing Cable incorrectly connected either on the Upper PCI board side or the Carriage Printhead Interconnect side

B. 42V not present in the Printhead Interconnect (power line)

C. Printhead Interconnect failure.

D. Failed Upper PCI board failure

E. Trailing Cable Failure

NOTE: Use utility 2.3 Main PSU on/off to power the printer to obtain the 42v to troubleshoot power supply issues.

Corrective action

Trailing Cable disconnected from the Upper side or the Carriage Printhead Interconnect side

1. Check the trailing cable connections of the Carriage Printhead Interconnect and the Upper PCI Board, we recommend disconnect the Trailing cables to clean the contacts and reconnect.

42V not present in Carriage Printhead Interconnect (power line)

2. Check the power LED in the Printhead interconnect (near the power cable connector), if the LED is off, verify that there is 42v power arriving to the Carriage Interconnect (LED).

3. If 42v does not arrive, check the power path from the Main PSU

Printhead Interconnect failure

4. Replace the Carriage Printhead Interconnect, ⇒page 749.

Upper PCI board failure

5. Replace the Upper PCI Board. ⇒ page 597.

Trailing Cable failure

6. Replace the complete TRS system, including the trailing cables.

SE Code: 03:10 - Main Power Supply unit Failure

Description

A critical error has occurred in the Main Power Supply. The Main Power Supply contains internal electronics which supply feedback to the Formatter Board about possible errors in the operation of the device. In case of internal failure, the unit triggers this signal activating the error in the Formatter Board.

Also the Formatter checks all the voltages received from the Main Power Supply. A failure in which will also trigger this error.

The non-arrival of 24v to the carriage will also trigger this error.

Problem causes in order of importance

A. Sporadic electrical failure on the Power supply unit or the Formatter Board

B. Power supply connections to the Formatter Board failure.

C. 42v power cable from the Main Interconnect to the Carriage is interrupted

D. Power supply failure

E. Formatter Board failure.

Corrective action

Sporadic electrical failure on the Power supply unit or the Formatter Board

1. Turn OFF the printer, wait 10 seconds, and switch On and restart the printer.

42v power cable from the Main Interconnect to the Carriage is interrupted

Check the 42 supply from the Main Interconnect to the Carriage (ensure the power path from the Main Power Supply to the Main Interconnect is ok, 42v leds light on the Main Interconnect). Check the 42v output from the Main Interconnect to the Carriage Interconnect (check the leds on the Carriage Interconnect). Check the 3 Carriage Interconnect to the Printhead Interconnect. Repair connection, or replace parts when appropriate. To activate the 42v, go to diagnostic 2.3.

Power supply connections to the Formatter Board failure

2. Turn the printer Off and check the cables from the Main Power Supply to the Formatter, Main Interconnect to Formatter.

3. Perform the 2.2.1 Electronics Control ⇒ page 356

Power supply failure

4. Replace the Main Power Supply ⇒page 594.

Formatter Board failure.

5. Replace the Formatter Board ⇒ page 591.

SE Code: 03.1:10 - Power supply 24/42 line power failure

Description

Main Power Supply 24/42 line power failure. The 42V and 24V lines from the Main Power Supply are connected directly to the Main Interconnect Board and from there distributed from here to the rest of the printer. This error is triggered by the Main Interconnect board.

Problem causes in order of importance

A. Sporadic electrical failure of the Main Power Supply

B. Power supply connections to the Main Interconnect Board Failure

C. Main Power Supply failure

D. Main Interconnect Board

Corrective action

Sporadic electrical failure of the Main Power Supply

1. Turn the printer Off and On.

Power supply connections to the Main Interconnect Board Failure

2. Turn the printer off and check the cables from the Main Power Supply to the Main Interconnect Board.

3. Perform the 2.2.1 Electronics Control diagnostic test ⇒ page 356.

Power supply failure

4. Replace the Main Power Supply ⇒ page 594.

Main Interconnect Board

5. Replace the Main Interconnect Board ⇒page 602.

SE Code: 03.2:10 - Power Supply Fan is stopped or burnt

Description

One or more of the main power supply fans has mechanically failed (blocked) or has electrically failed.

The fan should be rotating as soon as the printer is powered on. If the fan is not connected, the system error will not be displayed.

Problem causes in order of importance

A. Some thing is interfering with the rotation of the fan(s)

B. Main power supply unit has failed

Corrective action

Mechanical Interference with the fans

1. Check that nothing is preventing or blocking the fan(s) from rotating.

Main power supply has failed

2. Check that the fan cable is correctly connected and not damaged.

3. Replace the Main Power Supply Unit ⇒page 594.

SE Code: 05.1:10 - CPU Fan has failed mechanically or electrically

Description

The Formatter CPU Fan has failed. The Formatter Board contains a microprocessor with its own fan in order to maintain the temperature of the microprocessor with specific limits. The correct operation of this fan is critical for the correct operation of the microprocessor. The Formatter Board detects that the Formatter CPU Fan is not rotating and triggers the system error.

The fan should rotate as soon as the printer is turned on.

Problem causes in order of importance

A. Fan stopped due to a blockage of some kind (cables touching the fan, accumulation of dirt)

B. Fan cables disconnected or damaged.

C. Fan damaged.

D. Formatter Board failure.

Corrective action

Fan stopped due to a blockage of some kind

1. Check there is nothing preventing the fan from turning.

Fan cables disconnected or damaged.

2. Access the Formatter CPU Fan and verify that it is working correctly

3. Check the fan cable is correctly connected and is not damaged.

Fan damaged

4. Replace the Formatter fan ⇒ page 593

Formatter Board Failure

5. Replace the Formatter Board ⇒ page 591.

SE Code: 06:03 - Hard disk Failure: CRC error files from HD i corrupted

Description

An error has been detected in the Hard Disk System of the unit (CRC error files).

Problem causes in order of importance

A. Sporadic electrical failure has temporarily corrupted date in the hard disc

B. Hard disk drive failure

C. Hard Disk System or cable failure

D. Formatter Board failure

Corrective action

Sporadic electrical failure has temporarily corrupted data in the hard disc

1. OFF the printer, wait 10 seconds, and switch On and restart the printer.

Hard disk drive failure

2. Perform the Hard Disk drive test utility in diagnostics 2.2.2 Hard Disk Drive ⇒ page 362.

Hard Disk System or cable failure

3. Replace the Hard Disk System and cable ⇒ page 601.

Formatter Board failure

4. Replace the Formatter Board ⇒ page 591.

SE Code: 06:10 - Hard disk failure: Main NVM crash

Description

An error has been detected in the Hard Disk System of the unit (Main NVM crash)

Problem causes in order of importance

A. Sporadic electrical failure has corrupted date in the hard disc

B. Hard Disk System or cable failure

C. Formatter Board failure

Corrective action

Sporadic electrical failure has corrupted date in the hard disc

1. Turn OFF the printer, wait 10 seconds, and switch On and restart the printer.

Hard Disk System or cable failure

2. Replace the Hard Disk System and cable ⇒ page 601.

Formatter Board failure

3. Replace the Formatter Board ⇒ page 591.

SE Code: 07:10 - Main Interconnect Board Critical Error

Description

A critical error has occurred in the Main Interconnect Board. The error is detected and triggered in the Main Inter connect or the one of the PCI boards

Problem causes in order of importance

A. Cables between upper PCI board and the Main Interconnect and Lower PCI board and the Main Interconnect have been disconnected

B. Sporadic electrical failure

C. Failure of a remote controller board

D. Failure in connection of Main Interconnect Board

E. Main Interconnect Board

F. Failure in the Upper or Lower PCI boards, or cables between the Interconnect and PCI boards.

G. Failure of a remote controller board

Corrective action

Sporadic electrical failure

1. Disconnect and reconnect these cables. The cable from the Lower PCI board is connected to cable connector J307 on the Main Interconnect, while the cable from the Upper PCI board is connected to cable connector J306 on Main Interconnect.

2. Turn OFF the printer, wait 10 seconds, and switch On and restart the printer.

Failure of one of 3 Remote Controller Boards

3. Check the connections and the correct jumpers of the Left Front PPS Remote Controller Board, Left Rear PPS Remote Controller board and Capping Station Remote Controller Board.

Failure in connection of Main Interconnect Board

4. Check all the connections of the Main Interconnect Board ⇒ page 30. Activate the 24/42v power (diagnostics 2.3) and ensure all leds are working correctly on the Main Interconnect.

Main Interconnect Board

5. Replace the Main Interconnect Board ⇒ page 602.

Failure in the Upper or Lower PCI boards, or cables between the Interconnect and PCI boards.

6. Replace the PCI boards and cables connecting the PCI Boards with the Interconnect boards.

Failure of a remote controller board

7. Turn off the printer, disconnect the data cable going to the different remote controller board (left front & rear PPS remote controller board and capping station remote controller board).
8. Restart the printer: is the printer is going further?
9. -Check that the jumpers are correctly positioned on the different controller boards.

SE Code: 08:11 - Communication failure with front Panel

Description

The Front Panel contains its own electronics and firmware which communicates with the Formatter Board via the Main Interconnect Board (In the Main Interconnect Board there is a bypass of the communication lines down to the Formatter Board). This error is generated by the Front Panel itself indicating a failure in the communication with the Formatter Board, the Main Interconnect (i.e. unexpected time outs, incorrect signals, unexpected responses from the Formatter Board).

Therefore the most probable cause of this failure is that the Formatter Board has not correctly boot up and it is not responding to the signals sent by the Front Panel. Bear in mind that for the Front Panel to display this error it requires to be powered up. The printer will not work, and the Front Panel will display this message as soon as the printer is turned On.

Problem causes in order of importance

A. Sporadic electrical failure Front Panel - Formatter Board
B. Cable Front Panel - Main Interconnect Board failure
C. Cable Main Interconnect Board - Formatter Board failure
D. Formatter Board memory failure
E. Hard Disk System failure (OS not loaded, Firmware does not start)
F. Formatter Board (or microprocessor failure)
G. Formatter Board memory module
H. Front Panel failure
I. Main Interconnect Board failure
J. Upper PCI Board
K. Lower PCI Board
L. Main Power Supply

Corrective action

Sporadic electrical failure Front Panel - Formatter Board

1. Turn OFF the printer, wait 10 seconds, and switch On and restart the printer.

Cable Front Panel - Main Interconnect Board failure

2. Check the cable from the Front Panel to the Main Interconnect Board is not damaged and is correctly connected. For connection information, ⇒ page 12.

Cable Main Interconnect Board - Formatter Board failure

3. Check the cable from the Main Interconnect Board to the Formatter is not damaged and is correctly connected. For connection information, ⇒ page 28.

Formatter Board Memory failure

4. Check that the Memory module is connected to the Formatter Board.
5. Check that the Hard Drive System is connected to the Formatter Board.
6. Check that the Main Power Supply is connected to the Formatter Board.
7. Check that the Main Power Supply is connected to the Hard Drive.

Hard Disk System failure (OS not loaded, Firmware does not start)

8. Switch off printer and remove the Upper and Lower PCI Boards.
9. Start the printer in diagnostics mode.
10. Communicate from the IPS with the Formatter Board to ensure that the Formatter Board works correctly.Perform 2.2.3 IO Information diagnostic test ⇒ page 364. If it does not work correctly, replace the Formatter Board ⇒ page 591 and Hard Disk System ⇒ page 601.

Front Panel Failure

11. Replace the Front Panel and cables ⇒ page 586.

Main Interconnect Board Failure

12. Replace the Main Interconnect Board ⇒ page 602.

Upper PCI Board

13. Check the connections in the Upper PCI board
14. Replace the Upper PCI Board, ⇒ page 597.

Lower PCI Board

15. Check the connections in the Lower PCI board:
16. Replace the Lower PCI Board, ⇒ page 599.

Main Power Supply

17. Check the connections of the Main Power Supply.
18. Replace the Main Power Supply, ⇒ page 594.

SE Code: 09:10 - Vacuum Control System Failure

Description

There is a failure in the Vacuum Control System PCA

The Vacuum controller is located in the front right side of the Vacuum beam together with the OMAS Controller. The Vacuum system communicates with the Lower PCI Board via the Main Interconnect board where a failure in communication with the Vacuum Controller is detected.

Problem causes in order of importance

A. Sporadic electrical failure
B. Data Cable failure from the Main Interconnect to the Vacuum Controller
C. Power failure in the Vacuum Controller Board

D. Vacuum Controller Board failure

E. Connections from Lower PCI board to Main Interconnect failure.

F. Main Interconnect failure

G. Lower PCI board failure

Corrective action

Sporadic electrical failure

1. Turn OFF the printer, wait 10 seconds, and switch On and restart the printer.

Data Cable failure from the Main Interconnect to the Vacuum Controller

2. Check the LAN cable from the Main Interconnect (J2) to the Vacuum Controller board, ensure all the connections are correct, check cables and connections are not damaged, replace any that look damaged. A standard LAN cable can be used for troubleshooting purposes.

Power failure in the Vacuum Controller Board

3. Perform the Power diagnostics procedure 2.3 to supply 24v power. Check the power LEDs in the Vacuum Controller board have lights.
4. Check the power arrival of the 24v and 5v and ground in the power cable.
5. If power does not arrive check the power source in the Main interconnect (J17 (p3=5v, p4024v, p8=gnd).
6. If power does not leave the Main Interconnect with the PSU on (diagnostic test 2.3), replace the Main Interconnect (note: check for possible short circuits before replacing the board).
7. If power arrives and the data cable is ok, replace the Vacuum and OMAS Controller board.
8. If power leaves and does not arrive to the board, repair or replace the power cable.

Vacuum Controller Board failure

9. Replace the Vacuum and OMAS Controller Boards

Connections from Lower PCI board to Main Interconnect failure

10. Check the connections between the Lower PCI board and the Main Interconnect board

Main Interconnect failure

11. Replace the Main Interconnect Board ⇒ page 602.

Lower PCI board failure

12. Replace the Lower PCI Board, ⇒ page 599.

SE Code: 12.X:Y0 - Error in Switching to Roll to Roll or Roll to Free Fall configuration - ONLY LX800

Description

- Code: 12.1:00 - Switch to R2FF from R2R not possible (SILENT)
- Code: 12.2:00 - Switch to R2R from R2FF not possible (SILENT)

  The system will continue to operate in the previous configuration without doing the swap the error is silent and it will be simply be reported a message in the IPS, the machine will continue too be operative in the previous mode.

- Code: 12.3:10 – R2FF and R2R both relays CLOSED when trying to attempt a configuration (SEVERE)
- Code: 12.4:10 – R2FF and R2R both relays OPEN when trying to attempt a configuration (SEVERE)
- Code: 12.5:10 – Swapped feedback configuration when trying to attempt a R2FF or R2R configuration (SEVERE)

- The roll to Free Fall Rely control system has tried to switch the system to Roll to Free fall or Roll To Roll configuration and it has not been successful or the feedback of the status is incorrect.

Problem causes in order of importance

A. Sporadic Electrical Failure

B. Failure in the cables from the Main interconnect to Roll to Free fall rely control system

C. Faulty Roll to Free fall rely control system

D. Faulty Main Interconnect

Corrective action

Sporadic Electrical Failure

1. Switch Off the printer, wait 10 seconds, and switch On and restart the printer.

Failure in the cables from the Main interconnect to Roll to Free fall rely control system

2. Check all wiring from main interconnect to the roll to free fall rely control system, ensure all cables are correctly connected with no loose or damaged cables.
3. Run the diagnostics 3.10 to ensure the correct operation of the relay system.
4. Check the driver switches from J18 to the rely control system (24 volts and GND) in Pins 3(24V) & 8(GND) for R2R configuration. And pins 4(24V) & 9(GND) for R2FF configuration. Repair the wires if possible or replace the Main Interconnect or Rely control system as appropriate.
5. Check the status is correct by measuring the (closed when active) signal in the feedback lines J11 pin outs (pins 34&33 = Rely switch sensor mode R2FF, or pins 28&27 = Rely switch sensor mode R2R). Repair the wires if possible or replace the Main Interconnect or Rely control system as appropriate.

Faulty Roll to Free fall rely control system

6. Replace the Roll to Free Fall rely control system

Failed Main interconnect board

7. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 14.1:10 - Ecabinet internal fan failure

Description

The fan has failed in the Ecabinet.

The e-cabinet contains a cooling fan which expels air through the left top lateral side cover of the e-cabinet, regenerating the air and keeping the inside part of the box at an ambient temperature. The fan operates at 24v and the faulty signal is received in the Main Interconnect (J15, pins 13 & 14)

Problem causes in order of importance

A. False Fan failure detection

B. 24v power value not reaching the fan

C. Fan broken down/burnt out

Corrective action

One or more fans have failed

1. Check the fan to see if it is rotating. If it is rotating there may be false fan failure due to electrical reasons. Check the signal value received by the main interconnect (check fault signal electrical connections and flow). Check signal in the Main Interconnect, J15, pins 13 & 14 and check for any disconnected cables. Repair any connections or if the signal arrives and the fault signal continues, replace the Main Interconnect.

2. Check the arrival and supply of the 24v from the 24v secondary power supply.
3. Replace the failing fan

SE Code: 14.2:10 - Failure in the 3 phase contactor 24v Activation Line

Description

There is a failure in the 3 phase contactor activation line. The contactor provides 3 phase power to the power modules, the power fuses. The error is triggered when the printer tries to heat up but cannot due to lack of power from the 3 phase line (contactor closed). This error is detected in the Main Interconnect board (J15, pins 5, 6). The check is NOT done when the printer starts, but when the printer starts to print, as the heater and curing modules are activated.

Problem causes in order of importance

A. PID not powered up with single phase.
B. Power fuse blown, or power fuse bay has failed or is not correctly closed.
C. PID Controllers not correctly configured
D. KM 24 feed line Failure (GND, 24V cabling, PID failure)
E. Detection line failure (false detection)
F. Power Contactor failure (KM)

Corrective action

PID no power up with single phase

1. Check PID displays are ON (powered single phase), Ensure single phase power arrives to the PID controllers (refer to ⇒ page 85. If power arrives and the display is Off, replace PID Controller

Power fuse blown, or power fuse bay has failed or is not correctly closed.

2. Open e-cabinet ensure the power fuse bay is correctly closed
3. Check the Fuse blown indicator in the power fuse blocks (FH4&FH5, top red indicator square must be RED, we also recommend opening the fuse bay to ensure no fuses have been triggered, note power off e-cabinet to perform any operation inside), If fuse is blown, replace as appropriate. Check also that the cables FSx. connected to the alarm lines at the top of the fuse holders are correctly connected, and at the correct connectors, unless this system error will be displayed. Note. Before replacing the fuse make sure there is no short-circuit in the line of the fuse blown with GND and also with other lines. Repair the identified short circuit that caused the failure.

   How to check the lines in the power modules:

   Measure the resistance in the output connections (A2-B2-C2) of the power modules between these points and ground (any ground reference in the printer will do, such as the back plate of ecabinet), and the value should be infinite. Measure also the resistance value between (A2-B2, A2-C2, B2-C2), the value must be approximately 32 ohms (+/- 2 ohm) for the star configuration and for the delta configuration 16 ohms (+/- 2 ohm).

PID Controllers not correctly configured

4. Reconfigure PID controller, perform a factory reset ⇒ page 615.
5. On the PID controller, bypass FS3 with FS4 (connect both cables to the same point), and bypass FS4 with FS5 (connect both cables to the same point).
6. On the Fuse, connect directly FS1 with FS2 (or check at least that there is 0 Ohms when the fuse holder is closed with all fuses inside. Refer to the circuit diagrams ⇒ page 17.
7. On the Fuse, connect directly FS2 with FS3 (or check at least that there is 0 Ohms when the fuse holder is closed with all fuses inside. Refer to the circuit diagrams ⇒ page 17.

8. Check PID controller line output 2 is active. If it is not active, check configuration of PID controller ⇒ page 612. If configuration is OK replace the PID Controller

KM 24 feed line Failure (GND, 24V cabling, PID failure)

9. Perform the Power diagnostics procedure 2.3 to supply 24v power and arm the printer.
10. Check power arrival in A1 and A2 (24V) in the Km Line. If Power arrives: check failure 5 -> Detection line failure. If power does not arrive check with a multimeter the arrival or GND to A2 and then follow 24V line through the 2 PID controllers and then the power fuse blocks up until the safety relay. Repair failure as appropriate (could include the replacement of the PID controller, the power fuse block or safety relay).

Detection line failure

11. Perform the diagnostics procedure 2.4 E-cabinet fault signals, ensure to supply 24v power and arm the printer.
12. Check the signal from the detection cable to Main Interconnect (J15, pins 5,6). Replace cable or Main interconnect if signal does not arrive and system error is still triggered.

NOTE: The detector cable is connected to the terminal block TB5 lines KM+ & KM-. These two lines are short-circuited by the contactor when closed, contactor pins 1 & 2 cables KM+ & KM- from contactor to TB-5.

Power Contactor failure (KM)

13. If power arrives and 24v KM does not close, check continuity with 3 phase off).
14. Replace the KM Contactor

SE Code: 14.3:12 - 3 Phase voltage not configured

Description

The 3 phase voltage must be reconfigured if the printer is installed in a different country or location that has a different voltage. This can happen when having upgraded the firmware to version GF-BOB7.x or higher, or to version FG-BOO8x or higher, setting the 3 phase to a new setting (235V or 430V) and then having done a FW downgrade to FW version GF-BOB6.x or lower, or to version FG-BOO7x or lower.

Corrective action

1. Configure the voltage for the customer installation (0.5 3ph AC Volt Setup Menu)⇒ page 345.

SE Code: 14.4:12 - Generic comms error with temperature control modules

Description

The temperature control module PIDs do not seem to respond to the communications from the Formatter Board. This is a generic communication error.

The Formatter communicates with the PID controllers via the USB to RS-485 box connector, located on the rear side of the right E-cabinet door.

There is a USB cable from the formatter to the USB -RS485 box and then data cables from USB-RS485 box to the PID Controller which are connected in series with a Terminator resistor.

The error is reported by the Formatter Board. During start up, the printer sets up the PIDs configuration. When you print, the configuration is done at the start of the print and at the end of the print. While printing the configuration is checked every second, which means this error can be triggered at any moment

Problem causes in order of importance

A. Sporadic electrical failure between the Formatter Board and the PID controller.

B. Communication in RS485 bus (line, cable, module)

C. PID configuration failure.

D. Termination resistor failure.

E. PID Module failure

Corrective action

PID Module failure

1. Turn Off and On the printer.

Communication in RS485 bus (line, cable, module)

2. Check the connections USB-RS485 module to the PID controllers ensure all cables are correctly connected, cable and terminals integrity. Ensure BUS ending resistor is correctly installed. for configuration of the USB-RS485 box, refer page 611.

PID configuration failure.

3. Check the communication parameters of both PID modules ensure the address (1 PZ heating, 2 Curing), Baud Rate (19200bps), Parity (none), and ModBus type are correctly configured ⇒ page 611.

Termination resistor failure.

4. Check value of termination resistor, ensure there is no short circuit, 60 ohms when connected (120 resistor in the air). Repair any damages cables or change the resistor if required.

PID Module failure

5. If problem persist, disconnect the connection line from one module and check then check from the other. Replace the module causing the error in the communication line. To check communication to the heating or curing modules go to ⇒ page 447. and perform any test there.

SE Code: 14.5:12 - Comms failure with USB-RS485 converter

Description

The main electronics system (Formatter Board) is unable to initialize communications with any of the temperature controller PIDs through the USB-RS485 converter.

Problem causes in order of importance

A. Sporadic communication failure

B. Failure in the USB line (USB cable, USB-RS485 module, formatter failure)

C. USB-RS485 box configuration failure.

D. RS485 Bus comms failure.

E. Single phase line in not compliant

Corrective action

Sporadic communication failure

1. Switch Off the printer, wait 10 seconds, and switch On and restart the printer.
2. In case of a USB cable failure, change the USB cable from one USB port to the other, restart the printer.
3. Check the USB cable formatter-USB-RS485 converter box is connected at both ends, check USB-RS485 BOX LED status: Red LED in the box light on (USB Power 5V ON), the LED should be on 1 minute after the e-box is powered. If the light is off, replace the USB cable.
4. Replace USB cable
5. Replace USB-RS485 converter box,

6. Replace Formatter ⇒page 591.

USB-RS485 box configuration failure.

1. In case of a USB cable failure, change the USB cable from one USB port to the other, restart the printer.
2. Check the USB cable formatter-USB-RS485 converter box is connected at both ends, check USB-RS485 BOX LED status: Red LED in the box light on (USB Power 5V ON), the LED should be on 1 min after e-box is powered. If the light is off replace the USB cable.
3. Replace USB cable
4. Replace USB-RS485 converter box.
5. Replace Formatter ⇒page 591.

USB-RS485 box configuration failure.

6. Check configuration micro switches of the USB-RS485 converter box (1 and 2 OFF, 3 and 4 ON).

Communication in RS485 bus (line, cable, module)

7. Communication -> LEDs RX TX should flicker every second (around 2 minutes after power up). Change USB cable and Box if still fails replace Hard Disk Drive ⇒page 601. if still fails replace Formatter ⇒page 591.

Single phase line in not compliant

8. The printer should be protected from variations in line voltage, which are common in production printing environments. Lighting, line faults, or the power switching commonly found in machinery in factory environments can generate line transients that far exceed the peak value of the applied voltage. If not reduced, these micro-second pulses can disrupt system operation. In these cases it is recommended to include over-voltage (OVP) and transient protection on the power supply to the printer.

SE Code: 14.6:10 - Secondary 42V Power supply error

Description

The secondary 42V power supply provides the required 42 Volts power to the rear and front spindle motors, to the scan axis motor and the drive roller motor. Therefore without this power the printer is not able to function.

The actual detection is done in the Main Interconnect Board by capturing the bypass signal sent to the Printmech Board. The voltage is measured and if below a threshold the error is triggered.

The 42v secondary power supply is powered by the single AC power phase.

Problem causes in order of importance

A. False failure
B. Lack AC Single phase power in 42 secondary power supply/Main Interconnect detection/42v power path to Main Interconnect.
C. Power link in 42V secondary power supply (Check safety rely link)
D. Short circuit in any of the 42V supplied areas
E. Actual 42V secondary power supply failure

Corrective action

False failure

1. Turn OFF the printer, wait 10 seconds, and switch On and restart the printer.

Lack AC Power in 42 secondary power supply

2. Check the Power supply 42V with a multimeter directly in the secondary power supply terminals.

If it is giving 42V, check arrival of power in cables connected to J22/J23 on the Main Interconnect Board.

- If 42v power arrives, to the Main Interconnect, replace the Main Interconnect Board ⇒ page 602.
- If power does not arrive, check the power path 42v secondary PSU -> Main Interconnect, repair or replace cables or connections as appropriate.

If it is not giving 42v, check the single phase power arrival to Secondary power supply. If it does not arrive, check the single phase power path to 42v secondary power supply and repair as appropriate. Ensure correct connections for the 42v PSU and that the short-circuited signal arrives from the safety relay when active

Power link in 42V secondary power supply (Check safety rely link)

3. Check power link from safety rely to secondary 42V power supply (small black connector at the rear of the PSU) if failed repair. In order to work the link needs to be short-circuited the safety relay.

   The power link enables the secondary 42v power supply, once the safety relay is closed, and the line is short-circuited.

Short circuit in any of the 42V supplied areas

4. Check for possible short-circuits in any of the feed areas. Disconnect all connections from 42V power supply and verify if it works with no connections which would be the indicator or short circuit. Reconnect one-by-one to identify the area and repair as appropriate.

Actual 42V secondary power

5. Replace the Main Power Supply ⇒page 594.

SE Code: 14.7:10 - Secondary 24V Power supply error

Description

The 24V secondary power supply in the e-cabinet is not supplying the 24V correctly or is not detected. THese 24v lines are mainly used to power the fans in the Curing module

Problem causes in order of importance

A. False failure

B. Lack of Single Phase AC Power in 24 secondary power supply

C. Power signal 24V secondary power supply - Main Interconnect Board

D. Short circuit in any of the 24V supplied areas

E. Actual 24V secondary power

Corrective action

False failure

1. Turn OFF the printer, wait 10 seconds, and switch On and restart the printer.

Lack of Single Phase AC Power in 24 secondary power supply

2. Check Single phase power arrival to Secondary power supply, if it does not arrive, check the power path single phase - secondary 24v PSU and repair as appropriate.

Power signal 24V secondary power supply - Main Interconnect Board

3. Check 24V line secondary power supply to main interconnect, the connection goes through the cable that feeds the power signal to the curing fans. connector in Main Interconnect J15. Ensure the 24v arrives to the Main Interconnect. If signal arrives replace the Main Interconnect, if the signal does not arrive, follow the cable and replace as appropriate.

Short circuit in any of the 24V supplied areas

4. Check for possible short-circuits in any of the feed areas (curing fans). Disconnect all connections from 24V power supply and verify if the PSU works with no connections, this would indicate a short-circuit. Follow the connections of the fans, reconnecting on--by-one and repair as appropriate the cables or the components (fans)

24V secondary power error

5. Replace the 24V secondary Power supply⇒page 627.

SE Code: 14.8:10 - Emergency stop pushed

Description

One of the four emergency stop buttons was pressed, or the pressed detection signal has been triggered The four emergency stop buttons are connected in series. They complete a 24v path which supplies 24v to the safety relay in the ecabinet. This power path has a fuse. In the Ecabinet (FH11) the signal detection is done in the Main Interconnect (J15, Pin10 [24v], pin 9 [gnd]) All the e-stops released maintain the path closed, any e-stops pushed (or cables that have failed) opens the path

Problem causes in order of importance

A. Any of the emergency stop button pressed

B. False emergency stop detection

C. Any of the cable links between emergency stops broken

D. Emergency stop cable line connection in the power cabinet broken (no 24V out / not arrival 24V)

Corrective action

Any of the emergency stop button pressed

1. Ensure all four emergency stop buttons are disengaged; restart the printer.

False emergency stop detection

2. Open ecabinet and check safety relay power light is on.

3. If it is on, check the connection and cable in TB5 (terminal block area in the E-Cabinet) to Main Interconnect Board. J15 pin 10 (5th Row) 24v and pin 9 (gnd). If detections arrive correctly to the pins replace the Main Interconnect. If not follow the path from the connection blocks in the ecabinet to the Main Interconnect and repair as appropriate.

   Note: Use the diagnostic 2.3 to activate the 24v and proceed with any troubleshooting, use the diagnostic selection 2.4 to check the printer´s status of the emergency stop line.

Any of the cable links between emergency stops broken

4. With all the emergency stops released, check continuity between the two termination points in the e-cabinet. Emergency stop + and emergency stop - lines. If there is no continuity, there is a failure in the emergency stop line or the emergency stop units.

5. Ensure 24V in the front right emergency stop and go from emergency stop to emergency stop to detect the location of the failure. Repair the line as appropriate by repairing cable or replacing the emergency stop unit.

Emergency stop cable line connection in the power cabinet broken (no 24V in or out)

6. Check the 24V arrival (from the Main Interconnect) fuse in the e-cabinet FH-11. Check cable integrity from e-cabinet to the e-stops TB5 (terminal block connections in the E-Cabinet) cables e-stops+, E-stop--.

No connection from Ecabinet to Main Interconnect Board or connector in the Main Interconnect Board has failed

7. Check the connection from the power cabinet to the Main Interconnect Board.

8. Make sure power is leaving the Main Interconnect Board.

Main Interconnect Board internal failure

9. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 14.9:10 - 24V Ecabinet Line error

Description

The 24Volts from the e-box to the power cabinet are not supplied as expected. The e-cabinet electrical system require 24V to operate.

The 24v in the e-Cabinet come from the main power supply via the Main Interconnect (J15) to the E-cabinet (fuse FH11).

Problem causes in order of importance

A. Main Power Supply output not active

B. False lack of power detection (cable, connections, Main Interconnect Board)

C. Fuse on the Ecabinet blown

D. No Connection between the Main Interconnect Board and the Ecabinet

E. Main Interconnect Board failure

Corrective action

Main Power Supply output not active

1. Switch on the Main Power Supply in diagnostics mode (utility 2.3) and make sure the 24/42 power supply line is active (green light in the Main Power Supply). If the Main Power Supply does not become active after using the 2.3 utility, replace the Main Power Supply.

False lack of power detection (cable, connections, Main Interconnect Board)

2. Open the e-cabinet and check the safety relay power light is off (24v not arriving)
3. Use the diagnostic utility 2.4 and verify the 24v line is off.
4. Switch on the 24v line (diagnostic 2.3)
5. Check again the status of the 24v line, use the diagnostic utility 2.4. If it does not change to ON when 24v is active check the cable from the E-cabinet to the Main Interconnect Board (J15). Verify power at pin 16 24V detection. Ensure cable connection in the e-cabinet and pin integrity. If the cable is failed, repair the cable or replace the cable (Q6703-50047).

   If 24V signal arrives to the Main Interconnect pin when 24v is active, replace the Main Interconnect Board ⇒ page 602.

Fuse on the Ecabinet has blown

6. Check fuse compartment for the e-cabinet power input (FH11, 2A fuse).

NOTE: Before replacing the fuse, check for a possible short circuit between the 24V line and the ground. If short circuit is found, follow the electrical diagram to repair ⇒page 18.

Power path from Main Interconnect Board to Ecabinet

7. Check output of 24V power from Main Interconnect Board J18 (Pin 2 array) 24V to the GND.
8. If there is no power open the Main Interconnect Board cover and check the 24V power led indicator.
9. If the LED is off, check the power arrival to Main Interconnect Board from the Main Power Supply and ensure that the cable is correctly connected and has pin integrity.

If the LED is off, ensure the MAin PSU 24/42v power light is on. If it is off turn it on. Enter in the Utility 2.3: If the main PSU is on, check the power connector, if 24v, arrive go to the next step

Main Interconnect Board fault

10. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 15.1:01/16.1:01 - Heating/Curing System warm up timeout

Description

- **15.1:01** = Heating
- **16.1:01** = Curing

The printer is unable to warm up to its working temperature.

OFF -> Warm up stand by 45 degrees -> Stand by (undefined amount of time) -> Warm up printing (i.e 55 degrees Heating, 85 degrees Curing) -> Printing (maintains the target temperature)

Problem causes in order of importance

A. 3 phase power disconnected or fuse blown

B. Cold environment

C. Substrate transparent or reflecting IR signal, from the IR sensor.

D. Hole in the Substrate

E. Dirty Temperature Sensor.

F. Complete failure of temperature sensor or cable signal error

G. Failure of temperature sensor but signal is in working range.

H. Error in control cabling signal

I. Power module failure.

J. Incorrect 3 phase voltage configuration

K. Failure of the cabling of Lamps, Power line or thermostat failure in the temperature sensor.

L. Lamp failure

M. PID controller address swapped between heating and curing

Corrective action

3 phase power disconnected

1. Check 3 phase power lights on the side of the e-cabinet if they are off, check 3 phase power path (Installation, cabling, circuit breaker, 3phase filter, main switch). Check the line of the power fuse. If they are on ensure ACB-3 power switch is active. If it is active check 3 phase power path. Measure AC power in components with a multimeter.

   WARNING: AC Power measurements must only be undertaken by authorized personnel.

Cold environment

2. Check the environmental specifications in the *Users Guide*. It could simply be too cold for the correct operation of the printer.

Substrate transparent or reflecting IR signal, from the IR sensor.

3. Check that the media is not transparent or reflecting back to the temperature sensor. This would cause false readings.

Hole in Substrate

4. Make sure there is no hole at the IR sensor measuring position in the substrate. If there is a hole, advance the media 26 inches to ensure the IR sensor beam can detect the substrate (Required during the warm up process).

Dirty Temperature Sensor

5. Perform the IR temperature sensor cleaning operation from the User's manual. To check if the temperature sensor is not dirty place white piece of paper and ensure ambient temperature. Please adhere to safety precautions when operating in the heaters area.

6. Perform 8.3 Heating ⇒ page 449 and 8.4 Curing ⇒ page 457 tests to check the operation of the temperature sensor

Error in temperature sensor or cabling signal failure

7. Check with a multimeter the 24V power feed of the temperature sensor (Db9 at the back of the e-cabinet pins 3,4 and 7&8) check reading signal in milli-volts at the arrival in the PID controller (S1 & R1resolution >10mv per celsius degree). If power is not supplied, check power line feed from the main interconnect and the cable. If Signal does not correctly arrive, check connections in the connections box next to the sensors. Replace cables and sensors if required. Note: Try swapping temperature sensors for troubleshooting purposes.).

Error in temperature sensor but signal is in working range

8. Sensor is not pointing the appropriate place, ensure sensor is correctly installed and with no interference in the sensor path, correct the sensor's position or replace the sensor ⇒ page 662.

Error in control cabling signal

9. Perform Heating and Curing diagnostics test ⇒page 818 and set either the Heating or the Curing to operating temperature (55c or 85c) check the output signal in the PID display (marked in red with a little 1 in top left corner in the front display) blinks with the same frequency as the red light indicator in the power module. Check cable signal if required to ensure there is no cable failure, repair the cables if there are or replace the following as appropriate:

    - Replace PID controller ⇒ page 611.
    - Power module ⇒ page 618.

Power module failure.

10. Check power output in the power module when the LED is On. Set the system in the diagnostics menu to 'Stand-by' to operate and perform the troubleshooting. NOTE: OPERATE POWER LINES WITH EXTREME CAUTION AND ONLY BY QUALIFIED PERSONEL

Incorrect 3 phase voltage configuration

11. Check the configuration of 3 phase line in the printer to ensure the correct power assigned. Check the correct delta/star configuration of the printer (Installation Guide)

Failure of the cabling of Lamps, Power line or thermostat failure in the temperature sensor.

12. Check power arrival to lamps, including check of the bypass in the temperature thermostat replace thermostat or repair cables as appropriate.

Lamp failure

13. If power arrives to the lamp and lamp does not warm up. Replace the lamps. (check lamp is in open circuit). Note: The lamps are a resistor of 16 Ohms

PID controller address swapped between heating and curing

14. Ensure the configuration address for Heating is '1' and the address for Curing is '2' ⇒ page 612.

SE Code: 15.2:12/16.2:12 - System cool down timeout

Description

- **15.2:12** = Heating

- **16.2:12** = Curing

The printer is unable to cool down to its working temperature.

Problem causes in order of importance

A. The air intake of the heater fans is blocked (particularly in the temperature sensor area)

B. Ambient air too hot or something heating the print zone (i.e spot lights, heating system, etc)

C. Temperature controller error (output signal on)

D. Power module error (Internal short-circuit system stays on permanently).

E. Incorrect configuration of cables.

F. Array of fans not correctly working.

Corrective action

The air intake of the heater fans is blocked

1. Ensure there is nothing blocking the intake of the fans.
2. Check the environmental specifications in the User's Guide. It could simply be too hot.

Ambient air too hot or something heating the print zone (i.e spot lights, heating system, etc)

3. Make sure the printer is operating at specified ambient temperature. Ensure there is no external heat providers to the system like lights or external heaters (especially in the temperature sensor reading areas).

Temperature controller error (output signal on)

4. Ensure the control signal from temperature controller to the power module is not permanently ON (LED indicated). Make sure the temperature is OFF or on Stand-by and the temperature is the appropriate one for the target and for the reading. Check cabling and repair if required. If permanently on disconnect system from power modules or cabling from temperature controllers, ensure there is no short-circuit and the output value of temperature controller, if there is failure replace the Temperature Module ⇒page 611.

Power module error (Internal short-circuit system stays on permanently).

5. Check the power output sent from the power module in AC power. The power system should provide power according to the control signal indication in the phases. Replace the Power module if required ⇒page 618

Incorrect configuration of cables

6. Check the cable configuration for the print zone module, ensure the star triangle configuration is correctly configured and cables are correctly connected.

Array of fans not correctly working.

7. Check all fans are operational (if they are not connected they will not trigger a system error)

SE Code: 15.3:12/16.3:12 - Print Zone Heating & Curing HIGH temperature error

Description

- **15.3:12** = Heating
- **16.3:12** = Curing

Temperature in the module has exceed the upper limit, it is not safe to continue with printer operation.

Problem causes in order of importance

A. Temperature sensor failure (correctly positioned reflectors, abnormal reflection from the Substrate or Carriage when passing, damage to the Carriage cover)

B. Power module error (Internal short-circuit so the system stays on permanently)

C. Temperature controller failure (or incorrect configuration)

Corrective action

Temperature sensor failure

1. Place a piece of paper with an ambient temperature under the temperature sensors, check the values are reasonable. Check the alignment of the sensor, ensure the sensor is correctly positioned. Check the carriage cover is not damaged.
2. Replace the Temperature Sensor ⇒ page 840.

Power module failure

3. Check the Heating and Curing module with multimeter and ensure there is no short circuit. Replace modules as appropriate.

PID controller failure (or incorrect configuration)

4. Internal error in the temperature controller, restart the printer if the system error still occurs, replace the temperature controller ⇒ page 611.

SE Code: 15.4:12/16.4:12 - Print Zone Heating and Curing LOW temperature error

Description

- **15.4:12**= Heating
- **16.4:12**= Curing

Temperature in the module has exceeded the lower limit.

Problem causes in order of importance

A. Environmental temperature or substrate temperature is too low

B. IR Temperature sensor failure

C. Power module failure (short circuit, the power stays permanently on)

D. Temperature controller failure (or incorrect configuration).

E. Environmental temperature or substrate temperature is too low

Corrective action

Environmental temperature or substrate temperature is too low

1. Ensure the environmental temperature is within the operating specifications.

IR Temperature sensor failure

2. Place a piece of paper with an ambient temperature under the temperature sensors, check the values are reasonable. Check the alignment of the sensor, ensure the sensor is correctly positioned. Check the carriage cover is not damaged.
3. Replace the IR Temperature Sensor ⇒page 840 or ⇒ page 830.

Power module failure

4. Replace the Heating Power Module or Curing Power Module ⇒ page 618.

Temperature controller failure (or incorrect configuration)

5. Perform the Heating and Curing check ⇒page 447.
6. Replace the Heating/Curing Temperature Controller ⇒page 611.

SE Code: 15.5:12/16.5:12 - Heating & Curing temp control module comms error

Description

- **15.5:12**= Heating
- **16.5:12**= Curing

Communication error with the PID temperature controller: TIMEOUT, many bad CRCs, frame error, etc. USB-RS485 converter works OK, but there is a failure in the communication between the modules.

Problem causes in order of importance

A. Sporadic communication failure

B. Incorrect configuration of the temperature module

C. Incorrect cabling in the temperature controller, or terminator resistor failure.

D. Connections to controller box failure

E. PID controller failure (or incorrect configuration) failure of communication cable between PID controller & USB-RS485 converter.

Corrective action

Sporadic communication failure

1. Turn Off and On the printer

Incorrect configuration of the temperature module

2. Check PID configuration of the heating PID module. Modbus address 1 or 2 as appropriate and baud rate 19200. Parity None. If the configuration is incorrect - redo the configuration and reboot the printer for changes to update. If configuration is correct, (check the configuration of the other controller: address 2 if the other one was 1 and the other parameters, if incorrect place the correct configuration in the other controller and reboot the printer).

NOTE: To operate the IR temperature sensors the 24v line must be active (in printer mode this is automatically done, but in diagnostics mode the 24v line must to activated with the 2.3 diagnostics test). The actual temperature captured by the sensor will constantly be displayed in the PID temperature controller display located on the door of the power cabinet.

Incorrect cabling in the temperature controller, or terminator resistor failure.

3. Check the wiring and terminal resistor on the second PID controller (note the line should have about 60 Ohms between the two lines.

Connections to controller box failure

4. Ensure correct connections in terminal blocks and cable integrity

PID controller failure (or incorrect configuration) failure of communication cable between PID controller & USB-RS485 converter.

5. If the failure is detected by the controller itself, the module will display an error message. If the problem is the cabling of the PID or the communication box.

6. Replace the Heating/Curing Temperature Controller ⇒page 611.

SE Code: 15.6:10/16.6:10 - Heating and Curing temp controller internal error

Description

- **15.6:10**= Heating
- **16.6:10**= Curing

Print Zone heating and Curing temperature controller internal error. The module has detected a critical internal error.

Problem causes in order of importance

A. PID controller internal failure

Corrective action

PID controller internal failure

1. Replace the Heating/Curing Temperature Controller ⇒page 611.

SE Code: 15.7:10/16.7:10 - Heating & Curing Lower Temp sensor error

Description

- **15.7:10**= Heating
- **16.7:10**= Curing

The PID controller reports error in input signal arriving from the Temperature Sensor. The temperature must be between 10 and 120 degrees to be ok

Problem causes in order of importance

A. Dirty Temperature sensor

B. Ambient temperature or paper temperature below 5 degrees

C. The temperature sensor line has a failure

D. PID controller failure

E. PID Controller Cables to the Temperature Sensor

Corrective action

Dirty Temperature sensor

1. Clean the sensor lens

Ambient temperature or paper temperature below 10 degrees

2. Ensure the printer is operating within the temperature specifications.

Dirty Temperature sensor

3. Clean the sensor lens

The temperature sensor line has a failure

1. Check the voltage received in the connection points of the controller (S1 and R1).
2. Replace the Temperature Sensor ⇒page 840.
3. Check the temperature sensor is supplied with 24V power on the ecabinet side DB9 connector, pins 3R4 (24v power/GND) for heating temperature sensor. For curing temperature sensor pins 7 & 8 (24v power/GND). Note The 24v are supplied by the main Interconnect J15, pins 32/31. Check the power output from the Main Interconnect is ok, if not replace the Main Interconnect or replace cables and connectors as appropriate.

PID controller failure

4. If the voltage received is correct, swap the connections in PID controllers for troubleshooting purposes, if there is a failure replace the PID controller.

PID Controller Cable failure

5. Check the cables are connected correctly, replace them if they are damaged.

SE Code: 15.8:12 & 16.8:12 - Heating & Curing system power error

Description

- **15.8:12**= Heating
- **16.8:12**= Curing

There is mismatch between temperature as seen by the Temperature Sensor and the power the module is delivering, either:

- Temperature below expected value
- Output power too high

Problem causes in order of importance

A. 3 phase power disconnected or fuse blown

B. Cold environment

C. Incorrect 3 phase voltage configuration

D. Substrate transparent or reflecting IR signal, from the IR sensor.

E. Hole in the Substrate

F. Dirty Temperature Sensor.

G. Complete failure of temperature sensor or cable signal error

H. Failure of temperature sensor but signal is in working range.

I. Error in control cabling signal

J. Power module failure.

K. Failure of the cabling of Lamps, Power line or thermostat failure in the temperature sensor.

L. Lamp failure

M. PID controller address swapped between heating and curing

Corrective action

3 phase power disconnected

1. Check power lights on the side of the e-cabinet if they are off, check 3 phase power path (Installation, cabling, circuit breaker ACB-3, 3phase filter, main switch). Check the line of the power fuse (KM contactor active)

Cold environment

2. Check the environmental specifications in the *Users Guide*. It could simply be too cold or too hot for the correct operation of the printer.

Incorrect 3 phase voltage configuration

3. Check the configuration of 3 phase line in the printer to ensure the correct power assigned. Check the correct delta/star configuration of the printer.

Substrate transparent or reflecting IR signal, from the IR sensor.

4. Check that the media is not transparent or reflecting back to the temperature sensor. This would cause false readings.

Hole in Substrate

5. Make sure there is no hole at the IR sensor measuring position in the substrate. If there is a hole, advance the media 26 inches to ensure the IR sensor beam can detect the substrate (Required during the warm up process).

Dirty Temperature Sensor

6. Perform the cleaning operation from the User's manual. To check if the temperature sensor is not dirty place white piece of paper and ensure ambient temperature. Please adhere to safety precautions when operating in the heaters area.

Error in temperature sensor or cabling signal failure

7. Check with a multimeter the 24V power feed of the temperature sensor (Db9 at the back of the e-cabinet pins 3&4 and 7&8) check signal in mv at the arrival in the PID controller (S1 & R1 -10mv pwer celsius degree). If power is not supplied, check power line feed from the main interconnect and the cable. If Signal does not correctly arrive, check connections in the connections next to the sensors. Replace cabled and sensors if required. Note: Try swapping temperature sensors for troubleshooting purposes). Repair cabling system or replace the module if required

Error in temperature sensor but signal is in working range

8. Sensor is not pointing the appropriate place, ensure sensor is correctly installed and with no interference in the sensor path, correct the sensor's position or replace the sensor if required⇒ page 662.

Error in control cabling signal

9. Run diagnostics mode and set the system in stand by (45 degrees in both systems) check signal LEDs in PID (marked with a little 1 in top left corner in red in front display) blinks with the same frequency as the red light indicator in the power mode. Check cables signal as appropriate to ensure there is no cable failure, if there is a failure replace the following as appropriate:

    - Replace PID controller ⇒ page 611.
    - Power module ⇒ page 618.

Power module failure.

10. Check power output in the power module when the LED is On. Set the system in the diagnostics menu to 'Stand-by' to operate and perform the troubleshooting. NOTE: OPERATE POWER LINES WITH EXTREME CAUTION AND ONLY BY QUALIFIED PERSONEL

Failure of the cabling of Lamps, Power line or thermostat failure in the temperature sensor.

11. Check power arrival to lamps, including check of the bypass in the temperature thermostat replace thermostat or repair cables as appropriate.

Lamp failure

12. If power arrives to the lamp and lamp does not warm up. Replace the lamps. (check lamp is in open circuit).

PID controller address swapped between heating and curing

13. Ensure the address for Heating is '1' and the address for Curing is '2'.

SE Code: 15.9:10, 16.10:10 - Heating & Curing PID Configuration error

Description

- **15.9:10**= Heating
- **16.10:10**= Curing

The PID Controller is detecting a configuration error which does not enable it to be set up as the commands set from the Formatter require.

Problem causes in order of importance

A. Incorrect PID configuration

B. Faulty PID module

Corrective action

Incorrect PID configuration

1. Perform again the configuration of the PID module ⇒ page 464.
2. Perform the 8.5.1 Heating Calibration, see page 464, for the 8.5.2 Curing Calibration see page 465.

Faulty PID module

3. Replace the PID Controller ⇒ page 611.

SE Code: 15.11:10 & 16.11:10 - Temperature Controller calibration failure (ADVISORY) - LX800 only

Description

The heating and curing temperature controllers are equipped with a current sensor in the LX 800 to measure the current in the one of the phases and adapt the power provided to the system in the warm up phase. The current sensors – controllers pair need to be calibrated in manufacturing to provide accurate measures. These system errors are triggered whenever the calibration values from the controller memory and are not accessible or there is any indirect failure in the system.

In this case the printer will print with Power Adjust algorithm disabled, for installations with 3 Phase AC Input Voltage at nominal values no issue will be observed.

If the 3 Phase AC Input voltage is below a nominal value some power issues may occur:

- A longer time to warm up
- Power error in fast printmodes with high density plots: use printmodes with more passes, lower airflow in curing fans
- Power errors in some media types (textiles, backlits, etc): use printmodes with more passes, lower airflow in curing fans.

Problem causes in order of importance

A. Incorrect calibration values stored in the Temperature controller

B. Faulty Temperature controller/ Current sensor pair

Corrective action

Incorrect calibration values stored in the Temperature controller

1. Check in either the Service Plot or in Diagnostics menus '8.5.1. Heating Current Calib' ⇒ that the Current Offset is not zero (take care not to modify value in error):
   - Check "Current Offset" value is within valid range [-1.0 .. 1.0].
   - Check "Current Scaling" value is within valid range [47.0 .. 57.0].
2. If any of the parameters are out of a valid range, check the value of the current sensor parameters at the current transformer and enter values shown in the Diagnostic menu under Current Transformer.
3. If any calibration is still out of a valid range, replace PID Controller ⇒ page 611 & Current Transformer.

Faulty Temperature controller/ Current sensor pair

4. Replace the current sensor and temperature controller pair in the machine. The new pair will already be correctly calibrated with the calibration parameters already stored in the internal controller memory.

SE Code: 16.9:10 - Curing System Fans Failure

Description

One or more curing fans are failing (fault signal activated). Each of the 21 Curing Fans have a fault signal which is activated when the fan is powered but there is no rotation in the blades. If the fan is not connected there will be no identification of the failure.

Problem causes in order of importance

A. Fan(s) burnt-out

B. Fan(s) broken down

C. Fan(s) blocked

D. False Fan failure detection

Corrective action

One or more fans have failed

1. Check the front fan array to see if all the fans are rotating. If all fans are rotating there may be false fan failure due to electrical reasons or due to a failed fan. Check the signal value received by the main interconnect (check fault signal electrical connections and flow). Check the signal on J15 pins 17 & 18: 24v line down =ok, 24v line up =fan fault. Check for any disconnected cables. Try disconnecting fans until finding the failed fan reporting the error.
2. Replace the failing fan ⇒page 828.
3. If it is a false fan detection replace Main interconnect ⇒page 602.

SE Code: 19.1:10 - Service Station Remote controller communication failure

Description

The Lower PCI Board has failed to communicate with the service station remote controller via the Main Interconnect or the remote controller is reporting an error condition.

The remote controllers are based on an IC with the drivers to perform the appropriate motor movements, register the encoder signals and receive the different Input/output signals. These reported signals or motor commands are monitored and controlled from the PCI boards via communication Bus which links both boards via the Main Interconnect Board. In the BUS, the remote controller board identifies itself with a particular ID that is set with jumpers in the main connector (J4).

The communication bus is unique for both the PPS remote control boards and the one remote control board that is used as a bridge for the other board communication.

Problem causes in order of importance

A. Sporadic firmware error

B. Remote controller not powered

C. Data cables LAN Cable connections (remote controller side and Main Interconnect Board side)

D. Configuration cable (J4) connection or integrity

E. Termination jumpers with appropriate configuration

F. Remote controller failure

G. Main interconnect board failure

H. Lower PCI board failure.

I. Firmware failure

Corrective action

Sporadic firmware error

1. Switch single phase line off (use the circuit breaker 1), wait 10 seconds, switch back on and reset the printer.

Remote controller not powered

2. Access to the Service Station remote controller and check the 24V power LED. If led of check power connector (24V IN). If Led if off check power arrival to the Main Interconnect Board. If 24V power arrive replace the remote controller board. If 24V do not arrive check 24V power output from J16 Pin 4. If power do not leave check power arrival to Main Interconnect Board (remove the lid and check pwr 24V power led). replace Main Interconnect Board if failure ⇒ page 602.

Data cables LAN Cable connections (remote controller side and Main Interconnect Board side)

3. Check LAN data cable connection in the remote controller and Main Interconnect Board, ensure cable is correctly connected at both ends if damage replace cables.

Configuration cable (J4) connection or integrity

4. Ensure J4 cable is well connected and pins are correctly installed in the connector.

Termination jumpers with appropriate configuration

5. Ensure termination jumpers are correctly configured for this board (2 left jumpers installed)

Remote controller failure

6. Replace the Remote Controller Board (service station) ⇒page 728.

Main interconnect board failure

7. Replace the Main Interconnect Board⇒ page 602.

Lower PCI board failure.

8. Replace the Lower PCI Board, ⇒ page 599.

Firmware failure

9. Reinstall the firmware.

SE Code: 19.2:10 - 19.3:10 - PPS Left front/rear Remote controller comms error

Description

This is a failure communicating with the identified remote controller board

- **19.2:10**= Left Front PPS Remote Controller Board
- **19.3:10**= Left Rear PPS Remote Controller Board

The Upper PCI board has failed to communicate with the PPS left/right remote controller via the Main Interconnect or the remote controller is reporting an error condition.

The remote controllers are based on an IC with drivers to perform the appropriate motor movements, register the encoder signals, and receive the different input/output signals (i.e PPS low position switch). These reported signals or motor commands are monitored and controlled from the PCI boards via communication BUS which links both boards via the Main Interconnect Board. In the BUS, the Remote controller identifies itself with a particular ID which is set with jumpers in the main connector (J4).

The communication bus is unique for both the PPS remote control boards and one remote control board is used as a bridge for the other board communication

Problem causes in order of importance

A. Sporadic firmware error

B. Remote controller not powered

C. Data cables LAN Cable connections (remote controller side and Main Interconnect Board side)

D. Configuration cable (J4) connection or integrity

E. Termination jumpers with appropriate configuration

F. Remote controller failure

G. Main Interconnect Board failure

H. Upper PCI board failure.

I. Firmware failure

Corrective action

Sporadic firmware error

1. Switch single phase line off (use the circuit breaker 1), wait 10 seconds, switch back on and reset the printer.

Remote controller not powered

2. Access to the failing PPS remote controller (activate the 24v line (diagnostics 2.3) and check the 24V power LED (24V IN).

Main Interconnect Board failure

3. If the LED is off, check power arrival in the cable from the Main Interconnect Board.
4. If 24V power arrives, replace the remote controller board ⇒ page 739.
5. If 24V does not arrive, check 24V power output from J19 Pin 3,4 in the Main Interconnect.
6. If 24V power does not leave the Main Interconnect board, check power arrival to Main Interconnect Board (remove the lid Main Interconnect board and check pwr 24V power led). If the failure is with the Main Interconnect Board, replace the Main Interconnect Board ⇒ page 602.

Data cables LAN Cable connections (remote controller side and Main Interconnect Board side)

7. Check LAN data cable connection in the remote controller and Main Interconnect Board, ensure cable is correctly connected at both ends if damage replace cables. Check data link between both Remote Control boards, ensure the correct installation of the bus terminal jumpers.

Configuration cable (J4) connection or integrity

8. Ensure J4 cable is connected and pins are correctly installed in the connector (as this cable sets the id of the boards in the bus).

Termination jumpers with appropriate configuration

9. Ensure termination jumpers are correctly configured for this board (2 left jumpers installed), for the bus ending board (only 1 lan cable), no jumpers for the intermediate board (two lan cables)

Lower PCI board failure.

10. Replace the Lower PCI Board ⇒ page 599.

Sporadic firmware error

11. Reinstall the firmware.

SE Code: 21:02 - Moment of the Service Station is out of the acceptable range

Description

The printer detects that, when initializing the printer, the total movement of the service station is too high, outside of the acceptable range of the printer.

Problem cause

The Service Station calibration has not been performed or has been incorrectly calibrated

Corrective action

- Recalibrate the Service Station using the utility 5.3.7 Back and Elast from diagnostic ⇒page 424 and 5.3.4 Service Station Cal (from diagnostic mode) ⇒page 421.
- If after performing the above the error persists, perform the following:
  1. Perform the 5.3.8 Ser. Sta. reset zero rom diagnostics menu ⇒page 424.
  2. Calibrate the X and Y position of the service station using the procedure 5.3.4 Service Station Cal from diagnostic menu ⇒page 421.
  3. Perform the calibration the 4.5.2 Ser. Sta Compensation from service menu ⇒page 510.
- Once all of the settings of the Service Station have been reset and recalibrated, if the error persists, this would indicate a mechanical failure somewhere in the Service Station assembly. Go to the section that describes the elements of the Service Station in chapter 1. At the end of this section all the relevant test, utilities and calibrations are listed, refer to ⇒page 60.

SE Code: 21.1:03 - Service Station Servo Shutdown

Description

An error in the close loop control (Servo control) of the service station shuttle system has occurred. This error indicates that the service station motor is not moving as expected in a close loop control.

The servo controlled movements consist of applying a specific PWM to a motor (a certain amount of energy) and receiving the feedback of an encoder about the actual movement of the motor after applying that specific PWM.

Therefore, if after applying a specific PWM the encoder does not register the expected number of encoder counts (movement), the system will produce this error.

After any repair or in case of an intermittent system error is displayed, perform the Service station calibration 4.5.2.Service Station Compensation Calibration in Printer mode ⇒ page 510 and 5.3.4 Service Calibration ⇒page 421

Also if the PWM values come out of a certain range of values for the movement (i.e too high PWM due to friction), this error is produced.

Problem causes in order of importance

A. PWM signal is not supplied to the motor (PWM generator (driver) failure, motor failure, cable failure or disconnected)

B. Encoder signals indicating the movement not registered (Encoder disconnected, Encoder broken or failed, Cable disconnected, electrical system receiving the encoder signal failed)

C. PWM too high or too low due to a mechanical failure (mechanical system jammed, mechanical system broken or loose).

D. Dirty Encoder Strip or Encoder Reader.

Corrective action

PWM signal is not supplied to the motor (PWM generator (driver) failure, motor failure, cable failure or disconnected)

1. Perform a Service Station driver check: Perform the diagnostic procedure 5.3.1 Shuttle Open Loop ⇒page 416 and 5.3.2 Shuttle Close Loop ⇒page 418. If the failure is in Open loop, check cable connections, and power output LEDs in the remote controller PCA. For troubleshooting purposes use one of the remote controller PCAs from the PPS system to verify if the failure is because the remote controller board is faulty.
2. Replace the Service Station Remote controller board ⇒ page 728.
3. Replace the Service Station Motor ⇒ page 729.

Encoder signals indicating the movement not registered (Encoder disconnected, Encoder broken or failed, Cable disconnected, electrical system receiving the encoder signal failed)

4. Check in the open loop if the encode counts are registered after the movement. Moving the motor by hand and with the remote controlled powered it is possible to check the encoder signals with the LEDs on the board. replace PCA with one of the PPS remote controllers to ensure failure is not due to the PCA.
5. Replace the Service Station Remote controller board ⇒ page 728.
6. Replace the Service Station Motor ⇒ page 729.

PWM too high or too low due to a mechanical failure (mechanical system jammed, mechanical system broken or loose)

7. If PWM values are too high due to friction check the mechanical system, clean and grease the Service Station screw as appropriate. If the failure persist replace the screw system ⇒ page 732
8. If failure persist replace the service station shuttle system ⇒ page 730.

Dirty Scan Axis Encoder Strip and Encoder Reader

9. Clean the Scan Axis Encoder Strip and Encoder Reader ⇒ page 251.

SE Code: 21.3:10 - Service station Driver system Fault

Description

A critical error has occurred in the electrical system driver which generates the movement of this system (PWM).

The PWM signal for the service station motor is generated by the remote controller board located on the rear side of the service station. This IC has an internal feedback line which indicates if the IC is working correctly or not while generating the PWM signal. A failure in the expected internal signal produces this error. This is a critical error which may require replacement of the remote controller board.

Problem causes in order of importance

A. Service station remote controller failure

Corrective action

1. Replace the Remote Controller Board (service station) ⇒page 728.

SE Code: 21.4:03, 21:03- Service station Driver overheating/current limit protection

Description

The driver generating the PWM signal has detected an overheating due to overwork or failed condition. The system generates a temporary shut-down to protect itself. After a cool down period, it should be possible to resume normal operation.

The IC driver has an over-temperature feedback line. This error is produced when this line is activated. The servo-control movement is designed to prevent overheating. If this error occurs repeatedly, it is required to analyze the possible conditions of overwork (i.e too much mechanical friction on the limit of the PWM accepted value, run close loop test to analyze these values).

If working conditions seem to be normal, the driver may be failed and require change. Also analyze environmental conditions of the PCA driver (environment too hot)

Problem causes in order of importance

A. Environmental conditions of PCA driver too hot

B. Overworking conditions of driver in the PCA

C. Service station remote controller failure

Corrective action

Environmental conditions of PCA driver

1. Check the environmental conditions according to the specifications in the *Users Guide*.

Overworking conditions of driver in the PCA

2. Let the system cool down and try operating the printer again.
3. Check that the Service Station is in good mechanical working order.
4. Grease the service station. page 738.
5. Replace the Service Station Screw Assembly⇒ page 732.

Service station remote controller failure

6. Replace the Remote Controller Board (service station)⇒ page 728.

SE Code: 21.5:03 - Service station Movement Test Fault

Description

During start up, the printer does an automatic check by doing a small movement forwards and backwards to check the service station functionality (motor moves, encoder signals are received). This error is produced when this test fails. As the movement is very minimal this error usually represents a critical error like cables disconnected, motor failure, or electronic board fault.

Problem causes in order of importance

A. Encoder cable or power cable Service Station - remote controller failed or disconnected

B. Service station motor failure

C. Service station remote controller failure.

Corrective action

Encoder cable or power cable Service Station - Remote controller failed-disconnected

1. Perform the 5.3.1 Open loop ⇒page 416 and 5.3.2 Closed loop ⇒page 418 diagnostic tests.
2. If the open loop test fails, check the cable connections, and 12V and 5V power output LEDs in the remote controller PCA. Note: It is possible with the 24v on the Remote controller to see encoder counts by turning the motor, LEDs 6&7.
3. If the open loop test fails, for troubleshooting purposes ONLY, swap the service station remote controller board with one of the remote controller boards from the PPS system, and perform the open loop diagnostic test again to verify that the failure is not the remote controller board. Make sure the configurations are the same as the jumpers for the termination resistors in the board.
4. If the open loop test fails again, replace the service station remote controller board⇒ page 728.
5. If the problem is the motor, replace the service station motor ⇒page 729.
6. Reverse PWM polarity could also cause this failure (ensure the connections in the motor have not been mixed

Service Station motor failure

7. If the closed loop test fails, check the tail motor encoder cable connections.
8. Move the motor with your hand. With the remote controller board powered, it is possible to check the encoder signals with the LEDs on the board.
9. For troubleshooting purposes ONLY, swap the service station remote controller board with one of the remote controller boards from the PPS system.

10. If the problem appears to be the Remote Controller Board (LEDs ON, functionality with PPS remote controller board), replace the service station remote controller board. ⇒ page 728.
11. If the problem is the motor, replace the service station motor. page 729.

Service Station remote controller failure.

12. If pwm values are too high due to friction check the mechanical system, clean and grease the screw as appropriate ⇒ page 738.
13. If the failure persists, replace the screw system. page 732.
14. If the failure persists, replace the service station chassis. page 730.

SE Code: 21.6:13 - Service station distance test failure

Description

When the printer initializes, it performs a distance test in the service station to set up the initial position of the service station, and also to check that the actual service station length is as expected. The length is established by reaching the end of the service station path with a "bump" movement. False bumps due to abnormal mechanical friction could produce this error as well. An incorrectly calibrated capping station (backslash and elasticity) could also generate the same error.

Problem causes in order of importance

A. False bump during the initialization test

Corrective action

1. Perform a Service Station driver check: Perform the diagnostic procedure '5.3.1 Shuttle Open Loop'⇒page 416 and '5.3.2 Shuttle Close Loop' ⇒page 418. If the failure is in Open loop, check cable connections, and power output LEDs in the remote controller PCA.
2. Clean the service station screw and grease it to prevent high frictions ⇒page 738.
3. If able to boot in normal, run the calibration from service menu '4.5.2 Ser. Sta Compensation'page 510.
4. In case of permanent system error at each boot, run from diagnostic: ' 5.3.7 Back and Elast' (set to default settings the calibration of the movement of the capping station, ⇒page 424. When done, reboot in normal , and run the 4.5.2 Ser. Sta Compensation' ⇒page 510.
5. If not possible to repair, replace the screw system ⇒page 732.
6. Replace the Shuttle System ⇒page 730.

SE Code: 21.7:00 - Service Station Friction Alert

Description

This system error is an alert, the printer can continue to function normally. The error indicates that there is too much friction (more than expected) to perform the initial distance test movement. The error indicates a warning with the recommendation that procedures are performed to prevent a full servo shut down.

Problem causes in order of importance

A. High friction values due to a lack of grease on the Service station screw.
B. High friction values due to a lack of oil on the Service station sliding rods.
C. High friction values due to faulty sliding rods or bushings.
D. High friction values due to faulty screw and nut combination.
E. High friction values due to faulty motor or gear system.

Corrective action

High friction values due to a lack of grease on the Service station screw

1. Clean the service station screw and grease it to prevent high frictions ⇒page 738.
2. If the error continues, replace the screw system ⇒page 732.

High friction values due to a lack of oil on the Service station sliding rods

3. Clean the service station rods and oil them to prevent high frictions ⇒page 738.

High friction values due to faulty sliding rods or bushings.

4. Replace the Shuttle System ⇒page 730.

High friction values due to faulty screw and nut combination.

5. Replace the screw system ⇒page 732.

High friction values due to faulty motor or gear system.

6. Replace the Service Station Motor ⇒page 729.

NOTE: After any mechanical repair of the Service Station, perform the 5.3.4 Service Station Calibration in diagnostics ⇒ page 421 and the 4.5.2 Service Station Compensation calibration ⇒page 510.

SE Code: 21.8:10 - Incorrect position of the capping station (silent system error)

Description

In order to detect any possible movement of the carriage while the printer was switched off (which creates a higher friction of the carriage) with the capping station when booting up the printer. The following checks are done at each initialization:

- When the printer is switched off, the printer places the carriage in the capped position and records the position of the service station in the capped position (the position is how much the service station has moved towards the back of the printer to place the printheads in the capped position (= 3 caps lifted up to ensure a good sealing between printheads and the cap).
- When the printer is switched on, during the initialization, before moving the carriage, the printer will 'uncap' the printheads, moving the service station towards the front of the printer until it reaches the 'bump' position. The 'bump' position' is used when the printer is unable to move the service station up front as there is too much friction. The printer measures the distance that was made to uncap the printheads until this 'bump' position. Note that the printer does not have a sensor to detect the exact position of the service station in 'uncapped' position.
- The printer will compare this distance measured, with the previous distance, to move the printhead in the cap position done during the last switching off of the printer, in case of a difference, the silent error 21.8:10 will be displayed.
- The purpose of this new silent system error is because broken caps are still one of the top failures. One of the main causes of this failure, is if the printer is off, and the carriage is moved even by only ½ cm, when the printer is restarted, there is a very high probability that some caps will be broken. The cause of this is because of the high amount of friction between the caps (of the service station) and the pen pockets (of the carriage). When the printer starts up, the process moves the service station to the bump position, if there is too much friction, the bump position could be reached earlier than expected, and then the carriage starts to move, breaking the remaining caps.

Corrective action

1. Check if the CAPS are broken
2. Perform the diagnostic procedure 5.3.2 Shuttle Close Loop ⇒ page 418, checking if there is no too much friction when moving the capping station.
3. Perform the calibration from the diagnostic menu, 5.3.4 Service Station Cal ⇒ page 421.

4. Perform the calibration from the service menu, 4.5.2 Ser. Sta Compensation ⇒ page 510.
5. Clean the service station screw and grease it to prevent high frictions.
6. Once cleaning done, redo the calibrations.
7. If CAPS are getting broken, replace the screw system ⇒ page 732.
8. If CAPS are getting broken, Replace the Shuttle System ⇒ page 730.

SE Code: 23.1:12 & 23.2:12- Unable to pressurize ISM system on front side 1 or rear side 2

Description

The air system is unable to pressurize to the expected working pressure which, depending on the actual working cycle, could be between 5.2-5-6 (normal working pressure) psi or between 3.6-4 psi (during refilling the non-refilled side is pressurized to prevent backwards refill).

- **23.1:12**= Front DPS (side 1)
- **23.2:12**= Rear DPS (side 2)

Problem causes in order of importance

A. Air tube disconnected on the air system
B. Air Pump Failure (Pump or ISS PCA failure)
C. Air pressure bottle leak
D. Air tube leak (tube damaged)
E. Air relief valve failure
F. Intermediate tanks leak
G. Air sensor failure -> ISS Main Board failure
H. Intermediate tanks supports failure

Corrective action

Air tube disconnected on the air system

1. Review all air tube connections and ensure that there is no disconnection (Tubes from pumps and relief valve to tap, tubes from tap to intermediate tanks.

Air Pump Failure

2. Perform the 4.15.5 Front Air Pumps diagnostics procedure ⇒ page 398 and 4.15.6 Rear Air Pumps diagnostics procedure ⇒ page 398.
3. If the pumps do not work check pump connections and verify pin integrity.
4. If connections are correct, ensure pump failure by connecting to other working port and starting the pump.
5. If the pump does not fail with another working port, replace the Ink System Main Board ⇒page 700.
6. If the pump fails, replace the air pump⇒ page 699.

Air pressure bottle leak

7. Check that the pressure bottle cap is tight and there is no leakage.

Air tube leak (tube damaged)

8. Pressurize the system and check for any failed tube. Leave the pumps on test with diagnostic procedure 4.15.5, the pump will operate until 6psi is reached.

Air relief valve failure

9. Check relief valve is closed and air is not escaping from it when pressurizing. Swap relief valve from the other side to verify that it is the relief valve that is failing. If the relief valve fails, replace it ⇒ page 699.

Intermediate tanks leak

10. Intermediate tanks air leak. Swap all intermediate tanks and ensure that there is no leak. If a leak is detected re swap the intermediate tanks one by one until the leak is discovered. Replace Intermediate tank as appropriate and force 0.2 Fill Intermediate tanks ⇒ page 340.

Air sensor failure -> ISS Main Board failure

11. Swap Air pressure sensor tube connections in the PCA and display values if required. If the sensors do not have similar behavior, replace the ISS PCA⇒ page 700.

Intermediate tanks supports failure

12. Try to adjust tubes and check connections, clean if required, if no possible to recover replace the ink circuit module ⇒ page 693.

SE Code: 23.3:10 & 23.4:10- System is unable to depressurize in front or rear APS

Description

The system is considered to be depressurized at 0.3 psi, there is a time out of 120 seconds to depressurize. The standard operating range is 5.2-5.6 psi (working pressure). Block flow pressure 3.6-4 psi (not printing but refilling, the selected side is pressurized to this pressure to ensure that refilling is done on the expected side). While printing the non used side is pressurized to prevent backwards refilling.

- **23.3:10**= Front 1DPS (side 1)
- **23.4:10**= Rear 1DPS (side 2)

Problem causes in order of importance

A. Relief valve does not open

B. Cable of relief valve

C. Relief Tubes blocked

D. Pressure sensor does not detect de-pressurizing

Corrective action

Relief valve does not open

1. Check that the relief valve cable is correctly connected to the valve and to the ISS Main Board.

2. Open and close relief valve several times to check the valve opens (with a finger it can be checked if the valve opens and closes (diagnostics 4.15.7). In case of doubt of failure swap the relief valve connections.

Cable of relief valve

3. Swap the relief valve connections to check if the failure is the driver of the relief valve, if the cause is the valve, remove and replace it.⇒page 699.

4. If the failure is the actual driver of the electrovalve, replace the ISS Main Board ⇒page 700.

Relief Tubes blocked

5. Disconnect the tubes and perform a visual inspection of the system, in case of doubt disconnect the tube and blow in the tube to ensure there is no blockage towards the relief valve

Pressure sensor does not detect de-pressurizing

6. If the relief system seems to be working correctly, replace the ISS Main Board ⇒ page 700.
7. Replace the air pump, relief valve and tubes⇒page 699.

SE Code: 23.5:12 & 23.6:12 - Air pressure sensor in the main PCA detects out of range

Description

The full list of system error codes:

23.5:12 Air pressure sensor 1 Front

23.6:12 Air pressure sensor 2 Rear

Air pressure sensor valves have been detected as out of the expected measurement range. Expected pressure between -0.2 and 7 psi for the system error to be triggered the condition must be repeated for 1 minute.

Corrective action

1. Check the connections of the air tube towards the air pressure sensor in the ISS board. Disconnect the tubes and perform a visual inspection of the system, in case of doubt blow in the tube to ensure there is no blockage towards the relief valve.
2. Replace the Ink System Main Board ⇒page 700.

SE Code: 24:03 Ink System not Ready

Description

The printer is not able to print as the ink system is not ready, at least one setting is set to empty (ISM part or TRS part).

Problem causes in order of probability

A. At least 'ISM purged' or 'TRS purged' is set to NO instead of YES.

Corrective action

1. Check that the ISM (with intermediate tanks) and TRS are filled in with ink, and then, run the diagnostic:

- 0.8 Set ISM as Purged
- 0.9 Set TRS as Purged

SE Code: 24.x:12.1 - There is no ink flow while attempting to refill the intermediate tank

Description

The full list of system error codes:

- **24.1:12.1** = (k) Black
- **24.2:12.1** =(Y) Yellow
- **24.3:12.1** =(C) Cyan
- **24.4:12.1** =(M) Magenta

- **24.5:12.1**=(Lm) Light Magenta
- **24.6:12.1**=Lc) Light Cyan

There is no flow when trying to refill intermediate tank where n= 1=k, 2=Y, 3=C, 4=M, 5=Lm, 6=Lc

The system checks the static pressure and after opening valve, the pressure drops more than 0.1 psi indicating the refilling state. There is a time-out of 120 seconds to detect the refill state. The refill speed depends on the amount of ink in the Ink Cartridge and in the Intermediate tank, the 120 seconds is a safe time to detect the refill process, this is behavior is re-checked twice before the system error is triggered. The issue must occur continuously for one minute. This system error is stored as a critical fault condition in the NVM and requires repair and a condition reset from the service menu for re-storing normal operation condition.

Problem causes in order of probability

A. No flow between the Ink Cartridge and the Intermediate tank due to:

- Main Ink Electrovalve doe not open
- Integrated check valve blocked
- Intermediate tank overfilled

B. Incorrect ink pressure sensor detected due to air in the ink tube or faulty ink pressure sensor

Corrective action

No flow between the Ink Cartridge and the Intermediate tank due to:

1. Check that the ink pressure sensor calibration values are correctly set through the ink pressure sensor calibration utility (diagnostics 4.11). Verify the stored values compared to the values on the labels of the ink pressure sensor boards are correct.

2. Check the status of the intermediate tanks by removing them and checking the weights.

   - If one intermediate tank is almost empty and the other one is half the weight or less:
     - Check that the main ink valve can open and close correctly (diagnostics 4.15.1 and 4.15.2). Check the ISS Electro-valves test ⇒ page 396. If the electro-valve does not work try tapping it with a screw driver on the metal part of the body while the electro-valve is in motion. If this does not solve the error, replace the electro-valve and check the again. If replacing the electro-valve doe not solve the error, swap the cables of another electro-valve and repeat the test for both the original and the exchanged electro-valve to check if the error is with the cable or PCA. If the error is with the cable, this would indicate a faulty cable or a faulty ISS PCA. To check this, swap the two 40 pin cables and perform the test again, if the problem follows the cable replace the 40pin cable. If the problem is still with the valve, this would indicate the error is with the ISS PCA, remove and replace this part and perform the valve test again.
     - If the Electro-valve does work, purge the line from the ink supply down to the ink pressure sensor using a syringe following the standard purging process as described in the installation guide. After this has been performed check the ink pressure sensor by performing the diagnostic test 4.15.9 Ink Pressure Sensor values, ensure the test provides pressure values according to the expected ink amount in the supply 1/2 liter of ink should provide values of above 2000mpsi. If the test fails, replace the ink sensors board. Refer to the Ink Sensor Board on ⇒ page 698. Once replaced repeat the test to confirm the error message has been cleared.
   - If one intermediate tank is almost empty and the other one is full, replace the 4 way valve ⇒ page 707.
   - If both intermediate tanks are full, replace the main electrovalve for the failing color ⇒ page 708.

3. Perform the 4.14 No flow recovery procedure once you have fixed the error ⇒ page 395.

SE Code: 24.x:12.5 Risk of air in the Ink Tubes in slot x

Description

Just after inserting a new cartridge and starting to refill the intermediate tank, the printer detects that there is a high risk of a bubble of air in one of the tubes from cartridge connector to the ink electro-valve. This is triggered when the ink pressure is measured when refilling the intermediate tank and the pressure is lower than expected.

Problem causes in order of importance

- There is a bubble of air in the tube from cartridge connector to the ink electro-valve.
- A faulty ink pressure sensor.

Corrective action

- Re-purge the tube with the syringe and an empty bag. ⇒ page 706. Need new syringe is required with an empty bag (such as the one that comes with each brand new printer. There is a specific support part with 7 kits: Q6702-60431 Syringe Ink System Purge Kit or Q6702-60690 Ink System Tubes Cleaning Tool.
- Perform a check of the Ink Pressure Sensor ⇒ page 485.

SE Code: 24.7:12 & 24.8:12 - Front & Rear Ink pressure sensors board not calibrated

Description

The full list of system error codes:

- **24.7:12**= Front Ink Pressure Sensor board
- **24.8:12**= Rear Ink Pressure Sensor board

The three ink pressure sensors in the ink pressure sensors board must be calibrated with the appropriate values in order to measure the ink pressure accurately for the respective colors. An incorrect calibration of these sensors could cause unexpected system errors or incorrect functioning of the ISM system, such as incorrect detection of remaining ink in the cartridges.

The calibration values once introduced are stored on the non volatile memory of the ISM system.

Problem causes in order of importance

1. The Ink pressure sensors calibration procedure for the front ink pressure sensors PCA

Corrective action

The Ink pressure sensors calibration procedure for the front ink pressure sensors PCA

1. Enter the calibration values included on the label of the Ink Pressure Sensors board. Perform the Ink pressure sensor calibration (diagnostics 4.11) ⇒ page 406.

SE Code: 27.n:01 - Printhead temperature too high

Description

The full list of system error codes:

- **27.1:01** = Left Printhead: Yellow/Magenta
- **27.2:01** = Center Printhead: Light Cyan/Light Magenta
- **27.3:01** = Right Printhead: Cyan/Black

The printhead is overheating and has detected a temperature above operating limits and has disconnected itself for protection.

Problem causes in order of importance

A. Very Heavy density plot with low pass printmode

B. Print head health failure (too many nozzles out)

C. Ambient temperature too hot temperature (out of operating range)

D. Lack of Ink in the pen (printhead ink reservoirs are not being filled correctly.

E. Pen failed.

Corrective action

Very Heavy density plot with low pass printmode

1. The customer is printing a high density plot in low pass printmode, change the plot in the RIP and select a higher print.

Print head health failure (too many nozzles out)

2. Perform the 1.5.4 PH Stability Check Þ page 489.

3. There could be too many nozzles out. Recover the printhead.

Ambient temperature too hot temperature (out of operating range)

4. The environmental temperature could be too hot. the environmental specifications in the *Users Guide*.

Lack of Ink in the pen (printhead ink reservoirs are not being filled correctly

5. Check the ink system for failures, ink leaks, bent ink tubes etc.

6. Perform the Force Fill Intermediate Tank procedure ⇒ page 406.

7. Perform the Intermediate Tank Time Refill procedure, in case the electrovalve is damaged open the valve using the diagnostics 4.15.1 or 4.15.2 for 15 minutes.⇒ page 396.

Pen failed.

8. Replace the printhead.

SE Code: 27.n:02 - Printhead reseat occurrence

Description

This is a silent system error and does not affect the functioning of the printer, it is used to record the number of times that the printhead is reseated by the customer

- **27.1:02**= Left Printhead: Yellow/Magenta
- **27.2:02**= Center Printhead: Light Cyan/Light Magenta
- **27.3:02**= Right Printhead: Cyan/Black

These silent system errors will be logged the same as any system error.

SE Code: 28.xy:11 - Intermediate tank broken bag detected

Description

The full list of system error codes:

- **28.11:11** = Black-Left
- **28.12:11** = Black-Right
- **28.21:11** = Yellow-Left
- **28.22:11** = Yellow-Right
- **28.31:11** = Cyan-Left
- **28.32:11** = Cyan-Right

- **28.41:11** = Magenta-Left
- **28.42:11** = Magenta-Right
- **28.51:11** = Light Magenta-Left
- **28.52:11** = Light Magenta-Right
- **28.61:11** = Light Cyan-Left
- **28.62:11** = Light Cyan-Right

There is a broken bag in an intermediate ink tank.

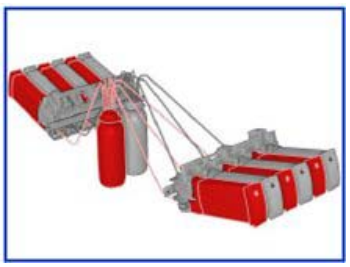
The intermediate tanks consist of an internal bag with the ink inside the plastic container of the tank. If there is a leakage of ink from the bag or the bag brakes the ink can pass to the air pressurization system causing depressurization in the pressure line.

Inside the tank there is a sensor based in the two terminal points separated by a small distance, where the ink touches these two terminal points it generates a short circuit producing the broken bag condition.

Once the Broken bag condition is triggered the printer will no longer function until the issue is fixed.

Corrective action

1. Perform 4.15.10 Int T Front Brk Bag ⇒ page 400.
2. If the test is failing remove the cartridge and check the electrical contacts.
3. Remove the failing intermediate tank. In case ink has reached the air tubes going from the Int T support to the air bottle (see below), then also replace the corresponding tube.



To replace the air tubes

a. Use the fitting and tube provided with the intermediate tank broken bag repair kit (Q6702-60561).

b. Unplug the corresponding air tube from the top of the bottle.

c. Cut the tube as close as possible to the support of the intermediate tank.

d. Clean the ink tube portion that is left with air and/or water, ensure that the tubes are dry at the end of the operation.

e. Insert the fitting and place the new tube.

4. Perform the procedure 4.4 IT broken bag recovery from diagnostics menu, see page 386.
5. Insert the new intermediate tank and perform the procedure 4.15.1x Int Front/Rear Brk bag from the diagnostics menu to check that the troubleshooting has been successful see page 396.

SE Code: 28.nx:12 - Intermediate tank end of life

Description

The full list of system error codes:

- **28.11:12**= Black-Left
- **28.12:12**= Black-Right
- **28.21:12**= Yellow-Left

- **28.22:12**= Yellow-Right
- **28.31:12**= Cyan-Left
- **28.32:12**= Cyan-Right
- **28.41:12**= Magenta-Left
- **28.42:12**= Magenta-Right
- **28.51:12**= Light Magenta-Left
- **28.52:12**= Light Magenta-Right
- **28.61:12**= Light Cyan-Left
- **28.62:12**= Light Cyan-Right

This is displayed on the Internal Print Server and is the trigger for installing Preventive Maintenance #3. The maximum number of cycles for refilling the intermediate tank has been reached. The Intermediate tanks need to be replaced to avoid a possible broken bag condition.

Corrective action

1. Perform 4.9 Change the Intermediate Ink Tanks ⇒ page 389.
2. Reset the counter for the Intermediate Ink Tanks ⇒page 498.

SE Code: 41.1:03 - Main drive system (Drive Roller) Servo shutdown

Description

An error in the close loop control (servo control) of the media advance motor has occurred. This error indicates that the drive roller system is not moving as expected in a close loop control.

The servo controlled movements consist of applying a specific PMW to a motor (a certain amount of energy) and receiving the feedback of an encoder about the actual movement of the motor after applying that specific PMW. Therefore, if after applying a specific PMW the encoder does no register the expected number of encoder units (movement), the system will display an error.

Also, if the PMW values comes out of a certain range of values for movement, (i.e. too high PWM to obtain a movement), this error is produced. This type of error is typically caused by high mechanical friction.

The PMW to move the media drive is generated by the Printmech board in the e-box, which receives the control from the Lower PCI Board. The power of the PWM comes from the 42v secondary power supply via the Main Control Board.

A difference with other media path systems, the media advance motor and encoder are two separate systems. The encoder sensor signal is sent to the Vacuum & OMAS controller system and from there via communication BUS to the Main Interconnect - Low PCI board.

Problem causes in order of importance

A. 42v from secondary power supply not active in the printer

B. PWM signal not supplied to the motors. PMW generator (driver) failure, motor failure, cable failure or disconnected.

C. Encoder signals indicating the movement has not been registered. The encoder is disconnected or broken or faulty. Cables disconnected, electrical system receiving the encoder signal failure.

D. PWM too high due to a mechanical failure or a mechanical system jammed, broken or loose.

Corrective action

42V power arrival to PrintMech

1. Ensure the Printer is able to reset when the printer starts up. Check 42v arrives to the Printmech board after resetting the GFI.

   If 42v does not arrive to the Printmech perform the appropriate repair on the 42v path:

- Secondary power supply powered with Single Phase.
- Secondary power supply activation link (Safety rely - sec power supply).
- Power supply provides 42v
- Cables power supply - Filter correctly connected
- Cables Filter - Terminal blocks correctly connected
- Cables terminal block - Main Interconnect correctly connected.
- Cables Main Interconnect Printmech correctly connected.

PWM signal not supplied to the motors or faulty motor

2. Perform the diagnostic procedure 3.4 Drive Roller
3. If the motor is not moving in the open loop, check the correct PWM signal is provided to the motor with a multimeter in the motor connector. If the power does not arrive, check the power is leaving the Printmech. If power does not leave check all the connections in the Printmech board if everything is correct, change the Printmech.
4. If power leaves the Printmech, but does not reach the motor, replace the power cable.
5. If the power reaches the motor but the motor does not move, replace the Drive Roller Motor.

Encoder signals indicating the movement of the motor has not been registered

6. If the test 3.4 Driver Roller does not register a movement of the Drive Roller:
   - Check the connections of the cables of the Driver roller encoder PCA to the Vacuum &OMAS controller
   - Ensure the Encoder disc is correctly installed in the encoder sensor. If the encoder disc is outside of the sensor or is damaged, correct the disc or replace it.
   - Ensure the Driver Roller does not rotate freely, the motor and gear system should not allow this. If the Driver Roller moves, the end of the cup gear and nut may be loose. Remove the Media Driver Motor, and tighten both the gear and nut (screwed in the Drive Roller, use the locking the nut by bending the nut washer flaps over the gear.
   - Replace the encoder sensor PCA and cable ⇒page 634.
   - Replace the Vacuum & OMAS Controller PCA assembly ⇒page 661.

NOTE: After replacing the encoder PCA, perform the Driver Roller Encoder Calibration (service menu utility 4.3.1)

PWM too high due to a mechanical failure

7. Check the gear system Driver Roller Motor - check that the Drive roller is properly greased.
8. Remove the Drive Roller Motor and verify that the Driver Roller freely moves on its bearing. If it does not and the bearings are stuck try greasing the system, if not replace the Drive Roller. If the Driver Roller moves correctly, replace the Drive Roller Motor. Only if the error persists replace also the Drive Roller Motor mount system.

SE Code: 41.3:10 - Drive roller motor electrical driver system failure

Description

The Lower PCI Board has detected an electrical critical error in the Printmech board.

Problem causes in order of importance

A. Lack of 42v in the Printmech
B. Lower PCI board - Printmech cable failure.
C. Failed Printmech Board
D. Lower PCI board failure.

Corrective action

Lack of 42v in the Printmech board

1. Ensure 42 v arrives to the Printmech board. Check the LEDs on the Printmech board to ensure that the electronics are correctly powered (all LEDs except the 42v ones).

Lower PCI board - Printmech cable failure

2. Check the cable of the Lower PCI- Check that the cable is correctly connected and there is no damage. Replace the cable if required.

Failed Printmech

3. Replace the Printmech ⇒page 596.

Failed Lower PCI board

4. Replace the Lower PCI board ⇒page 631.

SE Code: 41.4:03 - Drive Roller Motor electrical driver overheating

Description

The Printmech Board has detected an over-current condition.

Problem causes in order of importance

A. If this system error occurs while the printer is just starting up, during the initialization phase, the mostly probable cause is that someone was loading substrate or touching the drive roller at the same time. When starting the printer, during the initial phase, it is important not to touch the drive roller or this system error could display. This system error most often occurs after a paper jam, when restarting the printer and if at the same time a person is reloading the substrate.

B. Too much mechanical friction on the Drive Roller Motor system

C. Low PCI board - Printmech cable failure

D. Printmech failure

E. Drive Motor

Corrective action

System Error Occurs at the startup of the printer

1. If the error is displayed while booting/starting the printer, restart the printer without touching to the drive roller during the initialization phase, after having rearmed the printer.

Too much fiction due to a mechanical failure

2. Check the gear system and drive motor is properly greased. Remove the Driver Roller Motor and check that it freely rotates on its bearings. If it does not and it is stuck, try greasing and oiling the system.

Lower PCI board - Printmech cable failure

3. Check the cable of the Lower PCI- Check that the cable is correctly connected and there is no damage. Replace the cable if required.

4. Replace the Lower PCI board ⇒page 599.

Failed Printmech board

5. Replace the Printmech board ⇒page 596.

Failed Driver Roller Motor

6. Replace the Driver Roller Motor mount system ⇒page 631.

SE Code: 42.1:11, - Scan Axis motor servo shutdown

Description

An error in the close loop control (Servo control) of the Scan Axis Motor system has occurred. During the boot sequence, after having uncapped the carriage, the printer detects which type of scan axis motor is used (2 connectors or 3 connectors motor). If the direction test fails, this system error will also be displayed.

Problem causes in order of importance

A. Carriage path obstructed.

B. Carriage not lubricated.

C. SAX belt too tight or loose, belt tensioner damaged.

D. Dirty Encoder reader/Encoder Strip.

E. Carriage Encoder Cable or sensor or Encoder Carriage Data Line.

F. SAX Motor power 42v failure.

G. SAX Motor Data failure.

H. Main Interconnect failure.

I. SAX Motor failure.

J. Carriage Encoder Data Line.

Corrective action

Carriage path obstructed

1. Ensure that there are no obstructions in the Carriage Path.

Carriage not lubricated

2. Ensure the carriage is correctly lubricated and moves correctly along the SAX/rods and the carriage bushing. Turn the printer off and uncap the Service Station, manually move the carriage along the Scan Axis by hand

3. Perform the scan axis system test to test the Impelling system (diagnostic 5.1) ⇒page 406 and perform the appropriate repair procedure. Ensure the encoder signal path (Encoder cable - Carriage Interconnect - PH Interconnect 1 (Y/M) flat data cable - PH interconnect1 (Y/M)). Swap the PH Interconnect 1 and 3 to perform the appropriate troubleshooting.

NOTE: At the beginning of the test 5.1, the type of motor must be selected (2 or 3 connectors). In case there is no movement at all of the motors, failure of the encoder reader/ encoder strip could be discarded.

4. If the fault is intermittent and high friction problems, perform the service test 1.5.1 Friction test.

SAX belt too tight or loose, belt tensioner damaged

5. Ensure the belt is correctly placed and is not damaged, check the tensioner gear, ensure the bearing is ok and the system functions correctly.

Dirty Scan Axis Encoder Strip and Encoder Reader

6. Clean the Scan Axis Encoder Strip and Encoder Reader ⇒ page 251.

Carriage Encoder Cable or sensor

7. Check the Carriage Encoder and repair or replace the cable or encoder as appropriate.

SAX Motor power 42v failure

8. Follow the 42v secondary power supply and repair or replace from the power supply as appropriate.

SAX Motor Data failure

9. Check the SAX Motor data cable and connections, replace if required.

Main Interconnect failure

10. Replace the Main Interconnect Board ⇒page 602

SAX Motor failure

11. Replace the SAX Motor ⇒page 711

SAX Encoder Strip

12. Replace the encoder strip

Carriage Encoder Data Line

13. Replace the complete carriage chain (NOTE: the diagnostics test 6.0 does not test this data line in the trailing cable).

SE Code: 42.2:11, 42:03 - Scan-Axis Motor Fault Signal

Description

The scan axis motor contains its own electronics with embedded diagnostics. This error is triggered by the motor which detects the error condition. The failure is detected in the Main Interconnect.

Problem causes in order of importance

A. Motor data cable incorrectly connected or faulty

B. 42v Motor power cable failure

C. Motor overcurrent or over temperature

D. Dirty Encoder Reader/Encoder Strip.

E. Motor failure

F. Main Interconnect Board failure

G. Dirty Scan Axis Encoder Strip Encoder Reader

Corrective action

Motor data connections

1. Check the scan axis data cable connections at the motor and Main Interconnect Board. Check for any damage in the cable or connectors.

Motor Power Failure

2. Ensure 42v arrives to the SAX motor, follow the power path and verify 42v and GND ⇒page 18. Also check the return path to the power resistor.

Motor overcurrent or over temperature

3. With the printer off, uncap manually the Service Station and move the Carriage along the scan axis to check for high friction in the movement. Ensure the bushings and rods are greased, check for any damage to the belt tensioner.

4. If the error is intermittent run the diagnostics 5.1 Impelling system ⇒page 406. If required escalate the issue with logging traces.

5. Check the temperature of the motor is not too high (could be for too much friction or a faulty motor, replace the motor ⇒ page 711.

Dirty Scan Axis Encoder Strip and Encoder Reader

6. Clean the Scan Axis Encoder Strip and Encoder Reader ⇒ page 251.

Motor failure

7. Replace the scan axis motor ⇒ page 711.

Main Interconnect Board failure

8. Replace the Main Interconnect Board ⇒ page 602.

Dirty Scan Axis Encoder Strip and Encoder Reader

9. Clean the Scan Axis Encoder Strip and Encoder Reader ⇒ page 251.

SE Code: 42:10 - Scan Axis motor failure

Description

The scan axis motor is not responding as expected to the Main Interconnect Board control signals.

Problem causes in order of importance

A. Scan axis motor electronics 24V power failure

B. Scan axis data cable failure

C. Scan axis motor failure

D. Main Interconnect Board failure.

Corrective action

Scan axis motor electronics 24V power failure

1. Activate the 24v line (diagnostics 2.3) and check 24V SAX Motor power LED in the Main Interconnect Board, located next to the data connector on the Main Interconnect.

Scan axis data cable failure

2. Check cable connections and connectors integrity (Main Interconnect side (J1) and data cable connection in the motor side, if there is any damage replace the cable.

Scan axis motor failure

3. Replace the scan axis motor ⇒page 711.

Main Interconnect Board failure.

4. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 43:10 - Substrate Path Vacuum Fan error

Description

The vacuum fan is powered with 110V generated by the e-cabinet vacuum power transformer. The closed loop of the system is controlled by the Vacuum controller PCA which sends the PWM signal and receives the vacuum pump tachometer signal.

Problem causes in order of importance

A. 110V not arriving to the Vacuum pump (connections, cables, fuses, transformer, power jumper)

B. PWM and tacometer cable fault

C. Vacuum pump fault

D. Vacuum controller failed

Corrective action

110V not arriving to the Vacuum pump (connections, cables, fuses, transformer, power jumper)

1. To ensure the correct power jumper (for the voltage of the country) is correctly installed in the printer, check the installation guide of the printer.
2. Verify 110V power connections and cable from the e-cabinet terminal blocks to the vacuum pump. Reconnect or replace cable as appropriate if fault found.
3. Check with a multimeter the arrival of 110V to the vacuum pump. If the 110V arrives, replace the vacuum pump ⇒ page 664.
4. If voltage does not arrive, check if power is coming out from the appropriate terminal blocks in the e-cabinet. If power is coming out replace power cable.
5. Ensure that the configuration block is correctly connected.
6. Check that the pin outputs in the transformer are supplying 110V. If not, check single phase power input in the transformer.
7. If power is not supplied, check the vacuum pump power fuses.
8. If there is a blown fuse, check for possible short circuits down the line and then replace the fuse page 16.
9. Replace the transformer if fault is not found in the connections or fuses ⇒page 628.

PWM and tachometer cable fault

10. Check the tachometer and pwm cable connections at the vacuum pump and vacuum controller. Reconnect or replace cable as appropriate.

Vacuum pump fault

11. Replace the vacuum pump ⇒ page 664.

Vacuum controller failed

12. Replace the Vacuum and OMAS controller box ⇒ page 661.

SE Code: 44.1:03 & 45.1:03 - Front/Rear Spindle System Servo Shutdown

Description

An error in the close loop control (Servo control) of the front of rear spindle system has occurred (depending on the SE displayed). This error indicates that either the Front/Rear spindle or rear spindle system is not moving as expected in a close loop control.

The servo controlled movements consist of applying a specific PWM to a motor (a certain amount of energy) and receiving the feedback of an encoder about the actual movement of the motor after applying that specific PWM.

Therefore, if after applying a specific PWM the encoder does not register the expected number of encoder counts (movement), the system will produce this error.

Also if the PWM values come out of a certain range of values for the movement (i.e too high PWM to obtain a movement), this error is produced (These errors are typically caused by high mechanical friction)

The PWM to move the spindle system is generated from the Printmech Board in the e-box, which receives the control from the Lower PCI Board. The power of the PWM comes from the 42V secondary power supply via the Main Interconnect Board.

The Front spindle motor system consists in two motors connected in series. Therefore the power signal sent to one of the motors is also sent to the other, and if any of the two motors fail the other will fail as well.

The rear spindle motor is a single motor powered directly from the PrintMech.

44.1:03: Front Spindle system Servo Shutdown

45.1:03: Rear Spindle system Servo Shutdown

Problem causes in order of importance

A. PWM signal not supplied to the motors. PWM generator (driver) failure, motor failure, cable failure or disconnected

B. Encoder signals indicating the movement not registered. Encoder disconnected, Encoder broken or failed, Cable disconnected, electrical system receiving the encoder signal failed

C. PWM too high due to a mechanical failure mechanical system jammed, broken or loose

Corrective action

1. Perform the diagnostic procedure 3.2 Front Spindle System ⇒ page 371 or 3.3 Rear Spindle ⇒ page 373.
2. Perform the system burning test 3.1 Motor Burning ⇒ page 370, to test the action of the Spindles, apply grease while the spindles are rotating.

PWM signal not supplied to the motors

3. If the motors are not moving in open loop, check that the correct PWM signal is provided to the motor with a multimeter.
4. As an option, connect the power line to the other front spindle motor. Repeat the test to identify failed motor. Replace failed motor. page 646.
5. If required, swap power connections in the Printmech Board to ensure fault of the Printmech Board
6. Ensure 42V power arrival to the Printmech Board. Proceed with 42V power troubleshooting if 42V power failure.

Encoder signals indicating the movement not registered

7. If test fails check motor encoder connections and cable integrity. Swap encoder cable connections and power cable in the Printmech Board and Main Interconnect Board. Replace Motor (as the encoder is embedded), Cable or Main Interconnect Board as appropriate.

PWM too high due to a mechanical failure

8. If PWM is too high perform the system burning test 3.1, to test the action of the Spindles, apply grease while the spindles are rotating, then repeat the tests with the spindle removed, if it is still too high replace the Front spindle motor gear system ⇒ page 644.
   If the friction is not too high with the spindle removed, check the spindle and the spindle support mechanism for damage, also check the Spindle Plate positions.

SE Code: 44.1.1:03 - Roll to Floor Spindle System Servo Shutdown

Description

An error in the close loop control (Servo control) of the Roll to Floor Spindle System has occurred. This error indicates that the Roll to Floor spindle is not moving as expected in a close loop control.

The servo controls the movements by applying a specific PWM to a motor (a certain amount of energy), and then receiving feedback from a sensor on an encoder about the actual movement of the motor after applying that specific PWM.

This system error will be displayed if after applying a specific PWM to the spindle motor, the encoder sensor does not detected the expected number of encoder counts (movements).

This system error is also displayed if the PWM values are out of a certain range of values (i.e too high a PWM is required to move the spindle). These errors are typically caused by high mechanical friction.

The PWM to move the spindle system is generated from the Printmech Board in the e-box, which receives the control from the Lower PCI Board. The power of the PWM comes from the 42V secondary power supply via the Main Interconnect Board.

The Front spindle motor system consists in two motors connected in series. Therefore the power signal sent to one of the motors is also sent to the other, and if any of the two motors fail the other will fail as well.

The rear spindle motor is a single motor powered directly from the PrintMech.

Problem causes in order of importance

A. The PWM signal was not supplied to the motors. PWM generator (driver) failure, motor failure, cable failure or disconnected

B. Encoder signals indicating the movement not registered. Encoder disconnected, Encoder broken or failed, Cable disconnected, electrical system receiving the encoder signal failed

C. PWM detected is too high due to a mechanical failure, the system is jammed, broken or loose.

Corrective action

1. Perform the diagnostic procedure 3.9 Free Fall System ⇒ page 379.
2. Perform the system burning test 3.1 Motor Burning ⇒ page 370, to test the action of the Spindles, apply grease while the spindles are rotating.

PWM signal not supplied to the motors

3. If the motors are not moving in open loop, check that the correct PWM signal is provided to the motor with a multimeter.
4. Connect the power line to the Take Up Reel spindle motor. Repeat the test to identify failed motor. Replace failed motor ⇒ page 646.
5. Swap power connections of the Printmech Board to check if the fault is in the Printmech Board
6. Ensure 42V power arrival to the Printmech Board. Proceed with 42V power troubleshooting if 42V power failure.

Encoder signals indicating the movement not registered

7. If the test fails, check the Roll to Floor Spindle motor encoder connections and cable integrity. Swap encoder cable connections and power cable in the Printmech Board and Main Interconnect Board. Replace Motor (as the encoder is embedded), Cable or Main Interconnect Board as appropriate.

PWM too high due to a mechanical failure

8. If PWM is too high perform the system burning test 3.1, to test the action of the Spindles, apply grease while the spindles are rotating, then repeat the tests with the spindle removed, if it is still too high replace the Front spindle motor gear system ⇒ page 644.
   If the friction is not too high with the spindle removed, check the spindle and the spindle support mechanism for damage, check also the position of the Spindle Plate on the printer.

SE Code: 44.1.2:10 - Roll to floor Spindle System inverse polarity

Description

This error indicates that the spindle of the Roll to Floor system is turning in the wrong direction. When the printer starts up, it performs a check for movement and direction, this error indicates that this test failed.

Problem causes in order of importance

A. Incorrect cable connections with the Roll to Floor Spindle Motors (power polarity inverted).

Corrective action

Incorrect cable connections with the front spindle motors

1. Check connections in the Roll to Floor spindle motors, the fault can be due to an incorrect connection in the Printmech board. Ensure the connector is not forced. Swap pin connections if required.

SE Code: 44.2:10 & 45.2:10 - Front/Rear Spindle System inverse polarity

Description

This error indicates that the spindle is turning in the unexpected direction. When the printer starts up, it performs a check for movement and direction, this error indicates that this test failed.

44.2:10: Front Spindle inverse polarity

45.2:10: Rear Spindle inverse polarity

Problem causes in order of importance

A. Incorrect cable connections with the spindle motors. (power polarity inverted)

Corrective action

Incorrect cable connections with the front spindle motors

1. Check polarity connections in the Front and Rear spindle motors, the fault can be due to an incorrect connection in the Printmech board. Ensure the connector is not forced. Swap pin connections if required.

SE Code: 44.1.3:10 Roll to floor Spindle System driver fault

Description

The Printmech has detected a failure in the PCI board.

Problem causes in order of importance

A. Lack of 42V in the Printmech Board

B. Failed Printmech Board

Corrective action

Lack of 42V in the Printmech Board

1. Ensure 42V arrives to the Printmech Board. Check the power LEDs on the Printmech Board to ensure that the electronics are correctly powered (all LEDs except the 42V ones) ⇒ page 200.

Failed Printmech Board

2. Replace the Printmech Board ⇒ page 596.

SE Code: 44.3:10 & 45.3:10 - Front/Rear Spindle System driver system fault

Description

The printmech detects a failed condition to the PCI board which requires troubleshooting.

44.3:10 Front Spindle

45.3:10 Rear Spindle

Problem causes in order of importance

A. Lack of 42V in the Printmech Board

B. Failed Printmech Board

Corrective action

Lack of 42V in the Printmech Board

3. Ensure 42V arrives to the Printmech Board. Check the power LEDs on the Printmech Board to ensure that the electronics are correctly powered (all LEDs except the 42V ones) ⇒ page 200.

Failed Printmech Board

4. Replace the Printmech Board ⇒ page 596.

SE Code: 44.1.4:03 Roll to floor Spindle System Driver overheating

Description

The Printmech Board detects an over-current condition.

Problem causes in order of importance

A. Failed cable connections or failed Roll to Floor spindle motor.

B. Failed Printmech Board

Corrective action

Failed cable connections or motor

1. Check for short circuits in the cable line feeding the motor.
2. Swap the connections over with the Rear spindle to see if it still triggers the error.
3. Perform the diagnostics procedure for checking the Roll to Floor system 3.9 Free Fall System ⇒ page 379. If the failure is with a cable or motor repair or replace as appropriate. Note: If the Close Loop value of the friction detected is very high perform the system burning diagnostic test in service 3.1 Spindle Motors Burning ⇒ page 370, grease the gear system, if the failure persists replace the mechanical system of the driver.

Failed Printmech Board

4. Replace the Printmech Board ⇒page 596.

SE Code: 44.2.1:03 - Take Up Reel Spindle System Servo Shutdown

Description

An error in the close loop control (Servo control) of the Take Up Reel Spindle System has occurred. This error indicates that the Take Up Reel spindle is not moving as expected in a close loop control.

The servo controls the movements by applying a specific PWM to a motor (a certain amount of energy), and then receiving feedback from a sensor on an encoder about the actual movement of the motor after applying that specific PWM.

This system error will be displayed if after applying a specific PWM to the spindle motor, the encoder sensor does not detected the expected number of encoder counts (movements).

This system error is also displayed if the PWM values are out of a certain range of values (i.e too high a PWM is required to move the spindle). These errors are typically caused by high mechanical friction.

The PWM to move the Take Up Reel spindle system is generated from the Printmech Board in the e-box, which receives the control from the Lower PCI Board. The power of the PWM comes from the 42V secondary power supply via the Main Interconnect Board.

Problem causes in order of importance

A. The PWM signal was not supplied to the motors. PWM generator (driver) failure, motor failure, cable failure or disconnected

B. Encoder signals indicating the movement not registered. Encoder disconnected, Encoder broken or failed, Cable disconnected, electrical system receiving the encoder signal failed

C. PWM detected is too high due to a mechanical failure, the system is jammed, broken or loose.

Corrective action

1. Perform the diagnostic procedure 3.11 Take Up Reel system ⇒ page 380.
2. Perform the spindle test 3.3 Rear Spindle Test⇒ page 373, to test the action of the Spindles, apply grease while the spindles are rotating.

PWM signal not supplied to the motors

3. If the motors are not moving in open loop, check that the correct PWM signal is provided to the motor with a multimeter.
4. Connect the power line to the Roll to Floor spindle motor. Repeat the test to identify failed motor. Replace failed motor ⇒ page 646.
5. Swap power connections of the Printmech Board to check if the fault is in the Printmech Board
6. Ensure 42V power arrival to the Printmech Board. Proceed with 42V power troubleshooting if 42V power failure.

Encoder signals indicating the movement not registered

7. If the test fails, check the Take Up Reel Spindle motor encoder connections and cable integrity. Swap encoder cable connections and power cable in the Printmech Board and Main Interconnect Board. Replace Motor (as the encoder is embedded), Cable or Main Interconnect Board as appropriate.

PWM too high due to a mechanical failure

8. If PWM is too high perform the Rear spindle test 3.3, to test the action of the Spindles, apply grease while the spindles are rotating, then repeat the tests with the spindle removed, if it is still too high replace the Take Up Reel spindle motor gear system ⇒ page 644.
   If the friction is not too high with the spindle removed, check the spindle and the spindle support mechanism for damage, check also the position of the Spindle Plates on the printer.

SE Code: 44.2.2:10 Take UP Reel Spindle System inverse polarity

Description

This error indicates that the Take UP Reel spindle is turning in the unexpected direction. When the printer starts up, it performs a check for movement and direction, this error indicates that this test failed.

Problem causes in order of importance

A. Incorrect cable connections with the spindle motors. (power polarity inverted)

Corrective action

Incorrect cable connections with the front spindle motors

1. Check polarity connections in the Take UP Reel spindle motors, the fault can be due to an incorrect connection in the Printmech board. Ensure the connector is not forced. Swap pin connections if required.

SE Code: 44.4:03 & 45.4:03 - Front/Rear Spindle System Driver overheating

Description

The Printmech Board detects an over-current condition.

44.4:03 Front Spindle

45.4:03 Rear Spindle

Problem causes in order of importance

A. Failed cable connections or motor to Front/Rear Spindle system.

B. Failed Printmech Board

Corrective action

Failed cable connections or motor

1. Check for short circuits in the cable line feeding the motor.
2. Swap the connections over with the Rear spindle to see if it still triggers the error.
3. Perform the diagnostics procedure for checking the 3.2 Front spindle and 3.3 Rear Spindles ⇒ page 371 and page 373. If the failure is with a cable or motor repair or replace as appropriate. Note: If the Close Loop value of the friction detected is very high perform the system burning diagnostic test in service 3.1 Spindle Motors Burning ⇒ page 370, grease the gear system, if the failure persists replace the mechanical system of the driver.

Failed Printmech Board

4. Replace the Printmech Board. page 596.

SE Code: 46.n:01 - Priming not working as expected

The full list of system error codes:

- **46.1:01** = Yellow/Magenta Primer.
- **46.2:01** = Light Cyan/Light Magenta Primer.
- **46.3:01** = Cyan/K Primer.

Description

If the printer detects a primer functioning not as expected, a 'silent' system error will be put in the advisory system errors of the service plot

Problem cause in order of importance

A. Missing grease on the O-ring of the primer

B. Primer failure.

Corrective Action

Missing grease on the O-ring of the primer

1. Grease the O-ring as described in the Maintenance and troubleshooting guide, available on the www.hp.com
2. Perform a hard cleaning of the corresponding Printhead, and once finished check the lower part of the Printhead Cleaning Roller material is full of ink. Further instructions are available in a newsletter published in March 09 '5_L65500 PH troubleshooting and return.pdf.

Primer failure.

3. Perform the diagnostic 6.6.x Force Priming Left/centre.right. WARNING: restart the printer between each test!

4. From Diagnostic menu, remove the corresponding Printhead, insert the needle within the FI tower, and check with a syringe that the piston is going up while running the '4.12, Ink Pressure At Pen', testing each side of the air pressure pump.
5. -Check that the top of the FI tower, the part of the tubes in contact with the printhead, mainly the rubber part when the needle of the Printhead is passing through. This rubber part must be flat, in order to ensure a good contact between the printhead and the tube. If it is not flat, replace the corresponding part (Q6702-60688 TRS Print Head Ink Connectors Repair Set)
6. Weigh the printhead, the weight should be at least 250gr (the average Printhead weighs about 272gr), if the weight is too low, replace the Printhead. It is important to have scales with the right precision

SE Code: 47.1:03 - PH Cleaning system advance motor servo shutdown

Description

The PH cleaning advance motor has failed to perform the wiper advance movement as expected

The advance motor is controlled in close loop by the Main Interconnect Board. The motor receives the PWM signal from the Main Interconnect Board, the internal motor encoder reads the encoder movement signals and sends the signals to the linear to differential encoder PCA and then to the Main Interconnect Board with an intermediate connection in the PH cleaning module rear side.

Problem causes in order of importance

A. Printhead cleaner pinch module not correctly closed
B. Printhead cleaner path blocked. Roller cannot move the roll.
C. Advance motor roller connections failure, motor power or encoder cables disconnected.
D. Advance roller mechanical failure
E. Advance Motor failure
F. Main Interconnect Board failure
G. Printhead Cleaner roll system mechanical failure

Corrective action

Printhead cleaner pinch module not closed

1. Make sure the Pinch mechanism is closed, push in the black holder to ensure correct latching of the system. Repeat closing operation and re-start the system.

Printhead cleaner path blocked. Roller cannot move the roll

2. Check the wiper path and ensure there are obstructions. If there is an obstruction, re-do the wipe path and ensure there is no damage to the wiper or Printhead Cleaner roll parts.

Advance motor roller connections failure

3. Check the cable connections of the encoder and motor system. Note: Check electrical diagram to ensure all cables in the motor power and encoder path are correctly connected ⇒ page 12.

Advance roller mechanical failure

4. Check the rear side of the PH cleaner roll and ensure there is no obvious damage of the belt impelling system, such as a broken gear, broken belt, motor out of position. Perform 7.1 Printhead Cleaner Roll Advance System Open Loop ⇒page 438 and 7.1 Printhead Cleaner Roll Advance System Close Loop ⇒page 440 to determine the possible issue. Depending on the results of the tests replace the motor or mechanical parts as appropriate.

Advance Motor failure

5. Replace the Advance Motor ⇒ page 796.

Main Interconnect Board failure

6. Replace the main interconnect board ⇒ page 602.

Printhead Cleaner roll system mechanical failure

7. Replace the failing parts of the Printhead Cleaner Roll.

SE Code: 47.1:03.1 - PH Cleaning System Jam

Description

Printhead cleaning system has detected a Jam in the cloth path. The system error is a silent error not seen by the customer, but it will appear in the service plot for tracking purposes in order to know the frequency of the jam. In case the frequency is high, perform the corrective action.

Corrective action

1. Perform the procedures in the section 'How to check the Printhead Roller is functioning correctly' ⇒ page 252.

SE Code: 47.1:10 - PH Cleaning system Advance motor electrical fault

Description

Critical error detected with the Main Interconnect Board. The area of the board that processes the driver of the printhead cleaning advance motor.

Problem causes in order of importance

A. Main Interconnect Board failure

Corrective action

1. Check for any short circuits in the Advance Motor system and replace parts as appropriate.
2. Replace the Main Interconnect Board⇒ page 602.

SE Code: 47.2:03 - PH Cleaning system Engage motor servo shutdown

Description

The printhead cleaning up/down motor failed to perform the roll engage movement as expected (rubber roller lift).

The up/down motor is controlled in closed loop by the Main Interconnect Board. The motor receives the PWM signal from the Main Interconnect Board. The internal motor encoder reads the encoder movement signals and sends them to the linear to differential encoder PCA and finally to the Main Interconnect Board. There is an intermediate connection between the encoder PCA and Main Interconnect Board at the back of the printhead cleaning module.

Problem causes in order of importance

A. Rubber roller up/down path obstructed.
B. Rubber roller up/down system mechanically blocked.
C. Rubber Roller Up/down motor encoder failure
D. Rubber Roller Up/down motor failure (cable disconnected, Media motor failed)
E. Main Interconnect Board failure

Corrective action

Rubber roller up/down path obstructed

1. Make sure there are no mechanical parts stuck or preventing the rubber roller going up.

Rubber roller up/down system mechanically blocked

2. Move the system and check for any possible obvious damage

Rubber Roller Up/down motor encoder failure

3. Motor encoder failure, encoder motor cable to linear/differential board failure disconnected or failed.
4. Perform the Engage Motor PH cleaner roll service 7.3 (open loop) and 7.4 (close loop).
5. In case of failure check complete encoder path from motor to the encoder PCA down to the module connection and then to the Main interconnect. Ensure all connections are correct and replace cables if required.

Rubber Roller Up/down motor failure

6. Check cable connections ensure the encoder and motor system cables are connected as appropriate. Note: Check electrical diagram to ensure all cables involved in the motor power and encoder path are correctly connected ⇒ page 63.
7. If a failure in the cables or motor is detected replace them.

Main Interconnect Board failure

8. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 47.2:10 - PH Cleaning system Engage motor electrical fault

Description

Critical error reported in the Main Interconnect Board printhead cleaning rubber roller up/down motor driver.

Corrective action

1. Check for any short circuits or mechanical damage in the Motor Engage system.
2. Perform the procedures in 'How to check the Printhead Cleaner Roller⇒ page 252.
3. Replace the Main Interconnect Board ⇒page 602.

SE Code: 47.3:10/47.4:10 - Calibration of the Printhead Cleaning Roller is required

Description

The Printhead Cleaning Roller calibration values are missing from the NVM. The calibrations must be performed before the mechanism will function correctly.

Corrective action

1. If the printer cannot turn on in normal mode, start the printer in diagnostic mode and set the **standard** values> diagnostics 7.5, calibrate the default values.
2. Start up in Printer mode and perform the calibration in Service mode:
   - 4.7.1. Printhead Cleaner Height Calibration
   - 4.7.2. Printhead Cleaner Horizontal

SE Code: 47.5:10 - Overflow of PH Cleaning Material Counter

Description

The counter of the cleaning cloth advance has suffered an overflow.

Problem causes in order of importance

When a customer replaces the material of the cleaning roll without following the Front Panel instructions, some settings may be incorrectly reset. Among them are the cloth advance counter. If this counter suffers an overflow, this system error is displayed.

Corrective action

1. Perform the procedure 4.7.5 Reset PH Roll Adv ⇒page 524.
2. Perform the procedures in 'How to check the Printhead Cleaner Roller⇒ page 252.
3. Replace the Main Interconnect Board ⇒page 602.

SE Code: 47:13 - PH Cleaning pressure roller height distance failure

Description

When starting the printer, a specific check is done where the carriage is moved to the top of the printhead cleaning roller and the pressure roller is moved up until the calibrated height value. If the friction detected during this movement is too high, the system error 47:13 is displayed.

The pressure roller must have a specific calibration value to perform the cleaning operation correctly. This is displayed at the initialization of the printer.

Corrective action

1. Reboot the printer in diagnostics, and perform the utility: 7.5 PH High Calib Default ⇒page 443.
2. Reboot the printer in normal modes and perform a 4.7.1 Printhead Cleaner Roll Height Calibration ⇒page 514.
3. Perform the procedure 7.6 TestUP_Down loop47_13 ⇒page 444. As the Printhead Roller moves up, check there is nothing to obstruct the movement of the Printhead Roller. If required grease the mechanism.

SE Code: 48.n.1:03 - PPS Servo shutdown

Description

The full list of system error codes:

- **48.1.1:03**= Front Right Motor.
- **48.2.1:03**= Rear Right Motor.
- **48.3.1:03**= Rear Left Motor (IDS side).
- **48.4.1:03**= Front Left Motor (IDS side).

An error in the close loop control (Servo control) of the PPS system has occurred. This error indicates that the PPS system is not moving as expected in closed loop control.

The servo controlled movements consist of applying a specific PWM to a motor (a certain amount of energy) and receiving the feedback of an encoder about the actual movement of the motor after applying that specific PWM.

Therefore, if after applying a specific PWM the encoder does not register the expected number of encoder counts (movement), the system will produce this error.

Also if the PWM values come out of a certain range of values for the movement (i.e too high PWM to obtain a movement), this error is produced.

Problem causes in order of importance

A. PWM signal not supplied to motor

PWM generator (driver) failure, motor failure, cable failure or disconnected

B. Encoder signals indicating the movement not registered

Encoder disconnected, Encoder broken or failed, Cable disconnected, electrical system receiving the encoder signal failed

C. PWM too high due to a mechanical failure

mechanical system jammed, mechanical system broken or loose

D. PPS system fuse failure.

Contact between mechanical system fuse and the motor module.

Corrective action

PWM signal not supplied to motor

1. Check the connection of PPS motor power cable and encoder cables ⇒page 67.

Encoder signals indicating the movement not registered

2. Check that power is supplied to the encoder PCA (Led in the Main Interconnect)

PWM too high due to a mechanical failure

3. With PPS in the high position, unscrew the X-Y bushing, and check that it can move smoothly through the column. The screwdriver needs to be long.
4. With the PPS in the low position remove the bottom stopper to the PPS screw (may need to remove the left and right curing module).
5. Remove each PPS screw with a flat screw drive and then the grease the parts, check there is no obstructions.
6. In case you find plastic or metal obstructions, you will have to remove later the corresponding PPS motor assy to also clean it.
7. If the high friction error continues, swap the PPS screw from one to the other, and check if the failure is following the PPS screw.

PPS system fuse failure.

8. Check mechanical blocking status in the system fuse.

SE Code: 48.n.3:10 - PPS 1 Driver system error

Description

The full list of system error codes:

- **48.1.3:10**= Front Right PPS Driver Fault
- **48.2.3:10**= Rear Right PPS Driver Fault
- **48.3.3:10**= Rear Left PPS Driver Fault
- **48.4.3:10**= Front Left PPS Driver Fault

A critical error has occurred in the electrical system driver which generates the movement of the PPS system (PWM)

Advance: The PWM signal for the PPS near motors is generated by one of the IC in the Main Interconnect Board and for the left motors by the IC in the Remote Controller Boards. This IC has a internal feedback line which indicates if the IC is working correctly or not while generating the PWM signal. A failure in the

expected internal signal produces this error. This is a critical error which most probably requires replacement of the control Board.

In case this system error occurs AFTER a 48:12 system error, focus on the information of the 48:12 system error ⇒ page 169.

Problem causes in order of importance

A. Main Interconnect Board failure (for the Right PPS systems) Cabinet side.

Remote Controller Failure (for the Left PPS systems) IDS Side

Corrective action

1. In case of misalignment perform the Carriage beam system recovery. If this is not possible recover the system manually by removing the motor and aligning the PPS by hand.
2. Perform the PPS Motor check utility in diagnostics ⇒ page 412.
3. Verify correct connection of PPS motor power cable and encoder cables.
4. Replace the Main Interconnect Board for the right PPS system ⇒ page 602.
5. Replace the Remote Controller board for the left PPS system ⇒ page 739.

SE Code: 48.n.4:03 - PPS 1 Driver overheating

Description

The full list of system error codes:

- **48.1.4:03**= Front Right Driver over heating
- **48.2.4:03**= Rear Right Driver over heating
- **48.3.4:03**= Rear Left Driver over heating
- **48.4.4:03**= Front Left Driver over heating

The driver generating the PWM signal has detected an overheating due to overwork or failed condition. The system generates a temporarily shutdown to protect itself. After a cool down period it should be possible to resume normal operation.

The IC driver has an over-temperature feedback line. This error is produced when this line is activated. The servo-control movement is designed to prevent overheating. If this error occurs repeatedly, it is required to analyze the possible conditions of overwork (i.e too much mechanical friction on the limit of the PWM accepted value, run close loop test to analyze these values). If working conditions seem to be normal, the driver may be faulty and require change. Also analyze environmental conditions of the PCA driver (environment too hot).

Problem causes in order of importance

A. Environmental conditions of PCA driver

B. Overworking conditions of driver in the PCA

C. Main Interconnect Board failure (for the Right PPS systems)

Remote Controller Failure (for the Left PPS systems)

Corrective action

1. Perform the Carriage beam system recovery. If this is not possible recover the system manually by removing the motor and aligning the PPS by hand.
2. Perform 5.2.4 PPS Motor diagnostic test ⇒page 412.
3. Verify correct connection of PPS motor power cable and encoder cables.

4. Perform 5.2.2 Move to Load Position ⇒page 410 and check the average and maximum points of PWM values for the high constant values of friction. If the values are very high, grease the PPS system. If the system error persists replace the PPS Motor mount unit which fails, refer to ⇒ page 742.
5. Replace the Main Interconnect Board ⇒ page 602 or the Remote Controller Board ⇒ page 739 depending on the failing side,
   - Ecabinet PPS control motors> Main Interconnect.
   - IDS PPS controlled motors> Remote Controller Board

SE Code: 48.n.5:11 PPS Movement Test Fault

Description

The full list of system error codes:

- **48.1.5:11** = Front Right PPS Movement Test Fault
- **48.2.5:11** = Rear Right PPS Movement Test Fault
- **48.3.5:11** = Rear Left PPS Movement Test Fault
- **48.4.5:11** = Front Left PPS Movement Test Fault

During the start up the printer produces an automatic check by doing a small movement forwards and backwards to check the main system functionality (motor moves, encoder signals are received). This error is produced when this test fails.

As the movement is very minimal, this error usually represents a critical error like cables disconnected, motor failure, or PCAs fault.

Problem causes in order of importance

A. Cable connection failure.
B. Rotor of the motor blocked.
C. Motor failure/encoder
D. Main Interconnect Board failure (for the Right PPS systems)
E. Remote Controller Failure (for the Left PPS systems)

Corrective action

Cable connection failure.

1. Verify correct connection of PPS motor power cable and encoder cables.

Rotor of the motor blocked.

2. Check that the motor is not blocked by anything.
3. Perform 5.2.4 PPS Motor diagnostic test ⇒page 412.
4. Check mechanical blocking status in the mechanical movement limiter.

Motor failure

5. Replace the PPS motor together with the encoder system and cabling page 740.

Controller board failure

6. Replace the Main Interconnect Board ⇒ page 602 or the Remote Controller Board ⇒ page 739 depending on which is the failed part.

SE Code: 48:12 - PPS system misalignment error

Description

The relative movement of one of the PPS modules with respect to other is incorrect, which means that there is danger of a misalignment of the complete system. This system error stops the mechanical movement of the printer to prevent any possible damage.

This system error can also occur when the distance between the homing position and the engage position is greater than 7mm.

Problem causes in order of importance

A. A trapped obstruction has damaged the power transmission and has broken the mechanical power chain.

B. Moving down a homing sensor has been activated or the PPS Switch has failed.

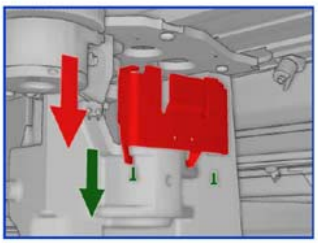
C. Moving up the scan beam there is a misalignment when it reaches the 'engage' position.

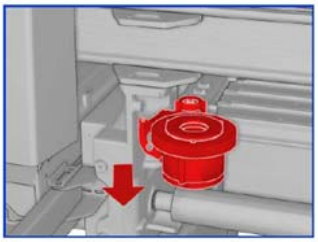
Corrective action

1. Restart the printer.
2. Try to move the carriage beam to the normal position (from front panel -> media or during the media load). If it is still failing, reboot in diagnostic and perform the same operation (5.2.1 Move to Home Position ⇒ page 409).

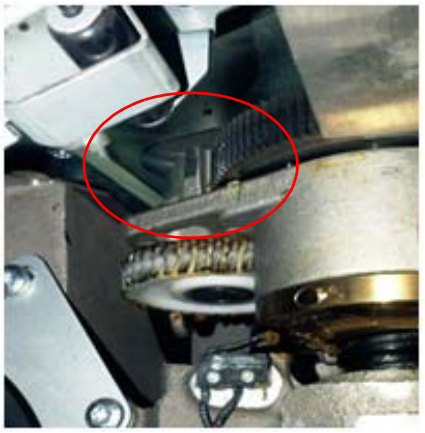
   In some cases, when entering from the front panel: Media >Carriage beam position >the option Carriage system recovery could be displayed instead of the 3 standard entries (Normal position, Move to custom or Move to load position). In case this Carriage system recovery is displayed and selected, the machine will move down the scan beam until the homing position is reach (4 homing switches are closed).
3. Verify that all the PPS supports are touching the scan axis.
4. Check to see if any object is trapped between the Scan Axis and PPS support.
5. While in diagnostic mode perform '5.2.7 PPS Switch status' ⇒ page 415, testing the four different homing switches of the PPS.
6. If the Carriage beam is misaligned perform a manual alignment by removing the PPS Motor and turning the PPS Gear system until they are aligned.

7. Make sure that all the motor mounts are correctly installed and all the limiters are in place.





Incorrectly installed



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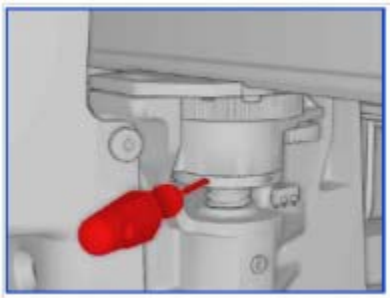


when the motor limiter is correctly installed, secure it with an A6 screw

Correctly installed

SE Code: 49.n:03 - Aerosol System Fan Failure

Description

- **49.1:03**= Fault in the aerosol Fan Right Array
- **49.2:03**= Fault in the aerosol Fan Left Array

The aerosol produced while printing may be affect the image quality of the pictures.

The aerosol can make other parts of the printer dirty, like encoders or sensors, and create spontaneous failures. It is recommended to repair the problem as soon as possible.

Problem causes in order of importance

A. The carriage has two fan arrays with 5 fans to each array.the fans have a fault signal which is activated when the fan is powered but not rotating. Fans or arrays not connected will not display this error.

B. One of the fans burned or failed

C. Carriage Interconnect Power fault (24V)

D. Carriage Interconnect Driver fault.

E. Data Cable failure

F. Printhead Interconnect

Corrective action

One of the fans burned or failed

1. Check if the fans array are not rotating when they are activated. Perform diagnostics 6.5 aerosol fans page 432 or Service 1.6.3 Aerosol Fans on page 493.
2. Replace the aerosol fans ⇒ page 765 or ⇒ page 767.

Carriage Interconnect Power fault (24V)

3. Ensure 24v are arriving to the Carriage Interconnect, refer to the 24v LED
4. Replace the Carriage Interconnect ⇒ page 748.

Carriage Interconnect Driver fault.

5. Swap fan array connections and perform the Fan Array diagnostic test to check which fan has failed.

Data Cable failure

6. Swap over Data cables to confirm the data cable failure, replace the failed data cable.

Printhead Interconnect

7. This is a signal failure, swap over the printhead interconnect 2 &3 and recheck and confirm the error, replace the faulty Printhead Interconnect.

SE Code: 50:01 - OMAS Sensor window dirty

Description

This error is triggered when the OMAS is disconnected as the result of a failed calibration or repeated navigation failures during a plot or it is dirty. The error is logged in a file.

Problem causes in order of importance

A. OMAS window dirty

B. OMAS sensor failure

Corrective action

1. Check the substrate type to see if it is transparent or lacks sufficient features to be read by the OMAS. If this is the case, turn the OMAS sensor off for that substrate type.

OMAS window dirty

2. Clean the OMAS window. Refer to the *Maintenance and Troubleshooting Guide*.

OMAS sensor failure

3. Replace the OMAS Platen Assembly⇒ page 655.

SE Code: 50:03 - OMAS Controller operational failure

Description

The error is advisory, the OMAS navigation is disabled, and the printer tries to continue printing. The navigation will be enabled at the next start up.

Problem causes in order of importance

A. Sporadic failure

B. Internal firmware error in OMAS controller

C. OMAS controller failed

Corrective action

1. Restart the printer. This error may be erratic, and can be solved with a simple restart.
2. If the error is persistent, it is possible to continue printing by turning off the OMAS sensor. However we do recommend solving the system error to obtain the full range of printer features.
3. Replace the OMAS and Vacuum Control Box ⇒ page 661.
4. Replace the OMAS Platen sensor and cable ⇒ page 655.

SE Code: 50:11 - OMAS sensor mis-positioned

Description

The readings of the Omas sensor do not correspond to the media advance. Therefore, OMAS navigation is not possible.

Problem causes in order of importance

A. OMAS sensor correctly positioned due to a mechanical failure

B. OMAS sensor failure

Corrective action

OMAS sensor correctly positioned due to a mechanical failure

1. Disassemble the OMAS Platen and ensure correct connections and sensor locations. Check the shims, for missing screws, or any other abnormalities.

OMAS sensor failure

2. Replace the OMAS Platen Assembly⇒ page 655.

SE Code: 50:14 - OMAS Firmware version mismatch

Description

The system automatically updates the internal firmware when a mismatch occurs; therefore this error is only displayed if the internal system has been corrupted and an update is not possible.

Problem causes in order of importance

A. Failure in OMAS controller

Corrective action

Failure in Omas controller

1. Replace the OMAS and Vacuum Control Box⇒ page 661.

SE Code: 50:17 - OMAS sensor LEDs configuration error warning

Description

One of the OMAS sensor LEDs illumination configuration parameters is out of range. These parameters are automatically calibrated by the printer at start up and at media load time.

Problem causes in order of importance

A. OMAS sensor is dirty.

B. OMAS sensor is damaged.

C. OMAS sensor flat cable is damaged.

D. OMAS controller board has failed.

Corrective action

OMAS sensor dirty

1. Clean the OMAS sensor and repeat the media load procedure. Note: Ensure the media used is to the specifications of the printer.

OMAS sensor damaged

2. Replace the OMAS sensor ⇒ page 655.

OMAS sensor flat cable damaged

3. Replace the OMAS sensor Flat cable ⇒ page 657.

OMAS controller board damaged

4. Replace the OMAS and Vacuum Control Box ⇒ page 661.

SE Code: 50.1:10 - Error in OMAS sensor electronics.

Description

Failing access to nvm at OMAS sensor module. This error is advisory, the navigation is disabled and the printer tries to go on. The navigation will be enabled at the next start up. This failure only occurs during the OMAS controller self-test (when the printer starts).

Problem causes in order of importance

A. Sporadic failure

B. OMAS sensor cable disconnected.

C. Failure in OMAS sensor

D. Failure in OMAS Sensor cable

E. Failure in OMAS Controller

Corrective action

Sporadic failure

1. Restart the printer. This error may be erratic, and can be solved with a simple restart.

2. If the error is persistent, you can continue printing by turning off the OMAS sensor.

OMAS sensor cable disconnected.

3. Ensure that the OMAS sensor cable is correctly connected to both ends of the sensor and controller side

Failure in OMAS sensor

4. Replace the OMAS Platen Assembly⇒ page 655.

Failure in OMAS Sensor cable

5. Check the OMAS sensor cable to make sure that it is correctly connected and is not damaged.

6. Replace the OMAS sensor cable ⇒page 657.

Failure in OMAS Controller

7. Replace the OMAS-Vacuum Control Box

SE Code: 50.1:11 - OMAS controller CAN communication error

Description

Failure in communication with the OMAS Controller board via CAN from the Main Interconnect Board

Problem causes in order of importance

A. Power Failure OMAS controller

B. Can cable line failure

- From Main Interconnect Board to OMAS controller (cable disconnected or failed)
- From Lower PCI to Main Interconnect Board

C. Vacuum controller PCA CAN line failure

D. Omas Controller failure

Corrective action

Power Failure Omas controller

1. Perform the Power diagnostics procedure 2.3 to supply 24v power. Check power LEDs on the Vacuum controller. If the LEDs are off, check power arrival in the power connector (GND, 5v and 24V).
2. If power does not arrive, check cable connections in the Main Interconnect Board and ensure voltages are coming form the Main Interconnect Board connector.
3. If power does not leave the Main Interconnect Board, remove the Main Interconnect Board cover and ensure all power LEDs are on.
4. If all the Main Interconnect Board power LEDs are not on, check power arrival to the Main Interconnect Board, check cable integrity and connectors.
5. If no problem with the cables or connectors is found, replace the Main Power Supply ⇒page 594.
6. If power arrives to the Main Interconnect Board, replace the Main Interconnect Board ⇒ page 602.

Can cable line failure

7. Check data cable connections.
8. Any LAN cable with the necessary length can be used to perform troubleshooting. Replace the cable and restart the printer. If the problem is the LAN cable, HP recommends that you replace it with the appropriate HP service part.

Vacuum controller PCA CAN line failure

9. Disassemble the OMAS-Vacuum PCA box and ensure all connections are correct.

Omas Controller failure

10. Replace the OMAS and Vacuum Control Box⇒ page 661.

SE Code: 50.2:10 - OMAS Controller board error

Description

Critical error detected on the Omas controller board. This failure only occurs during the OMAS controller self-test (when the printer starts).

Problem causes in order of importance

A. Sporadic failure

B. Failure in Omas controller

Corrective action

Sporadic failure

1. Restart the printer. This error may be erratic, and can be solved with a simple restart.
2. If the error is persistent, you can continue printing by turning off the OMAS sensor.

Failure in Omas controller

3. Check the OMAS controller board to make sure that everything is correctly connected and is not damaged.
4. Replace the OMAS and Vacuum Control Box ⇒ page 661.

SE Code: 52.n:01 - Drop detector failure

- **52.1:01** = Drop detector 1 failed or not connected (M-Y)
- **52.2:01** = Drop detector 2 failed or not connected (Lc-Lm)
- **52.3:01** = Drop detector 3 failed or not connected (C-K)
- **52.4:11** = All drop detectors Failed

Description

The drop detectors basic operation consists in receiving power to feed an LED transmitter and a receiver situated at both sides of the drop detector window. In stand-by with no drops or interference in the drop detector window; the transmitter is permanently powered and the receiver receives as signal of medium range (total range from 0 to 255, medium range signal around 127). The system error is displayed when the drop detector is 0 in stand-by (12v supplied to the drop detectors but there is no drop detection activity). Note: To have the 12v for drop detectors the system must be active, alternately the 12v can be activated in the diagnostics 5.3.5 Drop detectors 12v on/off

Problem causes in order of importance

A. Drop detector disconnected

B. Drop detector failed

C. Service station interconnect board or cable failed

D. Main Interconnect Board failed.

Corrective action

Drop detector disconnected

1. Make sure that the drop detector is correctly connected to the service station interconnect board. Use diagnostics 5.3.6 to see the valves of the drop detector indicates disconnection, not connected, drop detector faulty.

Drop detector failed

2. Swap the failing drop detector connection with another drop detector to ensure the issue is with the actual drop detector. If so, replace the drop detector ⇒page 726.

Service station interconnect board or cable failed

3. Check the service station interconnect board cable connections at both ends (service station and Main Interconnect Board). Make sure cable is well connected and check cable integrity, replace parts if required.

Main Interconnect Board failed

4. Ensure power (12V and 5V) arrives to the board (Power LEDs ON) (diagnostics 5.3.5 drop detector on/off). Check the LEDs in the drop detector interconnect.
5. Replace service station interconnect board and cable ⇒page 725.

6. Replace the Main Interconnect Board after finding the root cause of the failure; drop detector, faulty cable etc⇒ page 602.

SE Code: 52.5:11 - Unexpected drop detector position

Description

The drop detector is unable to detect its exact position to perform the drop detection.

When performing a drop detection, the printer performs a synchronization with the linear encoder and the tail encoder located in the service station motor in order to establish its position with respect to the drop detector windows before performing the actual drop detection action. This error indicates that this synchronization cannot be achieved as the readings from both encoders do not match according to the movements performed.

NOTE: This system error can be triggered by an occasional error with the drop detector. Before replacing any parts, perform the drop detector test, if the part passes the test a replacement is not required ⇒page 419.

Problem causes in order of importance

A. Intermittent failure mostly seen when previously used printheads are installed.

B. Drop detector linear encoder strip not correctly installed or connected

C. Drop detector linear encoder sensor dirty, disconnected or failed

D. Incorrect calibration of drop detector system

E. Power not arriving to the Service Station PCA (5V pin 19 and 12V pin 2, GND 20&1 pins)

F. Service station interconnect board or cable failure

G. Main Interconnect Board failure

Corrective action

Intermittent failure mostly seen when used printheads are installed

1. Check the functionality of the drop detector:

    f. Print the nozzle check by following the directions in the service menu (2.6.1 Nozzle Check).

    g. Cancel the drying time to save 10-15 minutes

    h. From service menu, perform the '1.5.4 PH Stability Check' ⇒page 489 and compare the results between printouts and results of the drop detection from the front panel.

    i. In case no failure is detected there no need to go further, the drop detector is working correctly and the intermittent system error is due to the high usage of the printheads.

Drop detector linear encoder strip not correctly installed or connected

2. Check the linear encoder strip in the service station. Make sure that the encoder strip is correctly installed in the sensor and placed well in its holders on each end.

Drop detector linear encoder sensor dirty, disconnected or failed

3. Check the linear encoder sensor connection. Perform the 5.3.3 Drop Detector Diagnostic test to check the linear encoder ⇒page 419. If the test fails, replace the encoder system ⇒ page 736

Incorrect calibration of drop detector system

4. Perform a 5.3.3 Drop Detector Calibration ⇒page 419.

Power not arriving to the Service Station PCA (5V pin 19 and 12V pin 2, GND 20&1 pins)

5. Ensure power (12V and 5V) to the Service Station Interconnect board (Power LEDs ON)⇒ page 206.
6. If power arrives (LEDs ON), replace the Service Station Interconnect board and cable ⇒ page 725.
7. If there is no power (LEDs OFF), replace the Main Interconnect Board ⇒ page 602.

Service station interconnect PCA or cable failure

8. Check the cable connections of the service station system. If no failure found replace the Service Station Interconnect Board ⇒page 725.

Main Interconnect Board failure

9. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 52.6:10 - Drop detector comms error

Description

Failure communicating with the Service station interconnect.

The Upper PCI Board communicates via the Main Interconnect Board with an ADC IC in the Service Station interconnect Board that receives all the signals from the drop detectors.

This error indicates that the drop detector values registered in the ADC can not be retrieved from the Service Station Interconnect PCA.

Problem causes in order of importance

A. Service station interconnect - Main Interconnect Board cable disconnected, pin connection fault
B. Power not arriving to the Service Station PCA (5V pin 19 and 12V pin 2, GND 20&1)
C. Service Station Interconnect fault
D. Main Interconnect Board failed
E. Upper PCI Board
F. Firmware error/corruption

Corrective action

Service Station interconnect to Main Interconnect Board

1. Check the cable connections from the Service Station Interconnect Board to the Main Interconnect Board. Check for cable or pin damage.

Power not arriving to the Service station board (5V pin 19 and 12V pin 2, GND 20&1)

2. Check there is power to the Service Station Interconnect (12V and 5V) (Power LEDs ON)⇒ διαγνοστιχσ 5.3.5.
3. If power arrives (LEDs ON), replace the Service Station Interconnect board and cable if no failure found ⇒page 725.
4. If power does not arrive (LEDs OFF), replace the Main Interconnect Board ⇒ page 602.

Main Interconnect Board failed

5. Replace the Main Interconnect Board ⇒ page 602.

Service Station Interconnect fault

6. Replace the Service Station Interconnect⇒ page 725.

Upper PCI Board

7. Replace the Upper PCI Board ⇒ page 597.

Firmware error/corruption

8. Replace the Hard Disk Drive ⇒ page 601.

SE Code: 52.7:10 - Drop detector control error

Description

Failure switching ON or OFF the Service Station interconnect board before or after performing a drop detection.

The Service Station interconnect board is not constantly ON (12V ON on the Main Interconnect Board which power the drop detectors). The Service Station interconnect board is activated before performing the drop detection by the Main Interconnect Board. This error indicates that a fault was detected in the Main Interconnect Board when activating the Service Station interconnect board (failure is internal to the Main Interconnect)

Corrective action

1. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 55:10 - Line sensor error (sensor box)

Problem causes in order of importance

A. Line sensor disconnected

B. Line sensor failed

C. Sensors interconnect failed

D. Carriage interconnect failed

Corrective action

Line sensor disconnected

1. Check cable connections of line sensor in the sensors interconnect

Line sensor failed

2. Perform the 6.4 Line Sensor check⇒ page 431

3. Replace the line sensor ⇒page 762.

Sensors interconnect failed

4. Replace the carriage sensor box⇒ page 750.

Carriage interconnect failed

5. Replace Carriage Interconnect Board ⇒page 748.

SE Code: 56:01 Drive roller Encoder position Error

Description

The system has been unable to find the drive roller encoder disc reference position

Problem causes in order of importance

A. Encoder disc loose or incorrectly positioned

B. Encoder sensor faulty

C. OMAS Controller faulty

Corrective action

1. Access the drive roller encoder disc location, ensure the correct position of the encoder disc. Replace the encoder disc if required, ensure the attachment latch is correctly secured and placed in the correct position. ensure drive roller gear system is well attached to the drive roller.
2. Replace the encoder sensor board and cable
3. If the problem persists replace the OMAS and Vacuum Controller PCA.

SE Code: 57:11 - Ink System Leakage

Description

The ISM Ink Leak has been triggered. The detectors are two terminal pins located on the bottom tray of the ISM system. The system error is triggered when the pins are short circuited by an ink leak or any other water based fluid reaching the ink tray.

Problem causes in order of importance

A. A genuine ink leakage.

B. A false ink leakage

C. False ink leakage detection

Corrective action

A genuine ink leakage

1. Check the bottom tray and the leak sensor. If there is ink present, find the source of the ink leak and fix it as appropriate. In case body of an electrovalve has been in contact with ink, especially if the color of the body is black, replace also the corresponding electrovalve as there is a risk of failure later. In case the body of the electrovalve corresponds with the color blue, there is no need to replace it, as it is fully protected against liquid. The change to the protected blue electrovalves were implemented in the manufacturing line during the summer of 2009 (printer S/N starting by SG98... or SG99...), but in any case, there is a need to check the color of the body of the main ink electrovalve. After fixing, clean the system and clear the ink leak error (diagnostics 4.7 Recover ink leak ⇒ page 389).

A false ink leakage

2. Water or condensation in the ink tray, clean the accumulated water, dry the tray and the sensor contacts if required remove any possible root cause of the accumulation of water.
3. After fixing clear the ink leak error (diagnostics 4.7 Recover ink leak ⇒ page 389).

A false ink leakage detection

4. Check for possible short circuits in the ink leakage detection line, use the diagnostics 4.5 Ink System Leakage to troubleshoot the issue, replace the detection cable or ISS PCA if required ⇒ page 700.

SE Code: 58:10 - Color sensor error

Description

When initializing the Color sensor, it performs an automatic calibration with an inner tile located on the back side of the shutter expecting it to be closed. A failure in this auto calibration is due to an operational failure or simply by having the shutter open will trigger this system error.

There are other operational sensor failures, such as an unresponsive communication attempt or an unexpected electrical signal from the sensor, both of which can trigger this error.

Problem causes in order of importance

A. Color sensor shutter open

B. Sol sensor disconnected

C. Sol sensor failed

D. Carriage interconnect failed

Corrective action

Color sensor shutter open

1. Ensure the color sensor shutter is correctly closed. The color sensor shutter could have been accidentally opened by a media crash, also an incorrect performance of the shutter mechanism could cause this failure. Perform the Color sensor shutter OPEN/CLOSE test if required. (Service tests 1.6.1 Open/ Close color sensor ⇒page 490

Sol sensor disconnected

2. Check SOL cable connections inside the sensors interconnect, and reconnect if required.

Sol sensor failed

3. Replace the carriage sensor box ⇒ page 750.

Carriage interconnect failed

4. Replace Carriage Interconnect Board ⇒page 748.

SE Code: 58.1:12 - Color sensor Shutter error

Description

The SOL shutter triggers an error and it cannot close or open for the SOL sensor to operate

There is no direct feedback from the shutter mechanism when this failure it is displayed.

Problem causes in order of importance

A. Sensors box shutter mechanical issue

B. Sensors box shutter motor electrical issue

C. Sol issue

Corrective action

Sensors box shutter mechanical issue

1. Check sensors box for any obvious mechanical shutter issue.

Sensors box shutter motor electrical issue

2. Check the cables are all correctly connected and there is no damage to any of the cables.

Sol issue

3. Replace the carriage sensors box ⇒page 750.

SE Code: 63:05 - Printing data Error

Description

This system error is advisory. It indicates a job cancellation due to the lack of printing data (interrupted, too slow) from the IPS to the printer while printing.

The error is triggered by the formatter which stops receiving the required information to be able to continue printing. This is not a communication error between the IPS and the printer.

Problem causes in order of importance

A. There are two IPS applications running and pointing to the same printer.

B. IPS (Internal Print Server) issue.

C. IPS PC does not have sufficient hard disc space.

D. IPS does not have sufficient memory.

E. IPS PC Operating system failure.

F. IPS PC failure

Corrective action

Two IPS application running

1. Locate the other PC running the IPS which is pointing to the same printer, and close the application.

IPS issue

2. Ensure there is no other program running in the IPS PC other than the IPS software for the printer (anti virus, PC recovery tools, large programs using the PCs resources etc.

IPS PC does not have sufficient hard disc space

3. Check the hard disc drive of the pc, ensure there is enough free space available to process the printing job.

IPS does not have sufficient memory

4. This is usually caused by another program/utility, virus using the RAM memory in the PC, check the memory usage and restart the pc, restore the resources if required.

IPS PC Operating system failure

5. Reinstall windows operating system, reinstall IPS software in the pc, ensure the correct version of the firmware is installed.

IPS PC failure

6. If the problem persists replace the IPS PC.

SE Code: 68:03 - Nvm Data lost

Description

The printer has encountered an error while accessing/writing values to the NVM. This error can be simply a sporadic firmware error or an electronic glitch.

Problem causes in order of importance

A. Sporadic error.

B. Firmware error.

C. HD data corrupted.

Corrective action

Sporadic error

1. Turn off the printer and wait a few seconds and turn on again the printer.

Firmware error

2. If the problem keeps reoccurring reinstall the firmware.

HD data corrupted

3. Replace the printer's hard disc drive.

SE Code: 71.1:19 - NVM Primary Main and Backup with default values

Description

Both Primary and Backup Main NVMs have the default set of empty parameters and machine cannot be started. This system error can be displayed if the Hard Disk drive and the Main Interconnect Board have been replaced at the same time.

Corrective action

1. Perform the Restore Factory Defaults procedure.

SE Code: 71.2:19 - NVM ISS Main and Backup with default values

Description

Both Ink Service Station and Backup Main NVMs have the default set of empty parameters and machine cannot be started. This system error can be displayed if the Hard Disk drive and the Ink Supply station Interconnect Board have been replaced at the same time.

Corrective action

1. Try to place back the previous working main interconnect or HDD
2. If you cannot find the initial working HDD or main interconnect, the case will have to be escalated to the division, both parts have to be sent to the division to be reconfigured.71.5:19 & 71.6:19 NVM Mismatch

Description

The Primary and Ink Supply Station NVM values and NVM backup values are mismatched and none of them are the default set of empty values therefore the printer can not determine which ones are the correct ones to use.

The Primary NVM memory is stored in the hard disk as file (NVM Primary Main) and includes all the calibration and configuration variables of the printer. This file has a backup stored in an EEPROM IC in the Main Interconnect PCA (NVM Primary Backup). Whenever the calibration parameters are changed with a calibration diagnostics tool both Main and Backup Memories are automatically updated with the new values. Whenever any of the two memories is replaced (HD or Main Interconnect PCA) The new unit would include a default set of empty parameters. The Printer automatically would detect this status of empty parameter and copy the stored values to replace them. This error is triggered when both Main and Backup memory values do not match but at the same time none of them are the default set of empty parameters, in this case the printer can not determine which ones are the correct ones and triggers the error.

Problem causes in order of importance

A. HD or Main Interconnect replaced from an already initialized system

B. HD Primary NVM values corrupted

C. Main Interconnect NVM EEPROM values corrupted

Corrective action

1. Perform the 71.5:19 and 71.6:19 recovery procedure⇒ page 365

SE Code: 72:04 calibration data not found or incorrect

Description

The printer is unable to find the required correct calibration data to continue normal printing operation. Check the missing calibration data by pressing cancel and the down key at the bottom of the error message. The printer will specify which calibration is missing/corrupted.

Problem causes in order of importance

A. GAIN-OFFSET: Line sensor needs to be calibrated-

B. l52k: Line sensor needs to be calibrated for L52K

C. DD CALIBRATION: The drop detector needs to be calibrated.

D. ADVANCE CALIBRATION: The Advance calibration needs to be performed.

E. ALIGNMENT: The alignment needs to be calibrated.

F. PPS CALIBRATION: The PPS needs to be calibrated.

G. CLC: The color needs to be calibrated.

H. ANALOGUE ENCODER: The analogue needs to be calibrated

Corrective action

1. Turn off the printer and restart after 10 seconds.
2. If the problem persists perform the corrective calibration as shown above.
   - For 1 and 2 Perform the service procedure 4.6.1 Line sensor Calibration
   - For 3 Perform:
     - 4.5.2 Service Station Calibration
     - 4.5.1. Drop detector Calibration
   - For 4 perform the diagnostics 4.3.4 Roller Calibration ⇒See page 504
   - For 5 perform the IPS Printhead Alignment procedure
   - For 6 escalate the issue to division.
   - For 7 perform the CLC (Close loop Calibration) from the IPS standard procedure.
   - For 8 perform the 4.3.1 Drive roller encoder Calibration.

SE Code: 73:03 - Carriage encoder reading error

Description

The system has found an issue while trying to read the encoder values from the Carriage.

This error is triggered by the upper PCI board which does not receive the appropriate encoder valves.

Problem causes in order of importance

A. Carriage encoder data path is broken.

B. Faulty Printhead Interconnect board.

C. Faulty Carriage Encoder.

D. Carriage Interconnect faulty.

E. Upper PCI board faulty.

F. Trailing Cable faulty.

Corrective action

Carriage encoder data path is broken

1. Ensure the carriage encoder data path is correctly connected: Encoder cable>Carriage PCA>Data Cable>to Printhead Interconnect

Faulty Printhead Interconnect board

2. Swap the Printhead interconnect with another to troubleshoot the issue and replace the faulty board if required.

Faulty Carriage Encoder

3. Replace the Carriage encoder ⇒ page 746.

Carriage Interconnect faulty

4. Replace the Carriage Interconnect board ⇒ page 748.

Upper PCI board faulty

5. Replace the Upper PCI board⇒ page 597.

Trailing Cable faulty

6. Replace the complete TRS system with trailing cable and tubes⇒ page 687.

SE Code: 74.2:04 - Mis-match firmware and ink configuration

Description:

When starting the unit, the printer detects a current version of GF-BOO.x (or higher) and ink setting: LX600 (while with GF-BOOxx FW version is only compatible with LX610 ink type).

Problem cause:

Miss-match of firmware and ink configuration.

Correction action:

Most probably an incorrect firmware upgrade has been performed, in case the ink type used is LX600, upgrade the printer with FW GF-BOBx.x

SE Code: 74.3:04 - Mis-match firmware and ink configuration

Description:

When starting the unit, the printer detects a current version of GF-BOB6.x (or higher) and the ink setting is LX610 (while with GF-BOB6.x FW version is only compatible with LX600 ink type).

Problem cause:

Miss-match firmware and ink configuration

Correction action:

Most probably an incorrect firmware upgrade has been performed, in case the ink type used is LX610, upgrade the printer with FW GF-BOOx.x.

SE Code: 76:03 - Out of resources in the internal Hard Disc Drive

Description

The internal hard disk drive does not have sufficient disc space.çDue tot he way the system uses the internal hard disc drive, this error is very rare and will most probably be caused by an error in the hard disc drive.

Corrective action

Turn off and on the printer, if the error persists, replace the hard disc drive ⇒ page 601.

SE Code: 78.1:04 - Media settings error

Description

This is an error with the media settings loaded

Problem causes in order of importance

Media setting file corrupted or incorrect

Corrective action

1. Reload the media settings.
2. Use an alternative media setting.
3. Perform again the new media load procedure.

SE Code: 78.X:01- End of roll reached/Media Slippage (ADVISORY)

Description

This collection of system errors are all advisory system errors, they are triggered when the values detected for media movement and tension do not correspond to the expected values (i.e Media moving, but input spindle not rotating). With these system errors the appropriate message will be displayed in the front panel for appropriate user's reaction:

- **78.2:01:** Potential end of the roll.
- **78.3:01:** Substrate may be detached from the rear spindle or slippage detected after forward movement.
- **78.4:01:** Substrate may be detached from the rear spindle or slippage detected after backward movement.
- **78.5:01:** Substrate may be detached from the front spindle or slippage detected after forward movement.
- **78.6:01** Substrate may be detached from the front spindle or slippage detected after backward movement.

Problem causes in order of importance

A. True end of the roll (media finished in one spindle system)

B. Media/Core/Spindle slippage

C. Spindle damaged with Air leak

D. Drive roller encoder disc faulty

E. Drive roller drive/ Media path system failure

Corrective action

True end of the roll (media finished in one spindle system)

1. Check the input or output spindle, ensure the media has not finish and detach from the core. Repeat the media load procedure or perform the appropriate media handling (i.e media removal).

Media/Core/Spindle slippage

2. Check the media spindle attachment; inflate more the spindle to ensure correct core attachment. In order to check the system is not slipping place a mark in the media, the core and the spindle to check which one is moving.

3. If the media is slipping on the roll:

   - If the media is slipping between the media and the core it is important that the end of the media is glued/stuck to the core. It might be possible that the media has to be rewound onto a new core, with the edge taped to the core.
   - If the media is slipping because the core and the spindle, check that the spindle is inflated to at least 5.5 bars (80psi) (as per the site preparation guide) As a workaround if there is an air leak in the input spindle, you could change over with the output spindle (but it must be replaced at a later date).

4. Check the media used is correctly rolled on to the core (you can use a different media roll to check for this issue), ensure the tension settings used in the printer are the appropriate ones for the media, and that the roll of media used is able to handle them. Reduce tension and system vacuum levels if required (note: ensure the values are still appropriate to control the media in the print zone).

5. **LX800:** In the case of dual roll, check the rubber latched with the different core systems, replace the rubber latches if required or re-tighten the core supports.

Spindle damaged, air leak

6. If the attachment on the spindle constantly looses latch, the spindle will be loosing air pressure (air leak). Perform the appropriate repair procedure re-tighten the end latches or replace the spindle valve.

7. Replace the damaged spindle if the Air leak issue cannot be repaired.

Drive roller encoder disc Faulty

8. If the media is not slipping on the roll:

   Check that the Encoder reader is not covered in a layer of grease, this can be done by rotating the encoder wheel in a complete rotation and checking with a light. If there is grease on the encoder, replace the encoder reader and disc.

Drive roller drive/ Media path system failure

9. Check that the Driver Roller Motor is secured correctly and is not loose, also check the mounting bracket is correctly installed, and is not loose.

a. With the printer turned off, try to rotate the Driver Roller, under normal circumstances, this should be impossible.

b. Check that the input spindle and the output spindle can move horizontally by approximately 5mm (0.4 inches).

c. Check the latches are correctly securing the Spindles.

d. Perform the following:

- 3.6 Vacuum test ⇒ page 377.
- 3.7 OMAS, check the temperature displayed is within the predefined limits ⇒ page 378.

e. Add a small amount of oil from the cleaning kit on the gears located just under the spindle, and perform the following diagnostic tests

- 3.1 Spindle burning test ⇒ page 370.
- 3.2 Front Spindle test ⇒ page 371.
- 3.3 Rear Spindle test ⇒ page 373.

SE Code: 78.7:01: Double-side only, cannot find the registration line

Description:

Double-side only, when printing side B, the printer cannot find the registration line on side A. The OMAS is looking for this line. The job cannot be printed.

Problem causes in order of importance

A. When having loaded the roll, did not position correctly the substrate with the first row on the print platen.

B. The OMAS is dirty or has failed.

C. Side A plot not large, margin registration line is marked outside of OMAS placement.

Correction action:

1. Clean OMAS
2. As a workaround reload the substrate and re-position correctly the registration line on the print platen, set the 'rows to registration' to 0 on the side B job properties on the IPS.
3. Check that the media edge holders are correctly loaded.

SE Code: 78.8:01: Skew exceeds limits

Description:

When loading the substrate, in case the edge of the substrate is moving too much laterally, this specific warning error is displayed.

Problem cause:

Most probably substrate has not loaded correctly, or too much telescoping on the input spindle.

Correction action:

Reload the substrate, and can still load the substrate, but in case of double side printing, there is a high probability of miss-registration.

SE Code: 79:03 - Communication error PCI Board & Formatter

Description

A critical error has occurred in the communication between the formatter board and one of the PCI boards.

Problem causes in order of importance

A. Sporadic error.

B. PCI board connection failure

C. Faulty Upper PCI Board

D. Faulty Lower PCI Board

E. Faulty Formatter Board.

Corrective action

Sporadic error

1. Turn off the printer and wait 10 seconds and turn restart the printer

PCI board connection failure

2. Disconnect both PCI boards from the formatter and clean the PCI ports by blowing in the them, clean the PCI contacts in the PCI boards and reconnect.

Faulty Upper PCI board

3. Replace the Upper PCI Board ⇒ page 597.

Faulty Lower PCI Board

4. Replace the Lower PCI Board page 599

Faulty Formatter board

5. Replace the Formatter Board page 591.

SE Code: 79:04 - Generic Firmware error

SE Code: 79.1:04 - Generic Firmware error

Description

This system error code can also be displayed 79:04 or 79.1:04- Generic Firmware error

An internal firmware error has occurred with the printer, if the error persists retrieve the error logs of the printer and escalate the issue to HP. A 79:04 can hide another system error code, as the front panel will first display the original error code and then as it shuts down displays the 79:04 error.

The 79.1:04 is an advisory error, not forcing the customer to reboot immediately the printer, reporting that the internal firmware is not critical and that the printer can still be used, but recommend restarting the printer when possible in order to ensure that this system error will not be displayed again.

A 79:04 system error is usually a consequence of an immediate printer shutdown following another system error. To get more information on this issue, refer to the specific section related to severe SE's ⇒ page 318.

Corrective action

1. Switch OFF and On the Printer.

2. If the error persists check that the Printer has the latest Firmware version, if it does not, update the firmware to the latest version.
3. Perform 5.3.7 Set Back and Elast. Default of the Service Station ⇒ page 424.
4. Perform the following test from diagnostic mode: '2.2.2 Hard Disk Drive ' ⇒ page 362 (a file system check will then be performed).
5. If possible extract the service plot and interpret the results using the information on ⇒ page 318.
6. If the error persists replace the Hard Disk Drive ⇒page 601.

SE Code: 81:01 - Paper path drive roller motor servo shutdown

Description

The media advance motor as failed to perform the drive roller movement as expected

The media advance motor is controlled in close loop by the lower PCI board> The motor receives the PWM signal from the PrintMech PCA, the media encoder reads the signals from an encoder disc located in the side drive roller and sends the signals via an individual cable to the Vacuum-Omas controller which sends the commands to the Main interconnect via a communication bus. From the Main interconnect the bus is bypassed to the lower PCI board.Problem causes in order of importance

Problem causes in order of importance

A. Object in substrate path, roller cannot move the media. Media jam.
B. No 42v in the Printmech board
C. Media motor failure cable disconnected, Media motor failed.
D. Media encoder failure encoder disc damaged or dirty, encoder sensor failed, damaged or dirty, encoder sensor cable disconnected or damaged
E. Printmech Board failure
F. OMAS-Vacuum Controller failure
G. Main Interconnect Board failure

Corrective action

1. Check that there is not a media jam and that no object prevents the drive roller from turning.
2. Check the 42v path from the 42v secondary power supply to the Printmech (ensure 42v are received in the Printmech, check the LEDs in the Printmech after the printer is armed).
3. Check the cables connected to the Drive Roller Motor and Encoder PCA.
4. Perform the Drive Roller open Loop check in diagnostics 3.4 Driver Roller ⇒ page 375. Check if the motor moves or if the encoder is not read. If the motor does not move check the cable from the Printmech to the motor, check with a muliti-meter the pwm output value in the Printmech with the test running:
   - If the pwm is not generated, replace the Printmech ⇒ page 596
   - If the pwm is generated replace the motor ⇒ page 638 or cable as required.

   If the motor moves but the encoder values are not registered replace the encoder disc sensor and cable. If the problem persists replace the OMAS and Vacuum Controller Box ⇒ page 661
5. Replace the Lower PCI Board ⇒ page 599.

SE Code: 81.02:01 - Tension roller unexpectedly raised - LX800 only

Description

The tension roller in the Roll to Free Fall System has been raised while printing. As the Printer is unable to control the substrate tension the system cannot operate any longer. The system error is severe and a reboot of the printer will be required.

Problem causes in order of importance

A. Roll to Free Fall pressure roller accidentally raised.

B. Sudden failure of the pinch switch/switch-Wiring.

C. Main Interconnect failure.

Corrective action

Roll to Free Fall pressure roller accidentally raised

1. Reboot the machine and Ensure the pinch system in the R2FF system is not raised while printing.

Sudden failure of the pinch switch/switch- Wiring

2. Check the physical position of the switch, ensure it is properly attached. Check the wiring and ensure there is no intermittent failure. Run the diagnostics test 3.8 Free fall pinch switch ⇒ page 378 diagnostics to troubleshoot any problem. The switch signal is finally received in the main interconnect J11 P26/25: Repair or replace switch and wires associated to the fault. In case of mechanical damage on the pinch lever handle replaced the system ⇒ page 686.

Main Interconnect failure

3. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 81.02:03 - Tension roller raised when in closed status - LX800 only (ADVISORY)

Description

Tension roller is raised but media has not been moved yet. The following message will be displayed in the front panel “Lower the tension roller lever immediately to continue printing!”.

Problem causes in order of importance

A. Sudden failure of the pinch switch/switch-Wiring.

B. Main Interconnect failure.

Corrective action

Sudden failure of the pinch switch/switch- Wiring

1. Check the physical position of the switch, ensure it is properly attached. Check the wiring and ensure there is no intermittent failure. Run the diagnostics test 3.8 Free fall pinch switch ⇒ page 378 diagnostics to troubleshoot any problem. The switch signal is finally received in the main interconnect J11 P26/25: Repair or replace switch and wires associated to the fault. In case of mechanical damage on the pinch lever handle replaced the system ⇒ page 686.

Main Interconnect failure

2. Replace the Main Interconnect Board ⇒ page 602.

SE Code: 85:03 - Drive roller encoder zero position not found

Description

The drive roller encoder disc contain a zero mark which is used as a reference for the drive roller encoder movement.

Whenever a substrate is loaded, the system looks for this zero position to perform the correct substrate advancements.

Problem causes in order of importance

A. Drive Roller Encoder Disc dirty.

B. Drive roller encoder PCA board not correctly positioned or faulty

C. Drive roller encoder disc faulty or loose.

Corrective action

Drive Roller Encoder Disc dirty

1. Clean the driver roller encoder disc in a complete revolution

Drive roller encoder PCA board not correctly positioned or faulty

2. Check the driver roller encoder sensor is correctly positioned and attached, check the driver roller encoder disc is correctly located in the sensor of the PCA.

3. Replace the Drive Roller encoder PCA ⇒ page 636.

Drive roller encoder disc faulty or loose

4. Check the drive roller encoder disc, ensure it is correctly positioned and attached to the aluminium disc support, ensure the support is correct attached to the driver roller.

5. Replace the drive roller encoder disc if any fault is found there.

SE Code: 86.1:01 - PPS in unknown position - LX800 only &

Description

Only in LX800 with Ink Collector installed, when starting to print (beginning of job) and the PPS is in an unknown position.

Problem causes in order of importance

A. PPS not properly initialized with ink collector.

B. Failure in the PPS system not possible to initialize.

C. Dirty Scan Axis Encoder Strip

Corrective action

PPS not properly initialized with ink collector

1. Remove the ink collector from the printer, reboot and go to the media load section. Enter in the PPS (carriage beam height submenu) and set the PPS in the appropriate printing position.

Failure in the PPS system not possible to initialize

2. Follow the appropriate troubleshooting for the PPS system. Ensure all PPS homing switches are working appropriately. All PPS motors and encoders should be work correctly, including the remote electronics and Main interconnect as well. Check for possible PPS system frictions if appropriate.

Dirty Scan Axis Encoder Strip and Encoder Reader

3. Clean the Scan Axis Encoder Strip and Encoder Reader ⇒ page 251.

SE Code: 86:01 - Scan axis servo shutdown

Description

This is an error with the movement of the carriage. The Scan Axis motor controller in close loop with the scan axis encoder system (carriage) has failed to perform the carriage movement as expected.

Any electrical fault in the scan axis motor, or high friction reading of the scan axis encoder system in the carriage can cause this error

Problem causes in order of importance

A. An object in the carriage path/rods oiling.

B. Scan axis motor cables disconnected.

C. Scan Axis motor 42v failure.

D. Dirty Encoder Strip/Encoder Reader

E. Error displayed while performing the 5.1 impelling system diagnostic test

F. Faulty Scan Axis Encoder Strip.

G. Faulty Interconnect PCA

H. Faulty flat data cables.

I. Printhead Interconnect board failure.

J. Upper PCI failure

K. Trailing cable failure

Corrective action

An object in the carriage path/rods oiling

1. Check for possible media jams or objects in the platen area.

2. Check there is sufficient oil on the rods

Scan Axis cables disconnected

3. Check the data cable (Main Interconnect >motor) and the power cables (e-cabinet>motor) and ensure they are all correctly connected at both ends.

4. Check the connections of the Encoder are not loose. Disconnect and reconnect them

Scan Axis motor failure.

5. Check the supply and arrival of the 42v to the Scan Axis motor after the printer is armed (start diagnostics 2.3 and arm the printer.

Dirty Scan Axis Encoder Strip and Encoder Reader

6. Clean the Scan Axis Encoder Strip and Encoder Reader ⇒ page 251.

Error displayed while performing the 5.1 impelling system diagnostic test

7. When performing the test in open loop, if the motor does not move:

   - Check the 24v supply to the motor electronics (check the LED next to the data connector in the Main interconnect), ensure the cable is connected correctly.
   - If the power is not on with 24v active (diagnostics 2.3), disconnect the data cable if it turns on, replace the Man Interconnect board ⇒ page 602. Note: check before reconnecting as the fault may come from the motor, if it does replace the Scan axis motor ⇒ page 711.
   - If the system still fails, replace the motor cables, Main interconnect and retest

8. When performing the test in open loop, the encoder units are not detected:

   - Check all the Scan Axis encoder path, ensure everything is correctly connected:
     - Encoder>Carriage Interconnect>Flat Data Cable.
     - Printhead Interconnect>Trailing Cable>Upper PCI board.
     - If all the connections are ok, replace the Carriage Encoder sensor ⇒ page 746.

9. When performing the test in open loop, there is high friction in the Carriage movement:

- Ensure the rods are well lubricated and there is no mechanical obstruction to the carriage path (uncap carriage and move the carriage along the scan axis, repair if required).

Faulty Scan Axis Encoder Strip

10. If the failure is always in a particular place of the Scan Axis, check for possible damage in the metallic scan axis encoder strip and replace if there is damage ⇒ page 722.

Faulty Carriage Interconnect PCA

11. Replace the Carriage Interconnect PCA ⇒ page 748.

Faulty Flat data cables

12. Replace the Flat data cables.

Printhead Interconnect board failure

13. Swap the Printhead Interconnect 1 and 3 and recheck the error, if the error has moved to the new location, replace the board ⇒ page 749.

Upper PCI board failure

14. Replace the Upper PCI board ⇒ page 597.

Trailing cable failure

15. Replace the complete TRS system with tubes and trailing cable ⇒ page 687.

SE Code: 86.2:01 - Scan axis length test failure

Description

The Scan Axis length is not as expected.

Problem causes in order of importance

A. Part number of the printer not as it should be.

B. A high friction point or something blocking the carriage path could cause this issue.

C. Damage to the Scan Axis encoder strip.

Corrective action

Part number of the printer not as it should be

1. The 104' printer should be part number Q6702. Change the part number if it does not match, use diagnostics 2.2.6.

A high friction point or something blocking the carriage path could cause this issue

2. Check for possible obstructions in the carriage path (with the printer manually off, manually uncap the Service Station and move the carriage along the Scan Axis to search for possible high friction points, look for objects or possible issues in the carriage path, the rods, bushings, platen area.

3. Perform service test 1.5.1 function test, this can help to diagnose any possible issue with friction problems in the gear axis.

Damage to the Scan Axis encoder strip.

4. Check for possible damage in the Scan Axis encoder Strip and replace if required ⇒ page 722.

SE Code: 93:11 - Unable to pressurize the IDS system

Description

It has not been possible to reach the working pressure in the IDs system. The IDS pumps ink towards the bag inside the intermediate tanks which push the ink out of through the ink tubes.

The pressurization value (in either of the two side) in normal working conditions is between 5.2-5.6 psi. If this value is not reached within 60 seconds of starting the pumps, the error is triggered.

Problem causes in order of importance

A. Air leakage from any of the systems on either side of the printer.

B. Air pumps not working

C. Relief valves not closed.

D. Air pressure sensors not working correctly

Corrective Action

Air leakage from any of the systems on either side of the printer

1. Across the ISM, start the air pumps of both sides (diagnostics 4.15.5 and 4.15.6) and check for possible air leaks (tubes broken or pinched, air pressurization bottles not correctly closed, tubes not correctly connected. Repair as required

Air pumps not working

2. While the air pumps are pumping air though the system, check they are all working correctly. Replace any pumps that are faulty ⇒ page 699.

Relief valves not closed

3. Operate the relief valves with diagnostics 4.15.7 and ensure the correct operation, replace the valves if they do not work ⇒ page 708.

Air pressure sensors not working correctly

4. Leave the pumps running from the previous test, and check the increment of pressure with diagnostics 4.15.8. If there is no air leak and pressure does not raise, replace the ISS board.

SE Code: 93:12 - Ink system module set as not purged

Description

the ink system is set as not purged and requires the purging procedure or the purging procedure has not been completed.

There two things that are used to trigger the error. The ISM normally is set as purged and the TRS is set as purged, the error is displayed when any of the two system are not set as purged.

ISM as purged is set after diagnostics utilities 0.1 Purge ISM and 0.2 fill Intermediate tanks are completed successfully. This as purged is set after diagnostics utility 0.3 Purge Printer tubes is completed successfully. The two parts can be reset by an unsuccessful refill utilities or by setting the printer for transportation and accepting transportation at low temperatures.

Problem causes in order of importance

A. Purge not performed.

B. Purge performed but not finished

C. Purge completed via manual procedures.

Corrective Action

Purge not performed

1. Complete a full purge of the ink system according to the installation instructions (3 steps).

Purge performed but not finalized

2. Complete the full purging process according to the installation guide (3 steps).

Purge completed via manual procedures

3. If the purge has been completed using manual procedures (opening electro-valves or filling intermediate tanks use diagnostic procedures, the system will not detect the ink system as purged. Perform

the diagnostic test 0.9 set TRS (see page 350), as purged and in some cases, the following diagnostic should also be performed 0.8 Set ISM as Purged (see page 349).

4. Do not set the ink system as Purge if you are not fully convinced that a correct and complete purge of the system as been performed.

3.2 How to do a complete check of the printer in 1/2day – 1 day

Checklist

- One roll highly recommended of HP photorealistic or Avery MPI 3000
- Have the pre-ripped images (for HP photorealistic or HP SAV), 'Test images are available with which you can check the print quality achieved once the printer has been fully installed. From HP's Web site (http://www.hp.com/), select Support & drivers, check Download software & drivers, type the name of the printer, select Drivers, and download the pre-ripped images.

Filename: Petra	Filename: Notatravel	Filename: Fish
		

- The latest firmware and IPS installed.
- Up to date documentation (installation guide, site preparation, …).
- Performed by a trained customer engineer

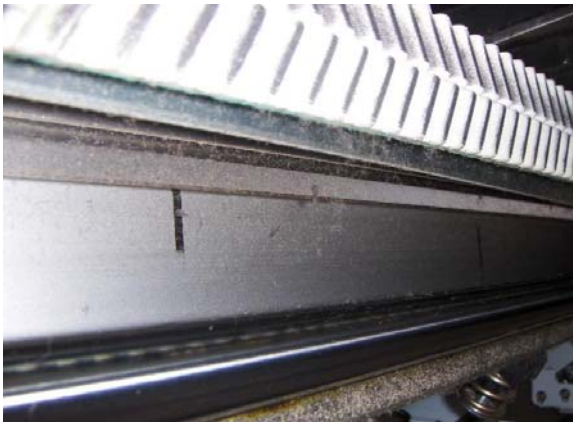
NOTE: Before moving the Carriage assembly, the carriage must first be uncapped to avoid breaking the printhead caps

1. Ensure the printer is in the ready status
2. Extract the service plot and check the contents (last system errors? Preventive maintenance to be done? Supplies status? Level of vacuum? Refer to the chapter '3.4 How to view/extract and interpret the service plot' see page page 307.
3. Load the substrate
4. Print the pre-ripped file, objective of this is to have a reference file to compare after the check.
5. Raise the scan beam to high/load position.
6. Restart the printer in diagnostic mode, and move the carriage to the repair position and switch off the printer (ACB1),

- Remove the substrate (wind it on the input spindle).
- Remove the rear left center window to be able to access to the cover.
- Remove the front left cover and rear left cover (to access to the ISM side).
- Remove the rear right cover to be able to check the capping station.
- Remove the metal covers of the encoder strip (WARNING, check that the heaters and curing module have cooled down).

7. **Scan axis:** Remove the encoder reader of the carriage and clean it (with cloth and alcohol).

8. Check the encoder strip of the scan axis. If you see some dust, remove it with the air pressure gun used to inflate the spindle (without touching it).



Dust on the Scan Axis

9. If the encoder reader contains oil or it is damaged, replace the encoder reader.
10. Clean any oil which may drop down from the support of the carriage rails, and on each side of the printer (at the top of the e-cabinet, or at the ISM side, on the flat cable mainly).
11. **Carriage:** Move the carriage to the middle of the printer and check under the carriage:
    - Check and clean if needed the bottom part of the carriage + aerosol inlet.
    - Clean the line sensor (refer to the maintenance and troubleshooting guide).
    - Move the carriage toward the right, open the carriage cover and remove each Printhead.
    - Check the capping position of each printhead, see page 235.
    - Check the PH Interconnect Connectors, refer to the *Maintenance and Troubleshooting Guide, chapter 8*.
    - Check that the O-rings of the primers are oily/greasy, apply more grease if required.
12. **Heating & Curing:** (Open the ACB3 + RCCB1, open the red switch in case of any doubt).
    - Check that the reflectors are clean. If you see any brown color, clean them (with water or a regulatory compliant solvent). Shown here is an example of a reflector which needs cleaning.

Reflector that requires cleaning

    - Open the e-cabinet, and with an voltage meter check the values of the resistance at the output of the static relay (heater and curing), refer to How to check the resistances on page 819.
    - Check that the tri-phase cables are well connected (correctly secured)
    - Check the triangle/star (heating & curing) and check that all cables are correctly connected.
13. **Capping station:** From the right window, clean the ink deposit (refer to the *Maintenance and troubleshooting guide, chapter 4***.**
    - Check that the caps are working (lifting up well with finger), and that no pins are broken.
    - The carriage should be placed in the middle of the scan axis and restart the printer in diagnostic mode

- Perform the test '5.3.2 Shuttle Close Loop', check the capping station while moving, and check the results of the test on the front panel, refer to page 418.

14. **ISM/Ink Delivery System:** Check the that the intermediate tanks are filled with ink (at least 400gr/600gr).

- Check the main ink electrovalve through the test '4.6 ISS Electrovalves'
- Move the carriage towards the right side (should still be in uncapped), and perform the test '4.12 Ink Pressure At Pen', refer to page 393. On each side APS0 and APS1, the color selection does not have an impact
- While the test is running use the syringe on each color and check that the piston is lifting up (place a cloth around the needle of the syringe), do this test 2 times on each color, one with APS0, and the second with APS1.

15. **Media path:** Perform '3.1 Spindle Motors burning', refer to page 370.

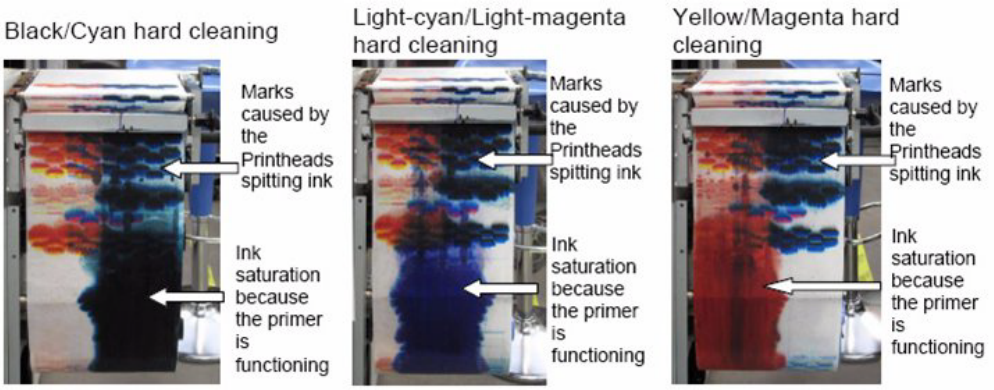
- Clean the drive roller if it is dirty.
- Check that there are no broken pinch wheels

16. **Check the PH cleaning roller**

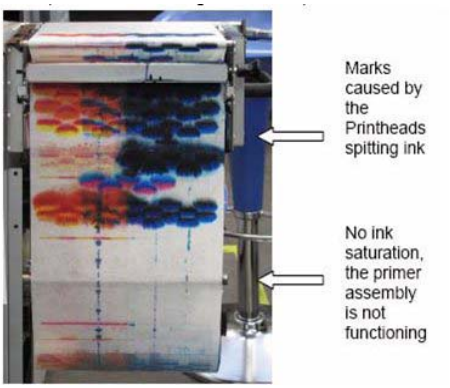
- Refer to the section 'How to check the Printhead Cleaning Roller is functioning correctly on page 252', and do at least the following test:
  - How to check that the Printhead Cleaning Material is not slipping between the Printhead Cleaning Roller and the Drive Roller
  - How to check the Pinch wheels axis are correctly installed in the Printhead Cleaning Roller:
  - How to check that the cleaning material does not slip between the advance motor and the drive roller (only to be performed if there is 'Printhead cleaning jam'):
  - How to check that the upper and lower torque limiter/clutch are working
  - How to check that there is no slippage/defect with the small gear connected to the big white gear?
- Run the diagnostic 7.x to check the different items of the PH cleaning roller.

17. **Check drop detection and primer:**

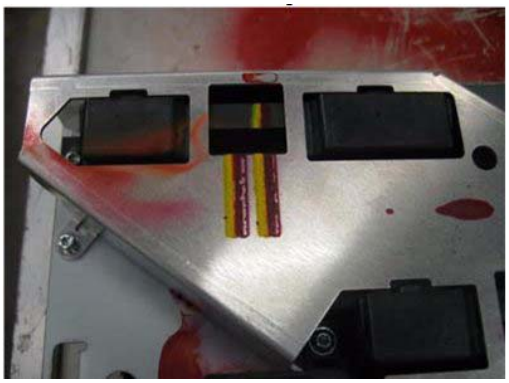
- Restart the printer in normal
- Perform a hard cleaning from the IPS on the 3 PHs:
  a. Open the PH cleaning roller and check if all the colors are have the right colors (light colors not really visible, but much less require the primer).



b. In case a primer is not working, a similar output will be seen from one PH:



c. the next time the carriage move, check that there are 2 lines centered at the side of each drop detector, here is an good example for Y/M.



d. Check the position of the capping station versus the Carriage/Printheads.

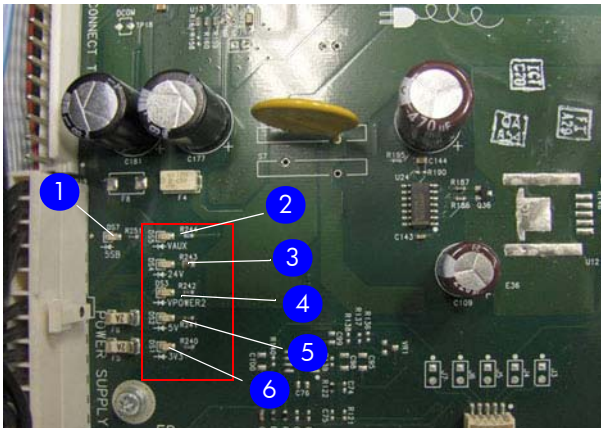
18. Reload the reference substrate and perform the following:

- PH alignment check, and if needed do a PH alignment
- Calibrate the media advance printing in 6p bidi (using the ladder available from the C:\Users\<user>\Documents\HP IPS\Advance Calibration, plot substrateadvancecheck_300dpi, doing a nesting printing a ladder on the middle and 2 other ladders, one on each side). The media advance is stable enough if, when printing and not touching at all the media advance compensation, the black/magenta lines stays touched.
- Perform a dynamic color registration
- Print the plot within C:\Users\<login>\Documents\HP IPS\Substrate Creation, Test1_temp_profile, a do a step and repeat, 'fit to substrate width', 'center' and increase the number of copies that it reach around 1 m length.
- => the plot should not show too much dynamic color registration
- Print the same ripped file as the beginning, and compare the results: the newer ones should be better that the first plot. There should be no image quality issues when looking at the plot for a viewing distance of 1m.

3.3 Subsystem Troubleshooting

3.3.1 Troubleshooting boards using the LEDS

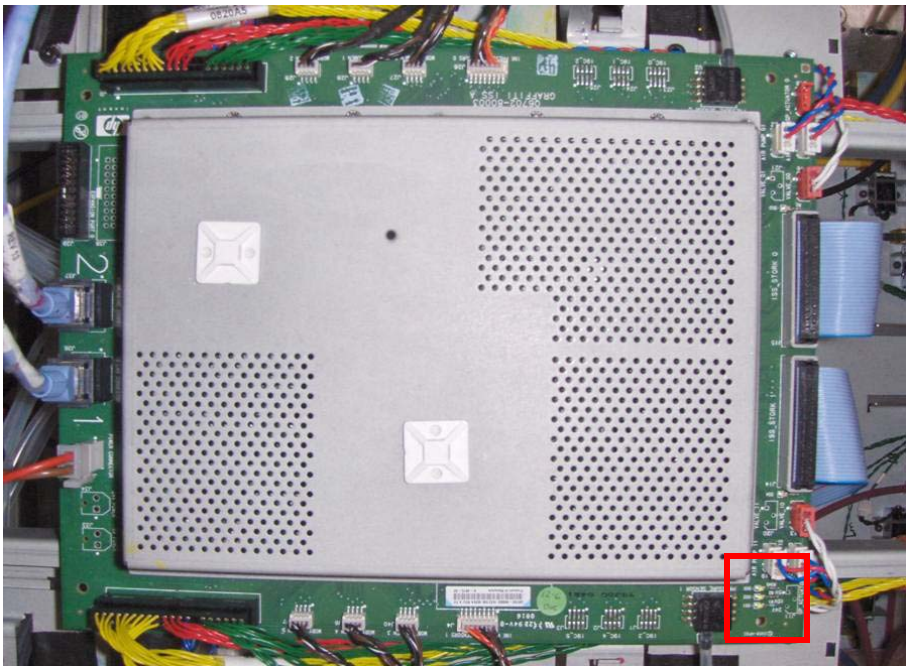
Printmech Board LEDs



LEDs	Description
1	5 Volts STDBY
2	12 V AUX
3	24 V
4	42 V (ON only when the secondary power supply is turned on)
5	5 V
6	3,3 V

ISS Main Board LEDs

To see the LEDs remove the Left Side Rear Panel⇒ page 565. The LEDs are marked on the board.



- 5 V: power used by the board
- 10 V: Not used (only to regulate the tension from 24 to 5 in 2 steps in order to reduce waste of energy)
- 24 V: Power that arrives to the board

LEDs	5	10	24	Description
State 1	OFF	OFF	ON	Fuse is blown or the ISS board has failed. Remove and replace board
State 2	OFF	OFF	OFF	24volts does not arrive to the board
State 3	ON	ON	ON	Functional

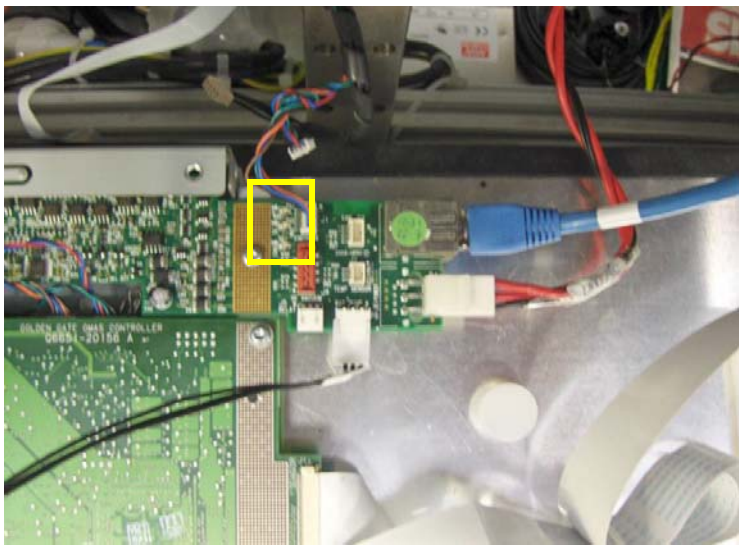
Check that there is no failure from the air pump or air release valve or ink electrovalve. In case there is a shortcut form these components => fuses of the 24V line will be burnt (this can occur on the ISM board or the main interconnect). The symptom is the same: NO 24V LED.

To check for a shortcut on each of these components, check the resistance while the printer is off: Check main components of ISM with an Ohm meter and the values should be with the following range (values in Ohm):

- Ink electro-valve: min: 100 , average: 230, Max: 500
- Air pump: min: 100 , average: 450, Max: 2000
- Air relief valve: min: 100 , average: 370, Max: 1000
- In case one components has value really out of rage, it is recommended to replace it.

The same can happen on the 5V line with the connection to the accumen of the cartridges. A shortcut on the 5V acumen line can damage the fuse on the 5V line, ISM board has to be replaced, and the corresponding accumen on the cartridge (or cable going to cartridge in shortcut).

OMAS and Vacuum Controller LEDs



To see these LEDs look between the covers of the OMAS and Vacuum controllers. No covers need to be removed.

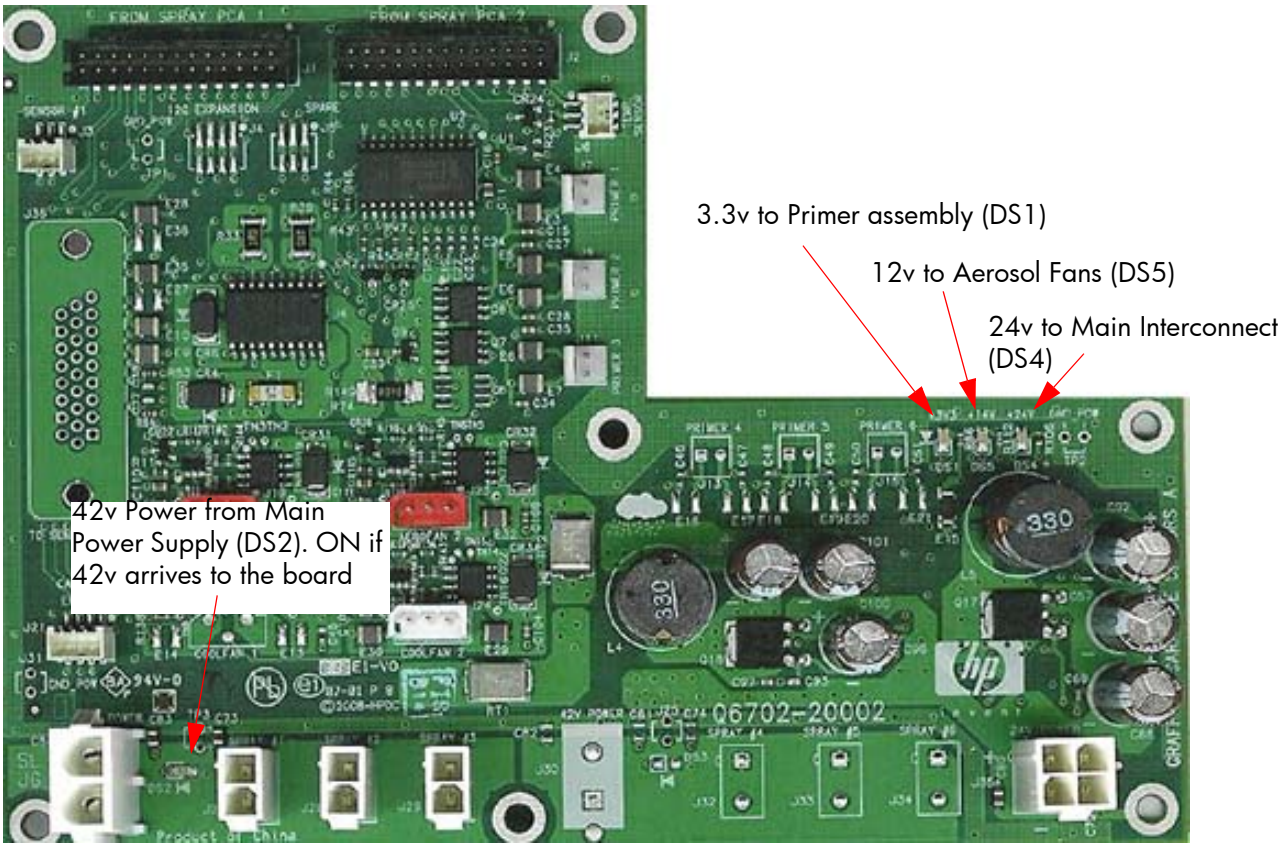
The LEDs are numbered in the table from top to bottom.

LEDs	LED	State
1	5 volts	On green
2	24 Volts	On green
3	CAN	On faint green

Carriage Interconnect Board LEDs

The following photo shows the location of the power LEDs. The 3.3V and 14V supplies are generated internally by the Carriage Interconnect Board from the 24V supply.

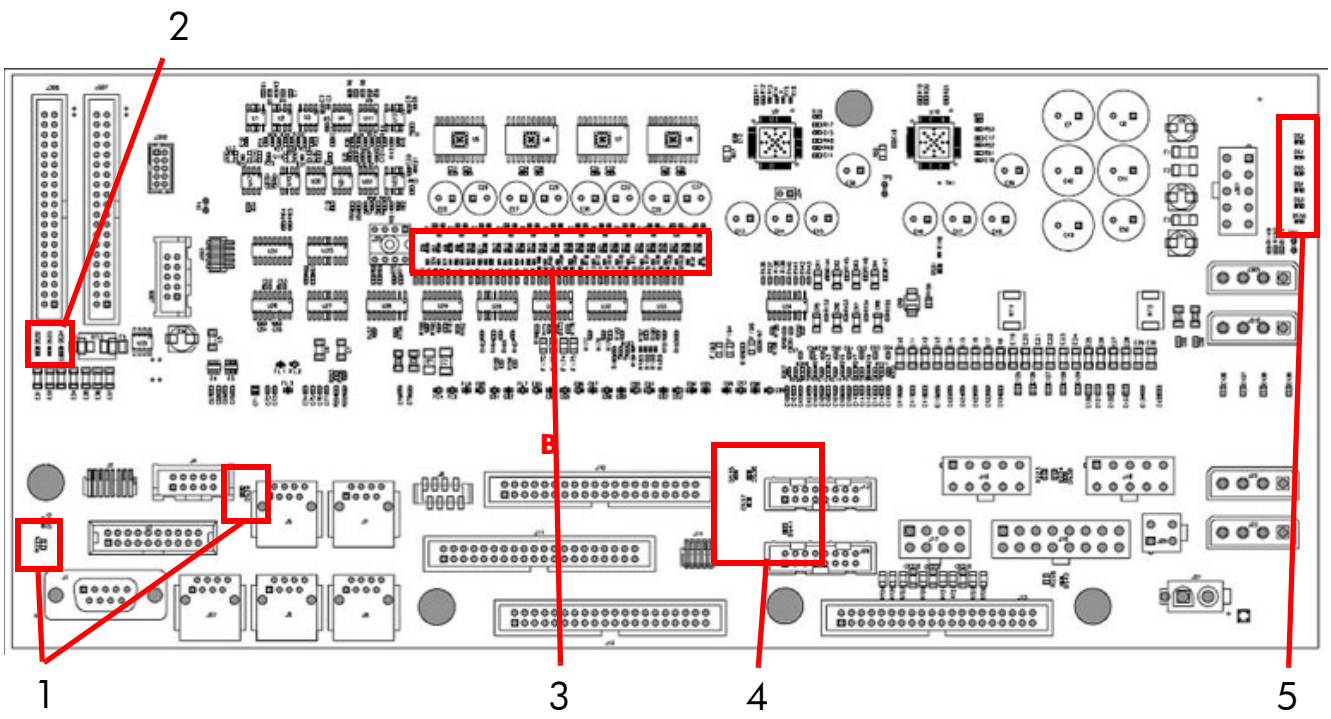
To see the LEDS, open the carriage lid and remove the carriage electronics cover ⇒ page 748.



Main Interconnect Board LEDs

To visually access the Main Interconnect Board, you must remove the cover. ⇒ page 602.

The following diagram is split into five areas of LEDs, which are explained below.



Area 1: Scan axis motor

There are two LEDs in this area.

- The left-most LED is labeled 24V. This LED is on when 24V is sent to the Scan Axis Motor.
- The right-most LED is labeled 12V.

Area 2: Scan axis motor

There are three LEDs here, all relating to the Scan Axis. From left to right:

- The first two LED's mean the GPIO direction. If the first one is ON it moves in one direction, and if the second one is ON, it moves towards the other direction.
- The third LED is ON if the motor is OK, and OFF when the motor fails.

Area 3: Remote Controllers

One row of 24 LED,s.

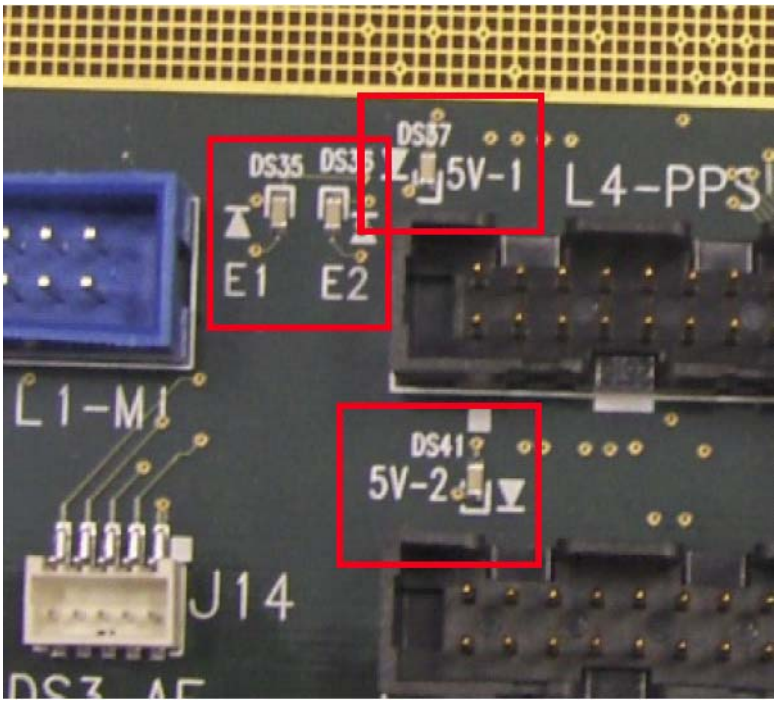
From left to right: the first 6 LEDs relate to the L1 Remote Controller, the second six to the L2 Remote Controller, the third six to the L4 Remote Controller, and the last 6 to the L5 Remote Controller.

- L1: controls the pinch lever switch
- L2: controls the sliding door switch
- L4: controls the right front PPS
- L5: controls the right rear PPS

The important is the 5th LED of each row of 6 which are always ON and blink when the Homing sensor is pressed. The other LEDs are not important.

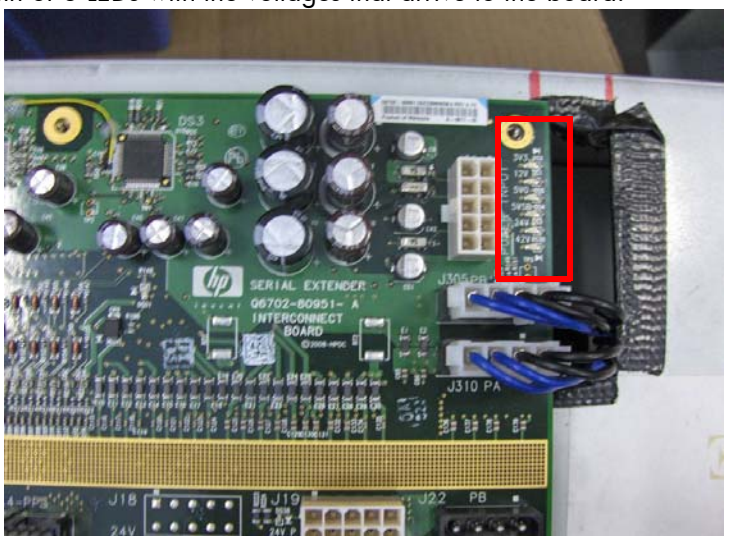
Area 4: PPS encoder, Dunker PCA

- E1, E2: These are the signals of the PPS encoder, and BLINK when the PPS is moving.
- 5V1, 5V2: Power for the dunker PCA (differential board)



Area 5:

A vertical column of 6 LEDs with the voltages that arrive to the board.

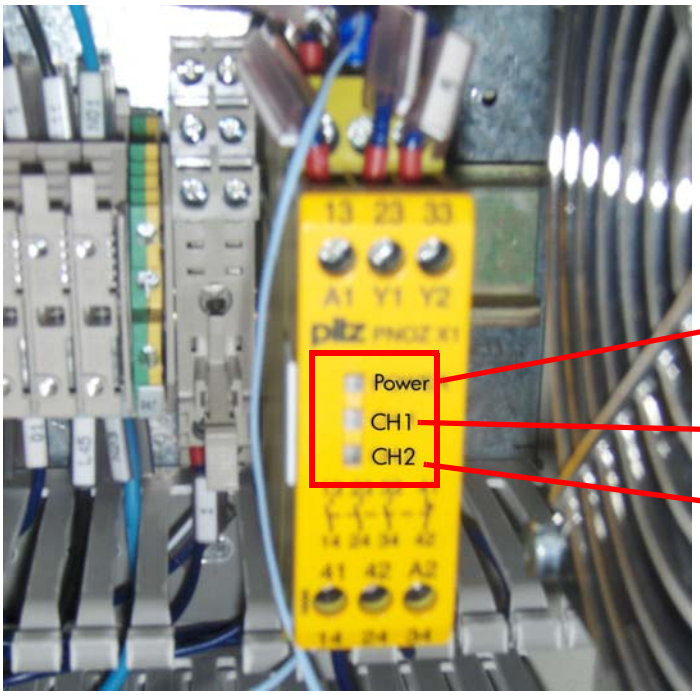


From top to bottom:

1. 3,3 V
2. 12 V
3. 5 V
4. 5 V STANDBY
5. 24 V
6. 42 V

Security Relay LEDs

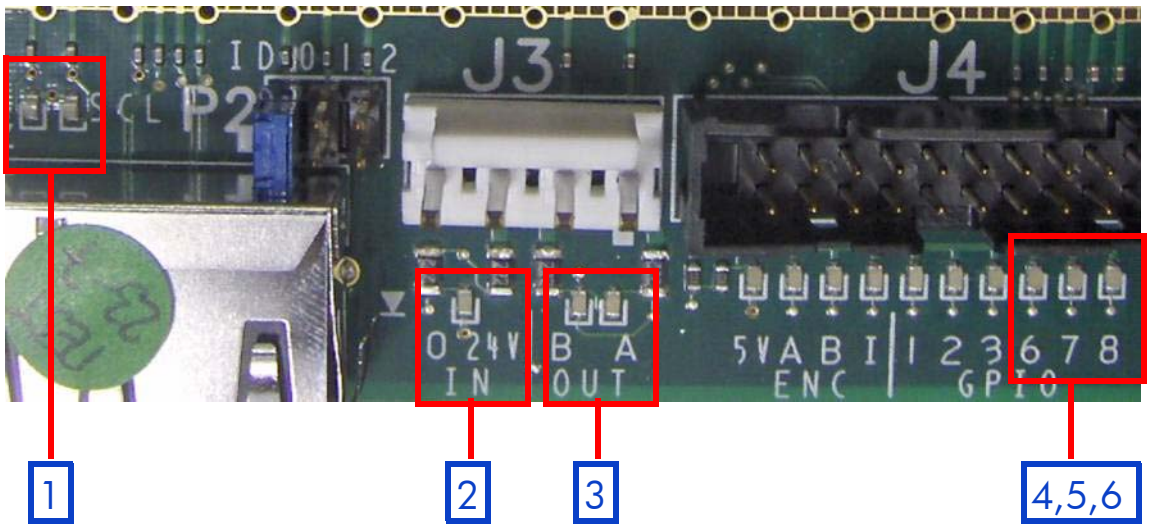
To visually access the security relay LEDs, you must open the electrical cabinet doors. The security relay is located on the right side.



1. Power LED, ON when 24v arrives to the Main Interconnect board
2. CH1
3. CH3

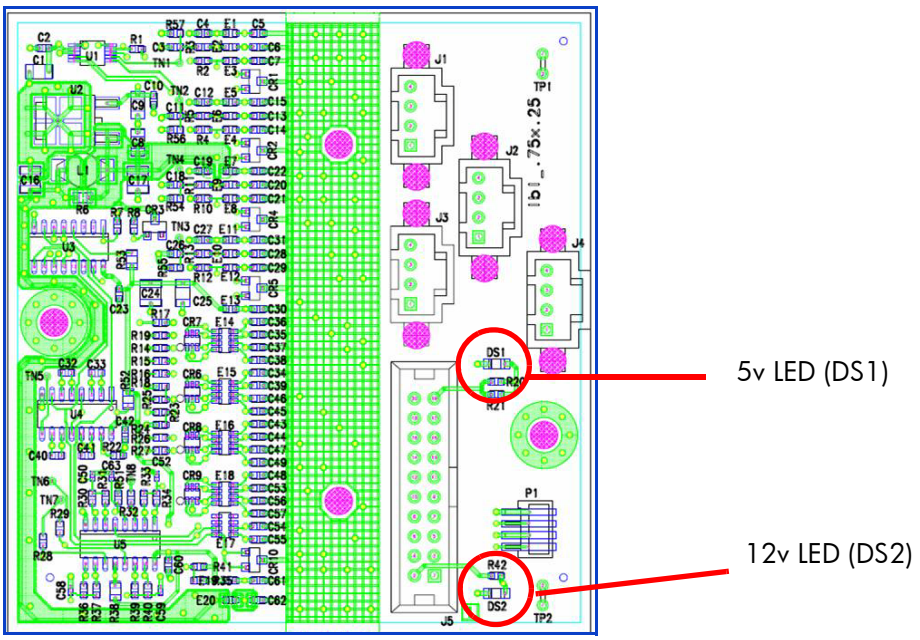
CH1 and CH2 are always OFF when the security relay is off.

PPS Remote Controller Board LEDs



1. Transmission of MICCI Bus, always ON, blinking at high frequency.
2. ON if 24 V arrives to the board. Its color is faint green.
3. 2 LEDs. Signal of PWM of motor. ON when moving the motor.
4. GPIO 6: encoder, ON when motor moving.
5. GPIO 7: encoder, ON when motor moving.
6. GPIO 8: homing sensor. Always ON if sensor is Ok, and BLINKS when sensor is pressed.

Service Station interconnect Board LEDs



Ink System LED Interface Board LEDs

The Ink System LED Interface Board generates the LEDs that you see through the front side of the Left Side Top Cover, which can be used by the operator to see status of the ink supply.

Top green LED

- When OFF, the ink cartridge is disconnected or not being read.
- When BLINKING slowly, the supply is being used.
- When ON, the supply is validated and ready for use.

Middle yellow LED

- When BLINKING quickly, the supply is empty.

Bottom Red LED

- When ON, there is an error with the supply.

LEDs status when initializing the printer

1. When the printer is off, ACB1 off, ACB2 off, ECB3 (tri-phase) off. No LEDs on.
2. Turning on ACB2, the GB switch turning ON, flat screen powered on and PC powered (need to turn on by pressing the switch om the IPS PC).
3. Turning on ACB3. This is when looking an the LEDs at rear right of the printer, under the big red switch: PH1 PH2 PH3 turned on.
4. Turning on the ACB1. The assumption is that the printer has been turned off from the front panel, it will not starting automatically.
   - When looking at the lamps at the rear right of the printer, under the big red switch:
     - Vacuum lamp turning ON
     - Power reset is still OFF)
   - When looking within the e-cabinet:
     - Main power supply: Amber LED on, other 2 are OFF (blue and green).
     - E-cabinet FAN is On.
     - 2 PID controllers turned on.

- main interconnect: only 1 LED ON: 5V STANDBY
- printmech: 5SB (5 V standby)
- All other LEDs are turned OFF.

• Outside of the e-cabinet: the curing FAN is turning normally (depending of the version of the main interconnect board).

5. When starting the printer, as the initialization counts down to 1 and until just before the message is displayed 'please arm the printer':

• When looking within the e-cabinet:
  - Main power supply: amber LED: OFF, blue: ON, green : OFF
  - Main interconnect (looking at the right part only, area 5): LEDs ON: 5V STANDBY, 12V, 5V.
  - Printmech: LEDs ON: 5SB (5 V standby), 12V AUX, 5V, 3.3V
• When looking outside the e-cabinet:
  - 24V and 42V LEDs (OFF) (no power reaching to carriage or ISM board).
  - All LEDs from the ISM board OFF, all LEDs in the carriage OFF.
  - OMAS/Vacuum controller board: 5 volts: ON, 2 other LED: OFF
  - Remote controller boards (left PPS/scan beam and capping station): LED 5V turned ON (and possibly 2 other LEDs at the side, depending on the encoder position of the corresponding motor + 'GPIOs LEDs, depending on the remote controller board).
  - Service station interconnect board: 5V LED ON (12v LED OFF (is turned On only during drop detection).
  - Curing FANS are usual slowing down (depending of the main interconnect board version)
  - Vacuum pump is turning normally.

6. When printer is displays 'printer waiting for rearm, press the power button' (and just before this message), the following extra LEDs will turn On compared to the previous step 5:

• When looking within the e-cabinet:
  - Main power supply: amber LED: OFF, blue: ON, green : ON (main 24V/42V)
  - Main interconnect (looking at the right part only, area 5):
  - LEDs turning ON: 24V and 42V (from main power supply)
  - Also on the main interconnect on the left part (area 1): 1 LEDs are turning of 24V.
  - Printmech: LEDs turning ON: 24V
  - On the safety relay : LED turning on: power LED
• When looking outside the e-cabinet:
  - ISM board: LEDs turning on: 24V, 10V and 5V
  - LEDs on the carriage assembly: All LEDS turning on (on carriage board: all 24V and 42V + 3.3V, 12V, on PH interconnect board: the RED LEDs and the green LEDs at the side of the trailing cable connector are turning on.
  - OMAS/Vacuum controller board: LED turning ON: 24V
  - Remote controller boards (left PPS/scan beam and capping station):
  - LED turning on: different LEDs , mainly 24V one.
  - Service station interconnect board: 5V LED ON (12v LED OFF (is turned on only during drop detection)

7. When arming the printer, the following extra LEDs are turning ON:

• When looking within the e-cabinet:
  - On the safety relay: LEDs turning on: CH1 and CH2
  - On the printmech, on the left side, in the area 2, the 3rd left of the scan axis motor is turning on (status of the scan axis motor).
  - On printmech: VPOWER2 (42V from secondary power supply).
• When looking on the lamps at rear right of the printer, under the big RED switch:
  - Vacuum lamp turning normally

- (Power reset still OFF)

3.3.2 Troubleshoot problems without system error codes

Printer turns on (beeps)

If the printer cannot start correctly, you may be able to diagnose the problem by listening for a series of beeps. The beeps are made by the Formatter Board, open the electrical cabinet doors to hear the beeps.

Use the following table to interpret the beeps.

Beeps	Location of the error	Corrective action
1	PROCESSOR	Replace the Formatter Board ⇒page 591.
2	POWER_SUPPLY	Replace the Main Power Supply⇒ page 594.
3	MEMORY	SE Code 05.3:10.
4	VIDEO_CARD	Not used.
5	UPPER or LOWER PCI BOARD	SE Code 01.3:10 OR 01.4:10.
6	DEAD_BIOS	Replace the Formatter Board ⇒page 591.
7	MOTHERBOARD	Replace the Formatter Board ⇒page 591.
8	Hard Disk System	Verify that the Hard Disc System cables are connected correctly and not damaged. Check that the hard disc is spinning by checking for the vibrations with your hand. Replace the Hard Disk System ⇒page 601.

If there are no beeps, check that the customer PDU and/or UPS is supplying power and that the power cables from the customers power supply are connected correctly and not damaged.

Front panel displays 'Initializing' but does not turn on

Here are the main causes of this behavior:

1. The small connector coming from the power supply is not connected to the Upper PCI board, but connected to the Lower PCI board (or not connected) ⇒page 599.
2. There is a failure on the bus from the Lower PCI Bus to the Main interconnect to the Capping Station Remote Controller Board. Disconnect the cable from the main interconnect to the capping station & left PPSS remote controller board (J5, J6 and J16), check configuration of the remote controller boards.
3. Switch off the printer, disconnect all the cartridges and restart the printer. If the printer can boot, when it is in ready, reconnect all the different cartridges connectors.
4. If the printer is still failing to initialize and HP support is required escalate the case, sending the log.gz.xxx, when booting in diagnostic, as described at the end of the chapter 3.

Front panel displays 'please close carriage cover'

Check to make sure there is no short-circuit of 5v to ground on the Carriage PCA and check on the cables from the Carriage Assembly to the Carriage Switch, Carriage Encoder Reader. Perform the diagnostic test 6.1 Carriage System Test ⇒page 427. In few cases, this issue has been fixed by replacing at the same time the encoder reader of the carriage (for scan axis movement control), carriage interconnect board and sensor box.

3.3.3 Advanced troubleshooting for difficult initialization issues

Cannot initialize front panel or fail during the count down 30 ->1

In this section is described what to do if the printer will not initialize, the front panel is blank, or the system error displayed does not help to solve the issue.

1. Turn off the printer.
2. Remove the Upper and Lower PCI boards.
3. Disconnect all the cables from the Main Interconnect except the following:
   - J301 (power cable from the main PSU) connected
   - J308 (cable from main interconnect to mother board)
   - J4 (cable from main interconnect to front panel).
4. Keep the standard power (and front panel) cables connected to the main board.
5. If J4 or J308 are not connected, then there is no possibility of starting the printer. This is because the 5VVstandby and 12V comes from the PSU -> main interconnect -> front panel (and does not pass through mother board). However, the request to start the printer from the on/off front panel is still going from front panel -> main interconnect -> mother board -> PSU.
6. When all the cables shown below are connected, normal sequence is the following:
   - On the PSU, power cable connected, if switch to 0 => no LED.
   - On the PSU, power cable connected, when turning the switch to ON.
     - Amber LED (and if printer has been switched off through ACB1, PSU will start immediately (amber LED switched off and middle blue LED turning on).
     - On the main interconnect, 5Vstby LED turns green.
   - When pressing on the on/off button of the front panel, first you hear a 'click' on the PSU, indicating that the PSU is turning on:
     - Amber LED switching off
     - Blue LED turning off (ATX power turning on 12V, 5V)
   - On the front panel, turning white with the black then rectangle squarre

   On the LED of the SATA to PATA conversion (only on LX series and in case the HDD has been replaced recently on a L65500, refer to chapter 1):

     - PHYRDY staying yellow/orange.
     - QCTMTY is blinking yellow/orange from time to time. If it remains turned on all the time, there is something wrong (HDD most probably has to be replaced if no connection issue).
   - On the front panel, normal decrease from 30 to 1 (with logo HP), and then displaying 'initializing'
   - Just before reaching the message on the front panel 'please arm the printer', the PSU is turning the 24V and 42V (gren LED on the PSU turning on).

Ensure that the cables from the HDD to the main board are correctly connected. Mainly the SATA cable, the one in black on this picture (can be removed easily).

In case the 'reset' button is pressed on the SATA to PATA convertor board, while on the front panel, it counts down from 30 to1:

- Counting is stopped, printer seems to be frozen.

- Need to restart the printer.

Refer to chapter 1, hard disc drive subchapter, to have a view of the differences SATA – PATA HDD. Jumpers on the main interconnect or the following:

- JP3, default 1-2 connected
- JP7: default 2-3 connected.

JP5 & 6: default 1-2 connected

Cannot initialize. The front panel stays at 'initializing' before arming the printer'

Minimum configuration to reach the 'arming message':

- Upper and lower PCI card is connected.
- Flat cable between lower PCI board (J8) <-> main interconnect plugged (J307)
- Flat cable upper PCI board (J8) <-> main interconnect plugged (J306)
- Small cable from bottom part of the upper PCI board <-> main interconnect plugged (J300)
- Small cable from main board <-> main interconnect (J308) plugged
- Small cable from side of the upper PCI board <-> power supply
  - Cables connected to the Main Interconnect:
    - J301 <-> Main power supply
    - J4 <-> going to front panel
    - J15 <-> different connections to the e-cabinet.
    - J19 connecting 24V from main PSU -> main interconnect -> upper part of e-cabinet (if this cable is not connected, a system error will display indicating that one safety button has been pushed, 14.8:10).

In case, with this configuration, you are able to reach to the 'please arm the printer', power off the printer, add anther cable and restart the printer, do these steps until you find the cable preventing the 'please arm printer' being displayed.

Also, with the minimum connection, in case of failure that the 'please arm printer' cannot be reached perform the test '2.3 Main PSU/OFF'. In case that the main power support 24V/42V can be turned on for 30 seconds and then the printer displays a 79:04, pointing to the 'Arm1', there is a high probability that the failure is from the small cable going from the power supply to the side of the upper PCI board.

Cannot initialize. Front panel displays 'please arm printer' but does not go further

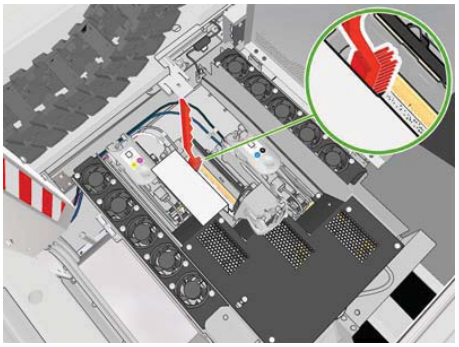
Switch off the printer, and set the printer with the minimum requirement as the previous case 3.3.4.2

- If then you can go further during the boot, switch off the printer, and add one cable and reboot the printer.
- Check if there is a shortcut on the carriage between 24V or 42V (coming from main power supply through main interconnect)(cables J20 and J21 from the main interconnect).

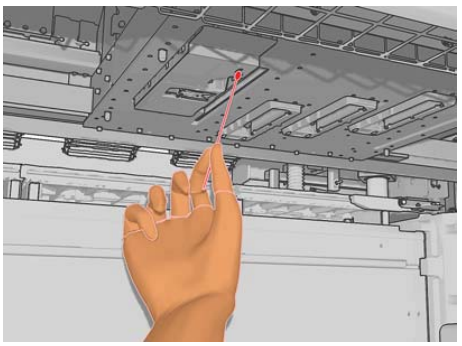
3.3.4 Troubleshooting Printhead Reseat/Replace or Banding/IQ issues caused by too many nozzles out

Step to be performed by the customer

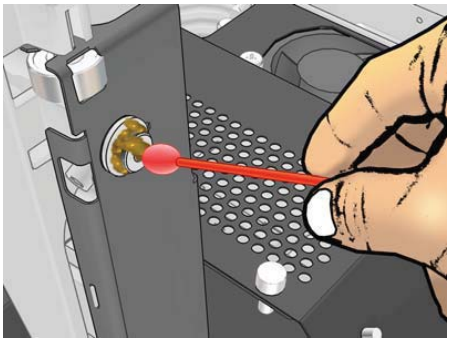
1. Clean and check the contacts between the Printhead and the Printhead interconnect board. Follow the procedure indicated within the maintenance and troubleshooting guide of the LX series, the chapter 'The front panel recommends replacing or reseating a printhead'.



2. Clean the line sensor and aerosol inlet. Follow the procedure indicated within the Maintenance and troubleshooting guide of the LX series, chapter 'Clean the line sensor and aerosol inlets'.



3. Check and grease the Oring of the primer if needed. Follow the procedure indicated within the Maintenance and troubleshooting guide of the LX series, chapter 'Maintain the printhead primers'.



4. Perform a hard cleaning of the Printhead (from the IPS -> Printer -> Printheads).
5. If the problem remains, replace the defective printhead(s).

If the problem remains an onsite visit is required

1. Collect the service plot for the printer, see page 307.
2. In case FW BOB5.x is installer or lower (include FW GF_16.x or lower), install the up to date tools & utilities. Initiate the firmware upgrade selecting the file 'newertools_October2010.fmw'. Once available, you can also upgrade to Firmware version BOB6.x.

What to do if there is banding or image quality issues caused by too many nozzles out

This procedure should also be followed in case of system error 27.1:01, 27.2:01 or 27.3:01 (temperature too high, not ending by a printhead reseat/replace).

To ensure that the banding is coming from 'nozzle out' and not from media advance variability, print a plot adding on each side the ladder and check that the banding is not happening when the media advance is changing (the ladders are embedded within the IPS, just need to be nested, C:\Users\<login>\Documents\HP IPS\Advance Calibration), and select the file of the same resolution as the image printed, in case of 300dpi, the file 'substrateadvancecheck' is recommended.

If the image quality issue is being caused by nozzles out, perform the following procedure.

1. Perform the procedure 4.12 Ink Pressure at Pen, refer to page 393. This test will check the flow of ink to the printhead. If this test fails, perform the following:

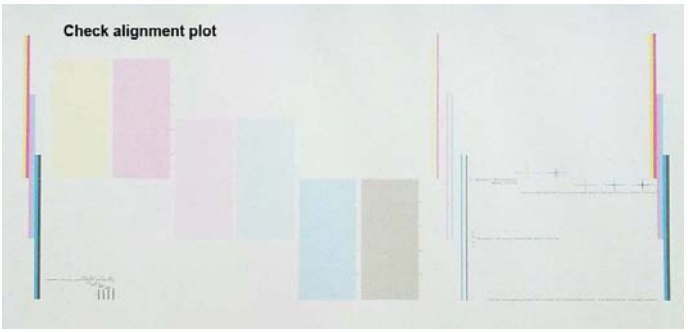
   a. Check the FI towers are the new type (yellow transparent body), if they are the old type (black body), replace them with, refer to page 777).

   b. Perform the procedures 'How to check the Ink Deliver System', refer to page 220.

Printhead Servicing

2. Check if the Printhead Maintenance Roller material is defective:

   a. Go to the IPS -> Printer -> Printhead alignment, select to print the 'alignment check' plot. The output looks like this:



   b. From this plot, look for the spitbars to the right and compare for each color the areas encircled in red from the next image:

   c. The areas encircled in red are printed with the same nozzles as the areas printed in blue. The only difference is that the blue areas had been printed first while the red areas had been printed just after wiping the printheads. If the red areas contain numerous nozzles out but were not already present in the blue areas, these nozzles out are most likely, induced by the wipe operation on the Printhead Cleaning assembly.

   d. This may indicate that the Printhead cleaning material is not functioning correctly. Replace the Printhead Cleaning material / maintenance kit and try again to see if it solves the issue.

3. Check if the Printhead Cleaning Roller is correctly calibrated, perform the test 4.7.4 Check height & Tilt, refer to page 520. In case of an intermittent issue, run this test on each points of the ink pressure roller, between each test, just open the printhead cleaning roller, lift up the ink pressure roller (black/brown rubber part in star shape) and rotate it clockwise until the next point/peak.
4. Check if the Priming is functioning correctly, refer to 'How to check if the Primer is working', on page page 229.
5. Check if the capping of the Printheads is being performed correctly, refer to Check of the Caps, on page page 235.
6. Check if the drop detection mechanism is functioning correctly, refer to Check the drop detection, on page 236.

Electrical failure

1. Swap over the Printheads interconnects, and check if the issue follows the Printhead or the Printhead Interconnect.
2. Test the Trailing Cable. There is a tool available from the HP escalation team in your region which can test the data and power line in the trailing cable, refer to page 272. If this tool is not available, perform the 6.0 Trailing Cable Test on page 425.
3. If the banding from nozzles out persists, replace the Carriage Board, refer to page 748.
4. If the banding from nozzles out persists, replace the Upper PCI board, refer to page 597.

The Front Panel recommends replacing or reseating a printhead

1. Look at the Service Plot and locate the 'Error ID' within 'current Printhead Info (I)' section and look at the 'Error Code' within the 'Printhead Error log' section.

Here is an extract from the current info

Current Substrate, Printhead, Ink System and Sensors Information

Date:	Oct 21, 2009	Product Name:	HP Designjet L65500 Printer	Serial Number:	SG8B71F004
Firmware version:	GF-GF_14.2.2.1	Product number:	Q6702A	Service ID:	1929
Printer status:	Reseat C-MK printhead				

Current Printer Configuration

Language:	English	Memory:	256 MB	Disk capacity:	40.0 GB
Current Temperature:	unknown	Current Humidity:	unknown		

Substrate Loaded Information

Substrate Path:	Roll	Substrate Loaded Status:	OK	Substrate Type Selected:	10 oz Key Banner
Substrate Width:	1371 mm / 54.0 inches	Substrate Length:	not available		

Current Printhead Info (I)

	Warranty status	Status	Error ID Code	Product Number	Product Name	Serial Number	Warranty Date
1 - Magenta-Yellow	Out of warranty	A OK	B 0	CC582A	HP 786	MY039810500266683	20100401
2 - Light cyan-Light magenta	See warranty note	OK	0	CC584A	HP 786	NT003910500287727	20100723
3 - Cyan-Matte black		missing					

Current Printhead Info (II)

	Used non-HP ink	Used expired ink	Ink Used	% warranty used (ml)	Usage Time	Max. Recovery Level	Scan Axis Shutdown
1 - Magenta-Yellow	false	false	31210 ml	260	182 h	2	0
2 - Light cyan-Light magenta	false	true	3900 ml	32	36 h	2	0
3 - Cyan-Matte black			ml		NaN h		

here is an extract from the history section.

Printheads name	Serial Number	Status	Usage time	% warranty used (ml)	Max Recovery Level	Error Code
1 -	MY039810500266683	B 0	182 h	260	2	262144
	Unknown	1	0 h	0	2	512
2 -	NT003910500287727	0	36 h	32	2	524288
	NT039810500266800	0	147 h	96	2	524288
	Unknown	1	0 h	0	2	512
3 -	KC003910500287924	4	134 h	94	2	532512
	KC035810500250283	0	49 h	49	2	0
	Unknown	1	0 h	0	2	512

1-: Yellow/Magenta, 2: Light Cyan/Light Magenta and 3: Black/Cyan printhead. For each printhead, the highest line corresponds to the current printhead installed, showing the up to date error of this printhead. The 2 other rows corresponding to the up to date error just before replacing the printheads.

Decode the code (shown in the red box)

First note that a printhead will have a status in the history only if it has been recognized at least once, the serial number can also be seen on the printhead.

Focus on the 'Error Code', on the one generating the printhead reseat/replace message. This a decimal number and it has to be converted to a binary number before it can be used. In order to convert the decimal error code to a binary error code, you can use a calculator (you can use the one part of Windows, just need to select View -> Scientific to access the right functions). For example, if you had the error code 4099, you would enter 4099 as a decimal number and then select the binary option which would give you a binary number of 1000000000011.

The following table explains the meaning of the different bits (0 or 1). When the value of the error code is reported as 0, it means that the Printhead is working correctly:

Bit	Meaning	Bit	Meaning
1st	FAILS_LOGICAL_V	11th	BAD_ACUMEN_ACCESS
2nd	FAILS_CONTINUITY	12th	WRONG_MODEL
3rd	SHUTDOWN	13th	MISMATCH
4th	FAILS_VPP	14th	CSDATA_NOT_RESPONDING
5th	TEMP_EXTREMELY_HIGH	15th	CSDATA_TRANSMIT_ERROR
6th	TEMP_EXTREMELY_LOW	16th	FAILS_ENERGY_CALIBRATION
7th	TEMP_TOO_HIGH	17th	EMPTY_DUMMY
8th	TEMP_TOO_LOW	18th	FULL_DUMMY
9th	BAD_ACUMEN_INFO	19th	END_OF_LIFE/Out of Warranty
10th	NO_PEN	20th	EXPIRED

The binary number needs to be read from right to left so that the 1st bit corresponds to the right one of the binary number. For example, the error code 4099 is converted to binary number 1000000000011. So using the table above, the error code means "FAILS_LOGICAL_V", "FAILS_CONTINUITY" and "MISMATCH".

What to do depending of the code reported

Before proceeding, first perform the electrical check on page 213 for the following codes:

- 1 FAILS LOGICAL V (REPLACE)
- 2 FAILS CONTINUITY (RESEAT)
- 3 SHUTDOWN (REPLACE)
- 6 TEMP EXTREMELY LOW (RESEAT)
- 8 TEMP TOO LOW (RESEAT)
- 9 BAD ACUMEN INFO (REPLACE)
- 11 BAD ACUMEN ACCESS (RESEAT)
- 12 WRONG MODEL (REPLACE)
- 13 MISMATCH (REPLACE)
- 16 FAILS ENERGY CALIBRATION (RESEAT)

For the following codes:

- 5 TEMP EXTREMELY HIGH (RESEAT)
- 7 TEMP TOO HIGH (RESEAT)

If the failure is intermittent, or if there is no more issue once you have replaced the printhead, perform the procedure 4.12 Ink Pressure at Pen, refer to page 393.

Note: In some specific cases, mainly in case the 3 printheads are reported with a code '5 TEMP EXTREMELY HIGH', Initiate again the Printhead replacement to have only one of the 3 printheads reporting an error. In case the 3 printheads are still reporting the same code '5 TEMP EXTREMELY HIGH', it might be required to replace at the same time the 3 printheads and the 3 Printhead interconnect boards. In this case, escalate the case first to the division. It is important to collect back all the defective parts.

For the following codes:

- 4 FAILS VPP

Most probable defective part: Printhead interconnect board, second most probable defective part is the data trailing cable.

For the following codes:

- 14 CSDATA NOT RESPONDING (RESEAT)
- 15 CSDATA TRANSMIT ERROR (RESEAT)

Most probable defective part: data trailing cable

For the following codes:

- 10 NO PEN

Just need to insert a printhead (through front panel, ink -> printhead replacement).

For the following codes:

19 END OF LIFE/OUT OF WARRANTY 20 EXPIRED

No specific action required when one of this 2 codes is reported, none of these codes can generate a printhead reseat or replace message (but it can be combined with an other code generating a printhead reseat/replace message).

The first code 19, End of life/out of warranty just indicates that the printhead is out of warranty.

The second code 20, Expired indicates that the printer has been used at least one day with expired ink. Even if there is no more cartridge with 'expired ink', the corresponding color/tube remained marked with expired ink as the 'expired ink' can stay within the intermediate tank. There is no possibility to clear a expired ink flag.

Described here is the definition of the item 'STATUS' and ERROR ID CODE: in current and history, all 3 items have a similar meaning, the code is different: in the current, it is reported as OK, missing, …. And in the history, it has to be slightly converted:

A	B
0	WORKING (=OK)
1	NO_PEN = Missing
2	REPLACE
3	RESEAT
8	REMOVE
16	REPLACEMENT INCOMPLETE
32	TEST_SEPARATELY (not used)

Further information on Image Quality Issues

(The following contains very important troubleshooting for known issues and are documented here as 'wrinkles', 'media edge holder with ink', ' aerosol inlet with dust', 'how to clean the PH connector' etc)

Refer to the Maintenance and Troubleshooting guide:

- Chapter 6 'Troubleshoot substrate issues'.
- Chapter 7 'Troubleshoot print-quality issues'.

This is guide is available on the www.hp.com -> support & Drivers; L65500, LX600 or LX800, click on Manuals.

From IPS 4.0.1, the documentation of the LX series is available online from the IPS (help -> User's Guide and Maintenance & Troubleshooting Guide).

3.3.5 Troubleshoot ink cartridge and printhead issues

Cannot insert a printhead

1. Use the correct procedure to change printheads, through the Front Panel.
2. Check that there is no obstruction in the printhead slot.
3. Check that the printhead is correctly oriented (compare with the others).
4. Check that you have closed and latched the printhead cover.

What to do before replacing a printhead

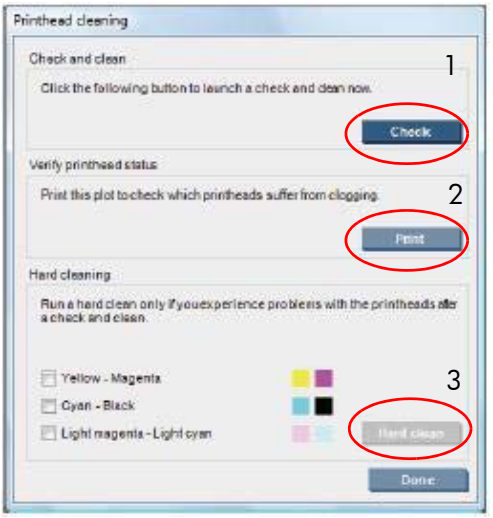
If the printhead is experiencing a one time fault, use the following procedure to troubleshoot the error before replacing it.

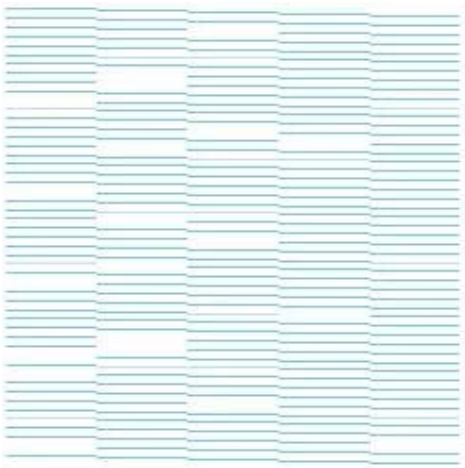
Check the printheads

If you believe that one or more of the printheads is performing poorly:

1. Go to the HP Internal Print Server (IPS) and select: "Printer > Printhead cleaning."
2. Press the "Check" button to perform routine cleaning.
3. If the problem persists, press the "Print" button in the same window to print the following:

Each color is printed by a single printhead and shows the performance of that printhead. If a significant number of printhead nozzles are blocked you will see missing lines in this display, as shown below.





4. In the same window, select any printheads that are showing missing lines, and press the "Hard clean" button.
5. When the hard clean has finished, press the Print button again to see whether the printheads have improved.
6. Perform again a hard cleaning of the suspected Printhead (from the IPS), and once the PH cleaning is done, open the sliding door and open the PH cleaning roller assembly.

Also, the following steps should be checked/done by the customer (documented in the maintenance and troubleshooting guide):

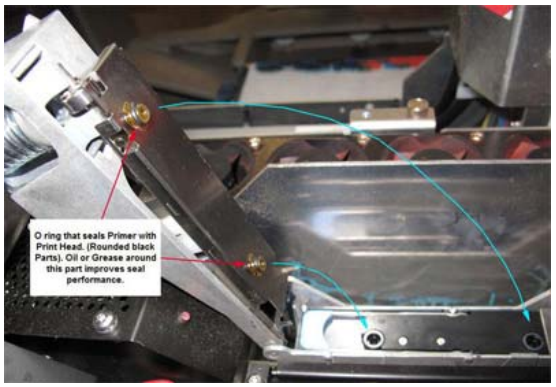
- Check of the primer:
  1. Trigger a Printhead replacement via the Front Panel.
  2. Open the Printhead latch of the printhead color that is not priming.

3. Close again the latch. We recommend a little oil or grease (or simple wetting) on both o-rings to improve the seal once the printhead is engaged.

On the LX600/LX800: the correct grease is provided within the cleaning kit, with the greasing procedure documented in the maintenance and troubleshooting guide. For the L65500, use the grease Molicote 44, available through the Gears kit ⇒page 549.

Picture 1: Black/Cyan Printhead latch in the open position

Picture 2: O ring that seals primer with Print Head.



4. If you have tried to repair the primer then repeat from step 1 and check if the primer is working as expected. If it does not, check that the primers? electrical cabling is correctly connected, (to confirm a failure of the primer you can swap the primer/printhead latch between both Printhead, to check if the issue is following the PH or is following the primer.

If after doing all the procedures described above the failing printhead is not recovering the nozzles out, please replace it.

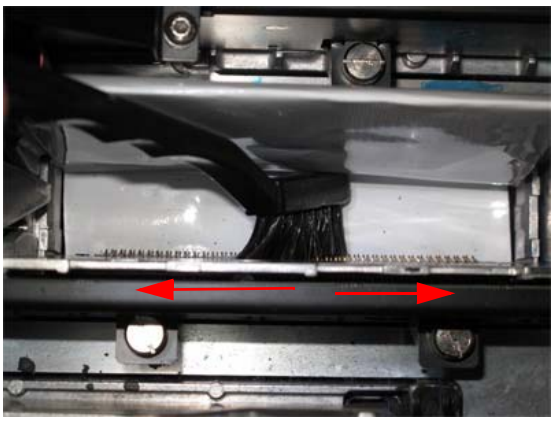
- Check of the PH interconnect board (mainly in case of reseat or replace message, but can also fixed some other cases of intermittent banding:

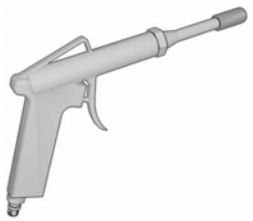
To perform the cleaning use the Cleaning kit (CK832A) included with the printer, see photo.

Use the following procedure to clean fiber/dirt from electrical contacts.

1. Remove the Printhead as described in the User's Guide to gain access to the Carriage Printhead Interconnect board.
2. Once the printhead has been removed look down into the empty printhead.s slot. Check the status of the electrical contacts which are located there. If necessary use a light to check the contacts.
3. TIP: To clearly see the electrical contacts, place a small piece of Z-folded paper down into the slot to highlight the contacts
4. If the contacts on the printer interconnect board are dirty and have fibers on them, this will cause the reseat/replace error messages.

5. Turn off the printer with the ACB1 switch and use the brush from the cleaning kit to carefully clean the contacts of dirt/fibers. Use care when cleaning so that none of the contacts are damaged.
6. After thoroughly cleaning the printhead interconnect contacts with the brush, use the Pneumatic air gun to blow any residual dirt from the contacts and the general area.





7. Once the area is clean, check again the contacts with a piece of paper and a light. Check that the contacts are clear of dirt/fibres and that none of them are bent or broken.

The contacts of the printhead interconnect are now clean

8. Insert the printhead back again.
9. Close the latch, close the lid of the carriage, close the right printer door.
10. Turn on the printer using the ACB1 switch.
11. If the printhead continues failing after performing this procedure, replace the printhead.

A printhead has overheated

A printhead may overheat for several reasons.

1. The room temperature may be too high.
2. The printhead may be suffering from blocked nozzles. You may be able to cure this problem by cleaning the printheads (Printer Menu>Printhead Cleaning).
3. The printhead may be suffering from an internal failure, in which case it must be replaced.

A printhead has damaged the substrate

When a printhead touches and damages the substrate, the most likely cause is excessive heat. Therefore, try decreasing the drying temperature.

Incorrect printhead cleaning roll errors

You should not touch the printhead cleaner roll except when you need to replace it. Any interference with the roll may prevent the printer from keeping track of roll usage, in which case you may see spurious error messages, and a printing job may be cancelled unnecessarily.

3.3.6 How to check the Ink Delivery System

In this procedure we explain how to check the ink delivery system from the cartridge to the Printhead.

1. First collect the service plot (page 494 of chapter 4). Need to have FW version > BOB 5.x and IPS > or equal to 4.2.5. If not, upgrade first to the up to date version of FW and IPS.
2. Remove the front left cover, and the rear left cover.
3. Look at the supply status part of the service plot

Supply Status			
	Connected?	Main valve	Presure sensor level
BLACK	YES	CLOSED	2117 mpsi
YELLOW	YES	CLOSED	2127 mpsi
CYAN	YES	CLOSED	1915 mpsi
MAGENTA	YES	CLOSED	2160 mpsi
LIGHT_MAGENTA	YES	CLOSED	2072 mpsi
LIGHT_CYAN	YES	CLOSED	2178 mpsi

Pressure sensor calibration values		
	Gain	Offset
BLACK	678	508
YELLOW	675	491
CYAN	676	484
MAGENTA	682	511
LIGHT_MAGENTA	691	502
LIGHT_CYAN	686	503
Intermediate tank side in use: 1		

Intermediate tanks values		
	Ink level (%)	Life cycles
BLACK	100	6
BLACK	67	6
YELLOW	82	6
YELLOW	72	6
CYAN	100	6
CYAN	78	6
MAGENTA	82	6
MAGENTA	75	6
LIGHT_MAGENTA	100	6
LIGHT_MAGENTA	71	6
LIGHT_CYAN	100	6
LIGHT_CYAN	86	6

Air pressure system		
	Pressure sensor value	Releave valve
Air pressure sensor 0	-3 mpsi	CLOSED
Air pressure sensor 1	-1 mpsi	CLOSED

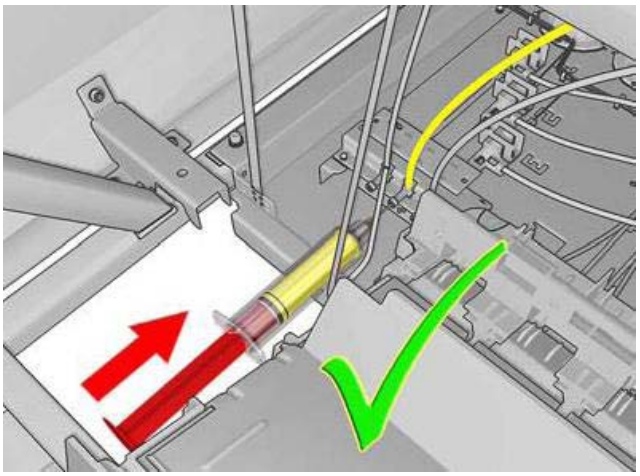
1. In the Current Ink Cartridge Info, there is a new column 'Error ID Code', this column contains a number which corresponds to a status of the Ink Cartridge. Here is the list of Error IDs and a brief description of each one (=x, x in HEX):

- OK = 0
- WRONG_INSERTION_MISMATCH = 1024
- EXPIRED = 128
- RESEAT = 16
- EMPTY = 2
- NOT_TOTALLY_TESTED = 4096
- WRONG_INSERTION_MODEL = 512
- VERY_LOW_LEVEL = 64
- LOW_LEVEL = 8
- NOT_PRESENT = 1
- WRONG_INSERTION_SIZE = 2048
- WRONG_INSERTION_FAMILY = 256
- UNKNOWN = 32
- ERROR = 4
- PREPARING_SYSTEM = 8192

2. Check the Pressure sensor level, values should be at least 1000psi (average should be around 2000-2200 psi).
3. Check the calibration of the ink pressure sensor. Compare the values displayed above, under 'Pressure sensor calibration values', and check that they are the same as the ones marked on the ink pressure sensor boards. If they are different, re-enter the values marked on the ink pressure sensor board in the printer, through the diagnostic menu, 4.11 Ink Pres. Sen. Calib refer to page 391.
4. Switch off the printer, through the ON/OFF button.
5. Once the printer is off, check the weight of each cartridge, check that none of them are about to become empty. The difference of weights between each intermediate tank should follow the table of the service plot 'intermediate tank values', 100% is equivalent to around 1kg. Note that these values are not 100% accurate, most importantly is that none of the intermediate tanks should be about to

become empty. If this is the case follow the chapter 'How to troubleshoot an unexpected empty intermediate tank' refer to page 224.

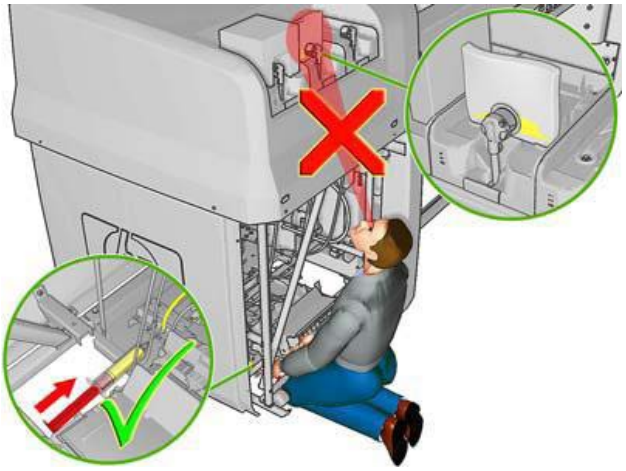
6. Reinsert each intermediate tank.
7. Check the main components of the ISM with an Ohm meter (printer off), and the values should be within the following ranges (values in Ohm):
   - Ink electro-valve: min: 100, average: 230, Max: 500
   - Air pump: min: 100, average: 450, Max: 2000
   - Air relief valve: min: 100, average: 370, Max: 1000
8. In case a component has a value out of rage, replace it.
9. If the any of the ink tubes going to the ink cartridges have low pressure, do not hesitate to re-purge the part from the Ink pressure sensor to the cartridge connector. The syptom of this will be if the printer displays an empty cartridge, when in fact there is plenty of ink in the cartridge. For each color that you want to re-purge the corresponding tube:
   - Turn the printer OFF
   - Equipment needed: one syringe + tube + flexible needle, and 1 purger bag (the empty bag of the cartridge used during the printer's installation).
   - Place the cartridge on a flat surface and turn it four times (rotating it through 360 degrees) as indicated on the label, to ensure that the ink is well mixed before use.
   - Insert a clean syringe into the ink cartridge and fill it with 30 cc of ink for the color selected.
   - Check that there is no air in the syringe by tapping it a few times. If there is air hold the syringe vertically with the needle up, so that the bubble of air rises to the top. Put a cloth around the needle, and press gently on the piston to remove the air from the syringe.
   - Insert the syringe in the purging port (next to the ink pressure sensor) for the color selected, and slowly push the ink until it clearly reaches the purge bags.



NOTE: In order to insert the ink the syringe correctly the tip must engage with a small spring inside the port.

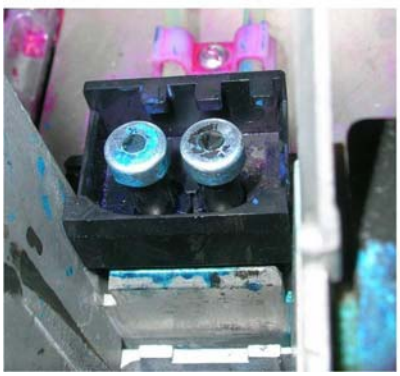
CAUTION: If you apply too much force to the syringe, you may damage the ink system. If there seems to be too much resistance, stop pushing the ink with the syringe and try to identify possible problems.

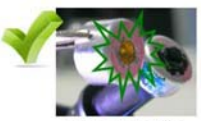
CAUTION: Never look away from the syringe. If you need to look at the purge bags or something else in the room, set down the syringe first. The ink system components are easily broken.



- If you see a bubble of air within the syringe, do NOT push it into the tube, refill the syringe if needed, after first removing the bubble of air (need to first disconnect the needle from the purging port).
- Remove the syringe from the purge port with a cloth around the needle to prevent spills.

10. Start the printer in diagnostic mode.
11. Check the 6 main ink electrovalves by running the test 4.6 ISS Electro valves ⇒ page 388. Place your finger on the electrovalve to feel the clicking. In case you do not hear the 'click click' coming from the corresponding electrovalve that you are testing, tap vigorously on the body of the electro-valve with a tool such as a screwdriver (do NOT tap on the tube at the front of the electro-valve, else you might create an ink leakage).
12. Remove the three Printheads.
13. Check each FI tower, mainly the black rubber part at the top of the FW tower. Here are 2 examples:





FI Below OK example

14. In case of any FI tower which seems to not work, replace them (refer to chapter 5 for the part number to order and chapter 6 to replace it). The newest version of the FI tower has a yellow body, the old style has a black body.
15. Check for each color, that the ink is correctly flowing to the Printhead:
    a. Perform the procedure 4.12 Ink Pressure at Pen, refer to page 393.
    b. Perform the following advanced test:
        1. You need a syringe + needle for each color
        2. Fill the printhead pockets with paper or cloth to prevent spilled ink or dirt from dirtying the Printhead interconnect contacts.
        3. Insert the needle on the color that you want to test, within the FI tower. The syringe needs to have the piston in place (else, when you remove the syringe, there is a high risk to place ink around the needle in the carriage).
        4. Run the test '4.12, Ink Pressure At Pen', testing each side of the air pressure pump (selection from the tool). Important: let the piston of the syringe in place and do NOT pull it out during the test, While running the test, the piston should be raised up slowly. (in some specific case, the piston has to be lifted up mainly if the piston is fully pressed down, just need to be raised up but then, the piston has to raise up alone.

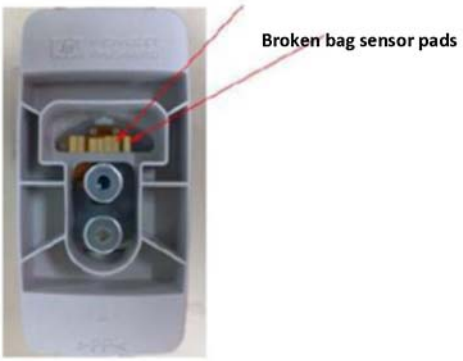
How to electrically check a new Intermediate Tank

Before installing a new intermediate tank, perform the following check to avoid false broken bag errors. Perform this check in the following cases:

- New printer installation
- A ink upgrade
- During the Preventive maintenance #3
- Troubleshooting an intermediate tank broken bag
- The Intermediate Tank

The procedure

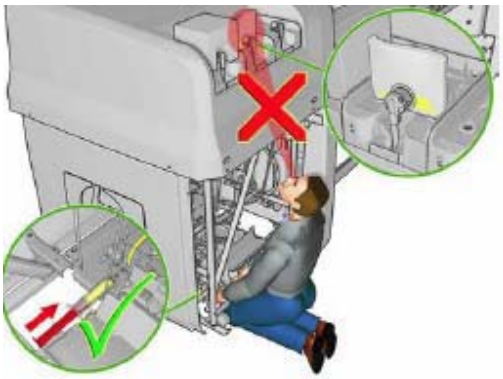
Measure the resistance between the broken bag sensor pads with a multimeter (pads indicated in the image below attached). If the resistance measured between the pads is below 20MΩ, discard the intermediate tank.

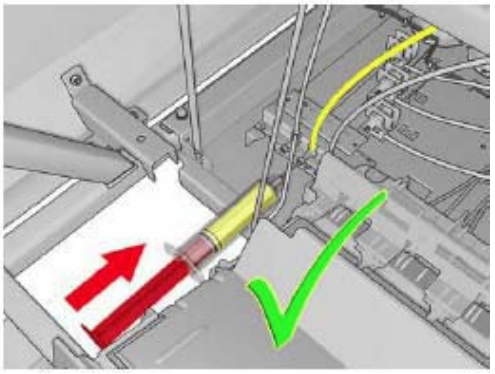


How to troubleshoot an unexpected empty intermediate tank

1. Check that the 4 way valves are not leaking in anyway.
   a. Insert ALL the intermediate tanks.
   b. Run the diagnostic '4.12 Ink Pressure At Pen', and select the ink pressurize pump to pressurize depending on the empty Intermediate tank.
      - In case it is an intermediate tank x1 which is empty, setup the rear pump (labeled 1 on the ISM board)
      - In case it is an intermediate tank x2 which is empty, setup the front pump (labeled 0 on the ISM board)
   c. Let the air pressurized for 5 minutes, and stop the test. Switch off the printer. Is there ink within the intermediate tank? If yes, the 4 way-valves must be replaced.
   d. If the empty intermediate tank remains empty, swap both intermediate tanks, and run the same test as step b, selecting this time the other air pressure pump. All the other intermediate tanks must be connected.
   e. Let the air pressurized for 5 minutes, and stop the test. Switch off the printer. Is there ink within the intermediate tank? If yes, the 4 way-valves must be replaced.
   f. If not, the 4 way-valve seems to work. Then go to the next step to check the main ink electro-valve.
   g. In any case swap back again the intermediate tank.
2. Make sure that all cartridges are correctly connected, check that the main electro-valve is working by using the entry from diagnostic '4.6 ISS Electro valves' ⇒ page 388, selecting the main electro-valve to test, and once selected, check that there is the click/click noise when opening/closing the electro-valve. Place your finger on the electro-valve to feel the clicking. If there is no noise, hit the body of the electro-valve with a pen while running the test.
3. Air bubbles in the tubes from the ink cartridges: It is important that thee are no air bubbles in the tubes, between an ink cartridge and the main electro-valve, if there are bubbles this a major cause on an empty intermediate tank when using the printer
   a. Make sure that the main electro-valve is not open (not running any specific test)
   b. Disconnect the ink cartridge and install one purge bag in the color of intermediate tank that will not fill.
   c. Insert a clean syringe into the ink cartridge and fill it with 30 cc of ink for the color selected.
   d. Insert the syringe in the purging port (next to the ink pressure sensor) for the color selected, and slowly push the ink until it clearly reaches the quick connector purger and the purge bags. If there is an air bubble inside the syringe, do not push it into the tubes. WARNING! Never look

away from the syringe. If you need to look at the purge bags or something else in the room, set down the syringe first. The ink system components are easily broken.





CAUTION: If you apply too much force to the syringe, you may damage the ink system. If there seems to be too much resistance, stop pushing the ink with the syringe and try to identify possible problems.

TIP: Make sure to insert the syringe far enough into the port. In order to insert the ink correctly, the tip of the syringe must engage a small spring inside the port.

e. Disconnect the purge bag and connect the ink cartridge.

4. In case of 'unexpected empty intermediate tank' and at the same time the printer marks the cartridge of the same color as empty (while ink remains), refer to the section 'What to if the printer incorrectly displays that an ink cartridge is empty ⇒ see page 226.

5. Once the troubleshooting above has been completed, check that all the air tubes are correctly connected, refill the empty intermediate tank.

Refilling the intermediate Tanks

There are different ways to refill the intermediate tanks, the recommended method is shown below, but there is also a method described here which should only be performed if the previous method did not work.

1. Troubleshoot the problem using the suggestion here:

   a. Is the tube of air bent or unplugged, check the connection from the intermediate tank to the air bottle, if there are bends or kinks in the tube, straighten them out.

   b. Check to see if the Intermediate tank is correctly connected.

2. Here is the process to force a refill of this intermediate tank:

   a. Run the entry '4.18 Int Tanks Ink', and check that the ink level of the empty intermediate tanks is displayed as empty (0%). If it is incorrectly set, change the values of the empty intermediate tank, and set them to 0%.

   b. From the diagnostic boot mode, select '4.13 Force filling I Tanks'.

   c. If nothing happens, it could be because there is insufficient ink in the ink cartridge (which can happen when filling the intermediate tank twice, one after the over).

      In this case, run the diagnostic entry '4.19 Int Tanks time refill'

   d. If nothing happens, then there is a last way to force the ink level, but this is a fully manual way, which has to be followed carefully:

      1. First check that there is enough ink in the ink cartridge to fill the corresponding intermediate tank (by just weighing the cartridge).

      2. The fill the tanks it is possible to group them by up to 3. Here are the 3 that should be grouped (remember that each intermediate tank is marked x y, with the following possi-

ble values x: 1.6 pointing a color (1:K, 2:Y, 3:C, 4:M, 5:Lm, 6:Lc) and y:1 or 2 pointing to an air pressure system (1 pointing to the front air pressure (named 0 on the ISM board), and 2 pointing to the air pressure (named 1 on the ISM board). There up to 3 cartridges which can be filled has to be part:

- within front or back group (intermediate tanks 1y, 2y or 3y, and 4y, 5y or 6y)
- of the same air pressure system (x1 together or x2 together).

3. For example, the intermediate tank 32 has to be filled (Cyan intermediate tank, can be filled in with the intermediate 12 and 22)
4. UNPLUG ALL the intermediate tanks that you do **not** want to refill. Keep connected only the intermediate tank 32 (and possibly the 22 and 12).
5. Make sure that ONLY the intermediate tank that you want to refill is connected (only the 32 in the example above, and cannot be more than 3 in any case).
6. MAKE SURE THAT ALL THE CARTRIDGES ARE CORRECTLY CONNECTED (or else you might have air entering inside the cartridge tube, resulting with the front panel displaying that the cartridges are empty when they are not).
7. From diagnostic menu, run the entry '4.15.1 Entry Front Valves', and select the Cyan electro-valve to open
8. Leave the electro-valves open for around 10 minutes. DO NOT DISCONNECT ANY CARTRIDGES DURING THIS OPERATION, EVEN IF THE CARTRIDGE IS EMPTY (first stop the test).
9. Run the entry '4.18 Int Tanks Ink', for the intermediate tank that you have refilled, set to 80% of ink level.
10. Switch off the printer
11. Check that the intermediate tank has some ink inside (no need to be full).

What to do if the printer incorrectly displays that an ink cartridge is empty

1. Check the dynamic pressure while refilling an intermediate tank
   - If not already done, perform the steps 1-11 described at the beginning of the 'How to check the Ink Delivery System' see page 220.
   - In case you have also the corresponding intermediate tank which is empty, the line between the cartridge and the ink pressure sensor might be blocked, use the following procedure to check it:
     a. Reboot the printer in diagnostic
     b. The intermediate tank connected to the corresponding color with the problem must almost be empty (can be one or both cartridges).
     c. IMPORTANT: Disconnect the two intermediate tanks from the other color (in order to ensure that the intermediate tank bag can be inflated/refilled).
     d. Perform the test 4.15.9, Ink Pressure Sens and check the value (should be around 2000-2400), refer to page 399.
     e. Open the main electrovalve of the color showing the problem, use procedure 4.15.2 Open electrovalve, refer to page 396.
     f. The intermediate tank will start to refill.
     g. Check again the ink pressure sensor value, through 4.15.9 Ink Pressure Sens (while the electrovalve is open), refer to page 399.
2. If the value displays step d is less than 1000, or even 500, this would indicate that there is a blockage in the line between the cartridge and the ink pressure sensor.

What is happening: when the ink flow is very small (but still happening), the difference of pressure between electrovalve closed (static pressure) and electrovalve opened (dynamic pressure) is much higher than a normal ink flow.

What can prevent a good ink flow between the cartridge and the ink pressure sensor?

- Air bubble (which was not removed in previous steps: How to check the Ink Delivery System, see page 220).
- A defective cartridge can be confirmed by using another cartridge.
- Defective cartridge connector => need to order this connector (coming with the ink tube down to the ISM ink tray).

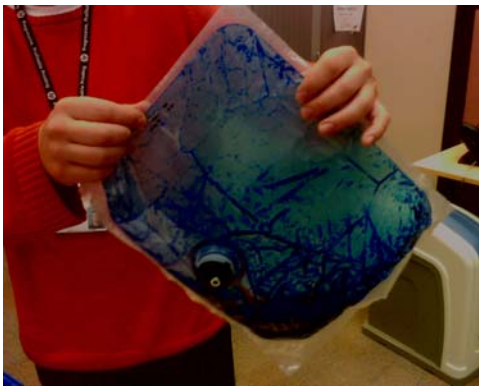
The same test can be run with 1 intermediate tank connected, the other or both intermediate tanks are connected (while reading the 4.15.9, Ink Pressure Sens while the main electrovalve is open, you can connect or disconnect the intermediate tank. What is important is to have the ink level within the intermediate tank less than half full, if they are full of ink, you will not detect any issue with the dynamic ink pressure).

3. The level of ink remaining within the cartridge is as expected

Here is a picture of an ink bag extracted from the cartridge box when the printer has reported it as empty

- If the same bag, you unfold it (and be also done by letting it hang from a corner for one day for example)

- Hanging the bag from a corner



So even if the bag was really squeezed at the beginning, after unfolding it, there seems to be more ink remaining in the bag, this remaining quantity should not exceed 100cc of ink, and with a new cartridge, we are all the time adding more ink in order to ensure that the customer can use the 3 liters of ink.

TIPS: If the customer is willing to use a part of this remaining ink, use the following procedure:

- BEFORE the printer displays the cartridge as empty, disconnect the cartridge, remove the carton and unfold the ink bag
- Place the unfolded ink bag at the place of the cartridge box
- Connect again the cartridge connector

IMPORTANT: This procedure must be performed with the ink cartridge disconnected, if not there is a risk of creating a system error of the ink pressure sensor and then having an ink leakage.

⚠ **CAUTION:** This procedure **must** be performed with the ink cartridge disconnected, there is a real risk of damage to the ink pressure sensor and an ink leakage. NEVER PRESS ON THE BAG WHILE THE CONNECTOR IS INSERTED.

Ink leakage due to an ink pressure sensor failure (communication to customer)

It is very important that the customer understands that the in cartridge has to be handled with care mainly when it is connected to the cartridge connector/printer.

Here are 3 situations which can create an failure on the ink pressure sensor and so cause an ink leak:

- With the connector from the printer inserted, and letting the cartridge fail from a few centimeters down to the tray
- With the connector from the printer inserted, in case the customer is trying to force the usage of the remaining ink, by pressuring manually on the cartridge box or on the cartridge bag (after having removed the carton): just a slight pressure applied on the ink bag can create an ink leakage.
- In the case of 'Out Of Ink' is displayed for one of the cartridges and the operator retrieves the new supply from storage and brings it to the printer, but accidentally lets it fall on the neighboring ink cartridge. Then, the operator removes the empty cartridge, and inserts the new one on its tray. During this operation, the neighboring ink cartridge has received an overpressure and this can create a failure on the corresponding ink pressure sensor situated at the bottom of the cartridge.

The reason for the failures is because the ink pressure sensor is directly connected to the cartridge, there is no electrovalve in the middle protecting the pressure sensor, any variation of pressure on the ink bag/cartridge is transferred immediately to the ink pressure sensor and this can cause an ink leakage.

The printer does not detect removal or insertion of an ink cartridge

Symptom: when plugging or unplugging a cartridge, in case the LED on the side of the cartridges do not react at all and the printer does not seem to see the change, here is the proposed troubleshooting steps:

1. Perform the following diagnostic procedures, and if any of the procedures fail, following the recommended troubleshooting procedure documented in the service manual, chapter 4.
   - 4.1 ISS Electronics page 383
   - 4.10 Ink Cartridge LEDs page 391
   - 4.20 Check Ink Supplies page 406
   - 4.3 Ink Supply Connector page 385
2. If all the previous procedures pass, check for a failure in the cable from the ISS board to the Upper PCI board, passing through the Main Interconnect. This line is passes through the following cables:
   - Cable linking J36 (ISS board) to J8 (Main Interconnect)
   - Cable linking J306 (Main interconnect board) to the Upper PCI board (flat cable).
3. Replace the components one at a time until you find which one is preventing the line from working.

In case support from HP is required, here is the information to provide, in order to speed up the response time:

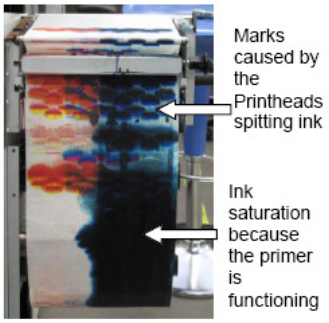
- The files (.xml and .tar.gz) from the HPretrivertool (please refer to the specific newsletter available on this tool).
- In case the HPretrivertool can not be run, at least the following files are mandatory:
  - Supply0.log, … Supply5.log (total of 6 files).
  - How to collect them:
    - Open an internet window, and type http://<ip of printer>/hp/device/3432/8828/tmp/ <ip of the printer, displayed on the small front panel, if you do not know it, from diagnostic, available within electronics menu -> IO information.
    - For each file, select it with the right click and do a file save as on a specific location on the PC.
    - Once all the files are transferred, just zip all together and send them to your HP support team.

3.3.7 How to check if the primer is working

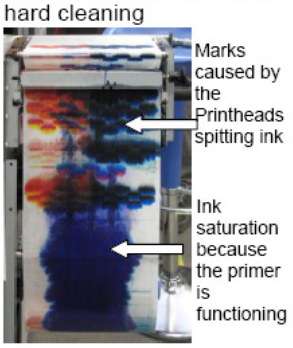
1. Perform a hard cleaning. At the end of the cleaning, open the Printhead cleaner assembly and compare the results with the following pictures:

   In the three photos shown here, we can see what the material on the printhead cleaner mechanism should look like when a hard recovery has been done (from the IPS) and the printheads and their primer assembly are working correctly:

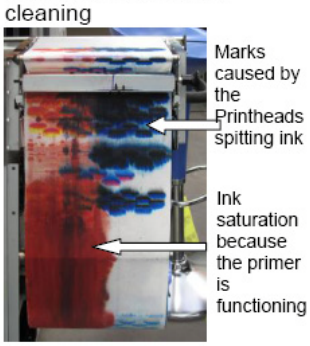
Black/Cyan hard cleaning



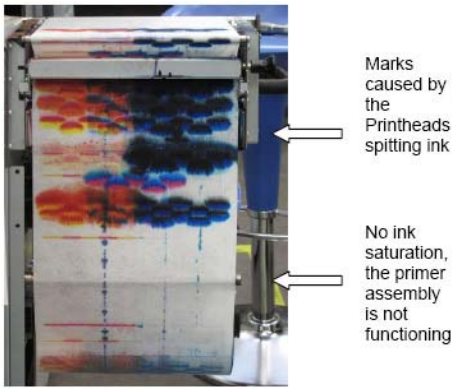
Light-cyan/Light-magenta hard cleaning



Yellow/Magenta hard cleaning



If the primer is not functioning, the material will **only** have the marks from the printhead spitting, there will be **no** saturation of the ink.

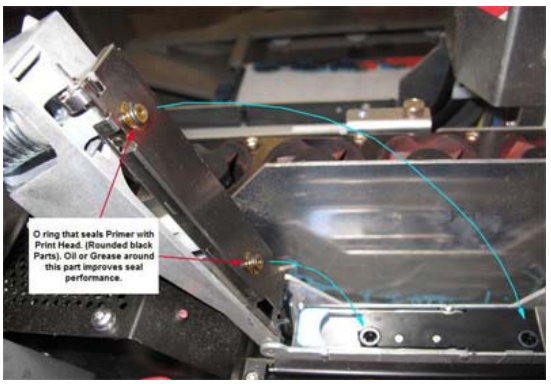


To solve an error with the primer try the following procedure:

1. Trigger a Printhead replacement via the Front Panel.
2. Open the Printhead latch of the printhead color that is not priming.
3. Close again the latch. **We recommend a little oil or grease (or simple wetting)** both o-rings to improve the seal once the printhead is engaged.

Picture 1: Black/Cyan Printhead latch in the open position

Picture 2: O ring that seals primer with Print Head.



4. If you have tried to repair the primer then repeat from step 1 and check if the primer is working as expected. If it does not, check that the primers' electrical cabling is correctly connected, (to confirm a failure of the primer you can swap the primer/printhead latch between both Printhead, to check if the issue is following the PH or is following the primer).

Note that this process to grease is documented within the maintenance and troubleshooting guide, released on June 09 on the www.hp.com, under L65500 manuals.

5. In case you suspect that one primer is failing, run the following test from diagnostic: 6.6.1 Force Priming Left, or 6.6.2 Force Priming Centre or 6.6.3 Force Priming Right).

In case of requirement of support from HP, here are the information to provide, in order to speed up the response time:

The files (.xml and .tar.gz) from the HPretrivertool.

3.3.8 Troubleshooting air leakage in the spindle

Find where the air leakage is coming from: We have found 3 parts where we can have an air leakage:

- At the metal parts which presses the black rubber on every end of the spindle. (this metal part can show one or two Hex screws).
- The air valve (the place where the air gun is applied)
  - and be through the part around the air valve
  - or can be through the middle of the air valve
- The black rubber parts, the ones that are inflated.

How to know where the air leakage is coming from?

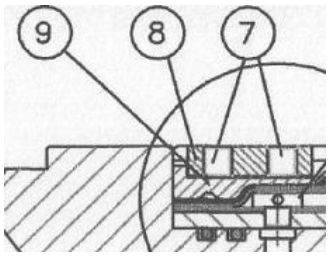
Place some water with soap in the place where the air leakage seems to come (on all the spindle if you do not know), pressurize, and check the bubbles forming: where the air leakage is coming, some bubble will be formed where the air leakage is coming from the black rubber.

What to do depending of the air leakage:

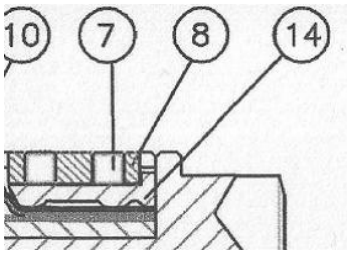
1. **In any case, the air pressure has to be checked**. If it is lower than 5 bars (70psi), potentially there will be an air leakage mainly from the valve (the middle of the air valve) as the valve will not have enough air pressure inside the spindle to close properly. **The air pressure HAS to be 5.5 bars (80psi)!**

2. **If the leakage is coming from the metal parts** towards the end/extremity.

   The leakage from the rubber parts, we found that there was a risk to have one metal part that started to move freely. There is a way to place it back.



Opposite to side valve



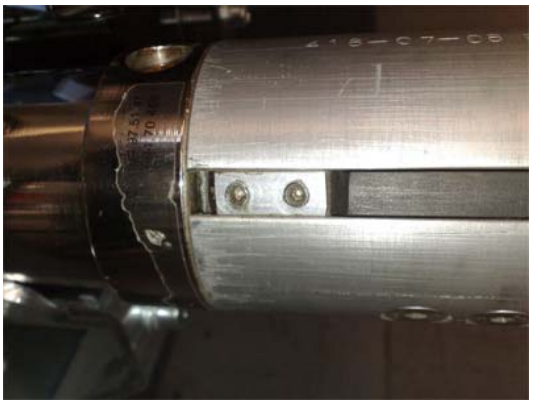
The drawings are the new valve design which will fix this issue.

On the previous manufactured part, the part #9 and #14 did not have a 90 degrees angle part, there were flat, and then can start to move freely laterally. When these flat metal part begin to not be straight under the screw #7, they are no longer secure and the assembly may start to leak.

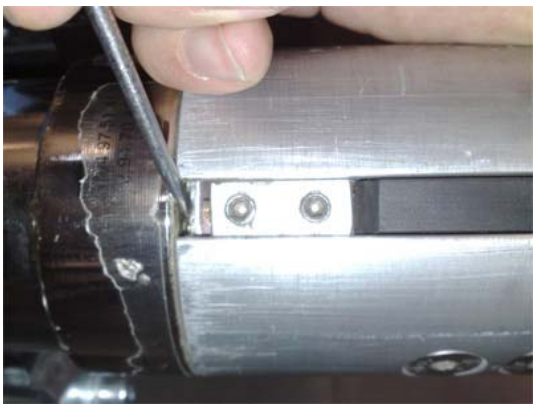
In the new design, also the screws #7 will be better maintained (better control of the force when placing it + potential addition of locktite) + specific better leakage tests have been implemented.

For those units which currently are affected, perform the following steps:

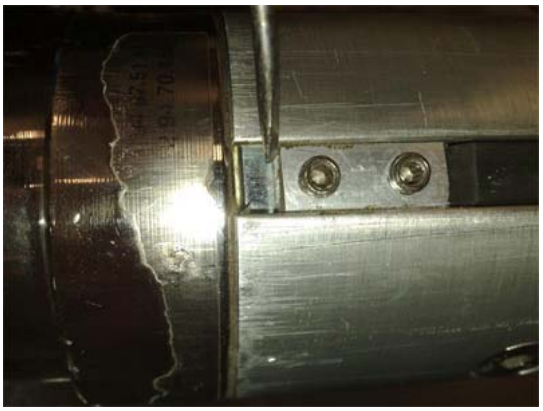
1. Press the valve in order to free all the air pressure in the spindle.
2. Use a Hex driver to unscrew the metal screws (#7) until the metal part it moves freely.



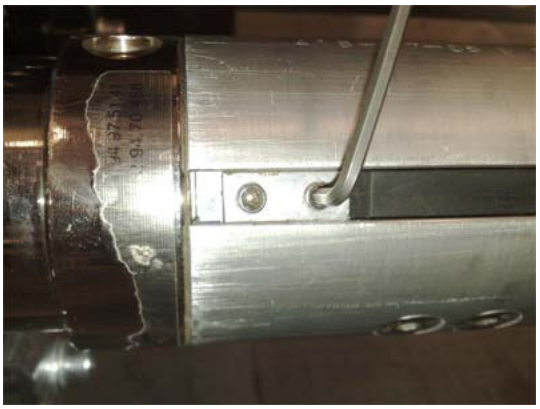
3. Move the metal parts to position part number 8 over number 9.

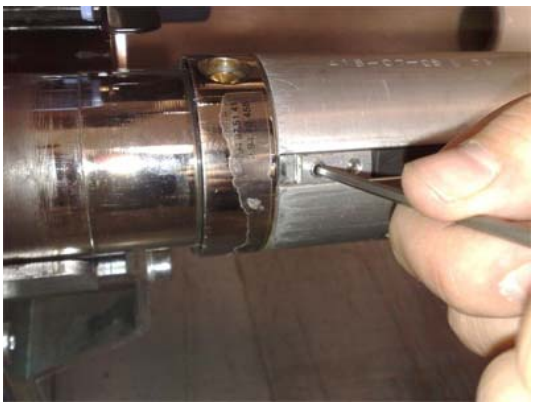


4.



5. Screw again number 7, starting from the right one and then the left one.





6. Apply pressure to the valve to check if the spindle is sealing correctly the pressure chamber.
7. If the air leakage remains, replace the spindle.

If the leakage is coming from the air valve:

- For the future parts the sealing has been improved, with the addition of a Teflon part to ensure that there is no air leakage from the thread of the valve + better control of the force applied when screwing the valve. The old valves need to be replaced in case of air leakage.
- Also, we are in the process to setup a support part with the air valve only.
- To replace the valve perform the following

1. Use a Double Hex driver or a wrench key of size metric 11 to unscrew the valve.

2. In some cases, by greasing the inner O-ring, this can fix the air leakage.

3. If the air leakage from the air valve cannot be fixed, and that the support part of the air valve is not available, replace the complete spindle.

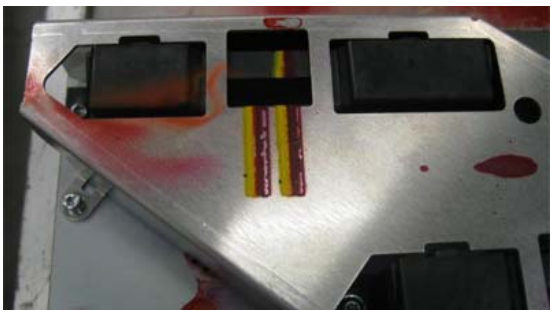
3.3.9 How to check the capping station

Check of the CAPs:

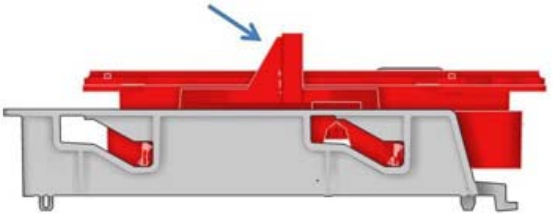
- Switch off the printer
- Remove each PH, and check that there is some liquid around the dies, following the trace of the CAPs, need to look with reflection. The contact has to be done with the liquid element from the PH cleaning roller (PEG). Here are some examples:

- Here is an example of something going wrong with the CAP (too high friction), the shape of the CAP is having a too high angle, creating on an angle a possible entry of air.

- If needed, re-calibrate in 'X' (through the scan axis) or in 'Y' (through the movement of the capping station, parallel to media movement) the CAPs: run the test from diagnostic mode: '5.3.4 Service Station Cal' page 421.
- Switch on the printer, after arming the printer, during the boot up sequence, the carriage will move -> then look at the capping station by opening the front right sliding door, with a 'maglight' and check the movement of the 3 CAPs when the printer will re-cap the Printheads: check that all three CAPs are raising up more or less at the same time.
- Go to the preventive and maintenance menu (3rd entry from the top), and perform the 'clean ink deposit' procedure.
  - When requested, open the right door.
  - Check that the lines just before the drop detectors are well centered in the drop detector. Clean these lines, with a cloth (following the explanation within the maintenance and troubleshooting guide)



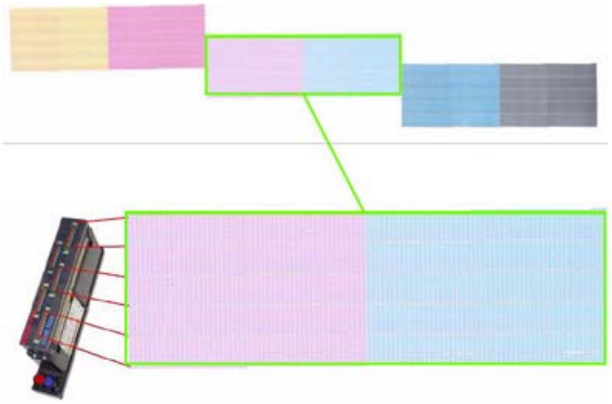
- Check that the CAPs are in good shape (no broken Pins, part showing in the picture below).



- When the checks and cleaning have been performed, close the right door, and follow the instructions on the small front panel.

Check functionality of the drop detectors:

1. Print the specific nozzle check (2.6.1 Nozzle Check), here is an example:



- Immediately after, when the printer is back to ready, perform 1.5.4 PH Stability, refer to page 489.
- And compare the number of nozzle out reported for each Printhead on the front panel versus the real number of nozzle outs from the plot printed.
- In case of important differences:
  - In the Printhead is pretty old, this might happen (mainly when the 'speed of the drop' is reducing). If you replace the PH with a newer PH, this important difference should not happen anymore
  - In case of new Printheads:
    - Run the 1.5.3 Ghost Drop Detection ⇒ page 487.
    - Run a hard cleaning of the PH and redo the 'force drop detection' after the end of the hard cleaning.
    - Perform the 1.5.4 PH Stability Check ⇒ page 489.
    - Interpret the printer.log ⇒ page 321.
    - Reset drop detection tables
    - Change of print mode

  In case support from HP is required retrieve the (.xml and .tar.gz files from the HPretrivertool.

- In case of there are little differences, and if most of the nozzles are working, you can reset the drop detection table. This can be done by performing the procedure 1.5.5 refer to page 489.

3.3.10 How to check the media path

Test the functionality of the drive roller. Open the pinch wheels, with no media loaded, place your hand on the drive roller (black rubber part) and try to rotate the drive roller (in both rotation). Except for a small backlash (a few millimeters), it should not be possible to turn the drive roller.

Check the calibration values of the drive roller calibration, refer to the service plot How to Interpret the Service Plot' ⇒ page 309.

Check for Media Slippage

1. Check the media spindle attachment; inflate more the spindle to ensure correct core attachment. In order to check the system is not slipping place a mark in the media, the core and the spindle to check which one is moving.

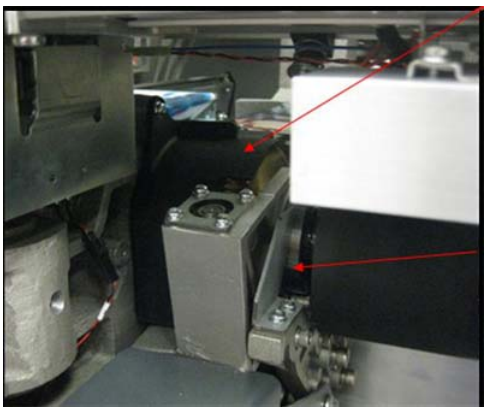
2. If the media is slipping on the roll:
   - If the media is slipping between the media and the core it is important that the end of the media is glued/stuck to the core. It might be possible that the media has to be rewound onto a new core, with the edge taped to the core.
   - If the media is slipping because the core and the spindle, check that the spindle is inflated to at least 5.5 bars (80psi) (as per the site preparation guide) As a workaround if there is an air leak in the input spindle, you could change over with the output spindle (but it must be replaced at a later date), and the issue might be moved to the output, but at the beginning of the roll, there is less force between the spindle and the core). For the LX800/LX850, as a work-around, the configuration 'roll to free floor' could be used, placing the working spindle on the input side.
   - In case of air leakage from the spindle ⇒ refer to page 231.
3. Check the media used is correctly rolled on to the core (you can use a different media roll to check for this issue), ensure the tension settings used in the printer are the appropriate ones for the media, and that the roll of media used is able to handle them. Reduce tension and system vacuum levels if required (note: ensure the values are still appropriate to control the media in the print zone).
4. **LX800:** In the case of dual roll, check the rubber latched with the different core systems, replace the rubber latches if required or re-tighten the core supports.

In case the drive roller can rotate

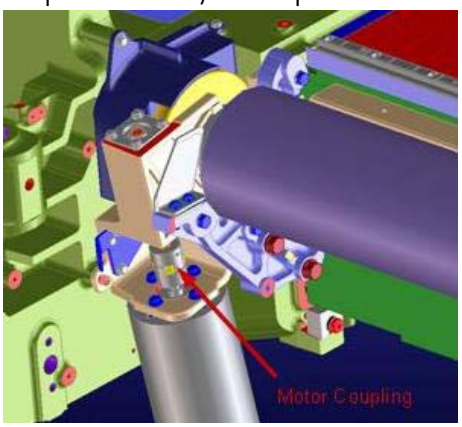
Perform the following check:

1. Lift up the PPS/Scan beam in loading position, and switch off the printer.
2. Remove the rubber cover drive roller encoder disc

3. Check that the drive roller motor and motor mount is correctly installed.



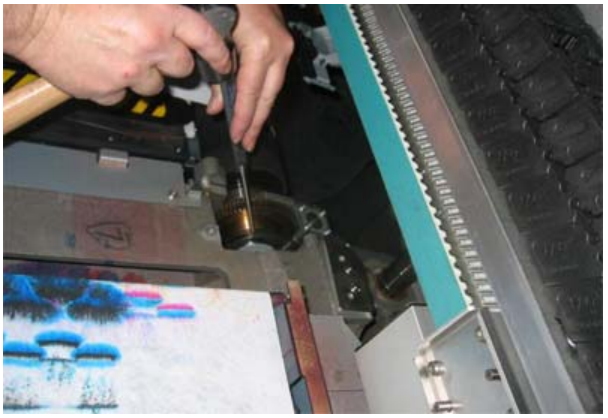
4. By rotating the motor coupling by hand, check that the retainer plate (shown by the lower red line in the picture above) is well positioned and tight.



5. Check that there is a least one tab bent, as shown in this picture below.

6. If there is no bent tab, try to tighten the driver roller, if it does not turn, do not force it too much, this would indicate the part is tightened sufficiently.

7. When positioned in front of the printer, use a ladder or steps to rise above the area, apply the screw driver onto the wheel just between the encoder and the gear, and apply small hits with the hammer in order to screw this metal wheel.



- The wheel to rotate is the one which has 4 indentations (and not the one which has more that 10 - 15 indentations.
- Rotate in the opposite direct to the normal rotation of the drive roller when it advances the media (from input to output).

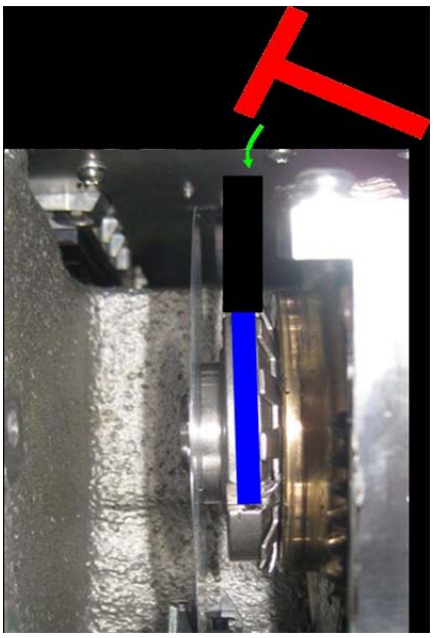
8. Rotate the motor coupling with your hand in order to check if any of the slots of the media drive roller nut and lids are aligned.

This picture shows one tab/lid aligned with a slot, note that in the middle of the circle, there is normally the drive roller axis.

9. If there is one combination of slot and lid aligned then bend the lid using a flat screwdriver and hammer so the nut remains locked.

10. If at first you do not find a combination of slot and lid aligned, then place the flat screwdriver on one slot of the nut and start tapping it with a hammer until you find the first slot and lid aligned. Once slot and lid are aligned proceed to bend the lid.

11. If eventually the alignment is not possible (this is very rare), two lids could be bent even though they are partially inside the nut slots. See picture below.

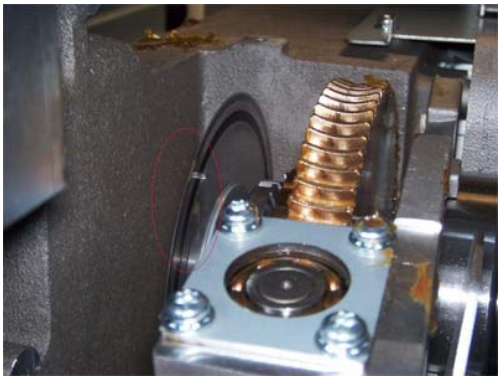


Slot and lid not aligned

Check the encoder disc of the drive roller

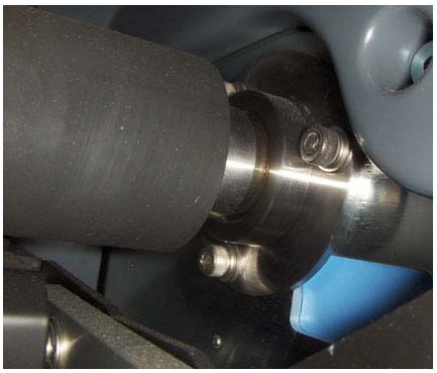
1. Lift up the PPS in loading position,
2. Remove the rubber cover drive roller encoder disc

3. MAKE SURE ENCODER DISC IS NOT DAMAGED OR DIRTY, do 2 or 3 turns of the drive roller cleaning the encoder disc with a lint free cloth, use water to perform the cleaning. Ensure encoder disc is well positioned in the encoder sensor.



LX800 only: Special checks of the Roll to Free Floor assembly

1. Check the extremities of the tension roller are correctly in position on the right side of the Roll to Free Floor:



Right side

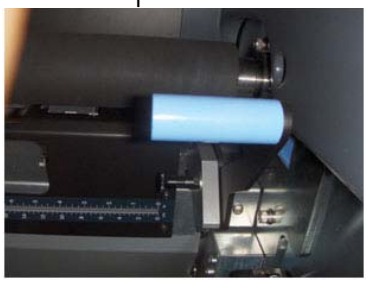
Note that the 3 screws securing the drive roller can also be located on the other side of the side plate, to increase the accessibility to these screws.

Right side

2. Check the extremities of the tension roller are correctly in position on the left side of the Roll to Free Floor:


Left side

3. Check the position of the Pinchwheel when the lever is in the up position.




Pinch wheel up

4. Check the position of the Pinchwheel when the lever is in the down position.

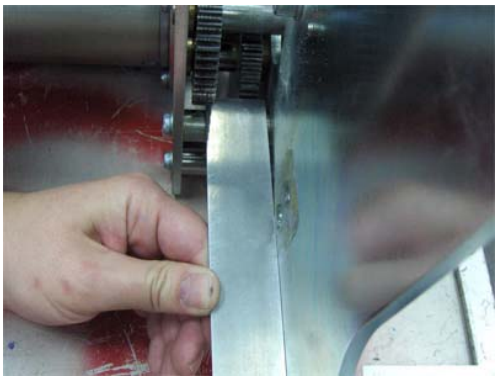

Pinch wheel down

5. Check the pinch wheels are correctly installed.

Other checks on the media path

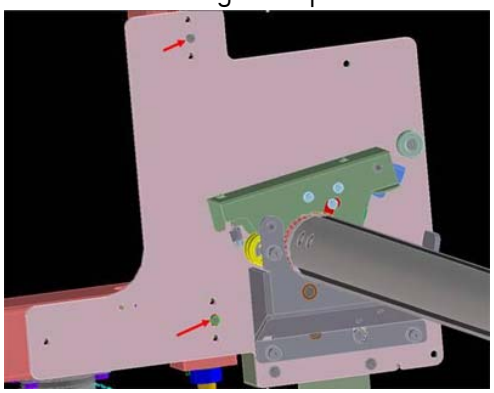
- Check that the input spindle and output spindle can move laterally by around 5mm (0.4 inches)
- Check that the latches are well maintaining the spindles. With the spindle in place, when closing the latch, it should not be too hard to close it, and also, once the latch is close, you should not be able to lift up the spindle, has to be well maintain.

- Check that the side of the spindle is not bent, here is an example of a bent side plate.



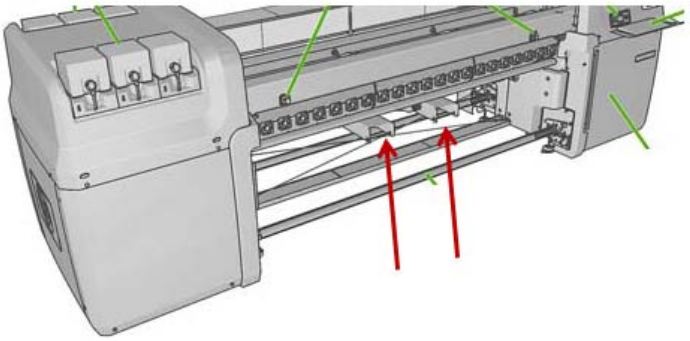
- Check the stand tensions (2metal cables in X linking each legs) are well tensioned. Re-tension it if needed.
- Check that the drive roller is not dirty. Here is an example of drive roller which has to be cleaned.

- How to clean the drive roller: from service menu, run '1.3.1 Turn Drive Roller', using a soft cloth damped with isopropyl 70% or equivalent cleaning liquid. It can take a long time to do a good cleaning, up to at least 1 hour.
- Check that all the pinch wheels are rotating well (pinch wheels open, checking with finger). Clean the pinch wheels if needed, using a with soft cloth damped with isopropyl 70% or equivalent cleaning liquid.
- In case of intermittent media wrinkles, check that the distance between the Media input spindle and the main drive the roller is the same on the left and right side. Same check to be done between the output spindle and diverter. In case of any difference, check that the side plate is well positioned. Here are the 2 alignment pins to be check, on each side plate (pointed out by a red arrow).



- Check that there is no visible source of air leakage within the vacuum beam under the printzone:
  - Check that the connection of the vacuum pump tube to the beam is correct.
  - Check that the forklift guide is correctly in place with all the screws (or there could be an air leakage through the holes maintaining the forklift guide within the vacuum beam).

- The location where the forks of a forklift truck can be entered are shown below with two arrows.



- Check that all the Media Input/Output motors are the same type of motor. All the motors must be of the same type.

  The type of motor installed can be identified by the presence or absence of a label on the motor. Both types have the bar code label.

  - **First type of motor (Red Brushes):** This type of motor has a circular red label or it could have a small '3D' label, shown here:

Circular Red Label

Small 3D label

  - Second type of motor (Black Brushes): The other type of motor does not have a Circular Red Label or a 3D label. It only has the bar code label.

No Circular Red Label

No 3D Label

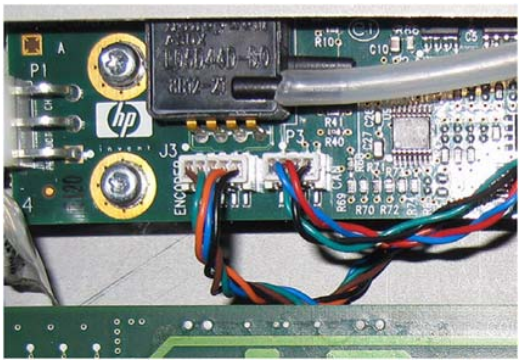
  - Check the service plot,
    - For GF-BOO firmware, go to the 'Component Usage' section, and check the setting 'Media Input/Media Output,
    - For GF-BOB firmware, go to just after the section 'Analog encoder calibration' and just before 'Printhead cleaner roll'.
      - If all the motors installed have the Circular Red Label or 3D label (Red Brushes): **check the setting is 1**
      - If all the motors installed are the type with only the bar code (Black Brushes): **check the setting is 0**
  - If the setting is incorrect, go to the procedures in the Diagnostic Mode and run the right corresponding test:
    - '3.13 L65500 Set Red Brushes' or
    - '3.14 L65500 Set Black Brushes'.

Perform the following diagnostics

- 3.6 Vacuum

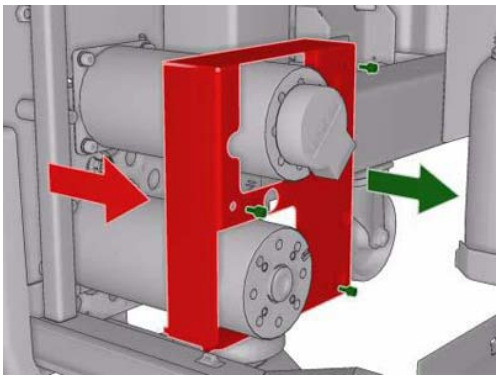
  In case the diagnostic test fails check the following:

- The forklift guides are in places, with all the screws (previous item).
- The tubes are correctly connected, to the tube set to the furthest part from the vacuum bars.



- Perform from service menu the '4.3.8 Reset vacuum aircal'⇒ page 506. For more information, refer to '3.6 vacuum' test ⇒ page 377.

- 3.7 OMAS, check mainly the temperatures reported.
- 3.2 Front spindle test (spindle in place, latches close, but no media loaded)
- 3.3 Rear spindle test (spindle in place, latches close, but no media loaded)
- Place few dots of oil (use the bottle of oil available within the cleaning kit). 2 possibilities to place this oil:
  - Quickest way: place few dots of oil on the gear of the side plate, just under the spindle, on the Media input and Media output.
  - But also add few dots of oils on the other gears of the side plate gears assy: slide the metal cover protecting the side plate gear (front and rear, here is an example from the front side plate):



  - Then place few dots of oil on each gear, and mount back this metal plate, to be done on the front right and rear right side plate.
  - Perform the 3.1 Spindle systems burning. This test will run for ½ hour, spindle in place, but no media loaded.
  - If the test 3.2 or 3.3 were failing before the oiling and burn-in, re-run the test (3.2 and/or 3.3).
  - If the test still fails, then each of the motors of the media output have to be placed on the media input, one after the other, and a functional testing of the media input spindle must be performed on each motor. The reason for this is the functional test on the spindle input side is places the motor at a higher speed (2 times faster) and this show a better performance/cleaning. for more information about the functional test ⇒See page 370.

Perform the following diagnostics from the service menu

- 1.3.4 OMAS Sensor Check.
- 1.3.6 OMAS LED Check, if there is any issue the system will report it.
- Run the service check '4.3.4 Roller Calibration: ⇒See page 504.

1. Load a roll of substrate with the following characteristics.

   - Printer must be in Roll to Roll configuration
   - External diameter at least 140mm/5.5 inches

- Remaining length at least 20m.
- As wide as possible, ideally the full width of the printer.
- The substrate type should be one for which the OMAS (Media advance) sensor works well, ideally a Self-adhesive Vinyl with a paper backing or any paper based substrate.

2. We recommend the following substrates:

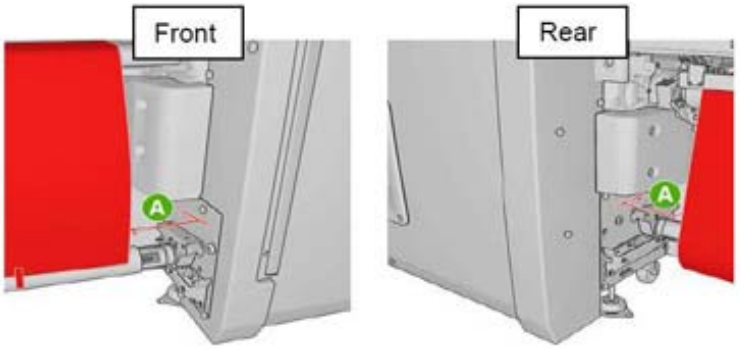
- HP photorealistic (provided in the box with most of the new printers)
- Avery MPI3000 of 78" (198 cm) wide.

3. However any substrate conforming to the characteristics described above can be used for this calibration.

4. Note: The printer will NOT actually print anything, but will advance around 14 meters of this substrate.

5. Before loading the substrate, clean the OMAS window (refer to the maintenance and troubleshooting guide). IMPORTANT: Before performing the calibration the printer must be **'cold'**, not having printed for at least one hour.

6. Load the substrate correctly according to the instructions from the support documentation, measuring the distance between the side plate and the edge of the substrate in the input and output.



7. Select the appropriate substrate in the IPS.

8. For the following test make sure the printer is in Roll to Roll configuration, the test will not work if the printer is in Roll to Floor configuration.

9. Enter into the Service Menu (detailed process explained below), and select t 4.3.5 Check Roller Calib (total time 10 minutes, 3.5 meters of substrate advanced). In case of an error code is displayed during this calibration, follow the information on the front panel, and contact your support representative.

10. Exit from the Service Menu, and rewind all the substrate (using the substrate movement button, and pressing on the back key, the substrate will then rewind until the beginning of the roll).

11. At the end of the Roller calibration and the Check Roller Calib, the main parameters of the calibration are displayed. If there is an error, the last line of the parameters will display an code number. If the code number is 0, no error has been detected, if the last line displays a number from 1 to 6, this would indicate an error was found.

Here are error code descriptions and the procedures to follow.

Code1: The possible causes of this error code are: A dirty OMAS window, the substrate is not OMAS navigable or the substrate loaded is skewed or has wrinkles (visual inspection), incorrect substrate settings, failures of the vacuum system or Media input/Media output side plate.

Perform/check in the following order, only move on to the next check when you are sure the error persists:

1. Use only OMAS navigable substrate that conforms to the characteristics described in step 1 in section A.

2. Unload substrate, clean the OMAS, reload substrate.

- Redo the calibration, 4.3.4 ⇒See page 504, Roller Calibration & 4.3.5 Check Roller Calib ⇒See page 505.
- Add new substrate process again for the substrate loaded (make sure there is not too much tension which would prevent a stable substrate advance).
- Check that the substrate loaded is the same as the substrate selected in the IPS.
- If the substrate seems stable when advancing it, and the substrate is OMAS navigable, this could indicate that the OMAS or Media Output is damaged:
  - Perform the OMAS service test (3.7) and replace OMAS if the test fails.
  - Perform the rear and front spindle test from the diagnostic mode (test 3.2 /3.3) with the spindle installed, latches closed and no substrate loaded. If one of the test fails:

1. Grease the side plate gears (using oil from the cleaning kit)
2. Remove both spindles and perform the diagnostic test: '3.1 Spindle System Burning'.
3. Perform again the rear and front spindle test 3.2/3.3 with the spindle installed, latches closed and no substrate loaded. If the test fails replace the media input or media output side plate, depending on the failing test.

- Check Vacuum sensor tubes are correctly connected and perform from the diagnostic menu the '3.6 vacuum system test'.

Code2: Most probable cause of this error is the substrate has been loaded skewed or the diverter is not functioning correctly.

Perform/check the following in the order, only move on to the next check when you are sure the error persists:

1. Reload the substrate correctly according to the instructions from the support documentation.
2. Unload the substrate, check that the diverter is turning freely, and reload substrate.
3. Collect the error file information using the HP retriever tool, by unchecking 'only Service Page', collect the file information 'logs.tar.gz<dateandtimeofextract>' and escalate the case to HP regional support team, asking them to escalate the case to the division, attaching the extracted file.

   When error2 is displayed, the printer can still work without any problems, however not all the improvements from the new firmware will work, such as the substrate advance variability reduction. The analyzes of the traces will confirm if there is any issue. Do not replace the diverter if there is no evident failure of this part.

Code3: Encoder disk of the drive roller may be damaged or wrongly assembled or there might be an issue with the driver roller:

Perform/check in the following order, only move on to the next check when you are sure the error persists:

1. Unload the substrate and carefully clean the encoder disk. The scan beam must be set to the high/loading position, the plastic cover removed, remove the cover protecting the drive motor, switch off the printer, turn the shaft/coupling of the drive motor in order to rotate the drive roller).
2. Restart the printer, and run the new calibration 'encoder calibration' (from service menu, 4.3.1).
3. Redo the calibration, 4.3.4 ⇒See page 504, Roller Calibration & 4.3.5 Check Roller Calib ⇒See page 505.

- Unload the substrate and replace the encoder disk and encoder reader (support part Q6702-60474 Drive Roller Encoder Disc and Encoder PCA).
- Remove the drive roller motor and its motor mount (so the drive roller can turn freely), and check the drive roller can turn easily; that the middle bearings are turning freely.
- After the replacement, redo the calibration from service menu, entry 4.3.1.
- Redo the calibration or check of the drive roller.
- If the same error is displayed, collect the error file using the HP retriever tool, Unchecking 'only Service Page', collecting the file 'logs.tar.gz<dateandtimeofextract>' and escalate the case to

HP regional support team, asking them to escalate the case to the division, attaching the extracted file.

When error 3 is displayed the printer can still work without any problems, however not all the improvements from the new firmware will work, such as the substrate advance variability reduction. The analyzes of the traces will confirm if there is any issue. Do not replace the driver roller if there is no evident failure of this part.

Code4: The variation of traction/tensions on the substrate is too high:

Perform/check in the following order, only move on to the next check when you are sure the error persists:

1. Use only OMAS navigable substrate that conforms to the characteristics described in step 1 in section A.
2. Check that the pinch wheels are closed/down.
3. Check Vacuum sensor tubes are correctly connected and perform from the diagnostic menu the '3.6 vacuum system test'.
4. Perform the rear and front spindle test from the diagnostic mode (test 3.2 /3.3) with the spindle installed, latches closed and no substrate loaded. If one of the test fails:
   - Grease the side plate gears (using oil from the cleaning kit)
   - Remove both spindles and perform the diagnostic test: '3.1 Spindle System Burning'.
   - Perform again the rear and front spindle test 3.2/3.3 with the spindle installed, latches closed and no substrate loaded. If the test fails replace the media input or media output side plate, depending on the failing test.
5. Redo the calibration, 4.3.4 ⇒See page 504, Roller Calibration & 4.3.5 Check Roller Calib ⇒See page 505.
   - Remove the drive roller motor and its motor mount (check that the drive roller can turn freely), and check the drive roller can turn easily; that the middle bearings are turning freely.
   - Carefully clean the encoder disk (scan beam has to be set at high/loading position, plastic cover removed, remove the cover protecting the drive motor, switch off the printer, turn the shaft/coupling of the drive motor in order to rotate the drive roller).
   - If it is still failing: unload the substrate, replace the encoder disk and encoder reader (support part Q6702-60474Drive Roller Encoder Disc and Encoder PCA).
   - After the replacement or cleaning, redo the calibration from service menu, entry 4.3.1. (no substrate loaded)
   - Redo the calibration, 4.3.4 ⇒See page 504, Roller Calibration & 4.3.5 Check Roller Calib ⇒See page 505.

     If it still fails for the same error: collect the error file using the HP retriever tool, Unchecking 'only Service Page', collecting the file 'logs.tar.gz<dateandtimeofextract>' and escalate the case to HP regional support team, asking them to escalate the case to the division, attaching the extracted file.

     When error 4 is displayed the printer can still work without any problems, however not all the improvements from the new firmware will work, such as the substrate advance variability reduction. The analyzes of the traces will confirm if there is any issue.

Code5: Cannot find the 'zero position' (system error 85:03) of the drive roller, this error can occur only during the calibration check.

The zero position is calibrated by the printer each time that the printer is started, using a part of the encoder disc of the drive roller, where there is a dark half circle.

Perform/check in the following order, only move on to the next check when you are sure the error persists:

1. Check that the substrate loaded is the same as the substrate selected in the IPS.

2. Unload the substrate and load it again. In case of 'zero position' failure, the following error is displayed on the front panel: '85:03'.
3. Carefully clean the encoder disk (scan beam has to be set to the high/loading position, the plastic cover must be removed, and remove the cover protecting the drive motor, switch off the printer, turn the shaft/coupling of the drive motor in order to rotate the drive roller).
4. If it is still failing: unload the substrate, replace the encoder disk and encoder reader (support part Q6702-60474Drive Roller Encoder Disc and Encoder PCA).
5. After the replacement or cleaning, redo the calibration from service menu, entry 4.3.1. (no substrate loaded)
6. Check that the Vacuum sensor tubes are correctly connected and perform from the diagnostic menu '3.6 vacuum system test'.
7. Redo the calibration, 4.3.4 ⇒See page 504, Roller Calibration & 4.3.5 Check Roller Calib ⇒See page 505.

   If it still fails for the same error: collect the error file using the HP retriever tool, Unchecking 'only Service Page', collecting the file 'logs.tar.gz<dateandtimeofextract>' and escalate the case to HP regional support team, asking them to escalate the case to the division, attaching the extracted file.

   When error 5 is displayed the printer can still work without any problems, however not all the improvements from the new firmware will work, such as the substrate advance variability reduction. The analyzes of the traces will confirm if there is any issue.

Code6: The OMAS is seeing too much variation in the substrate advance, this error can happen only during the calibration check.

Perform/check in the following order, only move on to the next check when you are sure the error persists:

1. Use only OMAS navigable substrate that conforms to the characteristics described in step 1 in section A.
2. Unload substrate, clean the OMAS, reload substrate.
3. In case of 'zero position' failure, the following error is displayed on the front panel: '85:03' -> check the encoder disc and encoder reader of the drive roller.
4. Check that the substrate loaded is the same as the substrate selected in the IPS.
5. Redo the calibration, 4.3.4 ⇒See page 504, Roller Calibration & 4.3.5 Check Roller Calib ⇒See page 505. If it still fails with the same error:
   - Check that the pinch wheels are closed/down
   - Check Vacuum sensor tubes are correctly connected and run from the diagnostic menu '3.6 vacuum system test'.
6. Perform the rear and front spindle test from the diagnostic mode (test 3.2 /3.3) with the spindle installed, latches closed and no substrate loaded. If one of the test fails:
   - Grease the side plate gears (using oil from the cleaning kit).
   - Remove both spindles and perform the diagnostic test: '3.1 Spindle System Burning'.
   - Perform again the rear and front spindle test 3.2/3.3 with the spindle installed, latches closed and no substrate loaded. If the test fails replace the media input or media output side plate, depending on the failing test.
   - Redo the check of the drive roller.

If it still fails with the same error: Redo the calibration of the drive roller, and after the check of the drive roller.

If it still fails for the same error: collect the error file using the HP retriever tool, Unchecking 'only Service Page', collecting the file 'logs.tar.gz<dateandtimeofextract>' and escalate the case to HP regional support team, asking them to escalate the case to the division, attaching the extracted file.

When error 6 is displayed the printer can still work without any problems, however not all the improvements from the new firmware will work, such as the substrate advance variability reduction. The analyzes of the traces will confirm if there is any issue.

Which test file to print on the side of the plots, to completely confirm the possible media advance variability.

You need to print a specific file without out using any color management. This file can be obtained from the support zone, under the section: Commercial Prod., L65500, Machine configuration, and download the file smallverticallineblack_magentalast.tif. HP IPS\Advance Calibration file is available from the IPS menu c:\Users\<current logging>\documents\, and the job name will be: substrateadvancecheck_300dpi.

When printing this do not use any color management, in order to make sure that the lines are printed with black or magenta color only.

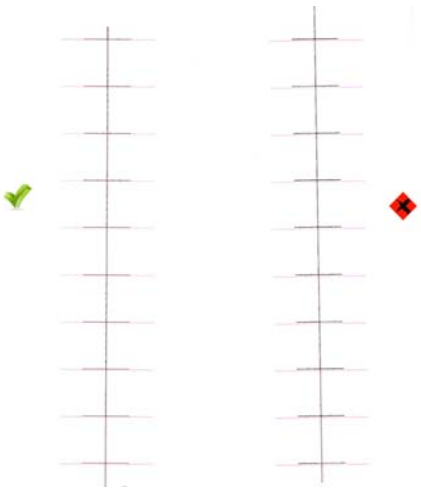
Once ripped, you can nest the image where the customer suspects the media advance issue, placing this ladder in EACH side of the image.

When you print it, you will be able to fine-tune the media advance, to align the magenta and black line.

The variation will then be visible. A small variation can all the time be possible. As a first rule, as long as the magenta and black are still touching, the printer is within specification.

Also, do not hesitate to fine-tune the substrate settings (tensions, temperature, vacuum).

The general rule: as long as there is no space between the black line and the magenta line (horizontal axis only), then there is no specific issue. If you have any doubt, we recommend printing the same diagnostic file on a SAV as for example the MPI 3000 from Avery (loaded as vinyl -> vinyl calendered 100%).



In case of requirement of support from HP, here are the information to provide, in order to speed up the response time:

- The previous print plots, with the ripped diagnostic print shown above, printed on each side.
- The corresponding settings (temperature, tensions, vacuum, printmode, …).
- The results from each check from this checklist
- The files (.xml and .tar.gz) from the HPretrivertool (please refer to the specific newsletter available on this tool).
- The following files have to be collected:
  - At least 9 files starting by FW_
  - At least 9 files starting by RW_

- Open an internet window, and type http://<ip of printer>/hp/device/3432/8828/tmp/ <ip of the printer, displayed on the small front panel, if you do not know it, from diagnostic, available within electronics menu -> IO information.
- For each file FW_.. or RW_.. , for each one, select it with the right click and do a file save as on a specific location on the PC.
- Once all the files are transferred, just zip all together and send them to the HP Support team.

3.3.11 Check the Scan Axis movement

Clean the Scan Axis Encoder Strip.

1. Raise the Scan Beam.
2. Switch off the printer.
3. Remove all the metal covers of the Encoder Strip, and pass the air pressure gun through the complete Encoder Strip. DO NOT TOUCH IT: it is sharp and sensitive to any shock.

Clean the Scan Axis Encoder Reader.

1. From diagnostics mode, move the Carriage to the repair position.
2. Remove the Rear Left Transparent Cover.
3. Remove the Encoder Reader and wipe a cloth with regulatory compliant solvent in the middle of the encoder, between the emitter and receptor part.

Perform calibrations

1. Perform the 1.5.1 SAX Friction Test from service menu ⇒ page 485.
2. Print from service menu print test file '2.5.1 Scan Axis Check and 2.5.2 PPS check. Interpretation of these plots is available, refer to page 298.

   In case of requirement of support from HP, here is the information required, in order to speed up the response time:

   - An example of the defect + pictures + media references + settings used.
   - On the scan axis check from diagnostic has been run, collect the following files from the /tmp directory:
     - scanAxisHighestFrictionTrzReverse10.txt
     - scanAxisHighestFrictionTrzReverse20.txt
     - scanAxisHighestFrictionTrzReverse40.txt
     - scanAxisHighestFrictionTrzReverse60.txt
     - sscanAxisHighestFrictionTrzForward10.txt
     - sscanAxisHighestFrictionTrzForward20.txt
     - sscanAxisHighestFrictionTrzForward40.txt
     - sscanAxisHighestFrictionTrzForward60.txt

   To do this open an internet window, and type http://<ip of printer>/hp/device/3432/8828/tmp/ <ip of the printer, displayed on the small front panel, if you do not know it, from diagnostic, available within electronics menu -> IO information. •

   - For each file scan select it with the right click and click on file save as on a specific location on the PC.
   - Once all the files are transferred, just zip all together and send them to the HP support team.

3.3.12 How to check the Printhead Cleaning Roller is functioning correctly

Image quality issues and intermittent jams in the Printhead Cleaning roller can be caused by the Printhead Cleaning Roller malfunctioning. Here we describe how to check that the Printhead Cleaning Roller mechanism is working correctly

Note: Before the functionality of the Printhead Cleaning Roller can be checked, the Printer must be in the 'Ready' status.

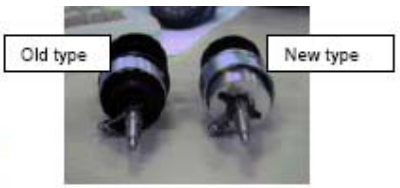
Recommended changes in case of intermittent PH cleaning roller jam

Some improvements have been made to reduce the risks of Printhead cleaning roller jams (real jam or 'false' jam). In the case where the customer complains of Printhead cleaning roller jam and depending on the printer's serial number we recommend replacing the following parts:

Two new support parts are available in each region:

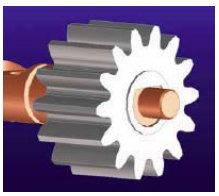
- **Gears kit** ⇒page 549. Which includes the following parts:

  The **clutch/torque limiter** of the lower axis (the one collecting the used material). The older one applies less force when rotating to collect the used material. This could cause a Printhead cleaning roller jam, mainly when the roll is almost used.



The drive shaft, main white gears assy connected just after the advance motor.

The older previous gear could slip between the big white gear and a small gear, creating intermittent false Printhead cleaning roller jam.



This part also includes two small gears + the upper torque limiter (the one connected to the higher axis, the one holding the new PH cleaning roller material.

Q6702-67024, PH Cleaner Roll Pinch Assy. This new part replaces the Q6702-60447. The new part is much more robust, it cannot be bent (the previous part could create intermittent PH cleaning roller jam (real or false ones).

So, in case of intermittent PH cleaning roller jam, we are recommending to order and replace the following parts (if the part has not been already replaced):

If the printer has a serial number of less than **SG8CJ1F001**, order the Gears kit ⇒page 549 and (PH Cleaner Roll Pinch Assy ⇒page 549) and use them to replace the following parts:

- Pinch wheel assy
- The clutch / torque limiter of the lower axis
- The drive shaft

If the printer has a serial number less than **SG9861F007**, order the Gears kit ⇒page 549 and (PH Cleaner Roll Pinch Assy ⇒page 549) and use them to replace the following parts:

- Pinch wheel assy

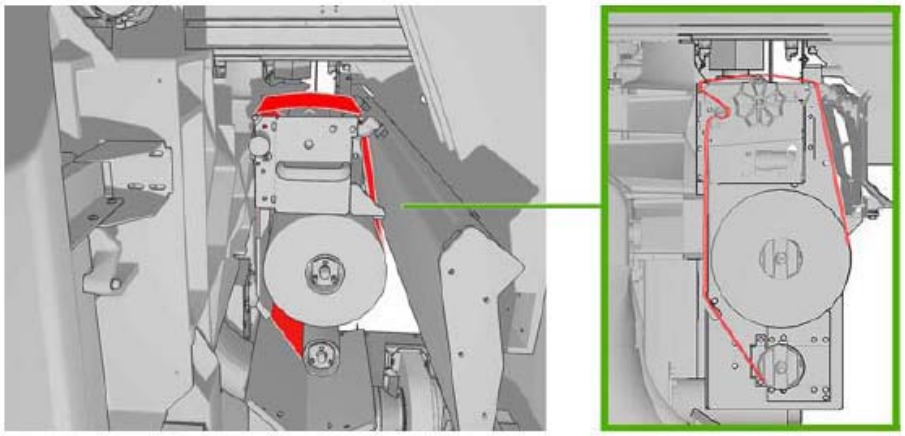
- The clutch / torque limiter of the lower axis

If the printer has a serial number of less than **SG98T1F002**, order the (Gears kit ⇒page 549) and use them to replace the following parts:

- The clutch / torque limiter of the lower axis

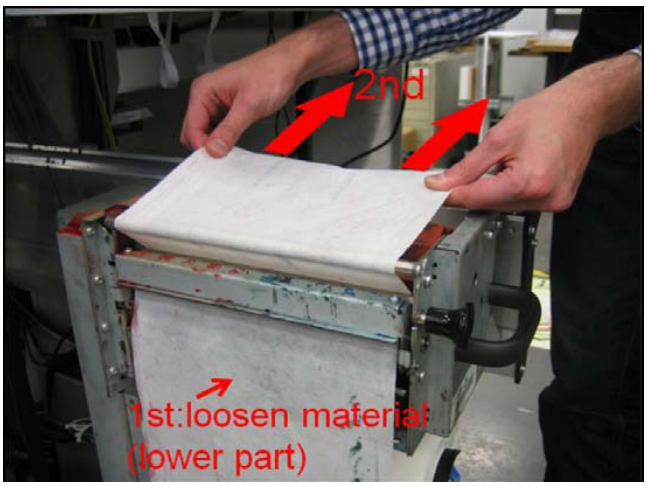
Check the routing of the cleaning material passes correct through the Printhead Cleaning Roller

Open the sliding door and open the Printhead Cleaning roller. Shown here (in red) is the correct route the cleaning material must follow through the Printhead Cleaning Roller.



How to check that the Printhead Cleaning Material is not slipping between the Printhead Cleaning Roller and the Drive Roller:

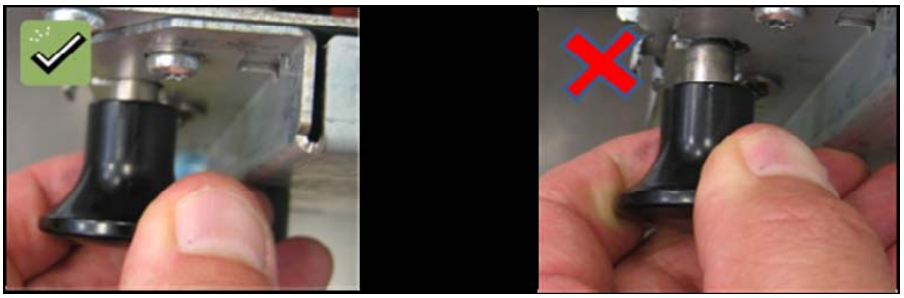
1. Release the tension of a small area of the cleaning material on the lower part of the Printhead Cleaning Roller (turn the axis collecting the material in an anti-clockwise direction).
2. Try to pull out a little of the material as shown in the picture, the cleaning material should not be able to slip through.
   - If the cleaning material is able to slip through, this is a probable cause of any intermittent cleaning jams the printer may be experiencing:
   - Check that the Pinch Wheel mechanism is correctly installed (described next).
   - Check that the Drive Roller is no slipping versus the advance motor (described later).



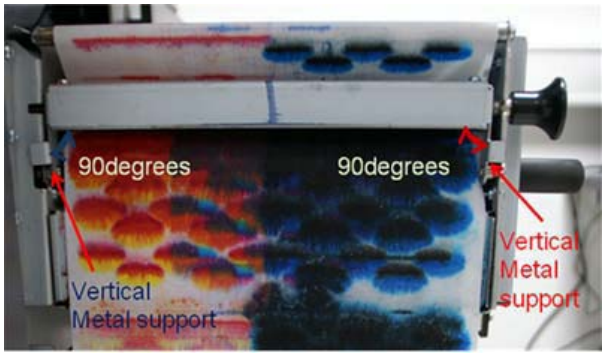
How to check the Pinch wheels axis are correctly installed in the Printhead Cleaning Roller:

1. Check that the black plastic knob is fully inserted. Pass to the customer the procedure for when inserting a new Printhead Cleaner, focus mainly on when closing this black plastic knob: NEED FIRST TO RELEASE THE TENSION of the Printhead cleaning material, **BY ROTATING ANTICLOCKWISE**

THE UPPER ROLL, containing the new material and then rotating the black plastic pinch wheel to close the printhead cleaning roller.



2. Check that the two vertical metal supports on each side of the axis of the 'pinch wheel roller' are not too bent.

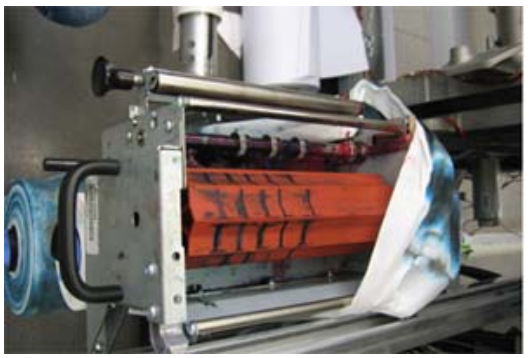


If the two vertical metal supports are bent, unbend them using pliers (the pliers should not be too small). In case one of the vertical metal supports is bent beyond repair:

- When closing the black knob, it can push slightly too much on the edge of the Printhead Cleaning Roller material, creating wrinkles on the horizontal part.
- The pressure applied on the Printhead cleaning roller material might not be sufficient, causing the material to slip and subsequently causing intermittent Printhead Cleaning Roller jams.

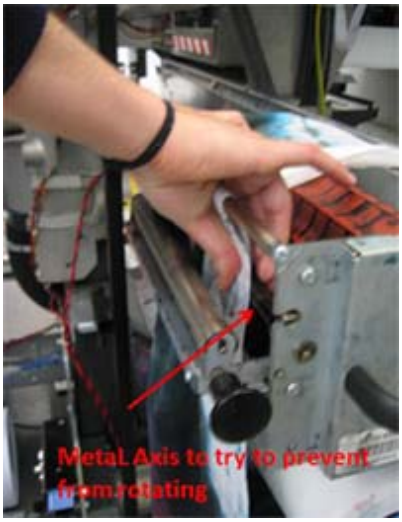
How to check that the cleaning material does not slip between the advance motor and the drive roller (only to be performed if there is 'Printhead cleaning jam'):

1. Open the pinch wheels of the Printhead cleaning roller (pull out and rotate the black plastic knob).
2. Rotate anti-clockwise the new Printhead cleaning material so that you can release some cleaning material and move it on its side in order to see the main metal axis as shown in the picture

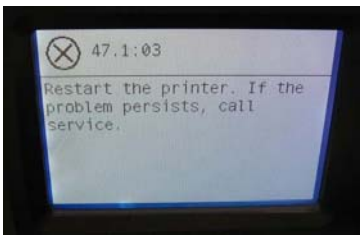


3. From the front panel go to Ink menu -> Check cleaner roll.
4. While the test is running (metal axis is rotating),
   - If the Metal axis is not moving at all, go directly to the section below: **'If the cleaning material is slipping or metal axis is not moving**'.

- If the axis is rotating, try to grip it, as shown as the picture under (using the Printhead cleaning roller material so that you do not get your hands too dirty), and apply a little force with your fingers toward the metal axis, and gradually increase the force to try and prevent the rotation of this metal axis. It must be done VERY CAREFULLY, this is because if the transmission is functioning correctly (i.e. the cleaning material does not slip), the torque of the roller is strong enough to cause an injury if fingers get trapped. If you follow the procedure above, you can easily remove your fingers, but be careful.



- You should not be able to stop the movement of the Printhead cleaning roller, and a system error 47.1:03 might be displayed. This means that the printer is functioning correctly.



If the cleaning material is slipping or metal axis is not moving

- If the cleaning material is slipping or the axis is not turning, this would indicate a gear/wheel is nor working and must be replaced. Order the Gears kit ⇒page 549. This error is the cause of the intermittent Printhead cleaning roller jam (note that the advance motor is working well, as the printer detects the rotation of this motor with an encoder reader placed at the back of the advance motor (in case the motor advance fails, a different system error would be displayed).
- In case there is still an intermittent Printhead cleaning roller jam, and the cleaning material does not slip, perform the following steps:

a. In case the printer S/N is < SG8CJ1F001, and if the white gears have not been already replaced, order the Gears kit ⇒page 549 and replace the white gears.

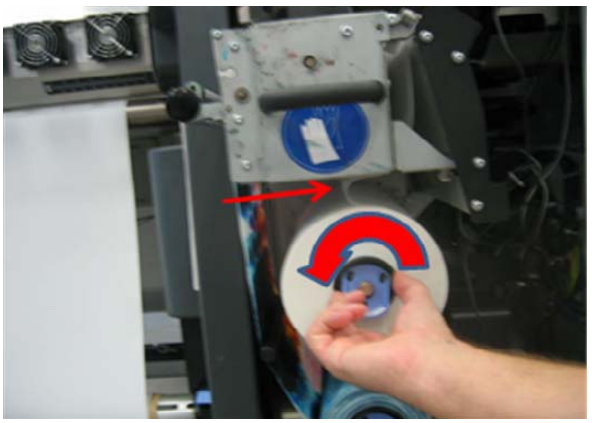
b. Rotate the axis of the roll anti-clockwise containing the new cleaning material, and check that there is not a higher friction than normal during the rotation (you should feel that, from a certain force, the 'back force clutch' is starting to have a slippage, maintaining a constant back force).

- If you feel that there is a higher force from time to time, remove the electromechanical brake, and recheck again. Electromechanical brake P/N: Q6702-60683 (Printhead Cleaner Upper Roll Electro-brake). Replacement instructions for this part are available in the service manual.
- Or the gears could be broken. To order and replace the (Q6702-60442 Printhead Cleaner Roll Driver Assembly) containing the upper and lower axis, with the upper gears (the drawing in the service manual (version December '08, on page 312/313 is not indicating the correct part.

c. If there is no specific issue when rotating the upper roller, replace the encoder reader (Q6702-60684 Printhead Cleaner Rollers encoder set) (2 off).

How to check that the upper and lower torque limiter/clutch are working

1. Open the pinch lever.
2. Rotate the used roll/lower roll to advance the PH cleaning material for approximately 10-20cms.
3. Upper axis: turn anti-clockwise, for ¼ of a turn, the roll containing the new PH cleaning material.

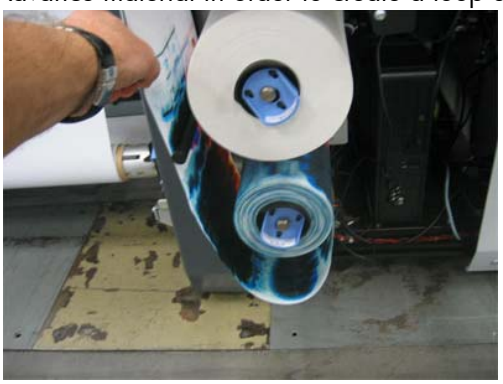


- Release the PH cleaning roller. The roller should rotate clockwise by ¼ turn. On the picture below, the hand does not have any more interaction with the roller. Is it is not rotating back clockwise, the electromechanical breaker and the clutch/upper torque limiter has to be checked.
- Note: If there is a new PH cleaning roller roll in place, as it is pretty heavy, it is possible that you will not feel the clockwise movement of the material once you release it by your hand. In this case, to confirm that there is still a 'rewind' pressure, just slide out the roller of the PH cleaning roller (after having pressed the blue part of the center of the PH cleaning roller roll) -> you should then hear, after pulling towards you the roll, a 'clack' movement showing that the axis has rotated clockwise.

- To check the electromechanical break, from diagnostic menu, run the test (7.1).

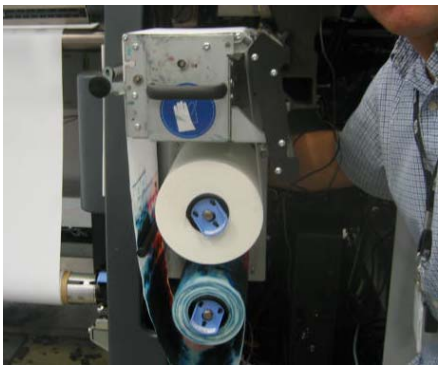
4. Lower Axis

- Open the pinch wheel of the PH cleaning roller
- Advance material in order to create a loop under the PH cleaning roller as shown under



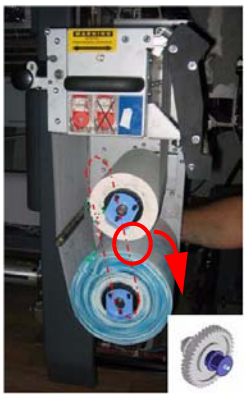
- Then pass your hand behind the PH cleaning roller, and rotate the lower belt -> it should rotate the lower axis and collect the material. Still rotating the belt: it should reach a point that the

belt can still rotate (with a higher force) and the used material axis no longer rotates as there is no more loose material (there should not be enough force to make the new material rotate, which is normal. Here are 2 examples.



How to check that there is no slippage/defect with the small gear connected to the big white gear?

Try to rotate this time the belt in the other direction (as shown in the picture): there should not be any slippage.

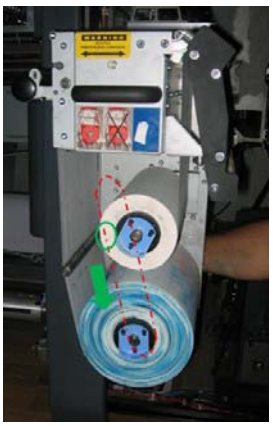


If there is any slippage: increase the tension on the belt, and if it is still failing, replace the big white gear (shown in the inset above) + the 2 small gears attached to this white gear.

The slippage reduces the tension used to rotate the used PH cleaning roller material.

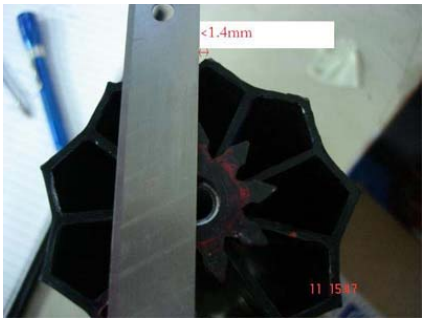
How to exactly know which belt to rotate?

Here is a picture containing a red dashed line showing the position of the lower belt situated behind the PH cleaning roller. Just hold the belt with your finger at the level pointed out by the green circle, and pull the belt down. It should turn, making the axis containing the used material also turn, until there is no more material to collect. There is then a slippage of the clutch / torque limiter, maintain the PH cleaning roller material under tension.



Checking the alignment between the Printhead cleaning pressure roller and the small plastic stars (sometimes called 'ninja stars') on each side of the pressure roller

Here is a picture showing the black Printhead cleaning pressure roller (it might be black of orange), with the small on each side. The pikes of each 2 elements have to match.



(The distance should be less than 1.4mm as shown in the 2nd picture). If more than 1.4mm is seen, replace this sub-assembly.

Check each rib of the Printhead cleaning pressure roller: it should be straight, no defect. Here is an example of defect, in the middle of the round circle. If such issue is seen, replace this part.

Check that the small gears connected to the lower axis are not broken. Here is a picture of these small gears (2 identical gears).

Check that the static wipe is working as expected

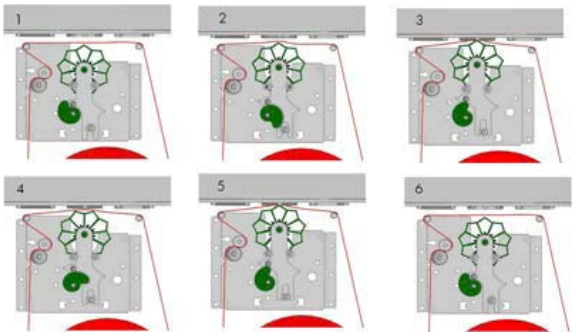
Perform a 'Check and Clean' from the IPS (go to the printer tab, Printhead cleaning), you can look at the Printhead cleaning roller, and check that the static wipe is working correctly, by looking at the Printhead cleaning roller (front right sliding door open).

a. Rubber star raises up

b. Printhead cleaning material advancing -> the rubber star then rotates

c. At the end of the movement of the Printhead cleaning material, a pike of the rubber should point up again.

If not, perform again the Printhead cleaning roller. The details of the static wipe are described below:



Functionality Check

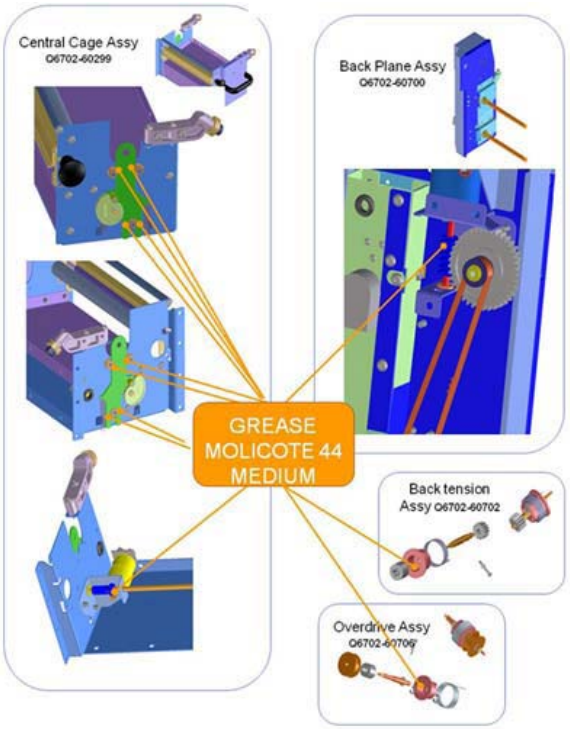
Restart the printer in diagnostic boot mode and perform the following tests:

- 7.1 Printhead Roll Adv Open Loop, include the test of the Electromechanical break.
- 7.2 Printhead Roll Adv Close Loop, to test the advance of the Printhead cleaning material
- 7.4 Printhead Roll Eng Close Loop, to test the engage movement (up/down movement of the Printhead cleaning roller).
- 7.5 Up/Down test page 443.

In case of intermittent failure of the Printhead cleaning roller check that the greasing is correctly applied (up/down movement, too much friction).

In this case of intermittent movement failure of the Printhead cleaning roller, a greasing of the Printhead cleaning roller is recommended.

Here are the different items to grease (removal of the Printhead cleaning roller is required, printer has to be switched off first.



The grease to use should be compatible with plastic and metal, as in Molicote 44. In case of any doubt, order the support part 'Q6702-67013 Grease kit for the PH cleaning roller'.

How to check if the height of the Printhead Cleaning Roller is calibrated correctly

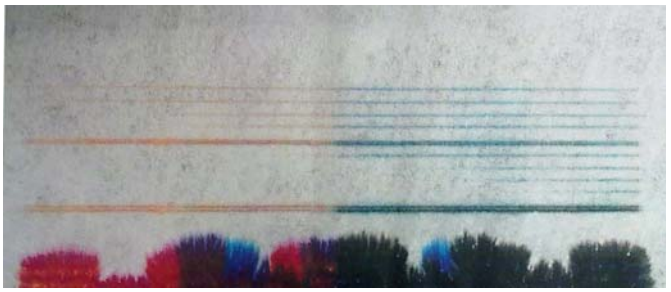
A printhead cleaning roller is 'tilted' when, when checking the distance between the 'carriage/printheads' and the 'Printhead cleaning roller', where one side (front side or rear side of the printhead cleaning roller) is higher or closer than the other side.

In case one Printhead cleaning roller is 'tilted', a calibration of the Printhead Cleaning Roller is required, see page 514). As the cleaning of the Printhead is done differently between one printhead and the other, creating intermittent nozzle out from one printhead/color.

To check if the Printhead Cleaning Roller is tilted, perform the utility 4.7.4 Check Height & Tilt from service menu ⇒See page 520, and use the following troubleshooting procedure:

Check the small thin lines, and looking at the ones where one side of the line is visible and the other one is not visible. Just count the number of thin lines which are having this effect (where the line is not visible throughout the width of the printheads):

Where only 3 lines do not show the full width of thin line, there is no need of recalibration of the tilt. If the number of lines is greater than three, then the Printhead cleaning roller must be calibrated. Here is an example of Printhead Cleaning Roller must be recalibrated:



7 lines are incomplete (lines # 1..7, line #8 is visible through all the printheads width). Note that the line #7 could be considered as fully visible, just on the edge.

How to recalibrate the tilt

Order the Shims: Calibration kit, refer to page 549, and add the shims on the side where the part of the line is visible. The quantity of shims to be added is as follows:

3-4 incompleted lines: 1 shim to be added

5-6 incompleted lines: 2 shims to be added

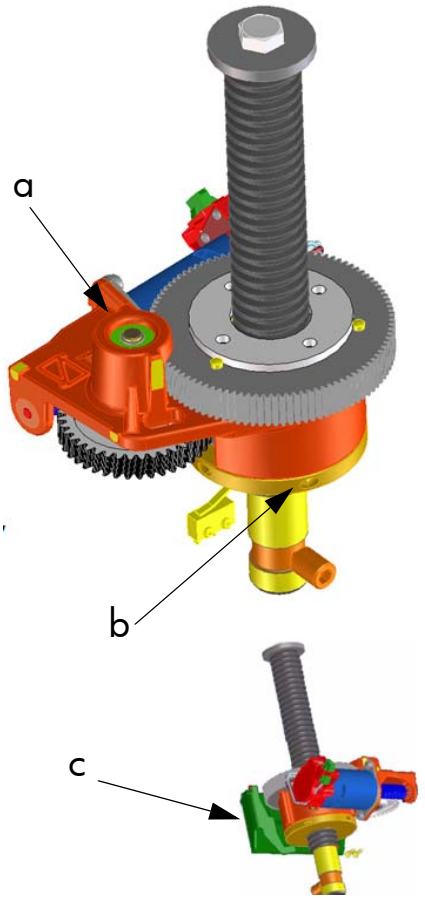
7-8 incompleted lines: 3 shims to be added

Example: in the previous case where there are 7 lines not printed through all the width, 3 SHIMS on the front side should be added. To add the shims refer to page 518.

In case of intermittent issues perform the this procedure '4.7.4 Check Height & Tilt' ⇒See page 520, on each points of the ink pressure roller, taking a picture of the results (after having marked the visible lines with a pen), and between each test, just open the PH cleaning roller, lift up the ink pressure roller (black/brown rubber part in star shape) and rotate it clockwise till the next point/peak.

3.3.13 What to do if the Scan Beam movement is locked and it cannot be moved

Use this troubleshooting if the Scan Beam will not move even when running a diagnostic check, it is not possible to move the scan beam (system error pointing to a motor), mainly when the Motor mount assembly is pushing towards the limiter, there is a high probability that this round part (a) is no longer in the correct position. This part should always fit within the scan beam, and prevent the motor mount assembly turning.

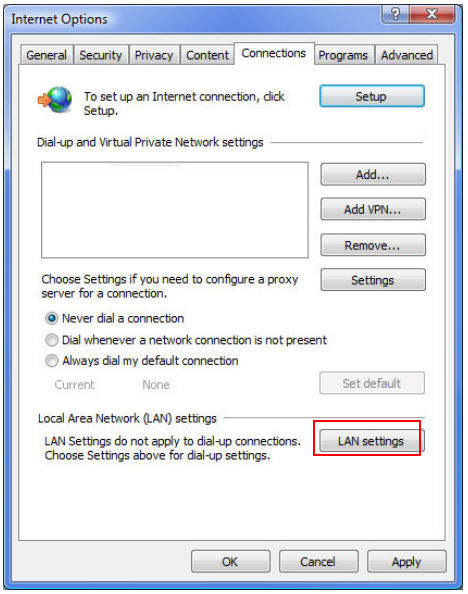


1. Check the PPS motor is fully working (specific test in diagnostic mode)
2. Disassemble the PPS motor (2 screws).
3. In case the issue is happening on one of the 2 PPS assembly of the front of the printer, we recommend to remove the closest curing module (refer to chapter 6).
4. Unscrew and remove the limiter (c)
5. Then with a thin screw driver (torx T10 for example), rotate the wheel situated at the bottom of the motor mount.
6. If required, rotate the motor mount also to place it into the correct position (a), this part must be inserted in the correct corresponding hole in the scan beam (do not place your fingers at the wrong place when doing this manipulation) insert it into the hole (b).

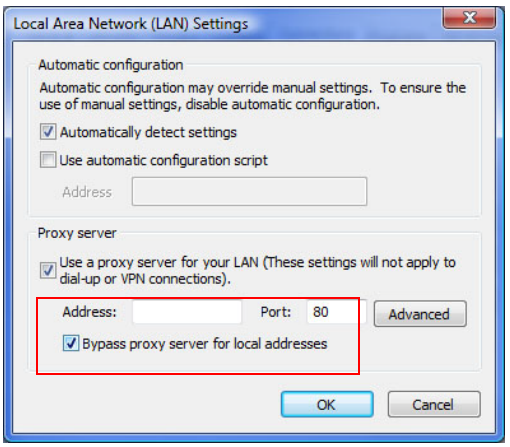
3.3.14 What to do in case of a 'slow IPS PC' or 'IPS being disconnected'

1. Check the setting of the proxy of the internet explorer of the IPS PC.

   a. In Internet Explorer select **Tools**>**Internet options**>**LAN Settings.**



   b. Check **'By-pass proxy server for local addesses'.**



NOTE: 'Automatically detect settings' can be unchecked (mandatory to use the callme@hp).

2. Check the IP address is correct and there is no conflict with another.

   a. From the IPS PC, **Start** -> **Accessories** -> **Command prompt**

   b. Type 'ping <ip address>'. The ip address of the PC can be seen on the small front panel or on the IPS Application>preferences>

   c. If there is a conflict with the IP address the command prompt will display 'program timeout'. Try turning off the printer and performing again the 'ping'. If there is an answer, this would indicate another device using the IP address. Contact the network administrator.

   d. If there is no conflict the command prompt will display 'Reply from <ip of the printer>: bytes=32 time<1ms TTL=128'.

3. Run from service menu: 1. Service Utilities menu>1.2. electrical System Menu>1.2.4 Input/Output Logs, check that there is no error reported, no need to redo the step 2.1 at the end of this test.
4. From another PC of the customer's, connected to the customer's network start -> Accessories -> Command prompt and type: ping <ip of the IPS PC> (the IP of the IPS PC is available within the network and sharing center from the control panel) the communication should work. Switch off the IPS PC and type again: ping <ip of the IPS PC> If one device is answering, this would indicate that there is an IP conflict on the customer network which can generate this intermittent issue. Another device on the customer network has the same IP as the IPS PC. Contact the network administrator.
5. On the IPS PC, if it has Windows Vista, install the winsock005265 patch (not applicable for Win7). The winsock is available under 'Software' of the L65500 platform on support zone.
6. Check the settings of the IPS PC as documented on page page 854.
7. Check that there are not two IPS application pointing to the same printer (if it is happening, each IPS application will become disconnected intermittently):
   a. On the IPS PC, check that there are not 2 different users logged in, with 2 different sessions of IPS up and running.
   b. How to check if there are no 2 different sessions of IPS form 2 different PCs: once you notice the intermittent issue / slow connection, collect from the printer the file printer.log

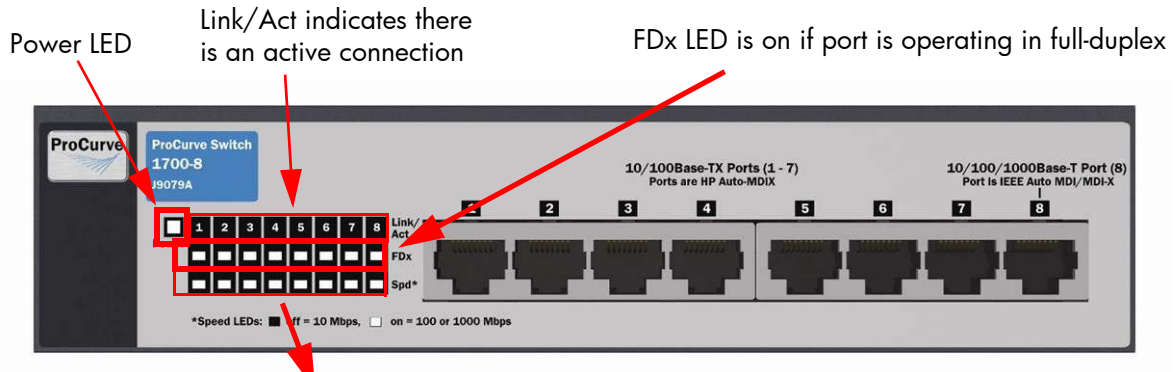
      Refer to page 321 for information on how to collect the printer.log.

      - With wordpad, open the file that you just copied (printer.log) and search for 'DFE hostname'
      - You should find the following strings around:

```
ReplFsm: [16:35:52.555] replaceNoActivityUpdate 60
4/28/10 4:35:55 PM: WARN: ************* Got a DFE connection ****************
4/28/10 4:35:55 PM: WARN: DFE hostname = 192.168.1.20
4/28/10 4:35:55 PM: WARN: DFE address  = 192.168.1.20
4/28/10 4:35:55 PM: WARN: ************************************************
```

      - Do a different search, and check that the DFE hostname is pointing constantly to the same IP address. In case there are 2 different PCs with 2 different IPS applications pointing to the same printer, you will find 'DFE hostname' with 2 different IPs, the IP of each PC on which the IPS application is running.
8. Check the LEDs of the ProCurve Switch 1400-8G

- The 1400-8G and 1700-8 Switches have the same LEDs. The Power LED indicates if the switch is on or off. The Link/Act LED indicates if there is an active connection. The FDx LED is on if the port is operating in full-duplex mode.
- On the 1400-8G Switch, the Speed LED indicates if the port is operating at Gigabit speed. On the 1700-8 Switch, the Speed LED indicates if the port is operating at 100 Mbps or Gigabit speed. (Remember the 1700-8 Switch has one port that operates at 10/100/1000; the other ports operate at 10/100.)



- 1400-8G—Speed LED is on if the port is operating at Gigabit speed
- 1700-8—Speed LED is on if the port is operating a 100 Mbps or Gigabit speed.

Cannot access from the RIP PC a shared directory on the IPS PC

Most probable cause of this error is a in the Control Panel -> Network and Internet -> Set up file sharing, ensure that the following settings in the “Sharing and Discovery” panel set 'password protected sharing to OFF:

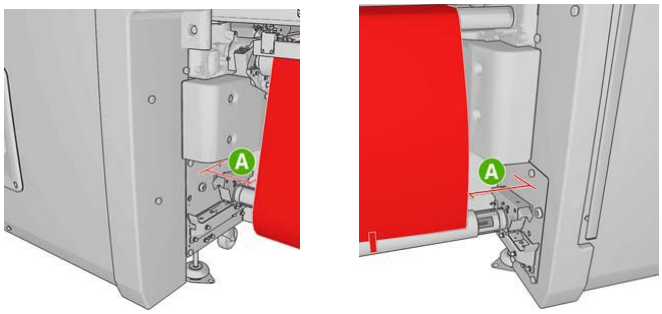
1. Network discovery: ON
2. File sharing: ON
3. Public Folder sharing: doesn’t matter (if you turn it ON, the folder /users/Public is automatically shared)
4. Printer sharing: doesn’t matter.
5. Password protected sharing: OFF
6. Media sharing: OFF (to save resources)

3.3.15 Additional troubleshooting of wrinkles on the substrate while printing

In case there are wrinkles, the first steps is to check is the procedure as described in the User’s Guide, and the Maintenance and Troubleshooting guide:

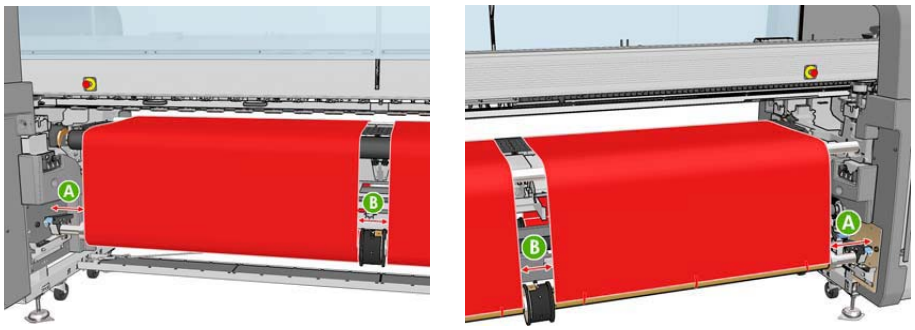
1. Reload the substrate following the process exactly as described in the User’s guide, but when measuring the distance A and B, use an external ruler (do not use the ruler of the spindle and the one under the curing module or on the Roll to Free floor (LX800 only)

   - For a Roll to Roll configuration, here is an extract from page 43 of the user’s guide, this is the step performed before closing the pinchwheels, and before taping the substrate to the core:

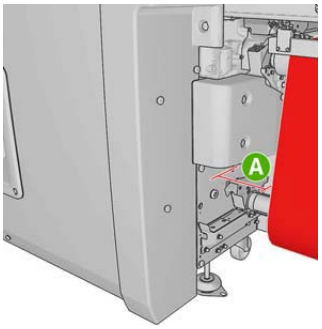


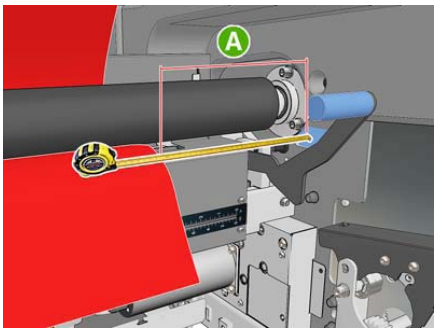
   Now tape the substrate onto the core, starting with the middle part, and recheck position A and B.

   - For a Dual Roll configuration, here is an extract from page 48 of the user’s guide:



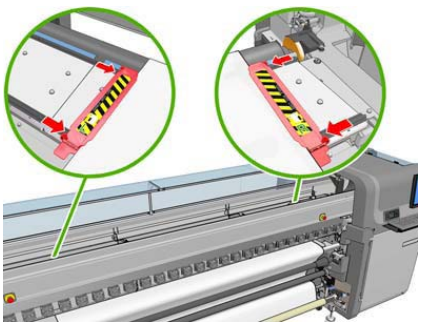
- For a Roll to Free floor configuration, here is an extract from page 53 of the user's guide:

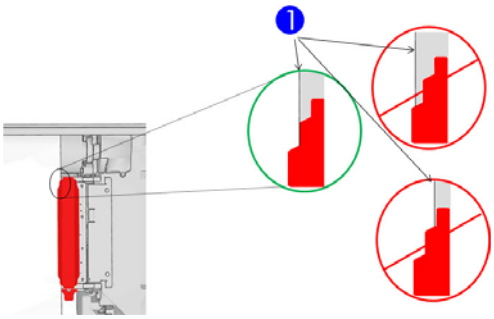




2. Ensure the Media Edge holders are correctly installed extract from user's guide, p25:

   The correct position is illustrated below, where (1) indicates the edge of the substrate. The substrate should be free to move, and should not touch the ends of the edge holder.





CAUTION: Incorrectly positioned edge holders could severely damage the printheads and carriage.

The temperature, tension, vacuum all have an impact on the movement of the substrate, which can be a factor when troubleshooting wrinkles. Ensure that the preset for the substrate has been correctly configured, check the steps in the User's Guide under the heading 'Create a new preset'.

In the Maintenance and Troubleshooting guide, there is a section dedicated to troubleshooting wrinkles on the substrate. The following is further information on this issue.

1. Wrinkles in the middle of the substrate

a. **LX800 only:** Remove the diverter (the bow shape of the diverter, can make the substrate move towards the middle).

b. Reduce as much as possible the temperature (which may require an increase in the number of passes to ensure a correct level of curing),

c. Increase tension of the substrate.

2. Substrate becoming loose at the sides, while remaining in tension in the center (can occur with paper based substrates such as the HP photorealistic for example):

a. **LX800 only:** Add a diverter (with the bow shape, this will maintain the tension in both the center and the sides).

b. If the looseness of the substrate is occurring in the media output, from time to time slide a sheet of paper (Letter-A4 size) within the roll, on each side of the output roll, at the same time, in order to add tension on the edge.

c. Then apply the standard changes (reducing temperature, quantity of ink, …).

3. In case of oblique wrinkle and a high tension on the edge (situated towards the cartridge side) and less tension on the side closer to the e-cabinet: there is a high probability that there is a bow on the input spindle (- and these wrinkles can pass the pinchwheels and reach the print zone).

a. Check the maximum diameter of the substrate (should not be more than 25cm)

b. Check the weight of the substrate: maximum weight, single spindle, (not the dual roll):

- 110kg for the L65500/LX600 and
- 130kg for the LX800)
    - (for dual roll: 100kg for 104”, 120kg for 126”)

In case one of the above items does not comply with the specification, this could be the cause of the issue. There is no official accessory from HP to support heavy/narrow rolls, as a workaround the customer could support the middle of the roll (using a metal ‘empty core’ + support in the middle of the spindle, which had to be adjustable in height).

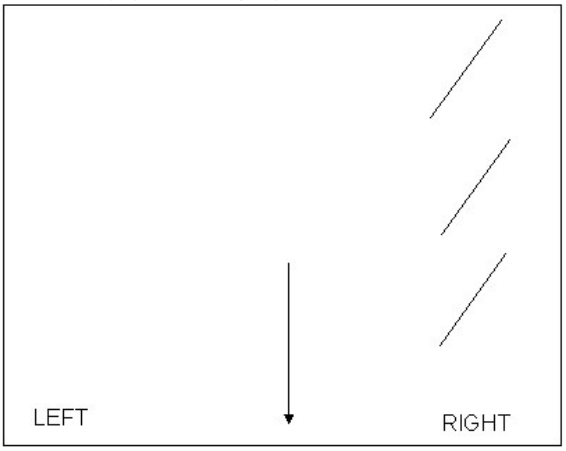
4. Look at the print zone, and check that the substrate is flat, that there are no bubbles between the drive roller and the print zone. (open the side window)

   a. Decrease the vacuum level (mainly for substrate width of 3.2m or 2 m, covering all the print-zone.

   b. Check that the vacuum level is not constantly at 100% (export the service plot when the printer is in ready, documented within the chapter 3, within the section 'page 309').

   c. Increase tensions on the output.

5. LX800 only: In the Roll to Free floor, in case of wrinkles as shown below, between the diverter and the tension roller, reduce the force applied by the pinchwheels, refer to the Maintenance and Troubleshooting guide on page 48.



3.3.16 Troubleshooting the printer when printing in Dual Roll configuration

Before proceeding to the advanced troubleshooting procedures, try the following steps which may solve the issue relatively easily:

1. Ensure that the substrate loading process, as described in the user's guide, has been correctly followed. It is particularly important to use a ruler when loading the substrate to avoid system errors, ink smearing and substrate jams.

2. (LX800/850 only) Add the output diverter (mostly on the output)

3. Increase the vacuum level (up to the 30 – 35).

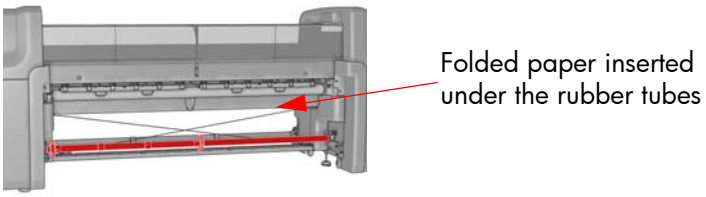
Note: Be aware that it is normal when loading 2 rolls, rolls which are within the printer's specifications in terms of weight and diameter, that there is a slight bow of the spindle, up to 1 cm (between the side support and the center). Replacing the spindle with a new one in case of this level of bow is not required. However, ensure that the diameter and weight of the rolls are within specification.

Roll specifications for the dual roll are the following:

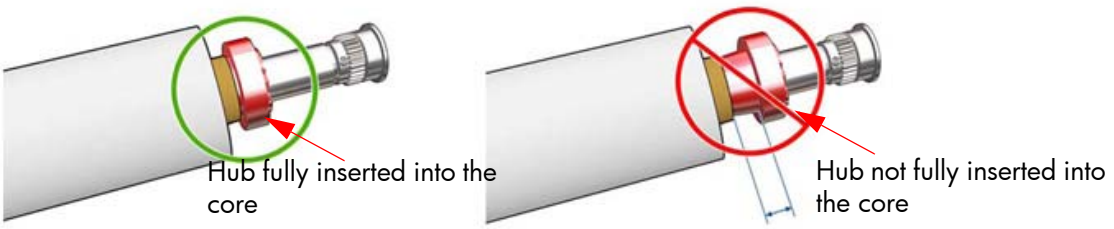
	For 104" Printer	For 126" Printer
Max Size	2 rolls 49" (1.25m)	2 rolls 60" (1.52m)
Max Weight	2 rolls 50kg (2 * 110lb)	2 rolls 60kg (2 * 132lb)
Max Diameter	25 cm (9,8")	25 cm (9,8")

4. Ensure that the core of the substrate is gripped sufficiently on the differential. To increase the grip of the core onto the differential it is possible to insert a piece of paper, folded several times, or other similar material (foam, cardboard, etc), under the differential rubber tubes. This increases the grip between the rubber tubes and the core.

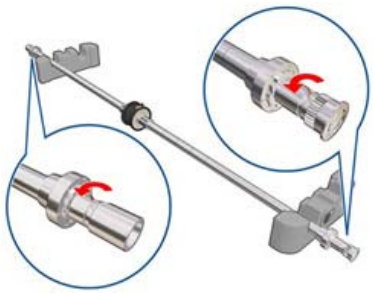
   Note: Insert enough paper to increase the grip sufficiently, but not too much, as removing the core later could be a problem requiring a lot of force (increasing the risk of damaging someone or something).



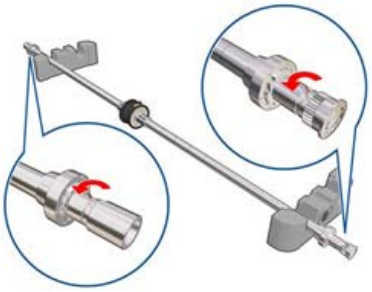
5. Ensure that the other end of the spindle, the hub is fully inserted into the core of the substrate, a small rubber mallet can be used carefully push the hub into the core.



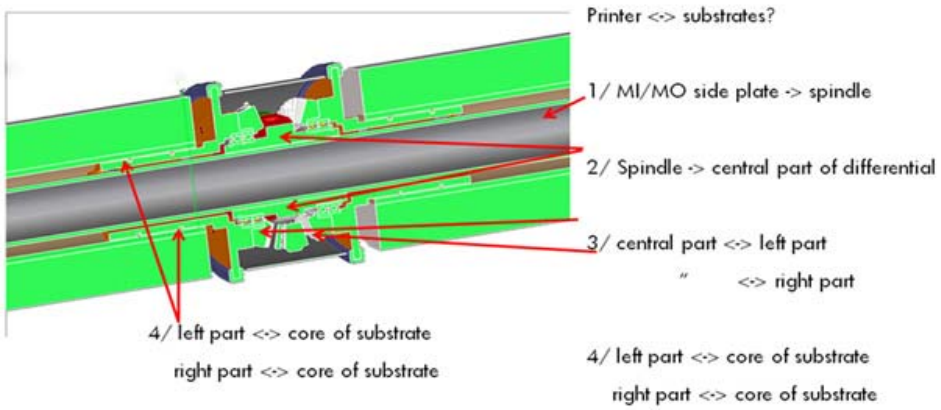
6. Ensure the 'cap' at the end of the hub rotates freely around the spindle; do not attempt to add any paper to obstruct the movement of this section of the Dual Roll spindle.



7. Ensure the 'cap' at the end of the hub rotates freely around the spindle; do not attempt to add any paper to obstruct the movement of this section of the Dual Roll spindle.

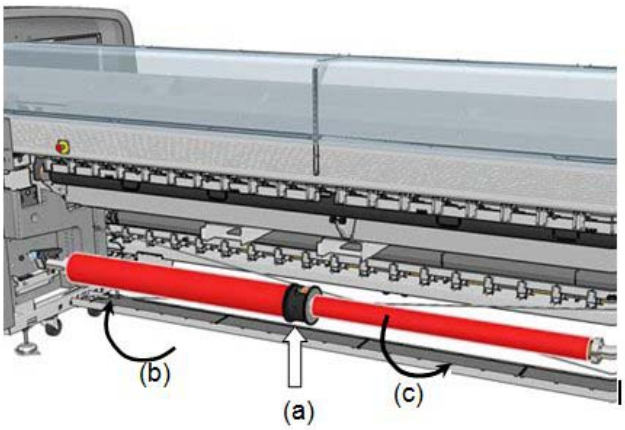


8. If there is still problems printing using the dual roll configuration, check the following areas of the Dual Roll:



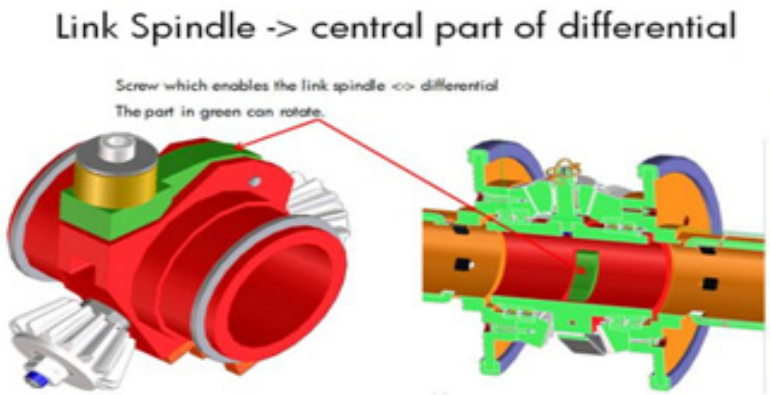
9. Check that the differential is functioning correctly without the substrate (in 1 roll configuration and 2 rolls configuration). To do this place your hands on the left part and right section of each of the differentials and check the following:

   - In the 1 roll configuration that they are linked together, and move together.
   - In a 2 roll configuration that the differential mechanism is working correctly. The central hub is fixed to the spindle (a: which cannot rotate), and if you rotate the left part (b), the right part (c) turns in the opposite direction.



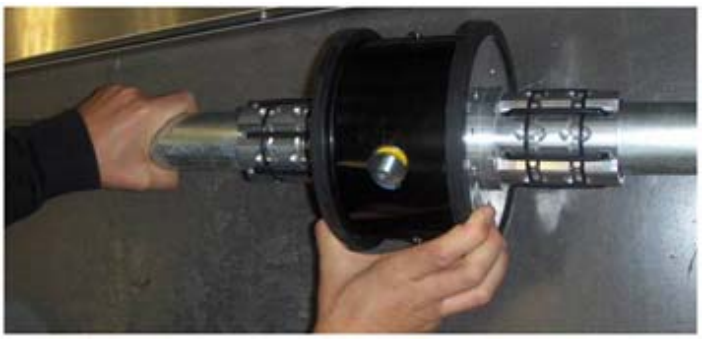
10. Troubleshooting the slippage between the Spindle and the Differential

a. The hub of the differential is secured to the spindle by means of the metal part shown below on the left in green; it is fixed to the spindle through a spring + locking screw arrangement.

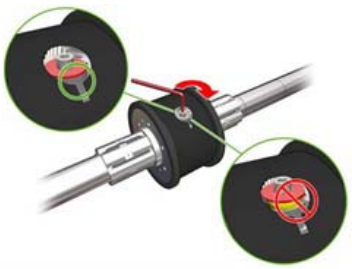


b. There are two methods to check the link of the differential to the spindle:

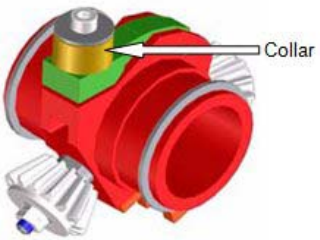
Method 1: Lock the differential in single roll configuration, while holding the spindle, try to turn the hub differential. If you can turn it, this would indicate that the hub is not secured to the spindle correctly.



1. Try to tighten the locking screw with the wrench further.



2. Tip: You can try removing collar (the part indicated here), and tighten the screw with wrench still further.



Method 2: With the substrate loaded, and the hub is secured to the spindle add two marks on each side of the spindle which will be aligned with the central metal protection cover.

1. Locate the junction of the metal protection cover of the differential, indicated here:

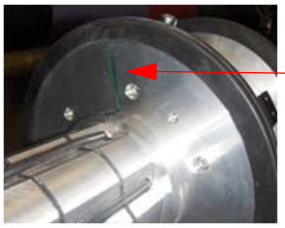
2. Mark on each side of the spindle the area which is aligned with this junction (you can use tape as the example below). If while you are printing the tapes become misaligned this would indicate that the cores are slipping on the spindle.

3. In case of any slippage you can try removing collar (the part indicated earlier), and tighten the screw with wrench still further.

4. Check the connection between the differential and the two cores:

   a. On end of the roll of substrate, the end that is inserted into the differential, draw a line as shown in the photo.

   b. In the differential draw a line as shown in the photo.



   c. Insert the roll of substrate into the differential and align the two lines.

If after printing for a while, the lines become misaligned, this would indicate a problem with the grip between the roll of substrate and the differential. Check the rubber tubes and the integrity of the core diameter. Check that the end of the core is not damaged. Check that the diameter of core is a standard size and supported for printing on the Dual roll configuration. Try adding paper under the rubber tubes as described earlier.

5. Check the connection between the cores and the substrate. On the other side of each substrate, add marks on the core where the substrate is attached to the core, as shown below.

If after printing for a while, the lines become misaligned, this would indicate a problem with the roll of substrate. It may have become detached from the core. If this is the case the roll of substrate cannot be used for Dual Roll printing due to the increased back tension. However it may still be used for printing in the Single Roll configuration as the back tension is significantly lower and the ends of the spindle are inflated increasing the grip of the substrate onto the core.

3.3.17 Testing the Trailing Cable

Use this procedure to test the trailing cable, the data and power lines (42v).

This tool can be obtained from division using the following part number: CR774-67020. It is not a common service part and must be ordered to solve specific cases.

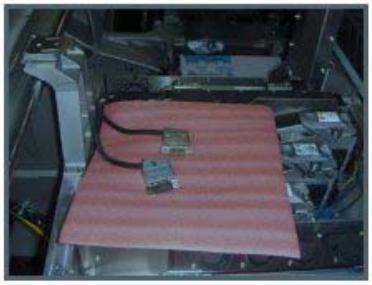
The trailing cable test tool

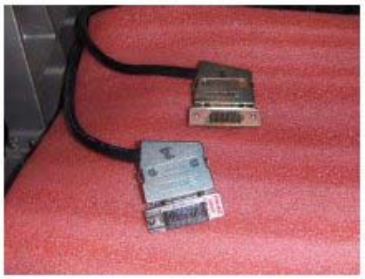
Shown below is a list of parts that can be found in the tool:

- 1 tester board WITHOUT 9V battery (standard rectangle one) for data trailing cable
- 3 “termination tools” connectors (to be placed at the end of the data trailing cable on the carriage side)
- 1 “connection tool” 'narrow'/'single' trailing cable <-> BNC (to be connected at the end of the data trailing cable on the ecabinet/EEbox side).
- 1 “connection tool” 'wide'/'Y' trailing cable <-> BNC (to be installed at the end of the data trailing cable on the ecabinet/EEbox side).
- 1 BNC<->BNC cable
- 1 42V extender

The combination of the termination tools and connection tool change all wires in the cable transforming it as if it is one long wire and enabling the connection with the test tool.

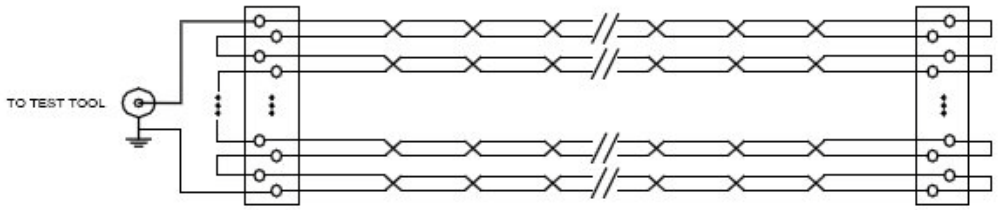
Shown here are the 'Y' Cable termination tools.





Shown here are the 'I' and 'Y' Cable.

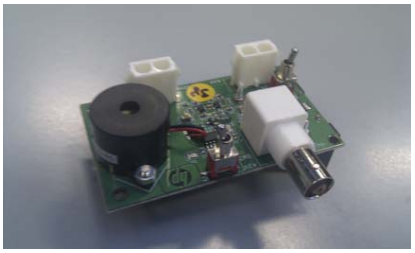
The twisted wire pairs in the cable are connected with the tools as shown:



One wire loop tools

The test tool is connected to the connection tool by a BNC-BNC cable. This tool is powered by a 9V battery and is used to test the obtained long cable. If the cable under test maintains its impedance value in the correct values, the tool is silent. When the cable's impedance exceeds the impedance limits, the test tool buzzes.

This configuration allows testing the signal changes when the trailing cable is manipulated.



Test tool

Testing cables

VERY IMPORTANT: uncap the carriage before switching off by performing the following:

- When the printer is switched on, initiate a PH replacement, and when it request to open the cover to access the PH, switch off the printer using the ACB1 at the front of the e-cabinet.
- Or from diagnostic: '6.2 Move to Repair Position' see page 430 and switch off the printer once the carriage is in repair position.

1. Remove the carriage cover to access to the trailing cables connectors. Disconnect the trailing cable connectors from the Printhead interconnect board PCA's.

2. To test the "I" cable, connect the termination tool on the connector placed in the carriage, connect the connection tool in the e-box side end and connect the connection tool to the test tool using the BNC-BNC cable.

Note: In order to avoid short-circuits on the tools, put a insulating piece between the tool and the metallic surfaces.

3. Switch on the test tools using the main switch in the board.
4. Set the second switch in the tool in the "42V" side (left) and not the "TC" side.

5. When the cable is connected, force it in different directions in both ends in order to try to reproduce the failure.


Stressing the 'I' Cable

- When the cable is correct, the test tool does not buzz.
- If the cable is permanently open, the test tool buzzers constantly. It's necessary to replace the damaged cable.
- If the test tool detects short time open circuits or impedance variations it buzzes for a time and after this it becomes silent. It's necessary to replace de damaged cable.

6. To test the "Y" cable, connect the termination tools on the connectors placed in the carriage, connect the connection tool in the e-box side end and connect the connection tool to the test tool using the BNC-BNC cable.



Connecting the 'Y' Cable

Note: In order to avoid short-circuits on the tools, put some insulating piece between the tool and the metallic surfaces.

7. Switch on the test tools using the main switch in the board.
8. Set the second switch in the tool in the "42V" side (left) and not the "TC" side.
9. When the cable is connected, force it in different directions in both ends in order to try to reproduce the failure.


Stressing the 'Y' Cable

- When the cable is correct, the test tool does not buzz.
- If the cable is permanently open, the test tool buzzers constantly. Replace the damaged cable.
- If the test tool detects short time open circuits or impedance variations it buzzes for a time and after this it becomes silent. Replace the damaged cable.

Stress connector test

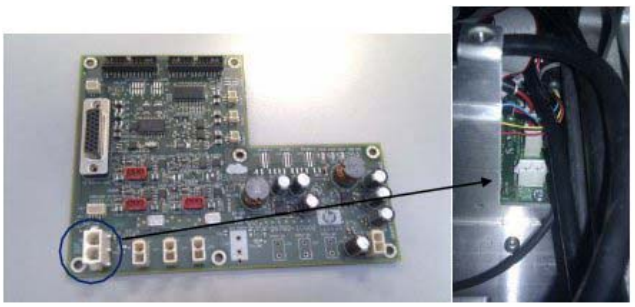
Another malfunction can be observed during the test. Even in cables which apparently function correctly, bad connections are possible between male and female connectors, the cable connector and the board connector. In this case, the cable movement during the printing operation can produce a temporary disconnection and induce errors.

To test this situation, we use the same tools used in the previous test. In this case, instead of force the cable, the connector in the cable end is firmly subjected and the loop wire tool is forced. In some cases, this produces bad connections between connectors which the test tool can detect.

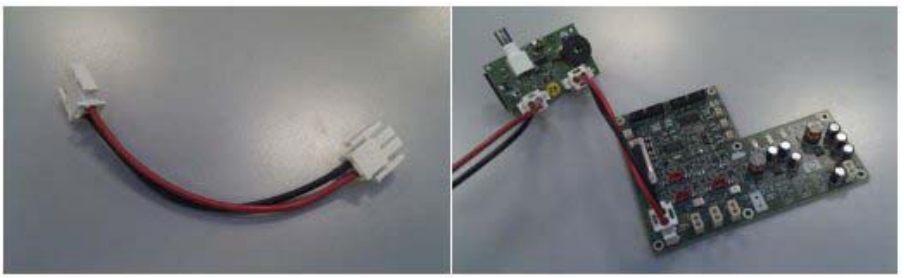
Stressing the connectors

Testing the 42v line

1. Remove the carriage cover to access the carriage PCA.
2. Disconnect the “42V connector” and connect it to the tool.

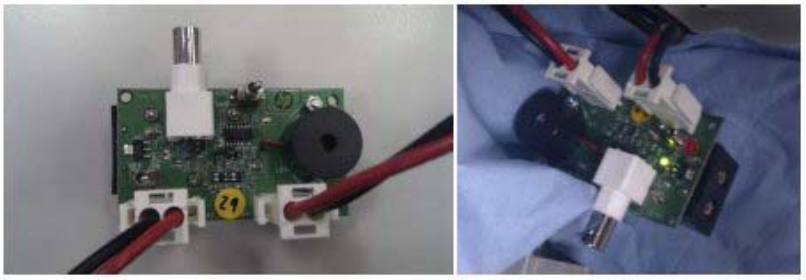


3. Use the auxiliary cable to connect the tool to the “42V from main interconnect” port in the carriage PCA.



4. Start the printer in Diagnostic mode and perform 2.3 Main PSU/Off test to switch on the 42V line.

5. Select “On” for the main switch in the test tool and set the other switch in the test tool in the “TC” position (right).



6. If the test tool detects an open circuit it buzzes constantly, otherwise the tool will light green.

CAUTION: In case the life of the 9v battery is nearly used, it is possible that it will behave as if the trailing cable is defective. Before replacing a cable, ensure that the 9v battery is in good condition.

7. To detect a possible battery failure: check the green LED: if it is glowing with lower intensity, the battery might need to be replaced.

3.3.18 Diagnosing failures seen in a printer which has been in use for a year

In this section we describe what we have seen on a few printers, when the printer has been in use for some time (at least 1 year). Some of the failures of this type are hard to troubleshoot and diagnose. Below we describe from experience in the field what the symptoms and solutions to this type of problem are.

From experiences in the field we have learnt the following tips and tricks:

- The encoder strip or encoder reader of the Scan Axis/Carriage could become dirty and can be cleaned with the air pressure gun used to inflate the spindles.
- The deflector of the resistors can become dirty and decrease the efficiency of the system until creating a system error or not heating up ⇒ page 880.
- Any electrical cable on the tri-phase not correctly installed will generate intermittent failures and potentially blow fuses.

In case the Encoder Reader or the Encoder Strip becomes dirty, the following symptoms have been seen:

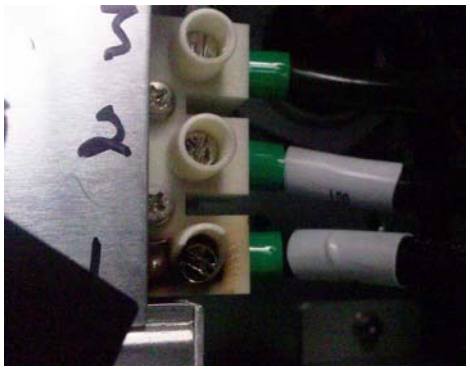
- Intermittent miss-registration through the Scan Axis.
- Intermittent 86:01, 42.2:11 or even some capping station failures such as 21.6:13 (Capping Station distance failure).
- Carriage bumping loudly on the right of the printer

Here is an example of an encoder strip with some dust (cover has been removed), to clean Scan Axis Encoder Strip and Encoder Reader ⇒ page 251.

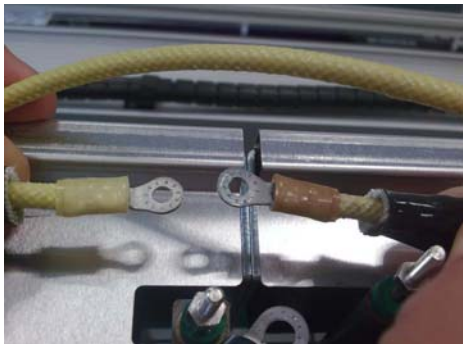
WARNING!: The following checks on cables must be performed with the printer switched off (from the PDU of the customer site).

Shown below are examples of electrical cable on the tri-phase not correctly installed:

- One cable connected to the tri-phase filter:



- One cable connected to a resistance slightly loose, the right one has a little brown part showing that it has been heated up as the connection was too loose):



- The above issues can increase the failure rate of the fuse.
- In case of any doubt, do not hesitate to check each screw securing an electrical cable in place.

3.3.19 How to check the complete Heating and Curing system

Use the following if a printer is showing a higher failure rate of the resistors or fuses or any intermittent error of the curing/heating slot.

Record the previous failures

- Check the 3 phase voltage settings
- Check the environmental conditions around the printer are to specifications (temperature, humidity, airflow around the printer.
- Check the average print mode used, substrate type used (with percentage)

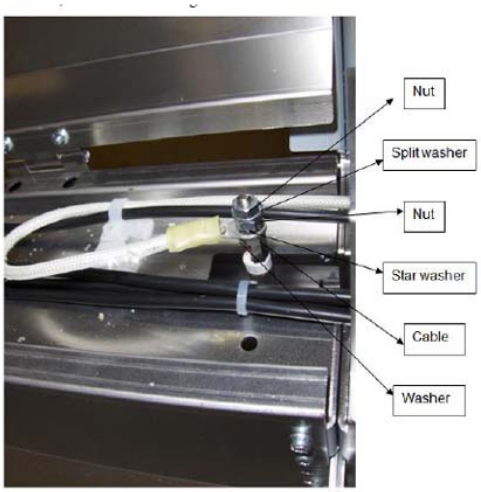
Connection check & resistance measurement check

When the printer is switch off (3 phases disconnected from the printer), check all the tri-phase cables from the red switch to the connection of the resistors (through the RCCB and circuit breaker on the door):

- Check that there are no loose connections, check each connection.
- Check the condition of the cables (for example: cable turning brown color should be replaced).

1. Check the cables on the Tri-phase are correctly installed. The above 2 photos are good examples of cables not correctly installed (see previous section).

2. Check that the connection between the resistance and the power cable (unscrew and screw back the connections, tying-up the nut (do not tie-up only the last nut, first loose it in order to tie-up the lower nut). Check that there is the insulator placed at the top of these connections.



3. Check the reflectors of the resistors and clean them if required⇒See page 880. If the reflectors are not clean this can cause issues with the printer that are difficult to troubleshoot and diagnose, shown below is what might typically occur if the reflectors are not reflecting sufficiently.
4. Higher than normal occurrence of 15.8:12 & 16.8:12 system errors.
5. Intermittently, a resistors could stop heating (as the safety thermostat behind the reflector becomes too hot and is activates).
6. Could reach a high failure rate of the fuses.
7. To check the resistors are functioning correctly refer to the resistance check ⇒See page 819.
8. Check that the static relay has not failed:
   - Measure the resistance between A2 <-> chassis, B2 <-> chassis, C2 <-> chassis. Expected values: > 1M ohm,
   - Measure between A1-A2 (should be less than10 ohm), B1-B2 (should be > 1 M ohm) and C1-C2 (should be less than 1 ohm).
   - Measure between A1-B1, A1-C1 and B1-C1 should be high (> 1MOhm)

   Use the following table to record the data:

Heating: A2-B2:	A2-C2:	B2-C2:
A2 <-> chassis :	B2 <-> chassis	C2 <-> chassis
A1-A2:	B1-B2:	C1-C2:
A1-B1:	A1-C1:	B1-C1:
Curing: A2-B2:	A2-C2:	B2-C2:
A2 <-> chassis :	B2 <-> chassis	C2 <-> chassis
A1-A2:	B1-B2:	C1-C2:
A1-B1:	A1-C1:	B1-C1:

9. Check the fuses.

Printer	High tri-phase voltage configuration	Low tri-phase voltage configuration
LX8x0	25A	40A
LX600/L65500	20A	33A

Measure the fuse resistance: curing left: middle: right: heating left: middle: right:

When fuse holder open, measure resistance between 2 points (input/output), value should be > 1 Ohms. Use the following table to record the data:

Results:	curing	left	middle	right	heating	left	middle	right
Resistance of fuses		.	.	.		.	.	.

Check the KM/main contactor. Measure resistance of the contactor on each phase, between the input and output points (should be at least 1M Ohm). Use the following table to record the data:

Results:	left	middle	right
Resistance of KM	.	.	.

10. Check the resistance at the output of the triangle – star box (both heating and curing), need to unplug the cables from the triangles/star box, and measure the values of each resistor. The acceptable values are as follows:

    - L66550/LX600 only: 16 ohms, minimum: 15 ohms, maximum: 17 ohms.
    - LX 8x0 only: 12.5 ohms, minimum: 11.5 ohms, maximum: 13.5 ohms.

    Use the following table to record the data:

Resistances measured after star/triangle:		
Heating: left:	middle:	right:
Curing: left:	middle:	right:

11. Add a space between KM and fuse holder. As shown on this picture, try to slide the fuse holder as much as possible towards the left (required to remove the 'stopper' placed at the left of the fuse holder. By default, the KM and the 2 fuse holders are in contact.

The reason for doing this is the KM can be cold, temperature is then transferred to the fuse holder and then reducing the reliability of the fuses.

Results: Add space between KM and Fuse holders? Yes / No

Connection the customer's site complies with the site preparation requirements

1. Check the three-phase lines of the customer's site are within the specification as described in the site preparation document.

LX600 three-phase line specifications

	High-voltage systems	Low-voltage systems
Input voltage (line to line)	3 × 380-415 V~ (-10%+6%)	3 × 200-220 V~ (±10%)
Input frequency	50 Hz	60 Hz[1]
Power consumption	12 kW	12 kW
Maximum load current (per phase)	32 A	32 A

LX8X0 three-phase line specifications

	High-voltage systems	Low-voltage systems
Input voltage (line to line)	3 × 380–415 V~ (-10%+6%)	3 × 200–220 V~ (±10%)
Input frequency	50 Hz	60 Hz[1]
Power consumption	15 kW	15 kW
Maximum load current (per phase)	30 A	50 A

[1] Japan may have input frequencies of 50 Hz or 60 Hz

- If the power line supplying the installation site is a public low voltage line shared with other users, the power line impedance at 50 Hz must be less than 52 mO for the LX600, or less than 34 mO for the LX800, to comply with European regulations. If other users on the same power line report any flickering of incandescent light bulbs, contact your electricity supplier to verify that the power network has an impedance lower than the one specified above.
- The heating and curing lamps are powered by the three-phase AC lines. For optimal printer operation, the three-phase system must have a maximum variation equal to or lower than 3%voltage unbalance, and 5% voltage sag. If the maximum variation is not within this range, print quality and printer operation may be affected. Contact your electricity supplier to remedy any voltage unbalance or sag.

  To avoid certain specific system errors in some cases, such as 15.8:10 or 16.8:10, you are recommended to have no more than 10 V variation in the three-phase line (line to line).

  As the failure is intermittent, the site has to be monitored during a longer period of time, for a few days at least. And we are recommending to have an electrician monitoring the site, measuring continuously the

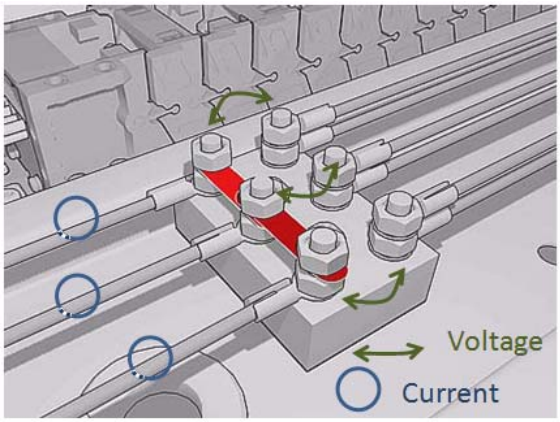
  - Power consumption (higher than the power consumption mentioned just before?) with Max and RMS values.
  - Voltage between phase (checking continuously if there are any unbalance issue) with max and RMS values.
  - Current (pike higher than the values mentioned before)? Big differences between the 3 phases? With max and RMS values.
  - If possible, the phase differences, a between phase (voltage and current) and between voltage & current (phi = f).

  Recommended of how to check these values: for few days, a specific equipment, Power quality analyzer, common for any electrician, should be used. Here is an example from Fluke, reference: 435. **Important:** sampling of each measurement should be 0.5s.

2. What to do in case you notice that there is an unbalanced current and/or voltage between phase:

   - Mandatory: Measure the temperature profile through the scan axis of the heater and curing, and report the results (3 measures to be done).
   - Recommended (to be done by an electrician): Measure the voltage and the current consumed on each resistance of curing and heating. To do this check the current and voltage at the level of the star/triangle box. Measurements should be done while 'preparing to print' (when going from standby/clod to printing).

Here are the measurements to be done on a star configuration



> ⚠ **WARNING!:** In the following procedure you will touch points of the tri-phase, when placing the measurement points/crocodile pincer, it is important to have the RCCB1 and ACB3 open!

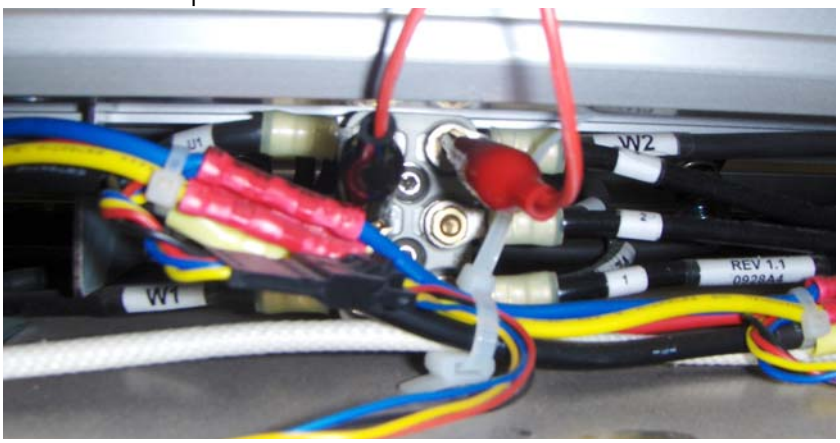
Tools required:

- A multimeter, with a possibility to display voltage values with a lead time/sampling of less than 1 second, also recommended to be able to set manually the range (0-500V for example), not having it set only to 'automatic'.
- VERY IMPORTANT: 'crocodile' pincer: to be able to read the values WITHOUT having to hold manually the measurement points from the multimeter.

The procedure:

1. Place the printer into the 'ready' status: RCCB1 OPEN, ACB3: OPEN, VERY IMPORTANT!!!! In case you let it open a little amount of time (1 minute), there is no risk of a system error when the printer is in standby.
2. Remove the cover under which the triangle/star box is placed.
3. Place the measurement point/crocodile pincers:
   - The black on the reference side (the side where the 3 points are put together).
   - The red on one of the 3 points going to the resistor.

Here is an example:



4. Place the multimeter as shown here.

5. Switch On/Close the RCCB1 and ACB3
6. Begin printing, and check the value on the multimeter during the warm up phase.
   - Every2 seconds, the value displayed should be around 220V for around 1 1.5s, and 0V for around 0.5-1s.
   - Once the printer starts to print, cancel the job (cancel it 2 times to also cancel the curing phase).
7. When the curing is cancelled (on the PID controller, you can see that the required target temperature is 45 degrees) open the RCCB1 and ACB3.
8. Move the red crocodile pincers to the second point/line.
9. Switch On/Close the RCCB1 and ACB3.
10. Begin printing, and check the value on the multimeter during the warm up phase.
    - Every 2 seconds, the value displayed should be around 220V for around 1 1.5s, and 0V for around 0.5-1s.
    - Once the printer starts to print, cancel the job (cancel it 2 times to also cancel the curing phase).
11. When the curing is cancelled (on the PID controller, you can see that the required target temperature is 45 degrees) open the RCCB1 and ACB3.
12. Open the RCCB1 and ACB3.
13. Move the red crocodile pincers to the third point/line.
14. Switch On/Close the RCCB1 and ACB3.
15. Begin printing, and check the value on the multimeter during the warm up phase.

- Every2 seconds, the value displayed should be around 220V for around 1 1.5s, and 0V for around 0.5-1s.
- Once the printer starts to print, cancel the job (cancel it 2 times to also cancel the curing phase).

16. Perform the same operation on the heater side (the top cover of the middle heater module should be remove).

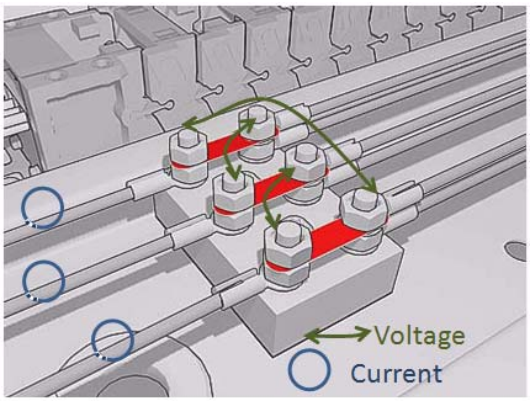
There are other possibilities for measurement, on each module, there is a specific connection box, with 2 cables, linking on one side each point of the resistor and on the other side going to the star/triangle element. You can also measure the voltage of this module on this specific connection box.

Here is an example on the right curing module, there is a little more space to place the measurement points.

NOTE: A similar process can also be performed on the output of the static relay, this time without need of 'crocodile' pincers.

Note that the similar process can be done also on the output of the static relay this time without need of 'crocodile' pincer.

Here are the measurements to be done on a triangle configuration.



1. Check residual circuit breaker is operational (supporting only TN and not IT power distribution system). Shown below are extracts from the site preparation and site preparation checklist:

- From site preparation guide:

> ⚠ **WARNING!** Ensure that the printer's built-in three-phase circuit breaker or ground fault circuit interruptor operates in the case of a current leakage fault to the product chassis, even when an isolation device (such as an isolating transformer) will be used to supply power to the printer.

- From site preparation checklist:

Electrical installation	Yes	No	Comments
Would the printer's integrated residual current circuit breakers (also known as the GFI) operate in case of a current leakage fault to the printer's chassis (even if an isolation device is installed)?	☐		(Required)

The impact of this requirement is that the printer must be powered by an AC Power distribution system TN (IT not supported).

The system codes TN or IT have the following meaning:

- First letter: relationship of the power distribution system to earth; T means direct connection of one pole to earth, I means system isolated from earth, or one point connected to earth through an impedance.
- Second letter: earthing of the equipment; T means direct electrical connection of the equipment to earth, independently of the earthing of any point of the power distribution system, N means direct electrical connection of the equipment to the earthed point of the power distribution system (in a.c. systems, the earthed point of the power distribution system.

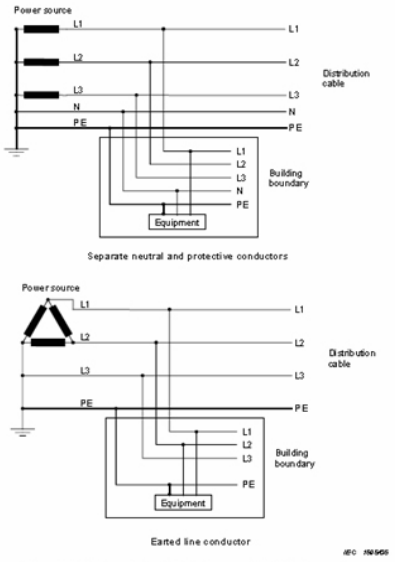
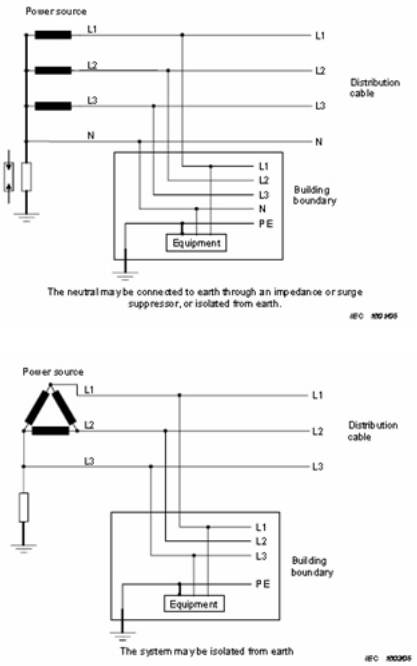


Figure V.1 – Examples of TN-S power distribution systems

TN system

•



IT system

Figure V.8 – Example of three line IT power distribution system

To check that the RCCB is well working, that the printer correctly connected to ground (and so that the power distribution system is a TN and not IT system) refer to the following the 3 tests:

HiPot Test on each Heater resistor (to be done by an electrician):

- Use HT COMBI419 or COMBI420 tool (MO) or any equivalent tool.
- Connect the ground of the tool to a ground point (on the left door for example)
- Disconnect the 3 power cables from the CRYDOM to the heaters (A2, B2, C2).
- HiPot test each cable and chassis. 6 tests
- Same test on the curing cables (HiPot test each cable and chassis). The value should be > 1999 M Ohm.

Record the results of the test:

Results: HiPot test	curing	left	middle	right	heating left	middle	right

From now, the tests will be done while printer is ON

2. Check that the RCCB internal test is working
   a. Start the printer until you see the message 'arm the printer'.
   b. Ensure that the tri-phase is turned on (the lamps on the right side/read of the printer turned on, the 3 ones under the main red switch).
   c. Press on the TEST button on the RCCB switch, it should open.

d. If it does NOT open:

- Switch off the printer (red switch).
- Check the connection of the tri-phase cable within the RCCB-1 connector, NEED to disconnect the RCCB1 connector.

Record the results of the test:

Results: Internet test of RCCB working yes/no?

3. Check that the FAN of the e-cabinet (on the left/front side) is functioning.

   a. While the printer is asking to 'arm the printer', check that it is blowing airflow from inside to outside of e-cabinet (just place a small piece of paper at the side of the FAN, within the e-cabinet => it should be stuck to the FAN).

   b. If Not working -> replace the FAN (no system error displayed in case it is not rotating)

   c. Clean also the FAN filters on both side of the ecabinet (need to remove front right and rear right cover, just use the air gun to clean the filter).

   d. This FAN is powered ON directly from the secondary 24V power supply.

Results: Internet FAN of e-cabinet working yes/no?

4. Check the grounding of the printer, that the RCCB-1 is correctly detecting current leakage (to be done by an electrician).

   VERY IMPORTANT: WHEN DOING THIS TEST, CHECK WITH THE CUSTOMER THAT THERE IS NO ISSUE IN CASE THE RCCB OF THE SITE IF OPENING. Reason: this test will check that the RCCB of the printer is fully working. If it is not working, or if the grounding of the printer is not perfect => an RCCB on the customer site might be opened.

   Use the HT COMBI419 tool (RCD)

   a. Use the HT COMBI419 or COMBI420 tool

   b. Mode: (RCD)

   c. Power enable the printer, arm the printer.

   d. Connect the test tool between any Crydom input and Chassis

   e. Run the test

   f. Do the test on each of the 6 input entry of both Crydom input, and marks the values from which the RCCB is tripping out.

RCCB tripping out level (mA):		
Heating: left:	middle:	right:
Curing: left:	middle:	right:

If possible perform a temp. profile check through all the scan axis (1-2 hours)

If possible, in order to check that the same power is passed to each resistor, run the following 2 tests from diagnostic mode, in order to check that the power applied on each resistance is equivalent:

- 8.3 Heating Temp Profile
- 8.4 Curing Temp Profile

Need to load a substrate to cover the full scan axis.

Table results:

Further escalation

If after performing the complete check of the heating and curing a solution has still not be found, escalte the issue to HP providing the following information:

- Complete history of the printer
- Symptom of the failures
- Which components were defective:
  - Clearly indicating which fuse (left/middle/right of heating/curing) or which resistance (left/middle/right or heating/curing).
  - In case of resistor failure, confirming that at each failure all 3 resistances have been replaced or not.
- Any specific repetitive symptom (example: happening only when starting up the unit, not happening while printing; happening only when it is raining. Or when outside temperature is low)
- Is the RCCB1 is opening intermittently.
  - At the moment of the failure of the resistance/fuses?
  - Or at different moments?
- Collect environmental conditions of the printer (average humidity, average temperature, position in the room, any cold air flow / hot air flow blowing to the printer, air renewal? Air conditioner, ...
- Average printmode used? More or less, usage of printer splitted by substrate type (SAV, paper based, banner)
- Collect also the service plot.
- From each of the troubleshooting tests performed report the results.

There is a high probability that the following specific traces will need to be taken out from the printer, to be done only if requested by HP (and specific file to be provided by HP). Here is this specific process to follow:

A. Turn on specific traces from the printer: import as new preset-substrate a specific file provided by HP, name: BOB-BOO-HeaterTraces.oms. It is important to restart the printer afterwards.

B. For the remaining part of the day, print for few hours. While printing:

- Check all curing fans are working. Use a thin paper and move it close to the fan input, paper must stick into the fan surface.
- Measure voltages and currents for each heater.

  Voltage/current while printing:

  Heating: left:middle:right:

  Curing: left:middle:right:

- Check color of the resistances (red? or more black? or Orange...).

  Check color of resistances while printing (if possible)

  Heating: left:middle:right:

  Curing: left:middle:right:

C. Once printing for few hours is done:

a. Collect specific traces files (heating and curing)

- Open an internet explorer on the IPS PC, URL http://<IP>/hp/device/3432/8828/tmp/
- Locate the 2 files:

- HeaterCZ_auto.log
- HeaterPZ_auto.log

- For each file, select it with a 'right click', and select 'save file as', and save the file on the IPS PC.
- Once both files are transferred, zip them together and send to HP.

Note that these 2 files are reset each time the printer is rebooted. In case of system error and there is a need to collect these files:

- Try to collect the files while there is the system error (but there is a risk that the internet link will not answer)
- Can reboot the printer in diagnostic (files are then NOT reset), and then the files can be collected using the same procedure described just before.

b. Redo Hi-Pot test (to be done by an electrician)

3.3.20 Order of calibrations

If there is a requirement to perform all calibrations, refer to this section for the order in which they should be performed.

In case one printer has lost its configuration, here are the proposed calibrations to be done:

1. Upgrade to the latest firmware and then from the from diagnostic mode:
   - 4.11 Ink Pres. Sen. Calib. (need to collect the calibration values marked on each ink pressure sensor board).
   - 5.3.4 Service Station Cal
2. Reboot in normal, and from service menu:
   - 4.7.1 PH Cleaner Height Calibration
   - 4.7.2 PH Cleaner Horizontal Calibration
   - 4.3.1 Drive Roller Encoder Calibration, need to have status 0 reported.
3. Restart the printer
   - 4.3.4 Roller Calibration, need to have the status 0 reported at the end of the calibration.
4. Restart the printer, check the code reported at the end of the calibration, mainly if it is not 0.
   - 4.3.5 Check Roller Calibration, need to have the status 0 reported at the end of the calibration
5. please check the code reported at the end of the check, mainly if it is not 0.
   - 4.5.2 Ser. Sta Compensation
6. Print the PH alignment check, ensure that the printheads are in good shape (mainly the black, Light magenta and Magenta), perform hard cleaning if required.
   - 4.5.1 Drop Detector Calibration
   - 4.6.1 Line Sensor Cal
7. Perform the customer calibrations (PH alignments, PH alignment check, advance calibration (per substrate and per printmode), color calibration (per substrate), dynamic color calibrations (per substrate)

3.4 Troubleshoot image quality

Introduction to Image Quality

About service prints and image quality

The printer has eleven service prints available to define and resolve image quality problems. If it is possible to identify the problem using a service print, as a matter of best practice, you should reprint the service print after taking action until the problem is solved.

The following **user prints** are available and fully documented in the User´s Guide and Maintenance and Troubleshooting Guide. In this service manual, we will NOT repeat all the information already available within the user's guide and maintenance and troubleshooting guide. However it is important that you also have these 2 guides available (take the ones from the LX series, applicable for the L65500 also).

- Add new substrate print (User's Guide: Handle the Substrate)
- Printhead alignment print (Printhead alignment diagnostic plot & manual printhead alignment) (within the maintenance & troubleshooting guide, in the printer calibration chapter).
- Advance calibration (from IPS version 4.x & FW BOB4.x)(within the maintenance & troubleshooting guide, in printer calibration chapter). (Go from IPS, Printer -> advance calibration,
- Color calibration (within the maintenance & troubleshooting guide, in printer calibration chapter) (Go to Substrate -> color calibration).
- Dynamic color calibration (within the maintenance & troubleshooting guide, in the printer calibration chapter) (Go from IPS, Printer -> color registration).
- Printhead check (from IPS, Printer -> Printhead cleaning -> verify printhead status)

The following **service prints** are available from the IPS: Printer -> printhead alignment -> Verify alignment.

- Media Expansion plot
- Pen to Pen Alignment along the scan axis (scan axis encoder strip)
- Bidirectional alignment along the scan axis + PRS diagnostics
- Printhead check (from IPS, Printer -> Printhead cleaning -> verify printhead status)
- Advance calibration (from IPS, Printer -> advance calibration, available from IPS version 4.0.1)
- Dynamic Color registration (from IPS, Printer -> color registration).
- Color calibration (from substrate -> color calibration)

The best image quality

Main generic steps to follow to ensure the best image quality:

- Check the printhead alignment (from IPS: Printer -> printhead alignment -> Verify alignment)
- Calibrate the media advance (from IPS -> Printer -> advance calibration, available from IPS version 4.0.1), select the print mode that you plan to use.
- Dynamic Color registration (from IPS, Printer -> color registration).
- Check that the Encoder Strip/Encoder Reader to not require cleaning ⇒ page 251.
- Check that the Resistor Reflectors do not require cleaning ⇒ page 880.
- And to check / fine-tune the different settings, mainly the dynamic color registration, print the following test files from the IPS, situated under C:\user\<login>\Documents\HP IPS (from version 4.0.1, it is available in Substrate Creation), file name: Test1_temp_profile.

  Print this test file to reach a total of 1 meter length, covering all the substrate, how: 'step & repeat' + fit to substrate + center and increase the number to reach a total of 1 meter length. Use the print more that you usually use.

- While printing, you can fine-tune the setting through the button 'Print Adjustment':

- The advance can be compensated through the Advance key. Need to have at least 10-20cms of plots printed. To know to increase/decrease:
  - When the magenta is first Vs black or Cyan (through media advance axis), the advance has to be decreased (and click on Apply).
  - When the magenta is behind/after Vs black or Cyan (through media advance axis), the advance has to be increased (and click on Apply). This is fully documented in the Maintenance and Troubleshooting Guide, in the sub-chapter 'Substrate-advance test print'.
- If there is mis-alignment of the magenta through the scan axis (axis followed by the carriage when moving), compared to the black/Cyan towards the edge of the substrate, (no mis-registration in the middle of the substrate, or the Printhead alignment has to be redone), it is possible to fine-tune the mis-registration. Refer to the Maintenance and Troubleshooting guide, chapter 3, 'Dynamic color registration on the fly' (for the L65500, the documentation is available on the www.hp.com, service & support -> L65500 and then click on manuals: document is called 'dynamic color registration user's guide'.

Printhead Alignment

Automatic printhead alignment

Description

Automatic alignment is a fully automated procedure that ensures optimal print quality in most cases. The printer prints some patterns and scans them with the built-in line sensor. This is the recommended method for any smooth, high-quality substrates (including vinyl, banners or backlit). If the printheads have many defective nozzles, automatic alignment may not give good results. The procedure takes about 9 minutes and consumes 9 inches of substrate.

Access

1. From the Internal Print Server, select **Printer** > **Printhead alignment** > **Automatic Alignment**.

Procedure

1. The automatic printhead alignment prints, scans, and calibrates automatically.

Manual printhead alignment

Description

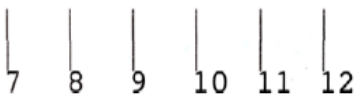
Manual alignment provides reasonable print quality when automatic alignment is not possible, typically because a highly-textured or non-white substrate is loaded (mesh, perforated, some fabrics, transparent, colored).

Access

1. From the Internal Print Server, select **Printer** > **Printhead alignment** > **Manual Alignment**.

Procedure

The printer prints 8 series of patterns, and you must choose the best result from each of the series (for example, number 10 in the picture below). This process takes about 10 minutes and consumes 9 inches of substrate.



Troubleshooting printhead alignment

Automatic printhead alignment may fail occasionally. In some cases, you may see the Front Panel error message "Automatic Printhead Alignment is cancelled because of scanning errors". In other cases, there is no error message but the print quality is not satisfactory. In these cases:

- The most probable cause of a printhead alignment failure is some problem with substrate advance. Please test substrate advance. After fixing any substrate advance issue, retry automatic printhead alignment.
- Another possible cause of failure is the use of highly-textured (some banners), non-white or very reflective (some satin offset) substrates. Use manual printhead alignment in these cases.
- If the substrate suffers from wrinkles during printhead alignment (automatic or manual), results will not be good. Try solving the problem by adjusting substrate parameters such as tension or heating and curing temperatures.
- If none of the above cases apply, please try using manual printhead alignment, or call HP Support.

User prints and image quality calibrations

Printhead alignment diagnostic print

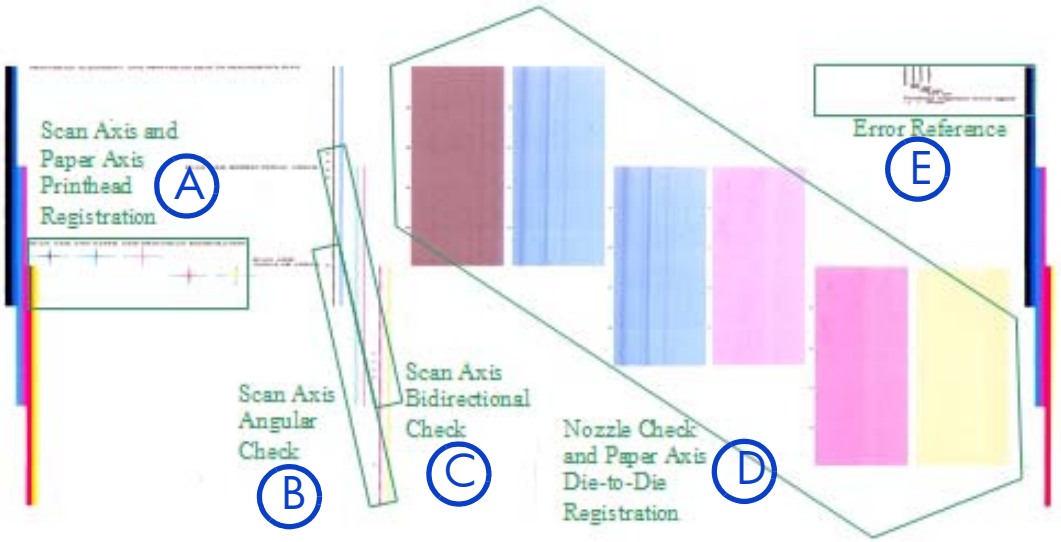
Description

The printer offers a printhead alignment diagnostic plot, to assess the quality of the current printhead alignment. This section contains more information than is shown in the Maintenance and Troubleshooting Guide.

Print access

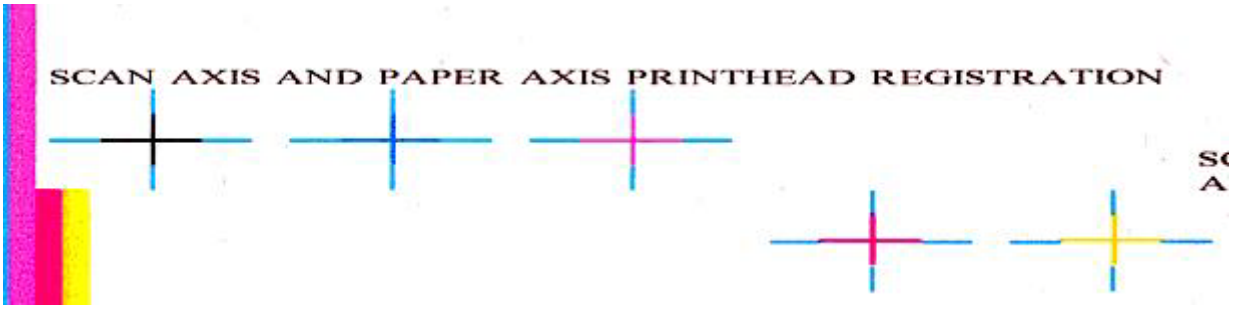
There are two methods to access this print and there is also one variation on the print.

- To print it, start the HP Internal Print Server and select **Printer** > **Printhead alignment** > **Diagnostics plot**.
- You can also access the printhead alignment diagnostic print from the service menu. **Service Menu** > **Service Prints** > **Printhead Alignment** > **40ips 600x1200**.
- A 35 IPS variation on the print also exists that is printed at 1200x1200, meaning that the plot is compressed to half the width. **Service Menu** > **Service Prints** > **Printhead Alignment** > **35ips 600x1200**.



Read the plot: Scan axis and paper axis printhead registration

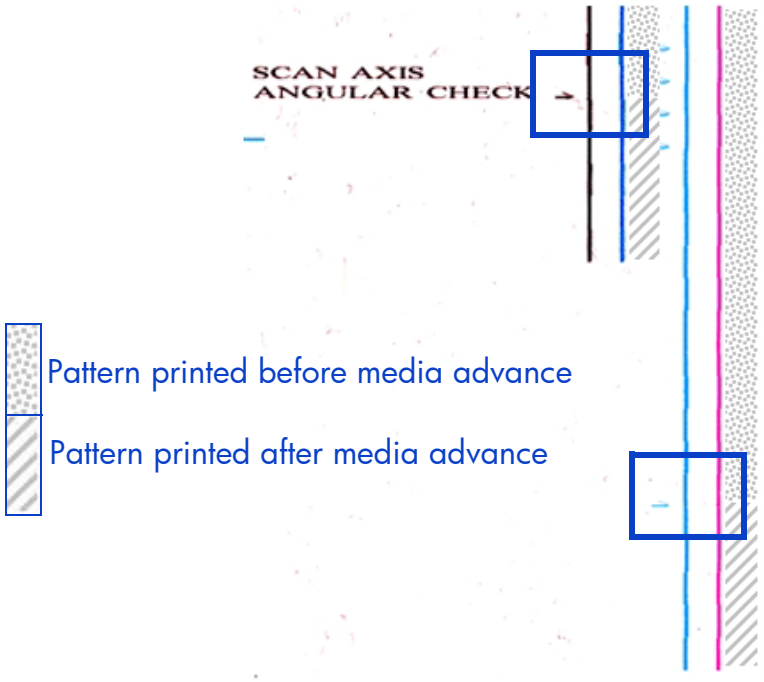
The colored crosses on the left side of the plot should show the lines well aligned with each other.



- The central die of the light cyan printhead is used as a reference to which the rest of the pens are compared. The substrate does not move while the pattern is printed.

Read the plot: Scan axis angular check

The vertical lines to left of center should be straight, without kinks.



The small arrow points to the place where lines printed in subsequent passes meet. The registration should be checked at that point for the KC, lm and MY printheads (MY is not shown). Please note that media advances between the printing of the upper and lower parts of the plot.

The Angular alignment check is heavily dependant on perturbations of the substrate. Occasionally, events such as **IPS Substrate Load** or any other that repeatedly moves substrate forward and backward may distortion the Angular check. In this case, move media forward for 20 inches and repeat the Printheads Alignment Diagnostic plot.

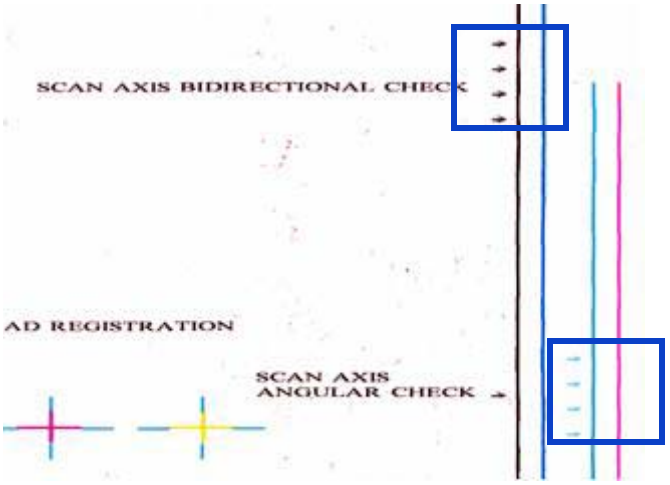
Problems in the Angular alignment lead to M-Y to C-K pen-to-pen mis-registration. This is because of the staggered disposition of the Printheads. For example, if an M line has an incorrect Angular alignment it will move towards Media Output with a certain skew, and a subsequent K line in the same position will show misregistration.

The Angular alignment can slightly change when media type or size varies, or when media has recently been loaded into the printer.

Read the plot: Scan axis bidirectional check

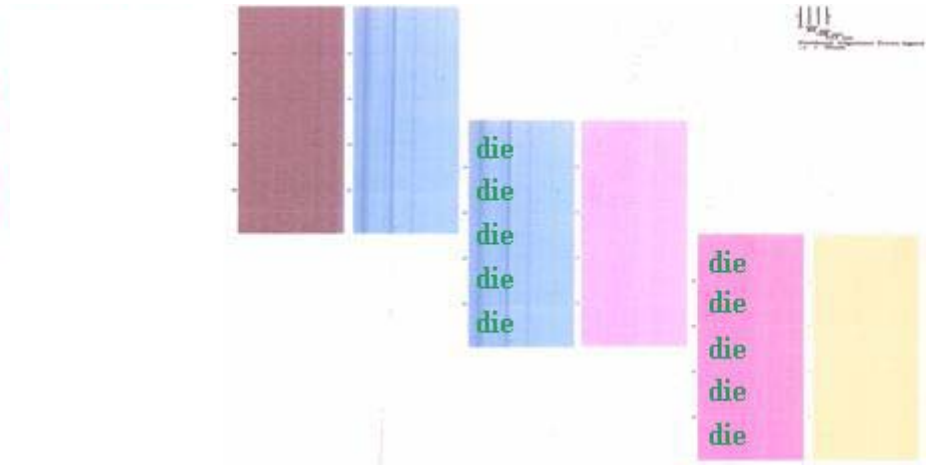
The small arrows point to the place where lines printed in forward and reverse direction meet. The registration should be checked at that point. The check should be done for the KC, lm and MY print-

heads (MY is not shown). The Bidirectional alignment can change slightly when media thickness varies.



Read the plot: Nozzle check and paper axis die-to-die registration

The color patches are printed with a halftone, low-ink area fill in one pass printmode.

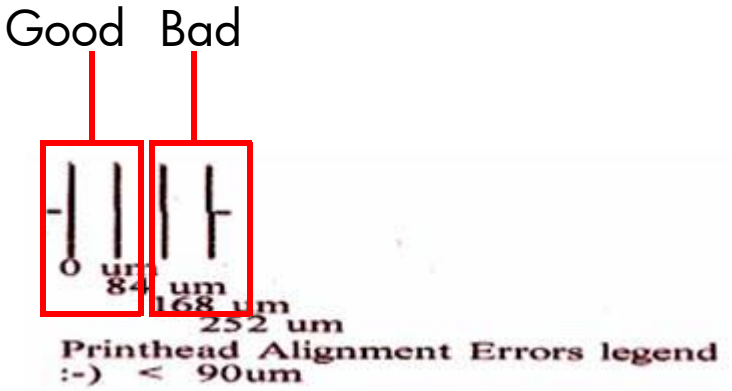


- The small arrows point to the place where two different printhead dies meet. No appreciable light or dark line should be seen at that point. Manual Alignment resets such alignment to the factory defaults.
- The patches also provide a basic judgment about the printhead nozzle status. Horizontal bands signal weak or missing nozzles.

NOTE: If there are many horizontal bands that signal weak or missing nozzles, the die-to-die registration might be a poor indicator. In that case, clean the printheads and reprint the Printhead Alignment Diagnostic Print for a better indication of the die-to-die registration.

Read the plot: Error reference

The plot contains a reference marked "Legend" that may guide the user when deciding if any of the printhead registrations is good or bad.



- The good/bad criteria shown above corresponds to a plot with maximum IQ (usually printed on high quality media such as vinyl). Other substrates and end usages may accept significantly worse registrations while still produce an output that is most cases is acceptable.
- Automatic printhead alignment may not produce optimal registration in all conditions. Media texturing, elasticity and behavior with respect to temperature may lead to some imperfections in printhead registration. In such case, user may choose to use Manual Printhead Alignment instead.

Color calibration diagnostic print

Description

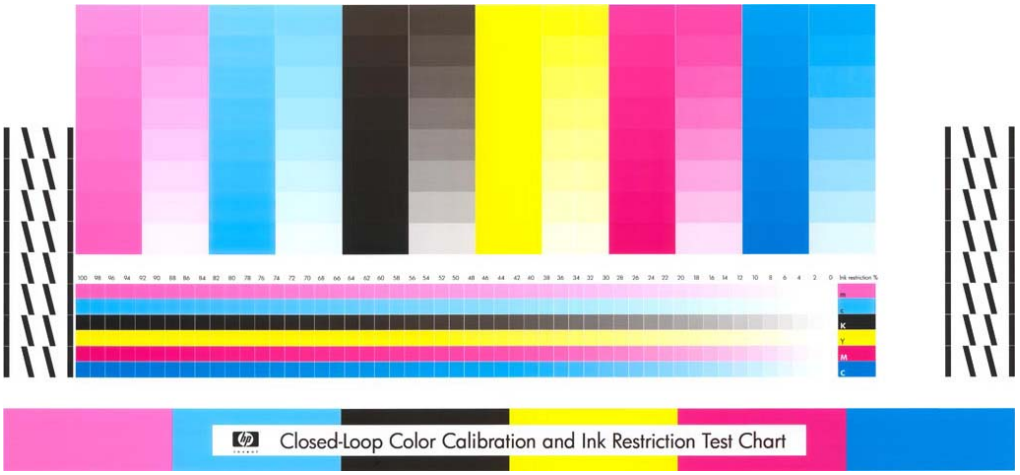
Color calibration enables your printer to produce consistent colors with a particular substrate type, even if printheads, ink cartridges and environmental conditions change. After color calibration, you can expect to get prints with the same colors from any two different printers situated in different geographical locations.

You should perform the print whenever:

- Whenever a printhead is replaced
- Whenever a new substrate type is introduced that has not yet been calibrated with the current set of printheads
- Whenever you notice excessive color differences between prints. Such color differences can be caused by aging and wear of the printheads, changes in substrate characteristics between one roll and another, changing environmental conditions and so on.

Print access

1. To start color calibration from the HP Internal Print Server, select **Substrate** > **Color calibration**, then click the **Calibrate** button.



NOTE: The calibration process is fully automatic and can be performed unattended after you have loaded the substrate of the type you wish to calibrate. The process takes about 25 minutes, refer to the User's Guide for more information.

Printhead health plot

Description

The Nozzle Health diagnostic plot will show the status of each printhead.

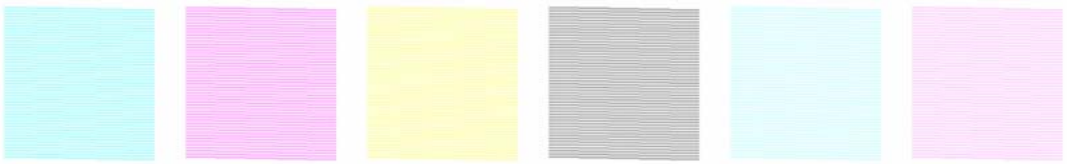
Print access

1. Go to the HP Internal Print Server and select **Printer** > **Printhead cleaning**.
2. Press the **Print** button in the same window to print the following display.

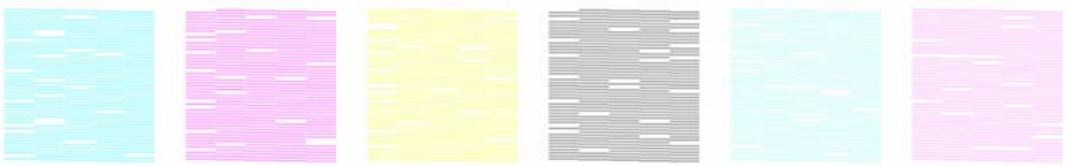
Read the plot

The print consists of six rectangles, one for each color. Each rectangle consists of small dashes. Any single dash uses few nozzles in the same way the user images are printed. This makes the printer robust to any failed nozzle and in this case, the image quality would not to be affected. The print uses the 4 passes printmode.

- Each color is printed by a single printhead and shows the performance of that printhead.



- If a significant number of printhead nozzles are blocked, you will see missing lines in this display, as shown below.



Corrective action

1. In the same window, select any printheads that are showing missing lines, and press the Hard clean button.
2. When the hard clean has finished, press the Print button again to see whether the printheads have improved.
3. If you still see five or more missing lines in any one color, you are recommended to replace that printhead. With fewer missing lines, the printer can maintain good quality when printing with four or more passes.

If the above printout seems blurred or grainy, you may need to change the substrate-advance compensation.

Print a Service Print

Description

You should print a service print whenever it can help you define or resolve an image quality problem.

The procedure for making each service print is the same.

Print Access

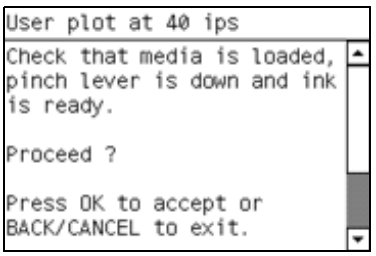
1. Load a substrate.
2. Open the **Service Menu** ⇒ page 332.
3. Navigate to **Service Prints** > **Subsystem** > **Plot**.

Procedure

Description: The printer makes sure that a substrate is loaded and then prints the plot.

Procedure:

The printer asks you if a substrate is loaded.



1. Press **Enter** if a substrate is loaded or **Cancel** if a substrate is not loaded.

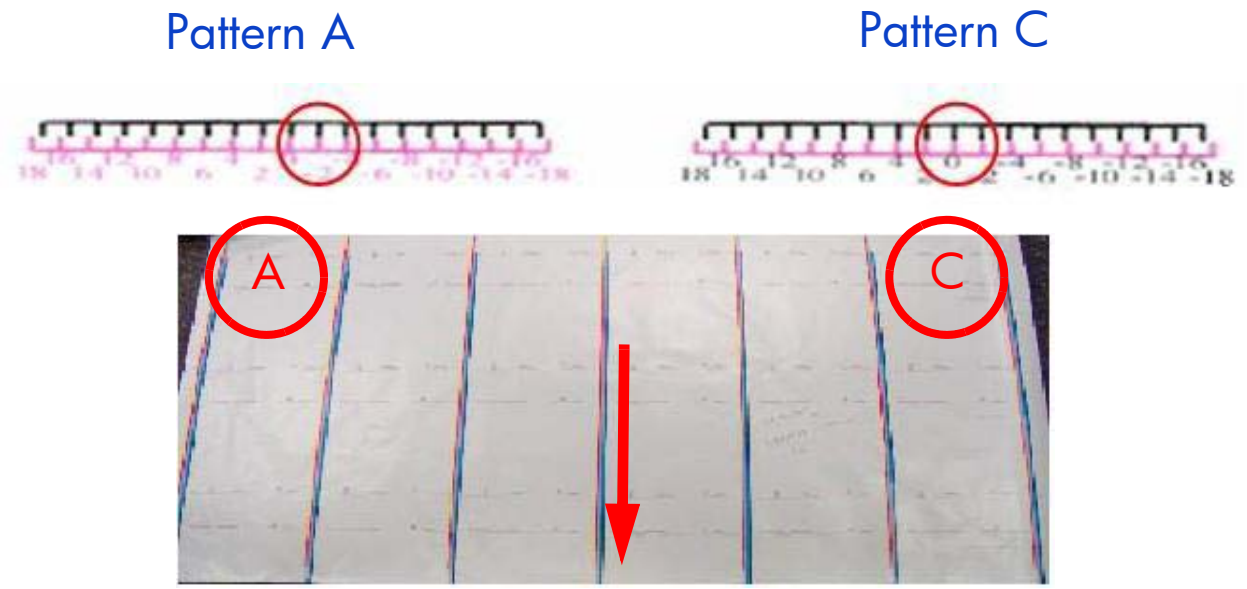
   The printer prints the plot.
2. Press any key to finish the service print.
3. Move the substrate advance far enough to read the plot.
4. Find the interpretation instructions in the next section⇒ page 298.

Read a Service Print

Substrate expansion plot (from service menu 2.3.4 Substrate Expansion Check)

Description

The substrate expansion plot allows you to identify the level of media expansion for a given substrate. For more information regarding media expansion and potential solutions for this problem, refer to the Maintenance and Troubleshooting guide.



Read the plot

1. Calculate the media expansion value using the formulas.
   - Aleft - Aright = media expansion
   - Cleft - Cright = media expansion
2. Use the following tables to interpret the media expansion values.

Pattern A values	Pattern C values	Image Quality
Less than or equal to 8	Less than or equal to 4	No noticeable problems
Less than or equal to 14	Less than or equal to 7	Minimum viewing 1 meter
Greater than 14	Greater than 7	Minimum viewing 5 meters

3. If you have a media expansion problem that must be solved, refer to the Maintenance and Troubleshooting guide.

Pen to Pen Alignment along the scan axis (scan axis encoder strip) (2.5.1 Scan Axis Check)

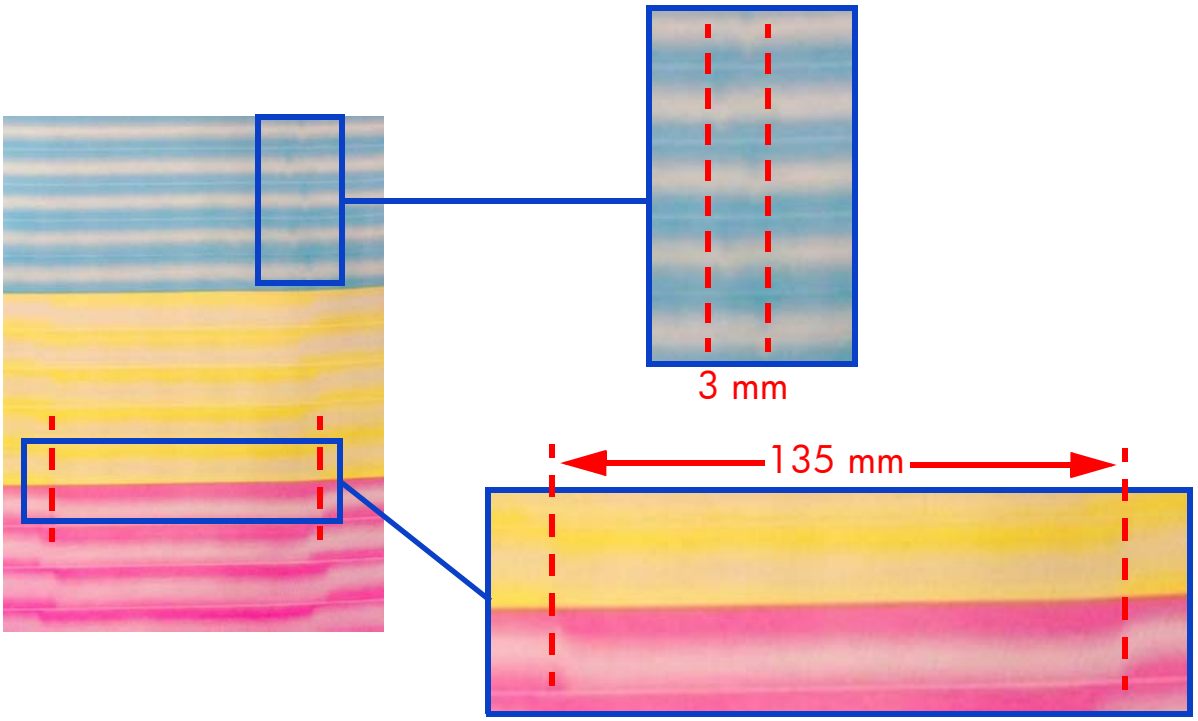
Description

This plot shows the pen-to-pen registration along Scan Axis. This error is revealed by means of an interference or vernier pattern that spans the whole Scan Axis of the printer. In fact, for technical reasons the plot is limited to 70 (or to the media width, whichever is smaller).

Read the plot

In general, the registration between colors should not show abrupt changes. A smooth variation along the scan axis is due to Media Expansion.

Abrupt changes signal serious problems with the scan axis encoder strip.



- In the cyan band, the encoder strip causes, glitches, about 3 mm apart that correspond to the printhead arrays.
- In the yellow and magenta band, the abrupt glitch measures 135 mm apart.

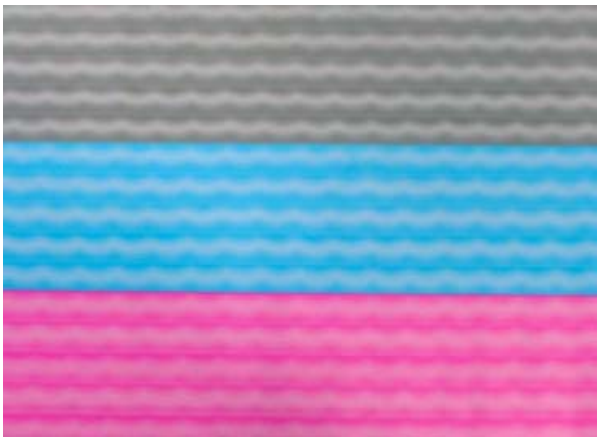
- Generally, you should always find both of these glitches if there is a problem.

NOTE: If you recognize both of these patterns in the same plot, even slightly, replace the encoder strip. There is absolutely no image quality tolerance for this problem ⇒ page 722.

Bidirectional alignment along the scan axis + PRS diagnostics (2.5.2 PPS Check)

Description

The Bidirectional Alignment along Scan Axis plot shows the error committed during bidirectional printing in both directions). This error is revealed by means of an interference or vernier pattern that spans the whole Scan Axis of the printer. In fact, for technical reasons the plot is limited to 70, (or to the media width, whichever is smaller).



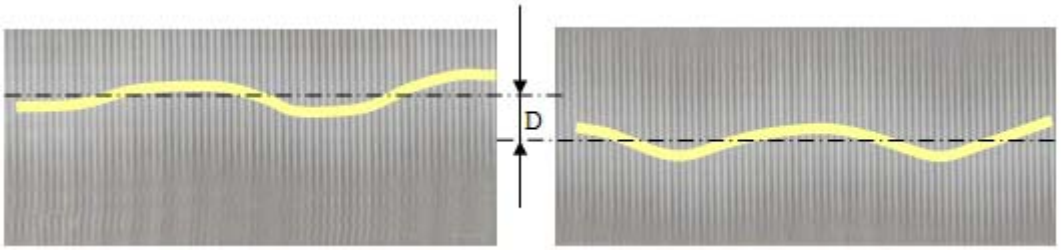
Read the plot

Bidirectional alignment diagnostics

Each thin band corresponds to one Falcon die. That is why there are 5 bands per color. The white wavy strip in the middle of each band indicates the error in the bidirectional alignment. The waves seen correspond to the platen ribs and are normal. If printheads are aligned, the white strip should be vertically centered within its band.

PRS diagnostics (Pen to Ribs Space [platen ribs])

For PRS diagnosis only the black portion of the plot will be used. Choose one of the 5 black bands (the one that has less nozzle outs or that looks better in general). The objective is to see if the white stripe remains centered in the band along the scan axis. Any PRS variation shows up as a deviation of the white strip up or down its band.



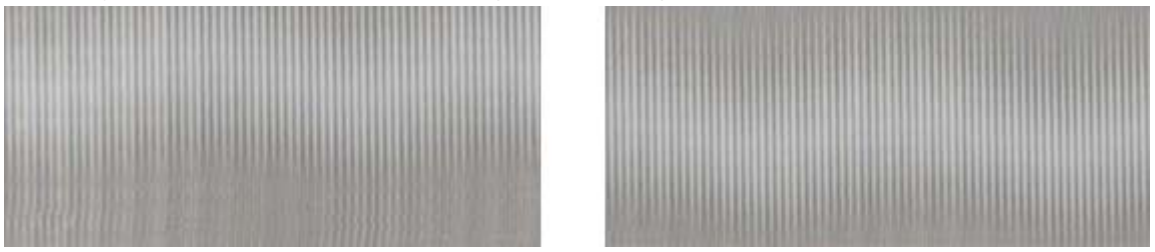
To find the value for **D**, use the following procedure.

1. Choose the band that exhibits the most variation for the black color.

NOTE: The higher the position of the strip on the plot, the higher is the PRS.

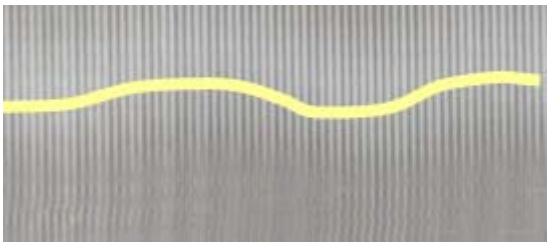
NOTE: In most cases the PRS values at the plot extremes are higher than in the center.

2. Choose two portions of that band to measure. Try to choose two portions of the band that vary the greatest from one another, like the previous example. Label them **A** and **B**.

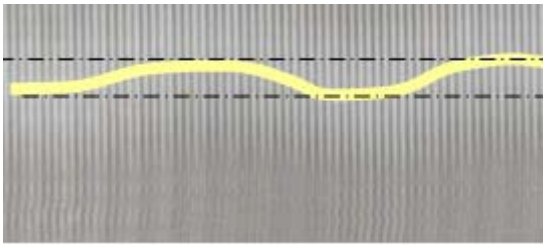


Portion A Portion B

3. Draw a line, like the yellow line in the previous example, that follows along the center of the white band of each portion.

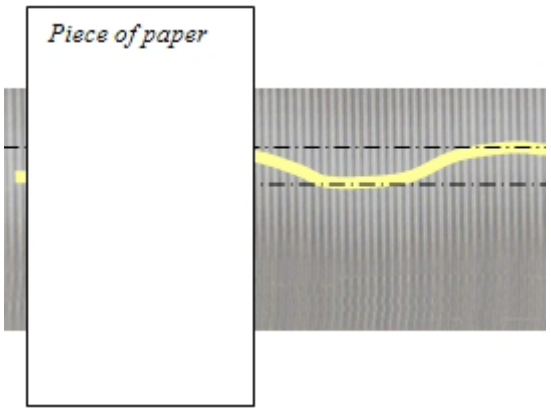


4. Draw a straight line (straight across and parallel to the scan axis) that corresponds to the greatest peak and lowest valley of each portion, according to the line you made in step 3.

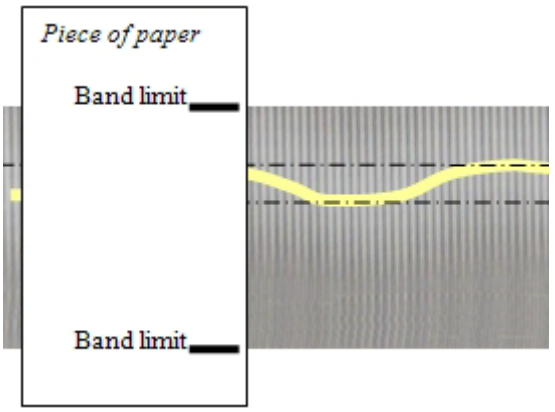


5. Draw two straight lines (band limits), exactly parallel to the scan axis (and the lines you drew in the last step), one over and one under the two portions. The straight lines must connect or be in exactly the same position, because you will use them as a reference for your measurements.

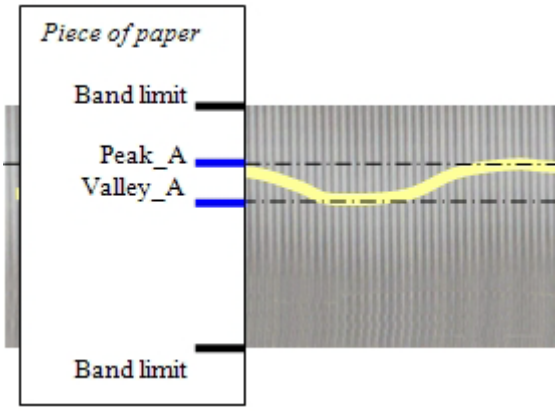
6. Place a separate sheet of paper on the print.



7. On the separate sheet of paper, draw a straight line that corresponds to the outer limits of the wavy band on the top and the bottom.

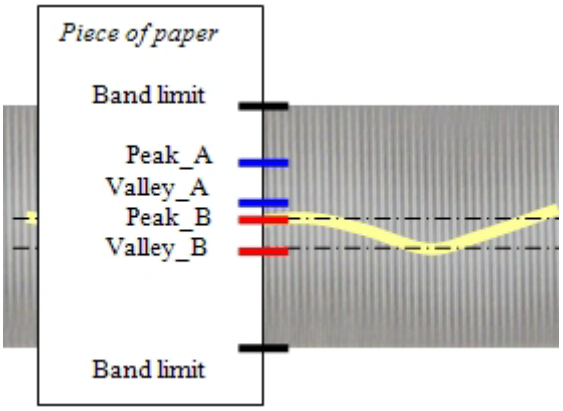


8. On the same sheet of paper, draw two lines that correspond to the peaks and valleys measured on the **Portion A**. Mark these lines **Peak A**, **Valley A**.



9. Move your sheet of paper to **Portion B** of the band.

10. Line up the band limits and draw four lines that correspond to the peaks and valleys measured on the second portion. Mark these lines **Peak B**, **Valley B**.



11. Measure the distance between **Peak A** and **Peak B**.

12. Measure the distance between **Valley A** and **Valley B**.

13. Find the average of these two distances (**peaks** + **valleys** / **2** = **average [d]**).

14. D should never be more than 1 mm.

Printhead nozzle health plot (2.6.1 Nozzle Check)

Description

The Nozzle Check print test is designed to check if the Printhead nozzles print correctly.

The Nozzle Check plot is printed in a special one-pass mode where only few nozzles are used at once with small media advances. Thus, completing the entire plot, can take around 15 minutes. The diagnostics test prints out every single nozzle of each Printhead without applying an error hiding or alignment algorithm.

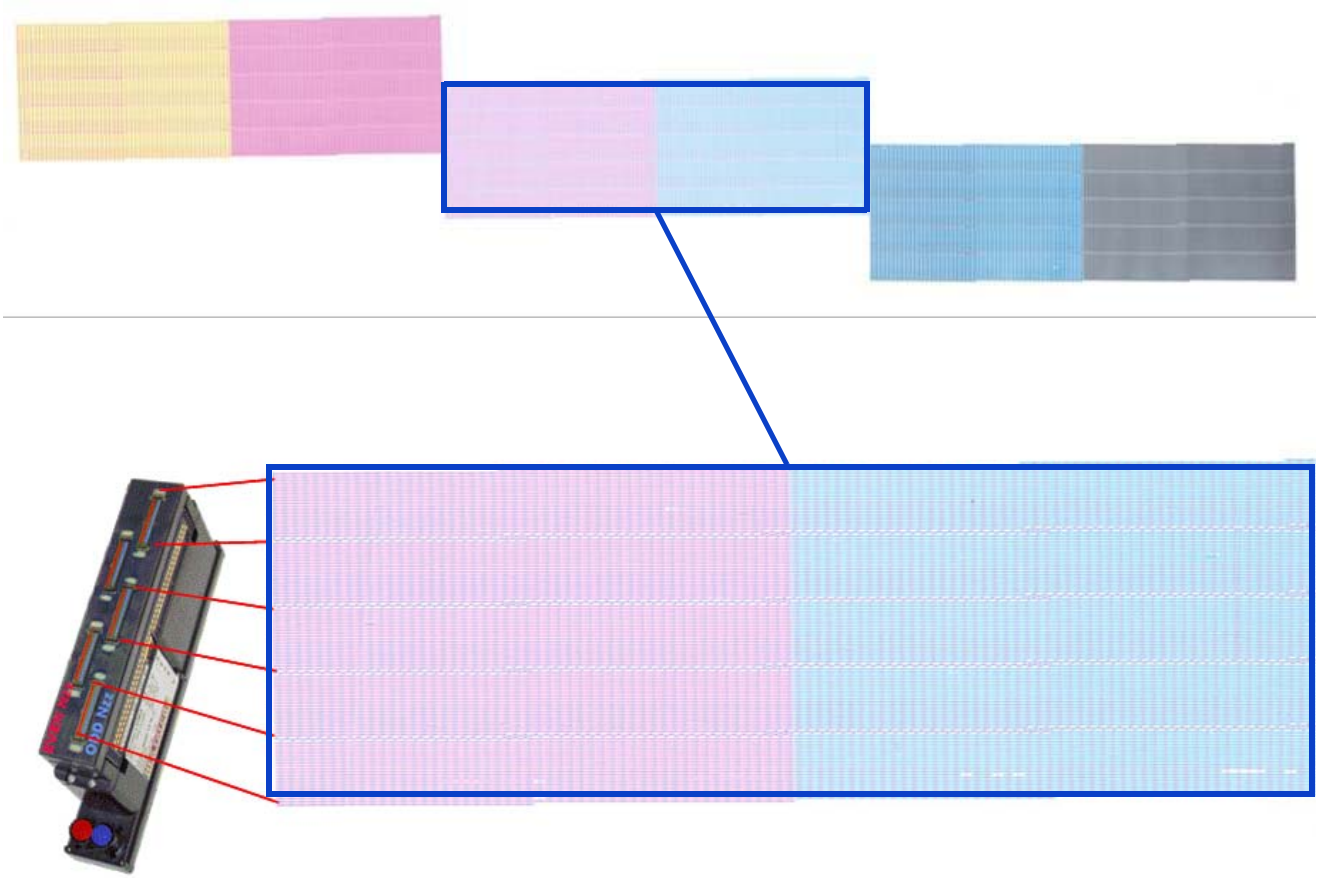
Print access

1. Load a substrate.
2. Open the **Service Menu** ⇒ page 332.
3. Navigate to **Service Prints** > **Subsystem** > **Nozzle Check**.

Read the plot

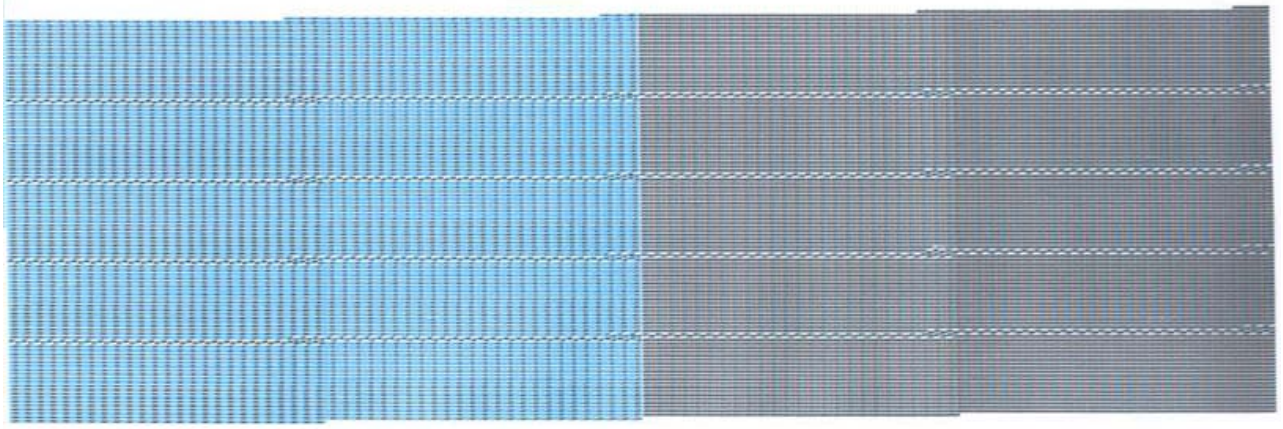
The plot is intended for visual inspection only.

The plot consists of three blocks. For each Printhead, there is a different block that can be identified by the colors of the printhead used inside. Each block is split horizontally into two areas that correspond to the two colors in the printhead. Vertically, the block is split in five sections that correspond to the 5 dies in the nozzle plate of the printhead. The figure below illustrates this idea.

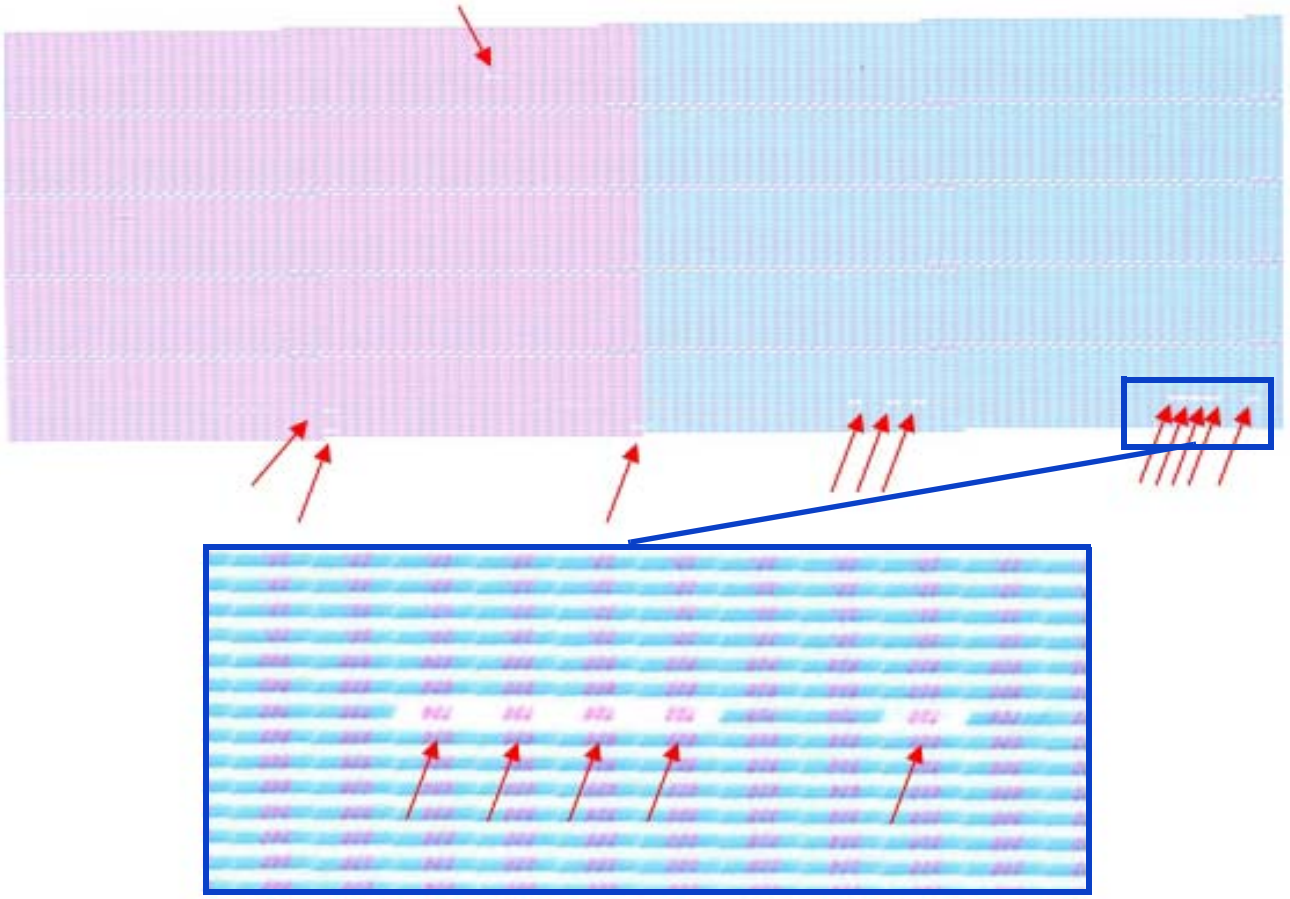


Each single region is composed by a series of numbered rectangles. Each rectangle is related to a single nozzle in the printhead. If one or more of the nozzles are malfunctioning or mis-positioned, you will see that the rectangles are not filled. The corresponding color and the number printed inside can be read.

This is an example of good nozzle health. All rectangles are perfectly filled with the printheads color.



This example has many nozzle outs. The unfilled rectangles (meaning that the nozzle is out) are marked with red arrows to help you to understand the issue. In this example, the zoomed area has 5 failed nozzles. The corresponding nozzle number can be read directly from the print.



Corrective action

If the printer has nozzle defects, it does not mean that you will not get perfect print quality results because the printer can automatically compensate for this so there is no need to replace the Printhead.

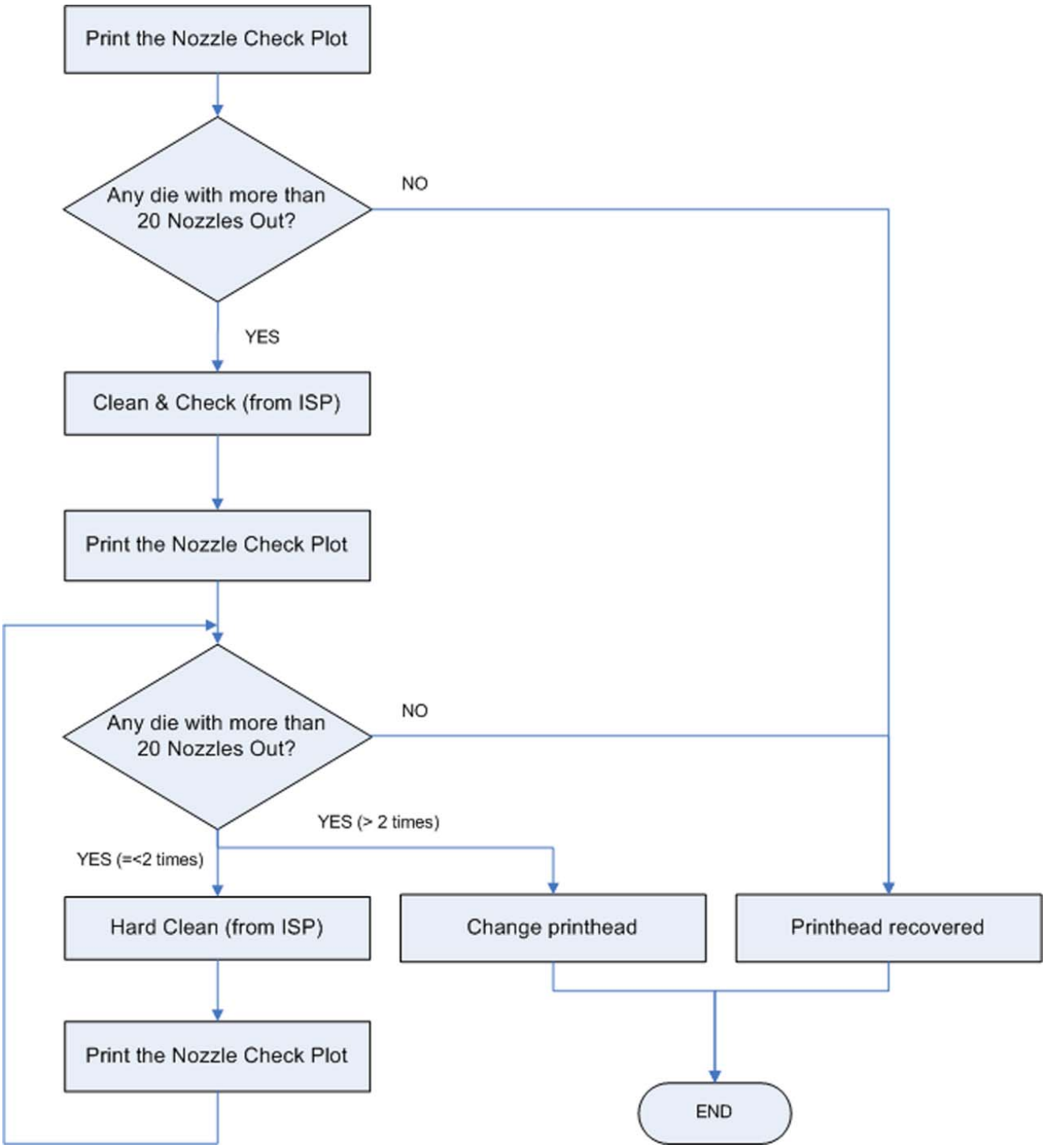
A single die for a single color can contain up to 20 nozzles out and not affect substantially the overall Image Quality.

The method of improving Nozzle defects is to:

1. Perform a Clean & Check process from the ISP.

2. Print a Nozzle Health plot.
3. If the is still any die above the threshold level (20 nozzle out), perform a Hard Clean process from the ISP.
4. Print again a Nozzle check plot. If the last action shows a clear improvement in the nozzles reliability, repeat the hard clean again.
5. Print a nozzle check plot. If all dies have recovered to less than 20 nozzles out per die, the process finishes. If not, proceed to replace the printhead.

The following diagram explains the corrective action flow for nozzle defects.



Resolving Image Quality Problems

Malfunctioning nozzles v.s. malfunctioning drop detector

In order to find if your problem is caused by malfunctioning nozzles or by a malfunctioning drop detector, follow these troubleshooting steps.

1. Check that the service station is well calibrated. Move the carriage by initiating a clean ink deposit, (from the Front Panel, **maintenance menu** > **clean ink deposit**. From the window, look at the drop detectors. If the thin lines are well centered versus each drop detector, the service station is well calibrated. If one line is nearly on the edge of the Drop Detector, perform a 5.3.4 Service Station calibration ⇒ page 421.
2. Check the priming troubleshooting refer to the Maintenance and Troubleshooting Guide.
3. Print the nozzle check from the service menu (**service prints** -> **carriage menu** -> **nozzle check**) in more than 6 pass without error hiding to help see intermittent nozzle outs), or from the IPS, print the 'PH alignment check' (print in 1 pass without error hide) or the 'check PH nozzle' (print in 4 pass, without error hiding enable) ⇒ page 303.
4. Perform the 1.5.4 PH Stability Check Þ page 489 to see the number of nozzle outs. Does the number of nozzle outs match the number o f nozzle outs in the service prints? If these numbers are very different, the drop detector does not work correctly.
5. If the problem is the drop detector, perform the 4.5.1 Drop Detector Calibration ⇒ page 508.
6. Also perform the 5.3.3 Drop Detector diagnostic test ⇒ page 419.
7. If the drop detector continues to fail after the drop detector calibration, replace the Drop Detector ⇒page 726.
8. It is possible to reset the table of the nozzle outs, forcing the printer to consider that all the nozzles are working by performing the service test '1.5.5 Reset Error Hiding '⇒ page 489.

NOTE: For advance troubleshooting: It is possible to view which nozzles the printer has detected are not functioning correctly when printing, by editing the file printer.log, and doing a search on 'dead nozzle': the list of nozzle numbers per color will then be available, number from 0 to > 5000. After having done a reset error hiding, and print a plot, you will see that there are no nozzles out. To view the results from the drop detection, perform two cleanings & check, and check that no system error is displayed in the service plot indicating an error that prevented the drop detection from occurring.

Further information on Image Quality Issues

(The following contains very important troubleshooting for known issues and are documented here as 'wrinkles', 'media edge holder with ink', ' aerosol inlet with dust', 'how to clean the PH connector' etc)

Refer to the Maintenance and Troubleshooting guide:

- Chapter 6 ‘Troubleshoot substrate issues’.
- Chapter 7 ‘Troubleshoot print-quality issues’.

This is guide is available on the www.hp.com -> support & Drivers; L65500, LX600 or LX800, click on Manuals.

From IPS 4.0.1, the documentation of the LX series is available online from the IPS (help -> User’s Guide and Maintenance & Troubleshooting Guide).

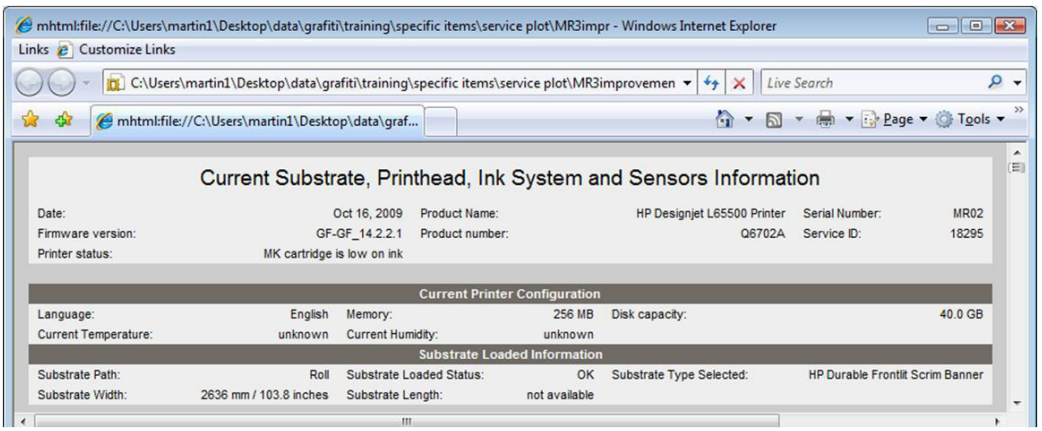
3.5 How to view/extract and interpret the service plot

Viewing the service plot through the IPS

To extract the service plot from the IPS, use the following procedure. The printer must first be in ready mode (for example if it is printing, the current job might be canceled). It is not possible to extract the service plot when the printer is in diagnostic boot mode.

1. From the IPS, select from the tab at the top 'Information>Service Information'.

2. The service plot is opened in an internet browser window.



Extracting the service plot

To extract the service plot use the following procedure.

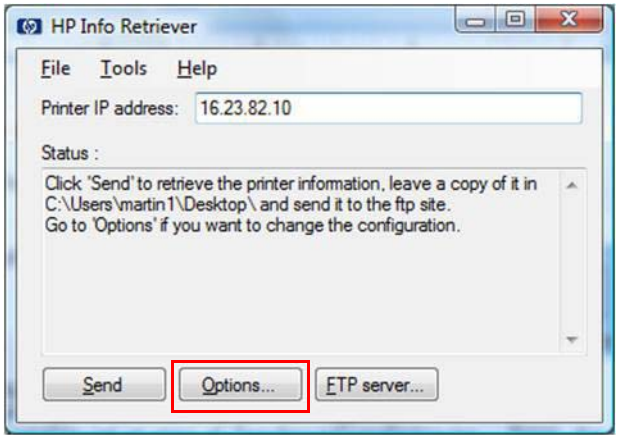
- If using IPS version 4.0.1 or higher, after having displayed the service plot as documented previously, a copy of the service plot is created on the desktop of the IPS PC, under the directory 'Service Information', take the up to date <date>MasterXML.xml file and send it to the requester (this file can be viewed using the HPinforetrievertool).

- If using IPS version lower than 4.x, the HP Info Retriever tool is required (available in the support zone), install it and then follow the procedure below.

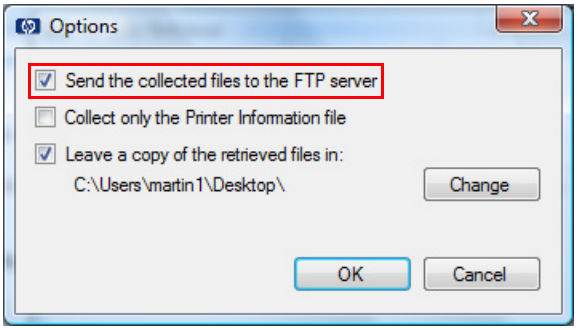
NOTE: The program HPInfoRetriever tool, from the IPS version 4.1.4, is available on the IPS PC and just needs to be installed (available under C:\Users\<windows login>\Documents\HP IPS\HPInfoRetrieverInstaller, to install it, run the program setup.exe

1. Double click on the HP Retriever tool icon, shown here.

2. A menu box will open, displaying the printer's IP address, select 'Options'.

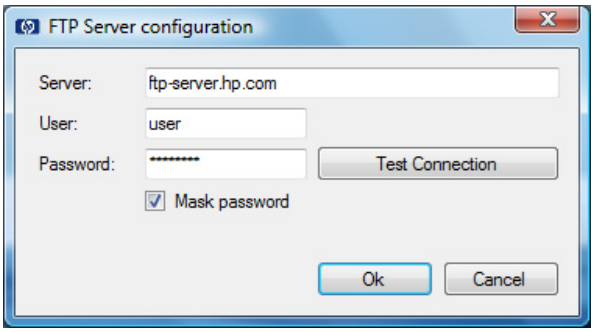


3. The options box is displayed, if you do not want to have the service plot file transferred to an ftp server, uncheck the box 'Send the collected files to a ftp server'. Click on 'ok'.

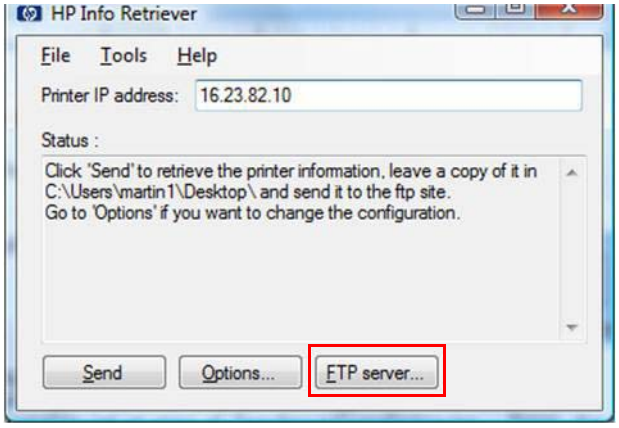


4. If you do want to have the service plot file transferred automatically to an ftp server, leave the option 'Send the collected files to a ftp server' ticked and click on 'ok'.

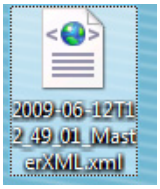
5. The ftp server configuration box opens. Add the server name, login and password into the boxes shown here., click on 'ok'.



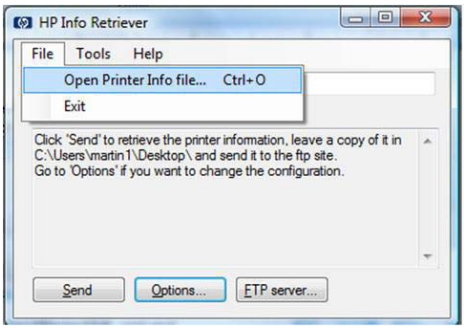
6. Click on ‘FTP server’ and click on send to sent the file.



7. The service plot file is created and placed on the desk top, it is called ‘date&time>MasterXMLxml’



8. This file can be opened using the HPinforetriever tool, by clicking on File>Open Printer info file and browsing to the xml file on the desktop. An browser window will open and all the information from the service page will be displayed.



NOTE: From IPS version 4.2, the HP info retriever tool will be embedded within the IPS application, available under C:/<users>/Documents/HP IPS. It can be installed (running install.exe).

Interpreting the Service plot

Overall printer status

Checking the FW version

The current **date** is the date of the printer, which can be configured through the front panel, through service menu, entry ‘1.2.1 Set date and time’. If this date is not accurate, there is no specific issue, as it is mainly used for the service plot (only the list of system errors might not be available in the correct order).

The **Service ID** represents the date when the first plot was done on the printer. Here is the process to follow get the corresponding date when the first plot was printed: format is YYXXX:

- YY = Year since 1990, Example: 2009 is 19
- DDD = Pseudo Julian date (the number of days since Jan. 1 while assuming each month is 30 days)
- For examples:
  - 63 = 30*2+3 = March 3rd
  - 361 = 12*30 + 1 = Dec. 31

Memory: The size of the memory on the main board, always 256MB on the HP Designjet L65500.

Language: Configuration of the small front panel.

Current temperature: Not available: Will become available from the next firmware and IPS release. It will then display the temperature on the ISM board, which can then be higher compared to the actual ambient temperature when the printer just have been printing.

Printer status: This is also displayed on the first line of the front panel.

Printhead info (current and history)

Here is an extract from the current info

Current Substrate, Printhead, Ink System and Sensors Information

Date:	Oct 21, 2009	Product Name:	HP Designjet L65500 Printer	Serial Number:	SG8B71F004
Firmware version:	GF-GF_14.2.2.1	Product number:	Q6702A	Service ID:	1929
Printer status:	Reseat C-MK printhead				

Current Printer Configuration

Language:	English	Memory:	256 MB	Disk capacity:	40.0 GB
Current Temperature:	unknown	Current Humidity:	unknown		

Substrate Loaded Information

Substrate Path:	Roll	Substrate Loaded Status:	OK	Substrate Type Selected:	10 oz Key Banner
Substrate Width:	1371 mm / 54.0 inches	Substrate Length:	not available		

Current Printhead Info (I)

	Warranty status	Status	Error ID Code	Product Number	Product Name	Serial Number	Warranty Date
1 - Magenta-Yellow	Out of warranty	A OK	B 0	CC582A	HP 786	MY039810500266683	20100401
2 - Light cyan-Light magenta	See warranty note	OK	0	CC584A	HP 786	NT003910500287727	20100723
3 - Cyan-Matte black		missing					

Current Printhead Info (II)

	Used non-HP ink	Used expired ink	Ink Used	% warranty used (ml)	Usage Time	Max. Recovery Level	Scan Axis Shutdown
1 - Magenta-Yellow	false	false	31210 ml	260	182 h	2	0
2 - Light cyan-Light magenta	false	true	3900 ml	32	36 h	2	0
3 - Cyan-Matte black			ml		NaN h		

here is an extract from the history section.

Printheads name	Serial Number	Status	Usage time	% warranty used (ml)	Max Recovery Level	Error Code
1 -	MY039810500266683	0	182 h	260	2	262144
	Unknown	B 1	0 h	0	2	512
2 -	NT003910500287727	0	36 h	32	2	524288
	NT039810500266800	0	147 h	96	2	524288
	Unknown	1	0 h	0	2	512
3 -	KC003910500287924	4	134 h	94	2	532512
	KC035810500250283	0	49 h	49	2	0
	Unknown	1	0 h	0	2	512

Warranty status: it is important to refer to the Legal information guide available on the www.hp.com web site, under documentation of the L65500. Here are 2 copies from this guide:

Warranty of Printhead: "Until the "end of warranty" date printed on the product is reached, or 12000 ml of HP ink have been cycled through the printhead, whichever occurs first". Warranty of the cartridge: "Until the HP ink is depleted, or the "end of warranty" date printed on the cartridge has been reached, whichever occurs first. This warranty does not cover HP ink products that have been refilled, remanufactured, refurbished, misused or tampered with." Usually the end of warranty date is one year after the manufacturing date. The 'warranty date' is the end of warranty, which is normally 18 months form the manufacturing date of the Printhead.

When 'Out of warranty', the printer detects that it is out of the PH warranty following at least one item mentioned under.

When 'See warranty note', it refers to this part of the legal document: "However, if printer failure or damage is attributable to the use of a non-HP or refilled ink cartridge or an expired ink cartridge, HP's authorized representative will charge its standard time and materials charges to service the printer for the particular failure or damage. "This is mainly referring that the Printhead has been used or currently used with expired ink or refilled or non-HP ink. Check within the current cartridge status.

Max Recovery Level: Number form 0 to 2. If set to 0, it means that there has never been any hard cleaning from the IPS done on this Printhead, to be checked before accepting the PH replacement in Warranty. When set to 1 or 2, it means that at least 1 hard cleaning has been done, but unfortunately, we do not have the information of when the last hard cleaning has been done.

In the **history part**, the

- Yellow- Magenta (Serial Number starting by MY): correspond at the 2 previous replaced PH and the current one (upper line).
- Light-Magenta-Light Cyan (Serial Number starting by NT): correspond at the 2 previous replaced PH and the current one (upper line out of the 3).
- Black-Cyan (Serial Number starting by KC: correspond at the 2 previous replaced PH and the current one (upper line out of the 3).

There is less information within the history part, mainly the last status, error code, %age warranty used (100% = 12l, 260% -> 31l), Max Recovery Level and Usage time.

In case if repeated issue, the column status and Error (ID) Code can give information of what is happening:

STATUS: Both columns status are have a similar meaning, just the codification way is different: in the current, it is reported as OK, missing, ….

Described here is the definition of the item 'STATUS' and ERROR ID CODE: in current and history, all 3 items have a similar meaning, the code is different: in the current, it is reported as OK, missing, …. And in the history, it has to be slightly converted:

A	B
0	WORKING (=OK)
1	NO_PEN = Missing
2	REPLACE
3	RESEAT
8	REMOVE
16	REPLACEMENT INCOMPLETE
32	TEST_SEPARATELY (not used)

Error Code, is a decimal number and it has to be converted to a binary number before it can be used. In order to convert the decimal error code to a binary error code, you can use a calculator (you can use the one part of Windows, just need to select View -> Scientific to access the right functions). For example, if you had the error code 4099, you would enter 4099 as a decimal number and then select the binary option which would give you a binary number of 1000000000011.

The following table explains the meaning of the different bits (0 or 1). When the value of the error code is reported as 0, it means that the Printhead is working correctly:

Bit	Meaning	Bit	Meaning
1st	FAILS_LOGICAL_V	11th	BAD_ACUMEN_ACCESS
2nd	FAILS_CONTINUITY	12th	WRONG_MODEL
3rd	SHUTDOWN	13th	MISMATCH
4th	FAILS_VPP	14th	CSDATA_NOT_RESPONDING
5th	TEMP_EXTREMELY_HIGH	15th	CSDATA_TRANSMIT_ERROR
6th	TEMP_EXTREMELY_LOW	16th	FAILS_ENERGY_CALIBRATION
7th	TEMP_TOO_HIGH	17th	EMPTY_DUMMY
8th	TEMP_TOO_LOW	18th	FULL_DUMMY
9th	BAD_ACUMEN_INFO	19th	END_OF_LIFE/Out of Warranty
10th	NO_PEN	20th	EXPIRED

The binary number needs to be read from right to left so that the 1st bit corresponds to the right one of the binary number. For example, the error code 4099 is converted to binary number 10000000000011. So using the table above, the error code means “FAILS_LOGICAL_V”, “FAILS_CONTINUITY” and “MISMATCH”.

Other examples from the previous screen shot:

- K/C PH: 532512 (DECIMAL) -> convert to (in binary) 10000010000000100000 => following error detected: TEMP_EXTREMELY_LOW, CSDATA_NOT_RESPONDING and EXPIRED (used expired ink). The connection between the Printer and the Printhead does not seem to work -> need to check all the different connections, and run the 6.0 from diagnostic menu (trailing cable check). Swapping the PH interconnect board can also check if the failure is following or not this board.
- For the M/Y PH, current value is 262144 -> convert to (in binary) 1000000000000000000 => END_OF_LIFE, which seems to mean that the PH is out of WTY (more than 12 l of ink consumed from the current status, and also available within the history > 100% warranty used).
- for the Lc/Lm, current value is 524288 -> convert to (in binary) 10000000000000000000 => EXPIRED, which is in line within the current status with a 'yes' within the 'used with expired ink' -> at least one time, this Printhead has been used with ‘expired ink’.

Here is a more detailed table:

Status code (dec)	Status code (hex)	Status name	User reported status	Description on printer HW	Test	Comments/tradeoffs
0	0x0	WORKING	OK	The pen is working properly	All	
1	0x1	FAILS_LOGICAL_V	REPLACE	The pen can have a Vcc inshort	Pen Vcc switch on	
2	0x2	FAILS_CONTINUITY	RESEAT		Pen Id programming and Pen continuity	Could be caused by a bad insertion so better to reseat rather than rejecting the pen.
4	0x4	SHUTDOWN	-	Not used	NA	NA
8	0X8	FAILS_VPP	REPLACE	Supected Vpp inskshort	Vpp turn on Vpp Leakage test	
16	0x10	TEMP_EXTREMELY_HIGH	REPLACE	The temperature of the pen is beyond normal margins	Thermal runtime tests	REPLACE as could be caused by an inkshort
32	0x20	TEMP_EXTREMELY_LOW	RESEAT	The temperature of the pen is under normal margins	Thermal runtime tests	Reseat as this could be caused by bad Vpp continuity
64	0x40	TEMP_TOO_HIGH	REPLACE	The temperature of the pen is beyond normal margins	Thermal runtime tests	REPLACE as could be caused by an inkshort
128	0x80	TEMP_TOO_LOW	RESEAT	The temperature of the pen is under normal margins	Thermal runtime tests	Reseat as this could be caused by bad Vpp continuity
256	0x100	BAD_ACUMEN_INFO	REPLACE	Some of the critical information of the acumen is beyond the allowed margins	Acumen info check	Replace. Pen manufacturing has a problem
512	0x200	NO_PEN	MISSING	There is no pen	Pen presence	
1024	0x400	BAD_ACUMEN_ACCESS	RESEAT or TEST SEPARATELY	Acumen can not be accessed	Acumen read	This could be due to bad acumen continuity or a short. In this last case, we don’t know which pen is failing.
2048	0x800	WRONG_MODEL	REPLACE	The model inserted is not the required by the printer	Acumen info check	Mechanical lockouts should prevent this so the error is redundant.
4096	0x1000	MISMATCH	REPLACE	The color is not the required in the slot	Acumen info check	*NOTE: If mechanical lockouts fail we will not be able to notice.*
8192	0x2000	CSDATA_NOT_RESPONDING	RESEAT	The CSDATA communication fails	Pen Id programming	Could be caused by bad insertion
16384	0x4000	CSDATA_TRANSMIT_ERROR	RESEAT	The CSDATA communication is erroneous	Every pen communication	Could be caused by poor contact.
32768 65536	0x8000 0x10000	FAILS_ENERGY_CALIBRATION EMPTY_DUMMY	RESEAT OK in purging, REMOVE otherwise	The energy cal has failed	ECC cal Acumen read, if we have acumen in setup printhead	Can be caused by bad contact *In purge this is requested. Default is not have acumen in dummy so wee will not be able to detect this.*
131072	0x20000	FULL_DUMMY	REMOVE		Acumen read, if we have acumen in setup printhead	*In purge this is requested. Default is not have acumen in dummy so wee will not be able to detect this.*
262144	0x40000	END_OF_LIFE	WARNING	Pen has warranty expired	NA	NA
524288	0x80000	EXPIRED	WARNING	Pen has used expired or non-hp ink	NA	NA

Cartridge information (only current)

Current Ink Cartridge Info (I)						
	Status	Product Name	Product Number	Serial Number	Install Date	Warranty Status
Matte black	OK	HP 786	CC585A	2303772-27-13	20090924	
Yellow	OK	HP 786	CC588A	1794328-32-13	20090924	
Cyan	OK	HP 786	CC586A	2279428-25-13	20090910	
Magenta	OK	HP 786	CC587A	2255984-1-13	20090917	
Light magenta	OK	HP 786	CC590A	2824508-25-13	20090910	
Light cyan	OK	HP 786	CC589A	2228572-12-13	20090910	

Current Ink Cartridge Info (II)					
	Expiration Date	Manufacturer	Capacity	Level	Used non-HP Ink
Matte black	20100713	HP	3000 ml	55 %	false
Yellow	20100816	HP	3000 ml	30 %	false
Cyan	20100629	HP	3000 ml	50 %	false
Magenta	20100112	HP	3000 ml	40 %	false
Light magenta	20100630	HP	3000 ml	50 %	false
Light cyan	20100330	HP	3000 ml	45 %	false

In the Current Ink Cartridge Info, there is a new column 'Error ID Code', this column contains a number which corresponds to a status of the Ink Cartridge. Here is the list of Error IDs and a brief description of each one (=x, x in HEX):

- OK = 0
- RESEAT = 16
- WRONG_INSERTION_MODEL = 512
- NOT_PRESENT = 1
- UNKNOWN = 32
- WRONG_INSERTION_MISMATCH = 1024
- EMPTY = 2
- VERY_LOW_LEVEL = 64
- ERROR = 4
- EXPIRED = 128
- NOT_TOTALLY_TESTED = 4096
- LOW_LEVEL = 8
- WRONG_INSERTION_SIZE = 2048
- WRONG_INSERTION_FAMILY = 256
- PREPARING_SYSTEM = 8192

The **install date** is the printer's date when the cartridge is installed for the first time in the printer.

The **Expiration date** is usually one year more versus the manufacturing date of the cartridge.

And the Warranty status is not filled in, but the verification of in/out Warranty is pretty easy to check (current date < expiration date and cartridge not empty and issue with the cartridge).

Note that Matte black is marked, while there is no other black. Do not take into account the 'Matte', this is mainly coming from other Designjet printers, where we have to distinguish 2 or even 3 different blacks.

Specific printer settings

- More information from the ISM (ink pressure sensor current values & calibration values, status of each cartridge, status of the ink electro valve, intermediate tank current level and counter (number of cycles), air pressure values and status of air relieve valve).

Supply Status			
	Connected?	Main valve	Presure sensor level
BLACK	YES	CLOSED	2117 mpsi
YELLOW	YES	CLOSED	2127 mpsi
CYAN	YES	CLOSED	1915 mpsi
MAGENTA	YES	CLOSED	2160 mpsi
LIGHT_MAGENTA	YES	CLOSED	2072 mpsi
LIGHT_CYAN	YES	CLOSED	2178 mpsi

Pressure sensor calibration values		
	Gain	Offset
BLACK	678	508
YELLOW	675	491
CYAN	676	484
MAGENTA	682	511
LIGHT_MAGENTA	691	502
LIGHT_CYAN	686	503

Intermediate tank side in use: 1

Intermediate tanks values		
	Ink level (%)	Life cycles
BLACK	100	6
BLACK	67	6
YELLOW	82	6
YELLOW	72	6
CYAN	100	6
CYAN	78	6
MAGENTA	82	6
MAGENTA	75	6
LIGHT_MAGENTA	100	6
LIGHT_MAGENTA	71	6
LIGHT_CYAN	100	6
LIGHT_CYAN	86	6

Air pressure system		
	Pressure sensor value	Releave valve
Air pressure sensor 0	-3 mpsi	CLOSED
Air pressure sensor 1	-1 mpsi	CLOSED

Which values we should expect if the printer is working well:

- Pressure sensor level: should be at least 1000 - 1500 mpsi unless there is no cartridge or one empty cartridge.
- Pressure sensor calibration values: should match versus what is marked on the ink pressure board.
- Intermediate tanks ink level: when weighing the intermediate tank, should be similar when weighing by hand the intermediate tank.
- Air pressure sensor: in case the printer pressurizes the ink system (for example, after a job is just done), the value should be around 5000-5500mpsi (on one side only, not on both).
- Information about the PPS/Scan beam: The current status can have the following values: HOMING, LOW, HIGH, HIGH_PRINT, MEDIA_LOAD, UNKNOWN, HALT.

  In case of high or high_print: the printer can print with the scan bean at a high position, increasing the level of spray…There is now an easy way to check remotely the scan beam position!!!

  In case of 'unknown', the scan beam has to be recovered (will try to move to the homing position). More information available in the training.

The following information is mainly just for information: current height position and PPS calibration shim values (represent the shims placed at the manufacturing side, valid when the printer S/N is higher than SG91xxxx).

PPS system			
Current status:	HOMING	Current height position:	4294641186 EU

PPS HOMING switch status							
Front left:	CLOSED	Rear left:	CLOSED	Front right:	CLOSED	Rear right:	CLOSED

PPS Calibration shim values			
	1 mm	0.1 mm	0.2 mm
Front left:	2	0	0
Rear left:	2	0	0
Front right:	2	0	0
Rear right:	2	0	0

Expected value: the most important is the current status, has the printer put the scan beam at the expected position (homing position).

For the height: it is there mainly in case of escalation, this information might help to better understand an issue.

For the PPS homing switch: should correspond with the actual position of the switch.

- Check the 3 phases settings remotely:

Three phase system voltage configuration	
Voltage:	400

Possible values: 200, 208, 220, 380, 400, 415, undefined (if undefined, stopper system error preventing to boot). The values should be the closed lower values versus the real measured voltage values (between phase). Exception: in case 378V is measured, 380V has to be selected.

- Check if the calibration of the drive roller has been done, checking that not all the values are set to 0.

  When a calibration has been performed, the slope=0. There are cases where the Amplitude and Phase = 0, which the calibration of the drive roller has been done.

Substrate advance calibration values							
Slope:	-0.001044	User slope correction:	0.0	Substrate settings slope:	0.0	First swath factor:	0.0
Amplitude 1:	46.0	Phase 1:	0.740682	Frequency 1:	1.0		
Amplitude 2:	0.0	Phase 2:	0.0	Frequency 2:	2.0		
Amplitude 3:	0.0	Phase 3:	0.0	Frequency 3:	0.0		

The following are acceptable values (any other values and the substrate advance could even fail to advance at all):

- Slope should be > -0.0093 and > 0.0047 (else a status should have been reported when doing the drive roller calibration and calibration check).
- Phase should be < 296. No constrain on the phase (else a status should have been reported when doing the drive roller calibration and calibration check).
- Value on Amplitude and Phase can be set to 0 in case a little compensation is required. Seeing values set to 0 does not mean that the calibration has not been correctly done.

Vacuum System

Vacuum system			
Vacuum level:	0.234801	Blower PWM:	

- As the service plot is generated when the printer is in ready mode, the vacuum level should be between -20 to +20. In case value set to -245, there is a high probability that the air pressure sensor is not working, perform the test of the vacuum from diagnostic mode '3.6 Vacuum' ⇒See page 377.

Check Sensor

Sensor system			
Window sensor:	CLOSED	Lid sensor:	CLOSED

- Calibration values of the encoder reader of the drive roller (for escalation only)

Analog encoder calibration			
	Gain	Digital gain	Digital offset
Channel A	3.0	0.0	0.0
Channel B	2.0	4.0	2.0

- More calibration information of the PH cleaning roller (for escalation mainly).
- Media input/output motor type configuration, for FW version GF-BOB-7.1.1.7 or higher.

Printhead cleaner roll			
Status:	OK	Level:	62 %
High calibration:	1714 EU	X Calibration:	-7543 EU

- Total printer usage, with the total consumption of ink per color (unit: litter, for example for Black: 2023liters).

Printer Usage						
Total printed substrate:	15683.15 m² / 168811.9 ft²					
Total number of prints:	2822					
Total ink used:	Matte black = 2023.9681367389999	Yellow = 1476.3539450069998	Cyan = 1823.8888515489998	Magenta = 1059.1969581219998	Light magenta = 1024.816673477	Light cyan = 2495.379933618

- Usage per Printhead slot:

Usage per Printhead Slot				
	Color	Product Number	Printheads Used	Total Insertions
Slot 1	Magenta-Yellow	CC582A	2	27
Slot 2	Light cyan-Light magenta	CC584A	2	5
Slot 3	Matte black-Cyan		1	0

The total Printheads used is the number of total different Printheads used in the printer, while the 'total insertions' is the total number of insertion of the current Printhead. In this example, there is no black/ Cyan Printhead plugged -> the total insertions is set to 0 (and up to now, only one Printhead has been used in this printer).

- Usage per Cartridge slot, notice that there are 2 different product numbers of cartridges, but only one is used (the other one is all the time set to 0). Note that the HP Ink usage is not accurate here, better to use the upper total ink used, within the total printer usage part.

Usage per Cartridge Slot			
	Product Number	HP Ink Usage	Usage
1 - Matte black	CC585A	0.0 cc	0 Cartridges / 0 cc
1 - Matte black	CC711A	13604.21 cc	5 Cartridges / 6570 cc
2 - Yellow	CC588A	0.0 cc	0 Cartridges / 0 cc
2 - Yellow	CC744A	22387.39 cc	8 Cartridges / 14080 cc
3 - Cyan	CC586A	0.0 cc	0 Cartridges / 0 cc
3 - Cyan	CC722A	10986.58 cc	4 Cartridges / 5110 cc
4 - Magenta	CC587A	0.0 cc	0 Cartridges / 0 cc
4 - Magenta	CC733A	15961.05 cc	6 Cartridges / 10370 cc
5 - Light magenta	CC590A	0.0 cc	0 Cartridges / 0 cc
5 - Light magenta	CC766A	9688.02 cc	5 Cartridges / 4890 cc
6 - Light cyan	CC589A	0.0 cc	0 Cartridges / 0 cc
6 - Light cyan	CC755A	10362.69 cc	4 Cartridges / 5940 cc

- Total usage per substrate type

Substrate per Substrate Type					
PVC Scrim banner frontlit-300%	203.94 m² / 2,195.2 ft²	Perforated vinyl-Punch window-100%	249.32 m² / 2,683.7 ft²	PVC Scrim banner frontlit-100%	2,782.03 m² / 29,945.5 ft²
Polyester fabric-100%	24.14 m² / 259.9 ft²	Green banner-100%	153.82 m² / 1,655.7 ft²	Polyester fabric-200%	19.48 m² / 209.6 ft²

- Usage of some components

Component Usage					
Printing time (h)	313	Power on time (h)	5922	Belt usage (#cycles)	303486
Usage oil reservoir (m)	7432	Usage slider rodes (m)	1024432	Carriage lid usage (millilitres)	71359432
Encoder strip ink (millilitres)	71359432	SAX motor # cycles	303486	SAX motor usage (m)	1024432
Tube ISS # cycles	303486	Carriage # cycles	303486	Line sensor since last clean (millilitres)	69659432
Line sensor since last exchange (millilitres)	71359432	Line sensor working time (h)	1	Spectrophotometer usage (centiliter)	12430941
Spectrophotometer working time (h)	0	# open/close of spectro. door	0	Sensor box usage (hundreds of microlitres)	713594327
Aerosol FAN usage (h)	385	Ink deposit level (cc)	491	Drop detection	1039
CAP station usage (#cycles)	7651	CAP station usage (joules)	-1	PH cleaner roll # engage cycles	125296
PH cleaner roll adv. (m)	1348	# OMAS nav. success	4275	# OMAS nav. fail	653
OMAS usage (m. media length)	4570	Heater resistance usage since last cleaning (cc)	69858	Heater deflector usage since last cleaning (cc)	69858
Usage of heaters temp sensors (millilitres)	73358473	Curing resistance usage since last cleaning (cc)	69858	Curing deflector usage since last cleaning (cc)	69858
Heating resistance usage (h)	497	Curing resistance usage (h)	495	Vacuum FAN usage (h)	2215
MI motor (input) usage (m)	3654	MI motor (output) usage (m)	3660	Media driver usage (m)	4717
PPS # cycles	98	PPS usage (km)	6293	# cartridges insertion 0	11
# cartridges insertion 1	11	# cartridges insertion 2	12	# cartridges insertion 3	20
# cartridges insertion 4	14	# cartridges insertion 5	24	# PH insertion 1	29
# PH insertion 2	14	# PH insertion 3	23		

- Status of the different preventive maintenance (details available within the preventive maintenance chapter)

Preventative maintenance Usage			
Kit Name	Current Usage (%)	Capacity	Unit
|Drop Detector Outside Spittoon Ink Volume|	0	136	l
|Curing Lamps|Heating Lamps|	4	1608	l
|Heating Sensors|	91	80	l
|Total ink consumed since last tetris sensor cleaning|	87	80	l
|Tubes Cycles|	40	28125	m²
|Total ink consumed since last color sensor clean/replace|	1	10000	l
|Chain Cycles|	5	225000	m²
|Sliders rods run distance since last lubing|	1	6250	m²
|Sliders rods run distance since last lubing and cleaning|	34	37501	m²
|Total ink consumed since last carriage lid cleaning|	89	80	l
|Pps Cycles|	4	121045	m²
0	0	0	unknown
0	0	0	unknown
|ds buffer supply number of cycles|	2	1260	l

- Job accounting section, this is the way to know the print mode used by the printer.

  Here is an example:

Job name	Optimized for	Image quality	Max detail	Extra Passes
20080128_15_23_41_GarciaFaria2_1_1_HR_1	Drawings/text	Normal (final)	Off	true

How to know the printmode: unfortunately, it requires some conversations. First, the following columns have to be 'transformed', and then with the 'converted settings', and knowing the media category used, you can know the real printmode used by the printer.

Transformation to be done:

- **Optimized for** -> Resolution enhancement, with
  - if drawings/text -> OFF (=ED)
  - if 'images' -> ON (=GN).

  ED and GN are the available settings selectable from the IPS, within the job properties ("halftoning method").

- **Max details**: if true -> On (=Uni) and if false -> Off (=Bidi)

  Uni and Bidi are the ones for Unidirectional and Bidirectional setting, again available within the job properties. With these transformations done, apply the following table:

Note that this table does not contain the bidirectional printmodes. The bidirectional printmodes are identified when the cell in the column Max-Detail is set to Off.

media category	print mode	Settings (service plot) Quality (number of passes)	XTRA-PASSES	Max-Detail (uni/bidi)	Resolution-enhancement (matrix/error dif)
100% other	1P Uni	fast	off	on	on
	2P Uni	fast	on	on	on
	3P Uni	normal	off	on	on
	4P Uni	normal	on	on	on
	6P Uni	best	off	on	on
	8P Uni	best	on	on	on
100% SAV	2P Uni	fast	off	on	on
	3P Uni	fast	on	on	on
	4P Uni	normal	off	on	on
	5P Uni	normal	on	on	on
	6P Uni	best	off	on	on
	8P Uni	best	on	on	on
150%	6P Uni	fast	off	on	on
	8P Uni	fast	on	on	on
	10P Uni	normal	off	on	on
250%	10P Uni	fast	off	on	on
	14P Uni	fast	on	on	on
	18P Uni	normal	off	on	on

- System errors: the report is grouped into 2 types: severe (stopper, requiring to restart the unit) and warning/silent. All system errors are documented within the chapter 3 of this service manual.

  For each error, the information about the Internal Code and Line is mainly for escalation purpose. But all the other information should be used when troubleshooting an error:

  When looking at the date and substrate usage (date and total quantity of media at the moment of the error), you can know the occurrence of the issue (happening each date? each week? Each x qty of media? …).

System Errors

Event #	Severity	Error Code	Internal Code	F/W Version	Substrate Usage	Line	Date
1	severe	79:04	-1161889074	GF-GF_13.1.1.4	6121.485599	aapmsg.c:167	20091017
2	severe	79:04	-1161889074	GF-GF_13.1.1.4	6121.485599	DigitalSensorElektra.cpp:253	20091017
3	severe	79:04	-1161889074	GF-GF_13.1.1.4	6121.485599	aapmsg.c:167	20091017
4	severe	14.8:10	285278214	GF-GF_13.1.1.4	6121.485599	eCabinetCallbacks.cpp:45	20091017
5	severe	16.8:12	285474824	GF-GF_13.1.1.4	6003.300678	HeaterModuleStateMachine.cpp:2369	20091013

Severe SEs

One important item for the severe system errors: in some cases, just after a specific system errors, when the printer begins to switch off, a second system error is generated one or different 79:04 system errors, and in this case, the customer will call the support saying that the 79:04 is being displayed. In this case, it is important to look at the service plot, and check if there is no previous system errors causing the last 79:04 system error. This can be detected when the date and the Substrate usage have not changed between the specific system error and the 79:04 system error.

In the example above, you can see that the 14.8:10 (system error around curing temperature which can not be maintained) generated 3 different 79:04 system errors (same date, same media usage).

Here is an example of advisory/silent system errors:

System Warnings							
Event #	Severity	Error Code	Internal Code	F/W Version	Substrate Usage	Line	Date
1	silent	52.5:11	369295366	GF-GF_13.1.1.4	6129.682357	DropDetectorLowLevelGraffiti.cpp:433	20091020
2	silent	52.5:11	369295366	GF-GF_13.1.1.4	6129.682357	DropDetectorLowLevelGraffiti.cpp:433	20091020
3	silent	52.5:11	369295366	GF-GF_13.1.1.4	6129.682357	DropDetectorLowLevelGraffiti.cpp:433	20091020
4	silent	52.5:11	369295366	GF-GF_13.1.1.4	6129.126874	DropDetectorLowLevelGraffiti.cpp:433	20091020
5	advisory	78.2:01	436469761	GF-GF_13.1.1.4	6121.485599	MediaPathGoldenGate.cpp:7231	20091016

The silent system errors are not displayed on the front panel, and log for troubleshooting purposes. Example: the 52.5:11 indicates that the drop detection has not worked (reporting a small red cross in the IPS if doing a clean & check or hard cleaning), but does not prevent the printer to print. In order to have it up and running, the complete check of PH and drop detection has to be done. Other example: 78.2:01, mentioning that the printer has detected an 'end of the roll' on the input side, which is a normal behavior if it really reaches the end of the roll, but not normal if there is still media remaining (refer to the specific corresponding troubleshooting of this system error to get more information).

Note: in case the printer clock is reset all the time to 2003, it is possible that the last system errors are not visible. The only way to find the corresponding last system error is to look at the Masterxml.xml file which is collected when using the HP info retriever tool.

The same process must to be followed if you are looking for an older system error than the last 20.

- Diagnostic log

  That is the safest way to fully check which tests or calibrations have been run (by user, or service persons or …). For each test, there are 2 entries:

  - When it starts
  - When it ends (if it has been ended normally, without having to stop the printer through the ACB1 switch or restarting the printer before the end of the test). Except pass, fail or cancelled, there is no more information of the test results, this still has to be reported manually (or using the front panel viewer available from the IPS, start -> all programs -> Hewlett-Packard -> Printer-FPCapture).

Diagnostic Log			
Date	Time	Name	Result
2009-01-29	05:07:24	diagReportTestVersion	STARTED
2009-01-29	05:07:26	diagReportTestVersion	OK
2009-01-30	02:54:02	svcOMASCalibration	STARTED
2009-01-30	03:08:33	svcOMASCalibration	FAIL
2009-01-30	05:02:32	svcForceDiagnosticBoot	STARTED
2009-01-30	05:02:36	svcForceDiagnosticBoot	CANCELLED

- **General calibrations**, this section is not very useful, it shows the calibration status at the moment the printer has been manufactured, but is not updated when a part is replaced (as the calibration information done/not done is not stored within the replaced component).

General Calibrations					
Printhead alignment	done	Drop Detector calibration	done	Line Sensor calibration	done
Correct CLCs	0	Total CLCs	0		

- **Loaded Substrate**, view the configuration of the substrate loaded, within the 'loaded substrate section', through the introduction of the following new information: Status, Ink collector, Media input, Media output, Substrate collector and the current ink restrictions (%). With the following possible settings of the new fields:
  - Status: ["Roll to Roll, "Roll to Free floor""not initialized, "no media", "printing", "ready" ,"initializing", "checking", "not active", "error", "standby", "waiting media type"]
  - LX800 only: Ink Collector: ["enabled" , "disabled"]
  - Media Input: ["inwards", "outwards"]

- Media Output: ["inwards", "outwards"]
- LX800: Substrate Collector: ["enable", "disable"]

Loaded Substrate					
Status:	ready	Ink collector:	no	Media input:	single
Media output:	floor	Substrate collector:	off	Ink limits:	C=89, M=89, Y=89, K=96, lc=89, lm=89
Vacuum Applied	150	MI_Tension_Applied	800	MO_Tension_Applied	650
Heating_Temp	550	Curing_Temp	950	Adv_Factor_Applied	0

- **List of preset substrate** settings with the corresponding Substrate ID (the one appearing within the XML of the job sent from the RIP to the IPS) and the color calibration information (status (done, default) and the date of the last color calibration done (if set t 1970 -> no color calibration has been done for this substrate.
- From this list, of the customer substrate, it is really easy to know the corresponding 'father/mother' substrate, it is marked in ( ).

Here is an example.

Substrate Name	Substrate ID	Color Status	Color Date
sihl (Blue back-100%)	72D9AD02F7317AE87D4CA3A32F7CD05E	Done	Wed Feb 11 06:34:50 GMT+00:00 2009
Removeable (Polyester Film-100%)	7D1791D8D98BE6E068AC9B9F04936D94	Done	Sun Jun 14 06:34:54 GMT+00:00 2009
cgfh (Vinyl-Calendered-150%)	4DE82898D2F76C51B8BBF92FC2487ED0	Default	Thu Jan 01 00:00:00 GMT+00:00 1970
asdf (Vinyl-Calendered-250%)	851542695A9E89B1FDA9824297A48F00	Default	Thu Jan 01 00:00:00 GMT+00:00 1970
Vinyl-Cast-250%	10022	Default	Thu Jan 01 00:00:00 GMT+00:00 1970
HP Mesh Banner with liner	10065	Default	Thu Jan 01 00:00:00 GMT+00:00 1970
Vinyl-Cast-150%	10021	Default	Thu Jan 01 00:00:00 GMT+00:00 1970
Vinyl-Cast-100%	10020	Default	Thu Jan 01 00:00:00 GMT+00:00 1970

- **IO information**, with 2 main sections. Here is an example:

```
==================================  IO DIAGNOSTIC PAGE  ==================================
----------- Gigabit Ethernet -----------            ----------------- USB ------------------
Installed:                          yes             Installed:                          no
IP enabled:                         yes             Printing enabled:                   no
Printing enabled:                   yes
Firewall enabled:                    no

------------ JetDirect EIO -------------
```

Do not take into account the USB part (there is no supported USB connection to IPS PC / RIP.

```
=================================== Gigabit Ethernet ===================================
--------- General Information ----------          ----------------- IPv4 -----------------
Status:                  I/O Card Ready          Status:                           Ready

Model Number:                    Q6702A
Hardware Address:          0040CA9F5930          IP Address:               16.23.82.112
Firmware Version:        GF-GF_3.1.1.2           Subnet Mask:              255.255.248.0
Port Config:               1000TX FULL           Default Gateway:            16.23.80.1
Auto Negotiation:                  On            Config By:                       Manual
                                                 BOOTP/DHCP Server:       Not Specified
---------- Security Settings -----------
                                                 Bonjour Service Name:
                                                 HP Designjet L65500 Printer [9F5930]
SNMP Set Cmty Name:       Not Specified
                                                 ----------------- IPv6 -----------------
                                                 Status:                           Ready


                                                 Link-Local:
                                                 fe80::240:caff:fe9f:5930
---------- Network Statistics ----------          Stateless:
Total Packets Received:          919976          Not Configured
Unicast Packets Received:        900861
Bad Packets Received:                 0
Framing Errors Received:              0
Total Packets Transmitted:       114139          DHCPv6:
Unsendable Packets:                   0          Not Configured
Transmit Collisions:                  0          Manual:
Transmit Late Collisions:             0          Not Configured

---------------- TCP/IP ----------------
IPv4:                            Enabled
IPv6:                            Enabled
Host Name:                NPI0040CA9F5930
IPv4 Domain Name:        emea.hpqcorp.net
IPv6 Domain Name:           Not Specified
Primary DNS Server:         16.110.135.51
Secondary DNS Server:       16.110.135.52
DNS(IPv6):
Not Specified

WINS Server:                Not Specified
Idle Timeout:                     270 sec
```

The Network statistic can show intermittent LAN connection issues, in case of high number of errors for example.

How to extract key files to be used in case you require support from HP

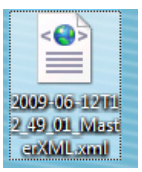
From the Printer

If there is a need of the service plot only: from IPS 4.0.1 or higher, when displaying the service plot from the IPS (printer -> service information), a copy of the service plot is also placed on the desktop, under service information directory. Send the up to date file to HP.

Use the program HPInfoRetriever tool to collect the service plot and the main internal files from the printer (refer to chapter 3.4.2, in this case, within option, the item 'Collect only the Printer information file' has to be unchecked. => 2 files are transferred:

NOTE: The program HP InfoRetriever tool, from the IPS version 4.1.4, is available in the IPS PC and just needs to be installed (available under C:\Users\<windows login>\Documents\HP IPS\HPInfoRetrieverInstaller, to install it, run the program setup.exe.

and



Both files have to be transferred to HP.

- In some cases, HP might ask to collect a specific file, under the 'tmp' directory. This is how:
  - Open an Internet Explorer window, and enter the following URL http://<IP>/hp/device/3432/8828/tmp/ , (<IP> being the printer's IP address, as shown on the printer's front panel),
  - Select the requested file (example: printer.log, or previous log files (eg.: log.gz.137, 137: highest number)), select it with a right click and do a file save as. Once the file has transferred to the PC, please zip and send it through e-mail to the requestor.

  Warning: through this process, the file MasterXML.xml and the file printer_previous.log are NOT generated. The resulting file can be opened using Internet Explorer.

- In case the printer is generating a system error while starting the printer -> the previous process are not working, no communication to the printer. So here is the process to follow:
  - Restart the printer in diagnostic boot mode.
  - Open an Internet Explorer window, and enter the following URL http://<IP>/hp/device/3432/8828/tmp/ , (<IP> being the printer's IP address, as shown on the printer's front panel),
  - Situate the last 5 files which have the following format: log.gz.<the 5 highest number available>
  - For each file, select it with a right click and do a file save as.
  - Once the 5 files are transferred to the PC, please zip them together and send it through e-mail to the requestor.

From the IPS

The traces utility is turned on by default, with a maximum file size of 200k. The location of the file is C:\Users\<login>\AppData\Roaming\HP\IPS, file: ips_<date_time>.log. This is to be provided for escalation in case of intermittant issues with the IPS.

4 Service Tests, Utilities & Calibrations

Introduction

The objective of this chapter is to guide you through the procedures for diagnostic tests, service utilities, and service calibrations. If you need to troubleshoot a problem with the printer, see ⇒ page 99.

Phone Support

The customer can be guided to perform nearly all diagnostic tests, utilities, and calibrations. However, there are some procedures that the customer should not do. The customer cannot perform the following:

- Save Factory Defaults
- Restore Factory Defaults
- Reset Maintenance Kit Usage
- Reset Life Counters

Overview of Diagnostic Tests, Service Utilities & Service Calibrations

Diagnostic Tests

Diagnostic tests are used to identify the root cause of a problem, and can be performed in response to printer problems or a system error code being displayed. When performing a diagnostic test, the objective is to find the failure and get a system error code or message that will help you with troubleshooting.

Whenever you get a system error code, check it up in the System Error Codes section of Troubleshooting. Most system error codes correspond to a specific fault in the printer, and in this section you will find the actions you need to perform to fix the problem, it may be a calibration to perform or you may need to replace a part, see ⇒page 102.

For specific information and procedures regarding diagnostic tests, see ⇒ page 335. Shown below is an overview of the Diagnostic tests available, print this out and use it as a quick reference to the tests available.

Diagnostics		
0. Purge & Setup Menu	**4. Ink System Menu**	**6. Carriage Menu**
0.1 Purge ISM	4.1 ISS Electronics	6.0 Trailing Cable Test
0.2 Fill Intermediate Tanks	4.2 Air Pressure System	6.1 Carriage System Test
0.3 Purge Printer Tubes	4.3 Ink Supply Connector	6.2 Move to Repair Position
0.4 Purge Ink Used Menu	4.4 IT Broken Bag Recovery	6.4 Line Sensor Check
0.5 3ph AC Volt Setup Menu	4.5 Ink System Leakage	6.5 Aerosol Fans
0.5.0 3ph AC Voltage 200V	4.6 ISS Electrovalves	6.6 Force Priming Menu
0.5.1 3ph AC Voltage 208V	4.7 Recovery Ink Leakage	6.6.1 Force Priming Left
0.5.2 3ph AC Voltage 220V	4.9 Inter Tank Change Process	6.6.2 Force Priming Centre
0.5.3 3ph AC Voltage 380V	4.10 Ink Cartridge LEDs	6.6.3 Force Priming Right
0.5.4 3ph AC Voltage 400V	4.11 Ink Pres. Sen. Calib.	6.6.4 Force Priming All
0.5.5 3ph AC Voltage 415V	4.12 Ink Pressure At Pen	**7.Print Head Cleaning Menu**
0.5.6 Voltage Configuration	4.13 Force Filling Tanks	7.1 PH Roll Adv Open Loop
0.6 Force Normal Boot	4.14 No Flow Error Recovery	7.2 PH Roll Adv Close Loop
0.7 Prepare for transport	4.15 ISS Components Test Menu	7.3 PH Roll Eng Open Loop
0.8 Set ISM as Purged	4.15.1 Entry Front Valves	7.4 PH Roll Eng Close Loop
0.9 Set TRS as Purged	4.15.2 Entry Rear Valves	7.5 PH High Calib Default

0.10 Set Ink as LX610	4.15.3 Inter Front Valves	7.6 Up/Down Loop Test
0.11 Set Ink as LX600	4.15.4 Inter Rear Valves	**8. Heating and Curing Menu**
1. User Interface Menu	4.15.5 Front (1) Air Pumps	8.1 Heating
1.1 Front Panel	4.15.6 Rear (2) Air Pumps	8.2 Curing
2. Electrical Systems Menu	4.15.7 Relief Valves	8.3 Heating Temp profile
2.1 ECabinet	4.15.8 Air Pressure Sens	8.4 Curing Temp profile
2.2 Main Electronics Menu	4.15.9 Ink Pressure Sens	8.5 Temp Controllers Calib Menu
2.2.1 Electronics Control	4.15.10 Int T Front Brk Bag	8.5.1 Heating Current Cali
2.2.2 Hard Disk Drive	4.15.11 Int T Rear Brk Bag	8.5.2 Curing Current Calib
2.2.3 Connectivity Check	4.16 ISS Flushing Menu	8.5.3 Reset Heating Calib
2.2.4 Unit Information	4.16.1 Auxiliary Tool Pump	8.5.4 Reset Curing Calib
2.2.5 SE 71.X:19 Recovery	4.16.2 Operate Front valves	**9. Covers Menu**
2.2.6 Set SN and PN	4.16.3 Operate Rear valves	9.1 Cover & Switch Sensor
2.2.7 Set ISM SN	4.16.4 Reset Ink Tanks	**10.Diagn. utilities menu**
2.2.8 Set IO Configuration	4.16.5 Set ISM as not purged	10.0 Enable/Disable Logs
2.3 Main PSU ON/OFF	4.16.6 Set TRS as not purged	10.1 Force Normal Boot
2.4 e-Cabinet Fault signals	4.17 Int Tanks Ink Life Cycles	10.2 Report Tests Version
3.Substrate Path Menu	4.18 Int Tanks Ink amount	10.3 Save NVM To File
3.1 Spindle Motors Burning	4.19 Int Tanks time refill	10.4 Restore NVM From File
3.2 Front Spindle System	4.20 Check Ink Supplies	10.5 Set all Settings to default
3.3 Rear Spindle System	**5. Scan Axis Menu**	
3.4 Drive Roller	5.1 Impelling System	
3.5 Pinch Switches	5.2 PPS Menu	
3.6 Vacuum	5.2.1 Move To Home Position	
3.7 OMAS	5.2.2 Move To Load Position	
3.8 Free Fall Pinch Switch Test	5.2.3 Move To Printing Position	
3.9 Free Fall system	5.2.4 PPS Motor Check	
3.10 Free Fall Relays	5.2.6 PPS Shims Values	
3.11 Take Up Reel System	5.2.7 PPS Switch Status	
3.12 Take Up Reel Sensors	5.3 Service Station	
3.13 L65500 Set Red Brushes	5.3.1 Shuttle Open Loop	
3.14 L65500 Set Black Brushes	5.3.2 Shuttle Close Loop	
	5.3.3 Drop Detector Test	
	5.3.4 Service Station Cal	
	5.3.5 Drop Detector 12V On/Off	
	5.3.6 Drop Detector Signals	
	5.3.7 Back and Elast	
	5.3.8 Ser. Sta. Reset zero	

NOTE: Most diagnostic tests are only available in diagnostic mode. This special mode does not require full initialization of the printer, and its only function is to perform tests.

NOTE: Except for internal service prints, the printer cannot start in the normal way when the printer is in diagnostic mode.

Service Utilities and Calibrations

Service utilities are a set of operations that help you service, clean, and maintain the printer, and can occasionally assist you with troubleshooting.

For specific information and procedures regarding service utilities, see ⇒ page 473.

Service calibrations allow you to calibrate printer components and settings to ensure optimal performance, and are performed after removing or replacing components or in response to system error codes or image quality problems. For specific information and procedures regarding service utilities, see ⇒ page 501.

Shown below is an overview of the Service Utilities and Calibrations available, print this out and use it as a quick reference to the features available to you.

Service		
1. Service Utilities Menu	**2. Service Prints Menu**	3.4.18 Cartridge connector2 (y)
1.0 Force Diagnostics Mode	2.1 Printhead Alignment	3.4.19 Cartridge connector3 (c)
1.1 Report Test Version	2.0.1 40 ips 600x1200	3.4.20 Cartridge connector4 (m)
1.2 Electrical Systems Menu	2.3 Substrate Path Menu	3.4.21 Cartridge connector5 (lm)
1.2.1 Set Date and Time	2.3.4 Substrate Expansion Check	3.4.20 Cartridge connector6 (lc)
1.2.2 Enable/Disable Firewall	2.5 Scan Axis Menu	3.4.23 Reset Ink Tray
1.2.3 Enable/Disable Logs	2.5.1 Scan Axis Check	3.5 Reset Scan Axis Menu
1.2.4 Input/Output	2.5.2 PPS Check	3.5.1 Reset Belt
1.3 Substrate Path Menu	2.6 Carriage Menu	3.5.2 Reset Carriage Chain
1.3.1 Turn Drive Roller	2.6.1 Nozzle Check	3.5.3 Reset Encoder Strip
1.3.2 Enable/Disable SCAPA	2.10 For Escalation Menu	3.5.4 Reset Scan Axis Motor
1.3.3 Enable/Disable OMAS	2.10.1 Odd 2 Even Sad	3.5.5 Reset SS screw Assy
1.3.4 OMAS Sensor Check	2.10.2 Pen2PenSad No Adv	3.5.6 Reset Drop Detectors
1.3.6 OMAS LED Check	2.10.3 Pen2PenPad No Adv	3.5.7 Reset SS All
1.4 Ink System Menu	**3. Reset Life Counters Menu**	3.6 Reset Carriage Menu
1.4.1. Ink Pressure values	3.0 Reset Maintenance Kit Usage	3.6.1 Reset Aerosol Box
1.4.2 Air Pressure sensors	3.0.1 Reset PMK1	3.6.2 Reset Lid
1.5 Scan Axis Menu	3.0.2 Reset PMK2	3.6.3 Reset Line Sensor
1.5.1 SAX Friction Test	3.0.3 Reset PMK3	3.6.4 Reset Sensor Box
1.5.3 Ghost Drop Detection	3.0.4 Reset PMK4	3.6.5 Reset Connection Tubes
1.5.4 PH Stability Check	3.0.5 Reset PMK5	3.6.6 Reset Carriage All
1.5.5 Reset Error Hiding	3.3 Reset Substrate Path Menu	3.7 Reset PH Cleaning
1.6 Carriage Menu	3.3.1 Back Spindle Motor	3.7.1 Reset UP/DOWN Assy
1.6.1 Open/Close Color sensor	3.3.2 Drive Roller Motor	3.7.2 Reset PH Cleaner Roll All
1.6.2 Color Sensor Check	3.3.3 OMAS Sensor	3.8 Reset Heating & Curing Menu
1.6.3 Aerosol Fans	3.3.4 Vacuum Pump	3.8.1 Curing Reflectors
1.8 Heating & Curing Menu	3.4 Reset ISS Menu	3.8.2 Curing Resistors
1.8.1 Heating Curing Temp	3.4.1 -> 3.4.12 Inter Tanks 11 to 62	3.8.3 Reset Curing Sensor
	3.4.14 Air Pumps set 0	3.8.4 Heating Reflectors
	3.4.15 Air Pumps set 1	3.8.5 Heating Resistors
	3.4.16 Reset Air Tray	3.8.6 Reset Heating Sensor
	3.4.17 Cartridge connector1 (k)	

4. Service Calibrations		5. Service Tests Menu
4.3 Substrate Path Menu	4.5 Scan Axis Menu	5.0 Show Test Messages
4.3.1 Drive Roller Encoder Calib	4.5.1 Drop Detector Cal	
4.3.3 OMAS temp Calibration	4.5.2 Ser. Sta Compensation	
4.3.4 Roller Calibration	4.6 Carriage Menu	
4.3.5 Check Roller Calibration	4.6.1 Line Sensor Cal	
4.3.6. Reset Roller Calibration	4.7 Printhead Cleaning	
4.3.7 View Roller Calibration	4.7.1 PH Cleaner Height Calib	
4.3.8 Reset Vacuum Aircal	4.7.2 PH Cleaner Horizontal Calib	
4.3.9 Advance Visual Check	4.7.3 PH Cleaner Measurement Tool	
	4.7.4 Check Height & Tilt	
	4.7.5 Reset PH Roll Adv	

About the Service Menu

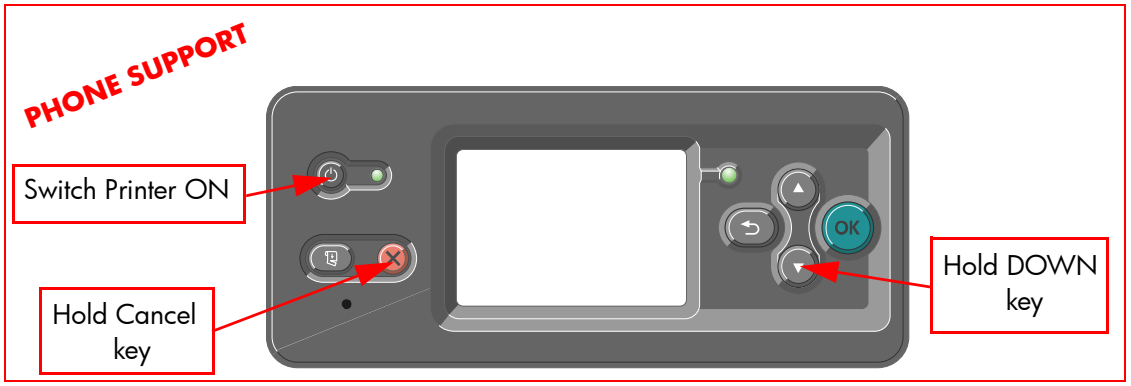
The Service Utilities, Reset Life Counters, and Service Calibration menus are only available from the service menu.

This special menu is hidden and requires a special access key combination to access it. Two menus exist, one for the user and one for the service engineer, in order to prevent the user from changing important settings like life counters or factory defaults.

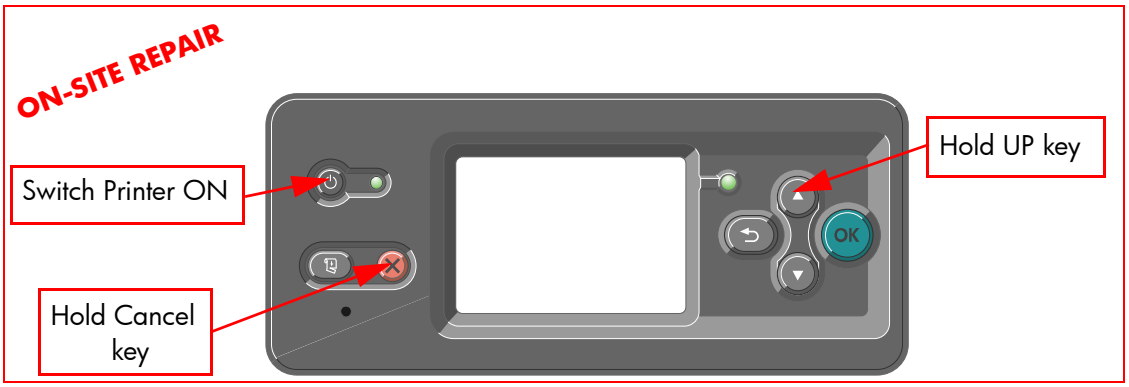
Service Menu Key Combinations

Diagnostic mode

1. For Call Agents who will request the User to Perform certain troubleshooting action, hold the **Down** arrow key and the **Cancel** key down and switch the printer **ON** using the front power switch. Watch the LED light on the Front Panel.



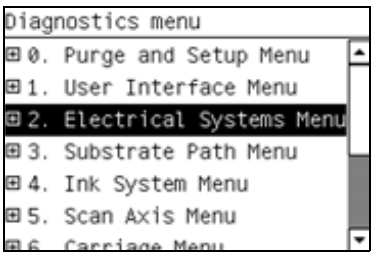
2. For On-Site Engineers, hold the **Up** arrow key and the **Cancel** key down and switch the printer **ON** using the front power switch.



3. First it will be **red** for short time, then **green** for a longer time, then it will be **off**, and finally it will start **flashing green**. As soon as it lights up green after being off, quickly release all three keys.

NOTE: If you restart the printer from the ACB-1 breaker switch or you do not press the service key combination in time, press and hold the ON key for 1 second and release the key, the printer will switch off within the coming 3-5 seconds. Do NOT leave the ON key pressed too long, or the printer will restart again immediately. If this occurs, just press again the ON key for 1 second and release it => the printer will switch off within the coming 3-5 seconds.

4. Once inside the Service Tests Menu use the **Arrow** keys to scroll through the Diagnostics menu. Press the **Enter** key to begin a specific test when the required Service Test is highlighted.



Common reasons for failing to boot in diagnostic mode

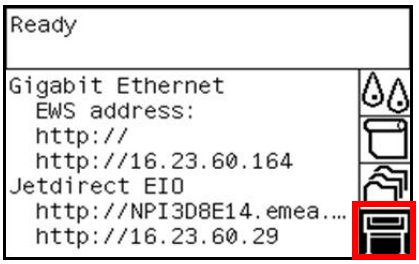
It is important to press and hold the buttons exactly as described here.

1. With the Down (customer) or UP (CE) and Cancel keys already pressed and kept down, press the On/Off button and keep it pressed until you see the green light switching on for the 2nd time..
2. A moment after pressing the On/Off button the green light comes on. Do not release the On/Off button at this time. If you do then the diagnostic menu does not open and the printer starts normally.

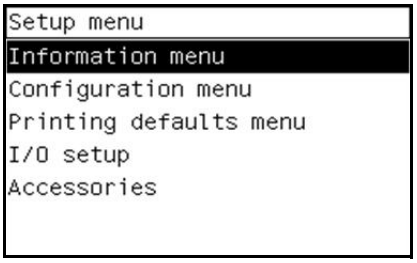
- Keep all three buttons pressed down until you hear the beep sound.
- Only at the end of the boot process do you know if the printer has booted in diagnostic mode or in normal mode.
- In case you do not have enough time, after having turned ON the big ON/OFF switch, to press the 3 keys -> hold down on the ON/OFF button (#3) for 1 second and release it; the printer will switch off within the coming 3-5 seconds, and then you can start again the sequences (by pressing on 3 buttons).

Service Menu

1. Select the setup icon from the Front Panel and press Enter.



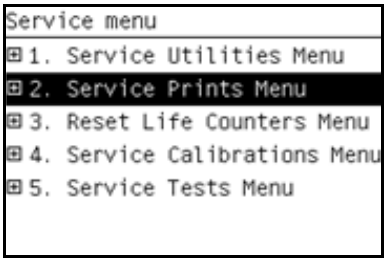
The Printer displays the following menu:



2. Depending on the situation:

- **Phone Support:** Press and keep it held down the **Down key,** and press the **Cancel** key at the same time.
- **Onsite repair:** Press and keep it held down the **Up key**, and press on the **Cancel** key at the same time.

3. The Service menu is displayed.



NOTE: In case of 'phone support', the 'reset life counters Menu' is not displayed.

Diagnostic Tests

If you need to troubleshoot a problem with the printer, see ⇒page 99.

Diagnostic tests help you determine which component is failing when you have a problem. This section guides you through the diagnostic test procedures and provides information about each test.

0. Purge & Setup Menu

0.1 Purge ISM

Description

This is used to purge the Ink Supply Module. The test guides step by step the user to fill the tubes of the ISM side with ink by one of two ways. This procedure is only performed during the installation process, further details are available in the 'Installation Guide'.

- Follow the user with instructions to fill the column of ink between Ink Cartridge connector and the purge port.
- Opening the entry electrovalves and letting the ink fill the ISM system up to the quick connector.

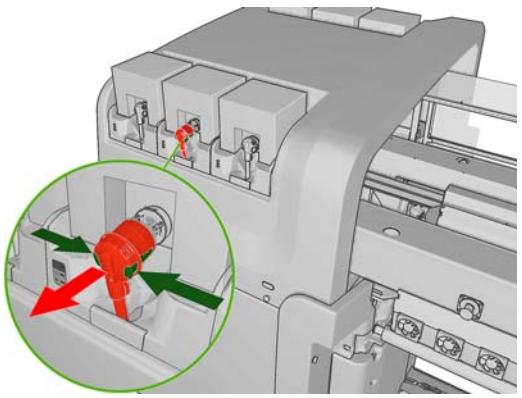
NOTE: The printer can tolerate up to 20cm of air (the length of the bubble) in the tubes per color, from the main ink electrovalve to the printhead, small pockets of bubbles are okay.

CAUTION: From the cartridge connector to the main ink electrovalve: NO bubble is acceptable, or the printer can display an error message 'unexpected empty cartridge' (while there is ink in the cartridge). The tube from the ISM ink tray to the ink cartridges are not transparent. In case of any doubt, do not hesitate to refill the ink within the tubes (only this portion of tube).

CAUTION: Do not apply too much force the syringe or any tube or connection. Gently manipulate the syringe during insertion to ink cartridges, purging ports, or printhead connections.

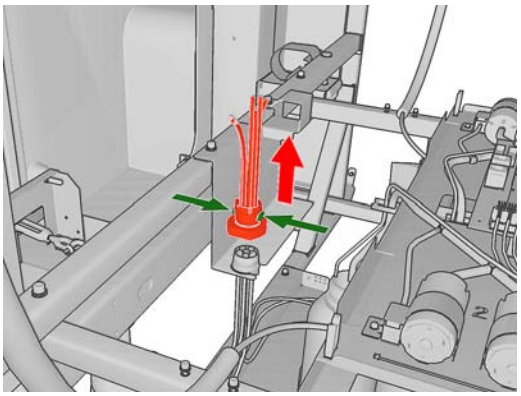
Procedure

1. Disconnect the ink cartridges.



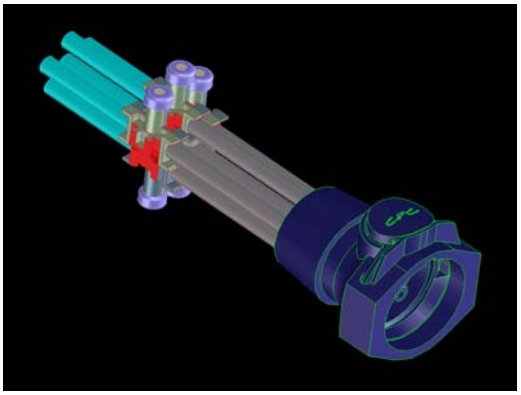
2. Connect the purge bags to the printer.

3. Disconnect the quick connector from the ISM..



CAUTION: The quick connector should always be handled with care and held by the provided protective tube, so as to avoid any over-stress on its internal fittings.

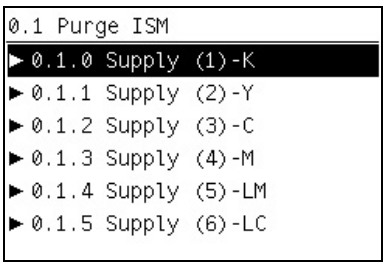
4. Connect the Purger Quick Connector to the ISM.



5. Screw the needles into all the syringes.

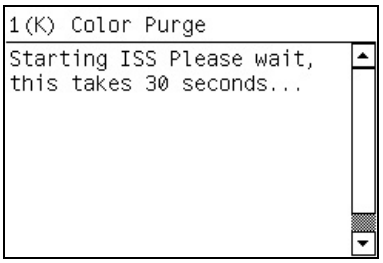
6. Go to the Diagnostics menu> **0. Purge Menu & Set Up Menu**> **0.1 Purge ISM**.

7. There is a special menu selection for each color line, each has the same identical operation, press ok to select the color to purge.

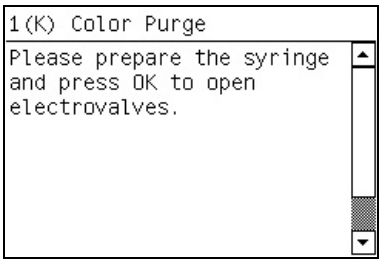


CAUTION: When selecting the option in the following procedure, do not push the ok button more than once per selection.

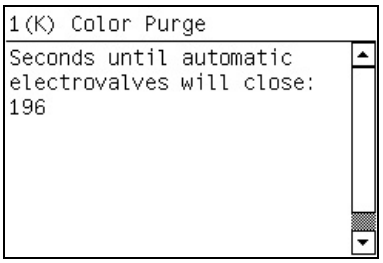
8. The front panel will display the following message, in the initialization period, the electrovalve of the color selected will open and close several times to ensure it is functional.



9. The front panel displays the following message, press the ok key to open the electrovalve of the selected color.



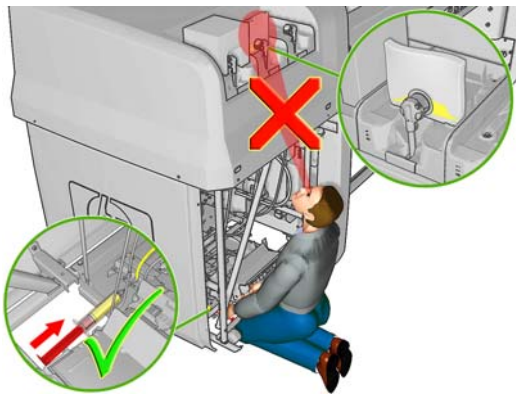
10. The front panel displays the time remaining that the electrovalve is open and beeps to indicate the open status (in total 200 seconds).



NOTE: At this moment the EV will open if ink does not go beyond the EV, the part might require a repair procedure. Try to open and close it several times using the 4.15.X service procedure.

11. Insert the syringe in the purging port (next to the ink pressure sensor) for the color selected, and slowly push the ink until it clearly reaches the quick connector purger (first) and the purge bags (second).

If you run out of ink in the syringe, it is okay to refill the syringe from the ink cartridge. Keep track of how much ink you remove from the ink cartridge, because you will be asked to report the quantity of ink taken. Make sure the electrovalves are still open.



NOTE: Make sure you insert the syringe far enough into the port so that the tip of the syringe engages with a small spring inside the port.

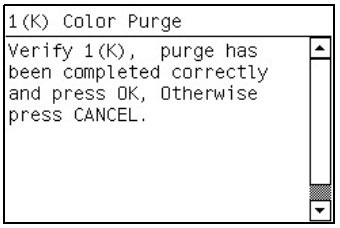
CAUTION: Never look away from the syringe. If you need to look at the purge bags or something else in the room, set down the syringe first. The ink system components are easily broken.

CAUTION: Do not insert the syringe if the electrovalves are not open, this will be noticeable as there will be too much resistance when inserting the syringe.

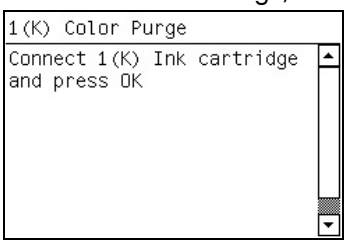
- 1 = K
- 2 = Y
- 3 = C
- 4 = M
- 5 = LM
- 6 = LC

12. Remove the syringe from the purge port with a cloth to prevent spills.
13. Press **OK** on the Front Panel to close the electrovalves.

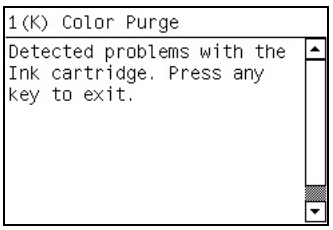
14. Press **OK** to confirm that you have finished purging the ink tubes for the color selected.



15. Disconnect the purge bag and connect the ink cartridge, and then press OK.

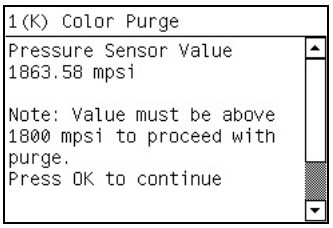


16. If there is a connection error at this point the following message will be displayed.



Check the ink cartridge is correctly connected. Check the connector switch and cable connections (red cable) to the ISM PCA

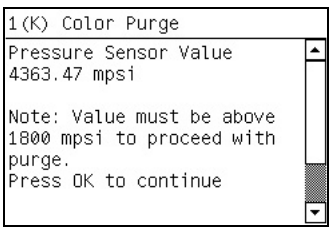
17. If there is no error at this point the following message is displayed.



The pressure must be above 1800 mpsi, this is to ensure that the ink pressure sensor is reading a good value (1800mpsi is for a ink cartridge almost empty), this check prevents bubbles of air in the line (which causes low ink pressure) which causes the system to mark the ink cartridge as empty. As in the next step the printer will access the acumen and write it as empty if the pressure is very low.

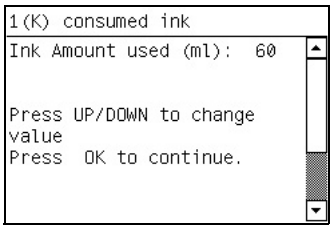
For completely new ink cartridges the value should be around 2200-2300 mpsi. If the value does not match the expected values, repeat the purging process of the column.

18. If there is a failure with the Ink Pressure Sensor or a cable is disconnected, the front panel will display that the ink pressure is above 3000 mspi, such as the message shown below.



If the above message is displayed, check the connections of the Ink Pressure Sensor cable. Check for any similar problems with the other colors that share the same ink pressure sensor board, if these color also have a problem, replace the board.

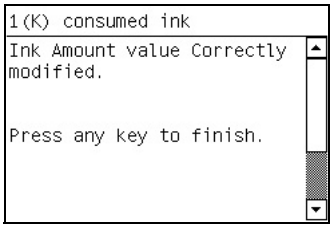
19. If there is no error at this point the following message is displayed.



20. Enter the quantity of ink that was extracted from the ink cartridge (typically this is 60ml), press the ok key when this is done.

NOTE: Entering the amount of ink taken from the ink cartridge correctly will have an impact on the precision of the remaining ink that is displayed to the customer. The out of ink message is independent of this value, which is solely dependant on the value detected by the ink pressure sensor.

21. The following screen is displayed when the values have been entered.



NOTE: Checks are made of the values of the ink pressure sensor before finishing the procedure. The reason for this is to ensure correct calibration before writing to the supply acumen as empty (pressure values too low which might be due to air in the column of ink between the supply and the ink pressure sensor). This check prevents displaying the ink cartridge with incorrect remaining ink.

22. Select the next color and repeat.
23. Remove the quick connector purger.

0.2 Fill Intermediate Tanks

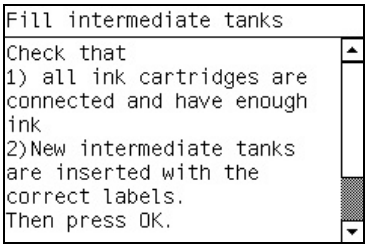
Description

This procedure is used to fill a new set of intermediate tanks with ink and should only be performed during the printer's installation (refer to the installation guide for details). The procedure first pressurizes and then depressurizes the tanks to check the condition of the inner bag of the intermediate tank. The procedure then fills the intermediate tanks with ink. This second procedure is time based and performed on one side (intermediate tanks X.1) after the other (intermediate tanks X.2). While one side is refilled the other is semi-pressurized to control the refill. For the procedure to be performed there must be at least 1.5L of ink in the ink cartridges, otherwise the system will halt the procedure.

Procedure

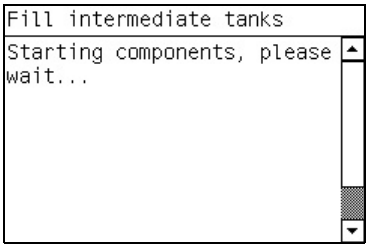
1. Go to the Diagnostics menu **0. Purge and Setup Menu** > **0.2 Fill intermediate tanks**.

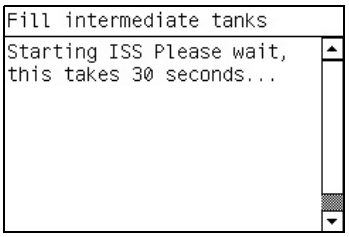
2. Ensure that all the intermediate ink tanks are installed, apply the labels (match them to the labels on the printer), and confirm that they are installed from the Front Panel.



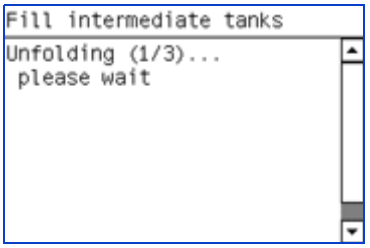
NOTE: This procedure sets the amount of ink in the intermediate tanks, if the process is interrupted or not fully performed for any reason, the procedure is forced to run again until it is successful. The refill process takes approximately 25 minutes.

3. The following messages are displayed while the printer starts the various subsystems in order to perform the procedure.

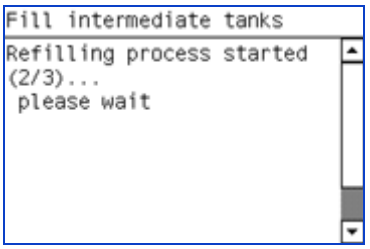


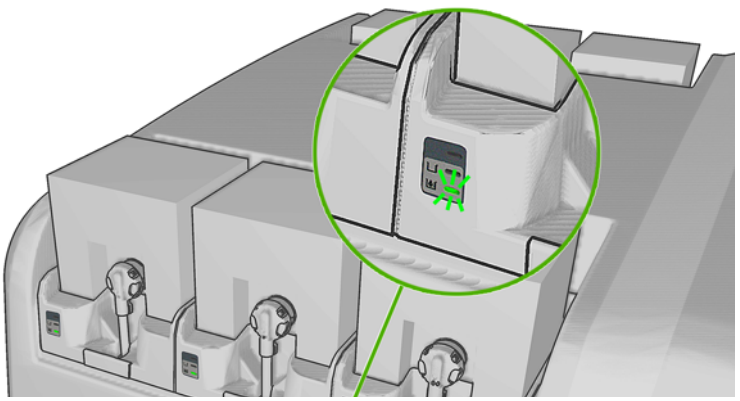


4. The printer unfolds the intermediate ink tanks. When the process is finished, press any key to continue.

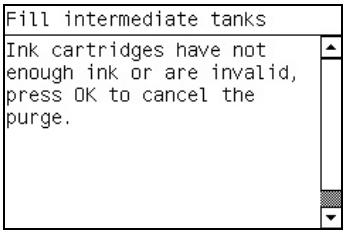


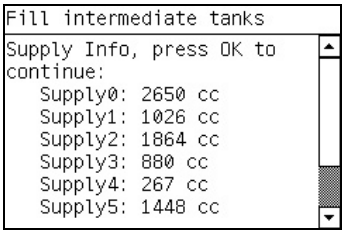
5. The printer fills the intermediate ink tanks. When the process is finished, check that the ink cartridge LED is green and press any key to continue.





6. If there is a failure at this point because of insufficient ink in the ink cartridge, the following message is displayed:





The supply ink information is obtained from the acumen of the supplies. If any of the values are 0 or non-read, check the connections of the ink cartridges or replace them if they are not working. Nomenclature used:

- Supply 0: Black Color Cartridge
- Supply 1: Yellow Color Cartridge
- Supply 2: Cyan Color Cartridge
- Supply 3: Magenta Color Cartridge
- Supply 4: Light Magenta Color Cartridge
- Supply 5: Light Cyan Color Cartridge

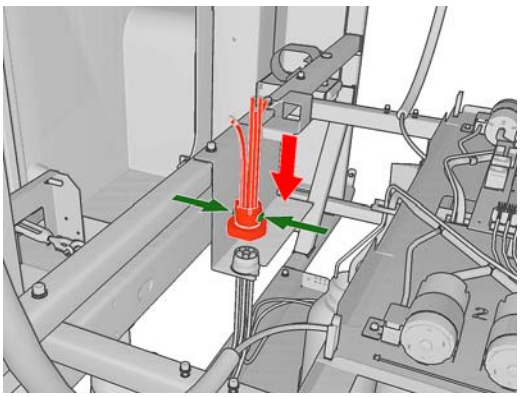
0.3 Purge Printer Tubes

Description

This process purges the TRS (Tube route system) from the ISM up to the print heads during the installation process. Further details of the process cab be found in the installation guide. The system pressurizes the ISM system to push ink into the tubes by placing the air purgers in the Printhead positions the air comes out filling the tubes. The test pressurizes the tubes constantly until the user finishes the operation.

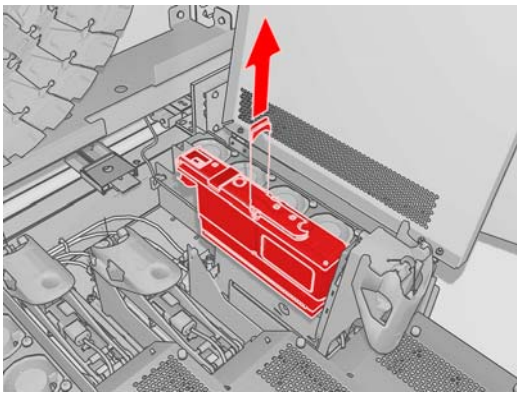
Procedure

1. Go to the Diagnostics menu and select **0. Purge and Setup Menu** > **0.3 Purge Printer Tubes**.
2. Connect the quick connector.

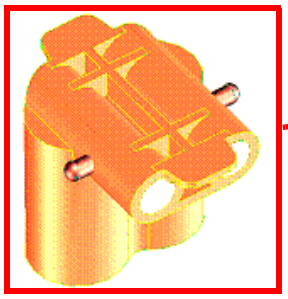


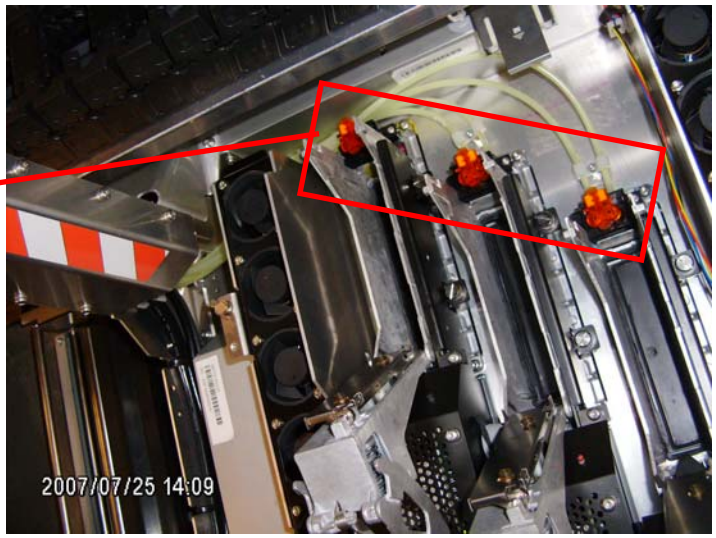
WARNING!: The quick connector should always be handled with care and held by the provided protective tube, so as to avoid any over-stress on its internal fittings.

3. Printheads must not be present in the printer before at the start of the procedure. Remove the printheads.



4. Install the air purge connectors.



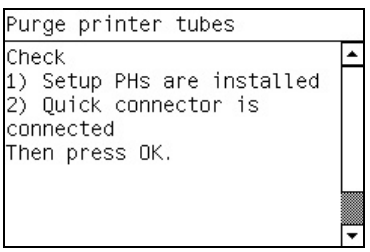


Ensure all purgers are placed in the FI connectors. The printer will then pressurize the system allowing ink to flow through the tubes from the intermediate tanks. The filling of the tubes will take about 100cc of ink.

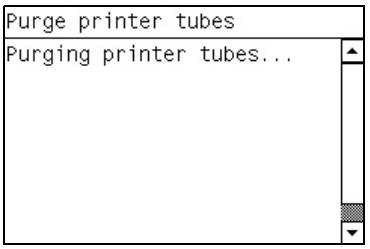
NOTE: If the tubes have been cleaned before it is possible that some remaining water in the tubes can trap the purgers, not allowing the air to come out. In this case used a syringe to extract the remaining air and ensure the ink reaches the Fluid interconnects.

NOTE: In case you do not have the purge connector, you can use a syringe as described before, but if you need to have the air pressure set for a long time, perform the following other diagnostic tool '4.12 Ink Pressure At Pen refer to page 393.

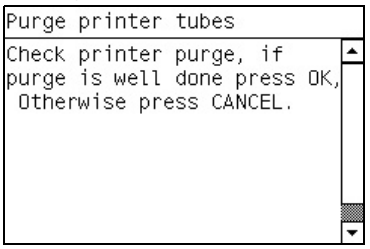
5. Press **OK** to purge the tubes.



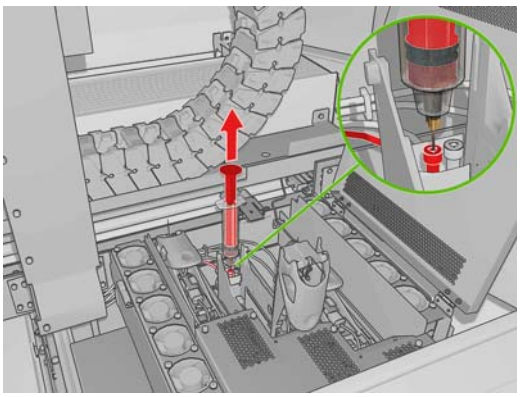
6. At this point, the printer sends ink to the carriage purging the tubes, this process takes approximately 5 minutes.



7. After a few minutes the following message is displayed, the Front Panel prompts you to confirm that ink has reached the air purge connectors. Look at the air purge connectors and confirm that each color has arrived to the connector. Press ok if the purge was completed successfully. At this point it is possible to re-pressurize the tubes system by pressing Cancel.



8. If the ink did not arrive to the air purge connector successfully, remove the air purge connector and insert a syringe of the same color. When the ink reaches the syringe, the printer tubes are purged.



WARNING!: Do not pull on the plunger of the syringe. The pressure in the tubes will force the ink into the syringe itself.

9. If the ink does not arrive to the syringe, press **CANCEL** and repeat **Purge Menu** > **Purge Printer Tubes.**

10. If the tubes are purged correctly, remove the air purge connectors and press **OK** to finish.

NOTE: Wear latex gloves and use a cloth when you remove the air purge connectors.

NOTE: The printer can be pressurized manually using other methods available in the diagnostics (such as starting up the printer's air pumps. Use this procedure if problems appear and additional troubleshooting required (such as verification that the system is pressurizing correctly). However ensure the TRS purged flag is reset (diagnostics '0.9 TRS as purged'.

0.4 Purge Ink Used Menu

Description

In the case where ink is removed from the ink supplies to purge additional purging operations, this menu enables the user to take into account the quantity of removed ink from the supply memory, this gives a more precise measure of the ink accounted for in the IPS of the printer. The procedure can be applied to each color line.

Procedure

1. Go to the Diagnostics menu and select **0. Purge and Setup Menu** > **0.4 Purge Ink Used Menu**.
2. The following are the selectable supplies:

   0.4.0 Supply (1)-K

   0.4.1 Supply (2)-Y

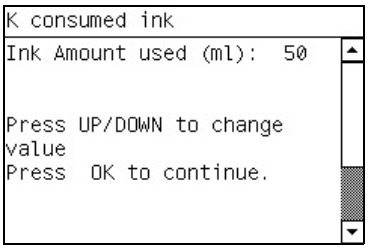
   0.4.2 Supply (3)-C

   0.4.3 Supply (4)-M

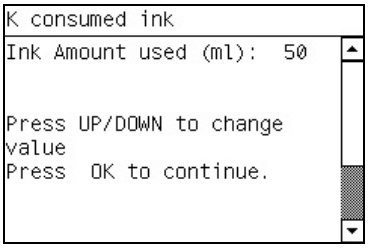
   0.4.4 Supply (5)-LM

   0.4.5 Supply (6)-LC

3. The front panel displays the following message, use the up and down keys to change the value displayed to the amount of ink that was removed from the ink cartridge for purging purposes. Press the ok key.



4. The front panel displays the following message and confirms the amount entered, press ok to finish.



If the above confirmation screen is not displayed, this could indicate an error writing the value to the acumen of the ink cartridge, in this case check the connections to the ink cartridge.

0.5 AC Volt Setup Menu

Description

This menu sets the voltage of the 3 phase (phase to phase) voltage in the printer. This value must be set correctly for the heating and curing systems in the printer to work correctly.

NOTE: 3 Phase voltage values below 190V and above 430V are not supported by the printer.

Procedure

1. Go to Diagnostics menu and select **0. Purge and Setup Menu** > **0.5 AC Volt Setup Menu.**
2. The following are the selectable voltages:

   0.5.0 3ph AC Volt 200V

   0.5.1 3ph AC Volt 208V

   0.5.2 3ph AC Volt 220V

   0.5.3 3ph AC Volt 235V

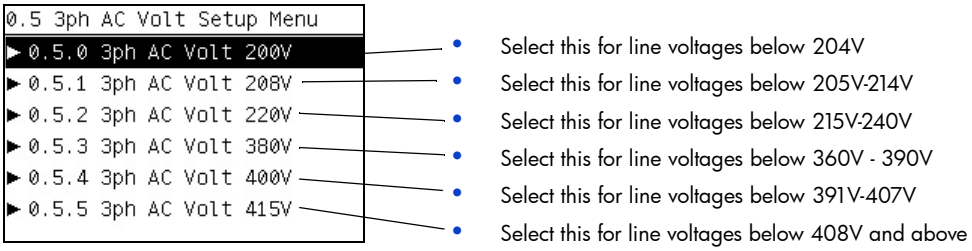
   0.5.4 3ph AC Volt 380V

   0.5.5 3ph AC Volt 400V

   0.5.6 3ph AC Volt 415V

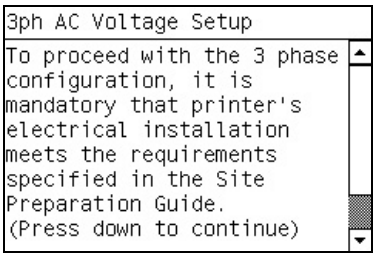
   0.5.7 3ph AC Volt 430V

3. The following screen is displayed, select the correct voltage of the line voltage of the customer site, and select the ok key.

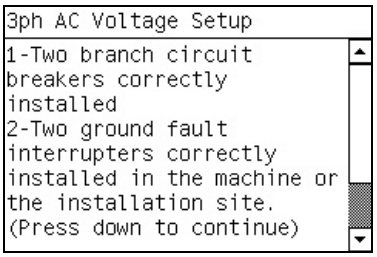


NOTE: It is possible to check the current voltage setting of the printer via the service plot by going to 'IPS Select information>Service Information' (available from firmware version 14.2.2.1 and IPS 3.5 and greater)

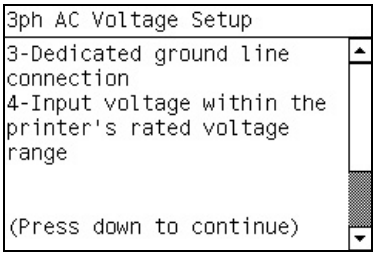
4. The following messages are displayed in order to confirm that the appropriate safety requirements have been met when installing the printer and selecting the voltage value. Read each message and press the down arrow to continue only when you are sure the corresponding safety requirement has been met.



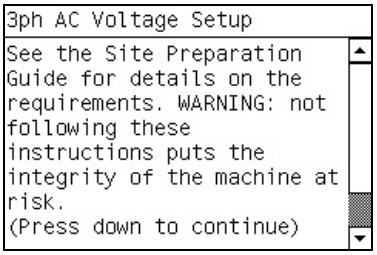
5. The following message is displayed, press the down arrow to continue.



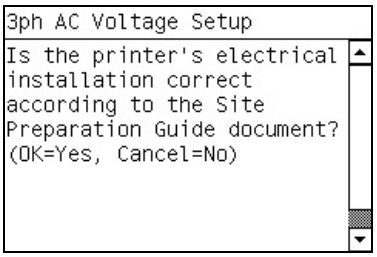
6. The following message is displayed, press the down arrow to continue.



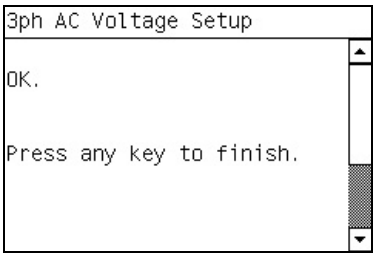
7. The following message is displayed, press the down arrow to continue.



8. The following message is displayed, press the down arrow to continue.



9. The following message is displayed, press the down arrow to continue.



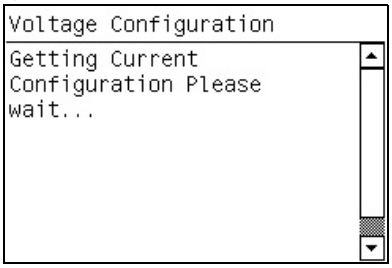
0.5.8 Voltage Configuration

Description

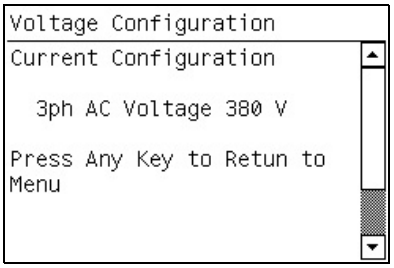
This menu enables you to see the current voltage configuration selected.

Procedure

1. Go to Diagnostics menu and select **0. Purge and Setup Menu** > **0.5 AC Volt Setup Menu** > **0.5.8 Voltage Configuration**
2. The following screen is displayed.



3. The current voltage selected is displayed.



The values displayed will depend on the current configuration. If the printer does not have any configuration selected the display will show NO CONFIGURATION. To set a voltage configuration refer to page 345.

0.6 Force Normal Boot

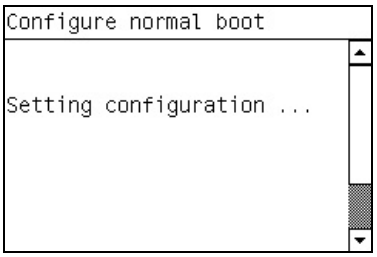
Description

This test changes the boot up parameter of the printer to start up in normal mode (also known as printer mode)

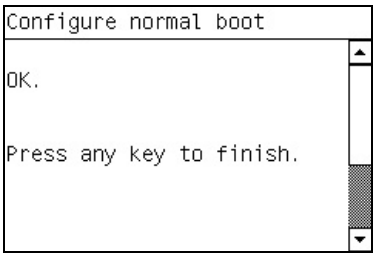
After initial set up of the printer in Diagnostics boot up, this procedure is selected to start up the printer normally. This procedure is required to reset the printer back to normal boot mode operation after '1.0 Force diagnostics boot mode' has been performed.

Procedure

1. Go to Diagnostics menu and select **0. Purge and Setup Menu**> **0.6 Force Normal Boot**
2. The following screen is displayed while the system is changed to boot up in Normal Boot mode.



3. When the process has finished, the following screen is displayed confirming the printer will now automatically boot up in normal printer mode., press ok to finish.



0.7 Prepare for transport

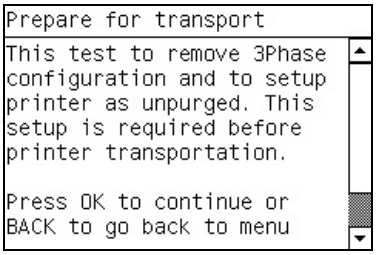
Description

This procedure is used to prepare the printer for transportation.

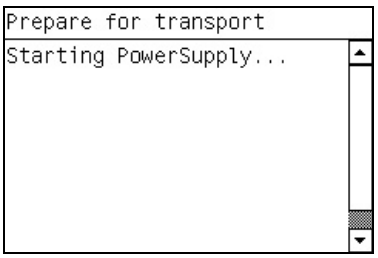
The procedure deletes the 3Phase configuration parameter, forcing the selection again of the 3 Phase configuration once in the customer new premises. In addition where the transportation environment was below 5 degrees and ink flushing was performed, the procedure enables the user to remove the ISM and TRS purged status which allows a re-purging of the printer.

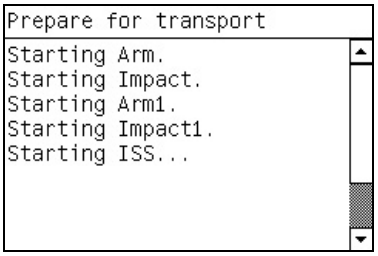
Procedure

1. Go to Diagnostics menu and select **0. Purge and Setup Menu**> **0.7 Prepare for transport**
2. The front panel displays the following message, press ok to continue.

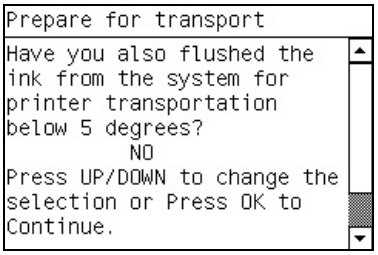


3. The front panel displays the following messages, and the 3 phase power configuration is reset in the printer.

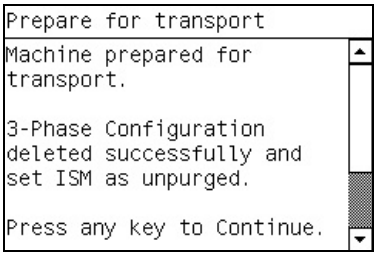




4. The front panel displays the following message. If yes is selected, the ISM and TRS purge status is reset to 0, forcing the purging procedure to be performed again, (this can be reversed using the procedure 0.8 and 0.9). If no is selected at this point the procedure will finish.



5. The following message is displayed confirming the printer's voltage setting has been reset and the purge status of the printer has been reset to 0 (Unpurged), press any key to finish the procedure.



0.8 Set ISM as Purged

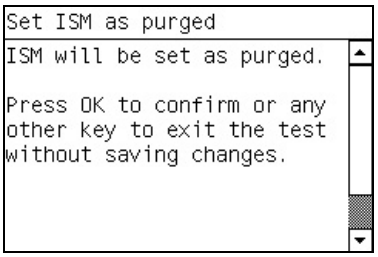
Description

This procedure is used to set the ISM purged status in the NVM. The test is used if the standard ISM purging procedure failed (0.1 Purge ISM ⇒page 335) and the purging process was manually performed and the status needs to be set using this procedure to 'Purged'.

CAUTION: If this procedure is performed and the printer has not actually been purged, printing failures and possible printhead damage will probably occur.

Procedure

1. Go to Diagnostics menu and select **0. Purge and Setup Menu**> **0.8 Set ISM as Purged**
2. The following message will be displayed, press the ok key to set the ISM status as 'Purged'.



0.9 Set TRS as Purged

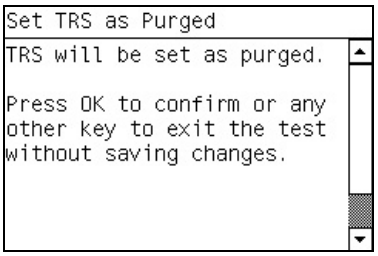
Description

This procedure is used to set the TRS purged status in the NVM. The test is used if the standard TRS purging procedure failed (0.3 Purge ISM ⇒page 342) and the purging process was manually performed and the status needs to be set using this procedure to 'Purged'.

CAUTION: If this procedure is performed and the printer has not actually been purged, printing failures and possible printhead damage will probably occur, (because there is air within the tubes and no ink).

Procedure

1. Go to Diagnostics menu and select **0. Purge and Setup Menu**> **0.9 Set TRS as Purged**
2. The following message will be displayed, press the ok key to set the TRS status as 'Purged'.



0.10 Set ink as LX610

Description

This routine sets the printer to use the LX610 ink supplies. The password for this routine is '**NPI**'. The printer will only function correctly after this has been set with the correct firmware version, refer to ⇒page 55.

Procedure

1. Go to the Diagnostics menu> **0. Purge Menu & Set Up Menu**> **0.10 Set ink as LX610**.

0.11 Set ink as LX600

Description

This routine sets the printer to use the LX600 ink supplies. The password for this routine is '**NPI**'. The printer will only function correctly after this has been set with the cortect firmware version, refer to ⇒page 55.

Procedure

1. Go to the Diagnostics menu> **0. Purge Menu & Set Up Menu**> **0.11 Set ink as LX600**.

1.0 User Interface Menu

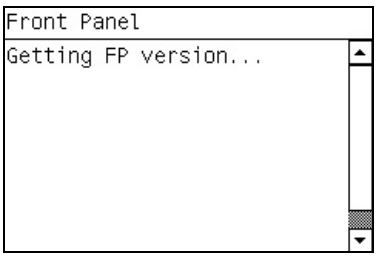
1.1 Front Panel

Description

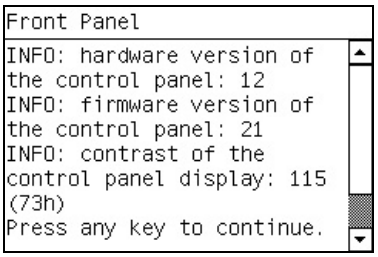
This procedure checks the correct functionality of the keys on the front panel and the correct operation of the pixels in the display. The procedure also performs a quick front panel internal electronics check.

Procedure

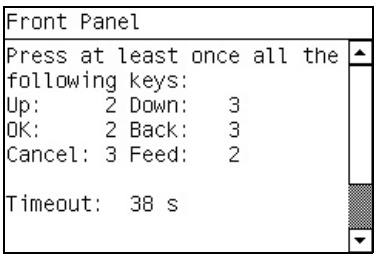
1. Go to Diagnostics menu and select **1.0 User Interface Menu**> **1.1 Front Panel**
2. The following message will be displayed, the version of the firmware is checked and the hardware version.



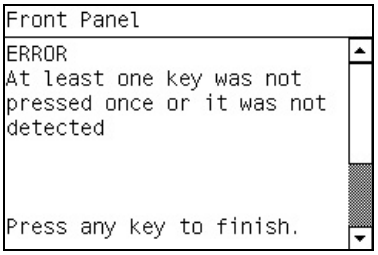
3. If this is displayed correctly, as shown here, this would indicate that the electronics of the front panel are functioning correctly, press any key to continue



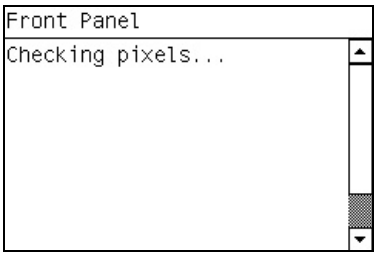
4. Press all the keys of the front panel, multiple times, each press of the key is recorded in the message displayed. Make sure the keys are pressed firmly, so that they can be registered correctly on the display. The procedure times-out after a while.



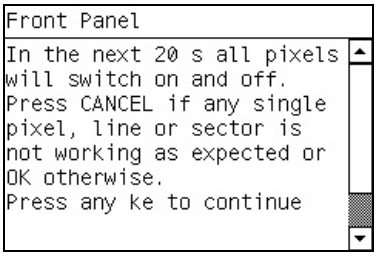
If any of the keys are register as 0 presses, an error message is displayed and the test fails.



5. If there is no error at this point the test continues, the front panel displays the following screen which tests all the pixels on the screen of the front panel.

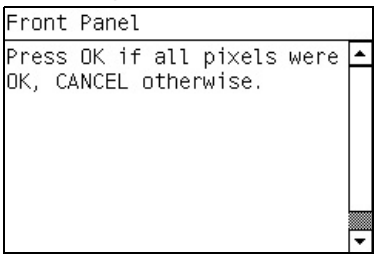


6. The front panel displays the following message, wait for 20 seconds to elapse for the start of the pixel test.



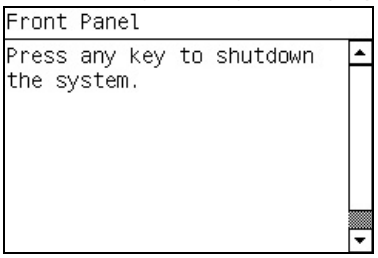
7. The front panel screen will go completely black, check to see if there are any white pixels showing, which would indicate a failure of one or multiple pixels on the screen.

8. The front panel will display the following message, if there were no white pixels showing and the screen was completely black, press the ok key.



If there were white pixels showing on the screen, press cancel to fail the test and replace the front panel.

9. If the screen passes the test, the following message is displayed, press any key to shutdown the printer.



2. Electrical Systems Menu

2.1 ECabinet

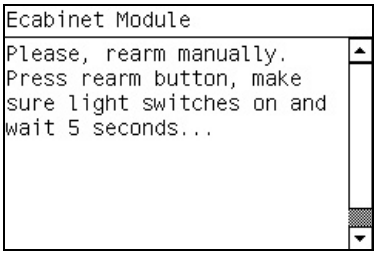
Description

This procedure checks the functionality of electronics in the ECabinet. The following are turned on for the purposes of the functionality:

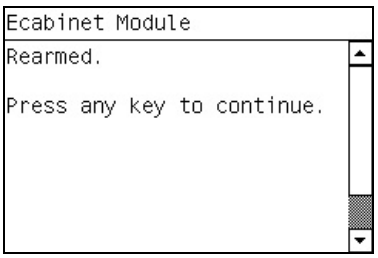
- Power Supply Voltage test (main power supply)
- Vacuum Transformer test
- Curing System Fans test
- Temperature Sensors test (communication temperature values)
- Heating and curing modules configuration

Procedure

1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.1 ECabinet**
2. The following screen is displayed, reset the circuit breakers and make sure there is a light showing.

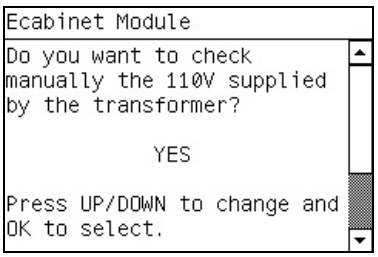


3. When the circuit breakers have been reset the front panel displays the following message, press any key to continue.

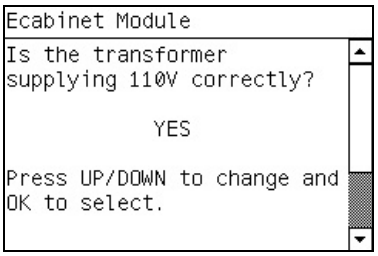


The printer starts the various subsystems required to perform the tests, if there are any system errors at this point refer the troubleshooting chapter.

4. The front panel will display the following message, select yes and press ok.

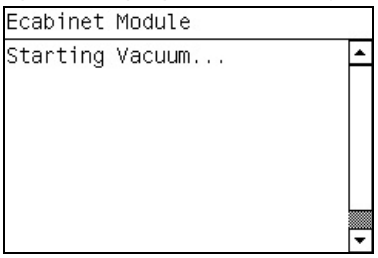


5. Use a voltameter to test for 110v in the output voltage point of the transformer or the terminal blocks to the vacuum pump, if there is 110v present, select yes and press ok.

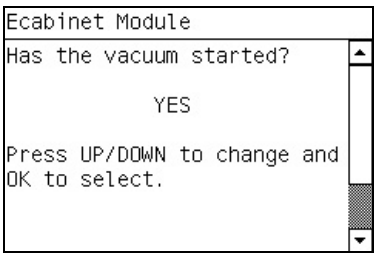


If 110v is not present, select no and press ok. The printer will shut down and the failure can be repaired.

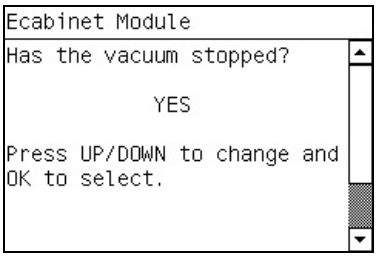
6. If there is no failure, the front panel displays the following message, and the vacuum system is turned on.



7. The front panel displays the following message, press yes if the vacuum has started.

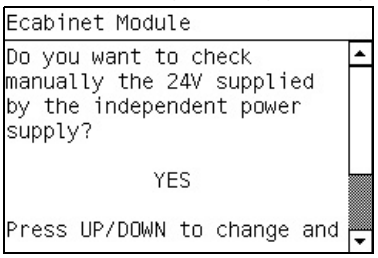


8. The front panel displays the following message, press yes if the vacuum has stopped.

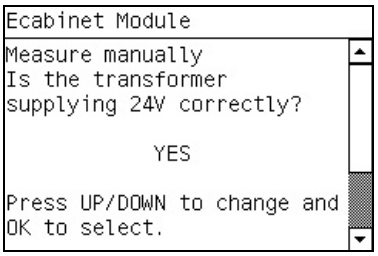


If there is an error with the Vacuum functionality, this would indicate an error with the Vacuum Transformer, press no and the printer will shut down so the appropriate repair can be made.

9. If there is no error at this point the following message is displayed, select yes and press the ok key.

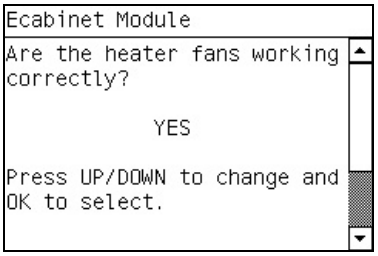


10. Use a voltameter to test for 24v in the output voltage point of the 24v Secondary PSU, if there is 24v present, select yes and press ok.



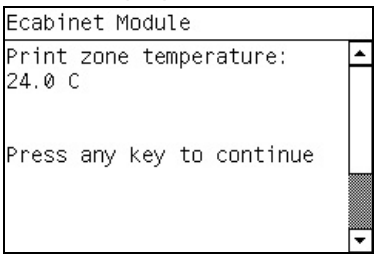
If 24v is not present, select no and press ok. The printer will shut down and the failure can be repaired.

11. If there is no error at this point the following message is displayed, and the curing fans are turned on, select yes and press the ok key if the curing ar functioning.



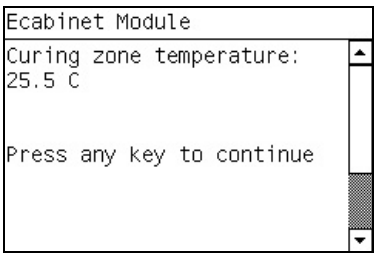
If the curing fans do not turn on, select no and press ok. The printer will shut down and the failure can be repaired.

12. If there is no error at this point the following message is displayed, and the heater is turned on to check if the Print zone IR temperature sensor displayed is raised to an appropriate level, press any key to continue.



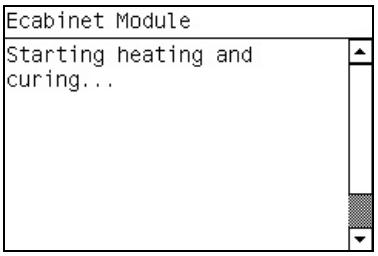
If the Print zone temperature is not displayed correctly on the front panel, this would indicate an error with the connections or failure of the Print Zone IR temperature sensor.

13. The following message is displayed, and the curing module is turned on to check if the Curing IR temperature sensor displayed is raised to an appropriate level, press any key to continue.l.

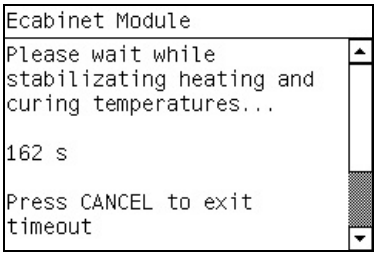


If the Curing temperature is not displayed on the front panel, this would indicate a indicate an error with the connections or failure of the Curing IR temperature sensor.

14. The front panel displays the following message, and the Heating and Curing modules are turned on to high.



15. The front panel displays the following message, while the Heating and Curing modules are turned on and the temperature is stabilized.



The Heating and Curing modules are turned on high (see warning below), check that they are heating up, if they do not this would indicate an error with the heating and curing modules which must be repaired.

WARNING!: This procedure will set the Heating and Curing modules to a very high temperature of 100 Degrees, **please careful as the media Loaded could be damaged at 100 degrees**. It is recommended to use only a media strip for the curing temperature sensor to be able to read, and under controlled circumstances, check the operation of the heating and curing modules at 100 degrees.

2.2 Main Electronics Menu

2.2.1 Electronics Control

Description

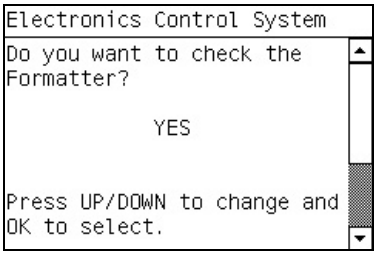
This procedure is a test to check the various boards and communication buses of the printer, to ensure they are installed/connected and functioning correctly. The following boards are checked:

- Formatter board
- Power Supply board
- Main interconnect (naming)
- PrintMech
- PCI Boards
- Carriage Board communication
- ISS Board communication

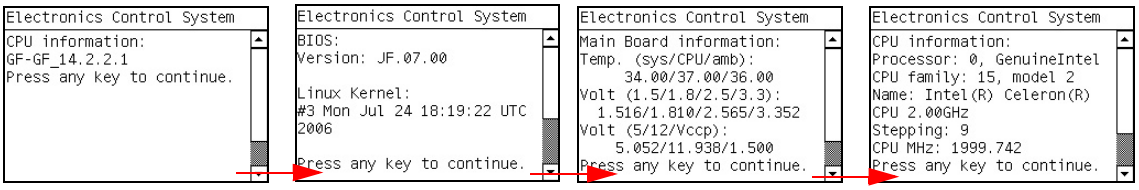
Procedure

1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.1 Electronics Control**.

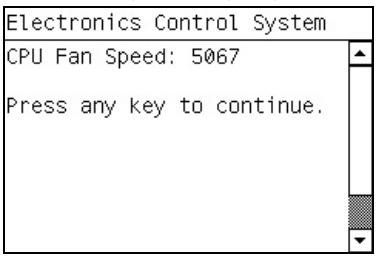
1. The front panel displays the following message, select yes and press ok.



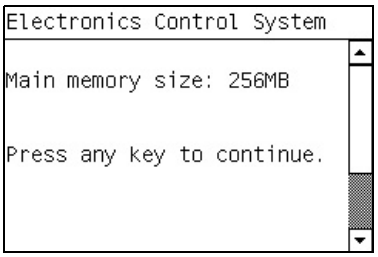
- The printer checks that the Formatter Board communicates correctly, press any screen to continue.



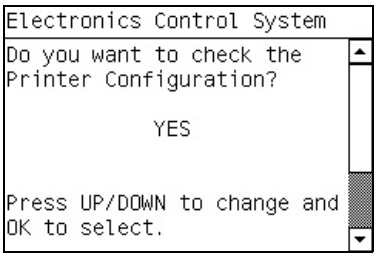
- The printer checks that the CPU fan is working correctly and the speed can be controlled by the firmware on the Formatter board, press any key to continue.



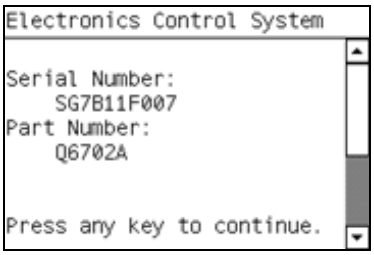
- The printer checks that the main memory reads and writes correctly, and that the size (256 mb) is correct, press any key to continue. If no is selected the test will finish and the printer will shut down.



2. The front panel displays the following message, select yes and press enter.



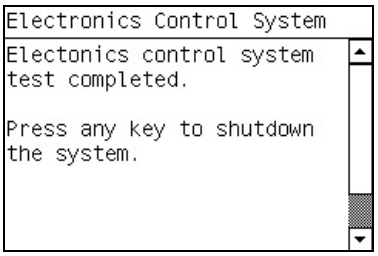
3. The front panel displays the following message. The printer verifies that the Main Non-Volatile Memory (NVM), located on the Hard Disk System, and Main NVM backup, located on the Main Interconnect Board, match.



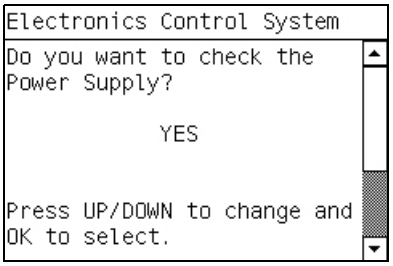
If either the Hard Disk System or the Main Interconnect Board have been replaced, they may not match. The printer also verifies that the serial number and part numbers are correct and use the correct format. If the versions do not match, the printer displays the serial numbers and part numbers of the NVM and NVM backup.

If necessary, the printer asks you if you want to force the NVM versions to synchronize. Press ok to synchronize the NVM or cancel to leave them not synchronized.

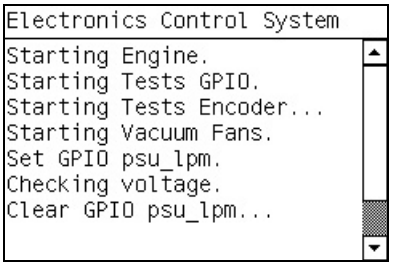
4. If there is no problem at this point the following screen is displayed, press any key to continue.



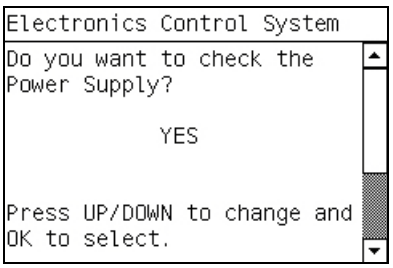
5. The front panel displays the following message, select yes and press ok.



The electrical subsystems start up in order to perform the test.

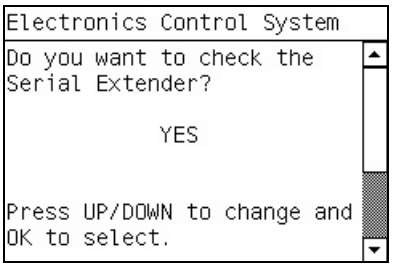


6. The front panel displays the following message, select yes and press ok if you can see the LED located in the Electronics box light up.



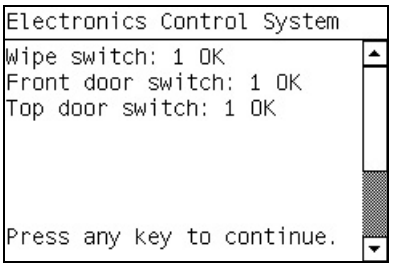
If the LED in the Electronics box does not light up, select no and the test will fail and the printer will shut down in order to make the appropriate repair.

7. If there is no problem at this point the front panel will display the following message, select yes and press ok.



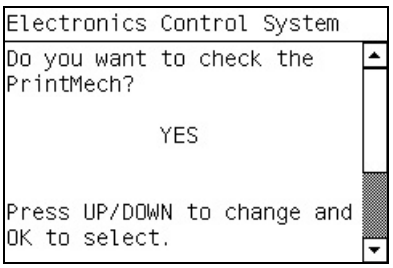
8. The printer checks that the Main Interconnect Board receives the correct voltage, can communicate without failure, and receives the input signals correctly.

9. If there is no problem at this point the printer displays the following message. The printer checks the printhead cleaning roll close position switch, the sliding door switch, and the top cover window switch. Press any key to continue.

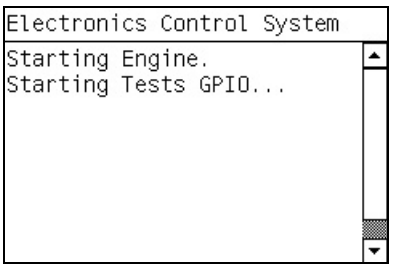


If there is a problem at this point the test will fail and the printer will shut down in order to make the repair.

10. If there is no problem at the point the front panel will display the following message, select yes and press the ok.

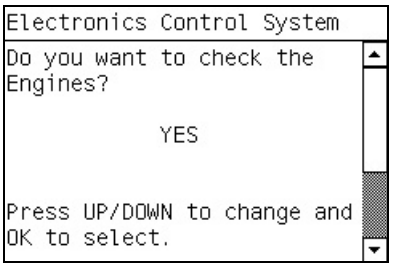


11. The front panel displays the following message, the printer checks that the Printmech Board receives the correct voltage (42 V), can communicate without failure, and tries to connect to an element using the printmech.

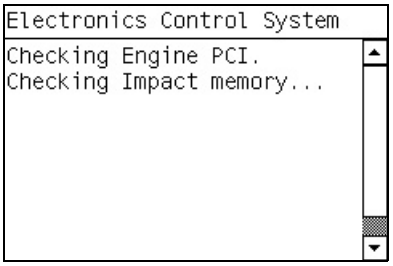


If there is a problem at this point the test will fail and the printer will shut down in order to make the repair.

12. If there is no problem at this point the front panel will display the following message, select yes and press the ok.

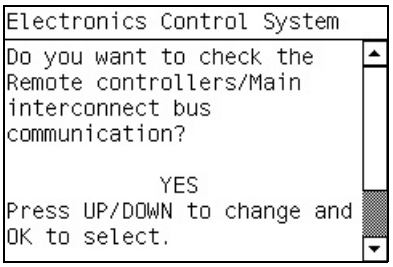


13. The printer checks the functionality, configuration, microprocessors operation and memory of the Upper and Lower PCI Board.

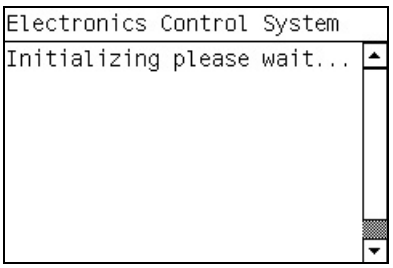


If there is a problem at this point the test will fail and the printer will shut down in order to make the repair.

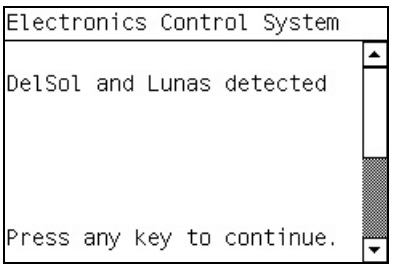
14. If there is no problem at this point the front panel will display the following message, select yes and press the ok.



The printer starts the various subsystems required to perform the tests, if there are any system errors at this point refer the troubleshooting chapter.

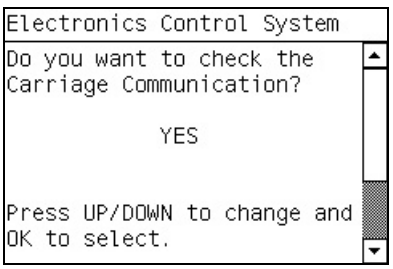


15. If the printer successfully detects the Remote Controller Boards and Main interconnect board, the front panel displays the following message.

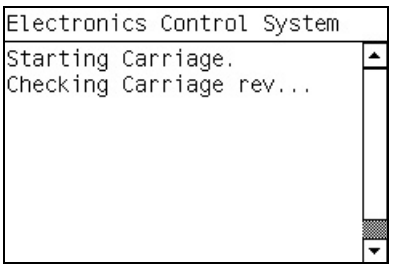


If there is a problem at this point the test will fail and the printer will shut down in order to make the repair.

16. If there is no problem at this point the front panel displays the following message, select yes and press ok.



17. The printer checks that the carriage receives the correct voltage without failure and that the Trailing Cables can communicate with the Carriage Printhead Board Assemblies.



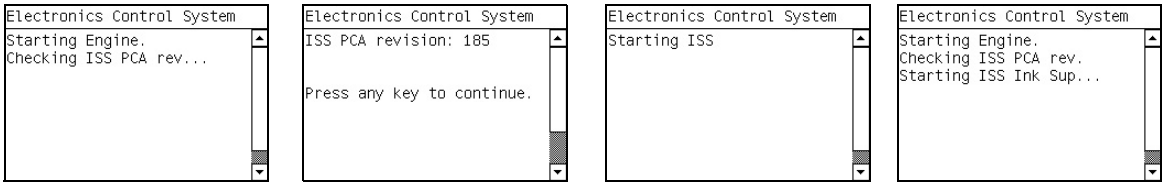
18. The printer sends a signal to the carriage and asks you to look at the 24 V Carriage LED to verify that the LED is on and the signal arrives, select yes if the LED light up.

    If the LED does not light up select no and the test will fail and the printer will shut down in order to make the repair.

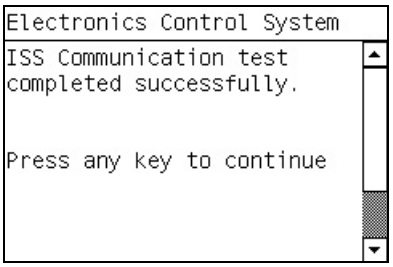
19. The printer asks you if you want to perform the ISS test, select yes and press ok.

20. The front panel displays the following messages and the printer checks the communications between the printer and the Ink Supply System board. The printer reads and displays the IDS revision value to check IDS connectivity with ADC. The printer asks you to verify that all the ink cartridges are connected cor-

rectly. Verify that all ink cartridges are connected correctly. If an ink cartridge is not connected, connect it now.



21. If the communications between the printer and the board are ok the front panel displays the following message, press any key to finish the test and shutdown the printer.



If there is a problem at this point the test will fail and the printer will shut down in order to make the repair.

2.2.2 Hard Disk Drive

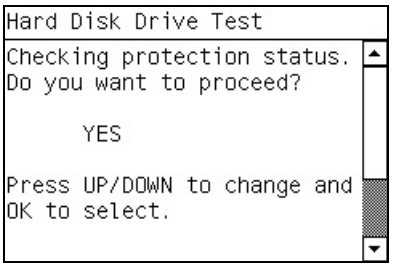
Description

This test checks the hard disc drive to make sure that it is working correctly, the checks include following:

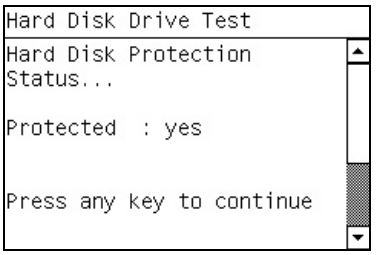
- Protection status test (protected/not protected)
- Partition configuration test
- System file contents (sanity check for critical files)

Procedure

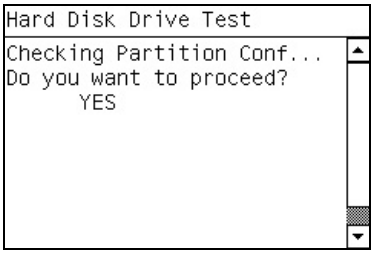
1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.2 Hard disk Drive**.
2. The front panel displays the following message, select yes and press ok.



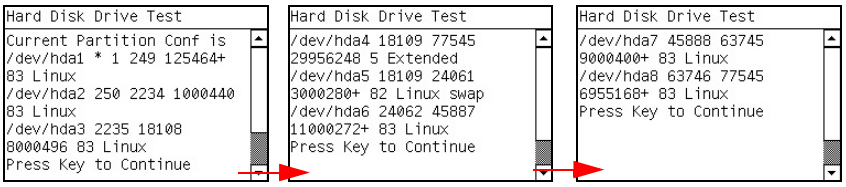
3. The printer reads the protection status of the hard disc drive and displays it on the front panel. Press any key to continue.



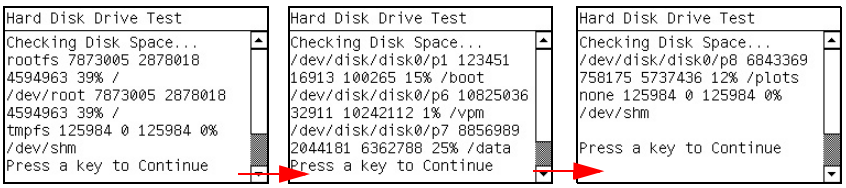
4. The front panel displays the following message, select yes and press ok.



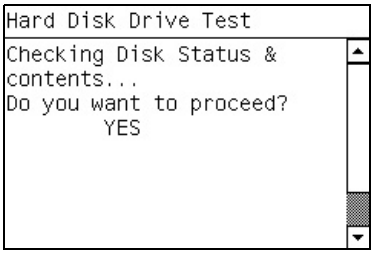
5. The printer checks the hard disc drive partitions for faults and displays the results on the front panel, press any key to continue.



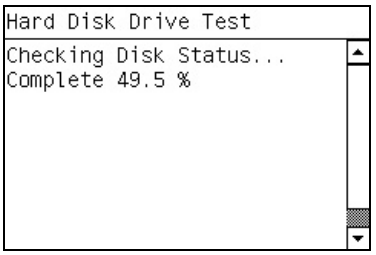
6. The printer reads and displays the current file system contents of the formatted partitions of the hard disc drive, press any key to continue.



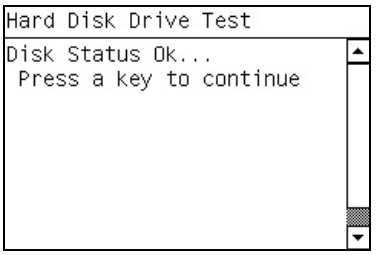
7. The front panel displays the following message, select yes and press ok.



8. The printer performs a sanity check of the hard disc drive to check the hard disc drive consistency. A progress value is displayed to indicate the percentage to completion.



9. If the status of the Disk is ok, the following screen is displayed, press any key to finish the test and shut down the printer.



2.2.3 Connectivity Check

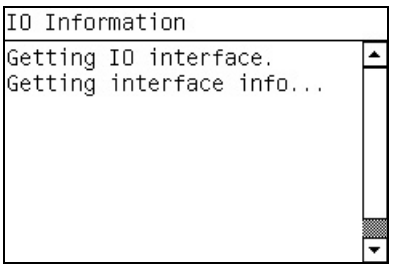
Description

This test shows the LAN configuration data, and tests the communication, which can help when troubleshooting or setting up a network. The information displayed is the following:

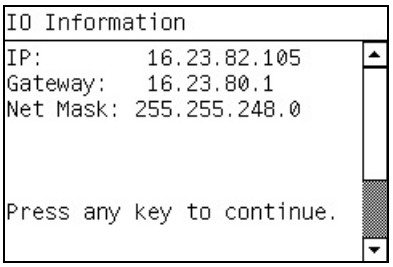
- IP address
- Gateway address
- Subnet mask
- Connectivity with the Internal Print Server

Procedure

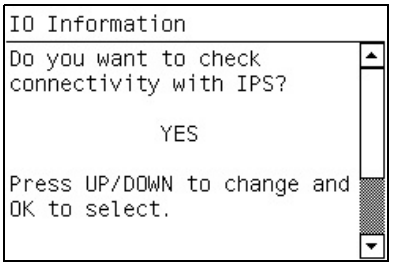
1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.3 Connectivity Check**.
2. The front panel displays the following message, while the printer retrieves the IO information.



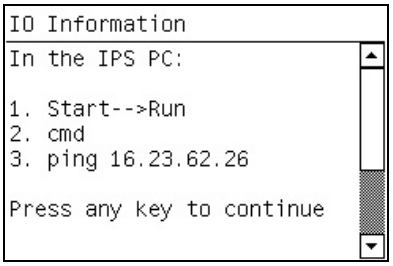
3. When the printer has retrieved the information it is displayed on the front panel.



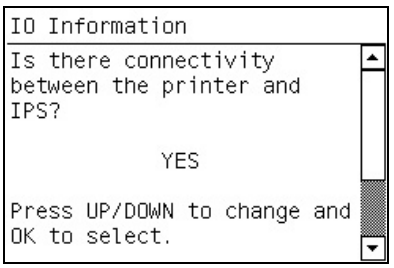
4. The following message is displayed, select yes and press ok to check the connectivity between the printer and the IPS (DFE).



5. The front panel displays the instructions on how to check the connectivity. From the IPS go to 'Run'>enter the word 'CMD'>enter the following 'Ping 'the IP address of the PC'>Press enter.



6. If there is connectivity select OK, if any packets were lost, select No. If yes is selected the printer shut down.



If there is a problem with the connectivity, the test fails.

2.2.4 Unit Information

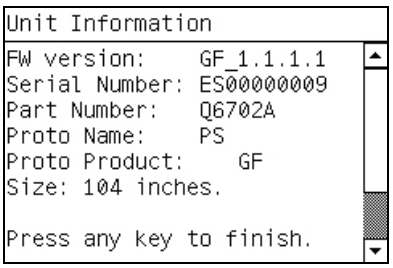
Description

This procedure retrieves printer information and displays the results on the front panel. This information is useful for obtaining internal printer information for use in networking or checking the firmware version etc.

- Firmware version
- Serial Number
- Part Number
- Prototype Name

Procedure

1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.4 Unit Information**.
2. The printer reads and displays the printer unit information, press any key to finish the test and the printer shuts down.



2.2.5 71.X:19 Recovery

Description

The SE 71.5:19 and SE 71.6:19 Recovery test resets the serial number and the part number in case the

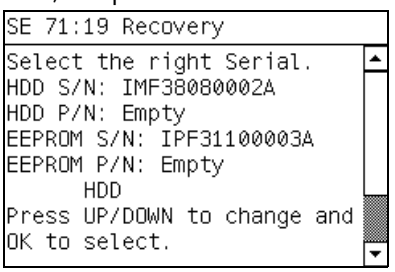
Hard disk, Main Interconnect Board, and/or Ink System Main Board were replaced at the same time or in case an already used HDD, Main interconnect board and Ink System board is placed in the printer

WILL causes an SE 71.5:19 or SE 71.6:19.

IN THIS CASE, IT IS CRITICAL to select the component which was already installed in the printer, or set the correct serial number and product number.

Procedure

1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.5 71.X:10 Recovery**.
2. Select between the HDD and the EEPROM = (of the Main interconnect board), select the part which contains the correct printer information, the part which has not been replaced.



3. Select between the HDD and EEPROM (of the ISM board), select the part which contains the correct information of the printer, the part which has not been replaced.

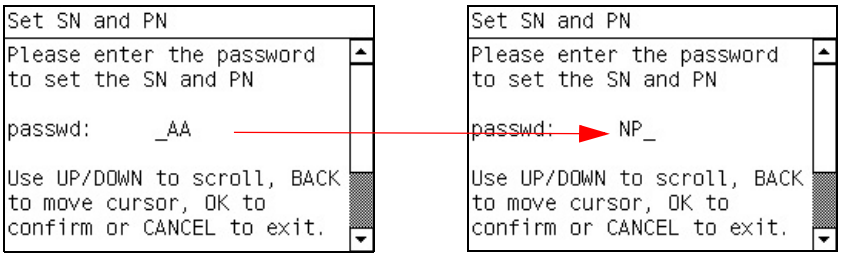
2.2.6 Set SN and PN

Description

This test displays and permits the engineer to set the Serial Number and Part Number of the printer. Use this procedure only in case of critical failure of both NVM main and backup and loss of the Serial Number and Part Number of the printer. The Tests is protected with the code "NPI" to enter in order to prevent the user performing this procedure.

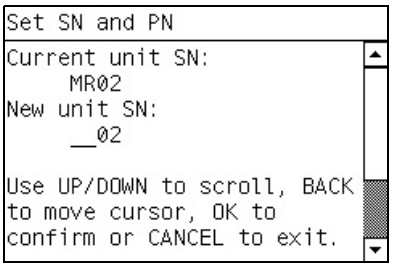
Procedure

1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.6 Set SN and PN**.
2. The front panel displays the following message, enter the password in order to get access to this functionality. **The password is NPI**.

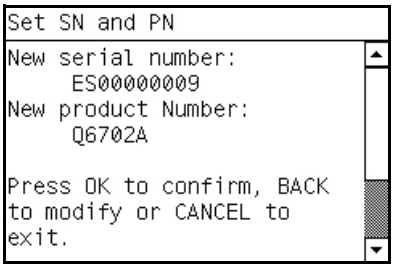


CAUTION: Changing the product number, could damage the printer. In case of any doubt on the product number, it is marked on the top left side of the e-cabinet.

3. The Printer displays the current Serial Number, use the keys on the front panel to change the serial number of the printer, and press ok.



4. The printer displays the new serial number and part numbers for confirmation. At this point, they are not saved.



5. Double check that the values displayed are correct, press ok to confirm and shut down the printer.

2.2.7 Set ISM SN

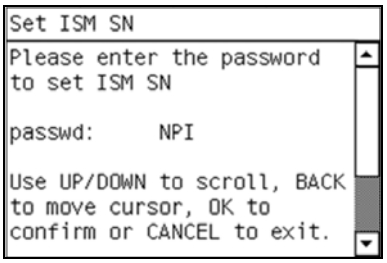
Description

This test displays and permits the engineer to set the Serial Number of the ISM board. Use this procedure only in case of a critical failure of both the HDD and the ISM board and the backup and there is a loss of the Serial Number of the ISM board (when the HDD and ISM have been changed simultaneously).

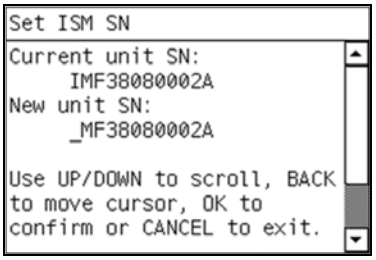
NOTE: The test is protected with the code **NPI** to prevent the user performing this procedure.

Procedure

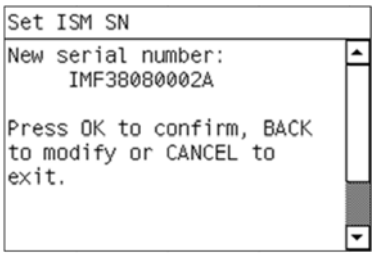
1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.7 Set ISM SN**.
2. The front panel displays the following message, enter the password in order to get access to this functionality. **The password is NPI**.



3. The printer displays the current ISM serial number. Use the keys on the front panel to display the new serial number of the ISM board.



4. The printer displays the new ISM serial number, press ok to confirm the change. Turn off the printer.



NOTE: In the case the serial number is not known the default number is set to IPF00000000A.

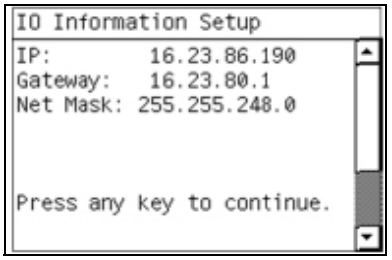
2.2.8 Set IO Configuration

Description

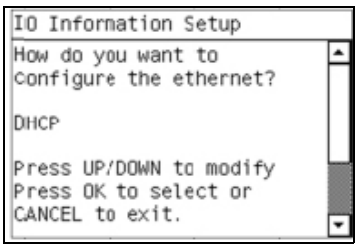
This procedure sets the IP address of the printer in case no IP address had been allocated.

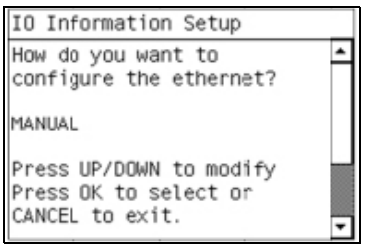
Procedure

1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.2 Main electronics Menu**> **2.2.8 Set IO Configuration option**.
2. The front panel displays the current IO information, press any key to continue.

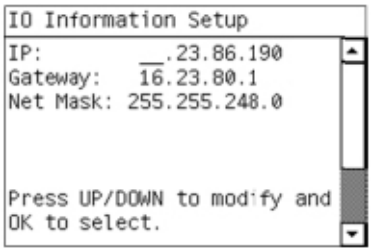


3. Use the keys to select the type of Ethernet configuration. In case there is no IP address configured select the Manual option. Press ok to confirm.

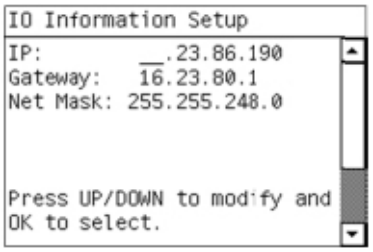




4. If the Manual option is selected the front panel displays the following screen, from here you can set the IP Address. When the IP address has been added, press ok.



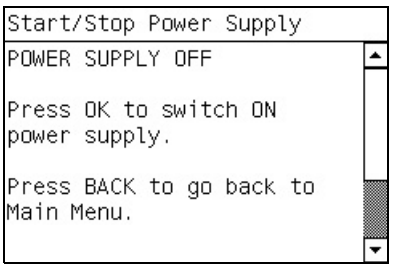
5. The front panel displays the following message, select ok to apply the settings.

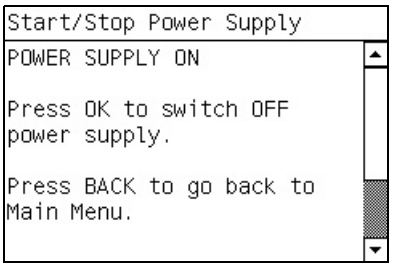


2.3 Main PSU/OFF

This tests allows the user to start up the 24v and 42v of the main power supply. Use this test to diagnose any electrical problem on the 24V and 42V supplied from the main Power supply.

NOTE: After any critical system error the 24V and 42v from the main power supply is cut, therefore this test is required to diagnose any fault which is caused by an error with the root supply of electricity.





2.4 ECabinet Fault Signals

Description

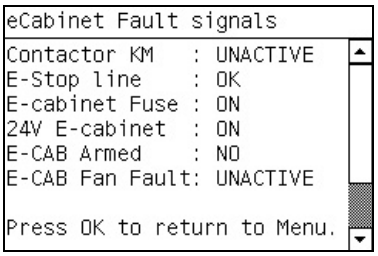
This tests displays in real time the input signals from the e-cabinet in the system electronics. The signals displayed in real time and that can be used to troubleshoot are the following:

- KM contactor is active but the system reports the 3 phase power is off.
- Emergency stop buttons ON/OFF
- F11 Fuse 24V power signal from the main power supply reaching e-cabinet
- 24V input signal is not detected and physically arrives to the correct check point in the e-cabinet
- Printer seems reamed (light button on), but the printer does not react correctly.
- E-Cabinet internal fan is on but the printer reports it as faulty.

Procedure

1. Go to Diagnostics menu and select **2. User Electrical Systems Menu**> **2.4 ECabinet**

2. After the first part of the procedure, the following screen is displayed showing in real time the electrical signal coming from the components. Press ok to return to the previous menu.



3. Substrate Path Menu

3.1 Spindle Motors burning

Description

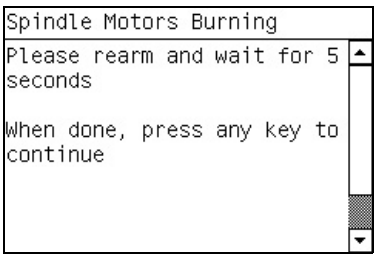
The procedure moves the front and rear spindle systems for a certain period of time at high speed. This test is to ensure correct operation of the mechanical gears of the systems also performing auto lubrication with the internal grease.

- As the systems operates in a torque based mechanism, if there is a long time without running or there are low temperatures, this can cause media movement issues, which could be solved by performing this procedure.
- Rear spindle: The tests runs the spindle 5 minutes in one direction and the 5minutes in the other. Test duration 10 Minutes.
- Front spindle: The test runs the spindle 15 Minutes in one direction and 15 minutes in the other. Test duration 30 Minutes.The procedure moves the front and rear spindle systems for a certain period of time at high speed. This test is to ensure correct operation of the mechanical gears of the systems also performing auto lubrication with the internal grease.

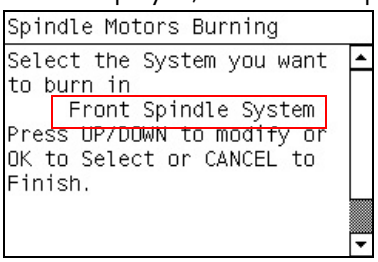
Procedure

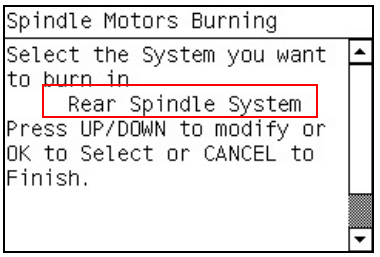
To perform the procedure remove the Front Spindle Motor and place it on the mount of the Rear Motor side plate, and connect it to the connections of the Rear Media Motor (you do not need to fully install it, just to connect it).

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.1 Spindle Motors Burning**
2. The following screen is displayed, reset the circuit breakers and make sure there is a light showing.

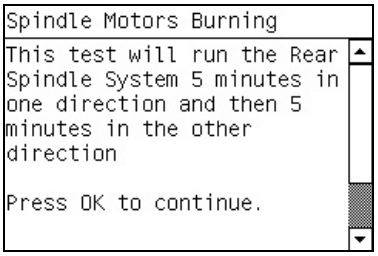


3. The following screen is displayed, select which spindle you want to test and press ok.

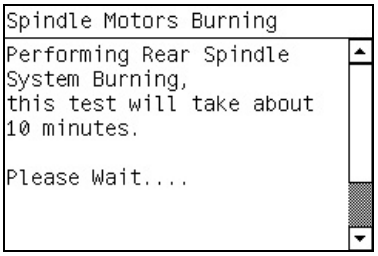




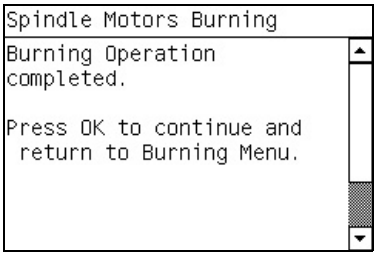
4. The following information message is displayed, press ok to test the selected spindle in both directions.



5. While the test is in progress the following message is displayed.



6. When the test has completed the following message is displayed.



3.2 Front Spindle System

Description

The procedure checks the operation of the Front spindle system first in open loop (operating the Motor system and showing the number of encoder units counted during the movement) and in close loop with a start stop detection procedure where the PWM to start the rotation movements is calculated to ensure correct mechanical operation as well as servo control. The second part of the test takes about 30 min.

NOTE: Only one of the motors includes the encoder system. Both motors are set in series so the failure of one can cause the failure of the other.

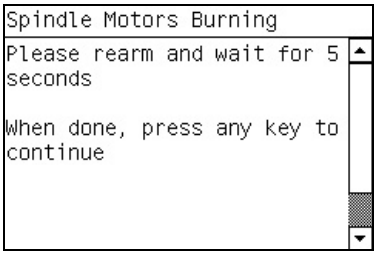
NOTE: Run this test to ensure correct operation of the Front spindle system or well after a system error related with the system to perform the appropriate troubleshooting.

NOTE: It is recommended to perform this procedure by connecting the motor to the rear spindle to achieve an improved test.

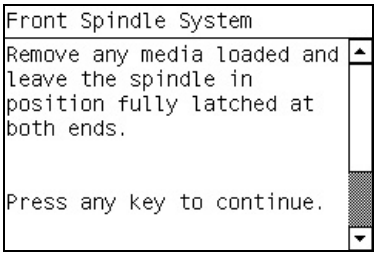
Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.2 Front Spindle System**

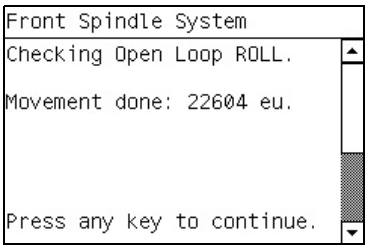
2. The following screen is displayed, reset the circuit breakers and make sure there is a light showing.



3. The front panel displays the following message, this test must be performed without media loaded, confirm there is no media loaded and press the ok key to continue.

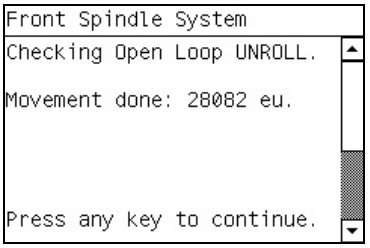


4. The front spindle motor is turned continuously (open loop) in the ROLL direction, the results are then displayed on the front panel in encoder units, press any key to continue.

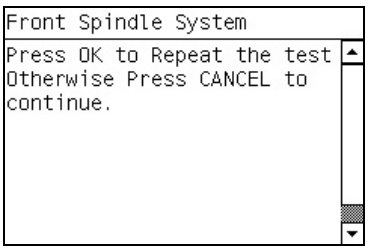


NOTE: Ensure the encoder is reading counts during the movement, if the value of the encoder units counted is too low (in the hundreds range, this could indicate a faulty encoder or encoder signal path). If the number of encoder units counted is 0, there is a complete lack of movement if the motor moved (spindle turned) there is a failure in the coder system or signal path which requires a repair.

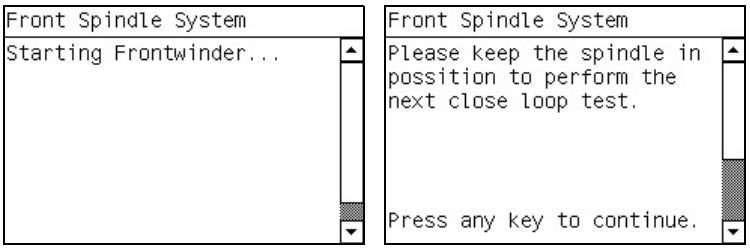
5. The front spindle motor is turned continuously (open loop) in the UNROLL direction, the results are then displayed on the front panel in encoder units, press any key to continue.



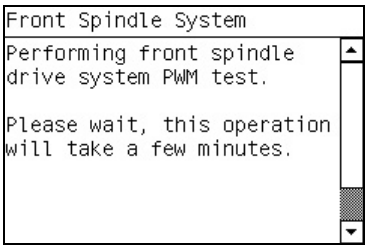
6. The test can be performed again for the purposes of further troubleshooting, press ok to repeat, or cancel to continue the spindle test.



7. The printer continues the test by displaying the following messages, press any key to continue

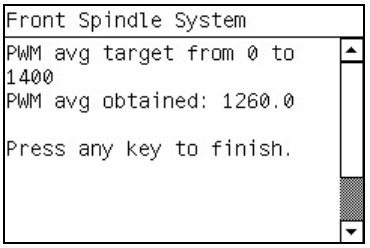


8. The front panel displays the following message while the front spindle moves in a start/stop method (close loop).



NOTE: This part of the test may take a few minutes to complete, and it may not be obvious that the test is in progress at times, as the printer may halt and do nothing.

9. The printer will apply gradually a value of PWM to the motor until the point where the motor starts rotating. This value will be the start of the movement point and it is a representation of the amount of friction in the system (amount of energy required for the motor to start moving). The test will be repeated 5 times forwards and backwards and a final PWM average value will be displayed, such as the one shown here.



NOTE: A good friction value of a system that is working correctly will be below 1400 eu PWM.

3.3 Rear Spindle System

Description

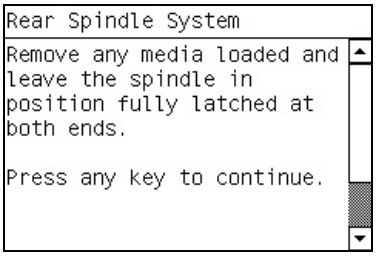
The procedure checks the operation of the Rear spindle system first in open loop (operating the Motor system and showing the number of encoder units counted during the movement) and in close loop with a start stop detection procedure where the PWM to start the rotation movements is calculated to ensure correct mechanical operation as well as servo control. The second part of the test takes about 30 min.

NOTE: Run this test to ensure correct operation of the Rear spindle system or well after a system error related with the system to perform the appropriate troubleshooting.

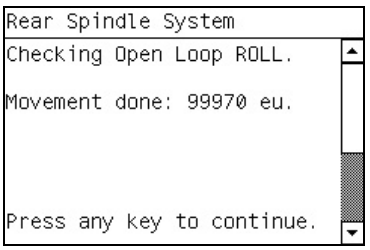
Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.3 Rear Spindle System**

2. The front panel displays the following message, this test must be performed without media loaded, confirm there is no media loaded and press the ok key to continue.

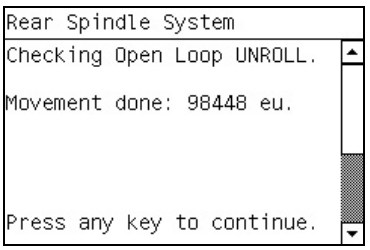


3. The rear spindle motor is turned continuously (open loop) in the ROLL direction, the results are then displayed on the front panel in encoder units, press any key to continue.

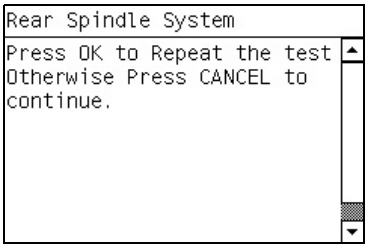


NOTE: Ensure the encoder is reading counts during the movement, if the value of the encoder units counted is too low (in the hundreds range, this could indicate a faulty encoder or encoder signal path). If the number of encoder units counted is 0, there is a complete lack of movement if the motor moved (spindle turned) there is a failure in the coder system or signal path which requires a repair.

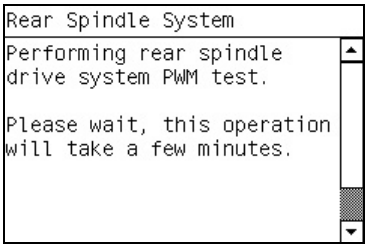
4. The rear spindle motor is turned continuously (open loop) in the UNROLL direction, the results are then displayed on the front panel in encoder units, press any key to continue.



5. The test can be performed again for the purposes of further troubleshooting, press ok to repeat, or cancel to continue the spindle test.

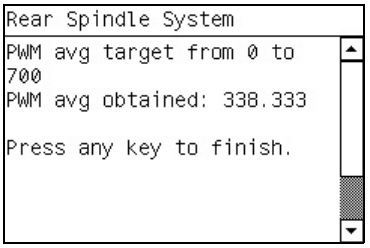


6. The front panel displays the following message while the rear spindle moves in a start/stop method (close loop).



NOTE: This part of the test may take a few minutes to complete, and it may not be obvious that the test is in progress at times, as the printer may halt and do nothing.

7. The printer will apply gradually a value of PWM to the motor until the point where the motor starts rotating. This value will be the start of the movement point and it is a representation of the amount of friction in the system (amount of energy required for the motor to start moving). The test will be repeated 5 times forwards and backwards and a final PWM average value will be displayed, such as the one shown here.



NOTE: A good friction value of a system that is working correctly will be below 700 eu PWM. In order to reduce the friction, perform a burn test of the system, adding some grease to the inner gear (disassemble the motors cover if required to add the grease).

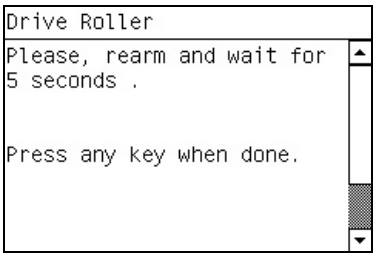
3.4 Drive Roller

Description

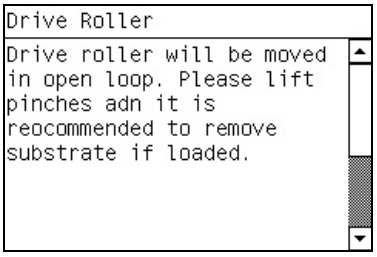
The procedure checks the operation of the Drive Roller in open loop (operating the Motor system and showing the number of encoder units counted during the movement).

Procedure

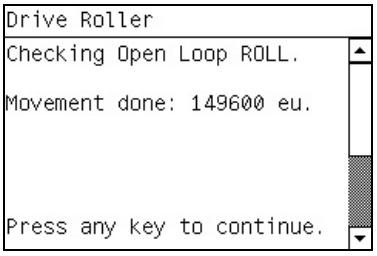
1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.4 Drive Roller**
2. The front panel displays the following message, reset the circuit breakers and make sure there is a light showing.



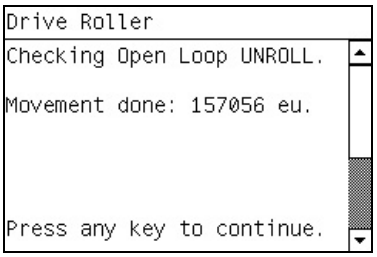
3. The front panel displays the following message, lift the pinches and remove any media present, press any key to continue.



4. The Drive Roller is turned continuously (open loop) in the ROLL direction, the results are then displayed on the front panel in encoder units, press any key to continue.



5. The Drive Roller is turned continuously (open loop) in the UNROLL direction, the results are then displayed on the front panel in encoder units, press any key to finish.



3.5 Pinch Switches

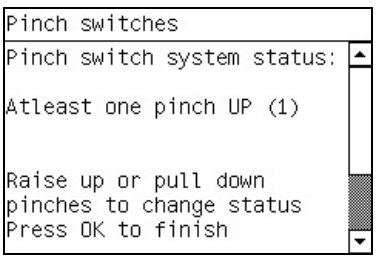
Description

This test shows the status of the pinches as detected by the switches in the front panel. This test can be used to detect any possible switch of cabling when the part was being installed, or cable failure.

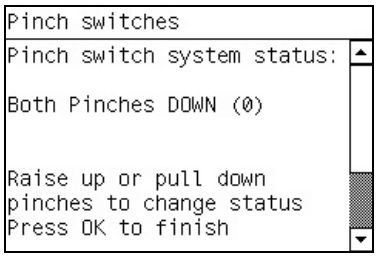
NOTE: The switches of both pinch bars are connected in series, so for the system to detect the pinch system as engaged, the test requires both bars to be down.

Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.5 Pinch Switches**
2. The front panel displays the status of the pinches as detected by the pinch switches. Change the position of a pinch to check the status is detected correctly and displayed on the front panel.



3. The Front Panel displays the following message, press any key to finish.



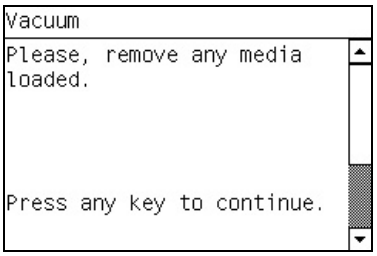
3.6 Vacuum

Description

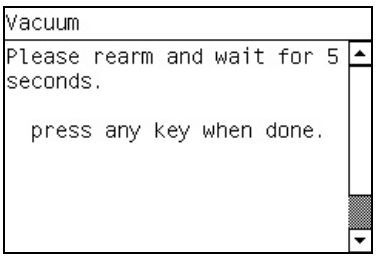
This test checks the vacuum system. Including electronics control system (vacuum control PCA), vacuum sensor and pump operation.

Procedure

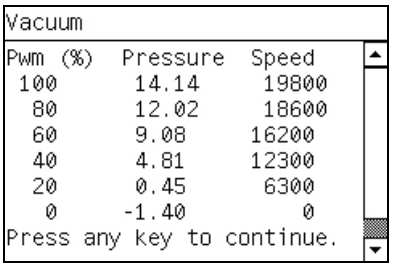
1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.6 Vacuum**
2. The front panel displays the following, the test must be performed without media loaded, confirm there is no media loaded and press any key to continue.



3. The front panel displays the following message, reset the circuit breakers and make sure there is a light showing.



4. The printer performs the vacuum test and displays the results on the front panel, press any key to finish the test.



5. In case of any failure, check the following:

- There has been reported a case of a 'FAIL' which is not actually a failure: In this case the pressure is too high (around 18-22) when the vacuum speed is at its maximum, but still with pressure values are decreasing when the vacuum speed is decreasing down to value around 0 when the speed is at 0: In this case, there is NO SPECIFIC issue, the holes of the print platen could be cleaned, but this should not impact the functionality of the printer.

- The calibration of the air pressure sensor might have been altered. Reset it through service menu, test: '4.3.8 Reset vacuum aircal' ⇒See page 506, restart the printed in diagnostic mode and run again the test '3.6 Vacuum'⇒See page 377. If there is no more failure, the issue is fixed.
- The vaccum values are well displayed (even in case of failure) from the firmware version GF-BOO7.x or GF-BOB7.x.
- That there is no air leakage within the vacuum beam, mainly that there is no air leakage between the tube coming from the vacuum pump and the vacuum beam
- That there are the forklift guides in place with all screws (refer to page 243).
- That the air tube from the vacuum board to the vacuum beam is correctly connected.

3.7 OMAS

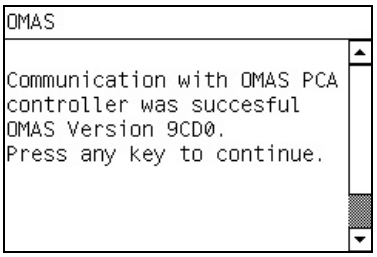
Description

The printer retrieves the firmware version and serial number of the OMAS sensor. This test checks the OMAS sensor electronics and the control system electronics.

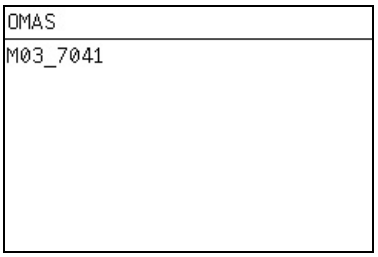
- The test performs also communication check reading the serial numbers from both sensors.
- Use this test as a health communication check after any OMAS controller or OMAS sensor replacement to confirm that the systems are correctly connected and operating.
- If there is a failure in the test a specific system error will be displayed: **50.1:11**

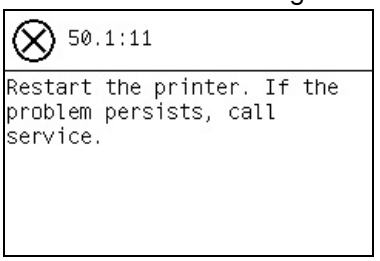
Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.7 OMAS**
2. The front panel displays the following message if communication with the OMAS PCA is successful, press any key to continue.



3. If there was an error with the communication to the OMAS the following screens are displayed.





Troubleshoot the system error displayed and make the appropriate repairs.

3.8 Free Fall Pinch Switch Test

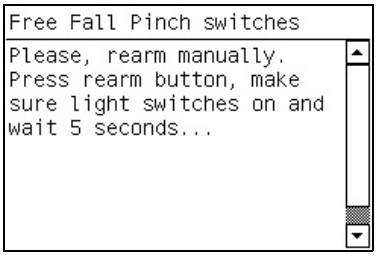
Description

The test shows the status of the Free Fall System Pinch Switch (open or closed). Use this test to troubleshoot any possible problem with the switch. The status shown is as the printer detects the value through the sensor.

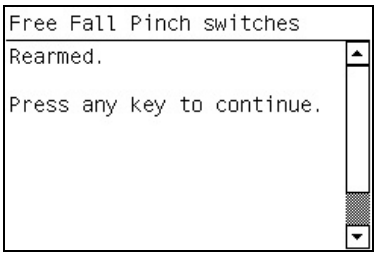
Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.8 Free Fall Pinch Switch Test**

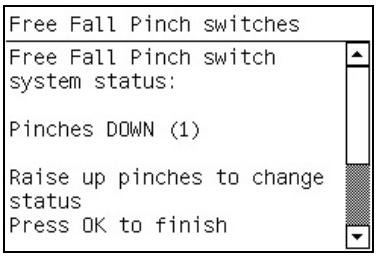
2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



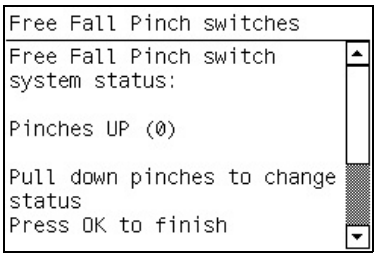
3. The front panel displays the following message to confirm the printer has rearmed, press any key to continue.



4. The front panel displays the current status of the pinchwheels as detected by the sensor (up or down), raise up or down the pinchwheels to see if the status displayed changes.



5. If the sensor and pinchwheel assembly is working correctly the status will change and be displayed.



3.9 Free Fall System

Description

This procedure checks the operation of the Free Fall System in open loop (operating the Motor system and showing the number of encoder units detected by the encoder sensor during the movement).

Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.9 Free Fall System**

3.10 Free Fall Relays

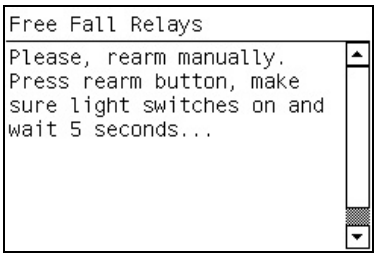
Description

This test shows the status of the Frontwinder and Freefall system switching relays. The test allows the switching between one configuration and the other and displays the values read by the feedback signals. Use this test if when troubleshooting the switching between the frontwinder and free fall, is not possible

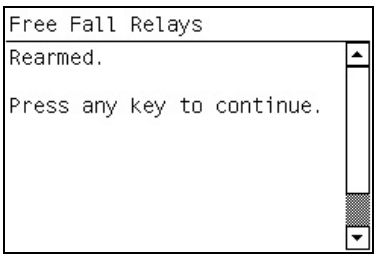
to identify any failures with switching rely system. Perform the test checking the status reported by the test in the front panel and the actual switching status reported by the LED located in the sensors.

Procedure

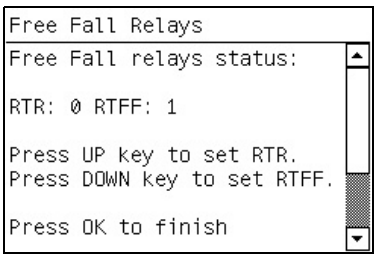
1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.10 Free Fall Relays**
2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



3. The front panel displays the following message to confirm the printer has rearmed, press any key to continue.



4. The front panel displays the current status of the Frontwinder and Freefall system as detected by the sensors, use the front panel keys (Up & down) to change the status, and check that the changes are reflect by the LEDs located on the sensors.



3.11 Take Up Reel System

Description

This test performs an open loop test of the front spindle system operating as the Take Up Reel. Take note that the motor driver in this mode is operated by the Delsol driver at 24V located in the Main Interconnect. The encoder path is the same one as used for the system in front spindle system mode. Use this test to identify any possible fault conditions with the system in Take up Reel mode.

Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.11 Take Up Reel System**.

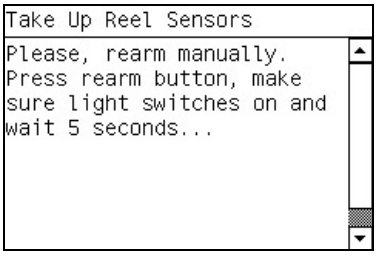
3.12 Take Up Reel Sensors

Description

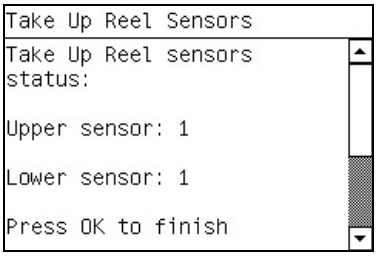
This test displays in real time the value from the take up reel media sensors. Use this test to troubleshoot any possible issue with the sensors.

Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.12 Take Up Reel Sensors**.
2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



3. The front panel displays the current status of the sensors in the Take up Reel, if the light beam is broken by a hand for example, and the status changes, this would indicate that the sensor is working correctly as it detected the hand.



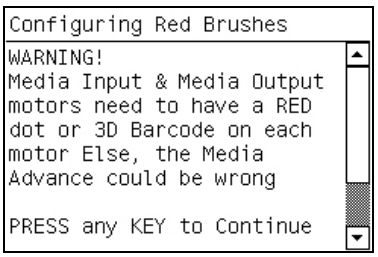
3.13 L65500 Set Red Brushes

Description

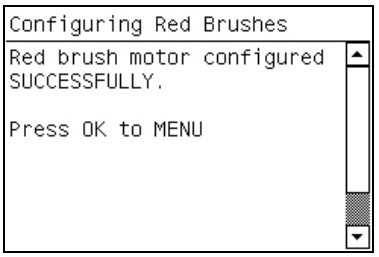
This test displays in real time the value from the take up reel media sensors. Use this test to troubleshoot any possible issue with the sensors.

Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.13 L65500 Set Red Brushes**.
2. The front panel displays the following message to ensure the Media Input & Media output motors need to have the RED dot or 3D Barcode on each motor, if this is not the case the Media Advance could be incorrect.



3. Once a KEY is pressed the Motors will be configured as “Red brush” motor type.



NOTE: This menu is not possible if the printer is a LX series, only possible for a L65500. This is because the LX series printers have been shipped only with ‘red brushes’ motor. On the support side, the black brushes motor will become unavailable soon while the red motors will be maintained. Specific flyer added within the support part and detailed information available within the chapter 3, ‘How to check the media path’⇒ page 236.

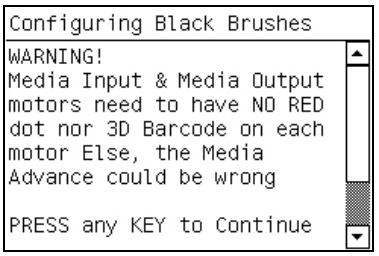
3.14 L65500 Set Black Brushes

Description

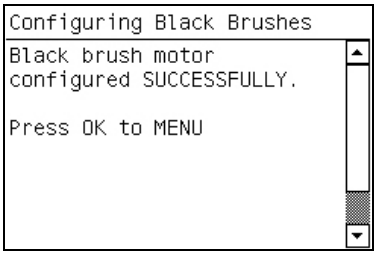
This test displays in real time the value from the take up reel media sensors. Use this test to troubleshoot any possible issue with the sensors.

Procedure

1. Go to Diagnostics menu and select **3. User Electrical Systems Menu**> **3.14 L65500 Set Black Brushes**.
2. The front panel displays the following message to ensure the media Input & Media output motors need to have the NO RED circle label or 3D Barcode on each motor, if this is not the case the Media Advance could be incorrect.



3. Once a KEY is pressed the Motors will be configured as “Black brush” motor type.



NOTE: This menu is not possible if the printer is a LX series, only possible for a L65500. This is because the LX series printers have been shipped only with ‘red brushes’ motor. On the support side, the black brushes motor will become unavailable soon while the red motors will be maintained. Specific flyer added within the support part and detailed information available within the chapter 3, ‘How to check the media path’⇒ page 236.

4. Ink system

4.1 ISS Electronics

Description

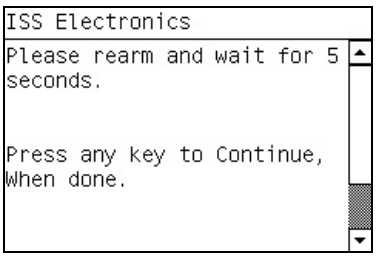
The ISS Electronics diagnostic test checks the following components and processes.

- Power Supply Voltage test (Ink System Main Board)
- Ink System Main Board to Electronics Box communication test (two LAN cables)
- Ink Cartridge Information test (can read the ink cartridge data)
- Broken Bag Detector test
- Non-Volatile Memory test (read/write to ISS NVM)

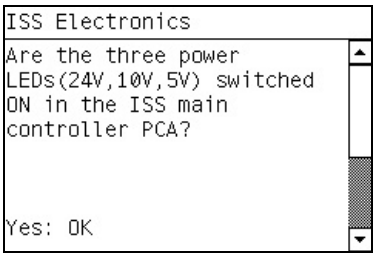
Perform this test to confirm the correct functioning of the Main ISS PCA.

Procedure

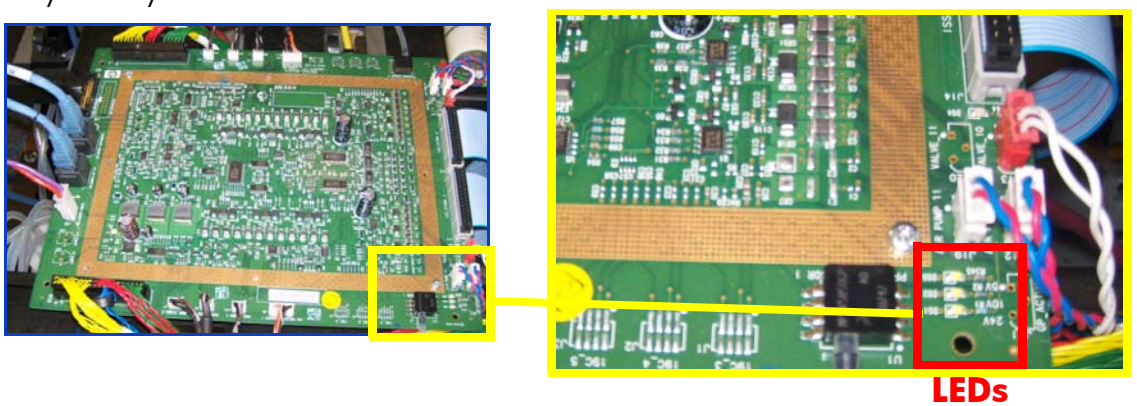
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.1 ISS Electronics**
2. The front panel displays the following message, reset the circuit breakers and make sure there is a light showing.



1. The front panel displays the following message, remove the Left Side Rear Panel. See page 565.

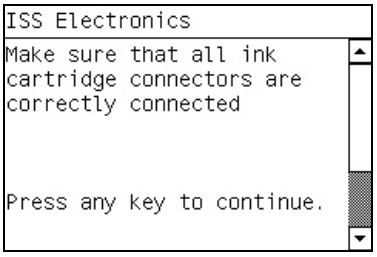


2. Check that the ISS PCA LEDs have come on (5 V, 10 V, 24 V), located on the Ink System Main Board, selected yes if they have come on.

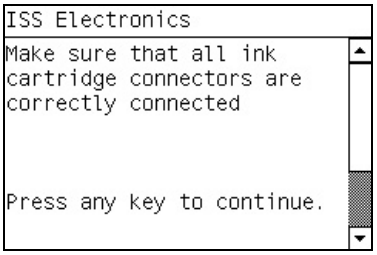


If they have not come on, select no and the printer will shut down in order to make the repair.

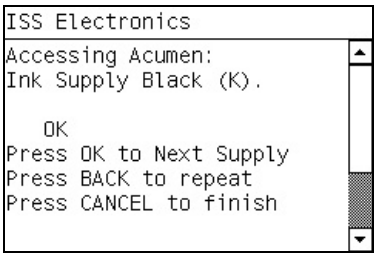
3. If there is no problem at this point the following screen is displayed, check that all the ink cartridges are correctly connected.



4. The printer checks the communication to the acumen of each of the ink cartridges to the Ink System Main Board, make sure all the ink cartridges are correctly connected, press ok to continue.



5. The front panel displays the following message if the printer can read the acumen on the ink cartridge, press ok each time to move on to the next color, until all the acumen of the ink cartridges have been read.



If there is a failure to read any of the acumen of the ink cartridges, the test will fail and the printer will shut down in order to make the appropriate repair.

4.2 Air Pressure System

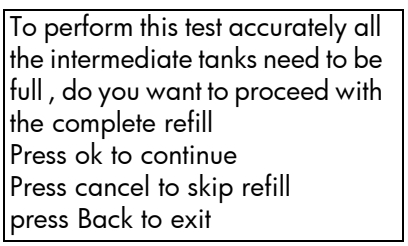
Description

This test checks the complete operation of the Air pressure system. The test ensures correct operation of the system as a whole, however use the procedure 4.15 to diagnose specific problems.

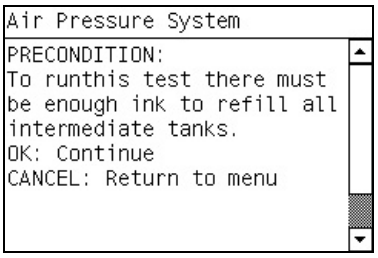
NOTE: Before this test can be performed a complete intermediate tank refill is required in order to ensure exact air volumes, therefore a minimum of 1.6l of ink is required in the ink supplies.

Procedure

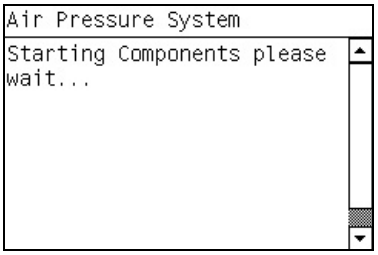
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.2 Air Pressure System**.
2. The front panel displays the following message, press ok to continue.



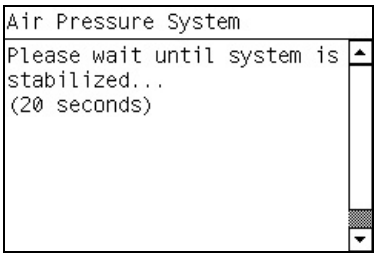
3. The front panel displays the following message, press ok to continue.



4. The printer starts the electrical subsystem required in order to run the test.



5. The printer pauses the test while the air pressure system stabilizes.



If there is insufficient ink in the ink cartridges the front panel will display an error and the test will finish.

6. If there is no problem at the point, the front panel will display the results of the air pressure test, press nay key to shut down the printer. The test mainly checks if the air pressure can reach a value of at least 5600mpsi. If, when pressurizing the air system, it cannot reach 5600mpsi, an error will be displayed.

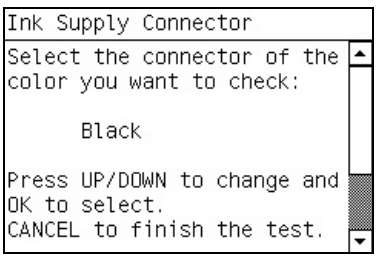
4.3 Ink Supply Connector

Description

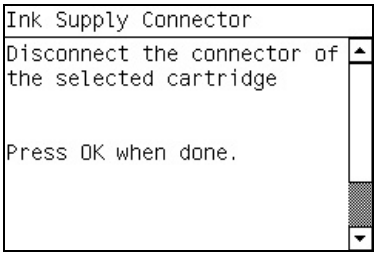
This test checks the correct functionality of the ink supply connectors (inner switches which detect if the connectors are connected or not). The test does not check the acumen connection with the ink supplies.

Procedure

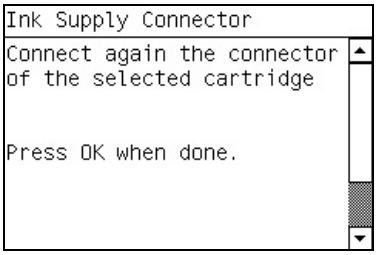
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.3 Ink Supply Connector**.
2. The front panel displays the following message, select the color of the ink cartridge connection that you want to check.



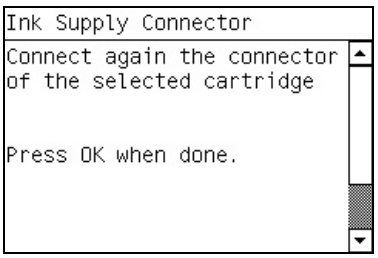
3. The front panel displays the following message, disconnect the connector of the ink cartridge you want to check.



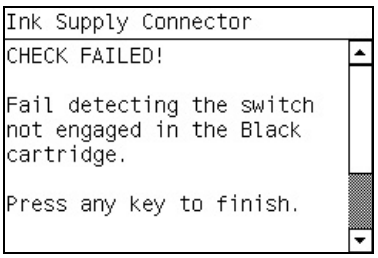
4. Reconnect the connector of the ink cartridge you are checking.



5. If the printer could detect the change in the connection status the following message is displayed and the test is passed.



If the printer could not detect the change in the connection status, the printer displays the following message and the test is failed. Check the connections of the ink cartridge and replace if appropriate.



4.4 IT Broken Bag Recovery

Description

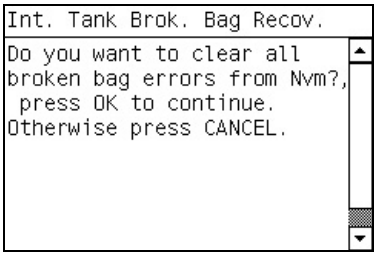
This procedure resets the Intermediate Tank broken bag status, use this procedure after the repair of the broken bag condition to return the printer back to normal operation.

NOTE: In case of false broken bag or to troubleshoot any possible electrical fault condition please use Procedures 4.15.10 or 4.15.11.

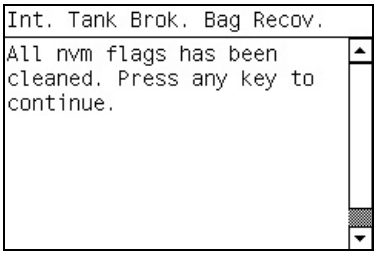
Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.4 IT Broken Bag Recovery**.

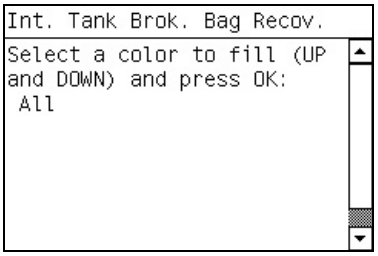
2. The front panel displays the following message, press ok to clear the Broken Bag status from all the bags in all the ink cartridges.



3. The front panel displays the following message to confirm the status has been removed from the ink cartridges.



4. The front panel displays the following message, select which intermediate tank to fill with ink or select all. Once selected the intermediate tank refill procedure will begin.



4.5 Ink System Leakage

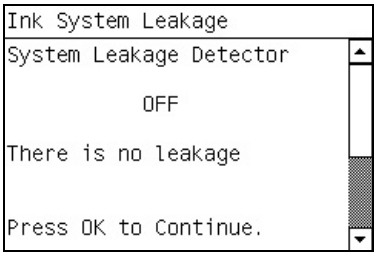
Description

This procedure resets the Ink System Leak status, use this after a repair of the system leak condition to return the printer to normal operation.

Due to a real time display of the status the test also allows the user to troubleshot a possible false ink system detection.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.5 Ink System Leakage**.
2. If there is no ink leak condition the front panel will display the following message, and the status will return to normal, and the printer can be used as normal, press ok to finish.



4.6 ISS Electrovalves

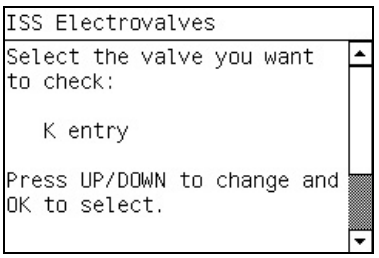
Description

This procedure opens and closes the ISS 6 entry and 6 intermediate electrovalves, opening and closing them 10 times with the interval of 1 second.

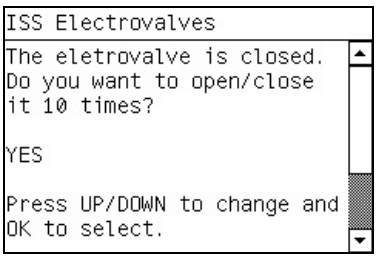
Use this test to ensure the correct operation of the electrovalve. The feedback is audible or by touching the electrovalve in test. Use also this test to unblock a possible stuck electrovalve.

Procedure

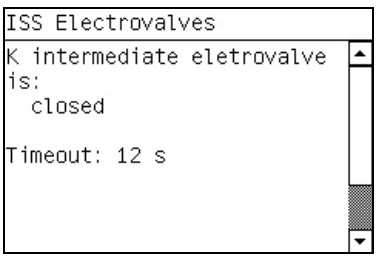
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.6 ISS Electro Valves**.
2. The front panel displays the following message, select the electrovalve you want to check.



3. Confirm the selection you have made or select no and select another electrovalve.

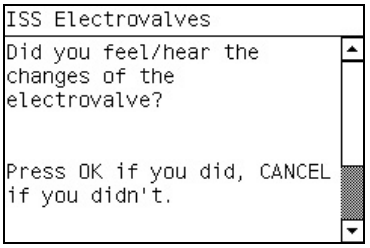


4. The printer begins the opening and closing of the selected electrovalve, and displays the status at the same time (open or closed)



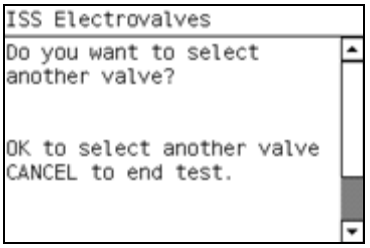
5. Place your finger on the electrovalve to feel if the electrovalve is opening and closing correctly. You will feel a tick-tack on your fingertip, and you will also hear the tick-tack sounds.

6. The printer asks you if the electrovalve opened and closed correctly, select yes if you could hear and feel the electrovalve opening and closing and press ok.



If the electrovalve did not open and close retry the test but this time hitting the electrovalve with a pencil to try and release it, do not hit the tubes or the connector, but the body of the valve, if it still fails, select no and press ok, the test will fail and the printer must be shut to replace the part.

If there was no problem at this point the front panel will display the following message, select another electrovalve to replace, or finish the test by pressing cancel.



4.7 Recovery from Ink Leakage

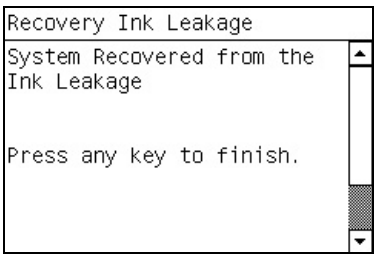
NOTE: You must fix the leak problem and clean the ink from the tray before you can recover the leakage status.

Description

The Recovery Ink Leakage diagnostic test is used to reset the Ink Leakage Sensor status in order to stop the system error code 57:11 from displaying. The printer reads the ink leakage sensor values to make sure that the problem has been solved). If the problem needs further troubleshooting use the procedure on '4.5 Ink System Leakage'. For more information about this system error code, see ⇒page 144.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.7 Recovery Ink Leakage**.
2. The front panel confirms the reset of the ink leakage status, press any key to finish.



4.9 Intermediate Tank Change Process

Description

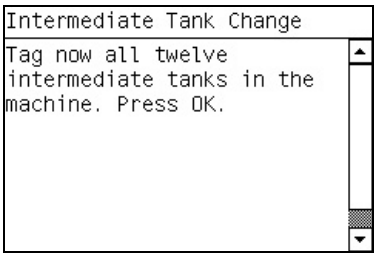
The intermediate ink tanks must be changed as a result of the Preventive Maintenance #3 Alert on the Internal Print Server. For more information on the preventive maintenance of the intermediate ink tanks, see ⇒ page 881.

The actual process is designed to save some ink while taking care to leave some ink in the old intermediate ink tanks due to the possibility that some ink has solidified in the bottom of the tank. In this way, ink is not wasted and the health of the ink system is maintained.

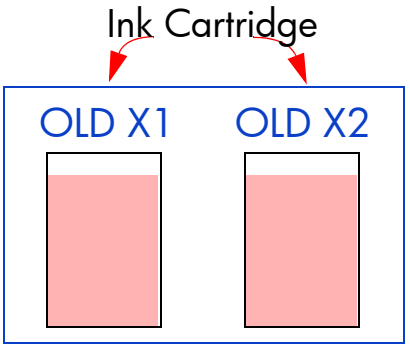
NOTE: Before installing a new Intermediate Tank, perform an electrical check on the part, refer to page 223.

Procedure

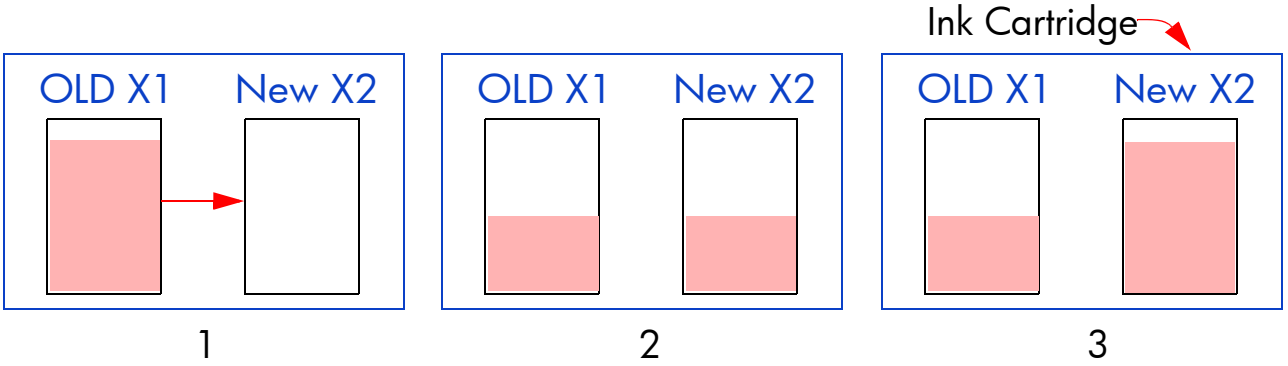
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.9 I Tank change Process**.
2. First check that each intermediate electrovalve is working correctly by performing the test 4.6 (ISS electrovalve) see ⇒ page 388, and if not hearing any 'click - click', redo the test while hitting the body of the electrovalve with a pencil. If one electrovalve cannot be activated, you can refill the corresponding intermediate tank manually (opening for 15 minutes the corresponding main electrovalve, and disconnecting 2 intermediate tanks from other colors, need to have the corresponding cartridge plugged in).
3. The front panel displays the following message, press ok to select all the intermediate tanks for refilling.



4. The printer fills the old X1 and X2 intermediate ink tanks to ±800 ml from the ink cartridges. ±380 ml of ink in each tank could contain ink solids, and will be discarded.

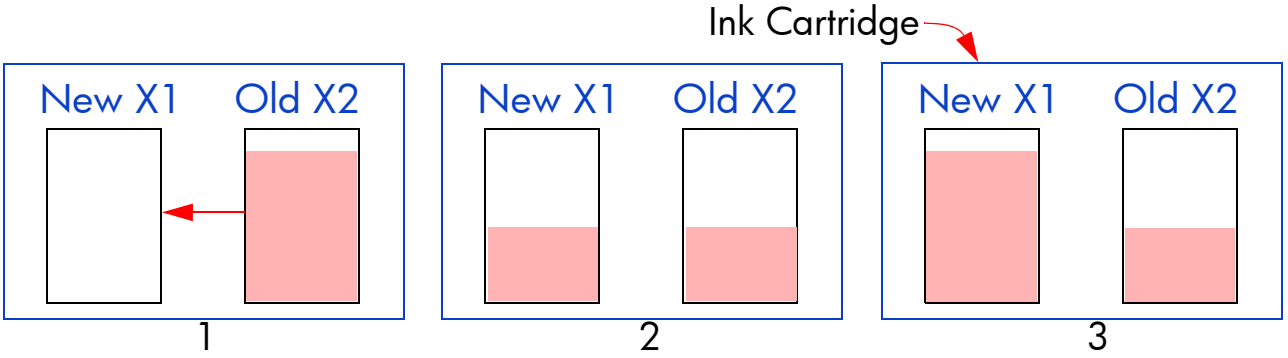


5. *New X2 is inserted.*
The printer sends ¬±420 ml from the old X1 intermediate ink tank to the new X2 intermediate ink tank, then fills the new X2 tank until ¬±800 ml from the ink cartridge. The new X2 tank now contains ¬±800 ml of good ink.

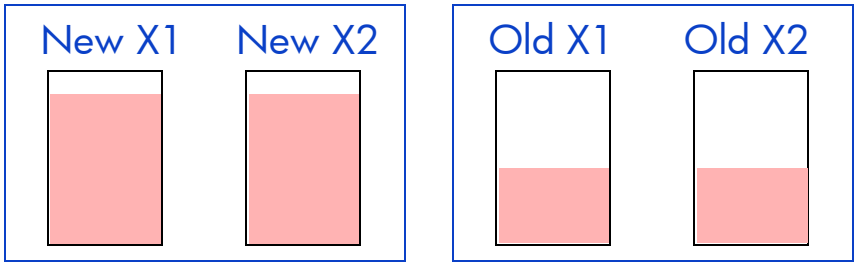


6. *New X1 is inserted. New X2 is removed and Old X2 is inserted.*
The printer sends ¬±420 ml from the Old X2 intermediate ink tank to the new X1 intermediate ink tank,

then fills the new X1 tank until ¬±800 ml from the ink cartridge. The new X1 tank now contains ¬±800 ml of good ink.



7. *New X2 is inserted.*
At the end of the process, the new tanks contain ¬±800 ml of ink. The old tanks contain ¬±380 ml of ink that could contain ink solids, and are discared.



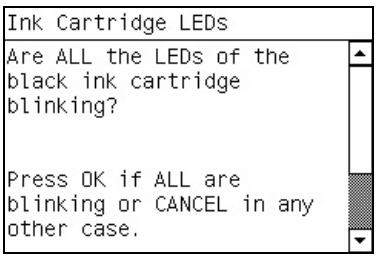
4.10 Ink Cartridge LEDs

Description

The procedure enables the troubleshooting of any possible ISS system Led interface boards by switching on and off the different leds of each color

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.10 Tank change Process**.
2. The front panel displays the following message, check if the LED on the black ink cartridge is blinking, if they are press ok and move on to the next color. The order that the colors are checked are Black, Yellow, Cyan, Magenta, Light Magenta, Light Cyan.



If there is an error and one of the LEDs is not blinking, selected cancel and the test will fail.

4.11 Ink Pres. Sen. Calib.

Description

This procedure displays and introduces calibration values for the two ink pressure sensors boards. The Ink Pressure Sensor Calibration is used any time the Ink Pressure Sensors are replaced, in order to enter the

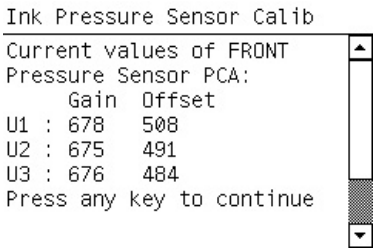
proper calibration values into the system. These calibration values are included with the service part (label).

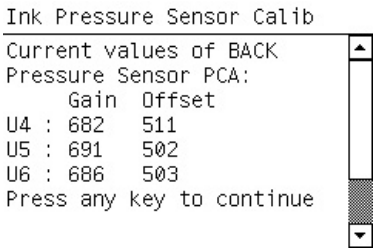
NOTE: During this procedure, you must have access to the Ink Pressure Sensor that you have replaced. Leave a cover open so that you can easily access the Ink Pressure Sensor.

Although the procedure is located in Diagnostic Mode and can fail, this calibration is not used to troubleshoot a fault (diagnostic mode is necessary in regards to firmware).

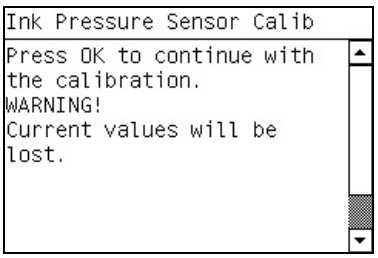
Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.11 Ink Pres. Sen. Calibration**.
2. The front panel displays the following message, these are the calibration values of the previous ink pressure sensor calibration which are stored in the system (front and back). Press any key to continue with the calibration.

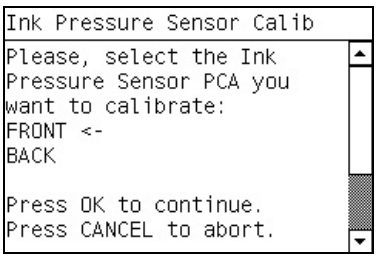




3. The front panel displays the following warning that if you continue with the calibration the stored values will be delete, press ok to continue the calibration.

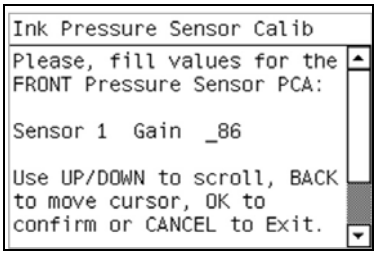


4. Select which Ink Pressure Sensor you want to calibrate and press ok.



At this point the calibration can be cancel and no changes will be made to the values held in the printer.

5. The front panel displays the following message, enter the values located on a label at the back of the Sensor PCA. Two values must be entered for the selected sensor: 'Gain' and 'Offset' O = Offset. G = Gain. Press ok to confirm the values.

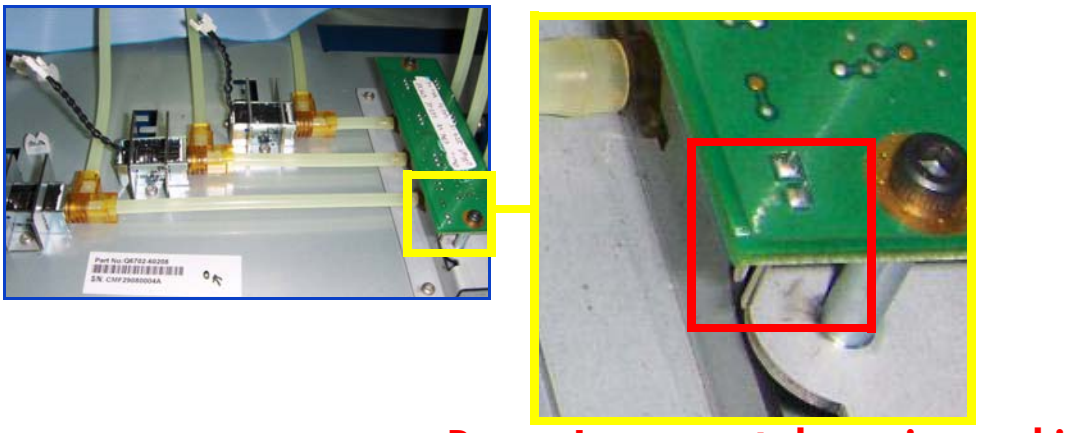


Repeat for the remaining values, taking care to enter the correct values. The printer saves the values to the ISS NVM and displays them on the front panel for confirmation.

6. Check that the values saved are the same as the values on the service part label, if the values are correct, press ok to confirm.

```
Ink Pressure Sensor Calib
Current values of BACK
Pressure Sensor PCA:
     Gain  Offset
U4 : 682   511
U5 : 691   502
U6 : 686   503
Press any key to continue
```

7. Remove the power jumper from the Ink Sensors PCA.



Power Jumper not shown in graphic

4.12 Ink Pressure At Pen.

Description

This test pressurizes the system and allows the user to insert a needle and a syringe to check the pressure with which the ink reaches the Printhead

Procedure

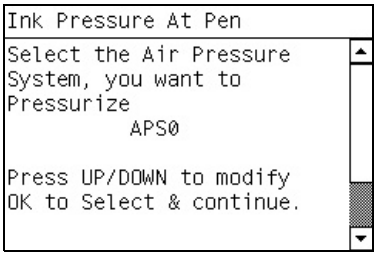
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.12 Ink Pressure At Pen**.
2. The front panel displays the following message while the procedure initializes.

```
Ink Pressure At Pen
Starting Components.
Starting ISS, this may take
30 seconds please wait...
```

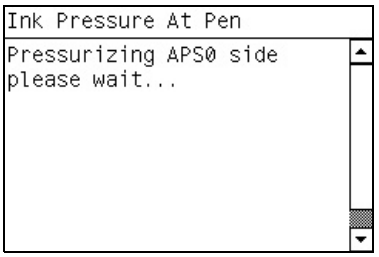
3. Select which color you need to check the pressure of.

```
Ink Pressure At Pen
Select the color where to
check the Ink Pressure

    Black

Press UP/DOWN to Modify
Press OK to select
Press CANCEL to Exit.
```

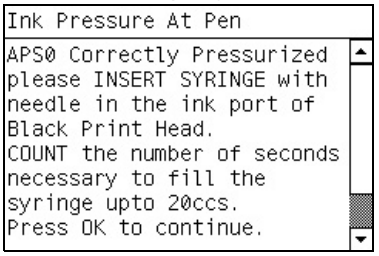
4. Select which side you want to check the pressure of.



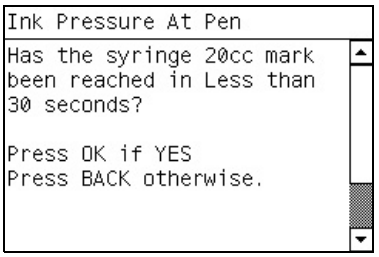
5. Wait until the correct pressure level is reached.



6. The front panel displays the following message, insert a syringe into the ink port of the selected color. Count the number of seconds it takes to fill the syringe with 20cc of ink.

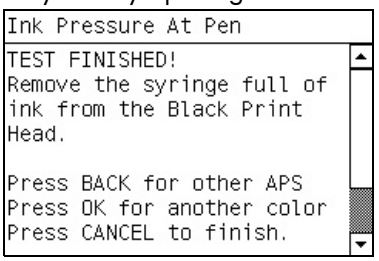


7. The front panel displays the following message, press ok if the syringe was filled with 20cc of ink within 30 seconds.



If the syringe was not filled within 30 seconds there is a problem with the pressure and the problem needs troubleshooting.

8. If there is no problem at this point the front panel displays the following message, remove the syringe from the color port and depressurize the system by opening the relief valves.



4.13 Force Filling Tanks

Description

This test allows a refill of the intermediate tanks with ink level monitoring. To perform this test it is required the system operates appropriately and to have at least 1.6liters of ink in all the supplies. The Force Filling Intermediate Tanks diagnostic utility is to fill the intermediate ink tanks in case they must be transported. In this way, the risk of a broken bag is reduced.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.13 Force Filling tanks**.
2. The printer makes sure that the ink cartridges and intermediate ink tanks are connected, and that the ink cartridges have at least one liter of ink in order to perform the test.
3. The intermediate tanks are then filled with ink.

4.14 No Flow Error Recovery

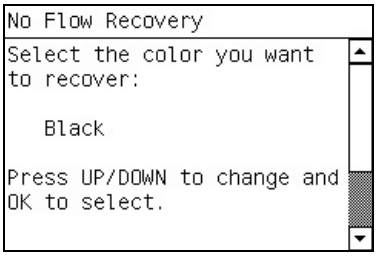
Description

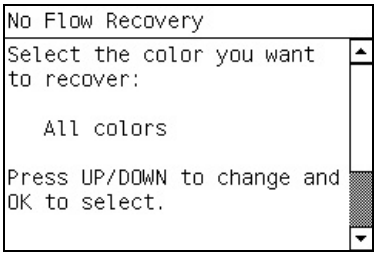
The procedure recovers the system condition of no start flow error, which is performed after a system error has been displayed and solved.

Select the color you want to perform the no flow error recovery, or all colors can be recovered.

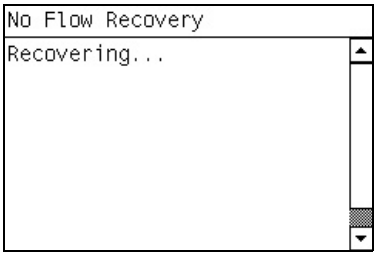
Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.14 No flow Recovery**.
2. The front panel displays the following message, select the color that needs recovering or select all colors.

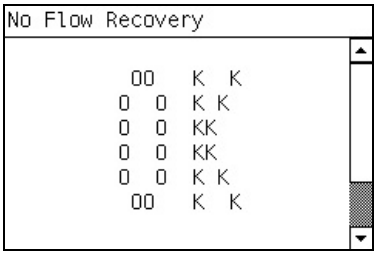




3. The front panel displays the following message while the colors are being recovered.



4. When the color(s) have been recovered the front panel displays the following message and the printer is shutdown.



4.15 ISS Components Test Menu

Use the following tests to diagnose the individual components of the Ink Supply System. The different procedures can also be used in combination to obtain specific system behaviors, as it is possible to return to the 4.15 menu after executing a specific test.

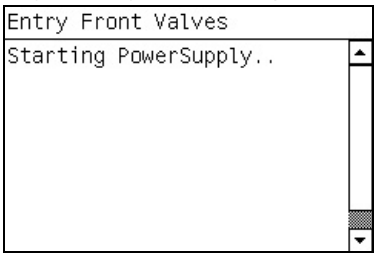
4.15.1 Entry Front Valves

Description

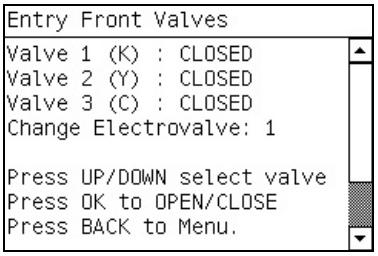
This procedure opens and closes the front entry electrovalves for any of the colors Black, Yellow and Cyan.

Procedure

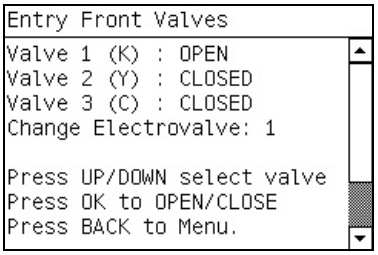
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.1 Entry Front Valves**.
2. The front panel displays the following message while the procedure starts.



3. Use the up and down keys to set the valve to open or close.



4. The front panel displays the change in status of the open valve.



4.15.2 Entry Rear Valves

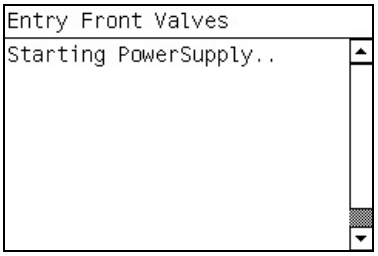
Description

This procedure opens and closes the front entry electrovalves for any of the colors Magenta, Light Magenta and Light Cyan.

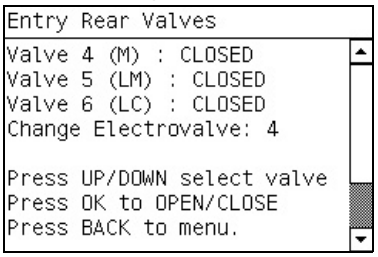
Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.2 Entry Rear Valves**.

2. The front panel displays the following message while the procedure starts.



3. Use the up and down keys to set the valve to open or close.



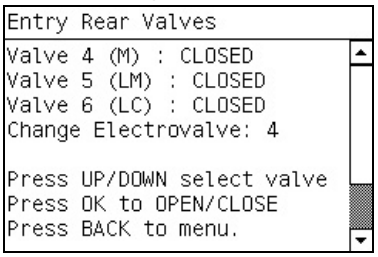
4.15.3 Inter Front Valves

Description

This procedure opens and closes the front intermediate electrovalves (bypass between the intermediate tanks) for any of the colors Black, Yellow and Cyan.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.3 Entry Inter Valves**.
2. Use the up and down keys to set the valve to open or close.



4.15.4 Inter Rear Valves

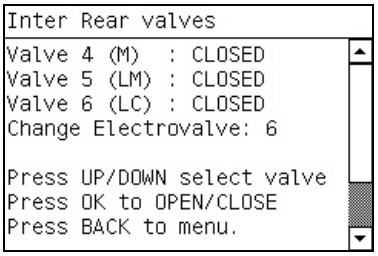
Description

This procedure opens and closes the front intermediate electrovalves (bypass between the intermediate tanks) for any of the colors Magenta, Light Magenta and Light Cyan.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.4 Inter Rear Valves**.

2. Use the up and down keys to set the valve to open or close.



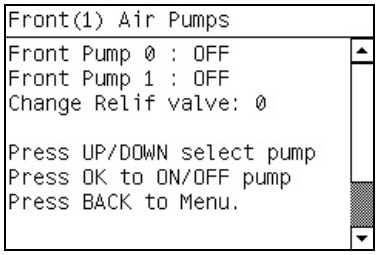
4.15.5 Front (1) Air Pumps

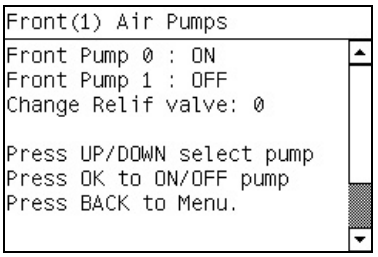
Description

This procedure activates the front pumps (APS0) independently. The pump will start pressurizing its side until the pressure reaches 6.5 Psi where the system cuts the feed to the pumps until the pressure is restored down to 5.2 Psi

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.5 Front (1) Air Pumps**.
2. Use the up and down keys to select the pump and press ok to open and close it (ON/OFF).





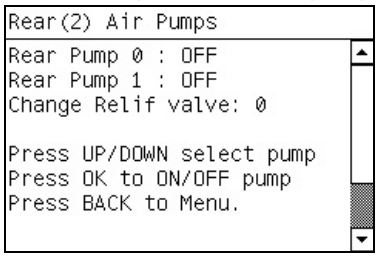
4.15.6 Rear (2) Air Pumps

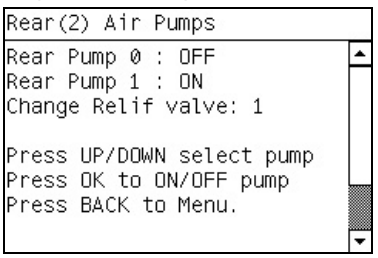
Description

This procedure activates the rear pumps (APS0) independently. The pump will start pressurizing its side until the pressure reaches 6.5 Psi where the system cuts the feed to the pumps until the pressure is restored down to 5.2 Psi

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.6 Rear (2) Air Pumps**.
2. Use the up and down keys to select the pump and press ok to open and close it (ON/OFF).





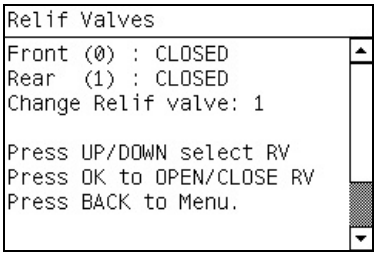
4.15.7 Relief Valves

Description

This procedure open the relief valves releasing the pressure from the APS

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.7 Relief valves**.
2. Use the up and down keys to select the relief valve and press ok to open and close it (OPEN/CLOSE).



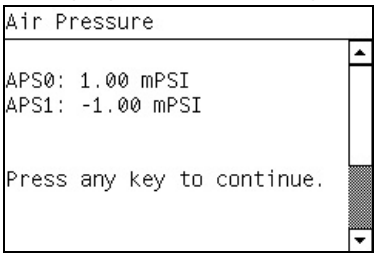
4.15.8 Air Pressure Sens

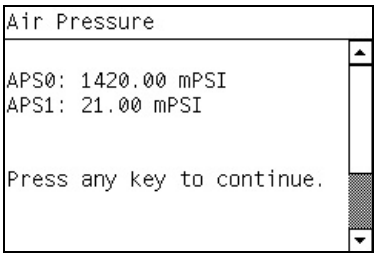
Description

This procedure displays the air pressure level in the APS. This procedure requires that the complete ISS system is booted up.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.8 Air Pressure Sens**.
2. The front panel displays the level of air pressure in the APS in real time.





3. When there is no air pressure applied with the air pumps and that the corresponding air release valve is open, an air pressure sensor should be between -0.3 t0 0.3 mpsi.
4. When there is air pressure applied with the air pump, value should reach at least 5600mpsi.

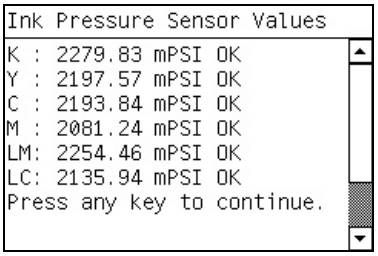
4.15.9 Ink Pressure Sens

Description

This procedure displays the ink pressure level. The procedure is useful to check ink pressure at different heights of the ink supply to test the ink pressure sensors.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.9 Air Pressure Sens**.
2. The front panel displays the level of ink pressure in the system as detected by the ink pressure sensors in real time.



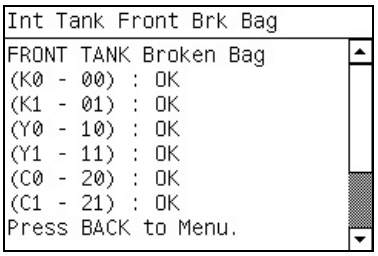
4.15.10 Int T Front Brk Bag

Description

This procedure displays the status of the broken bag sensors in the 6 Front Intermediate tanks.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.10 Int T Front Brk Bag**.
2. The front panel displays the status of the broken bag sensors in the 6 Front Intermediate tanks.



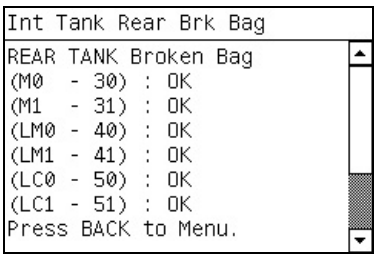
4.15.11 Int T Rear Brk Bag

Description

This procedure displays the status of the broken bag sensors in the 6 Rear Intermediate tanks.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.15 ISS Components Test Menu** >**4.15.11 Int T Rear Brk Bag**.
2. The front panel displays the status of the broken bag sensors in the 6 Rear Intermediate tanks.



4.16 ISS Flushing Menu

4.16.1 Auxiliary Tool Pump

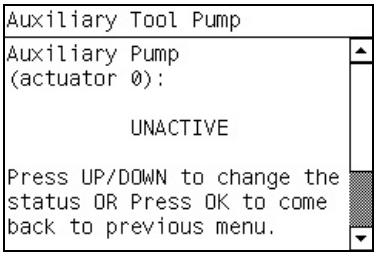
Description

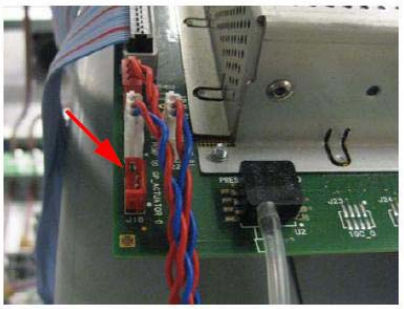
This test activates the Actuator port (5th Auxiliary Port not used in the system) in the ISS pca to connect the flushing tool pump.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.16 ISS flushing Menu** >**4.16.1 Auxiliary Tool Pump**.

2. The front panel displays the status of the Auxiliary Pump, when the pump is connected to the system, change the status of the pump to ACTIVE.





3. Check the pump with a voltage meter once it is active, it should be 24v.

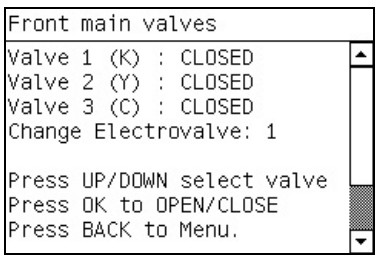
4.16.2 Operate Front Valves

Description

This procedure opens and closes the entry electrovalves for the front colors (Black, Yellow, Cyan) to perform the appropriate flushing procedure and empty the ink of that specific color. Follow the appropriate flushing procedure when this is active using the Auxiliary Tool Pump.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.16 ISS flushing Menu** >**4.16.2 Operate Front Valves**.
2. Use the up and down keys to select the front valve and press ok to open and close.



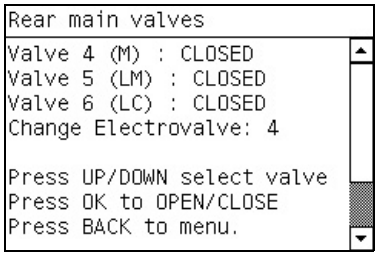
4.16.3 Operate Rear Valves

Description

This procedure opens and closes the entry electrovalves for the rear colors (Magenta, Light Magenta, Light Cyan) to perform the appropriate flushing procedure and empty the ink of that specific color. Follow the appropriate flushing procedure when this is active using the Auxiliary Tool Pump.

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.16 ISS flushing Menu** >**4.16.3 Operate Rear Valves**.
2. Use the up and down keys to select the front valve and press ok to open and close.



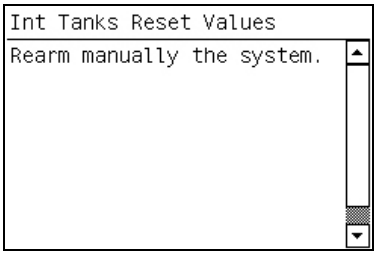
4.16.4 Reset Ink Tanks

Description

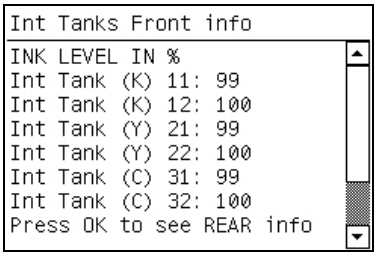
This entry is mainly used when upgrading the ink type from LX600 to LX610 (and could be used to downgrade from LX610 to LX600).

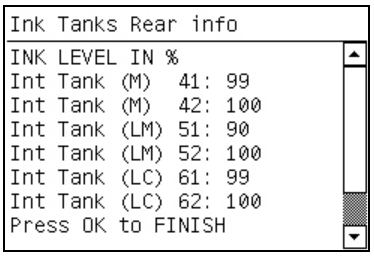
Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.16 ISS flushing Menu** >**4.16.4 Reset Ink Tanks**.
2. The front panel displays the following message to Rearm manually the system.

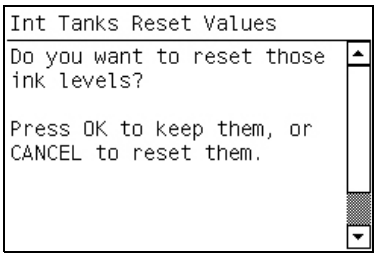


3. Front panel will display the Front and Rear Intermediate tanks ink level.

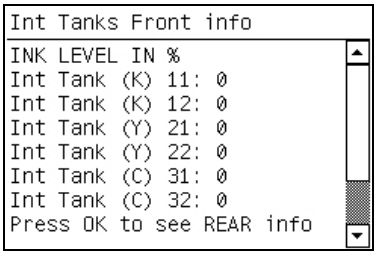


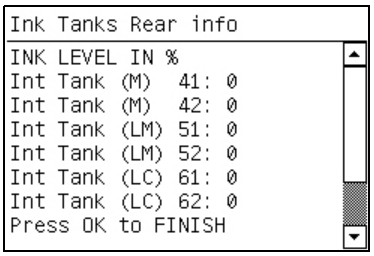


4. Press OK and you will be asked if we want to reset those ink levels to 0.



5. After resetting the values, printer will display the Front and Rear Intermediate tanks ink level set to 0.





4.16.5 Set ISM as not purged

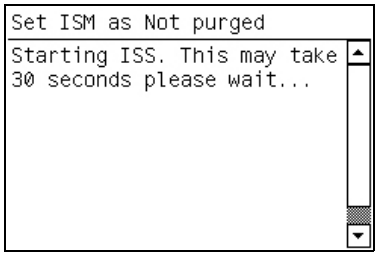
Description

This entry is mainly used when upgrading the ink type from LX600 to LX610 (and could be used to downgrade from LX610 to LX600).

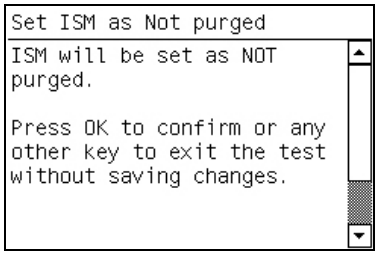
Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.16 ISS flushing Menu** >**4.16.5 Set ISM as not purged**.

2. The front panel displays the following message.



3. Front panel will send a signal to the ISM and will be set as NOT purged.



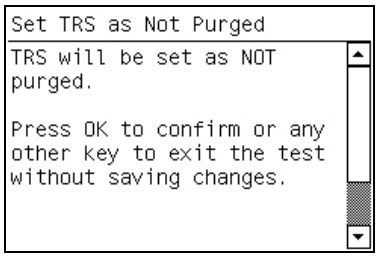
4.16.6 Set TRS as not purged

Description

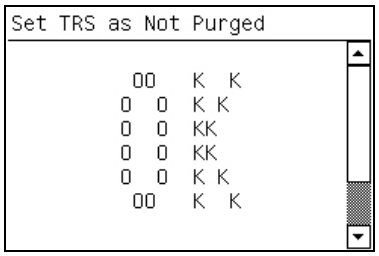
This entry is mainly used when upgrading the ink type from LX600 to LX610 (and could be used to downgrade from LX610 to LX600).

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.16 ISS flushing Menu** >**4.16.6 Set TRS as not purged**.
2. The front panel displays the following message, press the Ok to set the TRS as not purged.



3. The front panel displays the following message.



4.17 Int Tanks Ink Life Cycles

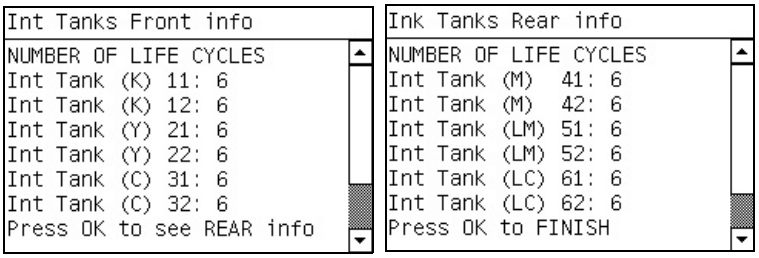
Description

This procedure displays the number of life cycles (full refill) of the intermediate tanks (front and rear).

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.17 Int Tanks Ink Life Cycles**.

2. The front panel displays the life cycles of the intermediate tanks.



4.18 Int Tanks Ink Amount

Description

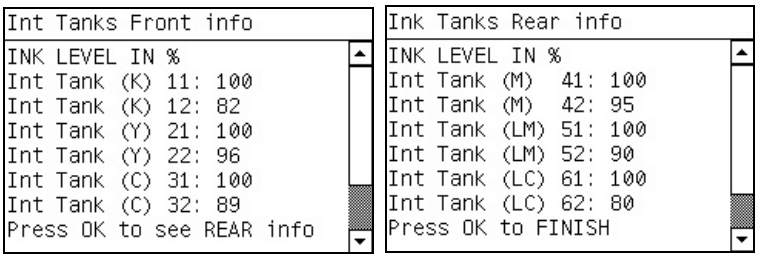
This procedure shows and modifies in % terms the amount of ink in the intermediate tanks.

Use this procedure in case of failure in refilling the intermediate tanks (which could be caused due to faulty ink pressure sensors).

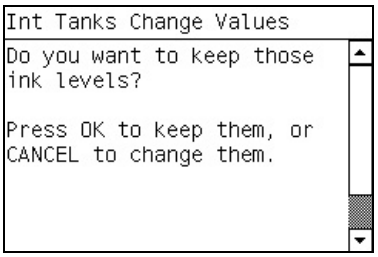
NOTE: The value shown at first is the amount of ink that the printer detects in the intermediate tank, which does not reflect the actual amount of ink present. Use this procedure to change the status to the actual amount of ink in the tank.

Procedure

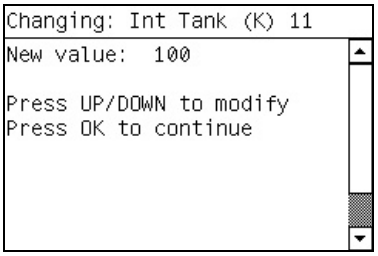
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.18 Int Tanks Ink amount**.
2. The front panel displays the percentage of ink detected in the front intermediate tanks by the ink pressure sensor, press ok to see the rear tanks. Press ok to finish and to change the values.



3. The front panel displays the following screen, press cancel to change the values in the intermediate tanks, press ok to keep them.



4. If you press cancel to change the values, the following screen is displayed. Change the value of the ink in the intermediate tank by using the up and down arrows, then press ok to continue to the next color.



5. The front panel will display a message confirming values changed.

4.19 Int Tanks time refill

Description

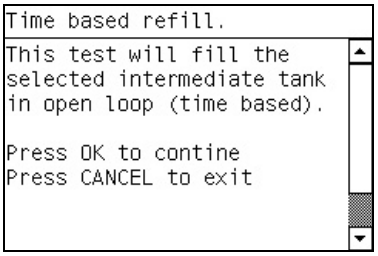
This procedure forces a refill of the intermediate tanks and sets them as full. The refill is time based.

Use this procedure in case the standard operation of refilling the intermediate tanks fails (0.2 Fill intermediate tanks). The procedure can be used to fix any other defect of the system where the intermediate tanks are emptied (electrical failures, leakages, etc).

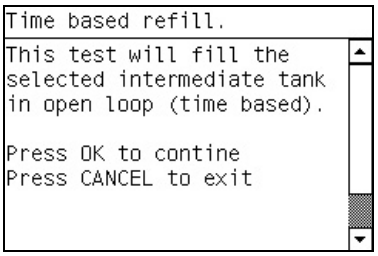
The refill time fixed to 15min per side.

Procedure

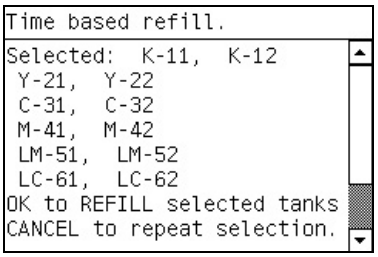
1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.19 Int Tanks time refill**.
2. The front panel displays the following message, press ok to continue to refill the intermediate tanks.



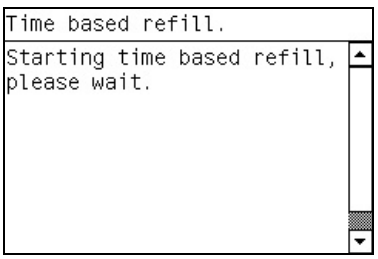
3. The front panel displays the following message, select yes to refill all the intermediate tanks, or no to pre-select some of the tanks to refill.



4. If you select yes to refill all the intermediate tanks the following message is displayed confirming all tanks will be refilled, if you select no in the previously, the printer will ask one by one which ones to refill.



5. The front panel displays the following message, and the refill of the selected intermediate tanks will begin. The procedure will take 15 minutes per side, 30 minutes in total for both sides.



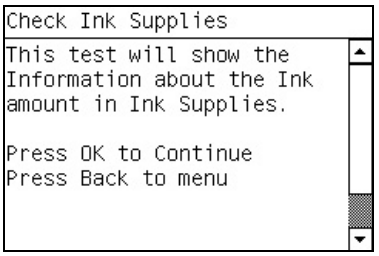
4.20 Check Ink Supplies

Description

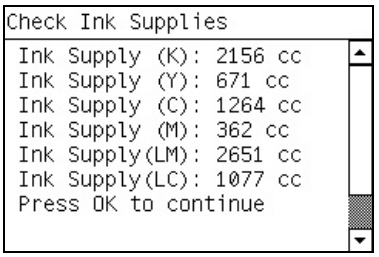
This procedure checks the actual status of the ink supplies as detected by the system (amount of ink stored in the supply acumen).

Procedure

1. Go to Diagnostics menu and select **4. Ink System Menu**> **4.20 Check Ink Supplies**.
2. Press ok to view the amount of ink in the ink supplies.



3. The front panel displays the amount of ink in the ink supplies.



5. Scan Axis Menu

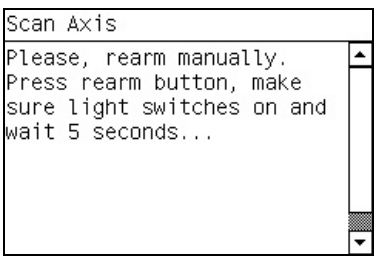
5.1 Impelling system

Description

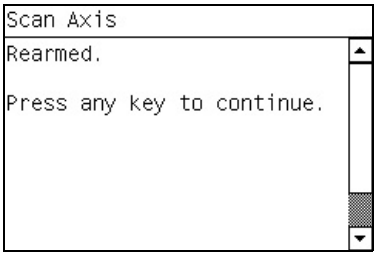
This test checks the Scan axis impelling system (motor and sax linear encoder allocated in the carriage) Use this test to troubleshoot possible issues with the impelling system.

Procedure

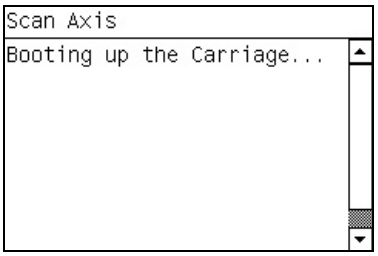
1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.1 Impelling system**.
2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



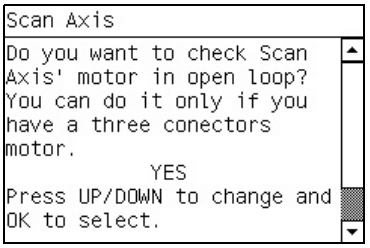
3. The front panel displays the following message to confirm the printer has rearmed, press any key to continue.



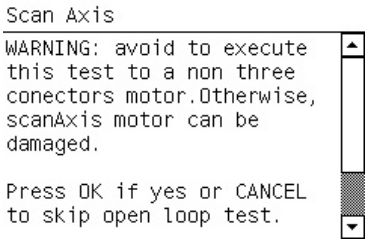
4. The front panel displays the following message. The printer checks communication with the Scan Axis Motor, Carriage, and Printhead Cleaning Assembly, no action is required unless a fault is found.



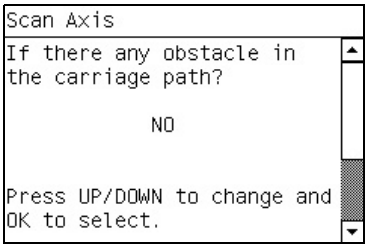
5. The printer asks you if you want to check the scan axis motor in open loop. You can only perform this test if the scan axis motor has three connections. Check that the motor has three connections. Select yes or no and press OK.



6. The front panel displays the following warning message, if the scan axis motor has three connections, press yes to confirm.

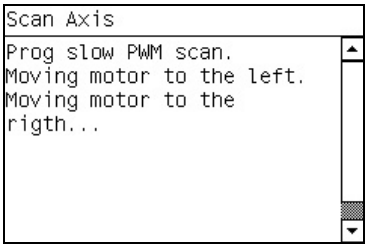


7. The front panel displays the following message, check that there are no obstacles in the carriage path, and select no and press ok.

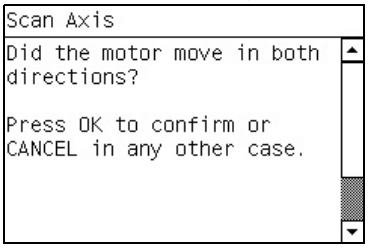


8. Verify that no obstacle blocks the carriage path, select No and press OK.

9. The front panel displays the following message while the printer moves the carriage in both directions.

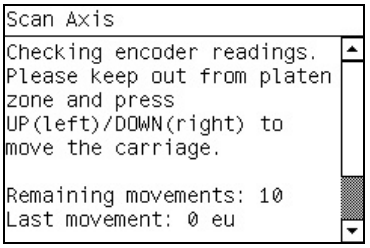


10. The printer asks you to confirm the movement, select yes if the carriage moved.

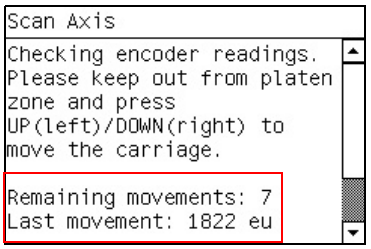


If the carriage did not move, select no and the test will fail, shut down the printer and make the appropriate repair.

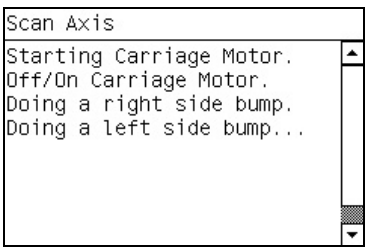
11. If the smallest movement is less than 10 encoder units, the printer asks you to move the carriage using the Up and Down keys on the front panel. Press the up key to move the carriage to the left and the down key to move the Carriage to the right. Make sure that you move the Carriage in both directions and check that the Carriage actually moves when a key is pressed.



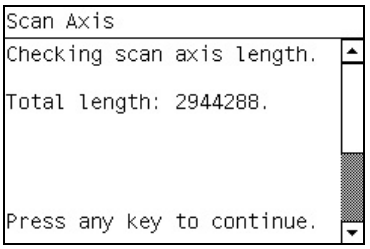
12. The front panel displays the number of movements remaining until the end of the test and the results of the test in encoder units.



13. The front panel displays the following message while the print performs left and right bumps to determine the scan axis length.

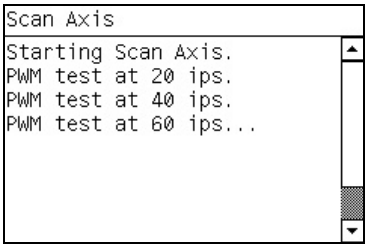


14. The front panel displays the results on the front panel.

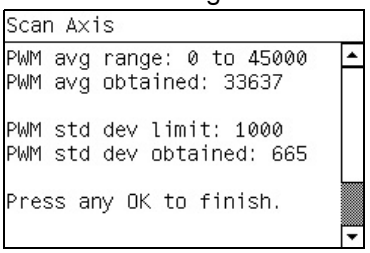


NOTE: Take note of the system error code. The printer asks you if you want to continue the scan axis diagnostic test. Use the **Up** and **Down** keys to select **Yes** or **No**. Press **Enter** to confirm your selection. If you select No, the printer finishes the scan axis diagnostic test. See ⇒page 102.

15. The front panel displays the following message while the printer performs a pwm test at 20, 40, and 60 inches per second.



16. The front panel displays the results in terms of friction detected. The temp directory can be accessed to capture these traces as a means to troubleshooting an error. Press any key to finish the test.



5.2 PPS Menu

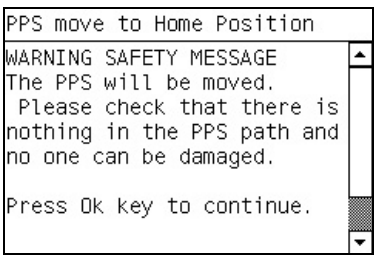
5.2.1 Move to Home Position

Description

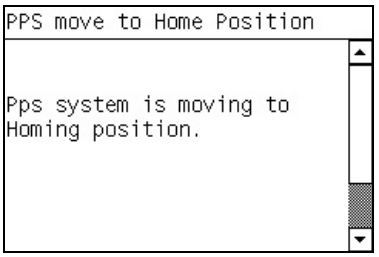
This test moves the PPS (Scan Axis Beam) to the home position= Standard Printing default position (with SAX resting on the 4 calibrated point and the PPS modules touching the SAX).

Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.2 Impelling system** >**5.2.1 Move To Home position**.
2. The front panel displays the following warning message, ensure the printer is in a condition (clear of hands and obstacles) to move the PPS to the load position.

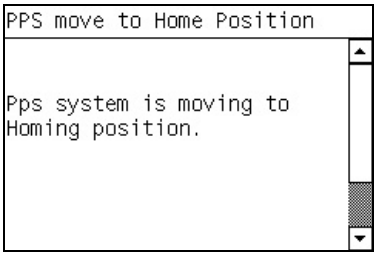


3. The front panel displays the following message while the PPS is being moved to the home position.

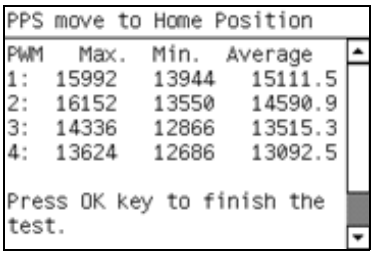


NOTE: This procedure can be used to check for friction in the PPS as the PWM information is captured during this procedure.

4. The front panel displays the following message when the home position of the PPS has been reached.



5. The front panel displays the PWM results, press any key to finish.



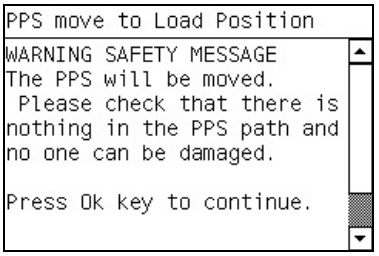
5.2.2 Move to Load Position

Description

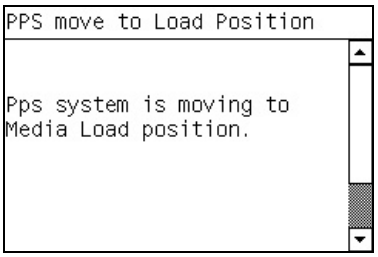
This test moves the PPS (Scan Axis Beam) to the substrate load position (default position 120mm above the printing position).

Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.2 Impelling system** >**5.2.2 Move To Load position**.
2. The front panel displays the following warning message, ensure the printer is in a condition (clear of hands and obstacles) to move the PPS to the load position.

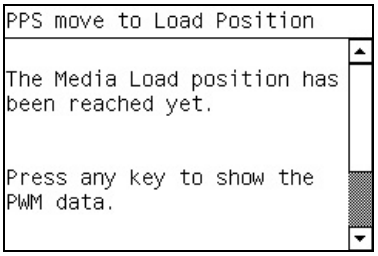


3. The front panel displays the following message while the PPS is being moved to the load position.

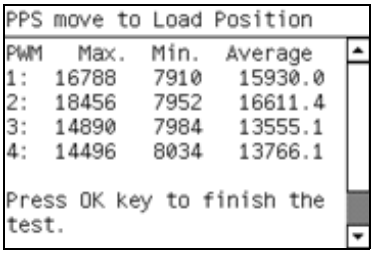


NOTE: This procedure can be used to check for friction in the PPS as the PWM information is captured during this procedure.

4. The front panel displays the following message when the load position of the PPS has been reached.



5. The front panel displays the PWM results, press any key to finish.



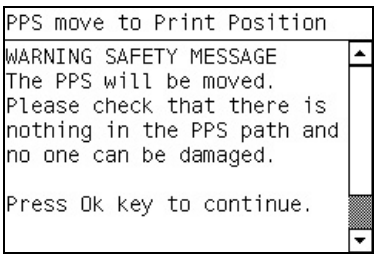
5.2.3 Move to Printing Position

Description

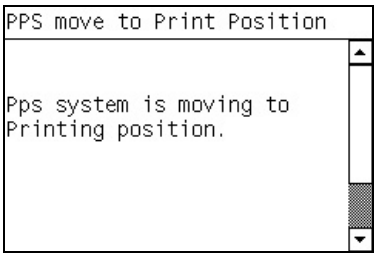
This test moves the PPS (Scan Axis Beam) to the high printing position (3.2mm).

Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.2 Impelling system** >**5.2.3 Move To Printing Position**.
2. The front panel displays the following warning message, ensure the printer is in a condition (clear of hands and obstacles) to move the PPS to the load position.

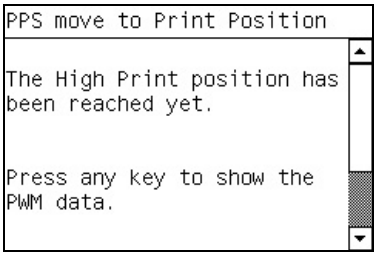


3. The front panel displays the following message while the PPS is being moved to the printing position.

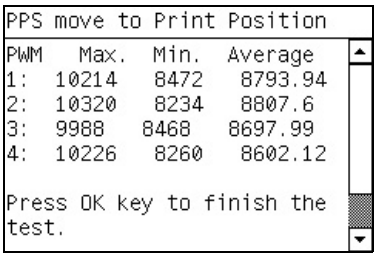


NOTE: This procedure can be used to check for friction in the PPS as the PWM information is captured during this procedure.

4. The front panel displays the following message when the printing position of the PPS has been reached.



5. The front panel displays the PWM results, press any key to finish.



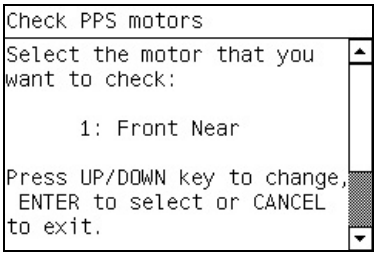
5.2.4 PPS Motor Check

Description

This tests checks the 4 PPS system motors in open loop (continuously), follow the on screen instructions of the test about removing the motors to prevent any printer damage. The printer allows you to move the PPS gear with your hand to verify that the encoder works correctly.

Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.2 Impelling system** >**5.2.4 PPS Motor check**.
2. The front panel displays the following message, select the motor that needs to be checked and press ok.

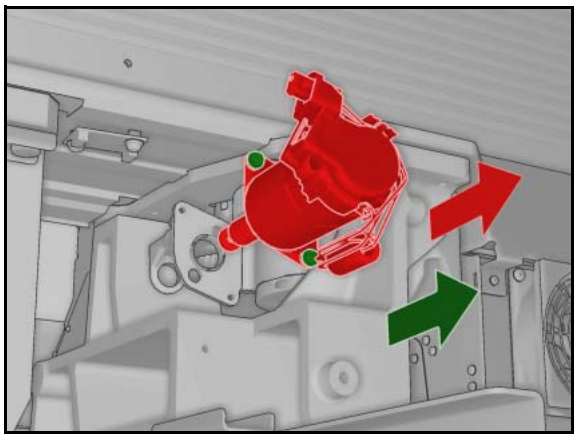


3. The front panel displays the following warning message, remove the PPS motor must be disengaged from the motor mount.

```
Check PPS motors
In order to perform this
test is compulsatory to
have the PPS motor
disengaged from the motor
mount as if not the machine
can be damaged.
Press OK key to continue or
Cancel to finish.
```

CAUTION: If the motor is not disengaged from the motor mount when you perform this test, the printer could be seriously damaged.

4. Remove the appropriate arc See ⇒page 570.
5. Without disconnecting the motor, remove the two screws that secure the motor and carefully remove it, taking care to completely disengage the motor from the gear. Press ok to continue when the motor is desengaged.



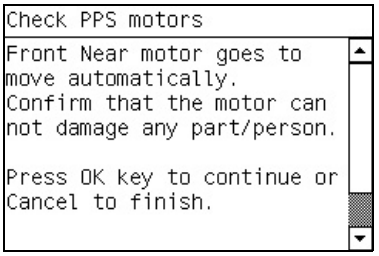
6. The front panel displays the following message, press ok and then turn the motor shaft with your hand.

```
Check PPS motors
Rotate the Front Near motor
with your hand.

Press OK key to continue.
```

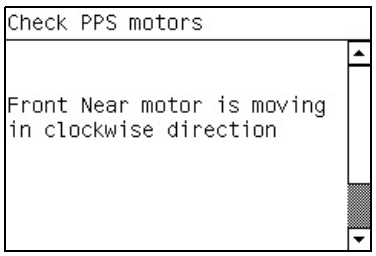
7. The printer displays the encoder counts as you turn the motor shaft with your hand.

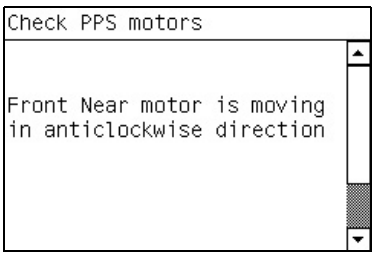
```
Check PPS motors
Front Near motor:
 Start position: 0 eu
 End position:   3442 eu

Press any key to continue.
```

8. The motor is about to be tested for movement, hold the motor safely and confirm that the motor can turn without damage to yourself or the printer, press ok when ready.

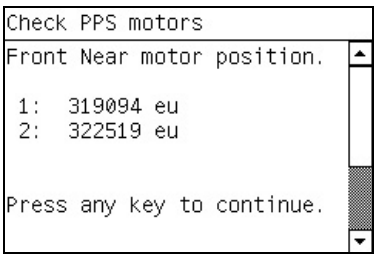


9. The printer displays the following message while the motor is friction tested in both directions.

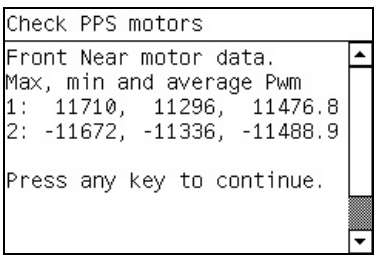




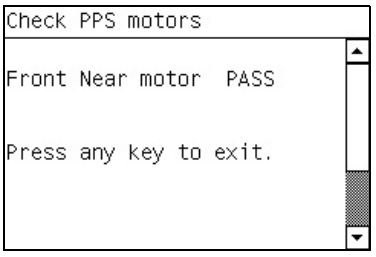
10. The front panel displays the results of the test in encoder units, press any key to continue.



11. The front panel displays the pwm required to move the motor, press any key to continue. Values in both directions should not be very different and approximately the initial values applied: between 10000 to 12000 of PWM.



12. The front displays the following message if there is no problem with the motor selected for testing, press ok to test another motor or cancel to exit the test procedure.



If there is a problem with the motor being tested, exit the procedure and shut down the printer to troubleshoot the error.

5.2.6 PPS Shims Values

Description

This test shows the value of the shims allocated in the 4 different resting points of the Scan Axis to obtain an absolute flat area of the SAX with respect to the platen. These values are stored in the manufacturing process of the printer and are specific for each printer.

The shims can be of 0.1, 0.2 or 1 mm and the test displays the number of shims of each type placed in the printer in the 4 corner printer locations.

NOTE: The shims calibrate the PPS and are placed in the manufacturing line and must never be removed or changed during the printer life. With printers with S/N <= SG91xxxxx, the values displayed from this test might not be the real values of the shim heights.

Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.2 Impelling system** >**5.2.6 PPS Shims Values**.
2. The front panel displays the shim values of each of the corners of the PPS, press any key when finished.

5.2.7 PPS Switch Status

This procedure checks the operation of the 4 different PPS system switches, activate the switches by hand and check the status changes on the display. The 4 PPS switches are the following>

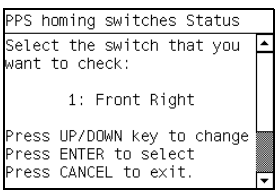
- Front Right
- Rear Right
- Rear Left
- Front Left

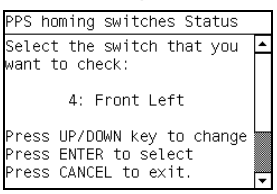
The test will provide audible signals of the switches status, added to this the test is able to diagnose switches individually from the switch area without requiring the check from the front Panel.

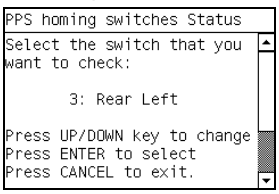
NOTE: You must raise the PPS to the Highest Position before you start the test.
Carriage Beam Position > **Move to Highest Position**.

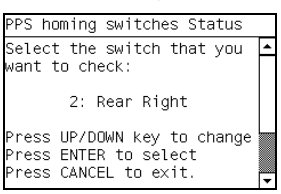
Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.2 Impelling system** >**5.2.7 PPS Switch Status**.
2. Select which of the four switches you want to check and press enter. Shown here are the options.

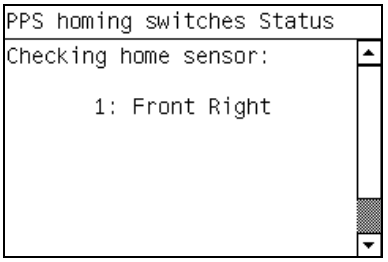




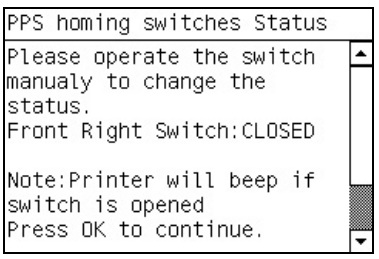


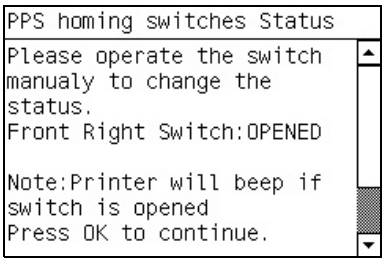


3. The front panel displays which switch is being tested. In this example the Front Right home sensor has been selected.



4. Manually toggle the selected switch so that the display changes (CLOSED/OPEN) and the printer beeps. If the display does not change or the printer does not beep, this would indicate a failed sensor.





5.3 Service Station

5.3.1 Shuttle Open Loop

Description

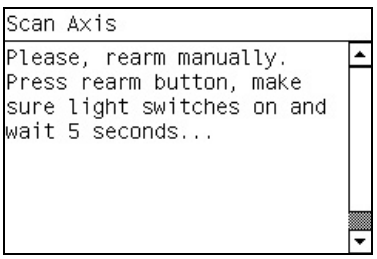
This test checks the service station shuttle motor system.

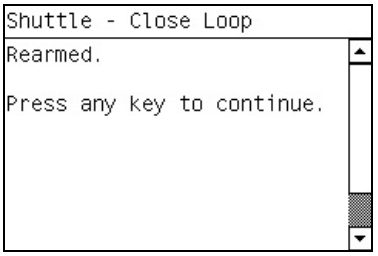
Use this test in case of failure of the shuttle to verify the motor system and the actual mechanical movement of the shuttle. Items tested>

- Test Start-up
- Power Supply Voltage test
- Communication test (motor, Remote Controller Board)
- Service Station Motor (motor, encoder)

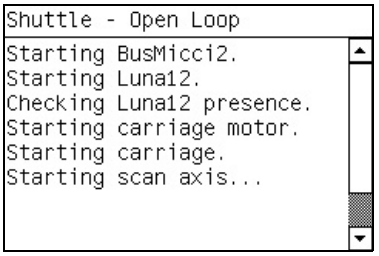
Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.1 Shuttle Open Loop**.
2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.

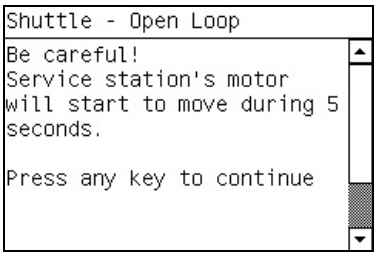




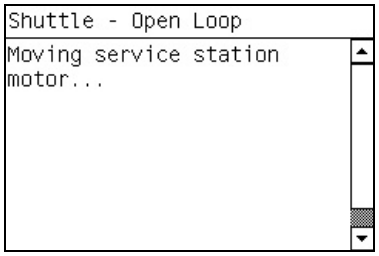
3. The front panel displays the following message while the printer initializes and checks various electrical subsystems.

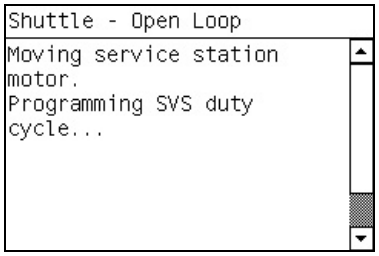


4. The front panel displays the following warning message that the service station motor will begin to move, make sure there are no hands or obstacles obstructing the path of the Service Station shuttle.

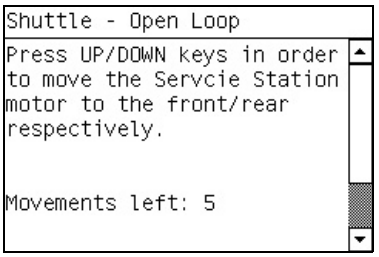


5. The front panel displays the following message while the Service Station motor moves.

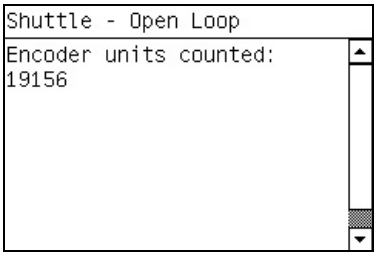




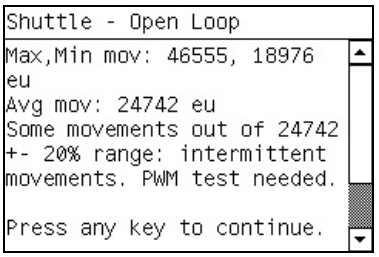
6. The front panel displays the following message, move the Service Station with the up and down keys 5 times, while the printer counts the encoder units.



7. The front panel displays the encoder units detected.



8. The front panel displays the results of the test.



NOTE: If the PWM values are out of limits, you will get a message asking you to perform a PWM test.

5.3.2 Shuttle Close Loop

Description

This test checks the service station shuttle motor system.

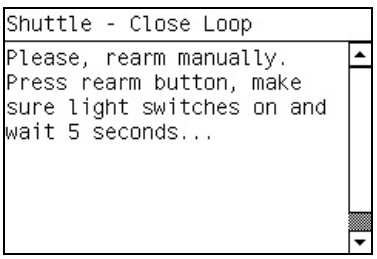
This tests ensures the correct operation of the service station shuttle.

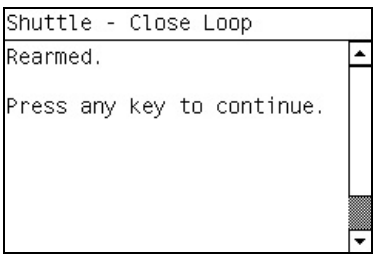
Use this test after system errors related with the mechanical part of the service station to diagnose and troubleshoot possible problems with the complete mechanical system. The checks the complete length of the service station movement.

- Test Start-up
- Power Supply Voltage test
- Communication test (motor, Remote Controller Board)
- Service Station Motor (motor, encoder)

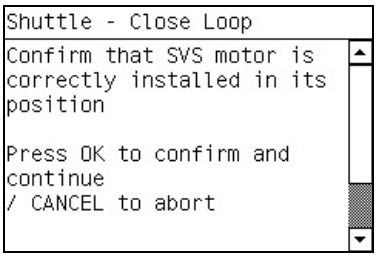
Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.2 Shuttle Close Loop**.
2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.

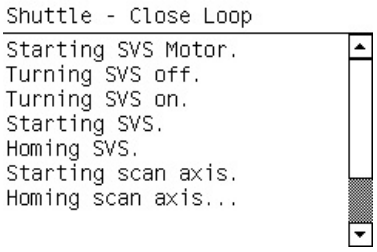




3. The front panel displays the following message asking if the Service Station motor is correctly installed in the printer, select yes if the motor is installed.

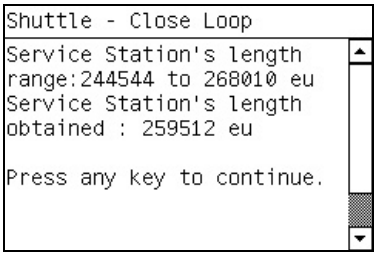


4. The front panel displays the following message while the printer tests the service Station in close loop (stopping and starting).

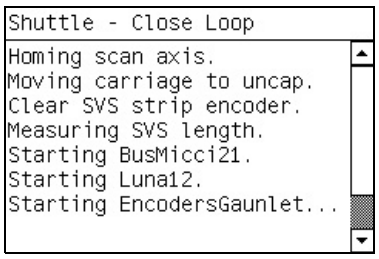


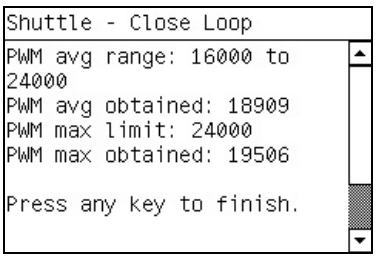
The printer tests the motor with feedback from the encoder while monitoring the PWM to see if there are any mechanical faults like friction. The test also checks the capping operation to ensure the correct operation of the service station functionality.

5. The results of the test are displayed in encoder units, press any key to continue



6. The printer initializes and tests communication with various electrical subsystems and then displays the results of the pwm friction test, press any key to finish the test.





NOTE: If the PWM values are out of limits, you will get a message asking you to perform a PWM test.

5.3.3 Drop Detector Test

Description

This test checks the drop detector signal values to verify the actual values from the sensors themselves while performing a simulated drop detection operation. The following processes and components are tested>

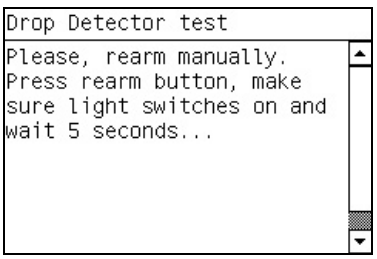
- Test Start-up
- Power Supply Voltage test
- Communication test (Service Station Connection Board, Remote Controller Board)

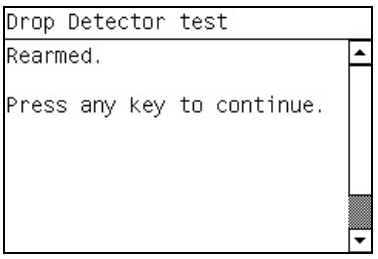
The test captures a one shot of the drop detection value.

Procedure

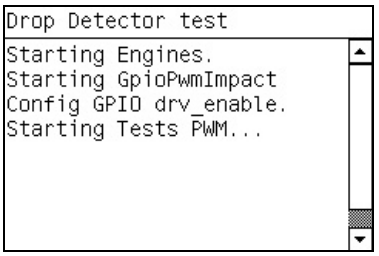
1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.3 Drop Detector Test**.

2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.

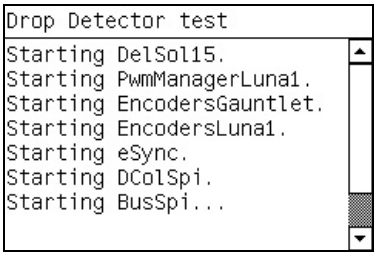




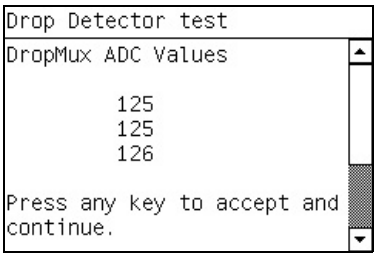
3. The front panel displays the following message while the printer initializes and checks various electrical subsystems.



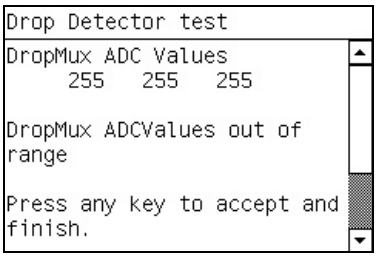
4. The front panel displays the following message while the printer tests the functionality of the drop detector.



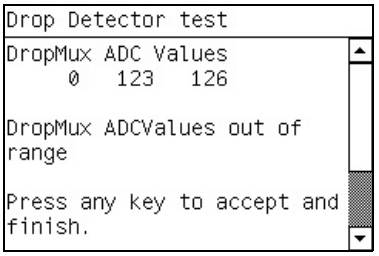
5. The front panel displays the results of the tests.



If there is a problem with communication with the drop detector the front panel displays the following message, this would indicate a connection problem service station cable or a problem communicating with the service station interconnect.



If there is a problem with the drop detector or if the cable of the drop detector is disconnected the front panel will display the following message.



5.3.4 Service Station Cal

Description

This test calibrates the XY position of the service station, for the printer to perform the drop detection and the capping procedures appropriately with respect to the carriage.

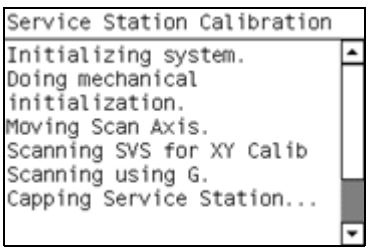
Perform this test after replacing the shuttle or the complete service station.

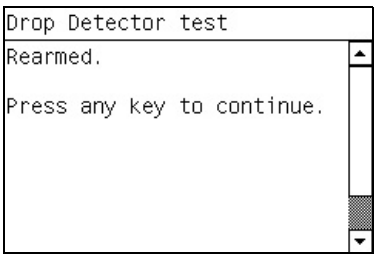
NOTE: The test uses the line sensor to perform the calibration and detect the position of the service station by using the V shaped lines located at the top left of the capping modules. In order to perform this calibration, it is important to ensure the correct functioning of the line sensor to obtain accurate values.

NOTE: For this calibration, only one 'V' sign marked on the plastic of the capping is used: The one from the Magenta/Yellow printhead. So in case this plastic part which includes the V shape is damaged, you can swap this capping module with the one from another color, cleaning quickly the cap, and then performing this calibration.

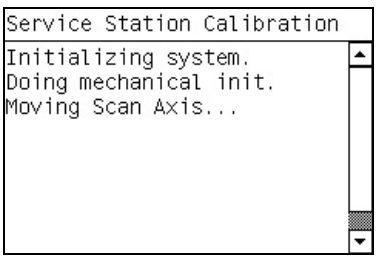
Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.4 Service Station Cal**.
2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.

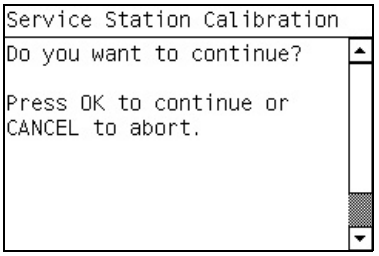




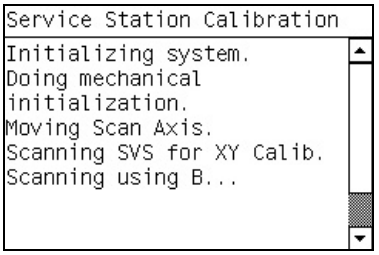
3. The front panel displays the following message while the printer initializes and checks various electrical subsystems, the service station moves into place to be tested.



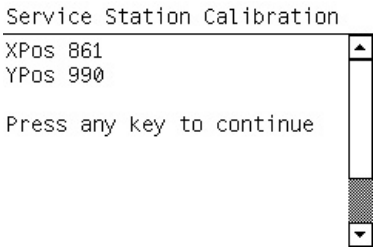
4. The front panel displays the following message, press ok to continue.



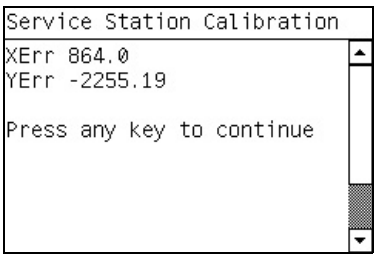
5. The front panel displays the following message while the printer calibrates the service station.



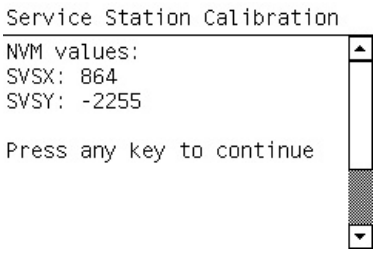
6. The front panel displays the current XY position of the service station, press any key to continue.



7. The front panel displays the XY error position of the service station, press any key to continue.



8. The front panel displays the new calibrated position of the service station, press any key to finish.



5.3.5 Drop Detector 12V On/Off

Description

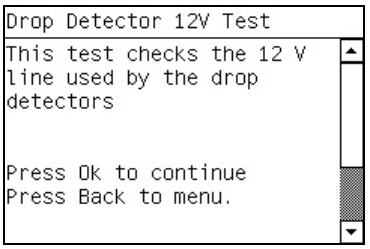
This procedure activates and deactivates the 12V which feeds the drop detectors. The 12V line is supplied from the main interconnect board to the Drop detector interconnect and from there sent to the 3 drop detectors. A short circuit of this line will cause (seen typically on the drop detector cables) the main interconnect to fail supplying this voltage, making the drop detection procedure unusable. This procedure activates and deactivates the 12V line in the Main interconnect which can be seen in the 12V of the Drop detector interconnect PCA.

To have a direct view of the 12V led, manually uncap and remove the carriage from top of service station.

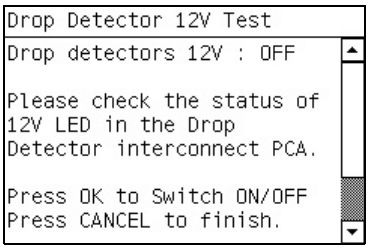
NOTE: Never replace the Main Interconnect before repairing the root cause of the short-circuit of the 12V line if not the new board will be damaged as well as soon as the 12V line is activated. Check there are no cables caught or damaged as this can cause errors in this area.

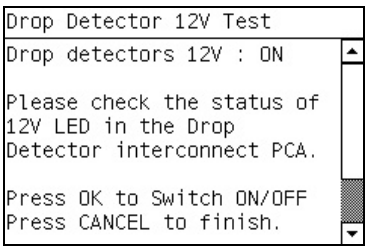
Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.5 Drop Detector 12V On/Off**.
2. The front panel displays the following message, press ok to continue.



3. The printer initializes the procedure and then ask you to check the 12V LED on the drop detector interconnect PCA. Press ok to switch the 12V Off and On of the service station interconnect board (the LED goes on and off).





4. Press cancel to exit the procedure.

5.3.6 Drop Detector signals

Description

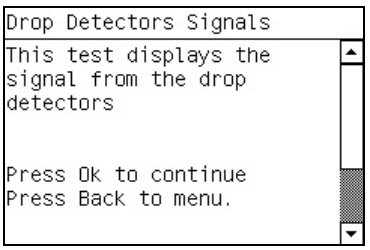
This procedure shows live (refreshed every second) the values of the 3 drop detectors.

- Disconnected or faulty drop detectors show values 0.
- Normal drop detector values oscillate with values around 127.
- If the values jump to very low values (bellow 80) or very high values (above 170), this could indicate a failure of the drop detector.

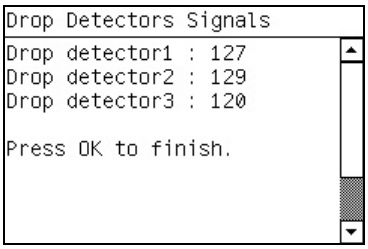
As the system is continuously refreshing, keep the Ok key pressed for a couple of seconds to quit the test.

Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.6 Drop Detector Values**.
2. The front panel displays the following message, press ok to continue.



3. The front panel displays the values of the 3 drop detectors, keep the ok key pressed to exit.



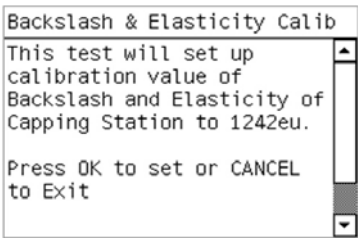
5.3.7 Back and Elast

Description

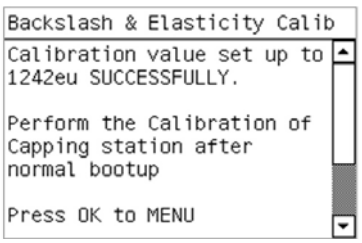
Set the Backslash and Elasticity of the service station to default default values. This should be done for specific system errors, in case the printer is not able to boot for a system error pointing to the service station. After having done this test, it is important to redo the calibration of the '4.5.2 Ser. Sta Compensation' from service menu, refer to page 510.

Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.7 Back and Elast**.
2. The front panel displays the following message, press ok to continue.



3. After the test, the front panel displays the following, press ok and perform the 5.3.4 Service Station Calibration, refer to page 421.



5.3.8 Ser. Sta. reset zero

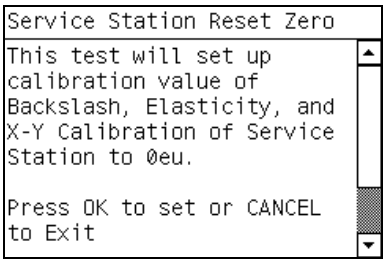
Description

This procedure resets the calibrations of the Service Station to zero (X, Y, Backlast and Elasticity). This procedure is performed in case the system error 21:02 is displayed.

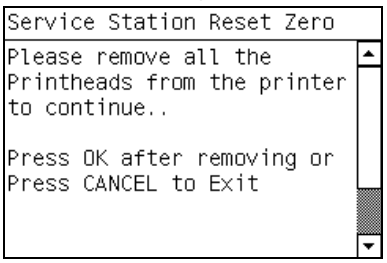
Procedure

1. Go to Diagnostics menu and select **5. Scan Axis Menu**> **5.3 Service Station** >**5.3.8 Ser. Sta. reset zero**.

2. The front panel displays the following message, press ok to continue.



3. Remove the printheads if they are installed and press ok.



4. After doing this reset of the variables, a complete Service Station calibration is required. Perform the following procedures:
   - 5.3.4 Service Station Cal from diagnostic menu ⇒ page 421.
   - 4.5.2 Ser. Sta Compensation from service menu ⇒ page 510.

6. Carriage Menu

6.0 Trailing Cable test

Description

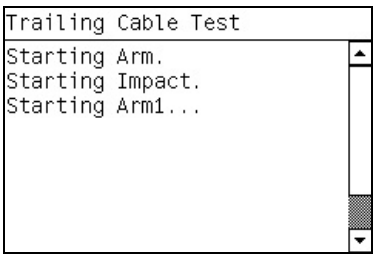
This test verifies the continuity between the Upper PCI board data lines and Printhead Interconnect PCA and also between the Printhead interconnect board and the printhead.

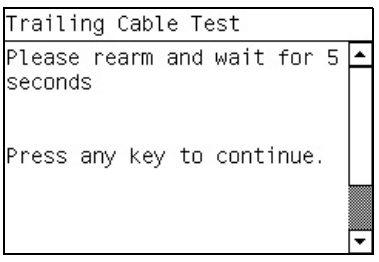
NOTE: Some lines are not tested, such as the signals from the encoder reader of the encoder strip to the upper PCI board (passing through the carriage board and the Print head interconnect of the Yellow/Magenta PH).

NOTE: For this test to work correctly all the printheads must be installed correctly in the printhead slots.

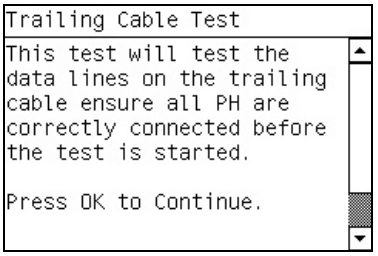
Procedure

1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.0 Trailing Service Station**.
2. The front panel displays the following messages, rearm the electrical cabinet, press the power button and press ok.



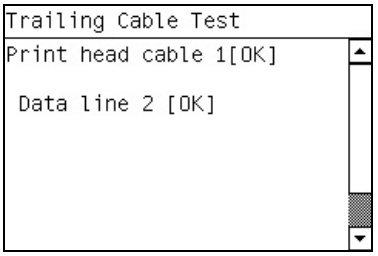


3. The front panel displays the following message, check all the printheads are correctly installed into their slots, and press ok.

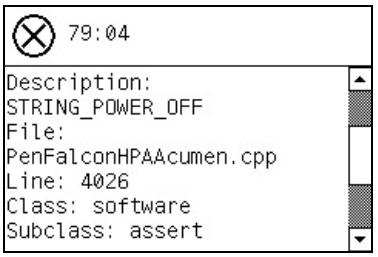


The data lines are checked between the Printhead and Printhead Interconnect and afterwards the data lines between the Upper PCI board and the Printhead Interconnect.

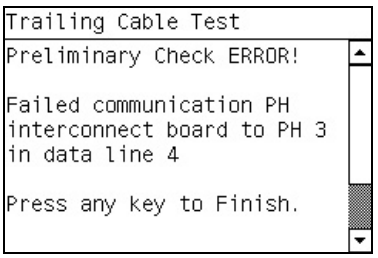
4. The front panel displays the results of the test.



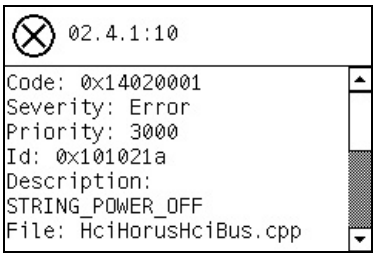
If any of the Printheads are not installed or there is a communication failure with one or more of the printheads, the front panel displays the following message.



If the data lines between the Printhead interconnect and one of more of the printheads, the following message is displayed.



If any of the trailing cables are not correctly connected, the following message is displayed.



If there is a failure in any of the data lines, the front panel will display a message with the number of the data line that has failed.

6.1 Carriage System Test

Description

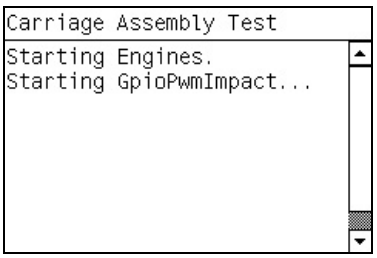
This test performs a complete analysis of all the functional systems in the carriage at system level. It is recommended to perform this test after a carriage repair to ensure all systems work correctly.

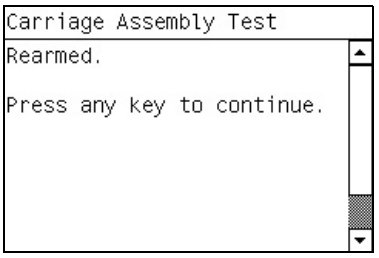
The following carriage parts and system are checked>

- Communications
- Nvm acumen values
- Printheads
- ..

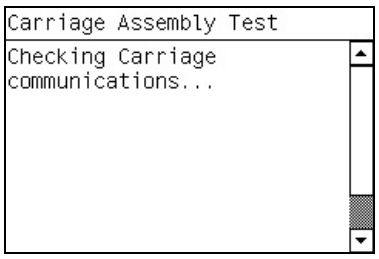
Procedure

1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.1 Carriage System Test**.
2. The front panel displays the following messages, rearm the electrical cabinet, press the power button and press ok.

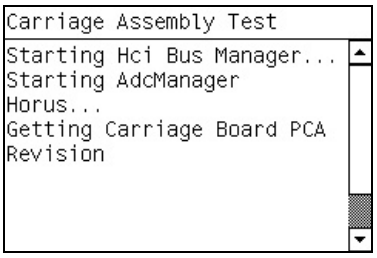


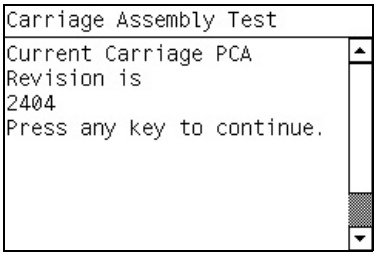


3. The front panel displays the following message while the printer checks basic communications with the Carriage.

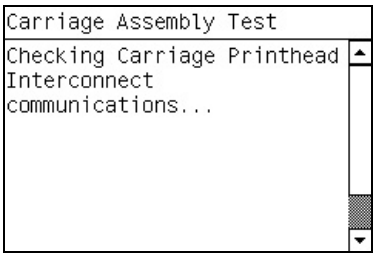


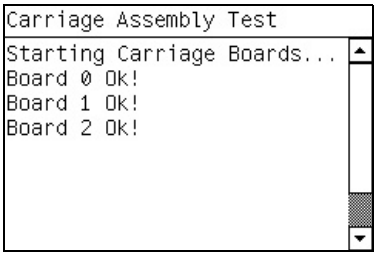
4. The front panel displays the following messages while the printer checks basic communication with the carriage Interconnect board, reading and displaying the revision of the carriage interconnect board. Press any key to continue testing the carriage.



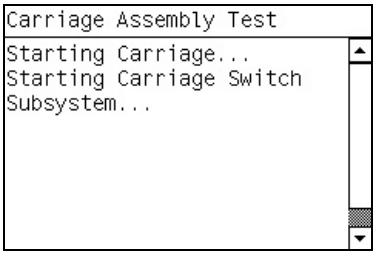


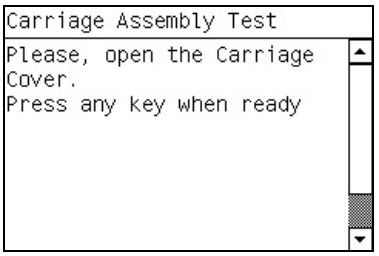
5. The front panel displays the following message while the printer performs the Printhead interconnect boards and HCI communications test.



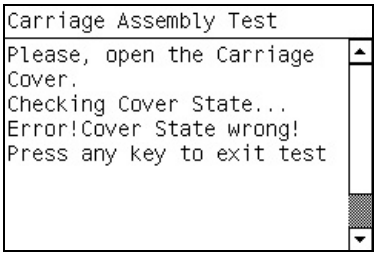


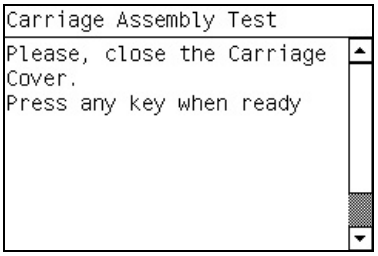
6. The front panel displays the following message while the printer performs the carriage switch test. Open the Carriage lid, and press ok.

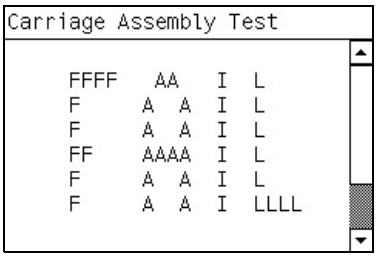




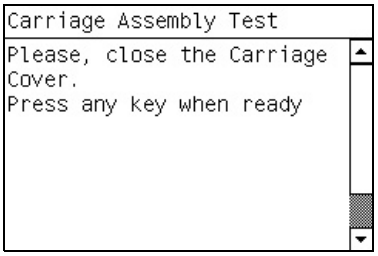
If there is a problem at this point, because the printer cannot detect that the carriage lid as been opened, the front panel will display the following error messages. Turn off the printer and repair the error.



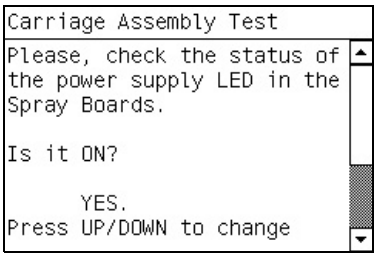




7. If there is no problem at this point the printer will display the following message.

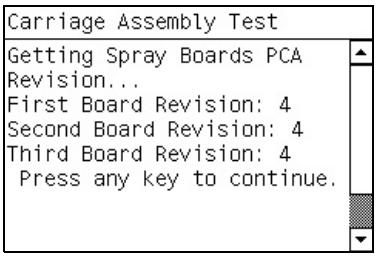


8. The front panel displays the following message to check the Printhead interconnect 42V power arrival. Look in through the window. You should be able to see three green LEDs through the carriage electronics cover. You do not need to remove the cover, if the light is on, select yes and press ok.

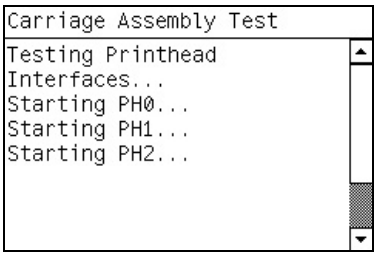


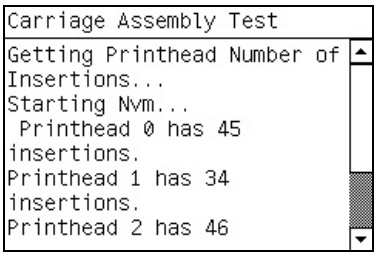
If the light of the LED is not on, select no and shut down the printer and make the appropriate repair.

9. If there is no problem at this point, the front panel displays the following message while the printer reads the revision of the Printhead interconnect board, checking the HCI communication with the Printhead interconnect. Press any key to continue.

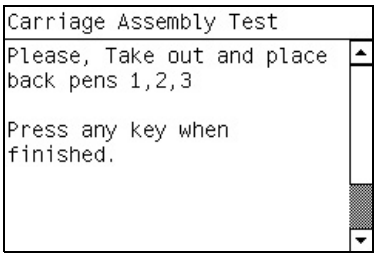


10. The front panel displays the following messages while the printer checks the communication of the Printhead accumen. The printer will read and display the number of printhead insertions.

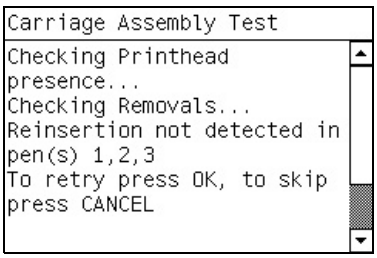




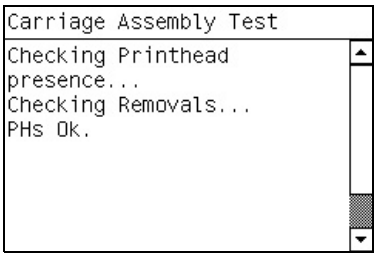
11. The front panel displays the following message, remove and reinsert the printheads to test the acumen in the printhead slots.



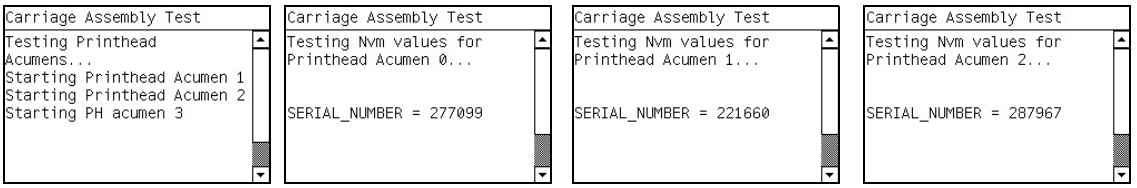
If there is a problem and the acumen do not detect the reinsertion of the printheads, the front panel displays the following message. Press ok to repeat the test.



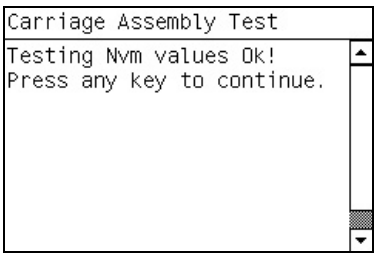
12. If there is no problem the front panel displays the following message, press ok to continue.



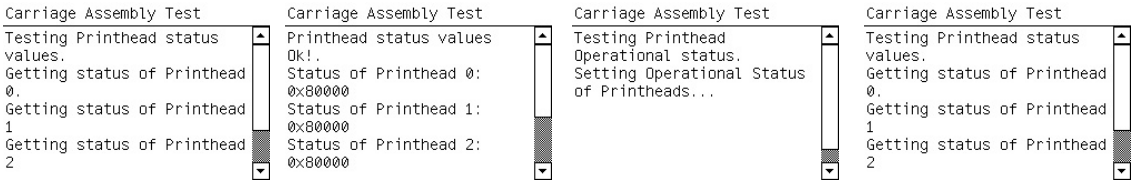
13. The front panel displays the following messages, while the printer checks the nvm values of the printhead accumens.



14. If there is no problem at this point the front panel displays the following message, press ok to continue.



15. The front panel displays the following messages, while the printer checks the functionality and status values of the Printheads. Reboot the printer after the test.



6.2 Move to Repair Position

Description

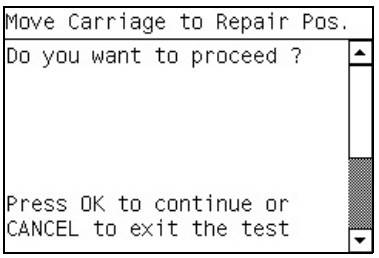
This test is used to move the carriage to the Left hand side of the platen automatically. This position is required to perform repair operations in the carriage, such as replacing the encoder sensor.

WARNING!: Check that the heating and curing subsystems are completely off during the procedure.

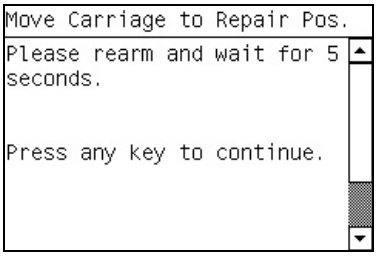
CAUTION: The carriage is not capped when in the repair position. Leaving the carriage uncapped for too much time can damage the printheads.

Procedure

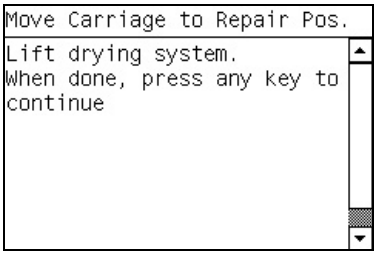
1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.2 Move to Repair Position**.
2. The front panel displays the following message, press the ok key.



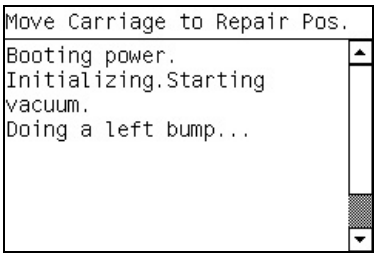
3. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



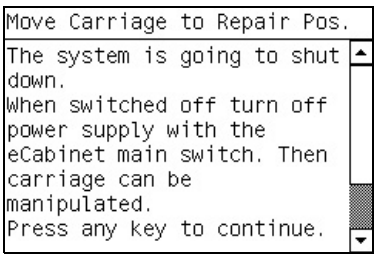
4. The front panel displays the following message, lift the drying system, and press ok.

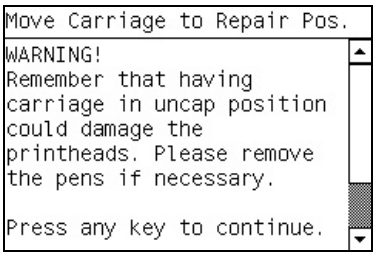


5. The front panel displays the following message while the carriage moves to the middle of the printer.



6. The front panel displays the following warning messages, press any key to continue and shut down the printer





6.4 Line Sensor check

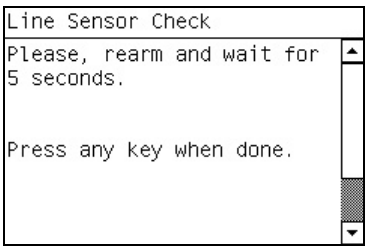
Description

The test checks the correct internal operation and communication with the line sensor located in the sensor box of the printer. The printer checks that the Line Sensor NVM reads and writes correctly. To do this, the printer temporarily writes a new serial number on the line sensor NVM then reads the new serial number to verify that the change was made.

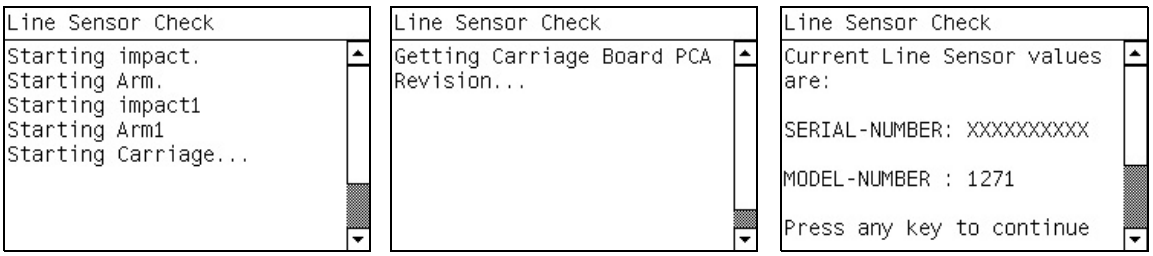
Procedure

1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.4 Line Sensor check**.

2. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



3. The printer starts various electrical subsystems and then checks the communication with the carriage board. The revision of the carriage board is read and diplsayed. Press any key to continue.



6.5 Aerosol Fans

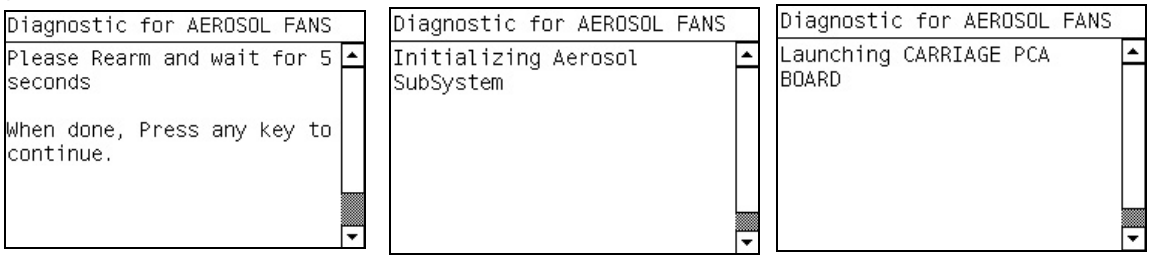
Description

This test runs the two different aerosol fan arrays situated in the carriage during a certain period of time, allowing the engineer to perform a visual check of the system with the carriage lid open.

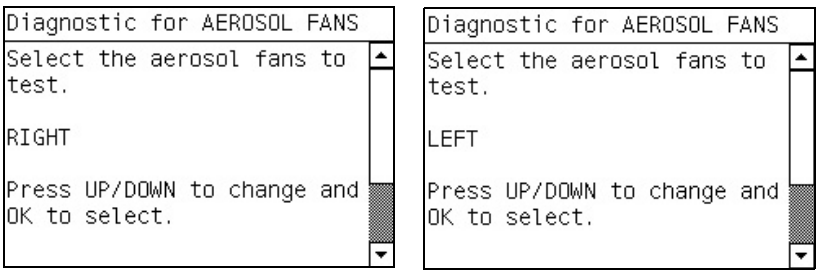
Use this tests to check the correct functionality of all the fans in the array. If any of the fans fail the system will display a continueable system error indicating a fan operational fault.

Procedure

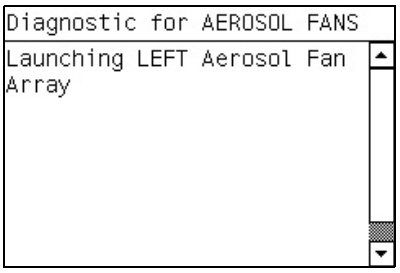
1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.5 Aerosol Fans**.
2. The front panel displays the following messages, rearm the electrical cabinet, press the power button and press ok.



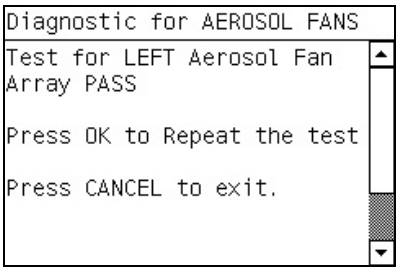
3. The front panel displays the following message, select which of the aerosol fan array you want to test (left or right) and press ok.



4. The front panel displays the following message while the selected array of fans rotate for 15 seconds, check that all the fans are working.



5. The following message is displayed if all the fans work.



If one or more fans do not work in the array, the test is failed and the printer is shut down in order to make the repair.

6.6 Force Priming Menu

These tests check the functionality of the primer by operating the pumps for15 seconds.

NOTE: Follow the instructions described in the tests about removing the Print Head latches when indicated to prevent any possible printer damage.

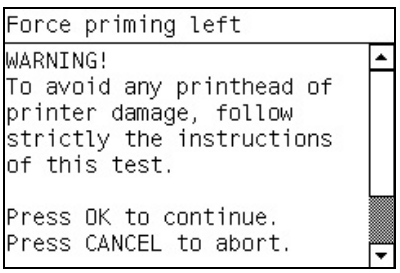
6.6.1 Force Priming Left

Description

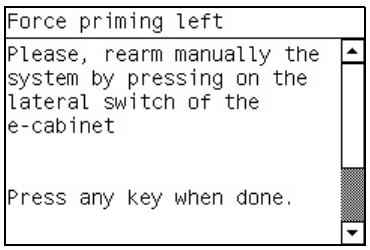
Operates the primer pump of the Left carriage printhead for 15 seconds.

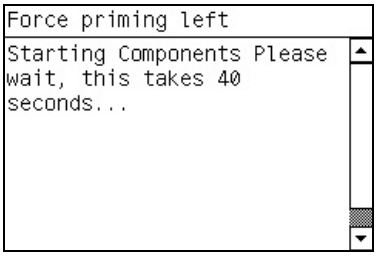
Procedure

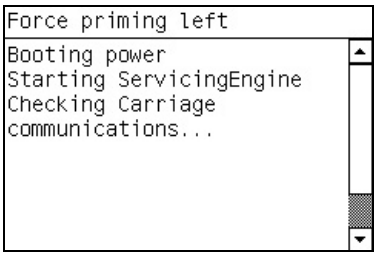
1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.6 Force Priming Menu**> **6.6.1 Force Priming Left**.
2. The front panel displays the following warning message, parts of this procedure must be performed in order to stop the printer from becoming damaged.



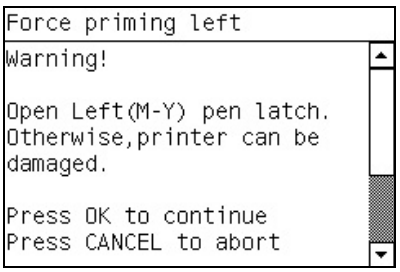
3. The front panel displays the following messages, rearm the electrical cabinet, press the power button and press ok.



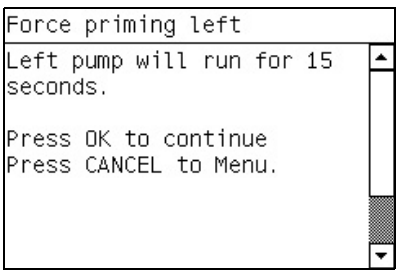




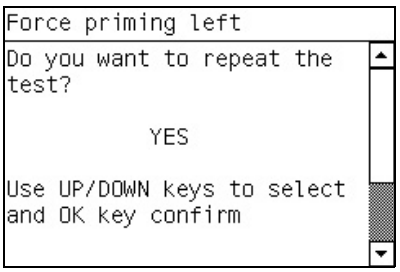
4. The front panel displays the following warning message, open the left latch for the printheads Magenta and Yellow.



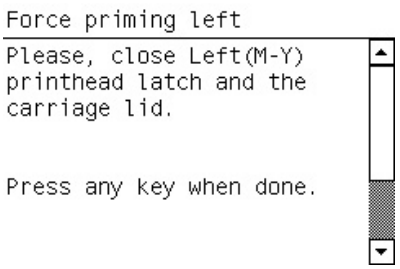
5. The front panel displays the following message, press ok and the pump of the left primer comes on for 15 seconds. Check the pump comes on and is fully functional.



6. The test can be run again by selecting yes and pressing ok.



7. The front panel displays the following when the test has been completed, close the printhead latch and carriage lid and press any key to shut down the printer.



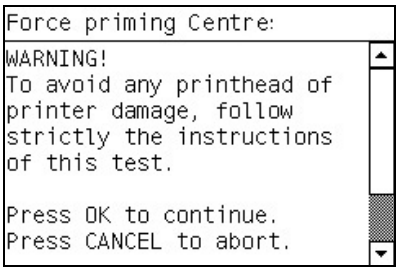
6.6.2 Force Priming Centre

Description

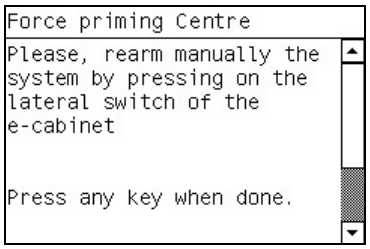
Operates the middle primer pump of the carriage for 15 seconds.

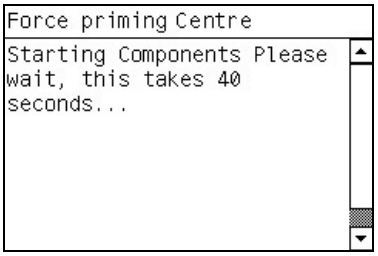
Procedure

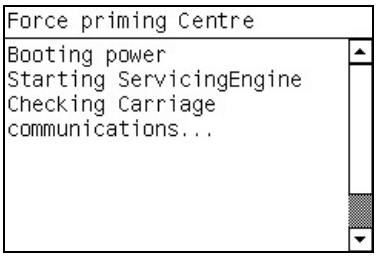
1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.6 Force Priming Menu**> **6.6.2 Force Priming Centre**.
2. The front panel displays the following warning message, parts of this procedure must be performed in order to stop the printer from becoming damaged.



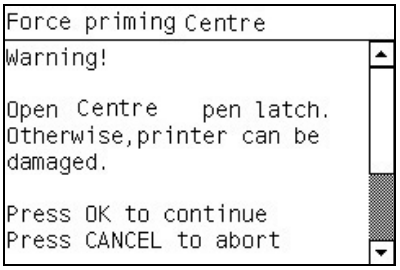
3. The front panel displays the following messages, rearm the electrical cabinet, press the power button and press ok.



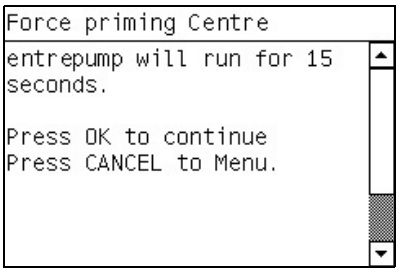




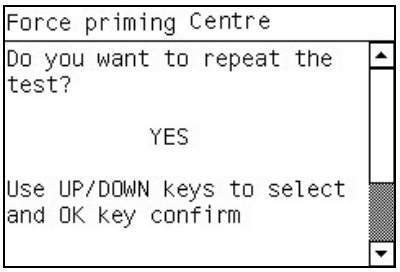
4. The front panel displays the following warning message, open the middle latch for the printheads.



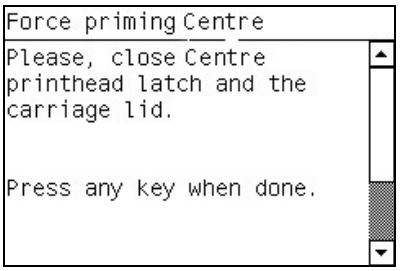
5. The front panel displays the following message, press ok and the pump of the middle primer comes on for 15 seconds. Check the pump comes on and is fully functional by placing your finger first on the pump and checking that it vibrates and then by placing the fingers under the holes of the latch (the 2 ones which have an plastic O ring around the holes) and check that there is a little air pressure (you will need to tap both holes at the same time).



6. The test can be run again by selecting yes and pressing ok.



7. The front panel displays the following when the test has been completed, close the printhead latch and carriage lid and press any key to shut down the printer.



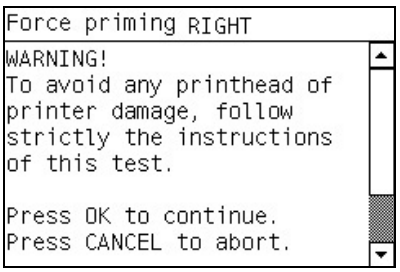
6.6.3 Force Priming Right

Description

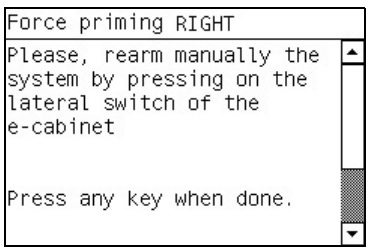
Operates the primer pump on the right of the carriage for 15 seconds.

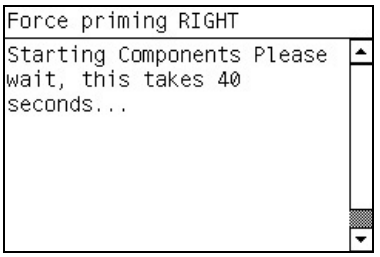
Procedure

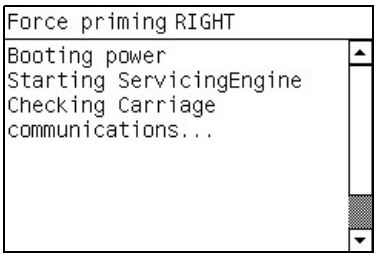
1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.6 Force Priming Menu**> **6.6.3 Force Priming Right**.
2. The front panel displays the following warning message, parts of this procedure must be performed in order to stop the printer from becoming damaged.



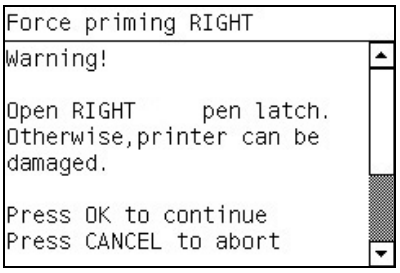
3. The front panel displays the following messages, rearm the electrical cabinet, press the power button and press ok.



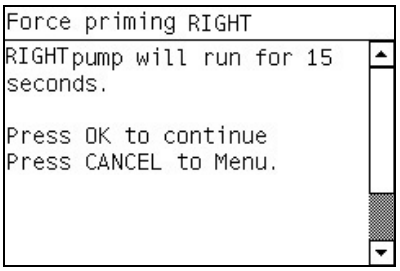




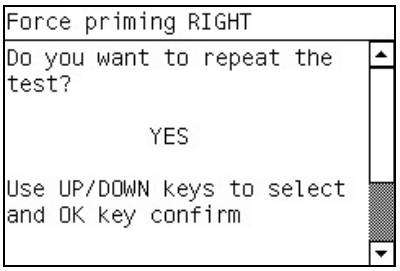
4. The front panel displays the following warning message, open the right latch for the printheads.



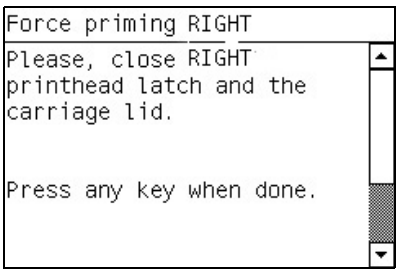
5. The front panel displays the following message, press ok and the pump of the right primer comes on for 15 seconds. Check the pump comes on and is fully functional.



6. The test can be run again by selecting yes and pressing ok.



7. The front panel displays the following when the test has been completed, close the printhead latch and carriage lid and press any key to shut down the printer.



6.6.3 Force Priming All

Description

Operates all the primer pumps on the carriage for 15 seconds.

Procedure

1. Go to Diagnostics menu and select **6. Carriage Menu**> **6.6 Force Priming Menu**> **6.6.4 Force Priming All**.

7. Print Head Cleaning Menu

7.1 PH Roll Adv Open Loop

Description

This is a test in open loop (motor movement during a test period without checking the encoder) for the advance motor of the PH cleaner system. The test is mainly to troubleshoot advance servo problems with the PH cleaning system.

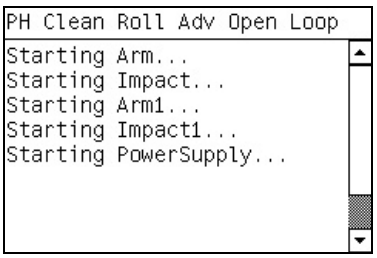
The test moves the Advance motor forwards during the test period with the expected motor movement, the encoder movement is recorded and displayed.

The test checks the movements of the top roll encoder, by displaying the encoder unit positions.

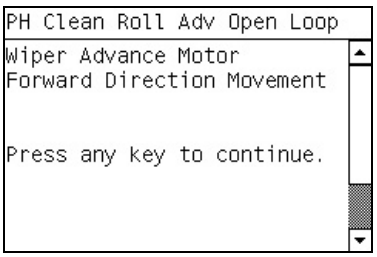
Additionally this test checks the electro brake attached to the top roll.

Procedure

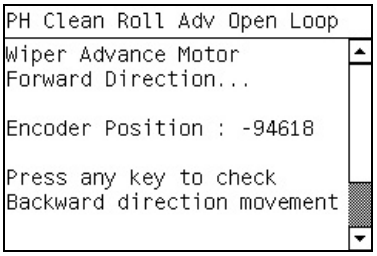
1. Go to Diagnostics menu and select **7. Print Head cleaning Menu**> **7.1 PH Roll Adv Open Loop**.
2. The front panel displays the following message while the various electrical subsystems are initialized in order to perform the test.



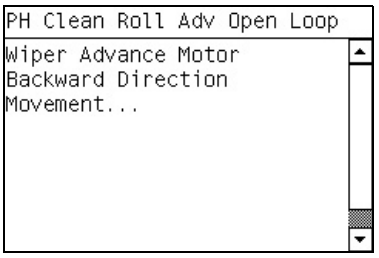
3. The front panel displays the following message, press any key to start the test, the printer will test the wiper advance in a forward direction. The printer advances the wiper 5cm (the test is timed).



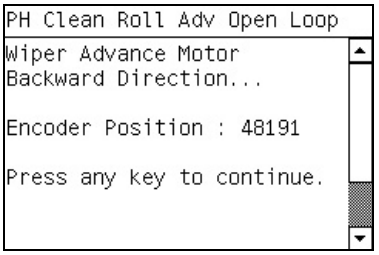
4. The front panel displays the results of the test in encoder units, press any key to check the wiper in the backward direction.



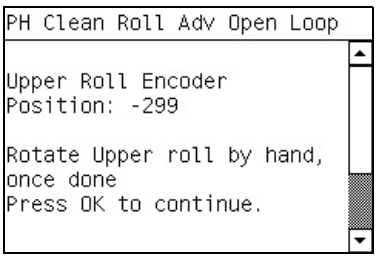
5. The front panel displays the following message while the wiper is being tested in the backward direction.



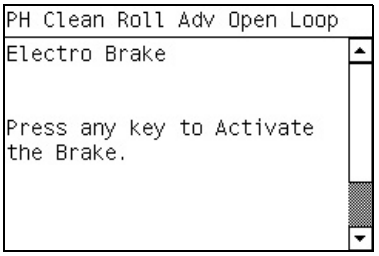
6. The front panel displays the results of the test in encoder units, press any key to continue.



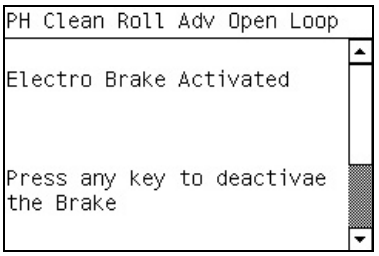
7. The next test will display in real time the encoder count units from the upper roll encoder system. Rotate the upper roll to see the encoder units changing on screen. A complete revolution should be about 3800 encoder units. When the test is finished, press ok to continue.



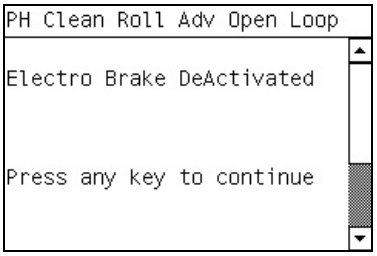
8. The next test will check the operation of the advance system electrobrake. The electrobrake acts directly on the upper roll system and a correct operation is key for correct tensioning of the cloth. Rotate the upper roll with the electrobrake ON and Off to ensure the correct operation. Press any key to activate the brake.



9. The front panel displays a message to confirm that the electrobrake is active, press any key to deactivate the brake.



10. The front panel displays a message to confirm that the electrobrake is deactivated, press any key to finish the test.



7.2 PH Roll Adv Close Loop

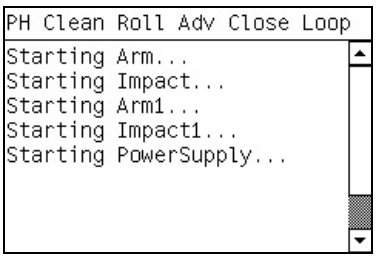
Description

This tests the advance motor in close loop, run this test after any repair to ensure the advance system works ok. The system moves the cleaning cloth 10cm to ensure the complete movement is ok.

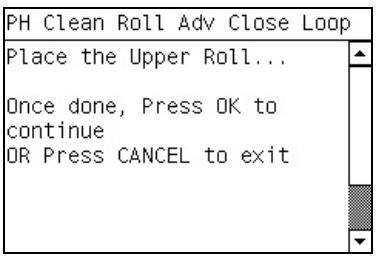
The test will activate all the components for the PH cleaner roll system and advance the cloth 10cm in close loop.

Procedure

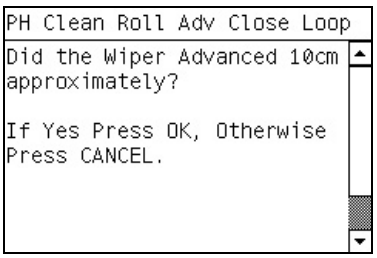
1. Go to Diagnostics menu and select **7. Print Head cleaning Menu**> **7.2 PH Roll Adv Close Loop**.
2. The front panel displays the following message while the various electrical subsystems are initialized in order to perform the test.



3. The front panel displays the following message, make sure there is cloth correctly loaded on the upper roll, press ok to continue the test.



4. Check the advance of the printhead cleaning upper roll, if is advanced 10cm, press ok.



If there was a problem and the cloth did not advance 10cm, press ok to repeat the test, if the cloth still does not advance press cancel and shut down the printer to make the appropriate repair.

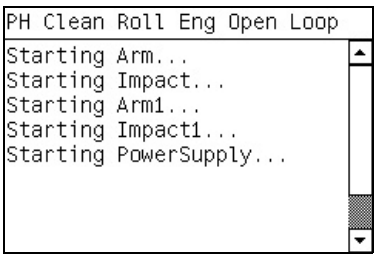
7.3 PH Roll Eng Open Loop

Description

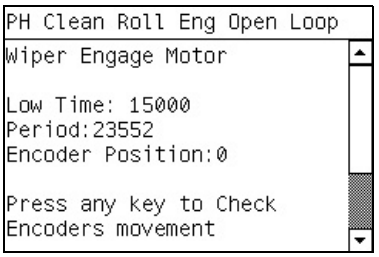
This test moves the engage motor. this motor raises the pressure roller up and down in an open loop (motor movement during a test period without checking the encoder). The test shows the number of encoder units counted during the movement. The test is mainly to troubleshoot engage servo problems with the printhead cleaning system.

Procedure

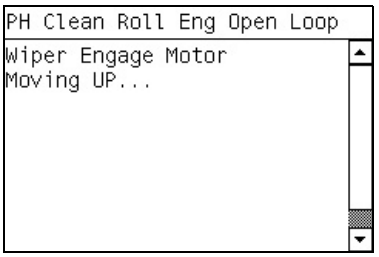
1. Go to Diagnostics menu and select **7. Print Head cleaning Menu**> **7.3 PH Roll End Open Loop**.
2. The front panel displays the following message while the various electrical subsystems are initialized in order to perform the test.



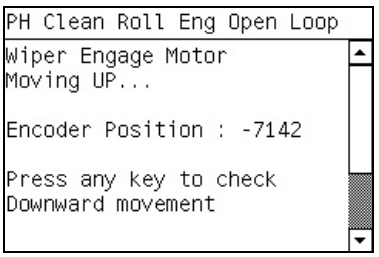
3. The front panel displays the following message, press any key to start the test.



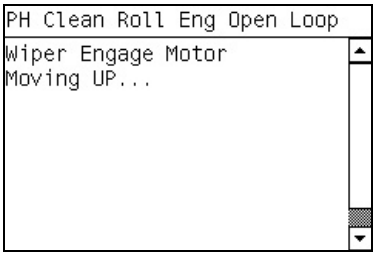
4. The front panel displays the following message, the wiper engage motor turns on and reads the encoder units moved.



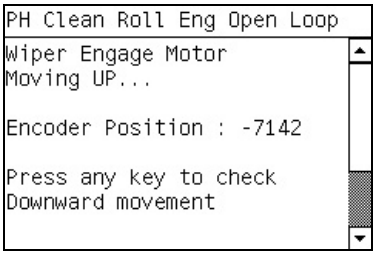
5. The font panel displays the results in encoder units.



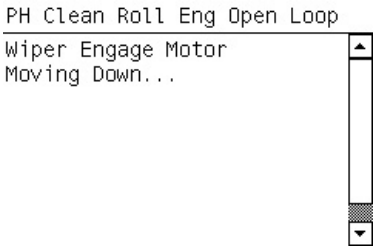
6. The front panel displays the following message, the wiper engage motor turns on and reads the encoder units moved.



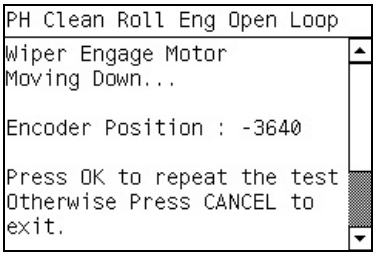
7. The front panel displays the results in encoder units, press any key to continue.



8. The front panel displays the following message, the wiper engage motor turns on and moves the roller down and reads the encoder units moved.



9. The front panel displays the results in encoder units.



7.4 PH Roll Eng Close Loop

Description

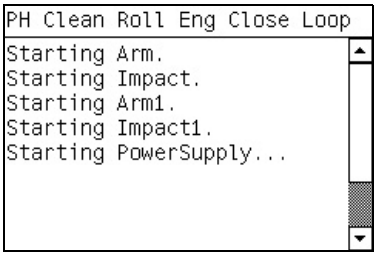
This in close loop for the advance motor, run this test after any repair to ensure the engage system works ok. The system moves the pressure roller to engage position (pressure roller up position where the actual PH cleaning activities are performed) and then down to the rest position

This test performs a system test of the advance system to ensure the system works ok

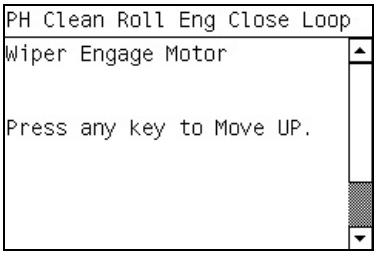
Procedure

1. Go to Diagnostics menu and select **7. Print Head cleaning Menu**> **7.4 PH Roll Eng Close Loop**.

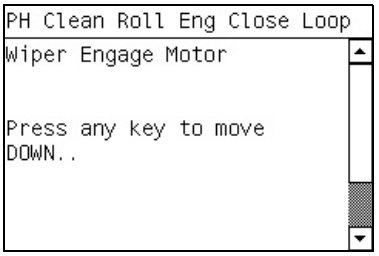
2. The front panel displays the following message while the various electrical subsystems are initialized in order to perform the test.



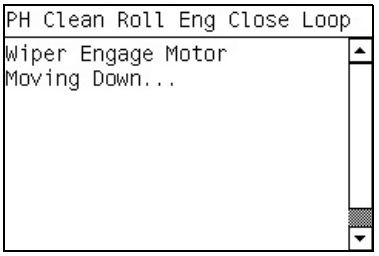
3. The front panel displays the following message, press any key to make the engage motor move the wiper up.



4. The front panel displays the following message, press any key to make the engage motor move the wiper down.



5. As the wiper is moving down the front panel displays the following message, afterwards the test is finished.



7.5 PH High Calib Default

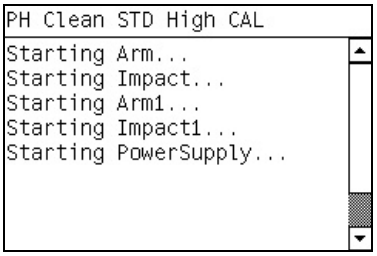
Description

This procedure places a default value of 1600 encoder units of the printhead cleaner roller engage system high calibration in the NVM. Use this test if the Printhead cleaning system fails to start up due to an incorrect calibration.

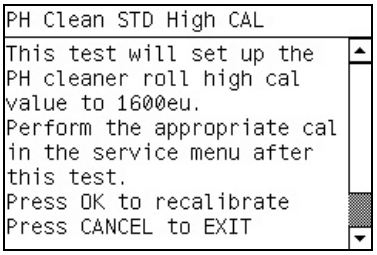
Procedure

1. Go to Diagnostics menu and select **7. Print Head cleaning Menu**> **7.5 PH High Calib Default**.

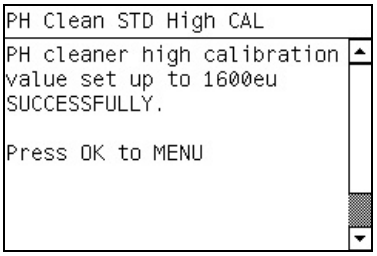
2. The front panel displays the following message while the various electrical subsystems are initialized in order to perform the procedure.



3. The front panel displays the following message, press ok to add a default value of the printhead cleaner roller motor.



4. The front panel displays the following message confirming the default value has been added, press ok to return to the previous menu.



7.6 TestUP_Down loop47_13

Description

The objective of this test is to be able to test in loop the up/down movement of the Printhead Cleaning Roller, in case of intermittent 47:13 system error.

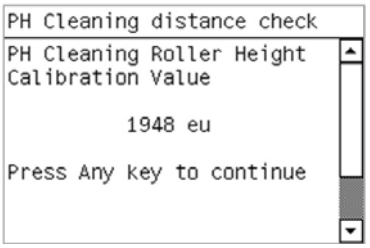
During the initialization of the printer, the Carriage is moved to the top of the Printhead Cleaning Roller, and then the PH cleaning roller is moved up, expecting to reached the 'engaged position'. If the printer detects a high force is required to overcome friction when moving up, before reaching the 'engage position', the printer will display a 47:13 system error.

In this case the printer will move 10 times the PH cleaning roller to the 'engage' or wipe position, and in case it detects any failure, will display 1 fail, and will try to test it a next time. This test can be run while the PH cleaning roller is open, in order to detect any mechanical failure.

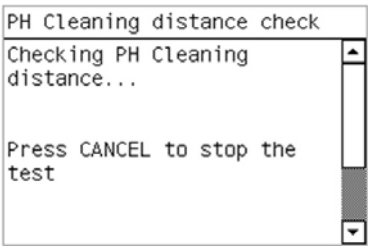
Procedure

1. Go to Diagnostics menu and select **7. Print Head cleaning Menu**> **7.6 TestUP_Down loop47_13**.

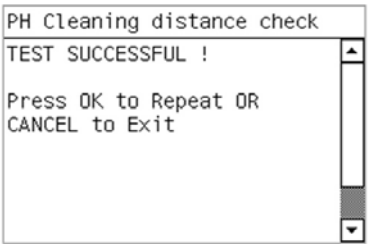
2. The front panel displays the following message, press the ok key.



3. The Printhead Cleaning assembly is tested.



4. If the test passes, the following screen is displayed.



If the test fails, end the test and perform the appropriate repair procedure.

8. Heating and Curing Menu

8.1 Heating

Description

This test performs an overall check of the heating system by checking the temperature sensors, temperature control module, power module and lamp system.

The system does a quick check of the IR temperature sensors and then heats up the drying to 45 degrees.

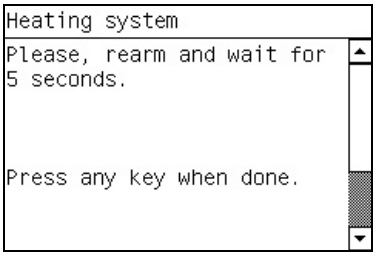
Run this test to perform a troubleshooting of the different components in the curing system as well as to perform a complete system check after doing any repairs to the system. This test checks the following

- Temperature Sensor test
- Heating system closed loop test (Temperature Sensor, controllers, output)

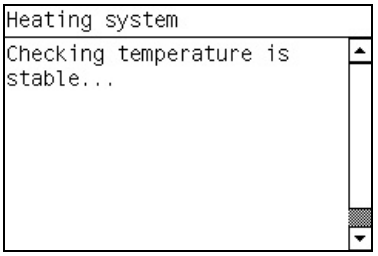
Procedure

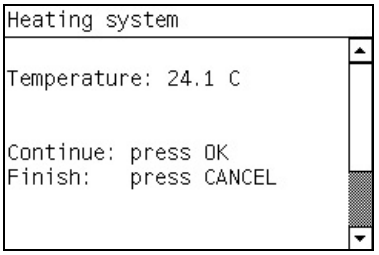
1. Go to Diagnostics menu and select **8. Heating and Curing Menu**> **8.1 Heating**.
2. Media must loaded, can just be taped on the media output and the substrate a minimum flat under heating and curing is sufficient.

3. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



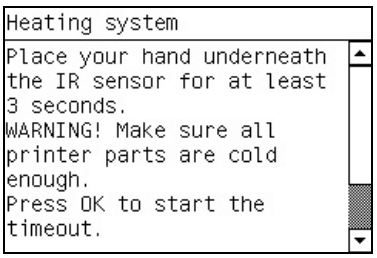
4. The printer reads the Temperature Sensor values and checks that they are stable, the front panel displays the following.



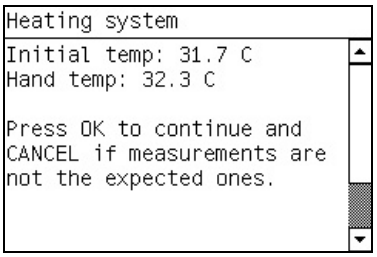


If the readings are not immediately stable, the printer turns on the vacuum and the fans and checks again for one minute (up to 4 times) before displaying a failure.

5. If there is no problem at this point the front panel displays the following message, place your hand under the IR temperature sensor and press ok.

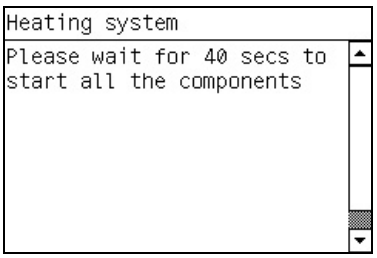


6. Check that the value displayed changes accordingly, if it does press ok to continue with the rest of the test.

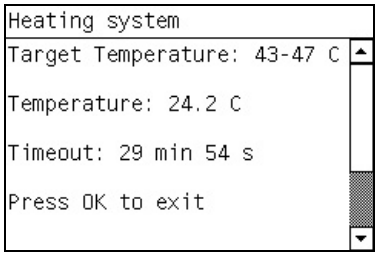


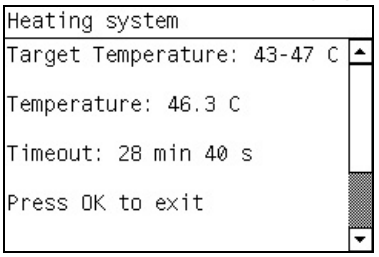
If the value displayed does not change, press cancel, and troubleshoot the error.

7. If there is no problem at this point, the front panel displays the following while the printer restarts the heating subsystem.

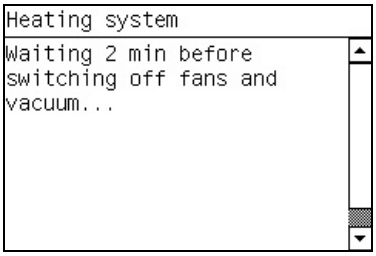


8. The printer sets a target temperature of 45 C and tries to achieve and sustain the target temperature and maintains it there until ok is pressed. In order to achieve this, the closed loop system must work correctly.





9. The front panel displays the following message as the heating system cools down after the test, after which the printer can be shut down.



8.2 Curing

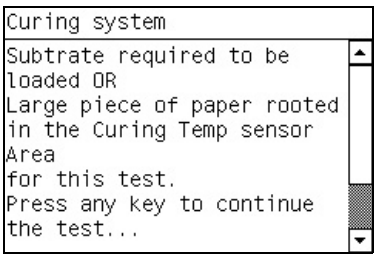
Description

This test performs an overall check of the curing system by checking the temperature sensors, temperature control module, power module, curing fans and resistor system. Run this test to perform a troubleshooting of the different components in the curing system. The curing test checks the following components and processes.

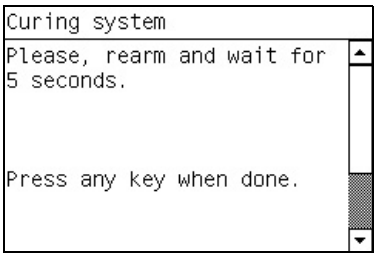
- Temperature Sensor test
- Curing system closed loop test (Temperature Sensor, controllers, output)

Procedure

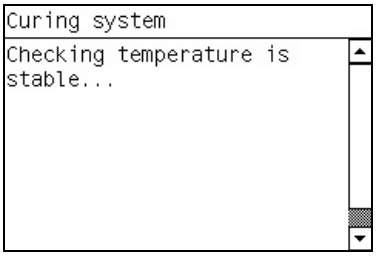
1. Go to Diagnostics menu and select **8. Heating and Curing Menu**> **8.2 Curing**.
2. Media must loaded, can just be taped on the media output flat under heating and curing is sufficient.
3. The front panel displays the following message, check there is substrate loaded in the media path so that the IR temperature sensor can be tested.

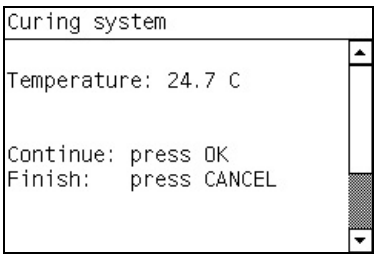


4. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.



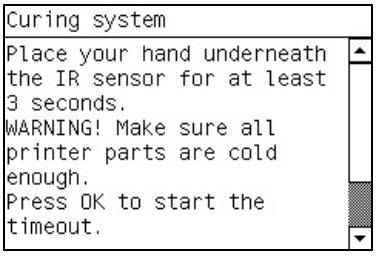
5. The printer reads the Temperature Sensor values and checks that they are stable, the front panel displays the following.



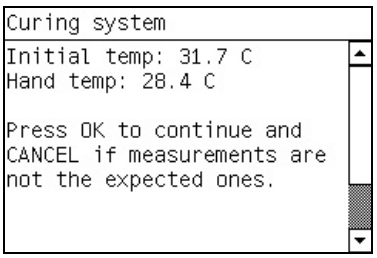


If the readings are not immediately stable, the printer turns on the vacuum and the fans and checks again for one minute (up to 4 times) before displaying a failure.

6. If there is no problem at this point the front panel displays the following message, place your hand under the IR temperature sensor and press ok.

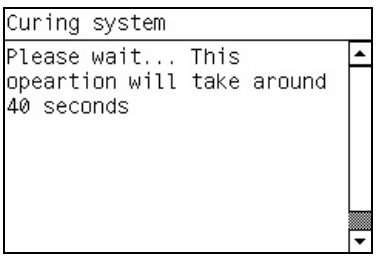


7. Check that the value displayed changes accordingly, if it does press ok to continue with the rest of the test.

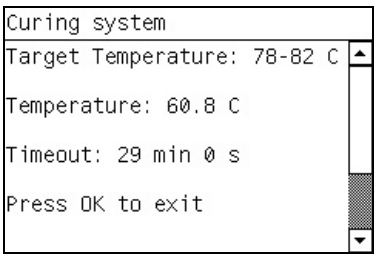


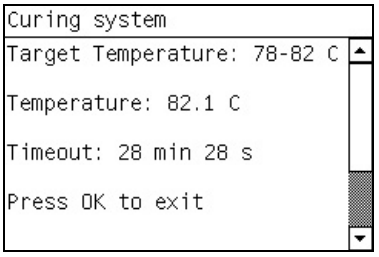
If the value displayed does not change, press cancel, and troubleshoot the error.

8. If there is no problem at this point, the front panel displays the following while the printer restarts the heating subsystem.

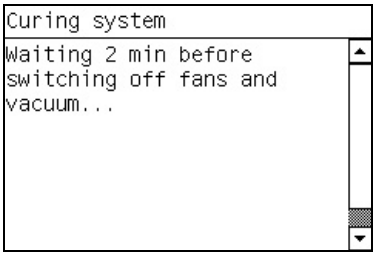


9. The printer sets a target temperature of 45 C and tries to achieve and sustain the target temperature and maintains it there until ok is pressed. In order to achieve this, the closed loop system must work correctly.





10. The front panel displays the following message as the heating system cools down after the test, after which the printer can be shut down.



8.3 Heating Temp Profile

Description

This test sets the Heating system at a user selectable temperature of 45 to 60 degrees in order to perform a system measurement over a previously printed check plot. This test checks the following>

- Print the temperature profile print
- Temperature profile test

The test requires a special temperature sensor gun in order to verify that the heating/curing system works correctly.

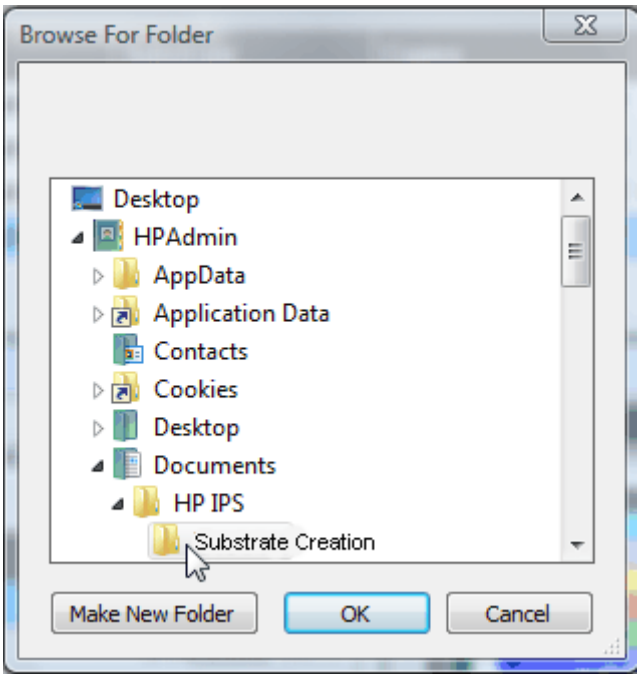
Procedure

Before performing the test check the following:

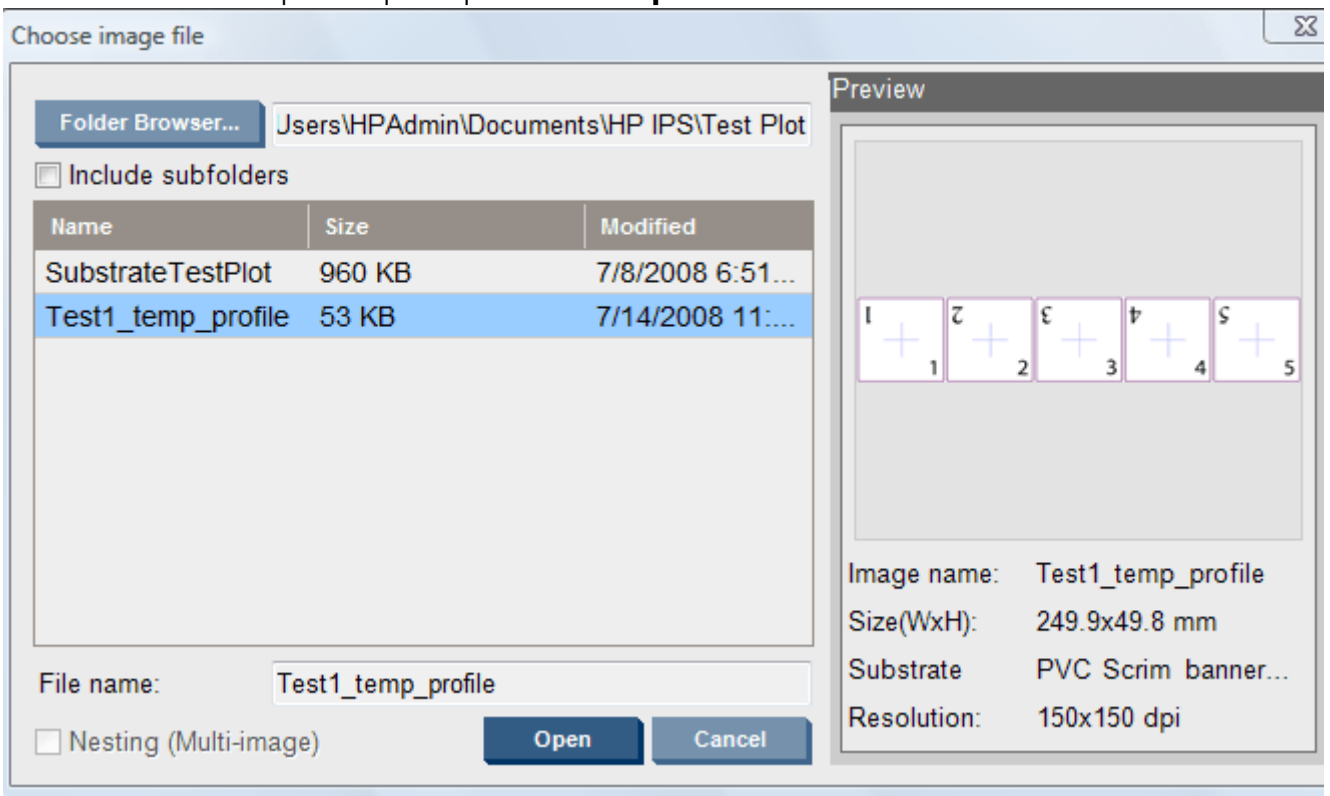
- (LX800) Ensure the Curing Plates are in the correct position.
- Before measuring any part of the substrate with a temperature measuring gun, make sure the substrate is as flat as possible.
- When measuring with a temperature gun, make sure that the same reference point is used constantly.

NOTE: It is important before performing the procedure that the reflectors are checked for dirt or damge as this will affect the temperature profile.

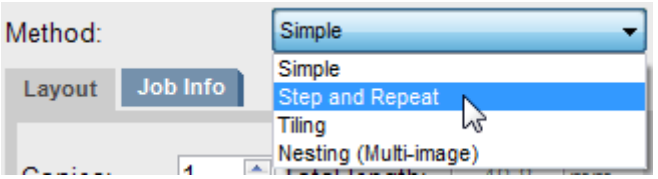
1. A print must be made to perform the test. With the printer in normal mode. Open a new job from the Substrate Creation and click **ok.**



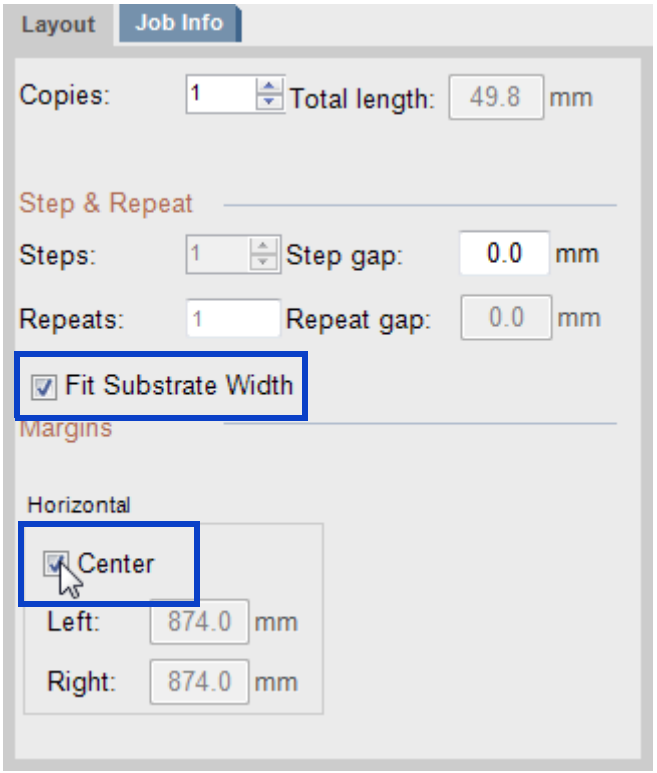
2. Select the temperature profile print and click **open**.



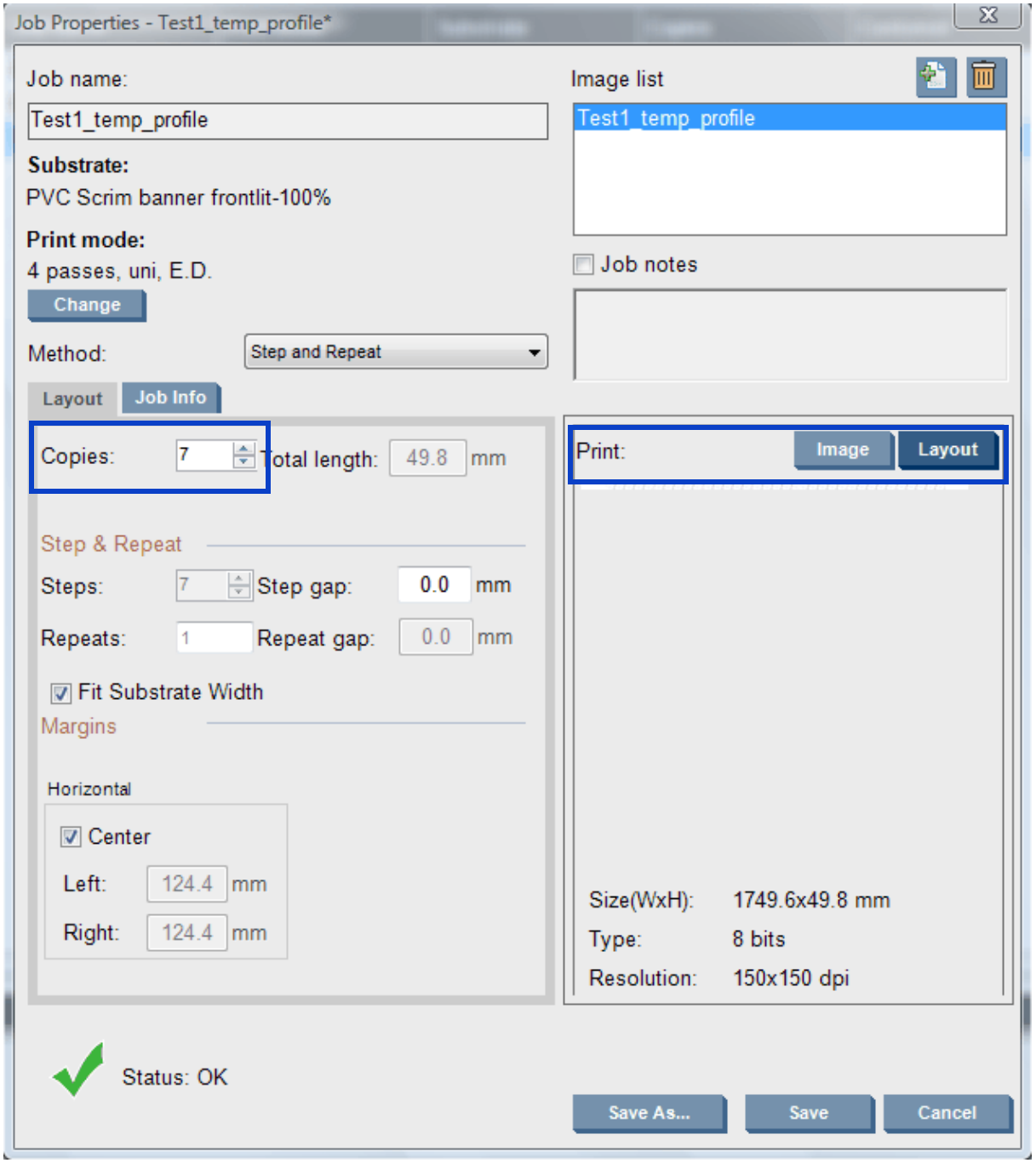
3. At the next screen, select **step and repeat** from the method drop down menu.



4. Select **fit substrate width** and **center**.

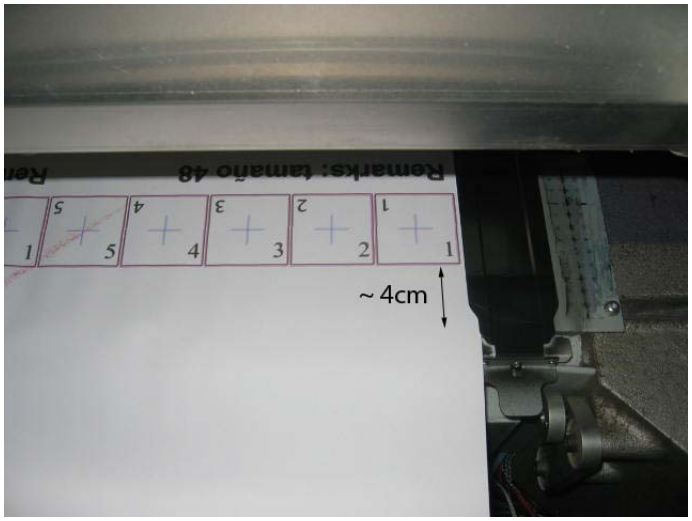


5. Increase the number of copies until the print fills the maximum width. Do not increase it so much that another line appears on the IPS in the Layout field.

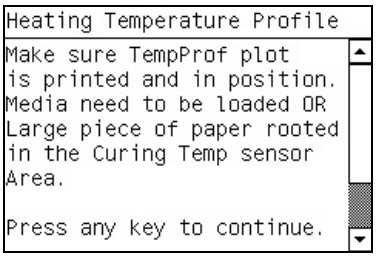


6. Click Save and continue to print.

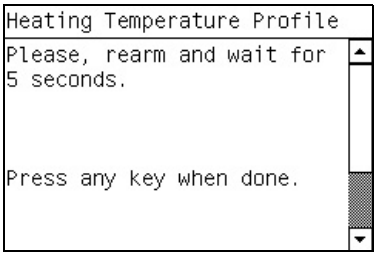
7. Position the plot until the bottom of the plot is four centimeters from the nearest edge of the media holder.



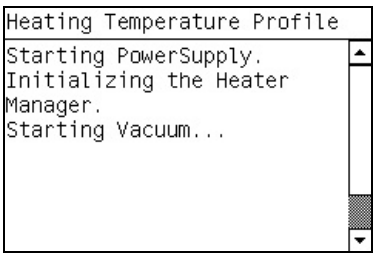
8. Go to Diagnostics menu and select **8. Heating and Curing Menu**> **8.3 Heating Temp profile**.
9. The front panel displays the following message, press any key to continue.

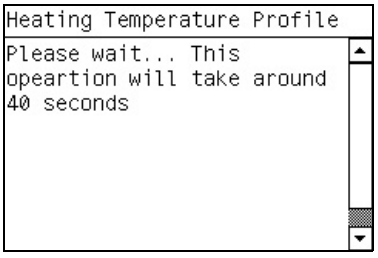


10. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.

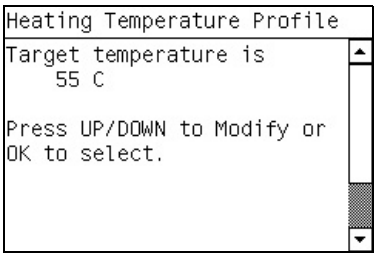


11. The front panel displays the following while the printer prepares to perform the procedure.

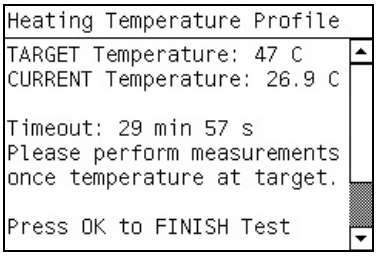




12. The front panel displays the following, use the up and down arrows to modify the target temperature.



13. The front panel displays the following message, make the measurement with the gun and press ok to finish the test.



14. Taking the measurement correctly is important to successfully completing this test. Shown below is a guide to correctly taking the temperature:

- Open the Officeability cover in front of the heating are if they are installed.
- Take the temperature while standing in front of the printer
- Guide the temperature gun through the scan beam so that the temperature will be taken the same way each time.
- Center the temperature gun on each cross, distance the gun from the substrate so that the surface area measured is approximately 4 cm (1.5”). Check the documentation that came with the temperature gun in order to see the distance required to read this area, as products can vary.
- The way the measurements are taken should be consistent, however when measuring under the temperature sensor some changes may have to occur to get a reading.

- Enter the values into an excel sheet of all the measurement points (it is easier with two people). It is important to repeat the process three times to get an accurate reading.

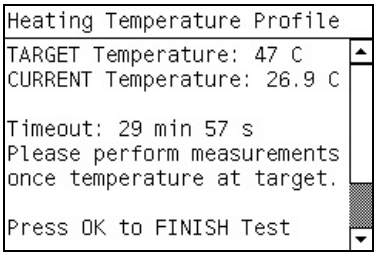
- In the excel sheet, highlight the point where there is a change of resistance. Shown below is what the excel sheet could look like:

	A	B	C	D	E	F
1	x_number	heat55deg 1st	heat 55deg 2nd	heat 55deg 3rd		
2	0	40	41	42		
3	1	47	49	48		
4	2	48	50	51		
5	3	48	49	47		
6	4	50	51	52		
7	5	48	51	49		
8	6	47	49	50		
9	7	48	50	50		
10	8	51	53	49		
11	9	49	51	50		
12	10	49	50	47		
13	11	50	51	49		
14	12	50	50	48		
15	13	48	48	52		
16	14	50	49	51		
17	15	50	50	52		
18	16	49	47	47		

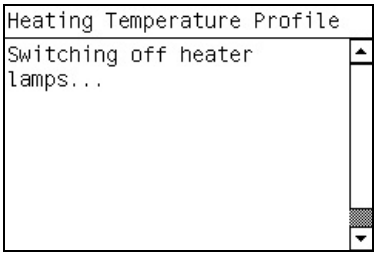
Maker a note of where the resistor changes

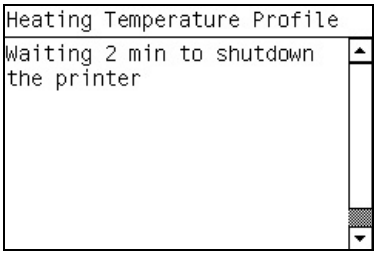
Change of resistence

15. Once all the above has been done, press ok to finish the test.

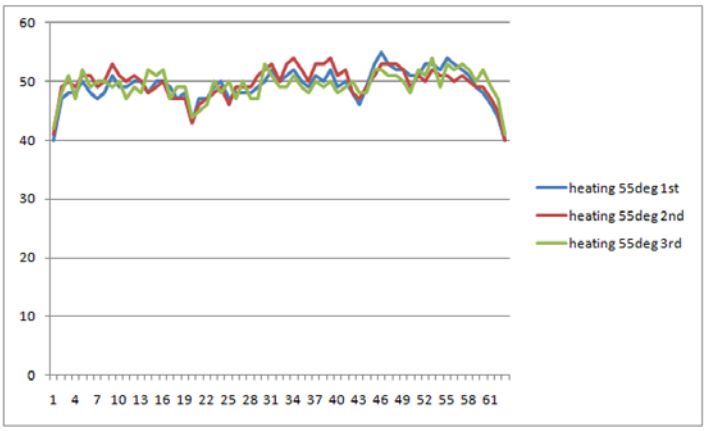


16. The heating system will now cool down, after which the printer can be shut down.





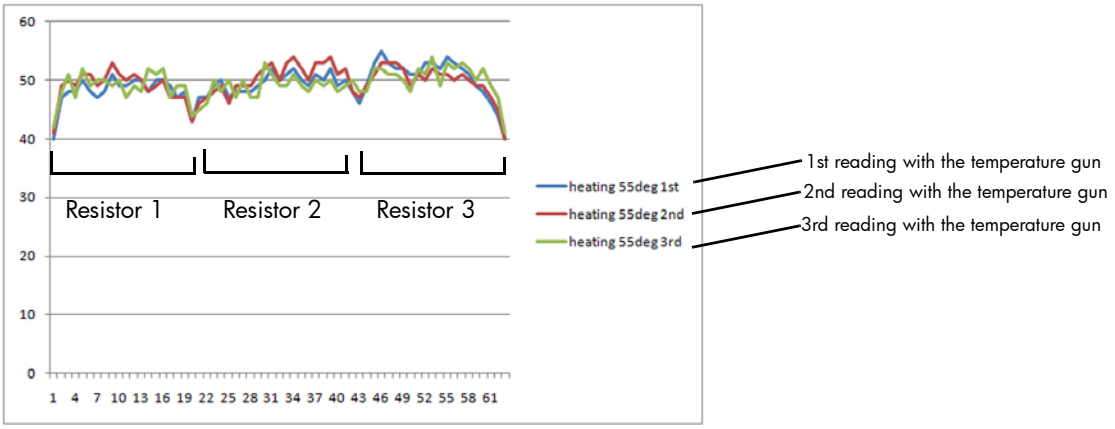
- After all the columns are filled in with the temperature readings (three readings), make a chart using the add chart feature of excel. The chart should look something like this:



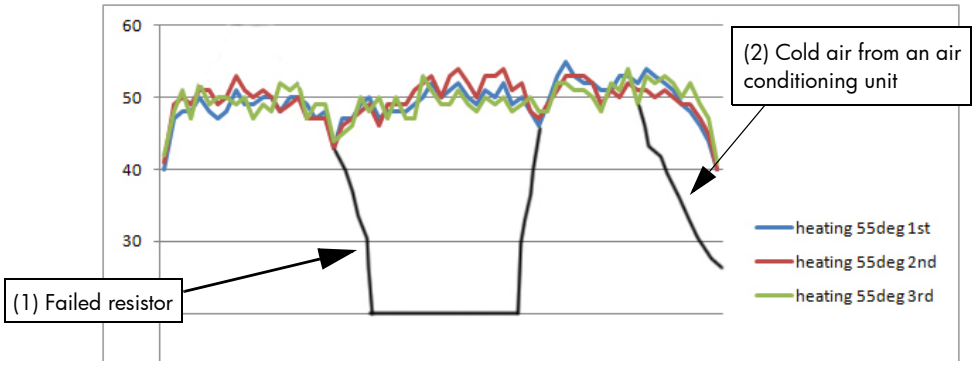
Interpreting the results of the Heating Temperature Profile test

In this section we describe how to interpret the chart produced from the excel sheet.

The left side of the chart corresponds with the right side of the printer. The chart shows dips and spikes in the temperatures that were detected, these should be were the resistors start and finish, this is normal.



If there are readings detected that are more than 30^{c} outside of the range, this could indicate an issue which would require troubleshooting. Looking at the chart can help you. Shown below is the chart made earlier with added black lines indicating what you would see for some typical problems that may affect the temperature profile:



- The first (1) is a dip in the chart caused by a failed resistor, check the resistor page 819, if it needs replacing page 822.
- The second (2) is a dip caused by cold air blowing on to that part of the printer, maybe from an air conditioning unit, or a fan or an open window.
- There may be other variations in the chart that can be caused by the following:
  - Make sure the deflectors are clean.
  - Check there are no bubbles or wrinkles in the substrate, if the substrate is not flat on the platen, this would cause a spike in the chart.

What is an acceptable variation of temperature change:

- LX800: There are many variables to take into account, but in general terms we could say an acceptable level of change in temperature would 30^{c} and the printer would still be able to print in specification.
- LX600/L65500: The variation in temperature change should not exceed 10^{c}.

8.4 Curing Temp Profile

Description

This test sets the Heating system at a user selectable temperature of 45 to95 degrees to perform a system measurement over previously printed check plot. The Curing Temp Profile test includes the following.

- Print the temperature profile print
- Temperature profile test

The test requires a special temperature sensor gun,in order to verify that the heating/curing system works correctly.

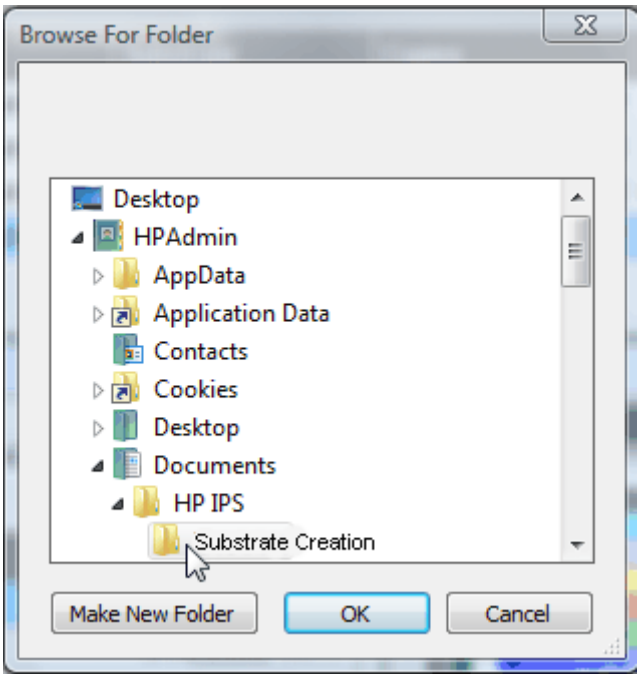
Procedure

Before performing the test check the following:

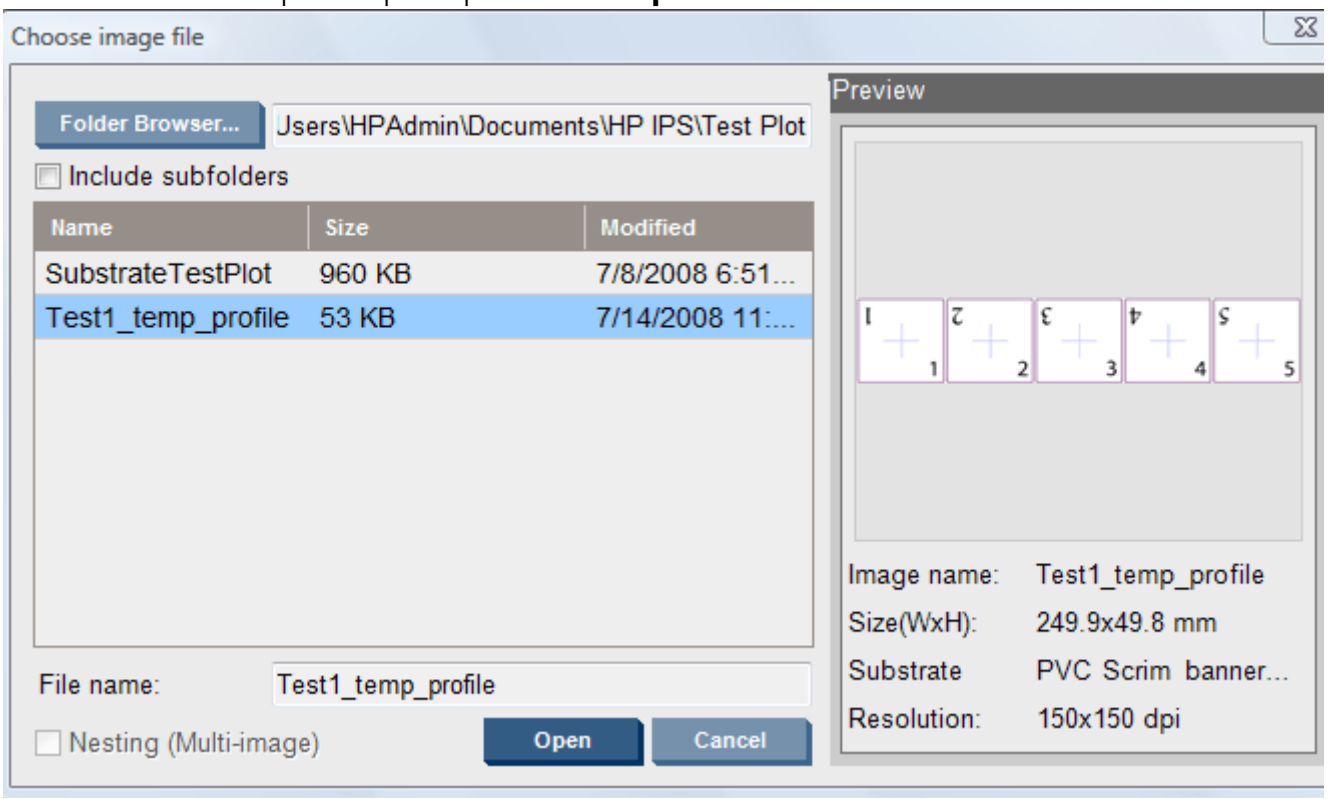
- (LX800) Ensure the Curing Plates are in the correct position.
- Before measuring any part of the substrate with a temperature measuring gun, make sure the substrate is as flat as possible.
- When measuring with a temperature gun, make sure that the same reference point is used constantly.

NOTE: It is important before performing the procedure that the reflectors are checked for dirt or damage as this will affect the temperature profile.

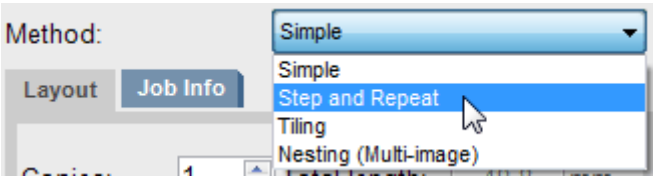
1. A print must be made to perform the test. With the printer in normal mode, open a new job from the Test Plot folder and click **OK**.



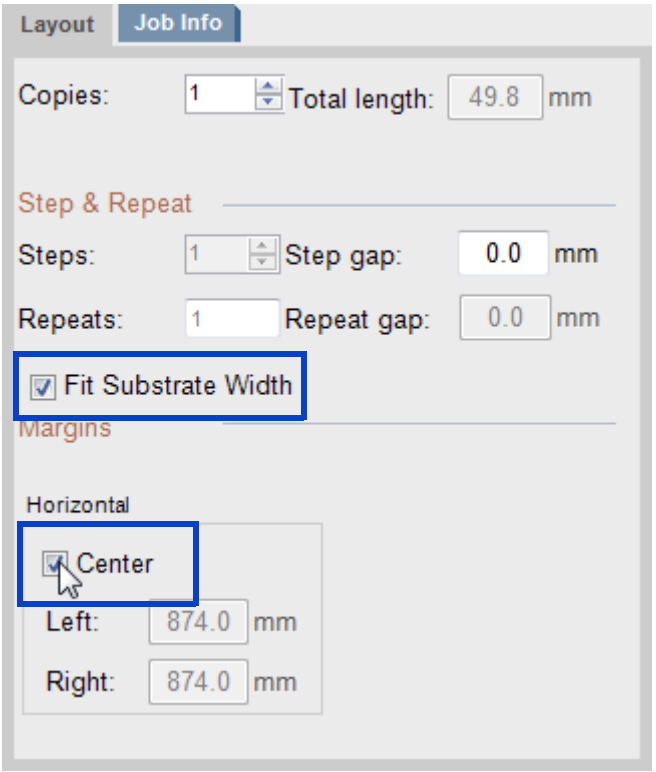
2. Select the temperature profile print and click **open**.



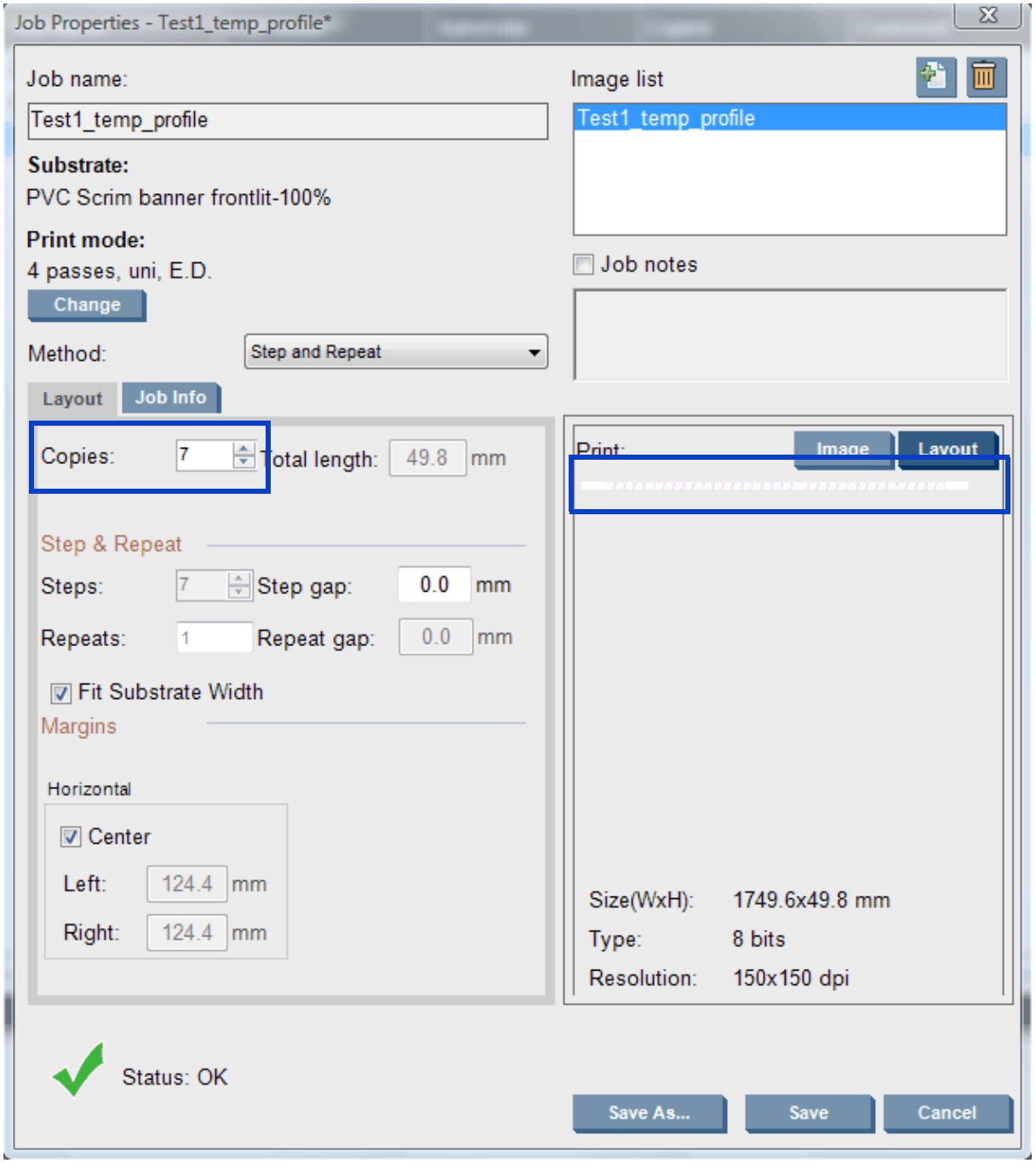
3. At the next screen, select **step and repeat** from the method drop down menu.



4. Select **fit substrate width** and **center**.

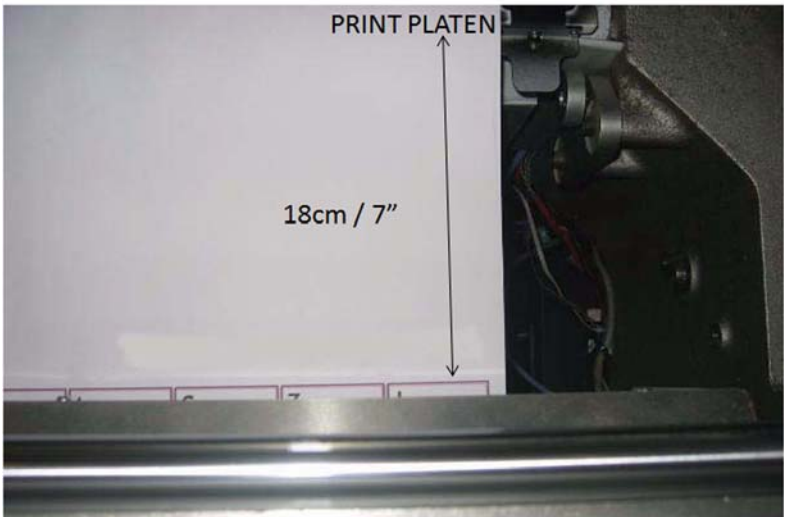


5. Increase the number of copies until the print fills the maximum width. Do not increase it so much that another line appears on the IPS in the Layout field.

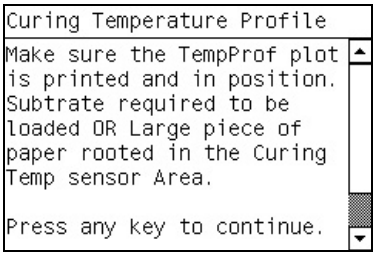


6. Click Save and continue to print.

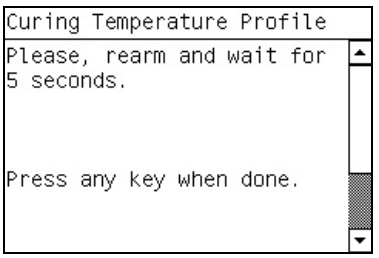
7. Position the plot until the bottom of the plot is four centimeters from the nearest edge of the media holder.



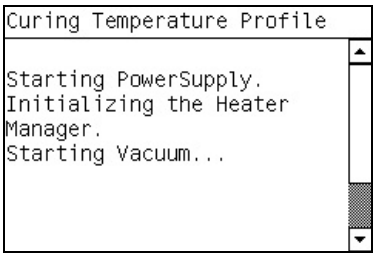
8. Go to Diagnostics menu and select **8. Heating and Curing Menu**> **8.4 Curing Temp profile**.
9. The front panel displays the following message, press any key to continue.

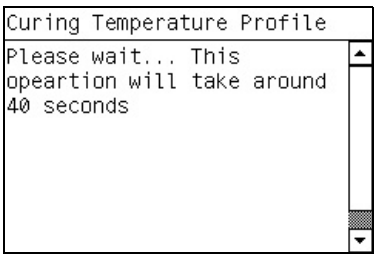


10. The front panel displays the following message, rearm the electrical cabinet, press the power button and press ok.

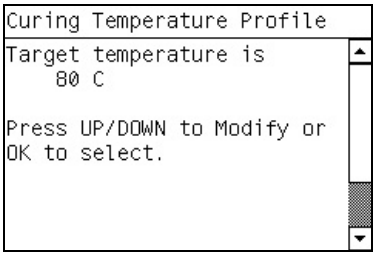


11. The front panel displays the following while the printer prepares to perform the procedure.

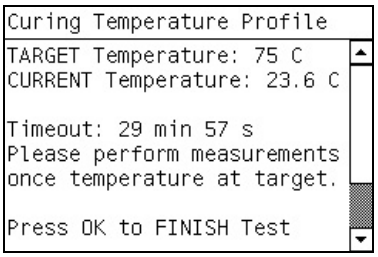




12. The front panel displays the following, use the up and down arrows to modify the target temperature.



13. The front panel displays the following message, take the measurement with the gun.



14. Taking the measurement correctly is important to successfully completing this test. Shown below is a guide to correctly taking the temperature:

- Take the temperature while at the back of the printer, standing on a chair/ladder, as shown in the picture:

- Guide the temperature gun through the scan beam so that the temperature will be taken the same way each time.
- Center the temperature gun on each cross, distance the gun from the substrate so that the surface area measured is approximately 4 cm (1.5”). Check the documentation that came with the temperature gun in order to see the distance required to read this area, as products can vary.
- The way the measurements are taken should be consistent, however when measuring under the temperature sensor some changes may have to occur to get a reading.

- Enter the values into an excel sheet of all the measurement points (it is easier with two people). It is important to repeat the process three times to get an accurate reading.

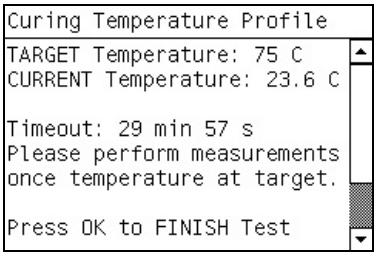
- In the excel sheet, highlight the point where there is a change of resistance. Shown below is what the excel sheet could look like:

	A	B	C	D	E	F
1	x_number	c uring 80deg 1st	c uring 80deg 2nd	c uring 80deg 3rd		
2	0					
3	1	75	74	76		
4	2	74	76	77		
5	3	78	77	79		
6	4	75	77	78		
7	5	77	79	80		
8	6	77	79	80		
9	7	79	81	77		
10	8	79	81	83		
11	9	77	78	79		
12	10	80	80	82		
13	11	77	78	79		
14	12	76	77	78		
15	13	75	75	76		
16	14	75	73	76		
17	15	74	73	75		
18	16	73	72	74		
19	17	71	69	72		
20	18	68	67	69		
21	19	67	65	69		
22	20	70	68	72	Change of resistor	

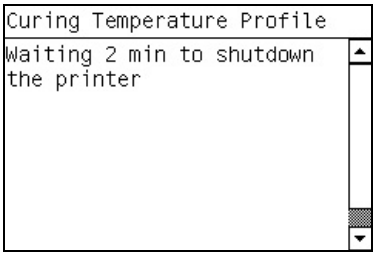
Make a note of where the resistor changes

- The first 5 cm and remaining 10 cms on the left not measured.

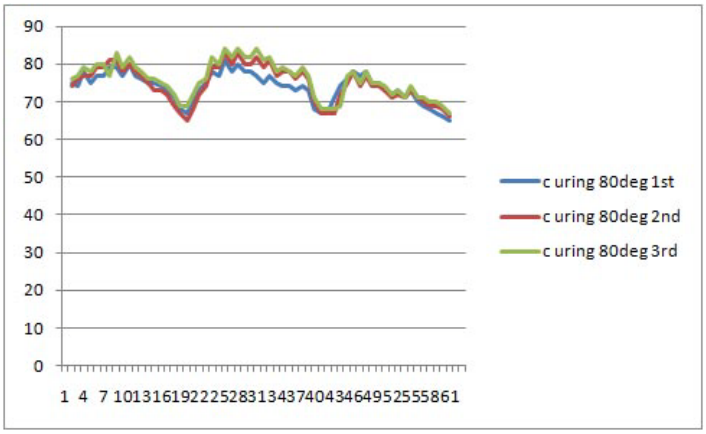
15. Press ok to finish the test.



16. The heating system will now cool down, after which the printer can be shut down.



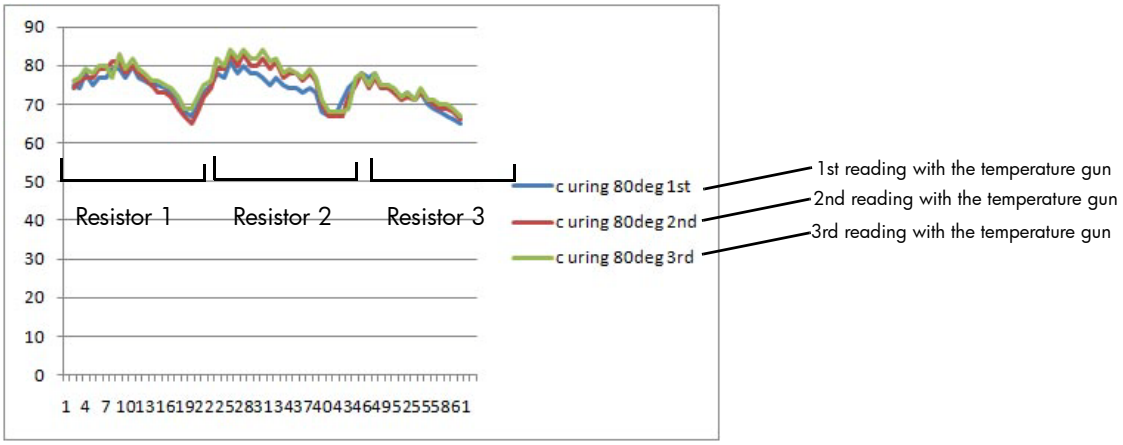
- After all the columns are filled in with the temperature readings (three readings), make a chart using the add chart feature of excel. The chart should look something like this:



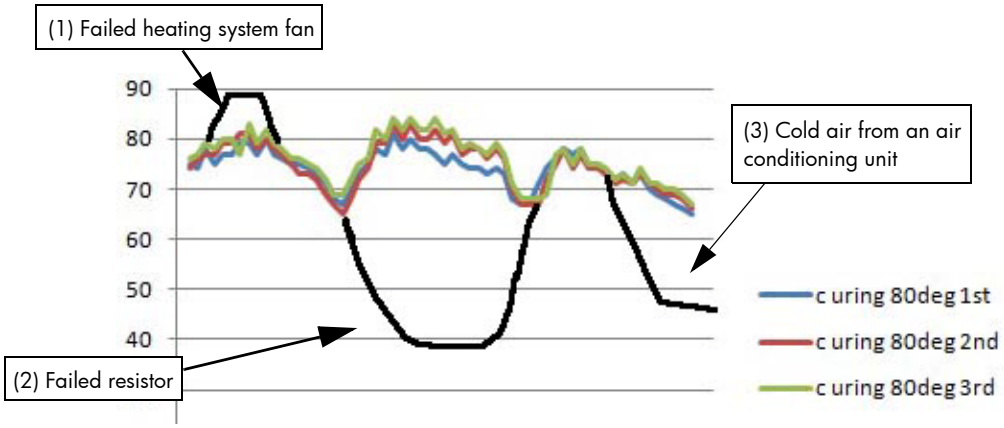
Interpreting the results of the Curing Temperature Profile test

In this section we describe how to interpret the chart produced from the excel sheet.

The left side of the chart corresponds with the right side of the printer. The chart shows dips and spikes in the temperatures that were detected, these should be were the resistors start and finish, this is normal.



If there are readings detected that are more than 30^{c} outside of the range, this could indicate an issue which would require troubleshooting. Looking at the chart can help you. Shown below is the chart made earlier with added black lines indicating what you would see for some typical problems that may affect the temperature profile:



- The first spike (1) in the chart is caused by a failed curing fan, check the fan, see page 353, if it needs replacing see page 828.
- The second (2) is a dip in the chart caused by a failed resistor, check the resistor page 819, if it needs replacing page 822.
- The third (3) is a dip caused by cold air blowing on to that part of the printer, maybe from an air conditioning unit, or a fan or an open window.
- There may be other variations in the chart that can be caused by the following:
  - Check there are no bubbles or wrinkles in the substrate, if the substrate is not flat on the platen, this would cause a spike in the chart.
  - LX800: Check that the Curing Plate is in the low position.
  - LX800: If there is a sharp decrease of temperature in the middle of the printer, this would be the area between the two curing plates, where there is a smaller plate. Remove this plate by removing four screws, but remember to replace the plate later when racing up the curing plate for printing on textile substrates.

What is an acceptable variation of temperature change:

- LX800: There are many variables to take into account, but in general terms we could say an acceptable level of change in temperature would 30^{c} and the printer would still be able to print within specification.
- LX600/L65500: The variation in temperature change should not exceed 10^{c}.

8.5 Temperature Controller Calibration

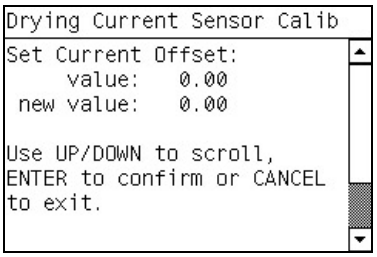
8.5.1 Heating Current Calibration

Description

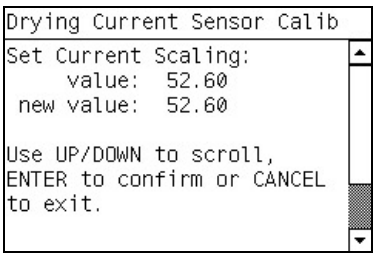
PID controllers and Current sensors in the LX800 have a calibration performed in the manufacturing line. This calibration is unique for each PID-Current sensor PAIR. The values from manufacturing are directly stored in the PID controllers. Any issue with memory erase of the PID controller will require these values to be set again. This test shows the values stored with the ability to change them if required.

Procedure

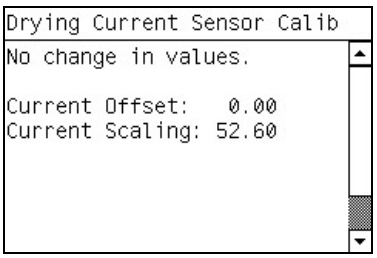
1. Go to Diagnostics menu and select **8. Heating and Curing Menu>8.5 Temperature Controller Calibration> 8.5.1 Heating Current Calibration.**
2. The front panel displays the following message. The test will show the current calibration values of the off-set value. Use the up and down keys to change the value. Press OK to save the new value and continue.



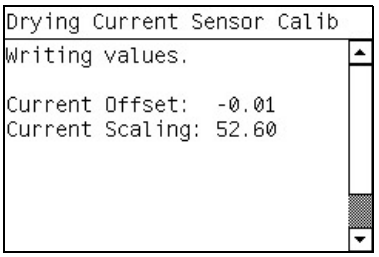
3. The front panel displays the following message. The test will show the current calibration values of the scaling value. Use the up and down keys to change the value. Press OK to save the new value and continue.



4. If the values are not changed the front panel will display the following message.



5. If the values are changed, the front panel will display the new values entered.



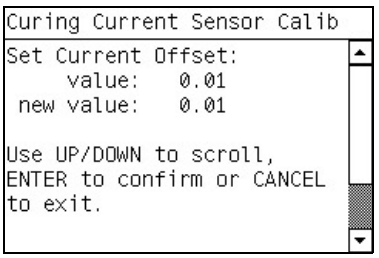
8.5.2 Curing Current Calibration

Description

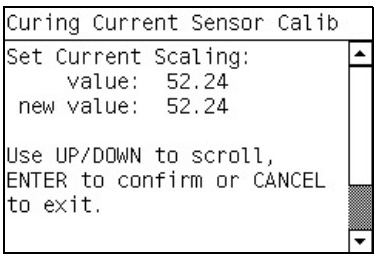
PID controllers and Current sensors in the LX800 have a calibration performed in the manufacturing line. This calibration is unique for each PID-Current sensor PAIR. The values from manufacturing are directly stored in the PID controllers. Any issue with memory erase of the PID controller will require these values to be set again. This test shows the values stored with the ability to change them if required.

Procedure

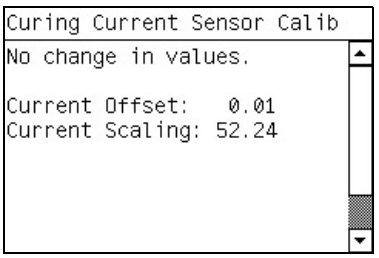
1. Go to Diagnostics menu and select **8. Heating and Curing Menu>8.5 Temperature Controller Calibration> 8.5.2 Curing Current Calibration.**
2. The front panel displays the following message. The test will show the current calibration values of the offset value. Use the up and down keys to change the value. Press OK to save the new value and continue.



3. The front panel displays the following message. The test will show the current calibration values of the scaling value. Use the up and down keys to change the value. Press OK to save the new value and continue.



4. If the values are not changed the front panel will display the following message.



5. If the values are changed, the front panel will display the new values entered.

8.5.3 Reset Heating Calibration

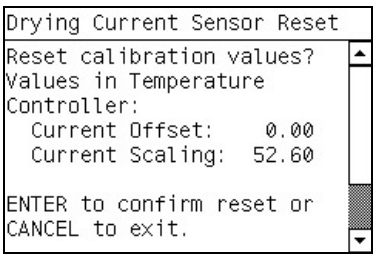
Description

In case of problems with the current values measured by the system this test allows a reset to the standard default values of the PID Controllers - Current sensors pair.

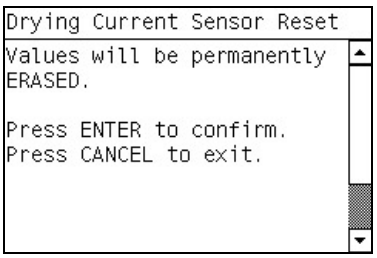
NOTE: Always calibrate a pair of PID controllers together. Use this test only if it is neccessary or while ordering a new set while performing troubleshooting.

Procedure

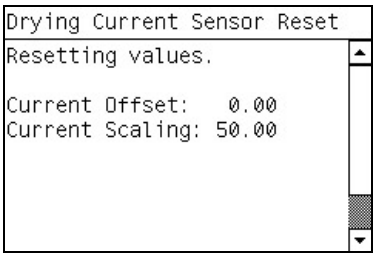
1. Go to Diagnostics menu and select **8. Heating and Curing Menu>8.5 Temperature Controller Calibration> 8.5.3 Reset Heating Calibration.**
2. The front panel displays the following message, press enter to confirm that the values can be reset to the default.



3. The front panel displays the following message, press enter to confirm.



4. The front panel displays the default setting.



8.5.4 Reset Curing Calibration

Description

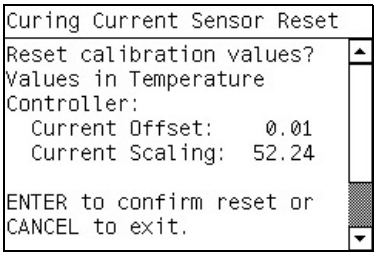
In case of problems with the current values measured by the system this test allows a reset to the standard default values of the PID Controllers - Current sensors pair.

NOTE: Always calibrate a pair of PID controllers together. Use this test only if it is neccessary or while ordering a new set while performing troubleshooting.

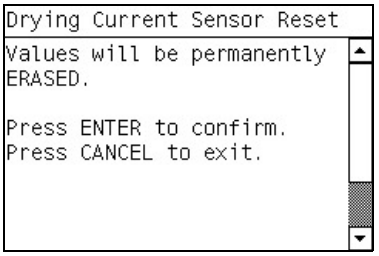
Procedure

1. Go to Diagnostics menu and select **8. Heating and Curing Menu>8.5 Temperature Controller Calibration> 8.5.4 Reset Heating Calibration.**

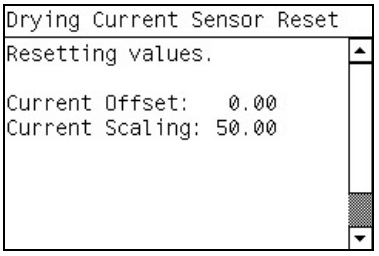
2. The front panel displays the following message, press enter to confirm that the values can be reset to the default.



3. The front panel displays the following message, press enter to confirm.



4. The front panel displays the default setting.



9. Covers Menu

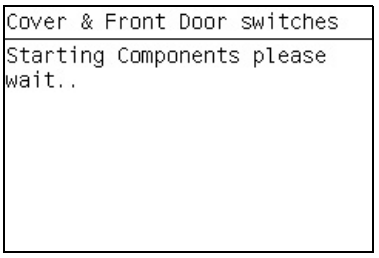
9.1 Cover & Switch Sensor

Description

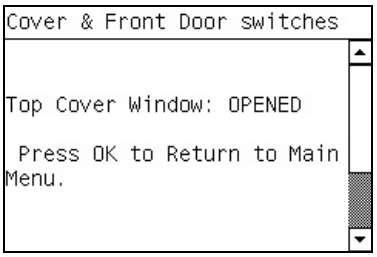
This test shows in real time the status of the right top cover window switch.

Procedure

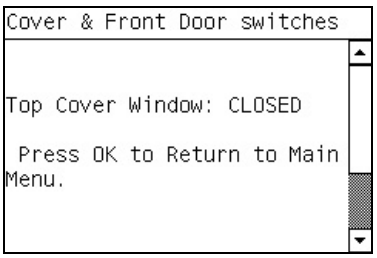
1. Go to Diagnostics menu and select **9. Cover Menu** > **9.1 Cover & Switch Sensor**
2. The front panel displays the following message while the test initializes.



3. The front panel displays the following message, open the top cover.



4. Check to see if the status displayed on the front panel changes, press ok to finish the test.



10. Diagn. Utilities menu

10.0 Enable/Disable logs

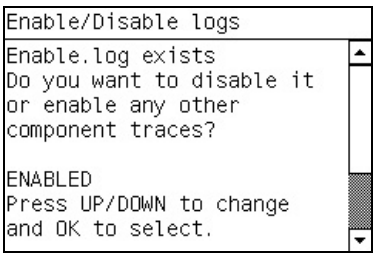
Description

Activates the system logs.

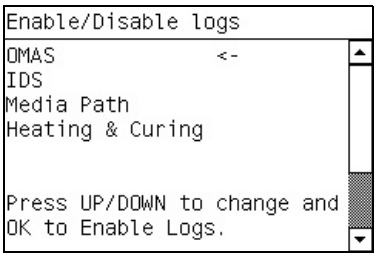
Procedure

1. Go to Diagnostics menu and select **10. Diagn. utilities menu**> **10.0 Enable/Disable logs**
2. The front panel displays the following message.

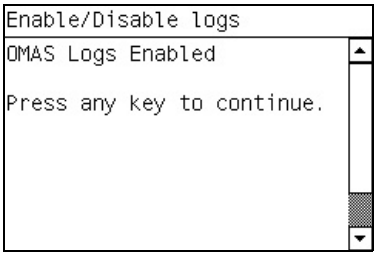
3. The front panel displays the following, use the up and down to change the status of the logs (on or off).



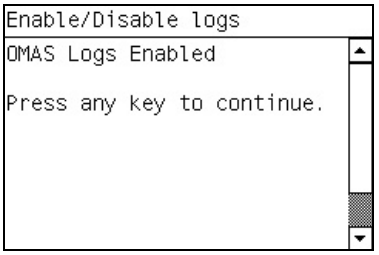
4. Select which component you want to be traced.



5. The front panel displays the following screen confirming the selected component is now being traced.



6. The front panel displays the following, press ok to continue.



10.1 Force Normal Boot

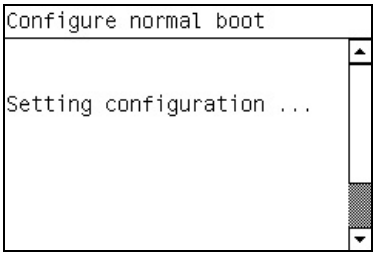
Description

This test changes the boot up parameter of the printer to start up in normal mode (printer mode)

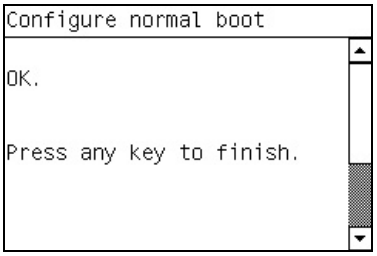
After initial set up of the printer in Diagnostics boot up this test is selected to start up the printer normally. This test will be required any time the 1.0 Force diagnostics boot mode is used. This is the same test as 0.6

Procedure

1. Go to Diagnostics menu and select **10. Diagn. utilities menu**> **10.1 Force Normal Boot**
2. The following screen is displayed while the system is changed to boot up in Normal Boot mode.



3. When the process has finished, the following screen is displayed confirming the printer will now automatically boot up in normal printer mode., press ok to finish.



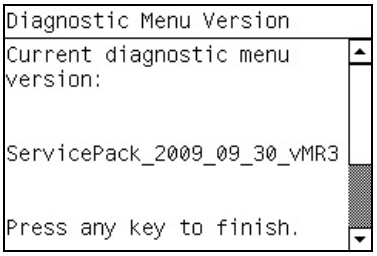
10.2 Report Test Version

Description

This procedure displays the service and diagnostics pack version installed in the printer, indicating version number and release date.

Procedure

1. Go to Diagnostics menu and select **10. Diagn. utilities menu**> **10.2 Report Test Version**
2. The following screen displays the service pack version.



10.3 Save NVM to file

Description

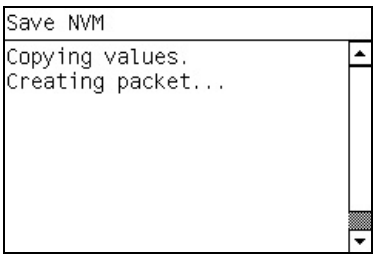
This procedure creates a backup copy of all the NVM values of the printer (including calibration values, part numbers, etc) in the tmp directory of the hard drive of the printer (same place where the printer.log is stored).

NOTE: This file can be retrieved in the same manner than the Printer.log and stored in a secondary place (as for example the IPS) as a copy of security.

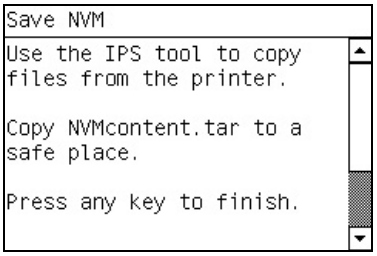
NOTE: Each time the procedure is run any previously generated file is overwritten obtaining a new snapshot of the NVM values.

Procedure

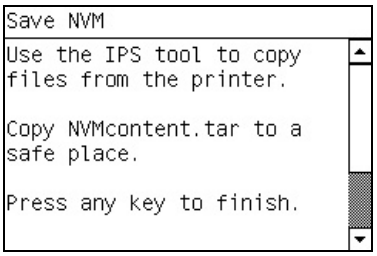
1. Go to Diagnostics menu and select **10. Diagn. utilities menu**> **10.3 Save NVM to file**
2. The front panel displays the following as the NVM file is created.



3. The front panel displays the following message, copy the NVM file to a place using the IPS tool to copy files from the printer, press any key to finish the procedure.



4. The front panel displays the following message.



10.4 Restore NVM from file

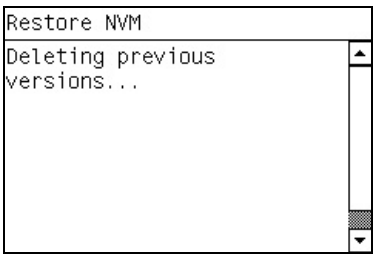
Description

NOTE: This procedure must be performed only with guidance from HP Support personnel, for escalation purposes only.

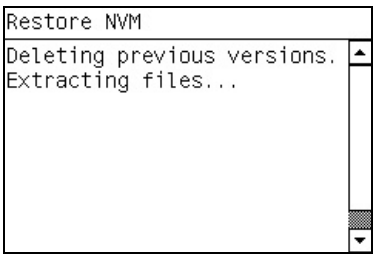
This procedure recovers a previous copy of all the NVM values of the printer (including calibration values, part numbers, etc).

Procedure

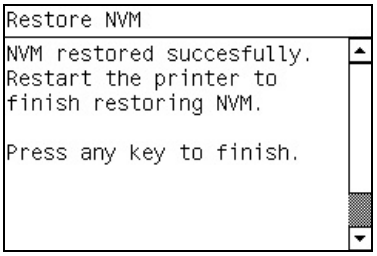
1. Go to Diagnostics menu and select **10. Diagn. utilities menu**> **10.4 Restore NVM from file**
2. The front panel displays the following as the previous NVM file is deleted.



3. The printer extracts the saved NVM file.



4. The printer displays the following message, press any key to restart the printer.



10.5 Set all Settings to default

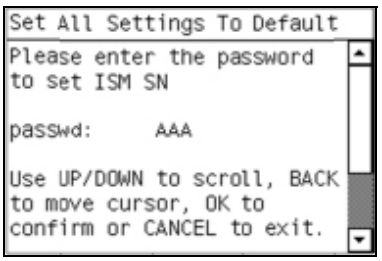
Description

This procedure recovers the serial number, the printer's part number and returns all the calibrations back to the default values if the hard disk, main interconnect and/or ISS board are replaced at the same time.

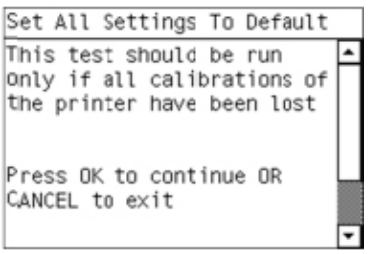
NOTE: After performing this procedure all the previous calibrations will be lost and they will need to be performed again.

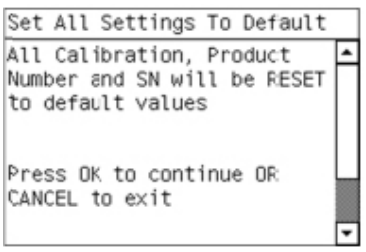
Procedure

1. Go to Diagnostics menu and select **10. Diagn. utilities menu**> **10.5 Set all Settings to default**
2. The front panel displays the following message, enter the password in order to get access to this functionality. **The password is NPI**.



3. Perform this procedure only when all calibrations have been lost due to the hard disk, main interconnect and/or ISS board being replaced at the same time.





4. Perform again all the printer's calibrations.

Service Utilities

If you need to troubleshoot a problem with the printer, see⇒ page 99.

These service utilities help you to service, maintain, and clean the printer. This section guides you through the service utility procedures and provides information about each utility.

1. Service Utilities Menu

1.0 Force Diagnostic Mode

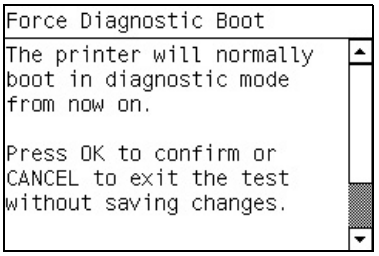
Description

Changes the boot up to always come on in diagnostic mode. This is useful if you will be performing multiple tests running from diagnostic mode.

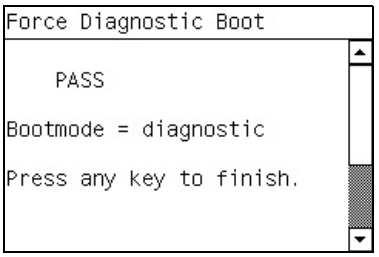
NOTE: Once you force the printer to boot in diagnostic mode, in order to change the bootmode back again, you must perform the Force Normal Boot diagnostic utility. See ⇒page 348.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**> **1.0 Force Diagnostic Mode**
2. The front panel displays the following message, press ok to confirm that the printer will now always come on in diagnostic mode.



3. The front panel displays the following, press any key to finish the procedure.



1.1 Report Test Version

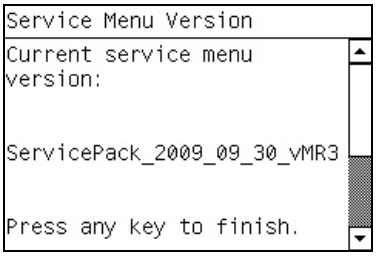
Description

This utility will show the actual version of the test utilities packet installed in the printer. As the packet can be updated independently of the firmware, this test helps the user to keep track of the actual version installed in the printer.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**> **1.1 report Test Version**

2. The front panel displays the service test version currently installed in the printer, press any key to come out of the utility.



1.2 Electrical Systems Menu

1.2.1 Set Date and Time

This is a menu with several utilities intended to test problems with the electronics system of the printer

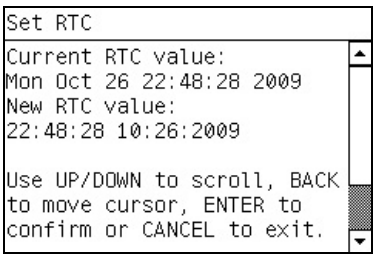
Description

This procedure changes the actual date and time of the internal electronics system in the printer, this date and time are different from the data displayed by the IPS PC of the printer. A correct set up of the time and date in the printer is especially important when saving and tracking the error logs used for escalations.

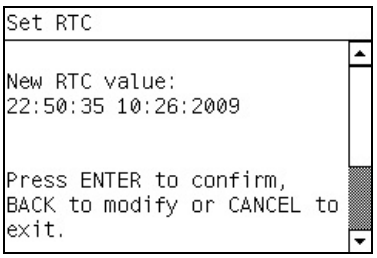
Performing this utility is recommended when installing the printer in order to align the time with the local time.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.2. electrical System Menu**>**1.2.1 Set Date and time**
2. The front panel displays the following message, use the up and down keys to change the date and time.



3. Once the new values are introduced the printer will request confirmation of the new time and date introduce into the Real Time Clock (RTC), press ok to confirm the new date and time.



NOTE: If the current RTC Clock cannot be set, this could indicate a possible firmware error.

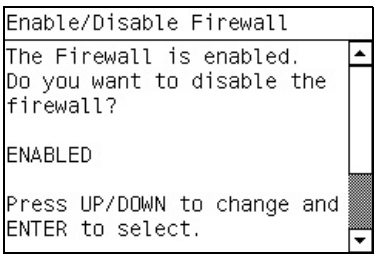
1.2.2 Enable/Disable Firewall

Description

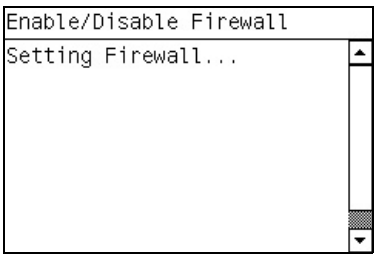
The printer-s electronics contain a communications firewall which on some occasions can produce some communications issues with the printer depending on the actual network architecture used. As a possible fix the firewall can be disabled in case of network issues.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.2. electrical System Menu**>**1.2.2 Enable/Disable Firewall**
2. The front panel displays the following message, select the status required (enables or disabled) and press ok.



3. The front panel displays the following message as the setting selected is applied.



1.2.3 Enable/Disable Logs

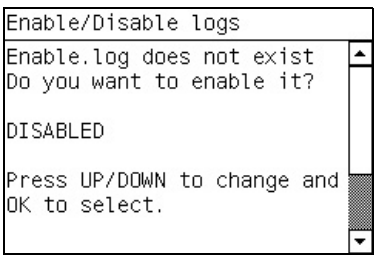
Description

This utility sets the printer to create the printer.log file in the tmp directory of the printer. The file will include all necessary information to use and provide in case of escalation.

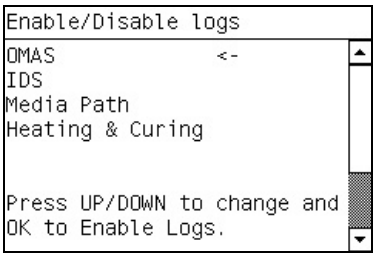
Additionally to the standard logs reporting, the test sets additional log information (extended logs) for selected subsystems within the printer. If the problem is localized in one of those subsystems, select the appropriate one. Otherwise just select randomly one of the subsystems displayed which will be enough to gather the standard set of logs reporting.

Procedure

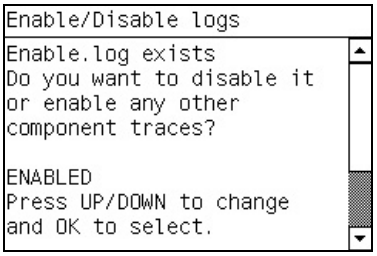
1. Go to Service menu and select **1. Service Utilities menu**>**1.2. electrical System Menu**>**1.2.3 Enable/Disable Logs**
2. The front panel displays the following message, select the status required (enables or disabled) and press ok.



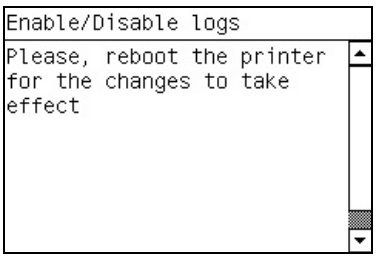
3. Select which component you want to be traced.



If the subsystem you selected is already log enabled, the front panel will display the following that it already exists, and do you want to enable more subsystems.



4. The front panel displays the following instruction, after any logs have been enabled the printer must reboot, reboot the printer.



NOTE: Once activated, Logs are continuously stored in the internal hard drive of the printer. Which eventually (after several years of usage) can cause the HD to run out of space. Therefore it is recommended to leave the logs disabled once all troubleshooting and/or repairs are concluded in the printer.

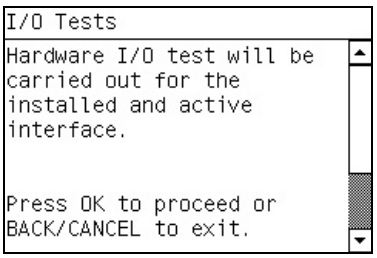
1.2.4 Input/Output Logs

Description

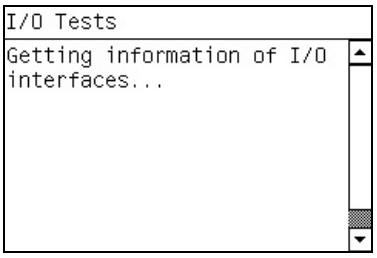
This utility performs a communication test with the internal network connection of the printer and with the IPS. the results are then displayed on the front panel

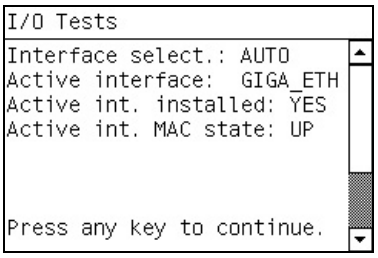
Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.2. electrical System Menu**>**1.2.4 Input/Output Logs**
2. The front panel displays the following message, press ok to continue.



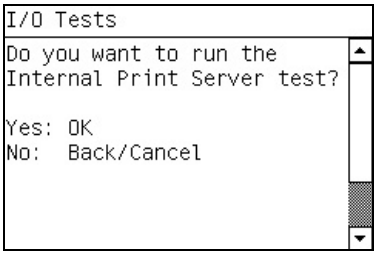
3. The printer gathers I/O information and displays the results on the front panel.



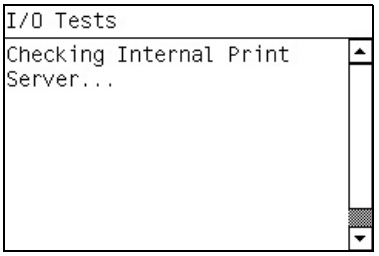


If there is a problem now the such as the internal network diver of the printer does not respond, the test will display a failure.

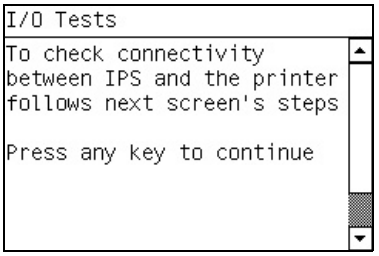
4. If there is not problem at this point the front panel will display the following message, press ok to continue with the I/O test.



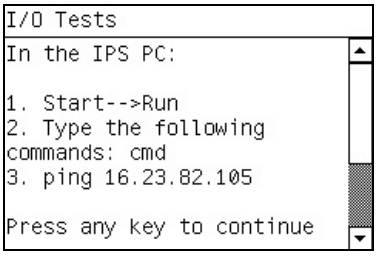
5. The front panel displays the following message while the printer gathers information about the IP address of the printer.



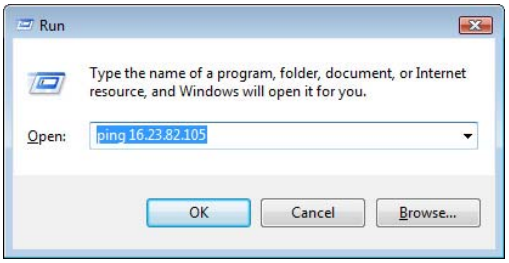
6. The front panel displays the following message, press any key to continue.



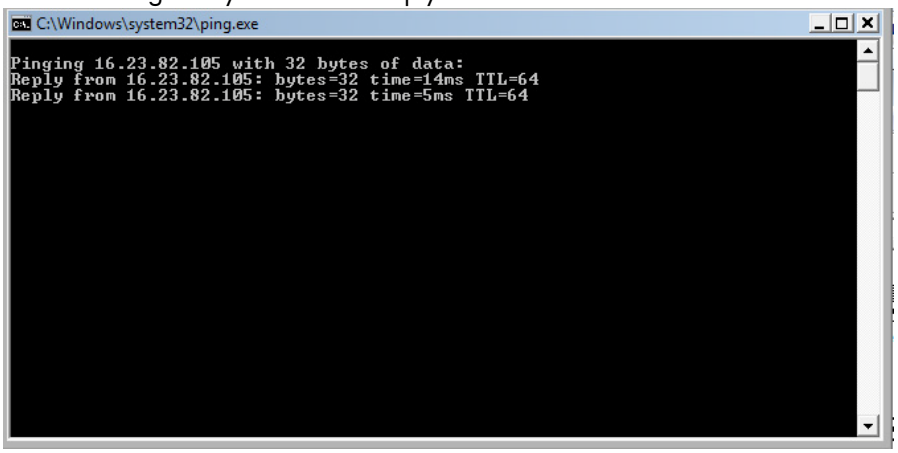
7. Follow the instructions displayed on the front panel.



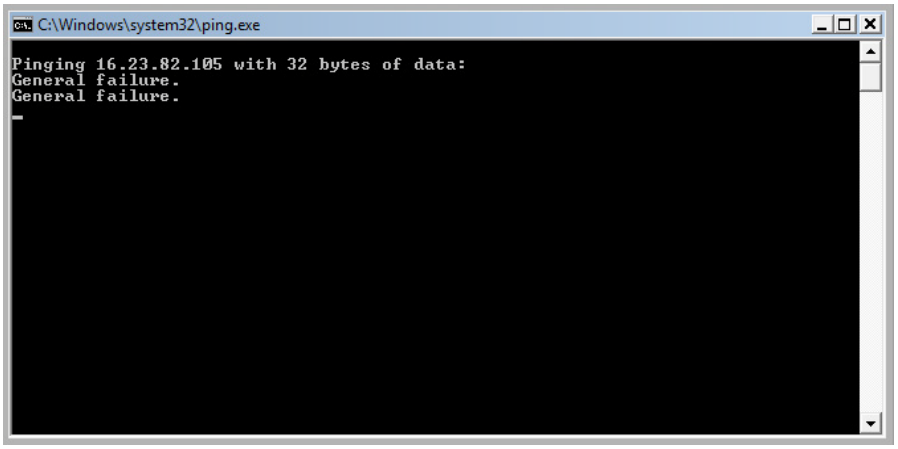
8. In the 'Run' window of the computer type 'ping' followed by the IP address of the printer.



9. The computer will display the following ms dos screen. A successful check will display the time in milliseconds how long the system took to reply.



If there is a problem the system will perform several retries. If the IPC PC is not connected to the network the display will display a 'General Failure'. Check PC connections, Switch connections & Switch Power supply (make use of the Leds on the network switch) and PC network configuration to troubleshoot the problem.



If the problem is in the printer side the display will show that the IP introduced is not reachable from the PC (in the example below the PC used has the ip 16.23.87.160). In this case check the network connection of the Printer (from electronics box to switch), ensure the network cable is connected and double check the communication lights on the formatter board and on the switch side to troubleshoot the issue. Try with different communication ports in the switch, replace the network cable first and then the formatter board. If the problem persists replace the HD in the printer.

1.3 Substrate Path Menu

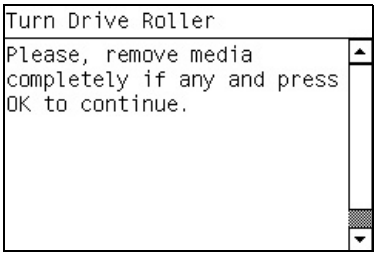
1.3.1 Turn Drive Roller

Description

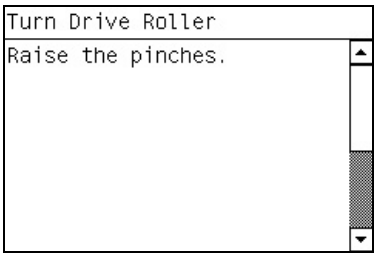
This test will simply turn the drive roller of the printer for a certain period of time. Use this test to perform the cleaning maintenance routine of the drive roller.

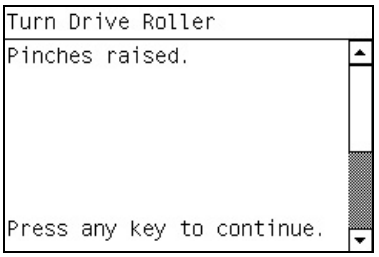
Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.3.Substrate Path Menu**>**1.3.1 Turn Drive Roller**
2. The front panel displays the following message, remove any substrate loaded and press ok to continue.

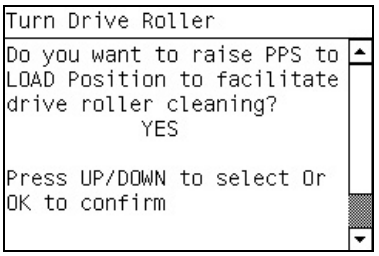


3. The front panel displays the following messages, raise the pinches and press any key yo confirm when this is done.

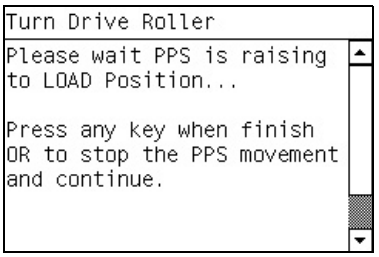




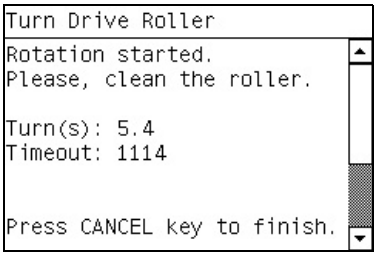
4. To help with the cleaning and maintenance of the drive roller, it is possible to raise the PPS, select yes if the PPS needs to be raised to perform the cleaning and maintenance of the driver roller.



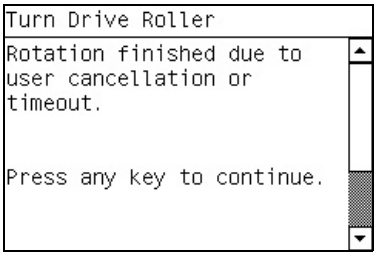
5. The front panel displays the following as the PPS is being raised, this operation can be halted at any time by pressing any key.The front panel displays the following as the PPS is being raised, this operation can be halted at any time by pressing any key.



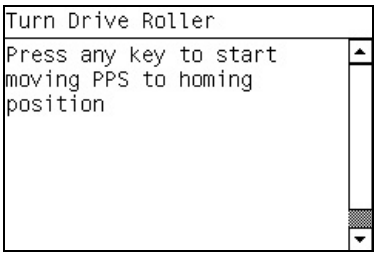
6. The front panel displays the following when the PPS has risen and the drive roller starts to rotate for the cleaning procedure. The number of turns is displayed and the time remaining before the procedure is stopped.



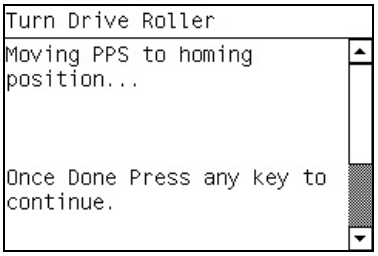
7. The front panel displays the following when the time-out period has been reached or cancel has been pressed to stop the driver roller rotating, press any key to continue.

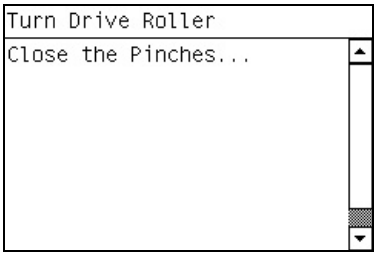


8. The PPS can now be returned to its previous position, press any key to move the PPS.



9. The front panel displays the following while the PPS moves to its original position, press any key and close the pinches to return the printer to the ready status.





1.3.2 Enable/Disable SCAPA

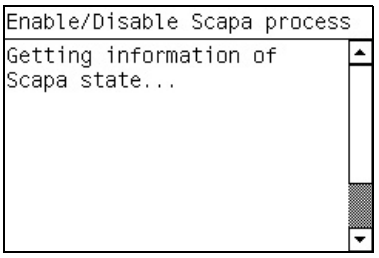
Description

SCAPA is the Skew control functionality of the printer. This test enables or disables this functionality. It is recommended to maintain this functionality always on in the printer, and just leave the disable option for advance troubleshooting of possible media advance issues.

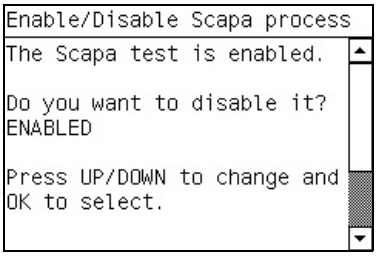
Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.3.Substrate Path Menu**>**1.3.2 Enable/Disable SCAPA**

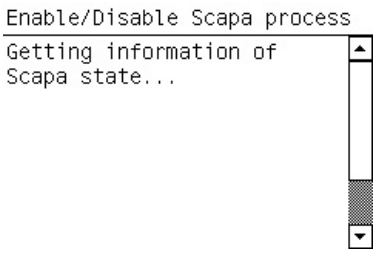
2. The front panel displays the following message while the printer gathers the status of the SCAPA.

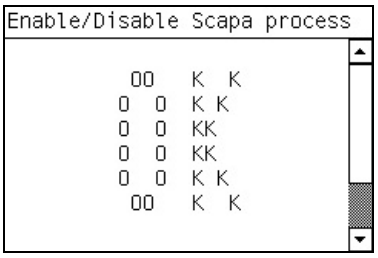


3. The front panel displays the status of SCAPA, use the up and down arrows to change the required status of SCAPA (enabled/disabled), and press ok.



4. The front panel displays the following message as the SCAPA setting is set, a message is then displayed to confirm the setting.





1.3.3 Enable/Disable OMAS

Description

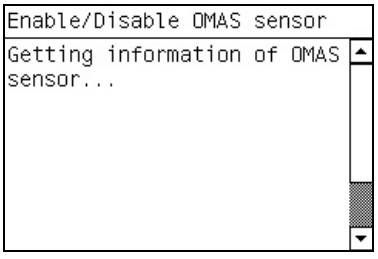
The OMAS sensor functionality can be physically enabled of disabled with this procedure. This selection overwrites any option selected in the IPS of the printer.

The purpose of this utility is to enable or disable the OMAS sensor, to be able to measure and troubleshoot the influence of the OMAS sensor on image quality problems. Sometimes, disabling the OMAS sensor is a recommended solution for image quality.

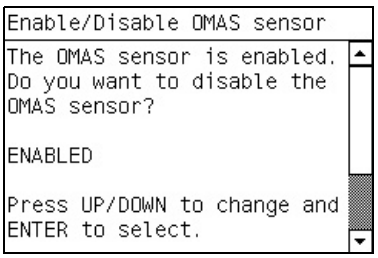
Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.3.Substrate Path Menu**>**1.3.3 Enable/Disable OMAS**

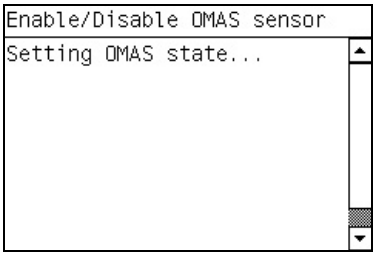
2. The front panel displays the following messages while the printer gathers the status of the OMAS.

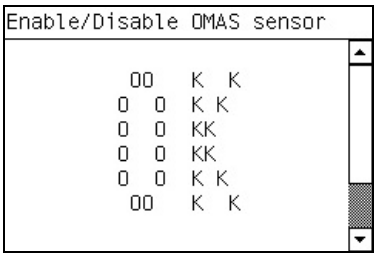


3. The front panel displays the status of OMAS, use the up and down arrows to change the required status, and press ok.



4. The front panel displays the following message as the OMAS setting is set, a message is then displayed to confirm the setting.





1.3.4 OMAS Sensor Check

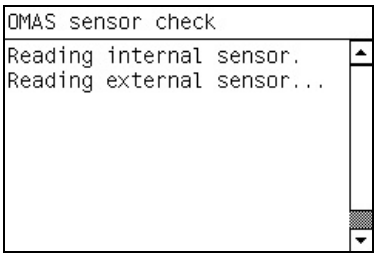
Description

The OMAS sensor check is used ONLY when doing a calibration of check of the drive roller. If this calibration/check is not needed, no need to check the OMAS

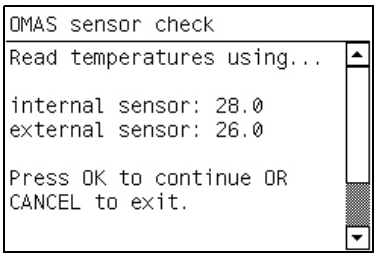
First both internal temperature sensor (the one embedded inside the OMAS sensor, at the base of the OMAS) electronics and the external temperature sensor (the one located at the back of the OMAS platen) are read and displayed.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.3.Substrate Path Menu**>**1.3.4 OMAS Sensor Check**
2. The front panel displays the following messages while the printer reads the OMAS.



3. The front panel displays the results of reading the OMAS, press ok to continue.

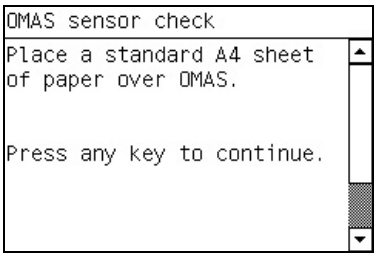


The temperature sensor of the OMAS is NEVER used => in case the temperature displayed is too low or too high, there is NO need to replace the OMAS temperature sensor

NOTE: Both temperature sensor values should be similar (+-10 degrees). Check for any abnormal values. If any of the sensors are not working correctly, an unreasonable value (such as temperatures around 100C or values around 0) may be displayed.

If there is a failure is in the internal sensor, replace the OMAS-Vacuum controller box, if the failure persist replace the OMAS platen and the Cable. If the failure is the External sensor replace the OMAS platen and the external temperature sensor with the cable.

4. If there is no problem the front panel will display the following message, place a piece of paper over the top of the OMAS sensor, if any substrate is already loaded, this will suffice, press any key to continue.



5. The sensor takes a photo of the substrate and display the two characteristic values of it. The average value and the standard deviation.

   The Photo is a Gray scale picture with pixel values between 0 to 256,

   The picture has a 640*96 pixels, the average value is the average of that gray scale for all the pixels, and this value should be around 100 +-15. If the value is below 85 or above 115 this means that the OMAS illuminations is not working well. Please perform the OMAS LED check to ensure the LEDs are working correctly.

   The standard deviation value is the standard deviation of those gray scale levels, if the value is 2 or below or above 8 it means that the OMAS is out of focus or dirty with spots creating large grey differences, perform a cleaning operation and repeat the test and if the value persist, change the OMAS sensor.

1.3.6 OMAS LED Check

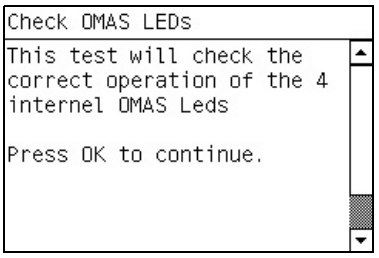
Description

This test checks the correct operation of the 4 internal LEDs in the OMAS sensor.

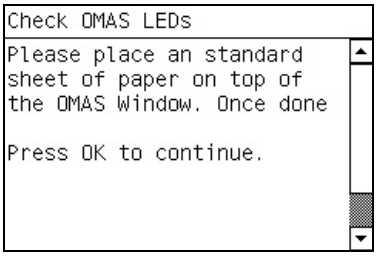
Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.3.Substrate Path Menu**>**1.3.6 OMAS LED Check**

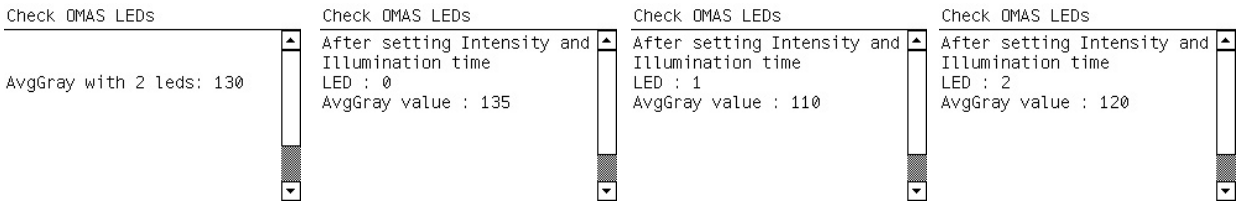
2. The front panel displays the following message, press ok to continue.



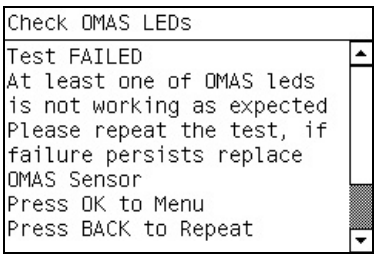
3. The front panel displays the following message, place a piece of paper over the OMAS sensor, and press ok.



4. The front panel displays the following message as the printer checks the LEDs.



If any of the values is below 67 this means that the LEDs are not working well and the test will give an error. If any of the LEDs fail, clean the OMAS and repeat the test if the failure persist, replace the OMAS sensor platen.



1.4 Ink system Menu

There are two test in the Ink system menu which display the Ink and Air pressure sensor values in real time while in printer mode.

1.4.1 Ink P. sensor Values

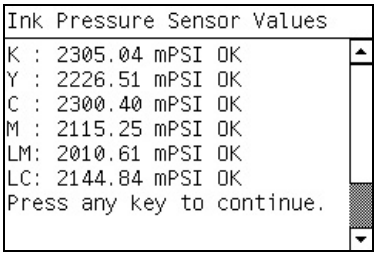
Description

This values are a real indication of the amount of ink available in the Ink cartridges. Empty cartridges will display pressures of just the column of ink in the connector tube, with values around 1400. Almost full cartridges will display values of around 2300. Bear in mind that the distribution is not linear.

NOTE: Due to the refreshing effect from the printer, some time it might give the feeling that the system does not react to the OK key when it is pressed to leave the test. This is normal, to exit just keep the button pressed for a few seconds until the system reacts.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.4.Ink System Menu**>**1.4.1 Ink P. Sensor Values**
2. The front panel displays the ink pressure sensor values as detected by the ink pressure sensor, press any key to return.



1.4.2 Air Pressure Sensors

Description

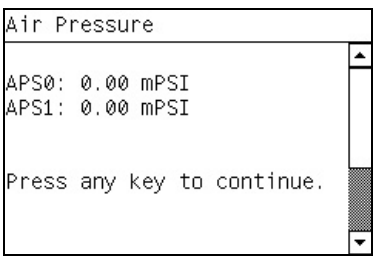
With the printer in non printing conditions the pressure values should be around 0. In printing conditions this test allows the user to see which side of the ink system is pressurized.

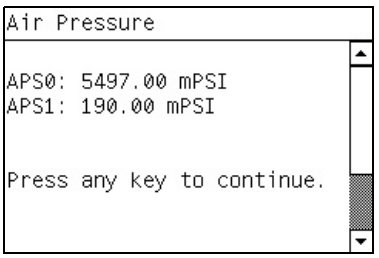
In normal pressurized conditions the pressure values should be in the 5000-5600 mspi. It is normal to have a little pressure on the non pressurized side around 100 to 200 mpsi.

NOTE: Due to the refreshing effect from the printer, some time it might give the feeling that the system does not react to the OK key when it is pressed to leave the test. This is normal, to exit just keep the button pressed for a few seconds until the system reacts.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.4.Ink System Menu**>**1.4.2 Air Pressure Sensors**
2. The front panel displays the air pressure sensor values as detected by the air pressure sensor, press any key to return.





1.5 Scan Axis Menu

1.5.1 SAX Friction Test

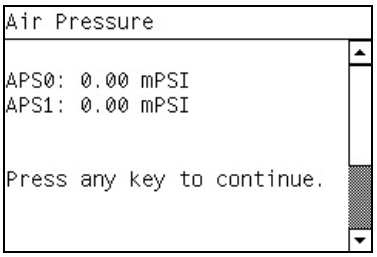
Description

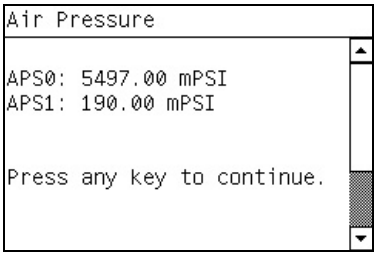
This tests checks for a possible scan axis mechanical friction. The test performs movements along the scan axis generating motor traces which could be used for further escalation analysis. The traces are stored in the tmp directory of the printer (same place where the printer.log is stored), follow the same instructions as the ones used for the printer.log to retrieve these files. The files include values of positions and motor Pwm values obtained. These values can be used to detect possible high friction (possible damaged) areas.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.5.Scan Axis Menu**>**1.5.1 SAX Friction Test**

2. The front panel displays the following as the printer checks for any possible physical stopper in the scan axis moving from right end to left end all its length in a slow bumping mode. In this mode the carriage will stop wherever a stopper is detected. The number of encoder positions of the linear encoder from the right bump limit will be displayed. If there is no issue, the number of encoder units will be the corresponding ones to the complete length of the scan axis. The resolution is 19200 encoder units per inch.

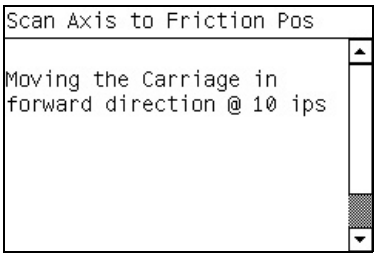


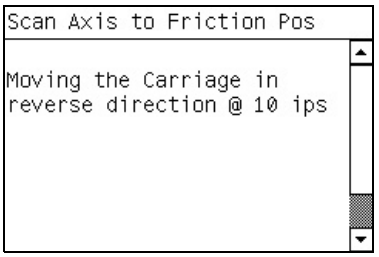


A normal value should be around 2944200 encoder units for a complete scan axis length.

3. After the measurement the system will move to the right bump to start the movement tests, the front panel displays the following. Movement from right to left and left to right at 10 IPS. Trace files created:

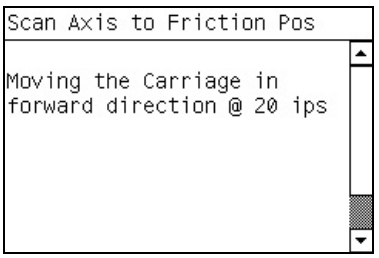
   - ScanAsixHighestFrictionTrzForward10
   - ScanAsixHighestFrictionTrzReverse10

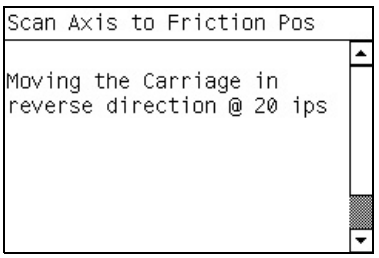




4. Movement from right to left and left to right at 20 IPS. Trance files created:

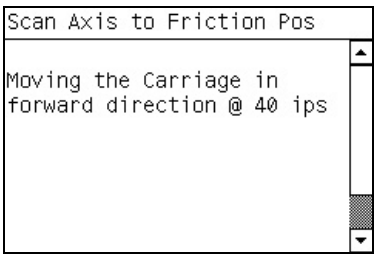
   - ScanAsixHighestFrictionTrzForward20
   - ScanAsixHighestFrictionTrzReverse20

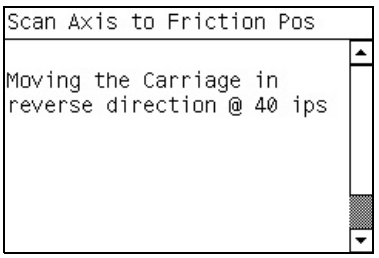




5. Movement from right to left and left to right at 40 IPS. Trance files created:

   - ScanAsixHighestFrictionTrzForward40
   - ScanAsixHighestFrictionTrzReverse40

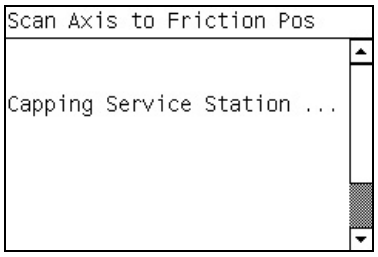




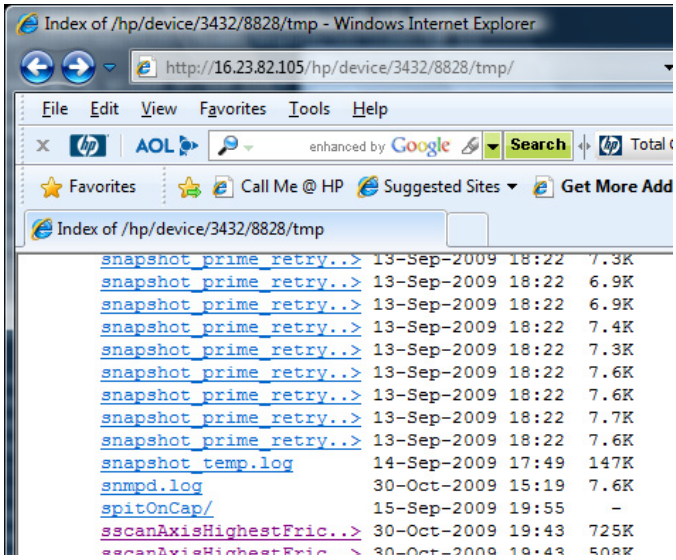
6. Movement from right to left and left to right at 60 IPS. Trance files created:

   - ScanAsixHighestFrictionTrzForward60
   - ScanAsixHighestFrictionTrzReverse60

7. The test will finish by performing a final capping procedure. Retrieve the files from the tmp directory for a possible escalation.



See an example here. There should be 8 files to retrieve. As the files have different names, they could be in different areas of the windows explorer, scroll around to find the 8 files.



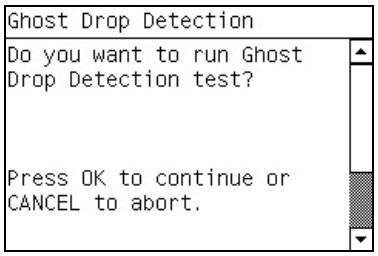
1.5.3 Ghost Drop Detection

Description

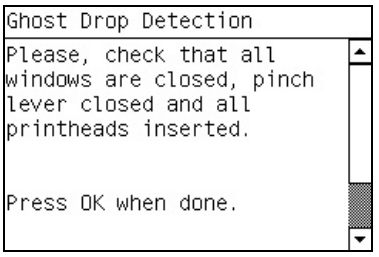
This test performs an empty dummy drop detection (with no ink spitting) to ensure the health of the drop detector sensors. Checking at the same time for any environmental noise or disturbance which could affect the quality of the drop detector values.

Procedure

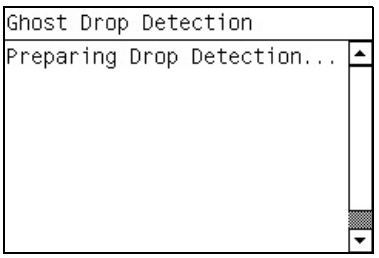
1. Go to Service menu and select **1. Service Utilities menu**>**1.5 Scan Axis Menu**>**1.5.3 Ghost Drop Detection**
2. The front panel displays the following message, press ok to continue.

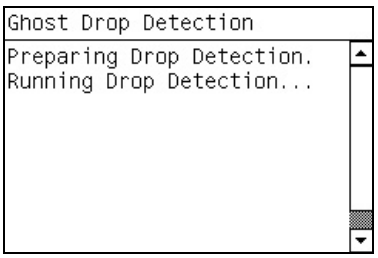


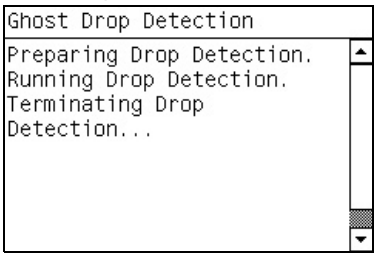
3. The front panel displays the following message, press ok to confirm the windows and pinch lever are in the closed position and all the printheads are installed.



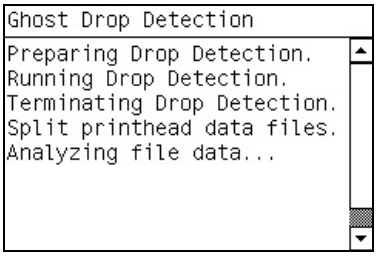
4. The front panel displays the following messages, as the ghost drop detector is performed.



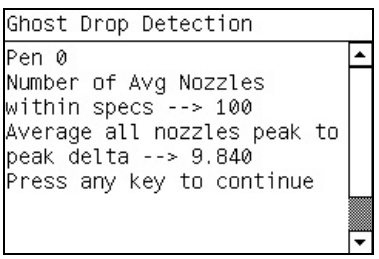


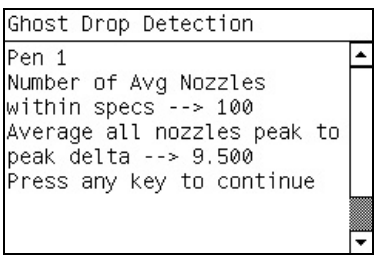


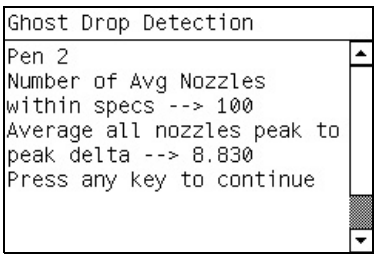
5. The front panel displays the final screen before the finish of the test.



6. The test results show two numbers, the first one is a percentage of the number of instantaneous drop detections measurements successful performed (usually 100) the second indicates the deviation of the measurement peak to peak values, which will be within certain values (test will fail for values out of range). The values will be reported per printhead, press any key to continue.





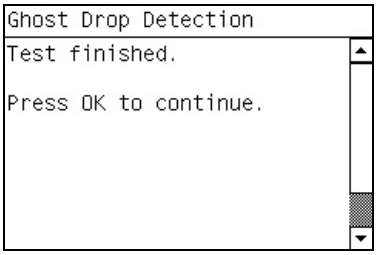


Note: The nomenclature used points to the different Printheads in the following Way:

- Pen 0 = PH 1: Yellow and Magenta
- Pen 1 = PH 2: Light Magenta and Light Cyan
- Pen 2 = PH 3: Cyan and Black

Use this test to check the health of the actual drop detector sensors.

7. The front panel displays the following message when the test is finished.



1.5.4 PH Stability Check

Description

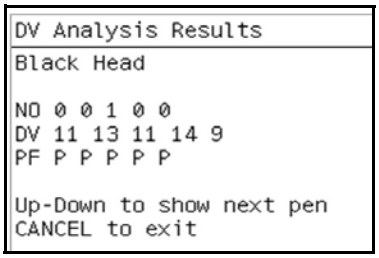
This tests verifies the drop velocity of the different dies of each printhead to ensure they are within acceptable values. Slow printhead drop velocities can cause the printhead to produce Banding. The test will display any value out of the expected range. Perform this test whenever troubleshooting horizontal banding because of a suspected degraded printhead.

For each color the average drop delay between drops will be displayed (the numbers) and the average value for the printhead calculated (a pass or fail criteria will be used in base of this average). For EACH die a P or F value (pass or fail) will also be displayed.

NOTE: It is important to print, just before this test, the 2.6.1 Nozzle Check, in order to compare the real nozzle out compared to the one reported from this test.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.5.Scan Axis Menu**>**1.5.4 PH Stability Check**
2. The front panel displays a message if a print has been done, or a clean & check has been performed in last 15 minutes, if it has press the ok key.
3. The results of the tests are displayed, use the Up and Down key to scroll to the printhead you want to view the results of.



NO: number of nozzle out
DV: Results of the 'drop velocity test
PF: Pass/Fail drop velocity test: P (pass) or F (fail)

The drop velocity test is designed to help troubleshoot image quality issues, not to be a gauge by itself, it should not be used to check if the Printhead has failed or not.

The test is more here to confirm that a banding issue is coming from a Printhead and not from another source, but there is a need to have first a banding/image quality issue. So if there is an image quality issue, then yes, it can be used to confirm a printhead failure (replacement), but if there are no image quality issues being experienced, there is no requirement to replace the Printhead.

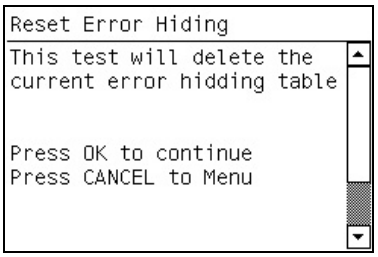
1.5.5 Reset Error Hiding

Description

This test will delete the error hiding table calculated by the drop detector system. Use this test to reset the table and print without the error hiding functionality.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.5.Scan Axis Menu**>**1.5.5 Reset Error Hiding**
2. The front panel will display the following screen, press ok to continue.



1.6 Carriage Menu

1.6.1 Open/Close Color Sensor

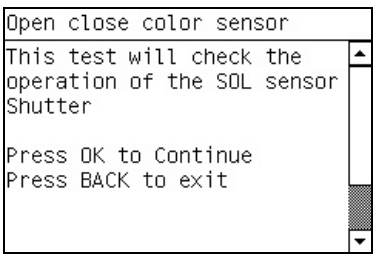
Description

This test checks the operation of the Color sensor shutter door.

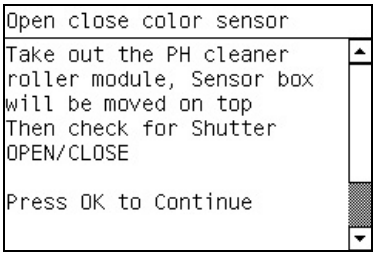
The start of the test is a visual check in which the carriage is moved on top of the PH cleaner roller and the Color sensor window is opened and closed 10 times. The best place to perform the visual check is with no media loaded, and the PPS fully raised (media load position) on the front right side right next to the print platen area, in the area where the OMAS-Vacuum controller is located. Please take the necessary precautions to place your head in this location to perform the visual inspection

Procedure

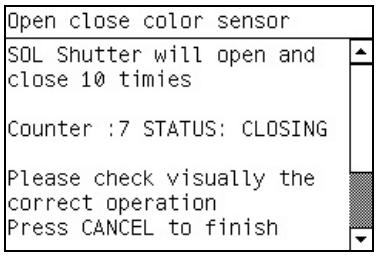
1. Go to Service menu and select **1. Service Utilities menu**>**1.6 Carriage Menu**>**1.6.1 Open/Close Color Sensor**
2. The front panel displays the following message, press ok to continue.



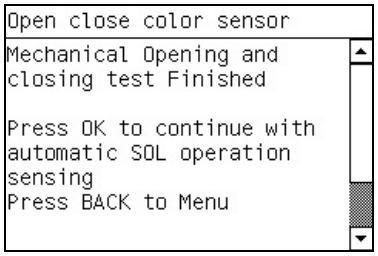
3. The front panel displays the following message, remove the printhead roller module, and press ok to continue.



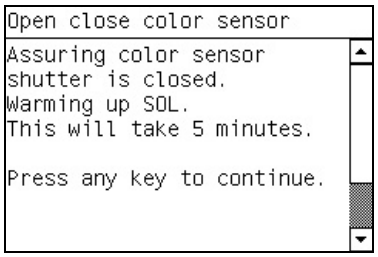
4. At this point the carriage will be uncapped and placed on top of the printhead cleaning system. Remove the PH cleaner to the other position and check that the color sensor shutter (window) is opening and closing, during this the front panel displays the following.



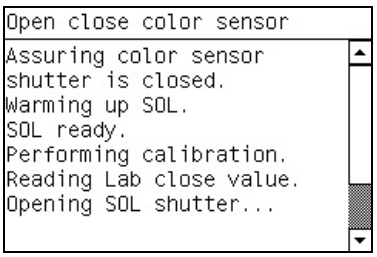
5. After a specific amount of time has past the front panel displays the following message, press ok to calibrate the SOL.

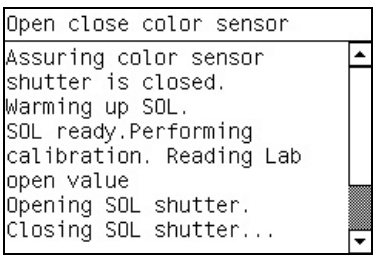


6. The front panel displays the following message as the SOL is warmed up in preparation for the SOL calibration. This takes about 5 minutes.

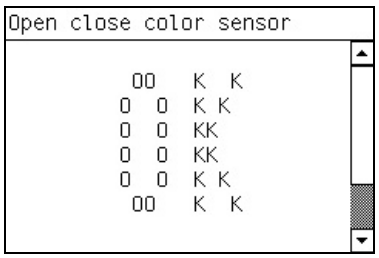


7. Once the warming procedure is finished the carriage will perform 4 movements along the SAX to get the color sensor value measurement in capping and on top of the IDS system (where the sensor performs a measurement in an empty space), the differences in measurements are compared to validate a complete opening and closing of the shutter.

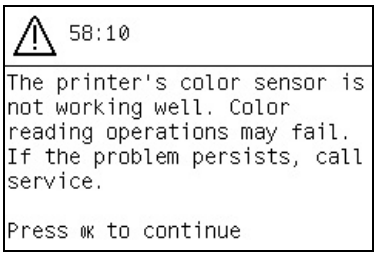




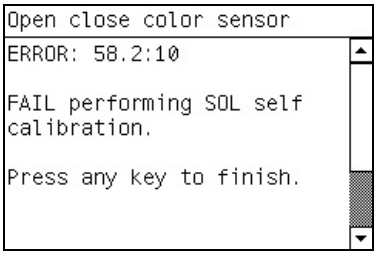
8. If there is no problem with the calibration, the ok front panel message is displayed.



If there is a problem during the calibration, such as no communication the front panel displays the corresponding system error code which can be used to troubleshoot the error.



If there is a problem during the calibration, such as the sensor is not able to warm up, the front panel displays the error message at the start of the test.



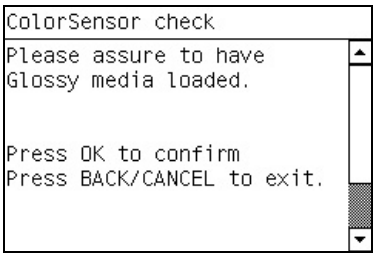
1.6.2 Color Sensor Check

Description

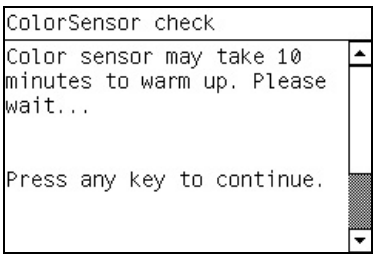
This test checks the operation of the color sensor. The test requires the usage of glossy media loaded in the print platen to use the white value as color sensor reading reference.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.6 Carriage Menu**>**1.6.2 Color Sensor Check**
2. The front panel displays the following message, make sure Glossy media is loaded and press ok to confirm.

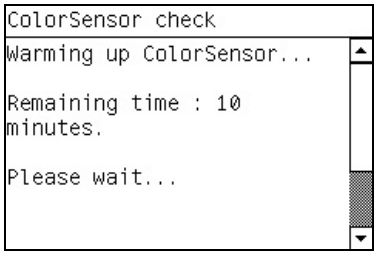


3. To perform the test, the color sensor must warm up, this process takes approximately10 minutes, press any key to begin the warm up of the color sensor.

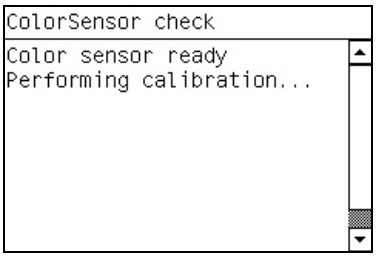


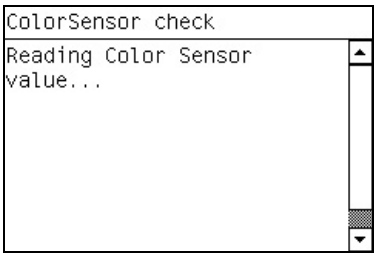
NOTE: There is a 5 seconds delay when pressing the OK key before the warming up starts.

4. The front panel displays the following as the sensor warms up.

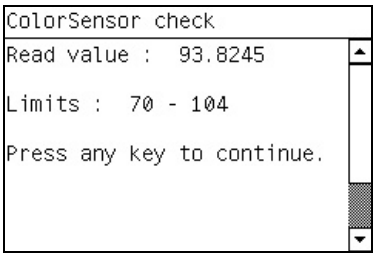


5. When the color sensor is warm the carriage will be uncapped and moved on top of the media about half a meter from the right in the scan axis. There the Color sensor (SOL) will perform a reading of the white of the media placed below. The value will be within an expected range. The procedure can be considered as a sanity check of the actual sensor. While the calibration is in progress the front panel displays the following messages.





6. When the calibration has finished, the front panel displays the results, press any key to finish the test.



Values of the glossy media should be around 80-95. Some safety limits should be around 70 to 105.

1.6.3 Aerosol Fans

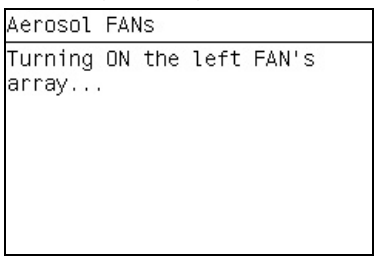
Description

This test checks the two aerosol fan arrays located in the carriage. Use this test to check the actual fan arrays in case of warning system error indicating that one of the fans is failing.

The test starts in sequence first the Left and then the Right for 15 seconds. Open the carriage lid and check the correct operation of the 5 fans in each array when selected the operation.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**1.6 Carriage Menu**>**1.6.3 Aerosol Fans**
2. The front panel displays the following message, as the fans come on.



1.8 Heating and Curing Menu

1.8.1 Heating and Curing Temp

Description

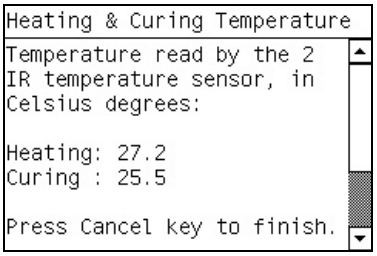
This test indicates the temperature values obtained from the heating and curing modules in the front panel.

Use this test to verify temperature measurement as seen by the printer system. The values should match the ones that display of the PID controllers.

If there is an internal problem with the PID controller the temperature may not be display as it should. This test will allow you to see how the printer is detecting the temperature as reported by the PID controller.

Procedure

1. Go to Service menu and select **1. Service Utilities menu**>**8.1 Heating and Curing Menu**>**1.8.1 Heating and Curing**
2. The front panel displays the temperature of the Heating and Curing modules, press the cancel key to finish.



2. Service Prints Menu

2.1 Printhead Alignment

Interpretation of these plots are available ⇒ page 291.

2.0.1 40 ips 600x1200

Description

Print this plot as verification of the printhead alignment calibration.

This is the same plot than the one that can be launched by the user from the IPS

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.1 Printhead Alignment**>**2.0.1 40 ips 600x200**

2.3 Substrate Path Menu

Interpretation of these plots are available ⇒ See page 309.

2.3.4 Substrate Expansion Check

Description

This plot is used to indicate the possible media expansion due to temperature effects in the media causing mis-registration of colors.

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.3 Substrate Path Menu**>**2.3.4 substrate Expansion Check**

2.5 Scan Axis Menu

Interpretation of these plots are available see Pen to Pen alignment along the Scan Axis ⇒page 309.

2.5.1 Scan Axis Check

Description

This plot shows there is no issue in the scan axis movement of the carriage.

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.5 Scan axis Menu**>**2.5.1 Scan Axis Check**

2.5.2 PPS Check

Description

The plot indicates that the carriage is fully parallel with respect to the print platen through all the width of the scan axis. See Bidirectional Alignment along the Scan Axis for the interpretation of this plot, see ⇒page 309.

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.5 Scan axis Menu**>**2.5.2 PPS Check**

2.6 Carriage Menu

Interpretation of these plots are available ⇒ page 303.

2.6.1 Nozzle Check

Description

This plots checks that all the nozzles are working correctly (plot with no error hiding). The test prints a pattern for all the 6 colors indicating if there is any nozzle out in any of the printheads. See Printhead Nozzle Health plot for the interpretation of this plot, see ⇒page 309.

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.6 Carriage Menu**>**2.6.1 Nozzle Check**
2. When the print has finished, cancel the dry time to save time.

2.10 For Escalation Menu

2.10.1 Odd 2 Even Sad

Description

These plots are only for escalation in case of deep printing issues and upon request for remote escalation troubleshooting.

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.10 For escalation Menu**>**2.10.1 Odd 2 Even Sad**

2.10.2 Pen2PenSad No Adv

Description

These plots are only for escalation in case of deep printing issues and upon request for remote escalation troubleshooting.

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.10 For escalation Menu**>**2.10.2 Pen2PenSad no adv**

2.10.3 Pen2PenPad No Adv

Description

These plots are only for escalation in case of deep printing issues and upon request for remote escalation troubleshooting.

Procedure

1. Go to Service menu and select **2. Service Prints menu**>**2.10 For escalation Menu**>**2.10.3 Pen2PenPad no adv**

3. Reset Life Counters

Description

These procedures reset the life counters of the different components / Kits. Reset the counters after replacing any of the components/Kits.

3.0 Reset Maintenance Kit Usage (NEVER TO BE DONE BY CUSTOMER)

Procedure

3.0.1 Reset PMK1

Description

Resets the cleaning of the heating/curing module reflectors.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.0 Reset Maintenance kit Usage**>**3.0.1 Reset PMK1**

3.0.2 Reset PMK2

Description

Resets the Carriage Chain Assembly.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.0 Reset Maintenance kit Usage**>**3.0.2 Reset PMK2**

3.0.3 Reset PMK3

Description

Resets the Intermediate Tank Set

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.0 Reset Maintenance kit Usage**>**3.0.3 Reset PMK3**

3.0.4 Reset PMK4

Description

Resets the Grease on the PPS Screw Assembly

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.0 Reset Maintenance kit Usage**>**3.0.4 Reset PMK4**

3.0.5 Reset PMK5

Description

Resets the 2.4 mm tubes

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.0 Reset Maintenance kit Usage**>**3.0.5 Reset PMK5**

3.3 Reset Substrate Path Menu

3.3.1 Back Spindle Motor

Description

Resets the back spindle motor.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.3 Reset Substrate Path Menu**>**3.3.1 Back Spindle Motor**

3.3.2 Drive Roller Motor

Description

Resets the drive roller motor.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.3 Reset Substrate Path Menu**>**3.3.2 Drive Roller Motor**

3.3.3 OMAS Sensor

Description

Resets the OMAS Sensor.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.3 Reset Substrate Path Menu**>**3.3.3 OMAS Sensor**

3.3.4 Vacuum Pump

Description

Resets the Vacuum Pump.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.3 Reset Substrate Path Menu**>**3.3.4 Vacuum Pump**

3.4 Reset ISS menu

3.4.1 = 3.4.13 Intermediate Tanks 11 to 62 & All

Description

Resets the intermediate tanks>

- 3.4.1 Intermediate Tank 11
- 3.4.2 Intermediate Tank 12
- 3.4.3 Intermediate Tank 21
- 3.4.4 Intermediate Tank 22
- 3.4.5 Intermediate Tank 31
- 3.4.6 Intermediate Tank 32
- 3.4.7 Intermediate Tank 41
- 3.4.8 Intermediate Tank 42
- 3.4.9 Intermediate Tank 51
- 3.4.10 Intermediate Tank 52
- 3.4.11 Intermediate Tank 61
- 3.4.12 Intermediate Tank 62
- 3.4.13 Intermediate Tank ALL

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**Select intermediate tank.**

3.4.14 Air Pumps set 0

Description

Resets the air pumps set 0.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.14 Air pumps Set 0**

3.4.15 Air Pumps set 1

Description

Resets the air pumps set 1.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.15 Air pumps Set 1**

3.4.16 Reset Air tray

Description

Resets the air tray.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.16 Reset Air Tray**

3.4.17 Cartridge Connector1 (black)

Description
Resets the cartridge connector 1.

Procedure
1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.17 Cartridge Connector 1**

3.4.18 Cartridge Connector2 (yellow)

Description
Resets the cartridge connector 2.

Procedure
1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.18 Cartridge Connector 2**

3.4.19 Cartridge Connector3 (cyan)

Description
Resets the cartridge connector 3.

Procedure
1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.19 Cartridge Connector 3**

3.4.20 Cartridge Connector4 (magenta)

Description
Resets the cartridge connector 4.

Procedure
1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.20 Cartridge Connector 4**

3.4.21 Cartridge Connector5 (light magenta)

Description
Resets the cartridge connector 5.

Procedure
1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.21 Cartridge Connector 5**

3.4.22 Cartridge Connector6 (light cyan)

Description
Resets the cartridge connector 6.

Procedure
1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.22 Cartridge Connector 6**

3.4.23 Reset Ink Tray

Description

Resets the ink tray.

Procedure

1. Go to Service menu and select **3. Reset Life Counters**> **3.4 Reset ISS Menu**>**3.4.23 Reset Ink Tray**

4. Service Calibrations

If you need to troubleshoot a problem with the printer, see ⇒page 99.

Service calibrations allow you to calibrate printer components and settings to ensure optimal performance. This section guides you through the calibration procedures and provides information about each calibration.

In these menus some of the calibration of the printer which require the machine to be in printer mode.

4.3 Substrate Path Menu

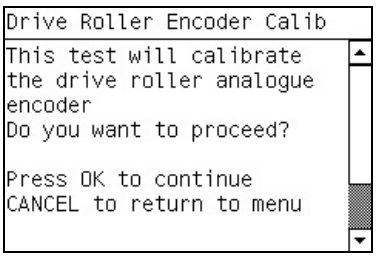
4.3.1 Drive Roller Encoder Calibration

Description

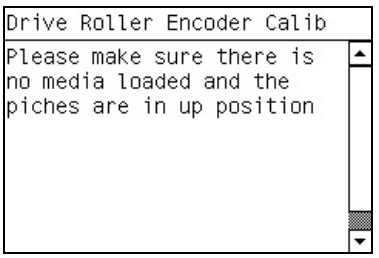
This test calibrates the Gain and the offset of the Drive roller encoder PCA. Run this test anytime the Drive roller encoder disc or the drive roller encoder PCA is replaced. This test also helps to diagnose any possible issue with the drive roller encoder system as the calibration will fail if the system presents any problem (i.e encoder disc dirty or damaged).

Procedure

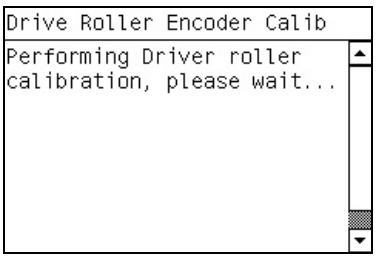
1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.1 Driver Roller Encoder Calibration**
2. The front panel displays the following message, press ok to continue.



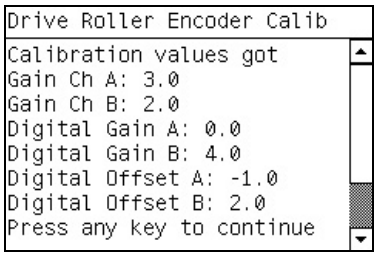
3. The front panel displays the following message, remove any media loaded and the pinches are in the up position, press ok to confirm this.



4. The front panel displays the following message as the calibration is performed.



5. During the calibration procedure the system will get values from the two encoder channels (A and B) and then verify the signal to apply the correct Gain and offset values.



The test has an embedded Pass/ Fail Criteria, depending on the values obtained.

If the calibration fails it could be because of the following reasons:

- Encoder disc dirty. Therefore the original analogue signal is too weak to obtain a solid steep value which could be also mistaken with noise. -> Clean the encoder disc.
- Encoder disc damaged. So the system is failing to gather all the necessary information. -> Replace the encoder disc.
- Encoder sensor lens dirty. Therefore original analogue signals too weak. As there is not a reliable procedure to clean the encoder lens we recommend to replacing encoder sensor PCA.
- Encoder PCA electrical failure. Board failure or Cable failure (pins pealed, connector with disconnections). Replace the encoder sensor PCA
- Signal Path faulty. This is the cable form the encoder PCA to the OMAS/Vacuum controller. Bear in Mind that the actual path is Vacuum controller -> Cable to OMAS controller, where the signal is processed and then sent to via CAN Bus to the Main Interconnect -> Upper PCI board. -> Check the cable path and if everything seems to be OK replace the OMAS/Vacuum controller box.

4.3.3 OMAS temp Calibration

Description

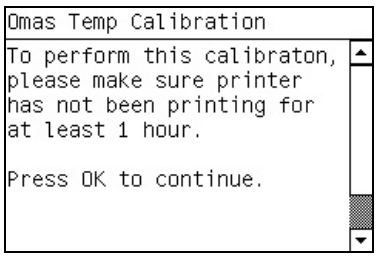
This test calibrates the temperature reading values of the two temperature sensors allocated in the OMAS sensor. The calibration applies the correct offset values with the readings obtained from 3 different temperature sensors: Temperature sensor in the ISM Pca, Internal temperature sensor in the OMAS sensor, external temperature sensor in the OMAS Platen.

Perform this calibration whenever the OMAS sensor is replaced.

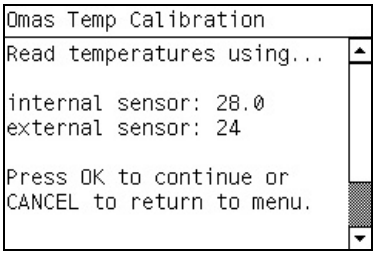
NOTE: In order to perform this calibration, the printer must be stable without printing for at least 1 hour before this calibration.

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.3 OMAS temp Calibration**
2. The front panel displays the following message, press ok to continue if the printer has not been used for 1 hour prior.



3. The printer reads the internal temperature and displays the results, press ok to finish the calibration.



It is normal to obtain values with some degrees of difference. If the values are too different (like 10 degrees) do not accept the calibration values (do not press OK), wait for the printer to be completely cold or replace the sensor displaying the non logical temperature value.

4.3.4 Roller Calibration

Description

This test calibrates the complete media advance path to establish a linearity on the system and therefore improve the media advance performance of the machine.

Run this test whenever any component of the media path is replaced. Run this test against media advance problems with the machine. This test must be performed with the printer in Roll to Roll configuration, it will not work in Roll to Floor configuration.

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.4 Roller Calibration**.

   This must be performed immediately after upgrading the printer:

2. Load a roll of substrate with the following characteristics.

   - Roll to Roll configuration.
   - External diameter at least 140mm/5.5 inches
   - Remaining length at least 20m.
   - As wide as possible, ideally the full width of the printer.
   - The substrate type should be one for which the OMAS (Media advance) sensor works well, ideally a Self-adhesive Vinyl with a paper backing or any paper based substrate.

     We recommend the following substrates:

     - HP photorealistic (provided in the box with most of the new printers)
     - Avery MPI3000 of 78" (198 cm) wide.

     However any substrate conforming to the characteristics described above can be used for this calibration.

NOTE: The printer will NOT actually print anything, but will advance around 14 meters of this substrate.

3. Before loading the substrate, clean the OMAS window (refer to the maintenance and troubleshooting guide). IMPORTANT: Before performing the calibration the printer must be 'cold', not having printed for at least one hour.
4. Load the substrate correctly according to the instructions from the support documentation, measuring the distance between the side plate and the edge of the substrate in the input and output.
5. Select the appropriate substrate in the IPS.
6. Enter into the Service Menu (detailed process explained below), and select the following menu selection:

- 4.3.4 Roller Calibrtion (total time 30 minutes, 20 meters of substrate advanced)

  In case an error code is displayed which is not equal to 0, follow the detailed troubleshooting for each code. The list of codes is explained within the chapter 3, under the subchapter “How to check the media path”, ⇒go to page 245.

Perform the following diagnostics from the service menu. within the section 'How to check the media path'⇒ page 236.

7. Exit from the Service Menu, and rewind all the substrate (using the substrate movement button, and pressing on the back key, the substrate will then rewind until the beginning of the roll).

NOTE: If you plan to redo a calibration or a check: do not rewind the substrate, as when rewinding it, there will be enough telescoping to fail the next calibration or check).

8. Restart the printer to apply the new calibrations/settings.
9. Perform the following:
   A. An Automatic Printhead Alignment (from the IPS)
   B. Print the Printhead alignment check (from the IPS)
   C. Fine tune the substrate advance for all substrates & printmodes that you are using (this will be different compared to the previous firmware version). This is why we recommend that you fine tune, each substrate, before printing. Open the following file and print it: C:/users/<current Vista login>/documents/HP IPS/Test Plot/ and select ‘SubstrateTestPlot’. Set the correct printmode and substrate and then send to print, adjusting the substrate advance, while printing, with the ‘print adjustment’ button, checking the ladder, and fine tuning the advance so that you can no longer see the magenta within the ladder. Refer to the user’s guide for detailed information.
   D. Fine tune the Dynamic color registration through the IPS if required.

4.3.5 Check Roller Calibration

Description

This test verifies that the Roller calibration has been performed successfully. Run this test as a verification of the Roller Calibration procedure ⇒See page 504. This test must be performed in Roll to Roll configuration.

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.5 Check Roller Calibration**

4.3.6 Reset Roller Calibration

Description

This test restores the default values of the Roller Calibration. Perform this reset whenever the system does not respond as expected (worst than before) after doing the roller calibration. The reset will put back all the values to 0.

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.6 Reset Roller Calibration**
2. Restart the printer to apply the new setting.

4.3.7 View Roller Calibration

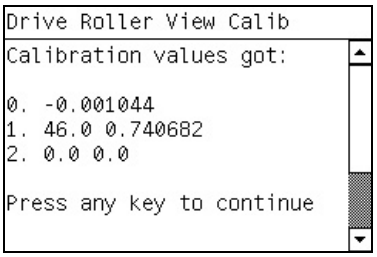
Description

This Shows the actual calibration parameters stored in the machine by the Roller Calibration.

Use this test to confirm the calibration values of the roller calibration stored in the printer. A printer where the calibration has not been performed shall have al the parameters in 0.

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.7 View Roller Calibration**
2. The front panel displays the Roller Calibration values.



4.3.8 Reset Vacuum Aircal

Description

Set the value the calibration of the air pressure sensor to the default, which measure the level of pressure within the beam under the print zone (to hold the substrate on the print zone).

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.8 Reset Vacuum Aircal**
2. Follow in the on screen instructions and restart the printer.

4.3.9 Advance Visual Check

Description

The Visual Paper Advance Diagnostic prints a test plot to check that the paper advance is operating correctly.

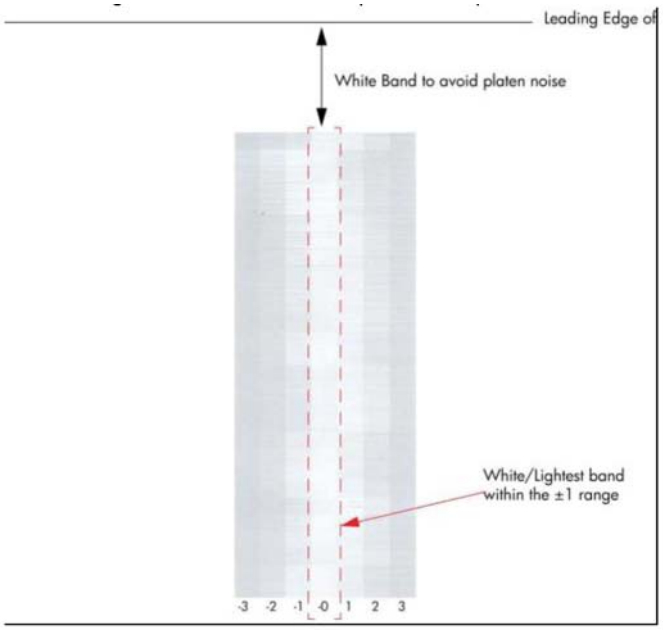
Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.3 Substrate Path Menu**>**4.3.9 Advance Visual Check**
2. The following diagnostic image is printed.

Interpreting the plots

The plot is printed using Photo Black ink in a 6-pass print mode (even on Gloss paper). The whitest/lightest band must be within the center ±1 area for a PASS result. There is a 3-inch white band before the plot to ensure there is no platen noise causing any advance errors while the media is covering the platen.

An example of an acceptable plot.



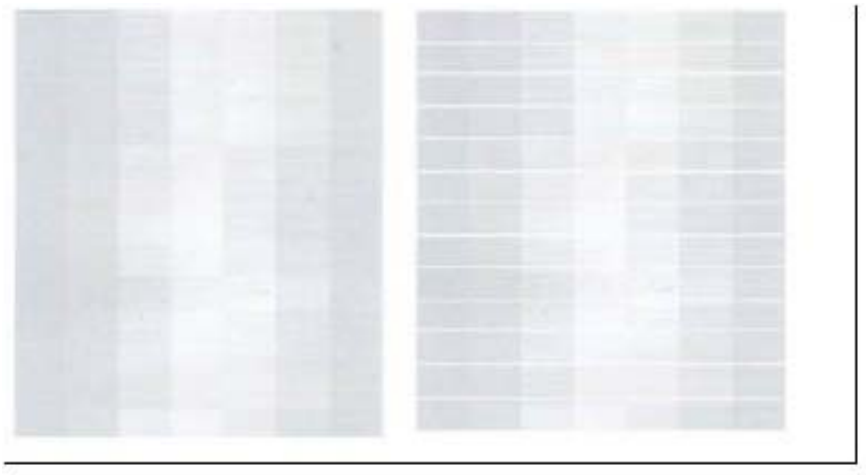
An example of an unacceptable plot.

The unacceptable plot shown above is caused by the following:

- The OMAS is not clean or has failed, repeat the test with the OMAS disabled. This will allow you to establish if this error is caused by an error with the OMAS.If the plot looks the same the cause cannot be attributed to the OMAS.
- Shown below is a list of components that could cause an error with the advancement of the media through the printer. Try replacing one and seeing if the error in the plot persists, if it does move on the next component until the error is fixed. Refer to procedure 3.3.9 Media Advancement troubleshooting.
  - Drive Roller refer to page 631

- Spindle/Back Tension page 643
- Media Input/Media Output
- Pinchwheels page 641

Example of a defective plot.



The example shown above is caused by defective nozzles on a printhead and cannot be attributed to an issue with the media advance.

4.5 Scan Axis Menu

4.5.1 Drop Detector Calibration

Description

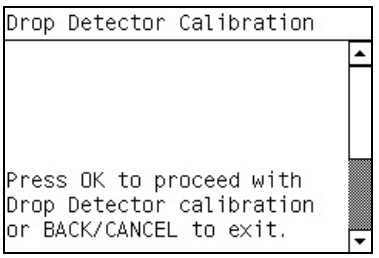
This test calibrates the drop detector system (also available from the Service plot).

Perform this test whenever one or more drop detectors are replaced or when the service station interconnect PCA is replaced.

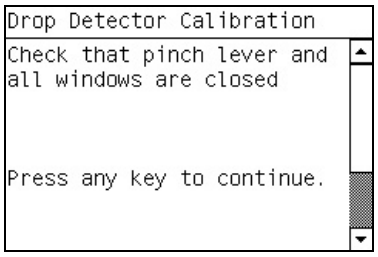
Procedure

CAUTION: All Printheads must be in good health. If one of the printheads does not having enough nozzle working, the calibration will fail, or will finish. To check that most of the nozzle are good enough for this calibration print the Printhead alignment check or, from service menu, 2.6.1 Nozzle Check page 495.

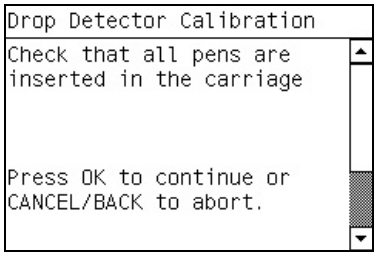
1. Go to Service menu and select **4. Service Calibration**>**4.5 Scan Axis Menu**>**4.5.1 Drop Detector Calibration**
2. The front panel displays the following message, press ok to perform the drop detector calibration.



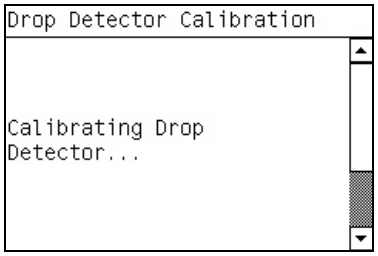
3. The front panel displays the following message, close the windows and pinches, press ok to confirm when this is done.



4. The front panel displays the following message, check that all the printheads are installed, press ok to confirm when this is done.



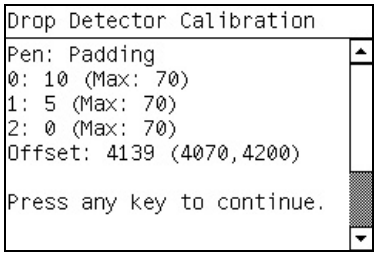
5. The front panel displays the following message during the drop detector calibration.



6. The calibration will adjust the sensitivity of the drop detectors to ensure a correct sensing of the system for the actual drop detection procedure.

NOTE: It is important to ensure that all the printheads are in good condition before proceeding with the drop detection calibration or the adjustment of the sensitivity parameters can be incorrectly adjusted. It is recommended to run a hard cleaning procedure from the IPS before performing this calibration.

7. The results of the drop detector calibration are displayed on the front panel, press any key to finish.



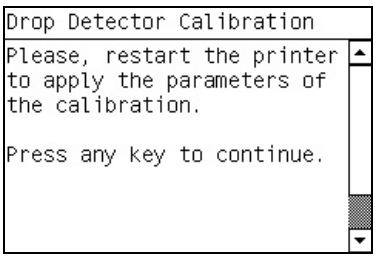
If all the calibration parameters are within limits the printer will finish and display an ok message, otherwise it will display a fail message.

In case of failure perform a new Hard Cleaning procedure and repair the calibration. If the calibration still fails. Ensure a good condition of the printhead which has failed (print the Nozzle check plot) and

replace the printhead if appropriate. If all the printheads are in good condition, it could that the drop detector sensors need to be replaced, then redo the calibration.

- Pen 0 = PH 1: Yellow and Magenta
- Pen 1 = PH 2: Light Magenta and Light Cyan
- Pen 2 = PH 3: Cyan and Black

8. If there is no problem at this point, the following message is displayed, press any key to restart the printer and apply the new drop detector values.



4.5.2 Ser. Sta Compensation

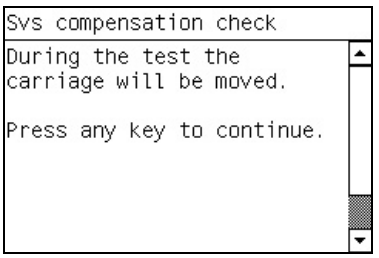
Description

This test calibrates the backlash and the elasticity of the service station for more precise movements of the service station.

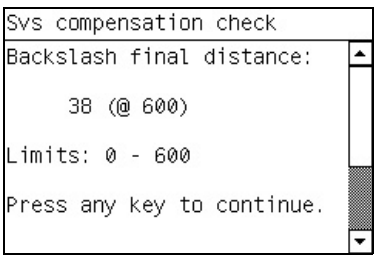
Perform this test after any service station mechanical repair.

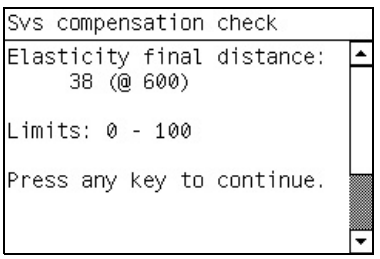
Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.5 Scan Axis Menu**>**4.5.2 Ser. Sta Compensation**
2. The front panel displays the following message, press ok to perform the service station compensation calibration.

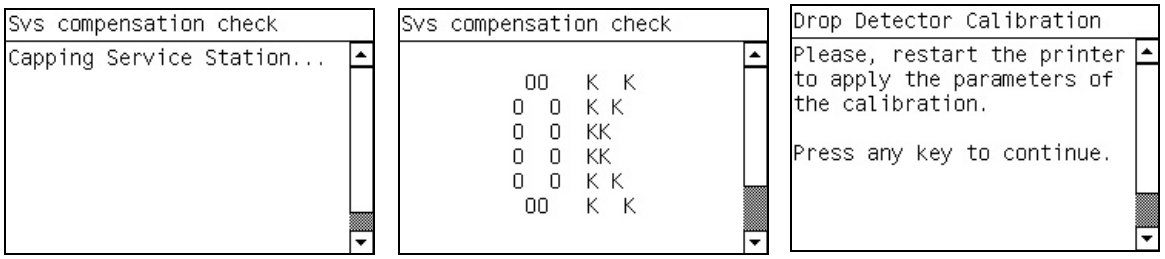


3. The front panel displays the following message, as the printer calibrates the amount of compensation to apply to the movement of the service station to improve accuracy.





4. The front panel displays the following message as the printheads are capped and the procedure finishes, press any key to shut down the printer and restart to apply the new values.



4.6 Carriage menu

4.6.1 Line Sensor Cal

Description

The line sensor calibration should be performed mainly after replacing a line sensor or a sensor box. It is made in 2 steps:

1. Calibration of the sensor, by measuring the white of a substrate and a dark area.

   During this first part, you can see that the printer is places the line sensor at the top of the substrate, taking measurements (measuring the white area), and then it places the sensor at the top of the PH cleaning roller, performing other measurements (measuring a dark area).

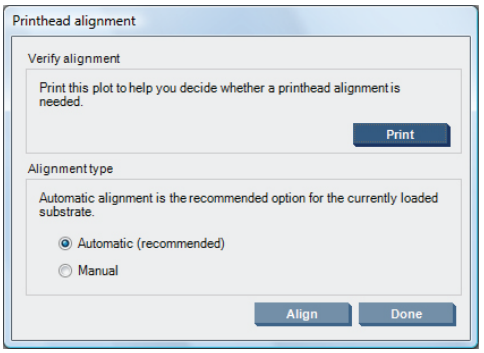
   A white substrate must be loaded, (the substrate cannot contain color or even a little gray substrate).

2. Calibration of the position of the line sensor versus the black Printhead. During this second step, the printer will print 21 small squares, and will scan them back.

How to perform the following calibration correctly

Load the substrate towards the right, and not too much towards the middle/left of the printer. Below is a picture showing the substrate loaded in the printer, under the right curing module, with the edge of the substrate well loaded towards the right (the edge of the substrate should be positioned to the right of 4cms/2 inches).

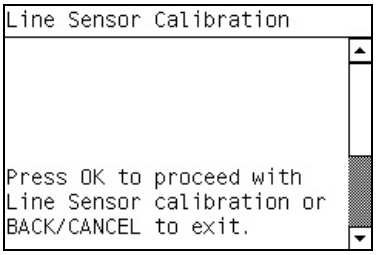
Check that the Black printhead is in very good condition, most importantly the first die of the black Printhead. This can be checked by printing the Printhead Alignment check from the IPS. To do this go from the IPS -> printer -> Verify Printhead alignment -> Print.



The reason for checking this is because when performing the 'line sensor to black' calibration, 21 patches will be printed using only this part of the black Printhead, without error hiding applied. In case of nozzles-out, the calibration will fail, and an error displayed such as -3, -4 or -5.

Procedure

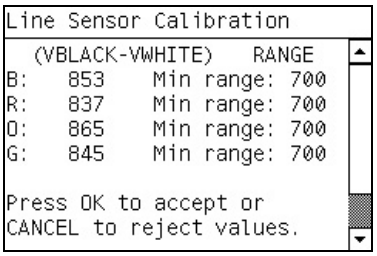
1. Go to Service menu and select **4. Service Calibration>4.6 Carriage Menu>4.6.1 Line Sensor Cal**
2. The front panel displays the following message, press ok to perform the line sensor calibration.



Test 1: In this test the carriage moves from top of the PH Cleaner module to the top area of the media switching ON and Off the 4 different leds (Blue, Red, Orange and Green) in the line sensor. The leds are switched on top of the media getting the value from the sensor reader then the carriage moves on top of the PH cleaner roll and gets a value switching off the led. The difference in value from light on and off is obtained and the appropriate gain applied to the received signal.

The final values obtained should be above 700 to be correct.

3. The front panel displays the results of the test, press ok if the results are above 700.



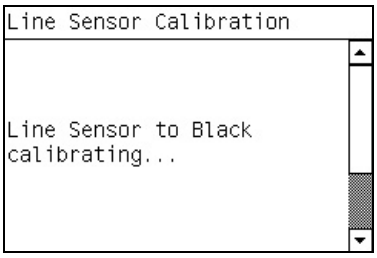
If the results are not above 700, press cancel, shut down the printer.

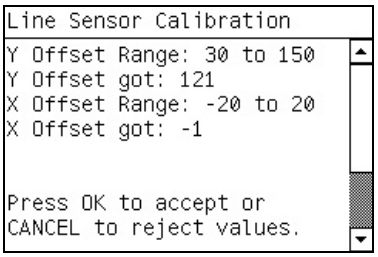
Test 2: As a second part of the procedure, the Line sensor to black distance is obtained and calibrated. This distance is the space from the line sensor focus point to the nozzle number 1 of the Black printhead. This value is used for any reading operation with the line sensor and to must correct as it is critical for a correct automatic alignment.

In case of error -1 is displayed-> most probable solution is to replace line sensor ⇒ see page 762.

To do the calibration the tests prints a pattern (21 small black squares (few mm by few mm are printed) on the media and then using the line sensor, the distance is calculated and stored as an offset to the nominal value.

The front panel displays the following message as the calibration is performed, the results of the test are then displayed. Press OK to accept and store the Values in the NVM otherwise please press cancel. The offset values are obtained in X and Y positions and should be between 30 to 150 in Y and between -20 to 20 in X.

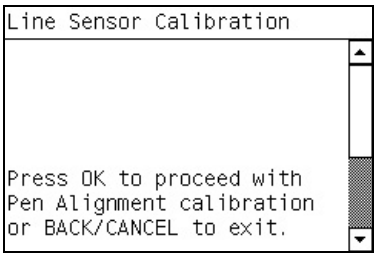


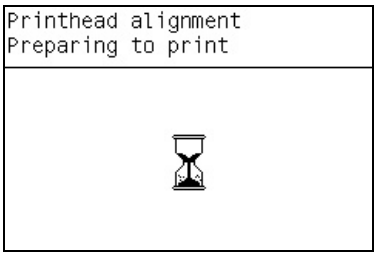


NOTE: The printing and scanning operation takes about 10 Minutes.

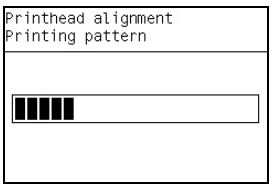
If the values are out of the range, check the correct position of the sensor box and the line sensor in it. Adjust or replace the sensor box if required.

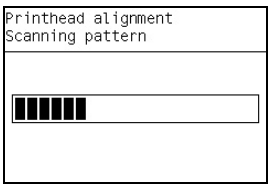
4. Finally to ensure all the alignment parameters correspond the values obtained, the test performs an automatic alignment. Press ok to perform the alignment.

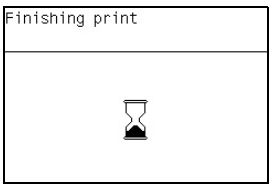


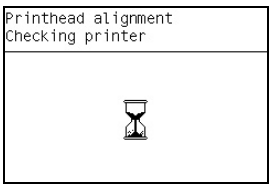


5. The front panel displays the following messages as the procedure progresses.

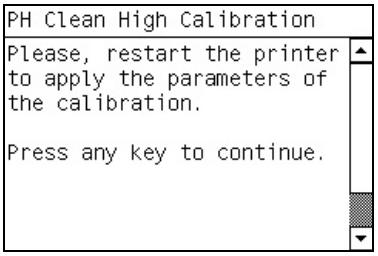








6. The front panel displays the following messages, press any key to restart and apply the new values.



4.7 Print Head Cleaning

4.7.1 PH Cleaner Height Calibration

Description

This calibrates the operational height position of the pressure roller of the PH cleaning system (location where the printer performs the wiping operation of the printheads while servicing; dynamic and static print head wipes).

Perform this calibration whenever the PH cleaning system is replaced or repaired.

NOTE: The steps in the movement should be smaller that 0.3mm.

NOTE: When performing the printhead cleaner height calibration, it is very important to perform the calibration with the black/cyan printhead (and NOT the other printheads).

NOTE: Do not use this procedure to check the height and tilt of the Printhead Cleaning Assembly, use 4.7.4 for this purpose, refer to page 520.

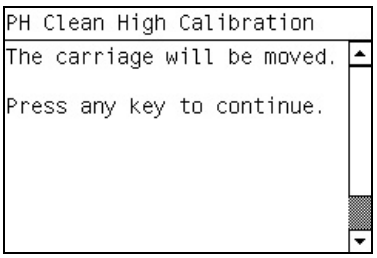
The Printhead Cleaner Roll height Calibration requires that you:

1. Use the up and down buttons on the front panel to move the carriage horizontally into position above the printhead cleaning rubber roller.
2. Use the up and down buttons on the front panel to move the printhead cleaning rubber roller vertically into position below the printhead.

   The calibration is always referenced from the Black/Cyan (K/C) printhead, so it is important to move the carriage so that the Black/Cyan printhead is above the rubber roller.

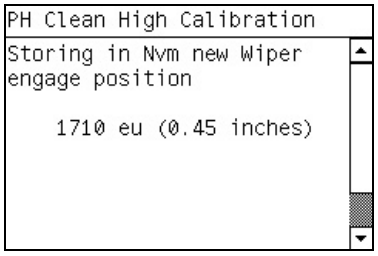
Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.7 Printhead Cleaning**>**4.7.1 PH Cleaner Height Calibration**
2. The front panel displays the following message, press ok to uncap the carriage and place it into position for the calibration.

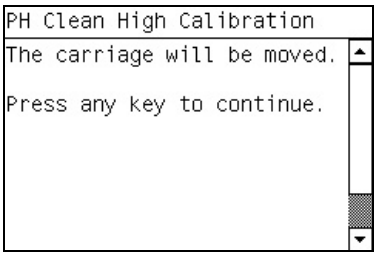


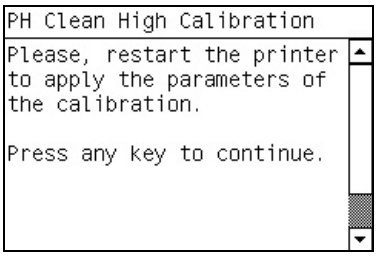
3. Use the up and down keys to move the Printhead cleaner mechanism up to the printhead until it touches the printhead.
4. Press the down button ONCE to move one step down, this is to ensure the correct position for the calibration. This is because when the cleaning process is in progress (flying/static wipe), the mechanism moves a fixed distance higher than what has been set. If after moving one step down the roller is still touching the printhead, re-do the calibration until it no longer touches. Press Ok to confirm the calibration.

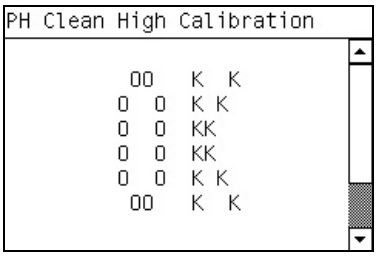
5. The front panel displays the following message, while the new values are stored in the nvm.



6. Press any key to finish the calibration and apply the values.







NOTE: As the position of the press roller edge may influence the calibration, it is recommended to perform the test '4.7.4 Check Height & Tilt' ⇒See page 520 to confirm the setting (need to restart first the printer).

4.7.2 PH Cleaner Horizontal Calibration

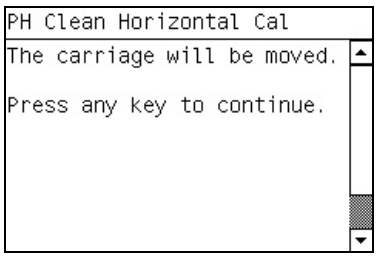
Description

This test calibrates the X position of the PH cleaning system (horizontal reference of the PH cleaning system with respect to the carriage positions)

Perform this calibration whenever the PH cleaning system is replaced or repaired.

Procedure

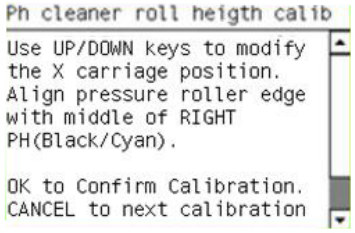
1. Go to Service menu and select **4. Service Calibration**>**4.7 Printhead Cleaning**>**4.7.2 PH Cleaner Horizontal Calibration**
2. The front panel displays the following message, press ok to uncap the carriage and place it into position for the calibration.



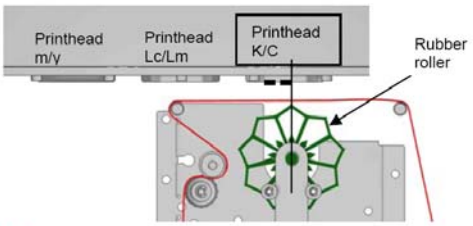
3. The optimum position of the Black/Cyan printhead over the rubber roller is not obvious and there is no mark with which to use as a reference. We recommend using a small focused light to check the position of the printhead over the rubber roller.

   As the line of the nozzles down the printhead (known as the dies) are actually off-centre, do not move the carriage so that the roller is directly under the centre of the printhead, but slightly to the left of center.

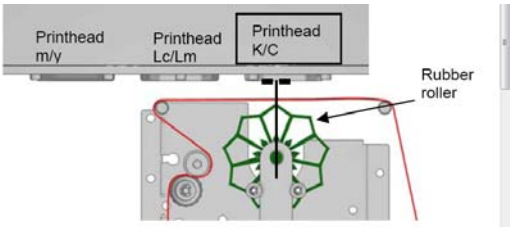
4. The front panel displays the following message.



Use the up and down keys to move the carriage horizontally to the optimal horizontal position, as described above (at each position, the rubber roller goes into an upper position to enable an improved check of the correct position):

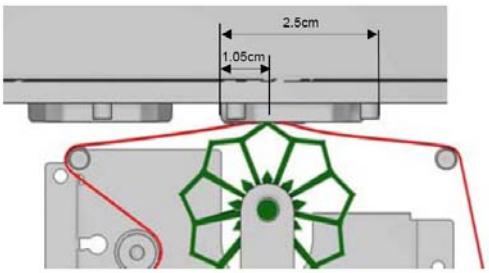


Wrong, Position of the rubber roller is directly under the centre of the black/cyan printhead

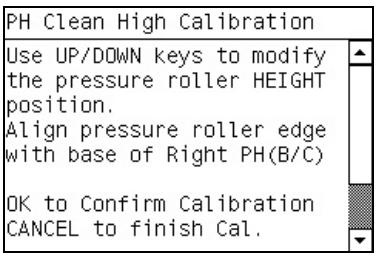


Correct: The rubber roller is off center, slightly to the left of center.

5. Here is the correct position of the rubber roller versus the carriage, press ok to confirm the calibration.



6. The front panel displays the following mesage.



4.7.3 PH Cleaner Measurement Tool

Description

This test is a tool to measure the relative high position of the PH cleaning system pressure roller with respect to the 3 different printheads.

Use this test to identify any possible misalignment of the PH cleaning system to perform the appropriate shimming procedure of the system.

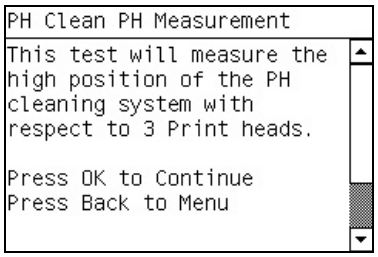
Perform this calibration whenever the PH cleaning system is replaced or repaired.

NOTE: The test '4.7.4 Check Height & Tilt' can also be used to check the tilt of the PH cleaning roller.

Procedure

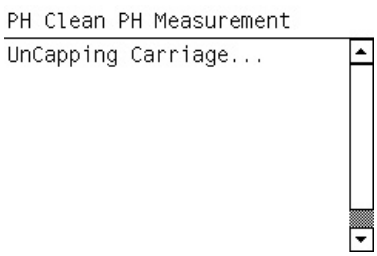
1. Go to Service menu and select **4. Service Calibration**>**4.7 Printhead Cleaning**>**4.7.3 PH Cleaner Measurement Tool**

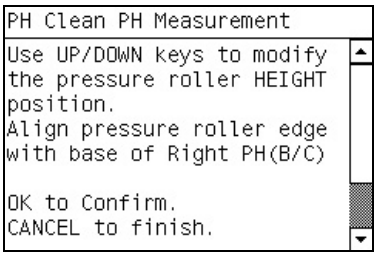
2. The front panel displays the following message, press ok to continue.



NOTE: As the Pressure roller axis rotates, the edge position of the pressure roller used to perform the measurement could change, giving erroneous values, ensure the same position of the pressure roller when performing the measurement.

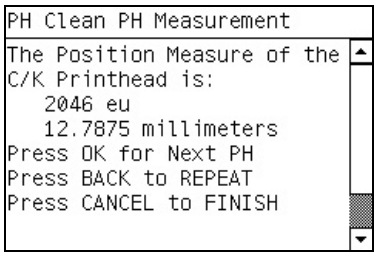
3. The front panel displays the following message.





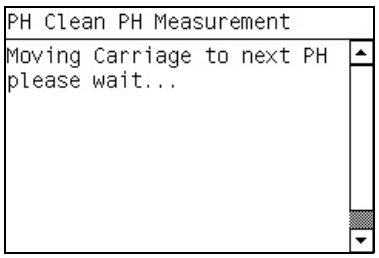
4. Use the Up and Down keys to move the pressure roller up or down to the correct distance from the Printheads. So that the Printhead will be wiped correctly move the pressure roller, the system moves in increments of 0.3mm, until the Printhead Cleaning cloth gently comes into contact with the Printhead above. When the correct position is reached press the OK key. Note: The Printhead Cleaning cloth must come into contact with the Printhead, this is different to the other calibration 4.7.1 PH Cleaner height Calibration.

5. The distance that the pressure roller was moved by will be measured and displayed on the Front Panel in encoder units and in mm. The distance can now be altered using the return (back) key. Press Ok to proceed to the next Printhead measurement.



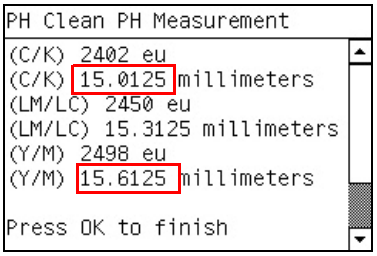
It is recommended to repeat 3 times the same measurement with the same printhead in order to ensure consistency. Use the BACK key to repeat the process.

6. The following is displayed and the Carriage moves to the next Printhead to be aligned with the pressure roller.



Repeat the same alignment procedure with the other Printheads until all have been adjusted.

7. When all the Printheads have all been adjusted the following screen is displayed. Note down the values of the C/K and Y/M printhead (indicated in the screen shot below) in millimeters. In the example shown here the values are 15.0125 for the C/K printhead and 15.6125 for the Y/M printhead.

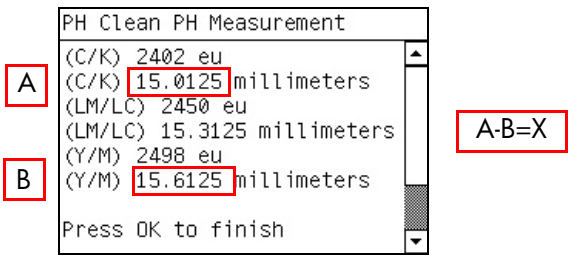


Note that the values displayed are different (higher) to the values displayed when performing the 4.7.1 PH Cleaner Height Calibration

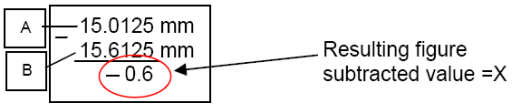
8. Note down the values and press ok to finish the test.

Calculating the results of the test

The values that were displayed at the end of the procedure can now be used to calculate if any shims need to be installed in the Printhead Cleaning Assembly and where they should go at the front or rear of the assembly.



Subtract the value in millimeters of the Y/M printheads from the value of the C/K printheads. In the example here this would be:



- If the resulting figure is positive, the shim(s) need to be installed on the rear side of the Printhead Cleaning Assembly.
- If the resulting figure is negative, the shim(s) need to be installed on the front side of the Printhead Cleaning Assembly.

The table below shows the range of values in millimeters and the applicable number of shims required (0,1 or 2). In the example shown above the calculation came to '-0.6', this would mean that 1 shim is required on the High side and the front.

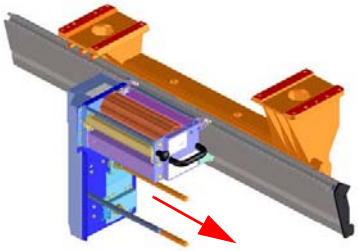
Subtracted value (mm)	Action
0.0-0.35	No shim is required
0.35-0.70	Add 1 shim on the HIGH side.
0.70-1.05	Add 2 shims on the HIGH side.
More than 1.05	Check module and/or structure

Note: The shim height/thickness is 0.6mm

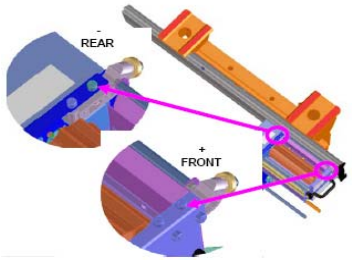
Installing the shims

The following procedure describes how to install the shims into the mechanism.

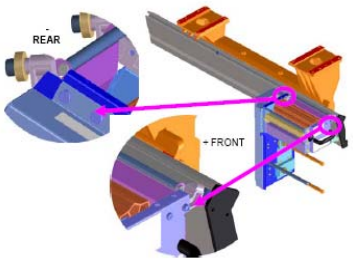
1. Remove the Wide Wipe Assembly.



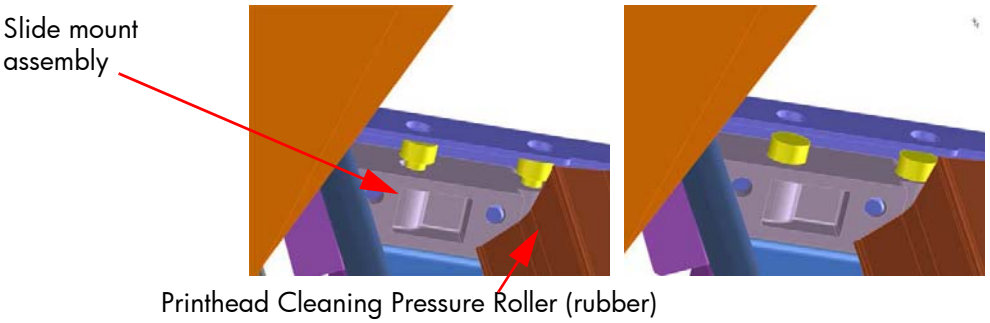
2. Loosen the two screws on the side, either at the front (if the value was positive) or at the rear (if the value was negative). Do not remove the screws.



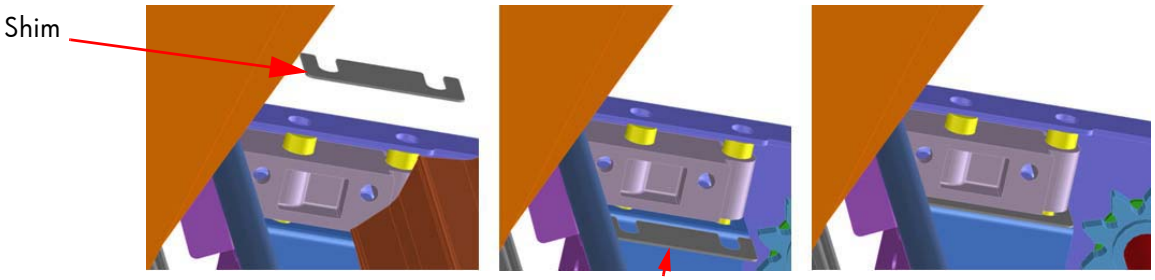
3. Loosen the two screws on the top either at the front (if the value was positive) or at the rear (if the value was negative). Do not remove the screws.



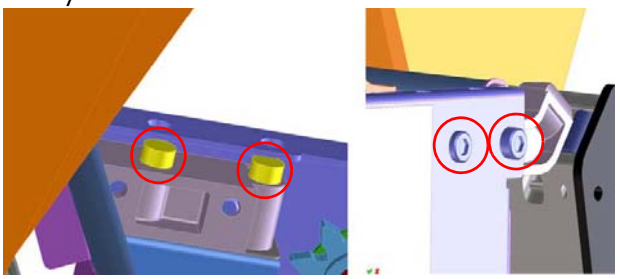
4. Slide up the Slide Mount Assembly.



5. Insert shim as indicated below.



Tighten the screws previously loosened.



Check the calibration and shims have been correctly set. Redo this calibration, lifting up the PH cleaning roller pressure roller until it just reaches the black.cyan Printhead. Then switch off the printer with the ACB1 (the carriage will then uncap) and then check that there is a real different of height, of at least 0.6 - 1mm, between the black/Cyan PH and the /M PH versus the PH Cleaning ink pressure roller.

And redo this operation for different point of the pressure roller (by just opening the PH cleaning roller, and rolling gently the pressure roller (pressure roller: the roll which has the shape as the ninja star).

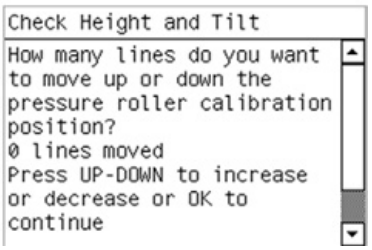
4.7.4 Check Height & Tilt

Description

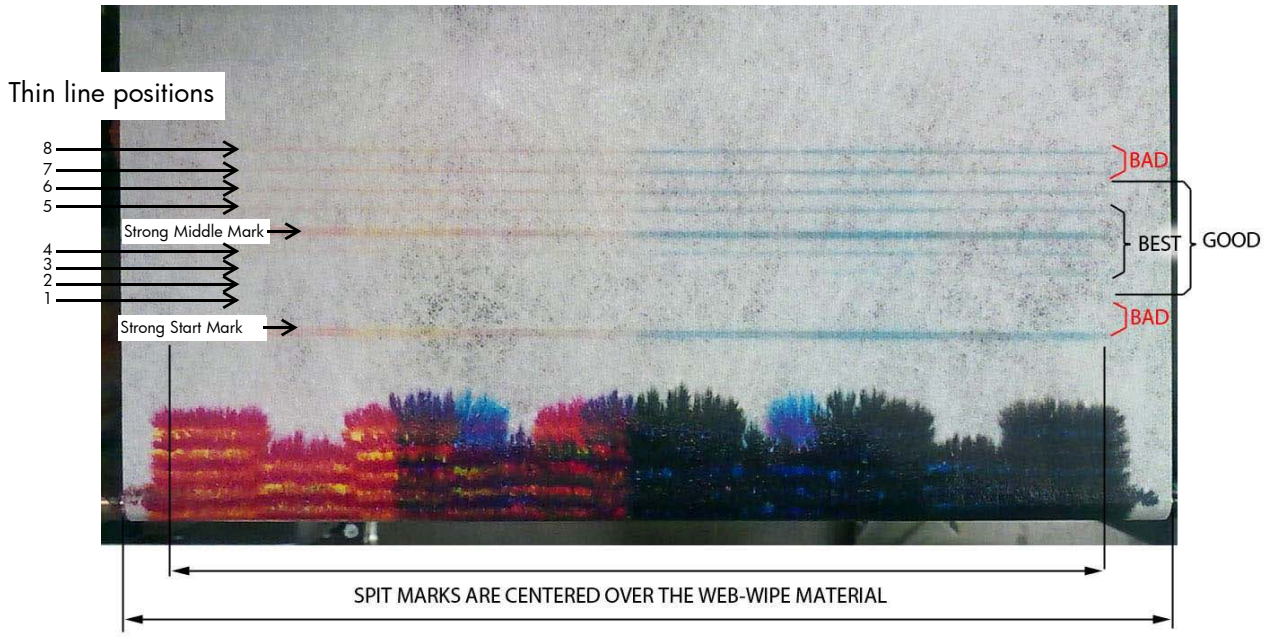
The purpose of this test is to check if the Printhead Cleaning Roller is correctly calibrated.

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.7 Printhead Cleaning**>**4.7.4 Check height & tilt**
2. The printer prints some horizontal lines on the Printhead Cleaning Roller, and the front panel displays the following message, press ok to continue.



3. Pull the Printhead Cleaning Roller from the Printer to view the lines printed. A correctly calibrated Printhead Cleaning Roller should look like this.



The meaning of 'BAD' is in case you see ONLY the 7th and/or 8th lines, or in case you can see all the lines from 1st line or from 2nd line.

How to interpret the result

The STRONG LINES should always be visible (the start and middle mark).

The other thin lines are done with different heights of the Printhead cleaning roller, made by cleaning the Printhead on the cleaning roller material (a spitting is first done, and then a cleaning/wipe), the first thin line is done with the lowest height and the last 8th line done with the highest position. Note that the height difference (of the Printhead Cleaning roller) between one position and the next one is 40 Encoder Units (around 0.2-0.3mm).

The printhead Cleaning Roller is incorrectly calibrated if the line #1 not visible (and the other lines are visible #2 to #8)

The printhead Cleaning Roller is sufficiently calibrated if the lines #1 & #2 not visible (and the other lines are visible #3 to #8)

The printhead Cleaning Roller is calibrated to the optimum position if:

- The lines #1 to #3 are not visible and lines #4 to #8 are visible (shown as the example above).
- The lines #1 to #4 are not visible and lines #5 to #8 are visible

The printhead cleaning roller is sufficiently calibrated when the lines #1 to #5 are not visible and lines #6 to #8 are visible

Incorrect calibration: Line 1..6 not visible, line 7..8 visible

Incorrect calibration: Line 1..7 not visible, line 8 visible

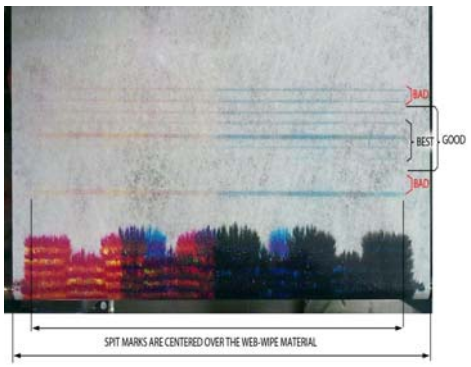
An incorrect calibration would require the a re-calibration in the height of the Printhead Cleaning Roller.

The best calibration would be if the transition point from the no visible lines to the visible lines is as close as possible from the 'Strong middle mark'.

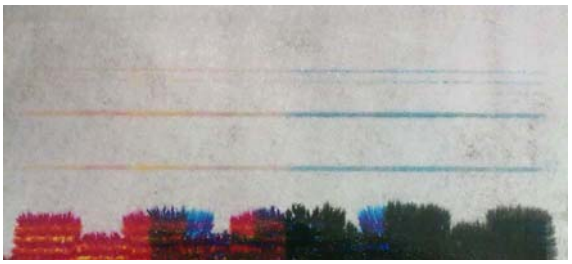
The 'tilt' of the Printhead cleaning roller has also to be done, cf the specific chapter under.

Hints and Tips: In some cases the lines are not very visible, so that you do not have to recheck which lines are visible and the ones which are not visible: highlight with a pen the lines which are visible (and also showing the 'Middle mark' and 'Start mark'.

In the example under, the lines #3,4,5,6,7 and 8 are visible, with specific marks (short line) have been added. The 'start mark' and 'middle mark' are highlighted with a specific short arrow mark.

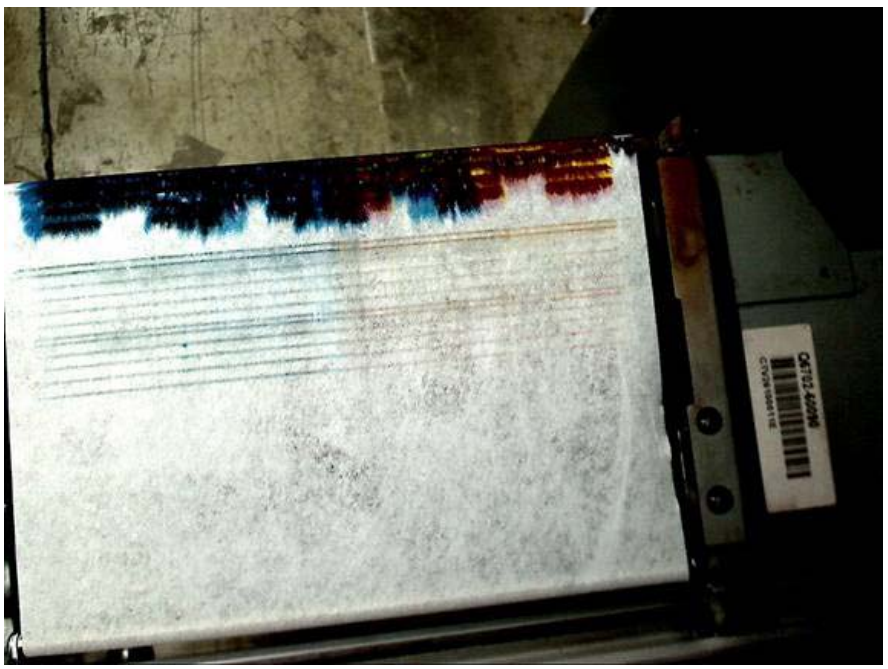


In the example above, the lines #3,4,5,6,7 and 8 are visible, with specific marks (short line) have been added. The 'start mark' and 'middle mark' are highlighted with a specific short arrow mark.



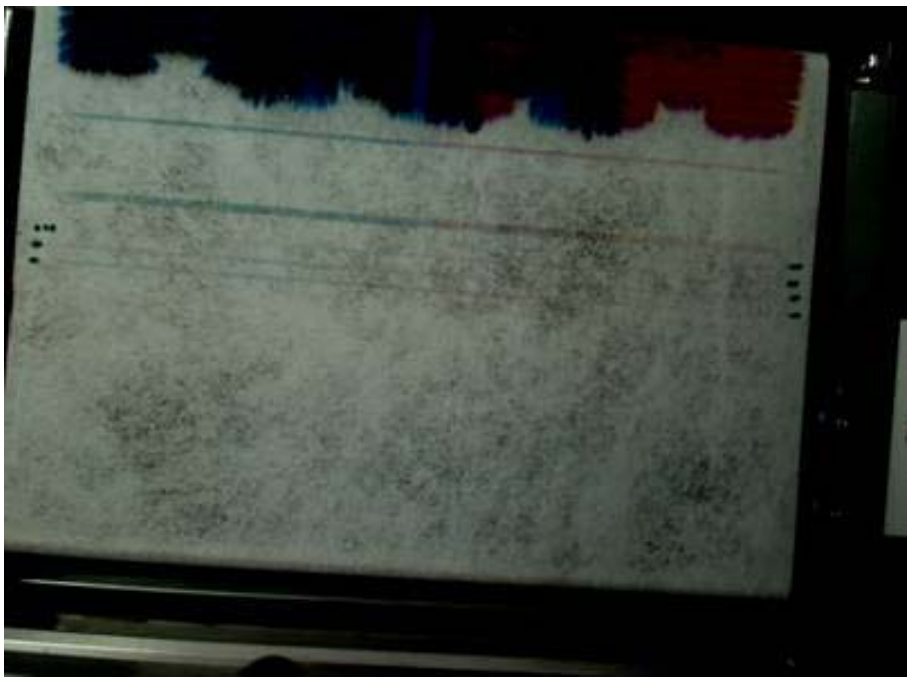
In the example here you can see an example of a calibration which is bad, only the lines 7th and 8th are visible, and none of the other thin line! In this case, the position should be moved up by 2 lines.

Below you can see an example of a calibration which is bad, the lines are too high.



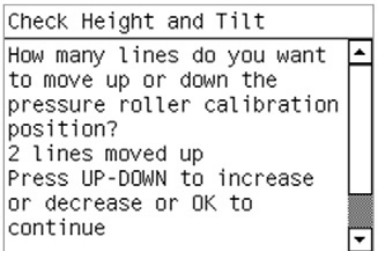
In this case, the calibration should be decreased by at least 4 lines - press 4 times on the DOWN key, and the same calibration has to be performed again after having restarted the printer.

Below you can see an example of a calibration which is bad, the lines are too low.



In this case, the calibration should be increased by around 2 lines - press 2 times on the UP key.

After having pressed 2 times on the up key, here is the front panel message which will be displayed:



In case of intermittent issue: run this test '4.7.4 Check Height & Tilt' ⇒See page 520 on each points of the ink pressure roller, taking a picture of the results (after having marked the visible lines with a pen), and between each test, just open the PH cleaning roller, lift up the ink pressure roller (black/brown rubber part in star shape) and rotate it clockwise till the next point/peak.

Check of tilt

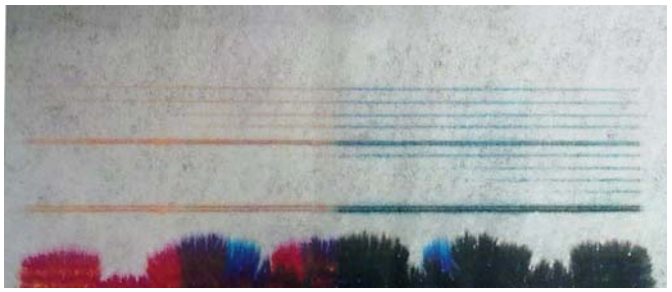
A printhead cleaning roller is 'tilted' when, when checking the distance between the 'carriage/printheads' and the 'Printhead cleaning roller', where one side (front side or rear side of the printhead cleaning roller) is higher or closer than the other side.

In case one Printhead cleaning roller is 'tilted', a calibration of the Printhead Cleaning Roller is required, see page 514). As the cleaning of the Printhead is done differently between one printhead and the other, creating intermittent nozzle out from one printhead/color.

To check if the Printhead Cleaning Roller is tilted, perform the utility 4.7.4 Check Height & Tilt from service menu ⇒See page 520, and use the following troubleshooting procedure:

Check the small thin lines, and looking at the ones where one side of the line is visible and the other one is not visible. Just count the number of thin lines which are having this effect (where the line is not visible throughout the width of the printheads):

Where only 3 lines do not show the full width of thin line, there is no need of recalibration of the tilt. If the number of lines is greater than three, then the Printhead cleaning roller must be calibrated. Here is an example of Printhead Cleaning Roller must be recalibrated:



7 lines are incomplete (lines # 1..7, line #8 is visible through all the printheads width). Note that the line #7 could be considered as fully visible, just on the edge.

How to recalibrate the tilt

Order the Shims: Calibration kit, refer to page 549, and add the shims on the side where the part of the line is visible. The quantity of shims to be added is as follows:

3-4 incomplete lines: 1 shim to be added

5-6 incomplete lines: 2 shims to be added

7-8 incomplete lines: 3 shims to be added

Example: in the previous case where there are 7 lines not printed through all the width, 3 SHIMS on the front side should be added. To add the shims refer to page 518.

In case of intermittent issues perform the this procedure '4.7.4 Check Height & Tilt' ⇒See page 520, on each points of the ink pressure roller, taking a picture of the results (after having marked the visible lines with a pen), and between each test, just open the PH cleaning roller, lift up the ink pressure roller (black/ brown rubber part in star shape) and rotate it clockwise till the next point/peak.

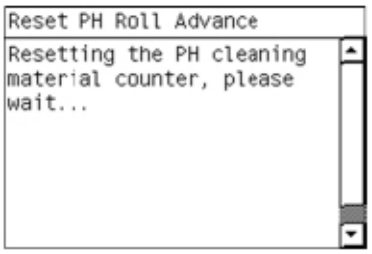
4.7.5 Reset PH Roll Adv

Description

Perform this procedure to recover from a 47.5:10 system error. If the customer does not perform the cleaning cloth replacement procedure following the instructions from the front panel, some setting are not correctly configured. This can cause some counters to go beyond pre defined limits causing a system error.

Procedure

1. Go to Service menu and select **4. Service Calibration**>**4.7 Printhead Cleaning**>**4.7.5 Reset PH Roll Advance**
2. The counter will be reset and the following message is displayed:



3. The procedure will reset all variables and check that the cleaning roll can be correctly advanced. THe level of the cleaning cloth will be set to 100%, but will be restored to the correct level after a few advances.

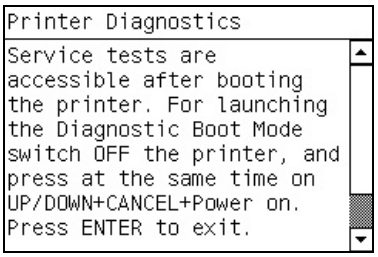
NOTE: When performing this procedure all information about the current Printhead Cleaning Roll usage will be lost. Only perform this procedure when the system error 47.5:10 is displayed

5. Service Test Menu

5.0 show Test Messages

Description

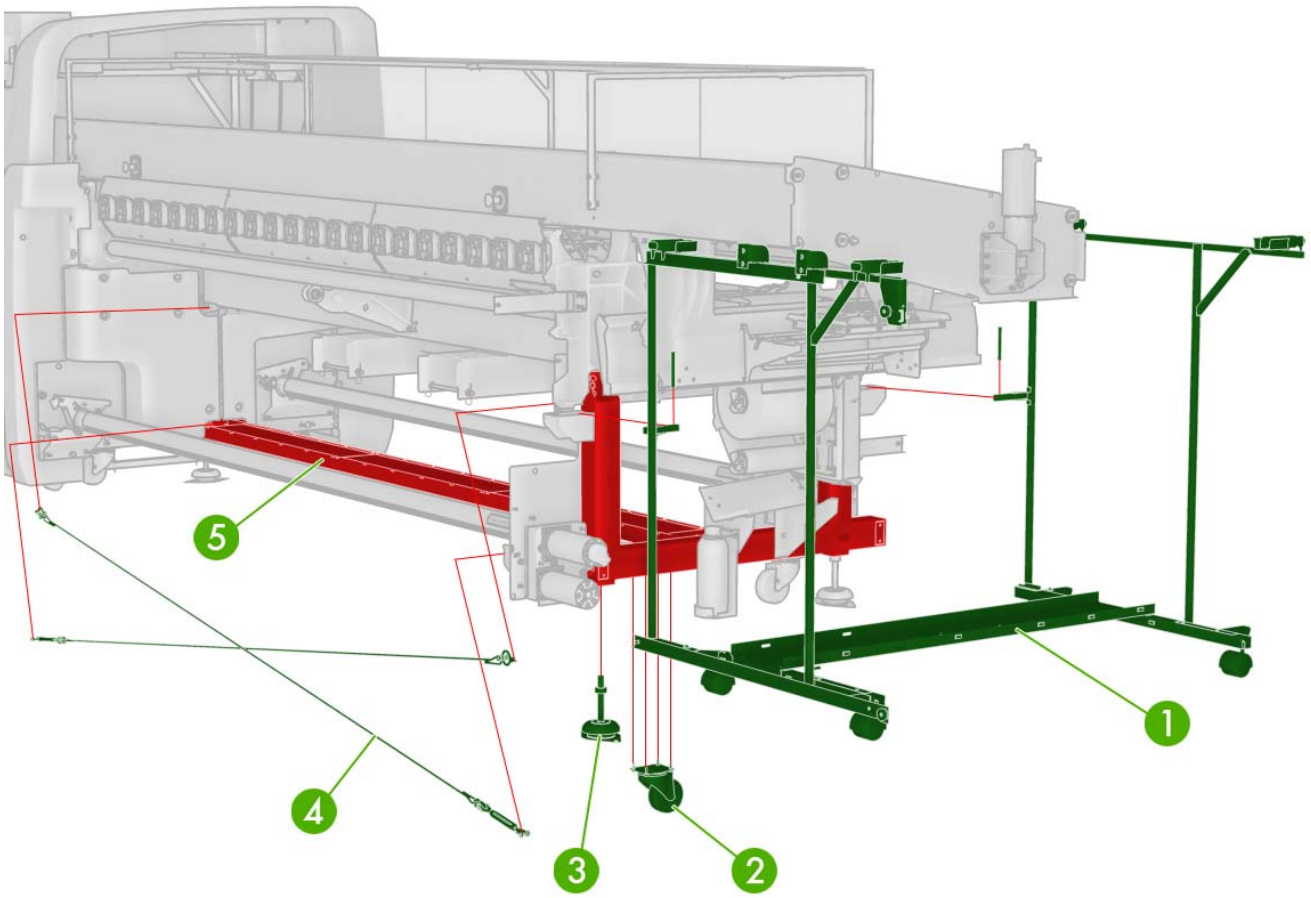
This test indicates how to enter in Diagnostics menu with the specific combination of key at printer start-up. The screen is just a reminder about how to enter manually in the diagnostics menu with the correct key combination at start up of the machine....



5 Service Parts & Diagrams

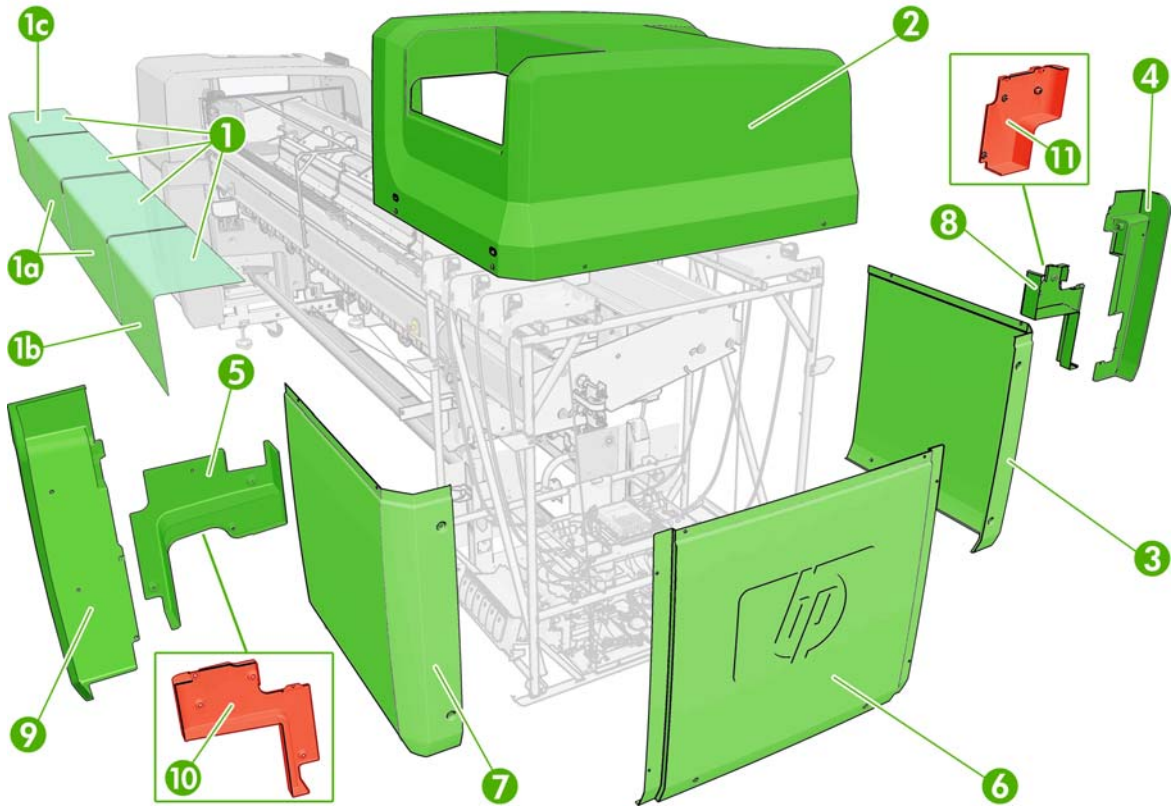
Printer Support

Ref	HP Part Number	Part Description	Page
1	Q6702-60542	Electrical Cabinet Support (comes with 4 casters)	589
2	Q6702-60421	Stand Wheel Assembly	588
3	Q6702-60420	Stand Rubber Foot Assembly	588
4	Q6702-60423	Stands Cross Tensioners (L65500/LX600)	589
4	Q6703-67009	Stands Cross Tensioners (LX8x0)	
5	Q6702-60422	Stands and Cross Brace Assembly (left and right)(L65500/LX600)	
	Q6703-67008	Stands and Cross Brace Assembly (left and right) (LX8x0)	



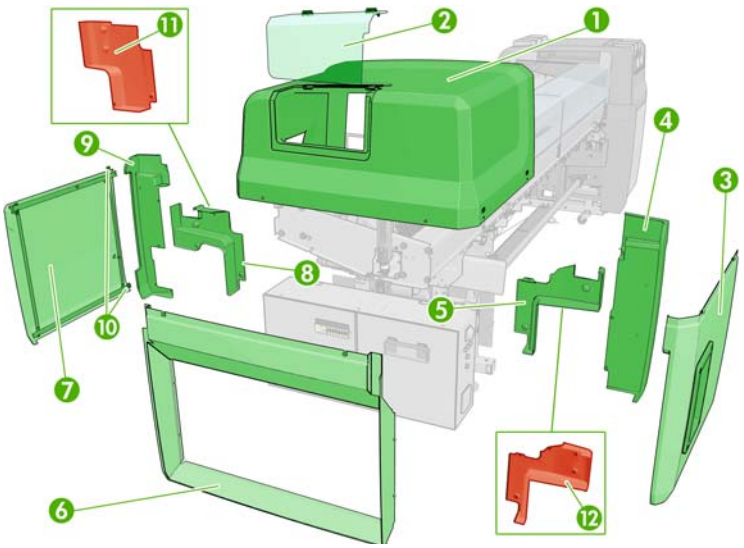
Left Covers

Ref	HP Part Number	Part Description	Page
1	Q6702-60522	Window Covers (L65500/LX600)(4 off)	573
1a	Q6703-67032	Extended Long Center Cover (LX8x0)(1 off)	
1b	Q6703-67054	Left Side Window Cover (1 off)	
1c	Q6703-67055	Right Side Window Cover (1 off)	
2	Q6702-60518	Left side top cover (L65500)	566
	Q6703-67053	Left side top cover (LX/600LX8x0)	
3	Q6702-60519	Left side Front Panel (L65500)	565
	Q6703-67029	Left side Front Panel (LX600/LX8x0)	
4	Q6702-60523	Left side front Arc cover	570
5,8	Q6702-60527	Left Side trims cover set (L65500/LX600)	570
6	Q6702-60520	Left Side Lateral Panel (L65500)	565
	Q6703-67030	Left Side Lateral Panel (LX600/LX8x0)	
7	Q6702-60521	Left Side Rear Panel (L65500)	565
	Q6703-67031	Left Side Rear Panel (LX600/LX8x0)	
9	Q6702-60524	Left side rear Arc cover	570
10	Q6703-67034	Left Side Rear Trim cover (LX8x0)	571
11	Q6703-67033	Left Side Front Trim cover (LX8x0)	570
Not shown	Q6702-67008	Top Left cover Metal Supports (L -shape 4 off: six screws)	
	Q6702-67009	Cosmetic Cover Screws (8 off) that secure the side covers, and metal supports	
	CR774-67026	ISM Frame Assy Serv (include all metal parts supporting covers with the 4 wheels)	



Right Covers

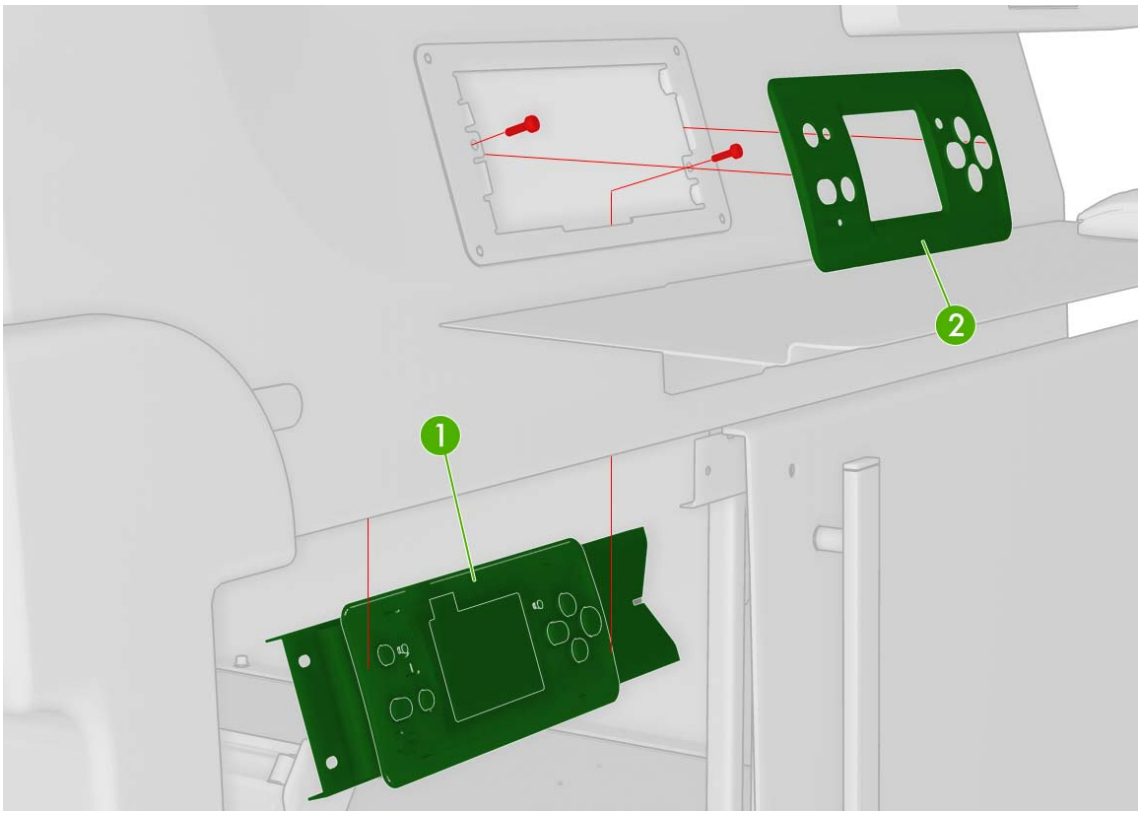
Ref	HP Part Number	Part Description	Page
1	Q6702-60513	Right side top cover assy (L65500)	568
	Q6703-67025	Right side top cover assy (LX600/LX8x0)	
2	CR774-67017	Right side cover window assy (With lock)(Rolled from Q6702-60515)	569
3	Q6702-60516	Right side cover rear panel assy (L65500)	567
	Q6703-67027	Right side cover rear panel assy (LX600/LX8x0)	
4	Q6702-60526	Right side rear Arc cover	571
5,8	Q6702-60528	Right side trims cover set (L65500/LX600)	572
6	Q6702-60517	Right side cover lateral panel (L65500)	567
	Q6703-67028	Right side cover lateral panel (LX600/LX8x0)	
7	Q6702-60514	Right cover slide door assy (door wheels and support) (L65500)	567
	Q6703-67026	Right cover slide door cover (LX600/LX8x0)	
9	Q6702-60525	Right side front Arc cover	571
10	Q6702-67017	Front right sliding door wheel.	567
11	Q6703-67035	Right side Front trim cover (LX8x0)	572
12	Q6703-67036	Right side Rear trim cover (LX8x0)	572
Not shown	Q6702-67007	L-shape metal supports (4 off) for Top right Cover, includes screws	
	Q6702-67009	Cosmetic Cover Screws (8 off) that secure the side covers, and metal supports	
	Q6702-67031	Officeabilty Upgrade kit (includes: front central transparent panel, PH cleaning roller access restriction and top right transparent door with locker (LX600&L65500)	574
	Q6703-67112	Officeabilty Upgrade kit (includes: front central transparent panel, PH cleaning roller access restriction and top right transparent door with locker (LX8x0)	
	CR774-67013	Officeability front central cover (with hinges) for 104" (LX600&L65500)	
	CR774-67014	Officeability front central cover(with hinges) for 126" (LX8x0)	
	CR774-67015	Officeability key kit and ecabinet key	
	CR774-67024	Officeability Hinge Assembly	



The two Officeability kits have two common parts:
The PH cleaning roller access restriction and top right transparent door with locker (with hinges)

User Interface

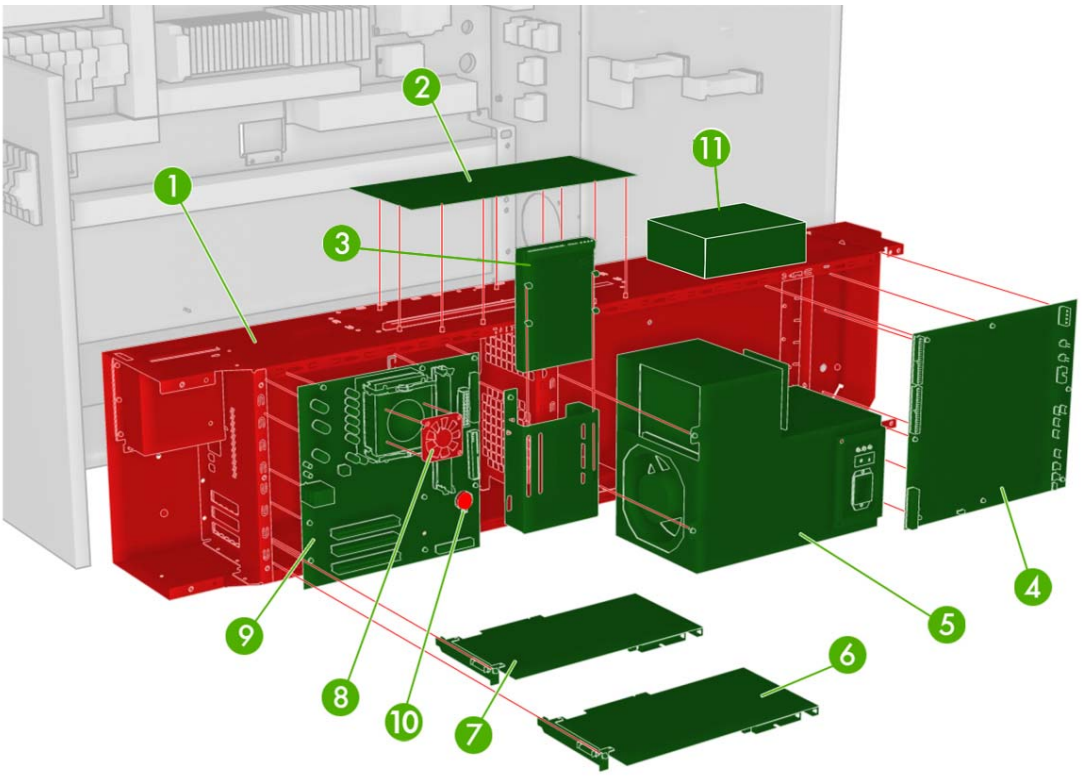
Reference on Figure	HP Part Number	Part Description	Page
1	Q6702-60387	Front Panel	586
2	Q6702-60388	Front Panel Bezel (including the button labels)	587



Electronics

Ref	HP Part Number	Part Description	Page
1	Q6702-60537	Main Electronics Box	603
2	Q6703-67107	Main Interconnect Board (rolled from Q6702-60531, this previous part can still be used on the LX600/L65500)	602
3	Q6702-60529	Hard Disk System (L65500)(This part can also be used in the LX600/LX800 but will require a fw upgrade from diagnostics)(if part not available, order CR774-67019)	601
	CR774-67019	Hard Disk System (126" compatible)(Rolled from Q6703-67089)(*)	
4	Q6702-60530	Printmech Board	596
5	Q6702-60536	Main Power Supply	594
6	Q6702-60535	Lower PCI Board	599
7	Q6702-60534	Upper PCI Board	597
8	Q6702-60533	Formatter CPU Fan	593
9	Q6702-67006	Formatter Board (includes Microprocessor and memory module)(rolled from Q6702-60532)	591
10	153099-001	RTC 3.0V Battery (CR2032) - Lithium disc cell 220mAh, 20mm diameter, 3.2mm height , small battery of the formatter board. (in case the P/N is not orderable, and that the customer/customer engineer cannot provide locally a battery CR2032, order the complete Formatter board.	
11	Q6703-67044	Media output control system (LX800/LX850)(includes cables)	

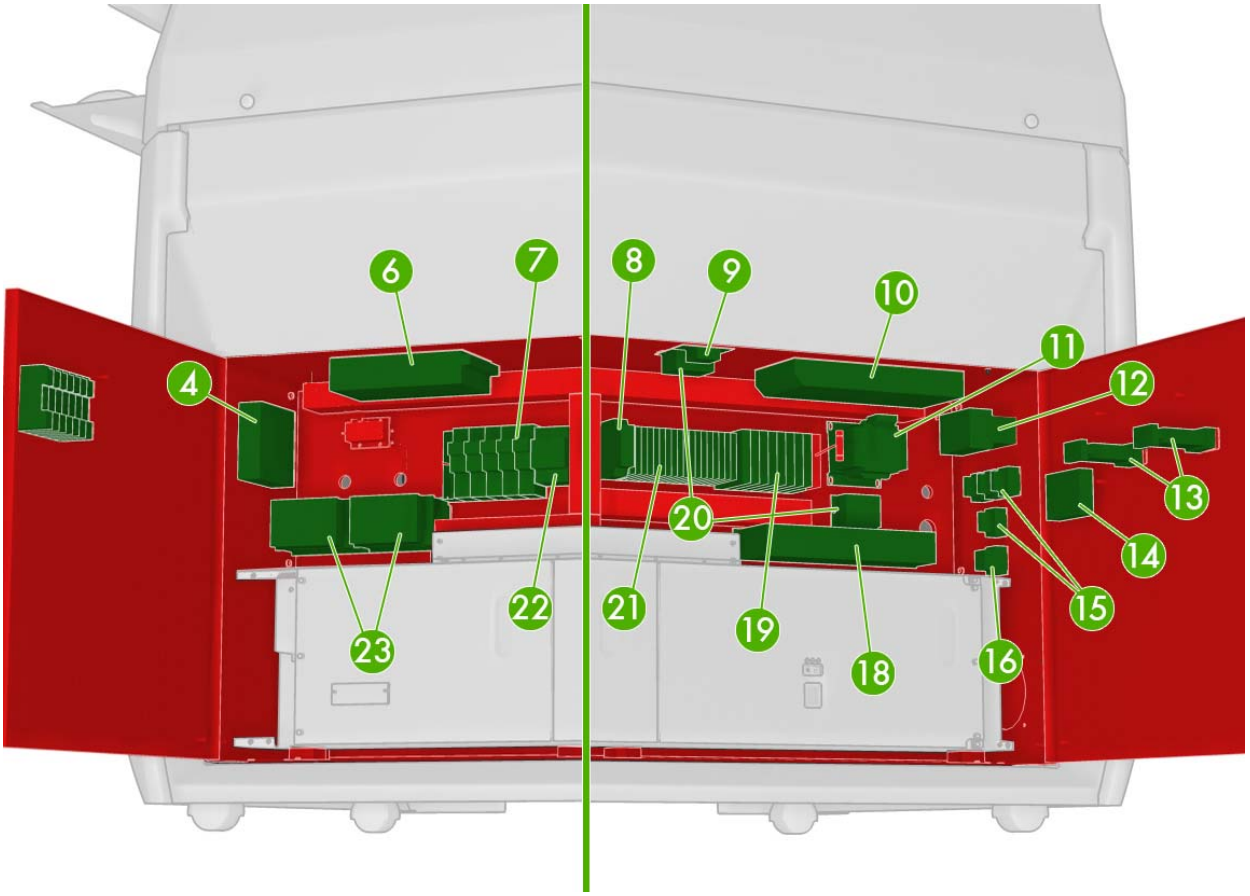
(*Depending on the product, once the part is installed, a system error 79:04 could be displayed. Perform a firmware upgrade from diagnostics to solve.



Electrical Cabinet

Ref	HP Part Number	Part Description	Page
4	CR774-67028	Electrical Cabinet Internal Fan (includes external guard and filter)(rolled from Q6702-67405, and Q6702-60555)	619
5	Q6702-60820 Q6702-60821	Power fuse 20A (L65500, LX600)(for 3 phase 3 x 380-415v*) Power Fuse 32A (L65500, LX600)(for 3 phase 3 x 200-220v*)	
	Q6703-67040 Q6703-67041	Power fuse 25A (LX8x0)(for 3 phase 3 x 380-415v*) Power Fuse 40A (LX8x0)(for 3 phase 3 x 200-220v*)	
6	Q6702-60395	Secondary 24 V Power Supply	627
7	Q6702-60394	Power Fuse Holder Block (holds power fuses, not included)	608
8	Q6702-60397	Safety Relay	626
9	Q6702-60404	Scan Axis Brake Motor Resistor	625
10	Q6702-60396	Secondary 42 V Power Supply	627
11	Q6702-60398	Vacuum Power Transformer	628
12	Q6702-60411	Main Power Switch (L65500/LX600)	610
	Q6703-67006	Main Power Switch (LX8x0)	610
13	Q6702-60390	Heating/Curing Temperature Controller (L65500/LX600)	611
	Q6703-67002	Heating/Curing Temperature Controller (LX8x0)(includes current sensor)	611
14	Q6702-60557	USB Heating and Curing Communication Box	617
15	Q6702-60408	Electrical Cabinet Power Light	609
16	Q6702-60406	Electrical Cabinet Power Button and Light	609
18	Q6702-60399	3 Phase Line Filter (L65500/LX600)	624
	Q6703-67003	3 Phase Line Filter (LX8x0)	624
19	Q6702-60410	Electrical Cabinet Rail Small Fuse Holder (with 1 type of holder)	629
20	Q6702-60400	Single Phase Line Filters	624
21	Q6702-60409	Electrical Cabinet Rail Connector (with 4different holders)	622
22	Q6702-60407	Main Power Breaker (L65500/LX600)	630
	Q6703-67005	Main Power Breaker (LX8x0)	
23	Q6702-60391	Heating and Curing Power Module	618
Not shown	Q6702-60554	Electrical Cabinet Low Power Fuse Set (inside number 19)	
Not shown	Q6704-67002	Power Cabinet (includes all upper front of e-cabinet and cables, does not include e-box)(LX600 color)	
	Q6702-60389	Power Cabinet (includes all upper front of e-cabinet and cables, does not include e-box)(L65500 color)	604
	Q6703-67001	Power Cabinet (includes all upper front of e-cabinet and cables, does not include e-box) (LX8x0)	604
Not shown	CR774-67018	Ecabinet triphase cable LX8x0 kits. Cables linking 12 with 18 with RCCB1 (on the ecabinet door).	
Not shown	Q6704-67008	Ecabinet triphase cable L65500/LX600 0 kits. Cables linking 12 with 18 with RCCB1 (on the ecabinet door).	
	CR774-67015	Officeability key kit and ecabinet key	

**Voltage measured between phase*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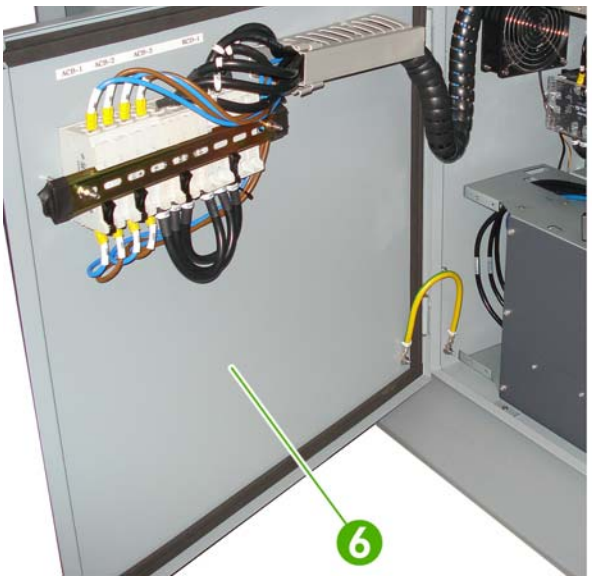
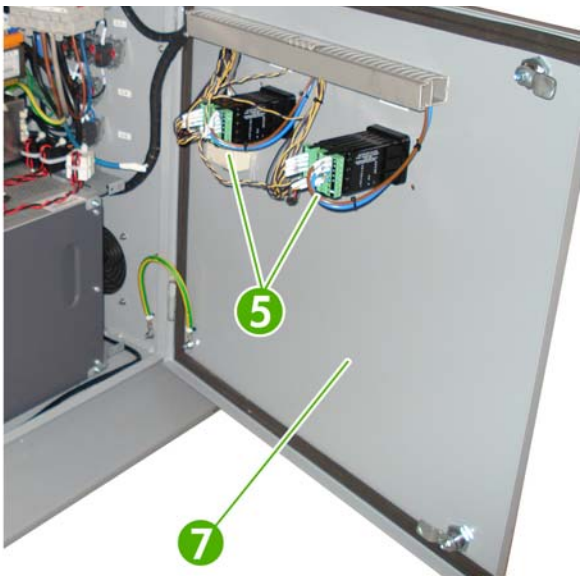
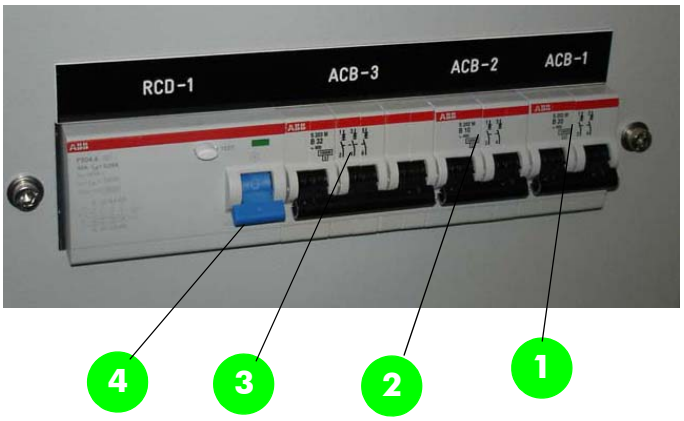
Electrical Cabinet Doors

Number	HP Part Number	Part Description	Page
1	Q6702-60402	Circuit Breaker 20A (ACB-1)	620
2	Q6702-60403	Circuit Breaker 10A (ACB-2)	620
3	Q6702-60401	Circuit Breaker 32A (ACB-3)(L65500/LX600)	620
	Q6703-67004	Circuit Breaker 63A (ACB-3)(L65500/LX8x0)	
4	Q6702-60857	RCCB 40A (L65500/LX600)	
	Q6703-67048	RCCB 63A (LX8x0)	
5	Q6702-60390	Heating and Curing Temperature Controllers (L65500/LX600)	
	Q6703-67002	Heating and Curing Temperature Controllers (LX8x0)(included current sensor)	611
6	Q6703-67133	E-Cabinet Left Door (includes RCCB 40A) with LX series color, roll from Q6702-67010 which contains same door with L65500 color). (LX600 and L65500)	605
7	Q6703-67132	E-Cabinet Right Door with LX600 series color, roll from Q6702-60856 (door with L65500 color)(if new part used on LX600/ L65500, hole will remain under the PID controller, if this is a problem, need to order complete e-cabinet for LX600/L65500).	607

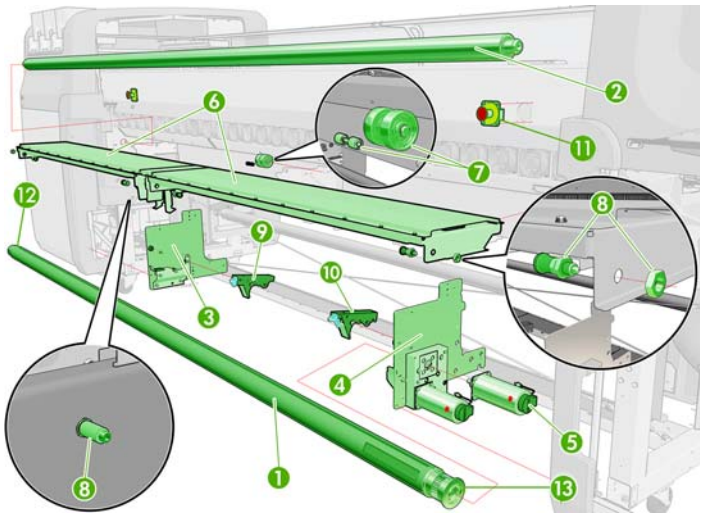






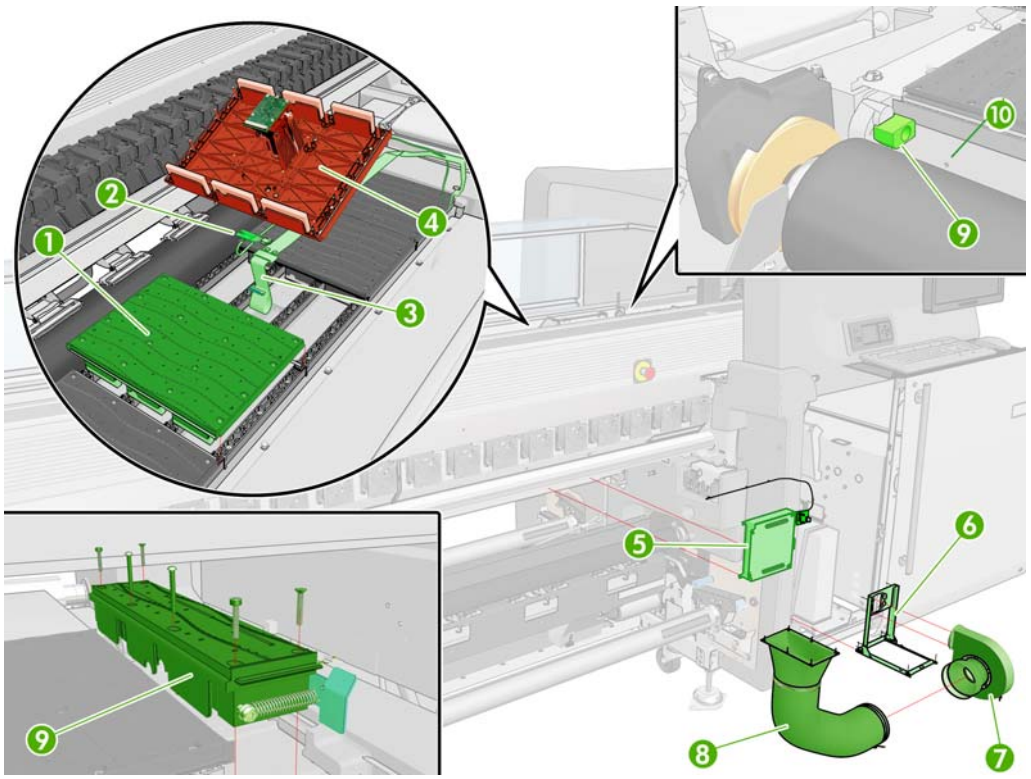
Front Substrate Path (1 of 2)

Ref	HP Part Number	Part Description	Page
1	Q6702-60461	Spindle (LX600/L65500)(includes air valve)	
	Q6703-67062	Spindle (LX8x0)(includes air valve)	
2	Q6702-60496	Diverter Assembly (L65500/LX600)	668
	Q6703-67023	Diverter Assembly (LX8x0)	668
3	Q6702-60471	Front Left Support Spindle Plate Assembly (L65500)	649
	Q6703-67068	Front Left Support Spindle Plate Assembly (LX600/LX8x0/ L65500) (includes Latch Type A)	
4	Q6702-60472	Front Right Drive Spindle Plate (L65500)(includes the 2 media output motors)(if not available, order 1 * Q6703-67067 and 1 * Q6703-67071, as the 3 front and rear spindle motors have to be replaced, detailed information in chapter 6)	
	Q6703-67067	Front Right Drive Spindle Plate (LX600/LX8x0)(includes the 2 media output motors, with red dots or 3D barcode)	
5	Q6702-60470	Spindle Motor (L65500) (with encoder assembly))(if not available, order 3 * Q6703-67071, as the 3 front and rear spindle motors have to be replaced, detailed information in chapter 6)	646
	Q6703-67071	Spindle Motor (LX600/LX8x0)(with red dots or 3D barcode)	
6	CR774-67023	Curing Bottom Plates Assembly (LX8x0) (rolled from Q6703-67104)	842
7	Q6702-60497	Diverter Support Bearings Set (LX600/L65500)	670
	Q6703-67024	Diverter Support Bearings Set (LX8x0)	
8	Q6703-67105	Curing Bottom Plate Stoppers (LX800/LX850)	841
9	Q6702-60468	Spindle Latch Type A	652
10	Q6702-60469	Spindle Latch Type B	653
11	Q6702-60559	Emergency Stop Button	
12	Q6702-67025	Spindle Air Valve	645
13	Q6702-60477	Drive Roller Support Bearings Set	633
Not shown	CR773-67002	Side metal part cover (LX820)(to cover the holes not used of the roll to floor assembly)	



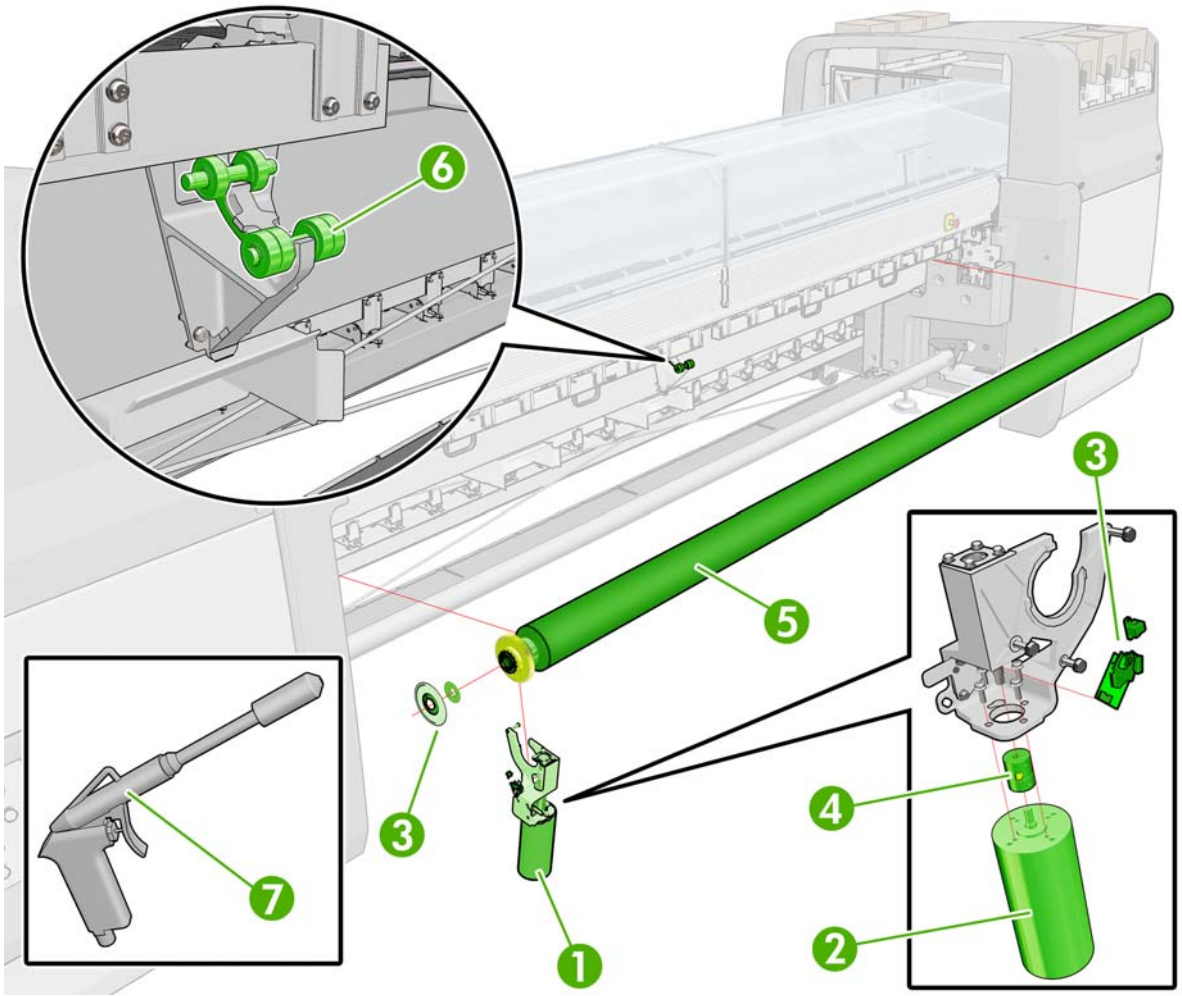
Front Substrate Path (2 of 2)

Ref	HP Part Number	Part Description	Page
1	Q6702-60538	Platen Assembly	667
2	Q6702-60495	OMAS Temperature Sensor Assembly	662
3	Q6702-60493	OMAS Sensor Cable	657
4	Q6702-60494	OMAS Platen Assembly	655
5	Q6702-60492	OMAS and Vacuum Control Box	661
6	Q6702-60541	Vacuum Pump Support Assembly	665
7	Q6702-60539	Vacuum Pump	664
8	Q6702-60540	Vacuum Tube Assembly (comes with rubber cone connectors for both ends)	666
9	Q6703-67106	Extended platen and stopper (LX8x0)	
10	CR774-67022	Platten_Driveroller Intermediate Cover (LX8x0)	640



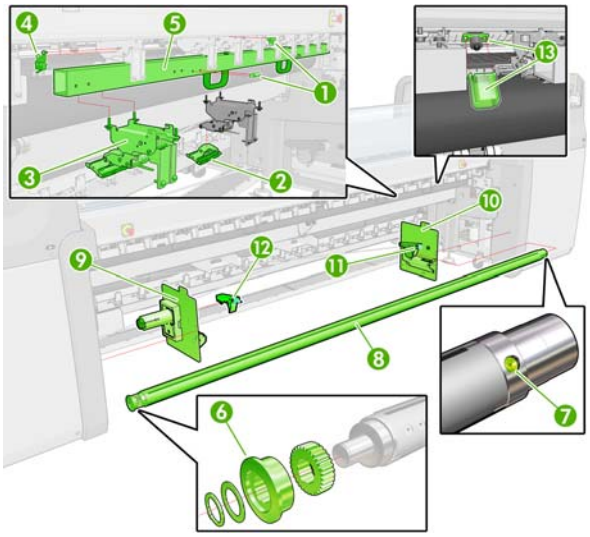
Rear Substrate Path (1 of 2)

Ref	HP Part Number	Part Description	Page
1	Q6702-60476	Drive Roller Transmission Assembly (includes motor, coupling, encoder reader, mount assembly)	637
2	Q6702-60475	Drive Roller Motor	638
3	Q6702-60474	Drive Roller Encoder Disc and Encoder PCA	636
4	Q6702-60478	Drive Roller Motor Coupling	639
5	Q6702-60473	Drive Roller Assembly (L65500/LX600)	631
	Q6703-67020	Drive Roller Assembly (LX8x0)	
6	Q6702-60477	Drive Roller Support Bearings Set	633
7	Q6702-60464	Pneumatic Gun	
not shown	CR774-67029	Plastic part covering Encoder Disc (part #3)	



Rear Substrate Path (2 of 2)

Ref	HP Part Number	Part Description	Page
1	Q6702-60481	Pinch System Up Retainer	642
2	Q6702-60480	Pinch Wheel	641
3	Q6703-67050	Pinch Assembly (roll from Q6702-60479 this previous part can be used on L65500/LX600) This item also includes item 2, the Pinch Wheel	640
4	Q6702-60483	Pinch Switch Sensor Assembly	642
5	Q6702-60482	Pinch Support (L65500/LX600)	641
	Q6703-67021	Pinch Support (LX8x0)	
6	Q6702-60462	Spindle Gear and Encup Set (also part of item 8)	644
7	Q6702-67025	Spindle Air Valve (also part of item 8)	645
8	Q6702-60461	Spindle (L65500/LX600)	643
	Q6703-67062	Spindle (LX8x0)(includes air valve)	
Not shown	Q6702-60470	Spindle Motor (L65500) (with encoder assembly)(if not available, order 3 * Q6703-67071, as the 3 front and rear spindle motors have to be replaced, detailed information in chapter 6)	646
	Q6703-67071	Spindle Motor (LX600/LX8x0)(with red dots or 3D barcode)	
9	Q6702-60467	Rear Right Drive Spindle Plate (L65500)(includes Latch Type A) (includes the 1 motors)if not available, order 2 * Q6703-67071 and 1 * Q6703-67070, as the 3 front and rear spindle motors have to be replaced, detailed information in chapter 6)	650
	Q6703-67070	Rear Right Drive Spindle Plate (LX600/LX8x0)(includes Latch Type A) (includes the 1 media motors, with red dots or 3D barcode)	
10	Q6702-60466	Rear Left Support Spindle Plate (includes Latch Type B Q6702-60469)	650
11	Q6702-60469	Spindle Latch Type B	653
12	Q6702-60468	Spindle Latch Type A	652
Not shown	CR774-67008	Oil collection upgrade kit	671
13	CR774-67010	1 Oiling cup and bracket kit	
Not shown	CR773-67002	Side Metal Part Cover (LX820)	

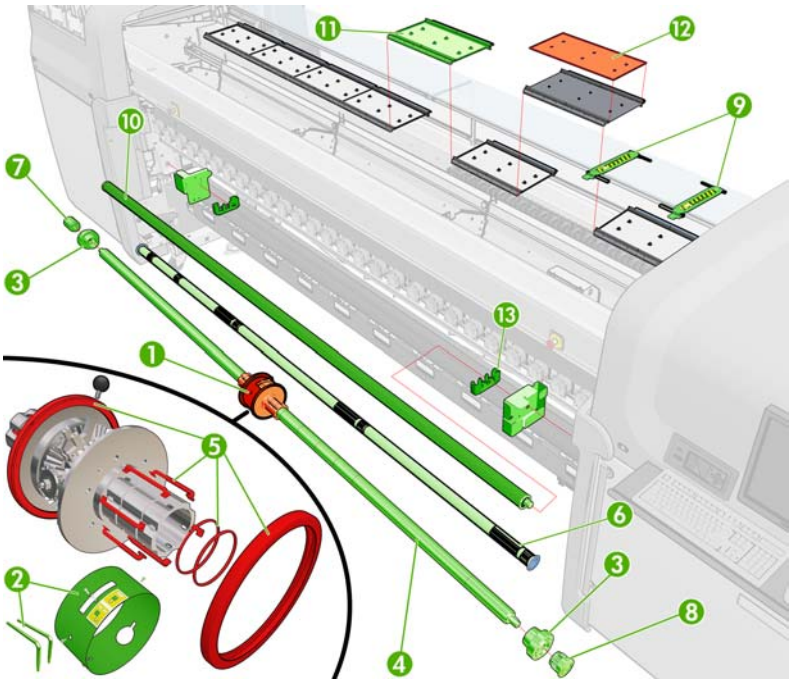


Dual Roll Assembly & Ink Collector & Diverter

Reference	HP Part Number	Part Description	Page
1	CR774-67005	Dual Roll Gear (Differential)(rolled from Q6703-67064)	
2	Q6703-67075	Dual Roll Tool and Screw Protection kit	
3	Q6703-67065	Dual Roll End Hub	
4	Q6703-67066	Dual Roll Spindle (LX800/LX850)(includes item 7 & 8)	
	Q6704-67001	Dual Roll Spindle (LX600/L65500)(includes item 7 & 8)	
5	Q6703-67086	Dual Roll Rubber Kits	
6	Q6703-67088	Loop Shaper Tube Kit (LX800/LX850)	
7	Q6703-67098	Dual Roll Cap Left	
8	Q6703-67097	Right Dual Roll Gear Cap	
9	CR774-67021	Media Edge Holders (1 set=2 off) (rolled from Q6703-67061)	
10	Q6703-67063	Wrinkles Diverter (LX8x0)	
11	CR774-67002	Ink Collector (includes 1 module, 1 foam)*(rolled from Q6703-67047) (LX800/LX850)The new ink collector is including more points of support (8 instead of 6)	
12	CR774-67003	Ink Collector Foam Sets (8 foams)*(rolled from Q6703-67084)(LX800/LX850) Note that the new version of foam is supporting both the new and previous version of ink collector support (6 and 8 points of fixation).	
13	Q6703-67102	Substrate Diverter Support (LX8x0)	

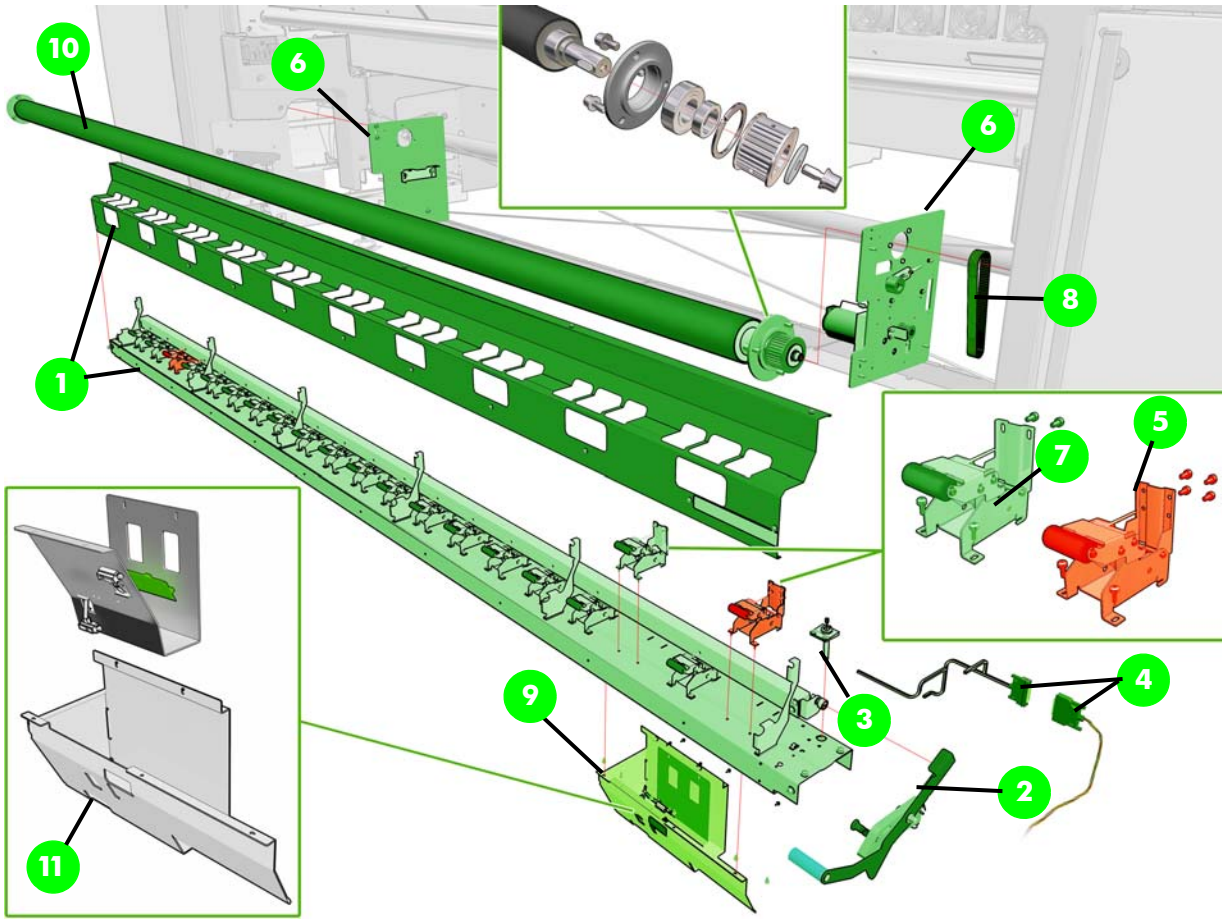
(*) In case a customer needs to order a complete set of foams, use the part number CR774-67003, which is NOT covered by the printer warranty, it is a supply as documented in the '*Maintenance and trouble-shooting guide*', in the chapter "Replace the ink collector foams".

Note: The Dual Roll is an accessory for the LX820/LX600/L65500



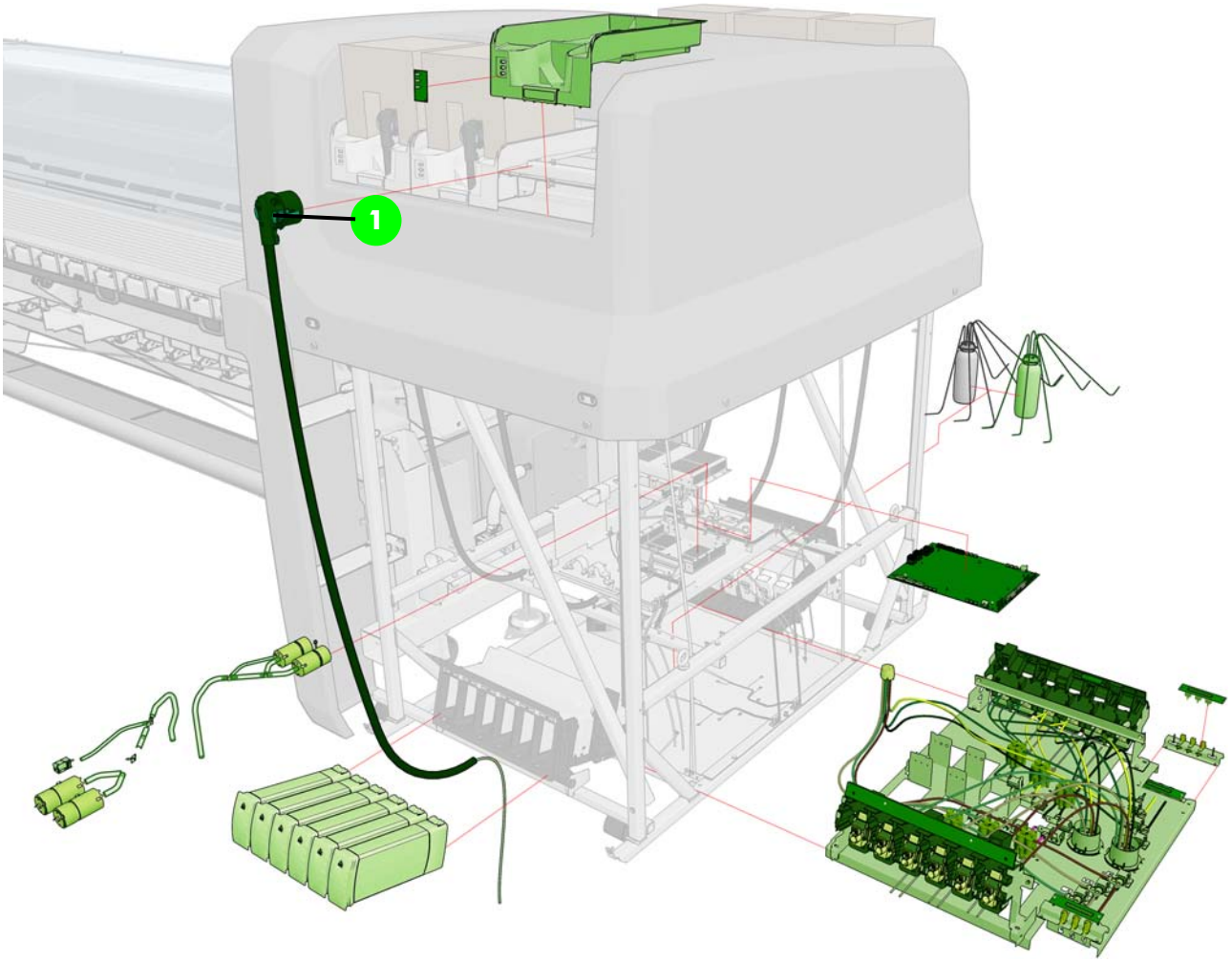
Roll to Floor Assembly (LX800/LX850)

Reference	HP Part Number	Part Description	Page
1	Q6703-67060	Roll to Floor Pinch Mech Assy (includes items 2,3,5,7)	
2	Q6703-67092	Roll to Floor Pinch Lever Kit	686
3	Q6703-67094	Roll to Floor Damper	681
4	Q6703-67059	Roll to Floor Signal Cable (from Main Interconnect)	
5	Q6703-67095	Roll to Floor Pinch Hinge (Outer positions: 4 screws)	685
6	Q6703-67087	Side Plate Left & Right (contains Roll to Floor motor)	683
7	Q6703-67076	Roll to Floor Pinch Hinge (Inner positions: 2 screws)	
8	Q6703-67058	Roll to Floor Timing Belt	676
9	Q6703-67049	Media Presence Sensor (includes TUR Sensors Cover)	681
10	Q6703-67045	Roll to Floor Roller	676
11	Q6703-67099	TUR Sensors Cover	681



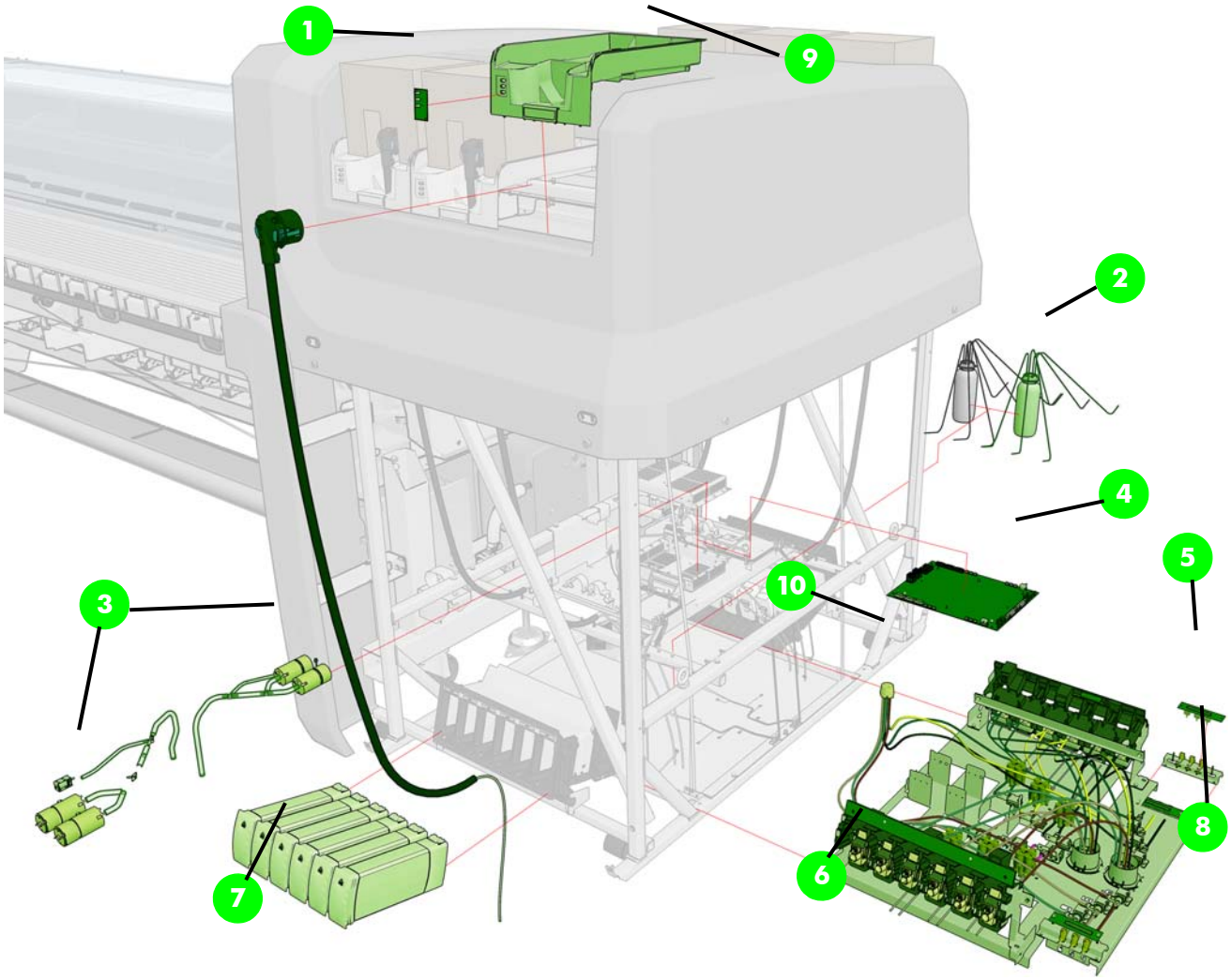
Ink System (1 of 3)

Ref	HP Part Number	Part Description	Page
1	Q6703-67078	Black Ink Cartridge Connector Set(Rolled from the Q6702-60548, previous part can also be used on L65500)	687
	Q6703-67079	Yellow Ink Cartridge Connector Set (Rolled from the Q6702-60549, previous part can also be used on L65500)	687
	Q6703-67080	Cyan Ink Cartridge Connector Set (Rolled from the Q6702-60550, previous part can also be used on L65500)	687
	Q6703-67081	Magenta Ink Cartridge Connector Set (Rolled from the Q6702-60551, previous part can also be used on L65500)	687
	Q6703-67082	Light Magenta Ink Cartridge Connector Set (Rolled from the Q6702-60552, previous part can also be used on L65500)	687
	Q6703-67083	Light Cyan Ink Cartridge Connector Set (Rolled from the Q6702-60553, previous part can also be used on L65500)	687



Ink System (2 of 3)

Ref	HP Part Number	Part Description	Page
1	Q6702-60426	Ink System LED Interface Board	689
2	Q6702-60430	ISM Air Circuit Module (bottle with cap and 6 mm tubes & fittings)	691
3	Q6702-60427	Ink System Pressurization Pump and Relief Valve (2 parts each,with tubes)(Rolled from Q6702-60547, previous part does not have a relief valve or a tube.	699
4	Q6702-60425	Ink System Main Board (not including top & bottom covers)	700
5	Q6703-67129	Ink Sensors Board (rolled from Q6702-60424)	698
6	Q6702-60429	ISM Ink Circuit Module part number Q6702-60686 is required to install this part, which is tubes and fittings) (does not include the Ink Pressure Sensor)	693
7	Q6702-60561	Intermediate tank broken bag repair kit (one intermediate ink tank, one air tube from air bottle to intermediate tank)	
8	Q6702-67022	3 Ink Pressure sensor mounts (includes tubes, fittings & metal support) (part number Q6702-60686 is required to install this part, which is tubes and fittings)	
9	Q6703-67113	Ink Supply Cartridge Support Tray	
10	Q6702-60687	ISM Ink quick connector repair set (male and female connectors, ink tubes and fittings to make the repair)	

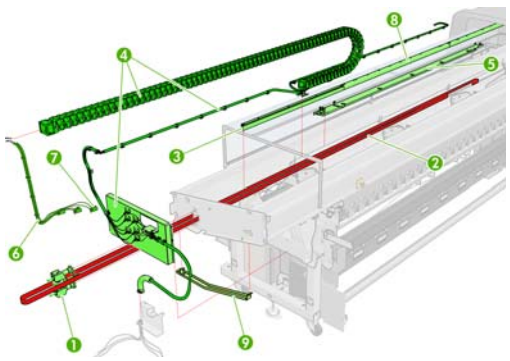


Ink System (3 of 3)

Number	HP Part Number	Part Description	Page
	Q6702-60432	Intermediate Tank Set (12 tanks). Note that in case one or few intermediate tanks have to be replaced, order more the reference Q6702-60561 which contains 1 intermediate tank	
	Q6702-60431	Syringe Ink System Purge Kit (contains 6 empty bags, 7 syringes with needles and tube, 4 orange 'setup printheads', the intermediate quick connector (to be able to fill-in only the ISM, without the TRS).	
	Q6702-60686	ISM Repair Kit (1 Electrovalve, 2 Check Valves (4 way valves), tubes and fittings for the rapair, tube cutter, 6 O rings for the ink pressure sensor, ink leak cable, connections)	
	Q6702-60689	TRS Repair Kit (two backflow valves, ink tubes, and all required fittings. Used to repair leaks in the TRS [carriage chain assembly])	
	Q6702-60690	Ink System Tubes Cleaning Tool (used to flush the ink system)(includes special pump, 1 intermediate ink tank, 1 syringe, 1 empty cartridge bag)	
	Q6702-60433	Ink System Cable Set	
	Q6702-60560	Intermediate ISS Data Cable (broken bag intermediate tank cables)(if part not available, order Q6702-60433)	
	Q6703-67127	Kit of 3 ink electro-valves with all the corresponding fittings, if not available, continue to order the ISM repair kit)	
	Q6703-67130	Ink collection from TRS kit, part of the CR775A ink upgrade kit for easier flushing of the ink tubes	

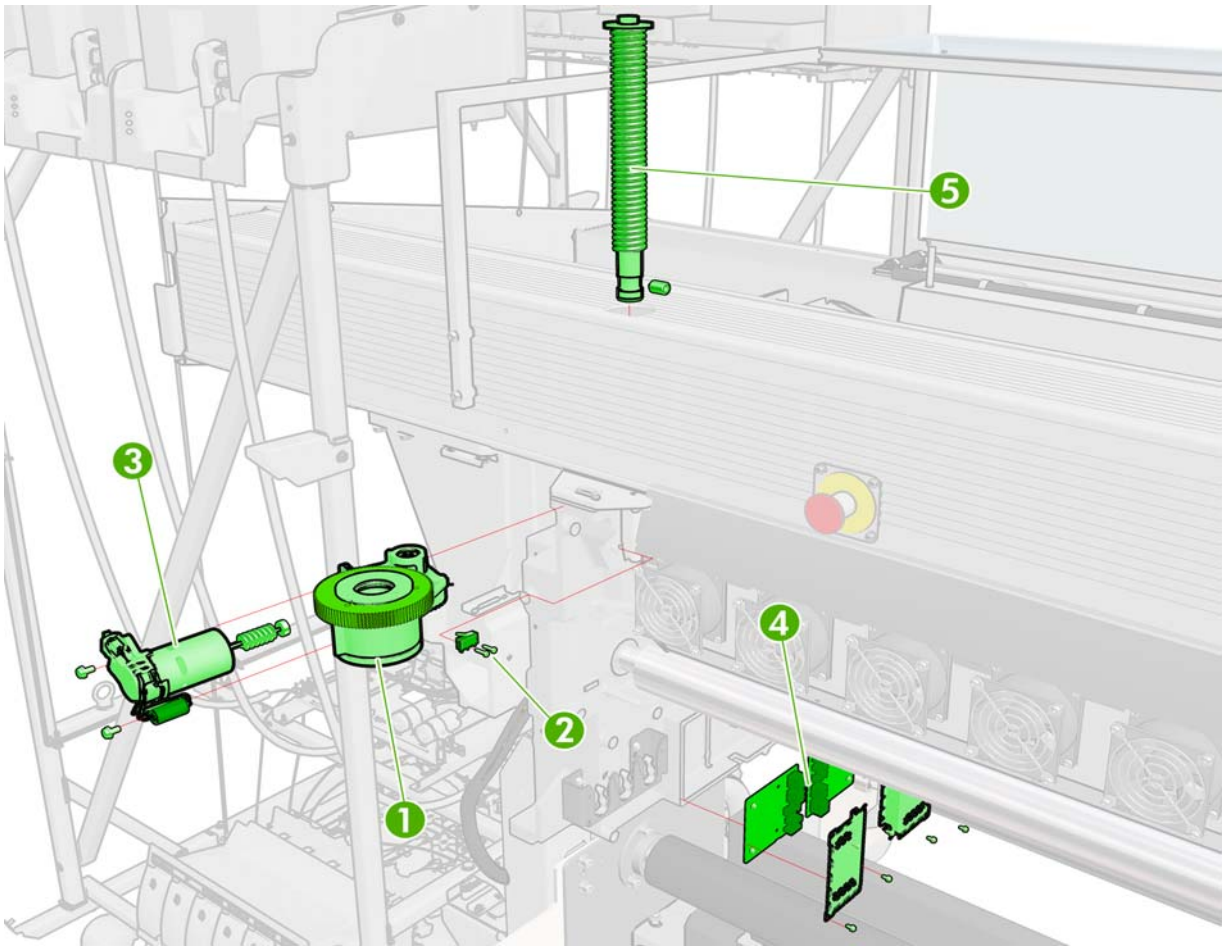
Scan Axis (1 of 3)

Ref	HP Part Number	Part Description	Page
1	Q6702-60439	Scan Axis Belt Tensioner	716
2	Q6702-60434	Scan Axis Impelling Belt (L65500/LX600)(if no more available, order Q6703-67010 and cut it at the right length)	714
	Q6703-67010	Scan Axis Impelling Belt (LX8x0)	714
3	Q6702-60435	Scan Axis Encoder Strip (includes encoder reader)(L65500/LX600)(if no more available, order 1 * Q6703-67011 (encoder strip) and 1 * Q6702-60505 (encoder reader)	722
	Q6703-67011	Scan Axis Encoder Strip (does NOT include encoder reader, need to order the encoder reader Q6702-60505)(LX800, can be used on L65500/LX600 by cutting the encoder strip)	
4	Q6702-60484	Carriage Chain Assembly (includes tubes, power and data cables)(L65500/LX600)	719
	Q6703-67022	Carriage Chain Assembly (includes tubes, power and data cables)(LX8x0)	719
5	Q6702-60440	Scan Axis Tube Shelf (L65500/LX600)	717
	Q6703-67013	Scan Axis Tube Shelf (LX8x0)	717
6	Q6702-60688	TRS Print Head Ink Connectors Repair Set (includes fittings, 8 cables, and FI towers)	
7	Q6703-67126	FI Towers Kit (rolled from Q6703-67111, increased reliability, 1 kit contains 6 FI tower) (does not include FI tower holders)	777
Not shown	Q6703-67108	Single Data Trailing Cable (Connected to Yellow/Magenta)(LX8x0 can be used L65500/LX600) ⇒See page 969.	751
	Q6703-67109	Double Data Trailing Cable (Connected to Light Cyan/Light Magenta & Cyan/Black)(LX8x0 can be used L65500/LX600) ⇒See page 970.	
	Q6702-67030	Single Data Trailing Cable (Connected to Yellow/Magenta)(L65500/LX600)⇒See page 969. (if no more available, order Q6703-67108)	
	Q6702-67029	Double Data Trailing Cable (Connected to Light Cyan/Light Magenta & Cyan/Black) L65500/LX600)⇒See page 970.	
8	Q6702-60436	Scan Axis Encoder system and support (includes encoder strip and 8 metal supports and screws)(L65500/LX600)	
	Q6703-67012	Scan Axis Encoder system and support (includes encoder strip and 8 metal supports and screws)(LX8x0)	
9	CR774-67009	Oil side Capture Tray	671
Not Shown	Q6702-67011	TRS dynamic Tubes replacement to be used when 'Preventative Maintenance #5' is displayed (L65500)	



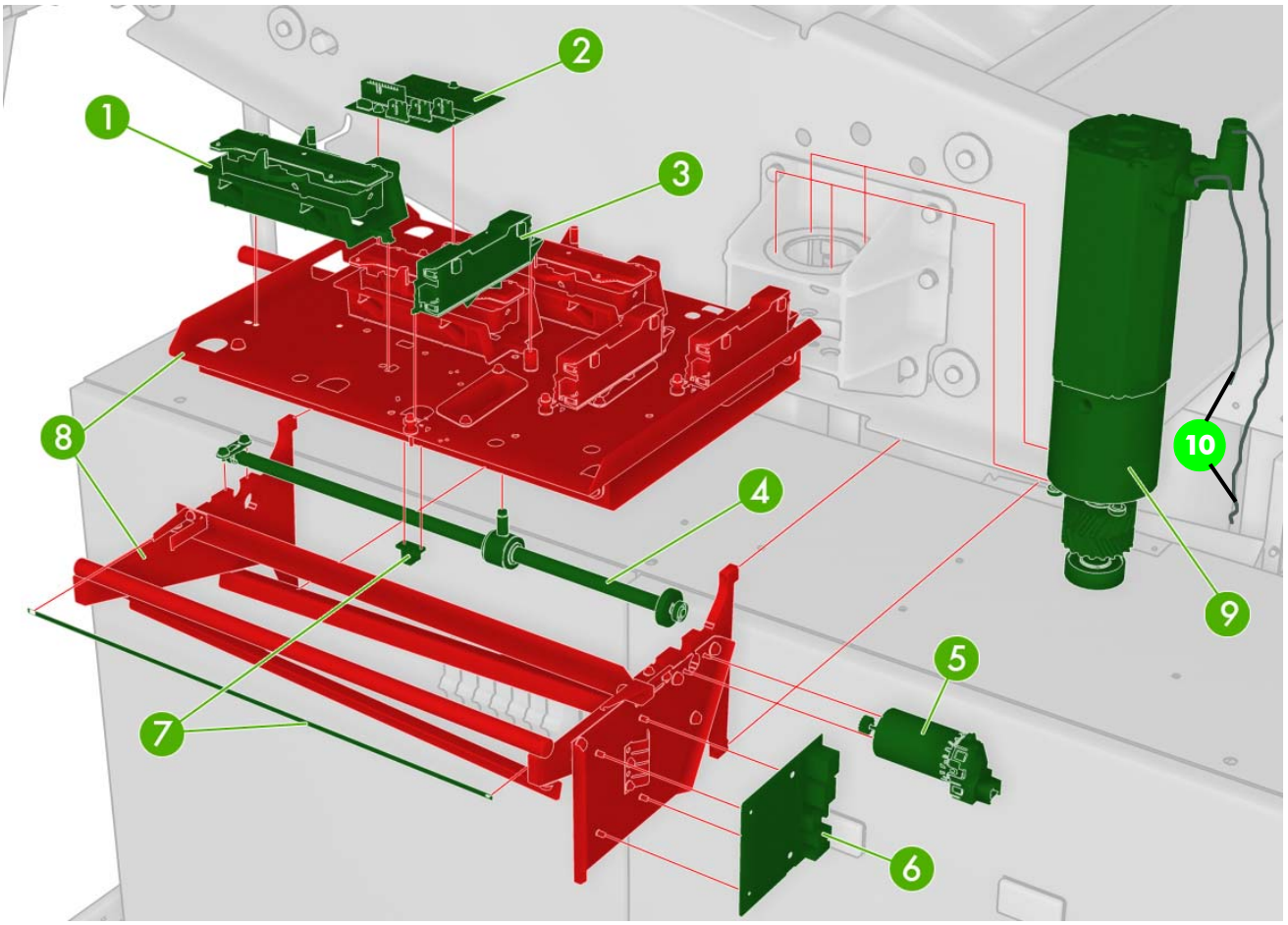
Scan Axis (2 of 3)

Ref	HP Part Number	Part Description	Page
1	Q6702-60488	PPS Motor Mount Assembly Type L (front left & rear right))	740
	Q6702-60491	PPS Motor Mount Assembly Type R (front right & rear left)	740
2	Q6702-60490	PPS Low Switch	743
3	Q6702-60487	PPS Motor Assembly	740
4	Q6702-60486	Remote Controller Board (PPS)	739
5	Q6702-60489	PPS Screw Assembly	741
Not shown	Q6702-60485	PPS Cables Set repair kit: Containing PPS remote controller board +switch for MI and MO (Q6702-50057 and Q6702-500578 respectively), data (Q6703-50031) and power (Q6703-50032) cables for PPS remote controller board	
	Q6702-60689	TRS Repair kit (2 back-flow/anti-return valves, ink tube and all fittings, this is used to repair any ink leak from a quick connector to IGUS chain	703
	CR774-67027	XY Guide Assy Serv (contains 2 columns and 2 bushings) (Bushing Y and Cushing XY)	846



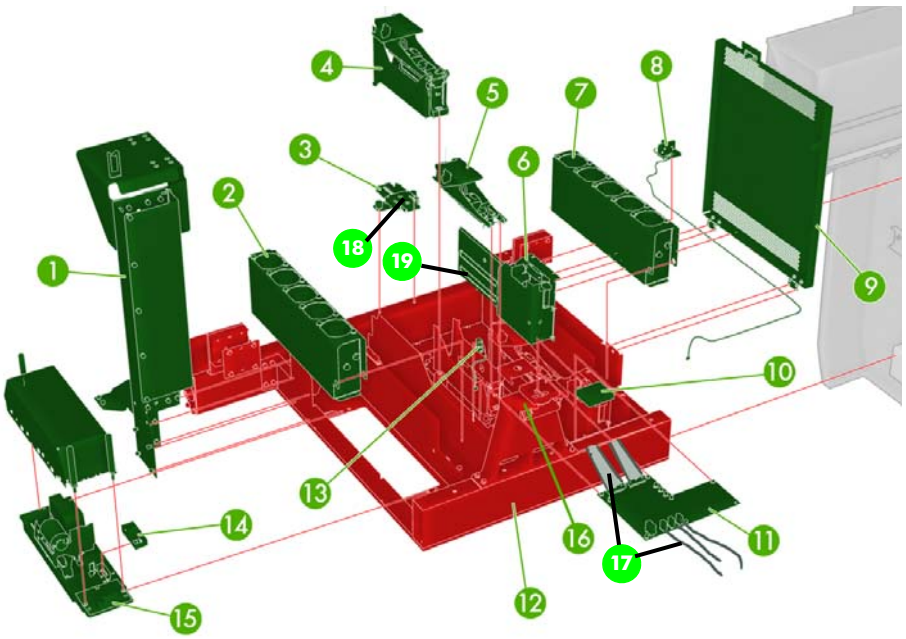
Scan Axis (3 of 3)

Reference	HP Part Number	Part Description	Page
1	Q6702-60418	Printhead Capping Module	734
2	Q6702-60416	Service Station Connection Board	725
3	Q6702-60415	Drop Detectors Set (3 off)	726
4	Q6702-60419	Service Station Screw Assembly	732
5	Q6702-60414	Service Station Motor	729
6	Q6702-60417	Remote Controller Board (Service Station)	728
7	Q6702-60413	Service Station Encoder Strip and Sensor	
8	Q6702-60412	Service Station Chassis	730
9	Q6703-67074	Scan Axis Motor (with 3 ohm resistance) (Rolled from Q6702-60437, this previous part can be used on the L65500)	711
10	Q6702-60438	Scan Axis Motor Cable Set repair kit (Data and Power cables and resistors) Data Cable ⇒See page 972, Power cable⇒See page 974. 30hm resistor cable ⇒See page 971,	



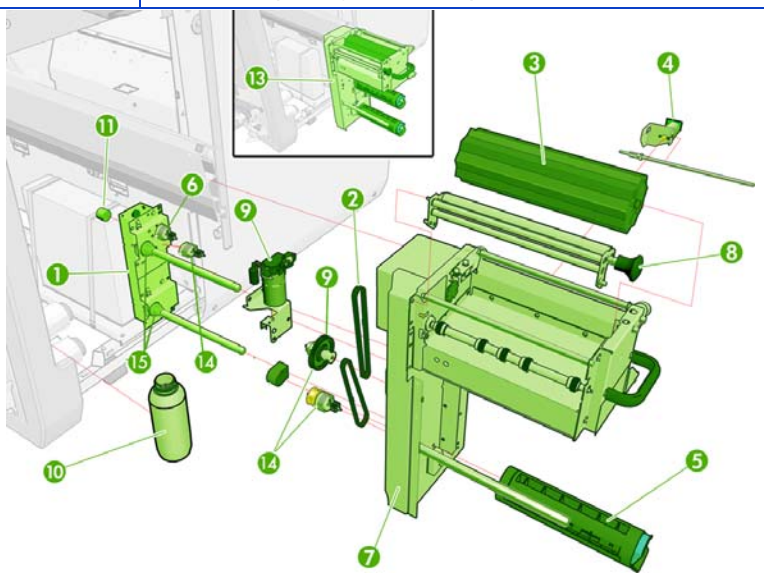
Carriage Assembly

Reference	HP Part Number	Part Description	Page
1	Q6702-60510	Carriage Tower Assembly	772
2/7	Q6702-60511	Aerosol Removal Box Assembly (includes fans)	765
3	Q6702-60504	Carriage Oiling Foam Retainer and Rear Support Set	769
4	Q6702-60501	Pen Pocket Kit	745
5	Q6702-60507	Primer Assembly (includes latch and labels)	763
6	Q6702-60506	Carriage Printhead Interconnect	749
8	Q6702-60505	Carriage Encoder Set reader	746
9	Q6702-60508	Carriage Lid	770
10	CR774-67031	Carriage Oiling Foam (2 sets of carriage oily foams) Scan axis Wicks and Felts (2 sets)	
11	Q6702-60512	Carriage Interconnect Board	763
12	Q6702-60498	Carriage Assembly	
14	Q6702-60500	Line Sensor Assembly	762
13	Q6702-60509	Carriage Lid Switch	771
15	Q6702-60499	Carriage Sensor Box	750
16	Q6702-60861	Carriage front bushing service kit (includes all sub assembly)	
17	Q6702-60502	Carriage Cable Set (2 data cables & 3 power cables)	
18	Q6702-60503	Carriage Oiling Foam Retainer Lid	768
19	Q6702-60858	PH Interconnect protection kit (includes all 3 PCAs, mylar & metal support)	781
Not shown	CR774-67032	Rear Carriage Bushings + intermediate Wicks & Felts Kit + 2 oily foams + bottle of oil	
Not shown	Q6703-67126	FI Tower kits (roll from Q6703-67111, increase reliability, 1 kit contains 6 FI tower).	
Not shown	Q6702-60688	TRS Print Head Ink Connectors Repair Set (includes fittings, 8 cables, and FI towers) (shown on page page 545)	



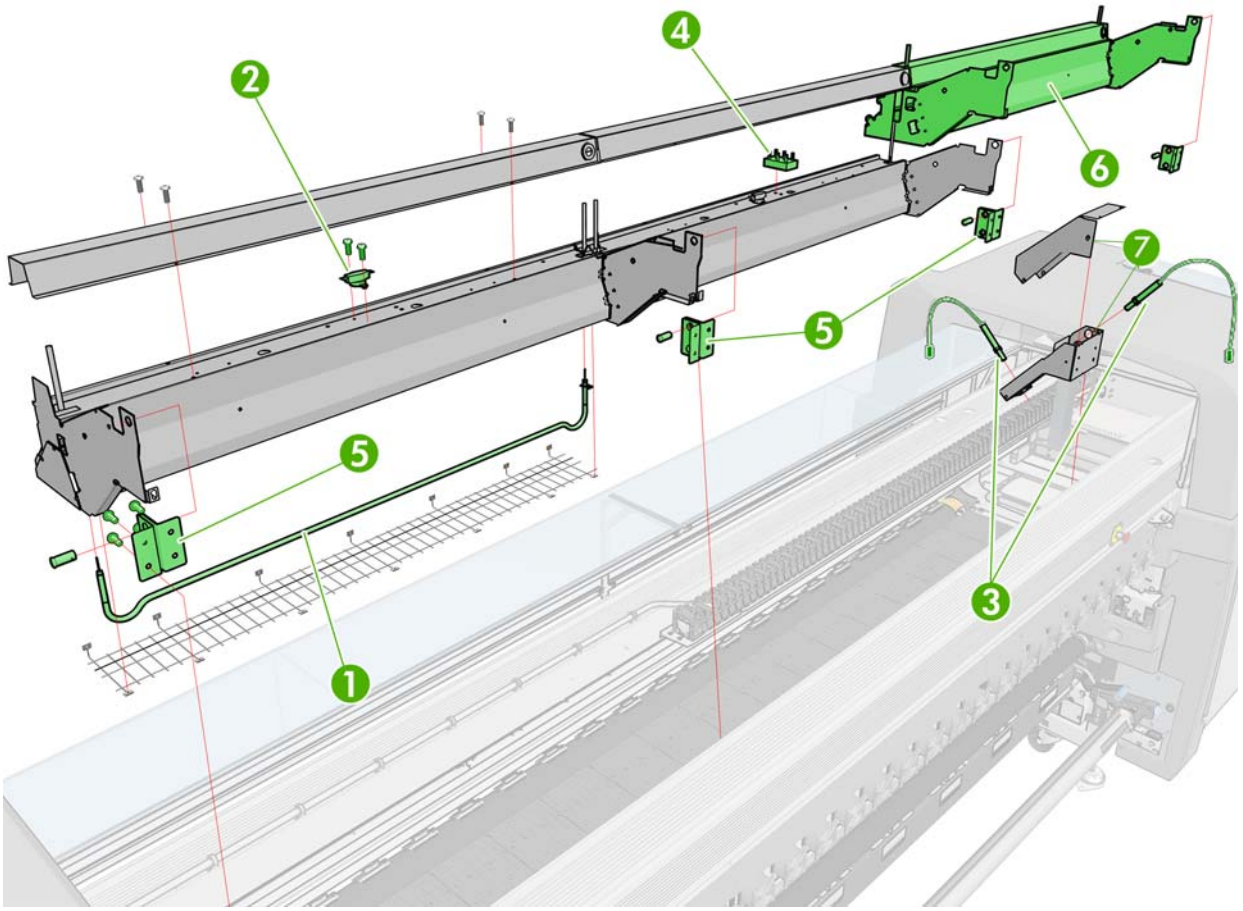
Printhead Cleaning Assembly

Ref	Part Number	Part Description	Page
1	Q6702-60442	Printhead Cleaner Roll Driver Assembly (includes the 2 metal axis supporting the PH cleaning material roll & the plastic part engaging the core of the PH cleaning roller material)	796
2	Q6702-60445	Printhead Cleaner Roll Belts Set (includes the belt only)	795
3	Q6702-67014	Printhead Cleaner Roll Rubber Roller (include 2 small plastic stars + metal center axis)(roll from Q6702-60443)	797
4	Q6702-67018	Printhead Cleaner Roll Up/Down Motor Assembly (roll from Q6702-60444, the new part include shaft)	798
5	Q6702-60448	Printhead Cleaner Roll Support Kit (core)	801
6	Q6702-67019	Printhead Cleaner Electrobrake (includes small gear & shaft)(Rolled from Q6702-60683)	
7	Q6702-60449	Printhead Cleaner Chassis (includes the complete assembly, except Media Advance motor, Cleaner Roll & Rubber Roll, cable kit, up/down motor, tension belts.	
8	Q6702-67024	Printhead Cleaner Roll Pinch Assembly (roll from Q6702-60447)	799
9	Q6702-67020	Printhead Cleaner Motor Assembly (includes the white main gear)(roll from Q6702-60487, the previous part is still used as the motor of the PPS/Scan Beam)	
10	Q6702-60685	PH Cleaner Waste Bottle	
11	Q6703-67077	PH Cleaner Rollers encoder (includes a connector to be compatible with older versions)(roll from Q6702-60684, this previous number is not compatible with new PH Cleaner Assembly)	802
13	Q6702-60441	Printhead Cleaning Roller Module (to be used only if previous repair failed9 (includes shims)	518
14	Q6703-67090	Gears kit (includes main gear connected to the 2 belt with the upper and lower clutch, axis of the electromechanical brake and 4 small gears (2 types of inner hole: 3 with an 'oval' shape and 1 with the round shape)(Rolled from Q6702-67015)	811
15	Q6703-67135	Roll Hub Assy Serv contains 2 plastic HUB of PH cleaning roller, linking PH cleaning roller cores to the PH cleaning roller, reinforced part with 3 ribs.	
Not shown	Q6702-67013	Grease kit for the Printhead cleaning rollers	
	Q6702-67012	Shims: Calibration kit (to be used for Calibration 4.7.3)(Printhead cleaner Adjustment Shims) (includes 3 shims)	516
	CR774-67016	Officeability Printhead Cleaning Access door (with 2 hinges)	574
	CR774-67024	Officeability Hinge Assembly	



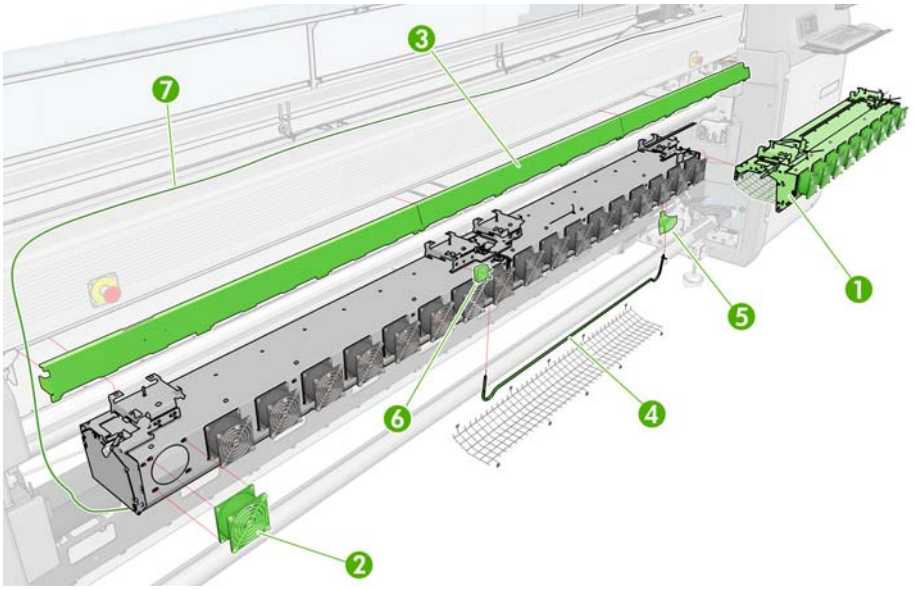
Heating Module

Reference	HP Part Number	Part Description	Page
1	Q6704-67009	Heating and Curing Resistor Set (3 off) (L65500/LX600)	822 834
	Q6703-67017	Heating and Curing Resistor Set (3 off) (LX8x0)	
2	Q6702-67005	Heating Safety Thermostat (L65500/LX600)	840
	Q6703-67042	Heating and Curing Safety Thermostat (LX8x0)	
3	Q6702-60459	Temperature Sensor (1 off)	830 840
4	Q6702-60454	Star - Triangle Configuration Box Set	839
5	Q6702-60458	Heating Supports Set	838
6	Q6702-60457	Heating Module Assembly (2 additional resistors) (L65500/ LX600)	831
	Q6703-67018	Heating Module Assembly (2 additional resistors) (LX8x0)	831
7	CR774-67025	Temperature Sensor Cage SERV	
Not shown	Q6703-67115	Drying cable set (LX8x0) (includes all power cable from start/ triangle till each connection of the 3 resistances, total of 6 cables)	
	Q6704-67004	Drying cable set (L65500/LX600)(include all power cable from start/triangle till each connection of the 3 resistances, total of 6 cables)	
	Q6703-67131	Kit of IR resistor fasteners (washers, nuts insulator to link heaters to the cables, 6 connection kits provided	827



Curing Module

Reference	HP Part Number	Part Description	Page
1	Q6702-60450	Curing Module Assembly (2 additional resistors)(LX600/L65500)	820
	CR774-67007	Curing Module Assembly (2 additional resistors)(LX8x0)(rolled from Q6703-67014)	820
2	Q6702-60452	Curing System Fan (1 off)	828
3	Q6702-67016	Curing Cable Cover Set(metal covers located at the top of the Curing fans, left, middle and right)(LX600/L65500)	
	Q6703-67114	Curing Cable Cover Set (metal covers located at the top of the Curing fans, left, middle and right)(LX8x0)(with hidden on/off button)	
4	Q6704-67009	Heating and Curing Resistor Set (3 off) (L65500/LX600)(rolled from Q6702-60456)	822 834
	Q6703-67017	Heating and Curing Resistor Set (3 off) (LX8x0)	
5	Q6702-60455	Curing Safety Thermostat (LX600/L65500)	829
	Q6703-67042	Heating and Curing Safety Thermostat (LX8x0)	
6	Q6702-60454	Star - Triangle Configuration Box Set	828
7	Q6702-60463	Front Top Power Cable (LX600/L65500)	
	Q6703-67056	Front Top Power Cable (LX8x0)	
Not shown	Q6702-60453	Curing Module Cable Repair Set (LX600/L65500)(includes all power cable from start/triangle to each connection of the 3 resistances, total of 6 cables)	
	Q6703-67016	Curing Module Cable Repair Set (LX8x0)(include all power cable from start/triangle till each connection of the 3 resistances, total of 6 cables)	
	Q6702-60451	Fan Array Cable (not shown)(LX600/L65500)(for cable drawing, refer the one of the LX8x0 see page 976. (on L65500_LX600: shorter and less connections to curing FANs)	
	Q6703-67015	Fan Array Cable (not shown)(LX8x0)(for cable drawing, refer the one of the LX8x0 ⇒page 976> and ⇒page 975).	
	Q6703-67131	Kit of IR resistor fasteners (washers, nuts insulator to link heaters to the cables, 6 connection kits provided	827



Internal Print Server PC

For more information, see Internal Print Server PC on page 873.

When the printer is out of warranty, the following parts of the PC can be ordered from the following web site: www.hp.com, support and drivers, np5700 and click on search and then search for 'how to order parts'

In some territories these parts can be also ordered through partsurfer.hp.com..

HP Part Number	Part Description
Q6702-67026	Internal Print Server PC (rolled from FN886PA #AB4) The IPS PC which can have VISTA + IPS (L65500 configuration) or Win7 + IPS + Antivirus + PrintCare (LX printcares configuration). In case the support part does not correspond with the previous IPS PC configuration, reinstall the IPS PC following the information available at the end of the chapter 6 of the service manual and use the DVDs provided with the initial printer.
HP part Number: Recovery DVD (no P/N available)	In case there is a need to get the origicanl DVDs: contact the specific support of the HP PC, contact information available within the documentation of the IPS PC, or from the www.hp.com -> Contact Customer Support -> Contact HP and once you are in contact with a call agent, request a copy of the recovery cd for the model of the IPS PS (HP rp5700) and provide the S/N of the IPS PC (marked at the back of the PC). In some regions there may be no availability, in this case order the complete Internal Print Server PC which comes with the recovery DVD.
Q6702-67027	Monitor (rolled from KR145AA#AB$
Q6702-60544	HP Switch 1400-8G (Rolled from J9077A#ABA) Includes also the power cord ecabinet switch and the 2 LAN cable PC switches; initially this part had only the cables but now all support parts also include the switch inside the box.
Q6703-67100	Web Cam
Q6703-67101	Web Cam USB Extension Cable
440499-001	IPS PC HDD (160GB)
445759-001	Front USB device with cable
445760-001	Power switch/LED assy with cable
445777-001	Expansion card cable kit
445763-001	SATA drive cable kit
419496-001	16X SATA DVD-ROM drive
435382-B31	USB, Basic Vista, international version,
434820-251	USB, Basic Vista, Russian version,
445765-001	Hood assembly with front bezel
445771-001	Power supply, 80Plus
445757-001	Standard system board
445764-001	Standard system board for Russia
450470-001	Intel Core 2 Duo Processors 2.13GHz
398038-001	Memory 1 GB, PC2-5300, CL5
445758-001	Riser card with mounting bracket and screws
445761-001	Chassis fan
445774-001	Heatsink with alcohol pad and factory-applied thermal grease
417966-001	Mouse, PS2, optical
153099-001	Battery, real-time clock
445766-001	Front bezel without mounting screws
445762-001	Internal speaker
445767-001	Fan duct
445770-001	Tower stand

Cables

For cables linked within a specific sub assembly, refer to the corresponding sub assembly

HP Part Number	Part Description
Q6702-60543	Front Data Bundle Cables (L65500/LX600/LX820) • Includes 3 'blue LANs cables' going from main interconnect to : ISM (2 cables) and left PPS (scan beam movement) controller board (not for use with LX820) • Q6702-50018: Vacuum control to Pump cable ⇒See page 924 • Q6702-50060: Main Interconnect to Vacuum Ctrl PCA data cable ⇒See page 936 • Q6702-50066: Top Door Switch cable ⇒See page 937 • Q6703-50021: Main Interconnect - Right PPS data cable ⇒See page 939 • Q6703-50023: Main Interconnect - Front Spindle motor encoder cable ⇒See page 941 • Q6703-50026: Main Interconnect - Capping station Remote controller PCA data ⇒See page 943 • Q6703-50028: Main Interconnect -Left PPS Data LAN cable type (not for use with LX820).⇒See page 944 • Q603-60173 - Main Interconnect - front cable ⇒See page 965
Q6703-67037	Front Data Bundle Cable (LX800/LX850/LX820) • Q6702-50018: Vacuum control to Pump cable ⇒See page 924. • Q6702-50060: Main Interconnect to Vacuum Ctrl PCA data cab⇒See page 936. • Q6702-50066: Top Door Switch cable (also included in Q6702-60543 support part) ⇒See page 937. • Q6703-50081: Main Interconnect -left PPS data cable and Main interconnect - ISM board data cable, total of 3 cables 'blue LAN type' cable ⇒See page 956. • Q6703-50096: Main Interconnect - Front Spindle motor & Roll to Free Floor (not for use with LX820) (& relay box).⇒See page 960. • Q6703-50021: Main Interconnect - right front/rear PPS data and power cable (motor encoder, homing switch and PPS motor power). .⇒See page 939. • Q6703-50026: Main Interconnect - Capping station Remote controller PCA data ⇒See page 943. • Q6703-60173: Main Interconnect - Front Panel Cable ⇒See page 965.
Q6702-60556	Electrical Cabinet to Main interconnect Cable • Q6703-50047 Main Interconnect to ecabinet data cable ⇒See page 949. • Q6703-50049 Main Interconnect - ecabinet 42V secondary power cable ⇒See page 951.
Q6702-60558	Emergency Stop Cable • Q6702-50033E-stop to e-cabinet cable (2 off)⇒See page 930. • Q6702-50034E-stop to E-stop cable (3 off)⇒See page 931.
Q6702-60560 (this part will roll to Q6702-60433)	Intermediate ISS Data Cable • Q6702-50027 ISM board - intermediate tank support (2 off) ⇒See page 929.
Q6702-60562	Main electronics Box Power Cable: • Q6703-50030 cable going from ecabinet mono-phase to e-box main power supply ⇒See page 945.

Q6702-60563	Main Electronics Box Cable Set • Q1271-60249: Cable PrintMech - Lower PCI board (A)* • Q1271-60259: Cable HDD IDE (not use anymore from LX series, Cf chapter 1, electronics -> HDD for more information)* • Q1271-60366: Cable PrintMech - Lower PCI board (B)* • Q1271-60653: Cable PCI board- Main interconnect * • Q6703-60180: Formatter- Main interconnect Front Panel cable ⇒See page 966. • Q6703-60181: Upper PCI board -Main interconnect encoders ⇒See page 967. • Q6703-60183: Power distribution cable (from main power supply to printmech and main interconnect boards)⇒See page 968. * no drawing of the cable available in chapter 11
Q6702-60564	Vacuum pump data cables: • Q6702-50018 Vacuum/OMAS controller to Pump cable ⇒See page 924. • Q6702-50060: Main Interconnect to Vacuum Ctrl PCA data cable ⇒See page 936.
Q6702-60565	Back Data Bundle • Q6703-50021: Main Interconnect - PPS data cable ⇒See page 939. • Q6703-50022: Main Interconnect - MI cable. Rear spindle motor encoder and switch of pinch wheels/media handle ⇒See page 940.
Q6703-67073	Back Power Bundle (LX600/LX8x0/L65500)(to be setup by Fall 2011, roll from Q6702-60566) • Q6702-50019: Vacuum power cable (pump differential _ vacuum pump power)⇒See page 925. • Q6702-50048: Main Interconnect- PH cleaning roller Assy power, rear right PPS motor power and service station remote controller board power cable ⇒See page 935. • Q6703-50082: Main Interconnect - left rear PPS power, left front PPS power, ISM board power and to internal ecabinet power connections ⇒See page 957. • Q6703-50044: print mech - media drive motor power cable ⇒See page 946. • Q6703-50045: Cable PrintMech -Rear Spindle system motor power cable ⇒See page 947. • Q6703-50098: relay box - roll to free floor power motor cable (used only on LX800 and LX850) ⇒See page 963.

Q6702-60568	Ecabinet internal tri-phase cable set: Q6702-50031 and Q6702-50032 triphase cables within the ecabinet, from Main switch <-> line filter and from line filter <-> RCCB1 (L65500/LX600)(no drawing of cables available)
Q6702-60569	PC and Monitor Power Cords (no drawing of cable available)
Q6702-60460	Front Power Bundle (LX600/L65500)- front right PPS motor and vacuum controller power cable • Q6702-50047: Main Interconnect - front right PPS motor and vacuum controller power cable ⇒See page 934. • Q6703-50046:Cable Print Mech-Front Spindle System motors power cable (PWM) ⇒See page 948.
Q6703-67019	Front Power Bundle (LX800/LX850) • Q6702-50047: Main Interconnect - front right PPS motor and vacuum controller power cable ⇒See page 934. • Q6703-50097 relay box <-> front spindle motors power cable (PWR) ⇒See page 962.
Q6702-60463	Front Top Bundle (LX600/L65500) • Q6702-50014: IR Temperature Sensor Cable (going from 2 temperature sensors to the back of the ecabinet) ⇒See page 923. • Q6702-50033: E-stop to e-cabinet cable ⇒See page 930. • Q6702-50036: Grounding cable long ⇒See page 932. • Q6702-50045: curing star/delta box to ecabinet static relay(LX600/L65500) ⇒See page 933. • Q6703-50050: Curing FAN cable from back of ecabinet to curing module ⇒See page 952. • Q6703-50051: heat star/delta box to ecabinet static relay (LX600/L65500) ⇒See page 953.

Q6703-67056	Front top bundle (LX8x0) • Q6702-50014: IR Temperature Sensor Cable (going from 2 temperature sensors till the back of the ecabinet) ⇒See page 923. • Q6702-50033: E-stop to e-cabinet cable ⇒See page 930. • Q6703-50099 Grounding cable long (LX8x0)⇒See page 964. • Q6703-50084: curing star/delta box to ecabinet static relay (LX8x0) • Q6703-50050: Curing FAN cable from back of ecabinet to curing module ⇒See page 952. • Q6703-50083: heater star/delta box to ecabinet static relay ⇒See page 958.
Q6702-60433	Ink system cable set • Q6702-50027 ISM board - intermediate tank support (2 off)⇒See page 929. • Q6703-50058: ISM Front bundle set ⇒See page 954. • Q6703-50059: ISM Rear bundle set ⇒See page 955.
Q6702-60567	Printhead Cleaner Cables • Q6703-50020: Printhead cleaner - Main Interconnect Data Cable ⇒See page 938. • Q6702-50022: Printhead cleaner Internal Data Encoder Cable ⇒See page 926. • Q6702-50023: Printhead cleaner Internal Power Cable ⇒See page 927. • Q6702-50024: Advance Motor - Differential PCA encoder Cable ⇒See page 928. • Q6703-60195: Linear to Differential encoder PCA (2 Off). Note that this kit does not contain the power cable from Main interconnect - Printhead cleaner assy. This power cable is included within the 'back power bundle'. See note below. [a]

a. *note that a new version of the encoder reader will come with the new version of cable. In case this new cable is used within a PH cleaning roller with a previous version of cable and encoder reader -> the encoder reader also has to be replaced. All information available about the different versions of encoder reader available within the the 'PH cleaning roller encoder reader replacement chapter.*

Additional Parts

HP Part Number	Part Description
Q6702-60546	Grease Kit (for Scan beam columns and Carriage rails, not for the Printhead Cleaning Rollers)
Q6703-67096	LX800 Labels Kit 126”
CR774-67004	LX850 Labels Kit
CR773-67003	LX820 addon and ruler labels. (Label on sliding door and rulers on spindle)(Note that the ruler labels can be used on any printer)
Q6702-60656	Cleaning Kit (L65500) Can also be used on the LX600/LX800 but in addition to the grease kit Q6702-67013.
Q6702-60860	Labels kit, Service (includes all labels, product label without the SN printed, this is to be added when it is placed on the printer).
Q6702-67013	Grease kit for Printhead Cleaning Rollers, & O ring of the Primer, under the latch of the Printheads.
Q6702-60839	Repackaging Kit (for transportation) (LX600/L65500)(through escalation only)
Q6703-67051	Repackaging Kit (for transportation) (LX800) (through escalation only)
CR774-67006	Add on spindle support
CR774-67011	126 inch Media Loading Tool (LX8x0), this support part also be available as accessory U0N75A
Q6703-67130	Ink Collection From TRS Kit. Includes the 3 ink purgers (small connectors installed in the carriage in place of the Printhead connectors) and 6 tubes connected to the ink purger + cap and empty bottle. To be used with the 'Ink system tubes cleaning tool' when all the tubes have to be flushed. This assembly is also part of the Ink upgrade kit accessory (CR775A).
U0N74A	Up Time Kit. Rolled from HK936AP and from Q6703-67093 (same content, reason of the change: ordering process improvement). Content: Includes pen capping module, ink pressure sensor board, pinchwheel, Carriage sensor box, Carriage Interconnect board, Carriage Printhead Interconnect board, Main Interconnect board, ISM repair kit, power fuse 20A, 25A, 32A, 40A, printhead cleaning roller gears kit, pinchwheel assembly, media edge holder (2 off), hard disk drive, temperature sensor, FI tower, single and double data trailing cables, heating/ curing resistance sets for LX600/L65500/ LX8x0
U0N73A	Delta kit. Roll from HK938AP and form Q6703-67128, (same content, reason of the change: ordering process improvement). Content: Front Panel Set, Heating/ Curing Temp Controller, Heating/Curing Power module, Encoder strip and sensor, Ink system main board, Purge kit, Temperature Sensor, Pinch Sensor, Remote controller Board, Control box for OMAS and VACUUM, Carriage encoder Assy, Primer assembly, Printmech board, Upper PCI board, Lower PCI board, Main Power supply, Intermediate Tank Broken Bag Repair kit, Formater Board (with Micro, Memory), Pressure Roller Side Wipe of PH cleaning assembly, Ink Pressure Sensor Mount, PH Cleaner Stiff Pinch SERV of printhead cleaning assy, Temp Controller 126, SAX Encoder Strip 126, PH cleaner encoder of the Printhead cleaning assembly

6 Removal & Installation

Introduction

This chapter is a step-by-step guide to the removal and installation of the key components of the printer. You may find it useful to tick off the steps as they are performed. Use the illustrations for each procedure to identify the parts referred to in the text.

NOTE: Before using this chapter to remove and install a new component, always make sure that you have performed the relevant service test from Chapter 4. If the test passes you will not need to replace the component.

Safety Precautions

Review the instructions identified by WARNING and CAUTION symbols before you service the printer. Follow these warnings and cautions for your protection and to avoid damaging the printer.

WARNING!: Serious shock hazard leading to death or injury may result if you do not take the following precautions:

- Ensure that the AC power outlet (mains) has a protective earth (ground) terminal.
- Switch the plotter off, and disconnect it from the power source prior to performing any maintenance.
- Prevent water or other liquids from running onto electrical components or circuits, or through openings in the module.

Electrostatic Discharge (ESD) Precautions

To prevent damage to the Printer circuits from high-voltage electrostatic discharge (ESD):

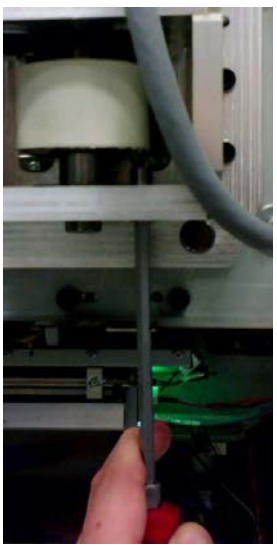
1. Do not wear clothing that is subject to static build-up.
2. Do not handle integrated circuits (ICs) in carpeted areas.
3. Do not remove an IC or a printed circuit assembly (PCA) from its conductive foam pad or conductive packaging until you are ready to install it.
4. Ground (earth) your body while disassembling and working on the Printer.
5. After removing a cover from the Printer, attach an earthing (ground) lead between the PCA common and earth ground. Touch all tools to earth ground to remove static charges before using them on the Printer.
6. After removing any PCA from the Printer, place it on a conductive foam pad or into its conductive packaging to prevent ESD damage to any ICs on the PCA.

Required Tools

The following standard tools are required to disassemble and repair the Printer.

- A long Torx Screwdriver with the following magnetized attachments: T8, T9, T10, T15, T20, and T25
- Multimeter (voltage, current, ohmmeter).
- Infrared (IR) temperature gun for any issues related to temperature of the Curing and Heating assemblies.
- A Torx Screwdriver with T30 attachment. The total length of this screwdriver should not exceed 24cm/9.4". This is required to be able to rotate the resistors of the Drying/Heating area.

- Long torx extension of at least 13 cm (5.1")in order to remove the scan axis motor.



- T40 (required for removing the carriage)
  Important: It is an absolute must to have long torx extension pins which have a diameter of approximately 2-3mm and are more than 8cm (3.1") in length (exception for the T30, where it has to be at least 13cms (5.1"). This is because the access of a few screws will be difficult with a normal screw driver.

  Screwdrivers that have changeable heads are good for installing and removing the majority of screws. But in some instances only one-piece screwdrivers will do. This is because the diameter of the part that secures the changeable heads is too large to be able to fit through some access holes in the printer. (example: access to remove the encoder reader from the drive motor, remove the support of the magnet which keeps the PH cleaner roller closed, or removal of the motor? of the PH cleaning roller assy.

Here is a picture of a screw driver which has changeable heads, which does NOT work for all the screws.

- A long thin-bladed T-10 Torx Screwdriver to remove the Primer. The blade must be longer than 12 cm with a maximum diameter of 10 mm.
- A long thin-bladed T-20 Torx Screwdriver to remove the OMAS Sensor. The blade must be longer than 11 cm with a maximum diameter of 4 mm.
- A T8 Torx Screwdriver to remove the left cover. The blade must be longer then 5 cm with a maximum diameter of 9 mm.

Wrench Keys

The following wrench keys numbers are required to disassemble and repair the Printer.

- 5.5 small wrench key to remove the nut that secures the Encoder Strip of the Scan Axis in place. It is much Better to have a socket with the head of 5.5.

- 7mm to remove heaters/curing resistance connections
- 10mm, 13mm and 14mm to remove securing bolts
- 11mm with a pipe shape to replace the air valve of the spindle
- 15mm to lift up/down the 3 feet.
- 17mm (to release/control tension of the scan axis belt, PPS screw),
- 17mm with straight extension of at least 15cms in order to remove the PPS screw
- 24mm (to screw/unscrew the printer from the pallet, for transportation/installation)
- 30mm to lift up/down the 3 feet, and the nuts maintaining the printer to the bottom part of the crate. For the installation/repackaging, two 30 mm wrench keys are required, in order to be able to secure /remove the 2 nuts per screw which link the printer to the bottom part of the crate.

Allen keys

- 7mm (side driver plates of MI/MO),
- 6mm
- 5mm (scan axis motor, media drive motor, MIMO motors, wiper assembly)
- 4mm (vacuum FAN motor)
- 3mm (remove/fix the scan axis belt)
- 2mm (for media drive advance motor, to loosen the coupling).

Circlip Removal

- 2 types are required: Circlip installation & removal tool. One which closes the 2 points/holes of the Circlip (usually, as the previous one, the circlip tool is increasing the distance between the 2 points/holes), this is used for removing the tension roller.

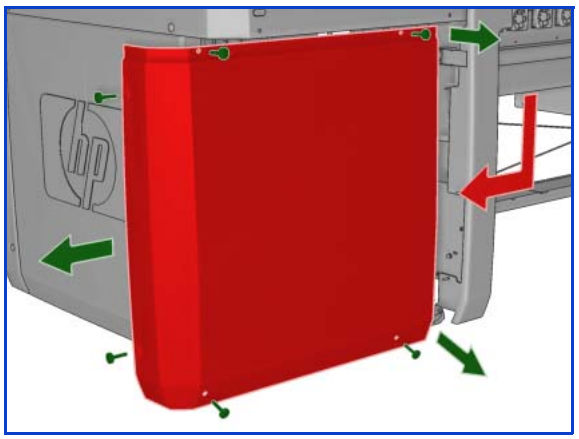
Other tools required

- Plastic headed hammer. This is used in various procedures, for example in the the Trailing Cable replacement procedure to part the links in the IGUS chain without causing any damage.

- Cutting pliers: To cut plastic bands and insulation lock ties
- Cross-head (Phillips) screwdriver: To loosen screws securing the main body of the Printer and to be able to remove the flat screen of the IPS.
- Flat end (slotted) screw driver. Ensure the head of the screw driver is min width 4mm, max width: 5mm as it will not be inserted correctly when removing/installing the IGUS chain and can cause damage to the carriage links when performing the turning action.
- Soldering machine to replace the 3 Ohm dissipation resistor of the scan axis motor ('gold' resistance situated at the top of the e-cabinet).
- Cutter, cable and cutting tool in order to be able to put repair most electrical cables of the e-cabinet.
- Tube cutter, we recommend using the same tool as the one used on the Scitex XL printer (P/N: 395A20000 Description: tube cutter)
- Wear protective shirt + gloves when manipulating the ink tubes so that there is no risk to the installers clothing from ink.
- Specific protective gloves to manipulate covers for service engineer (similar gloves to the ones used by a gardener).

Left Covers

Left Side Front Panel



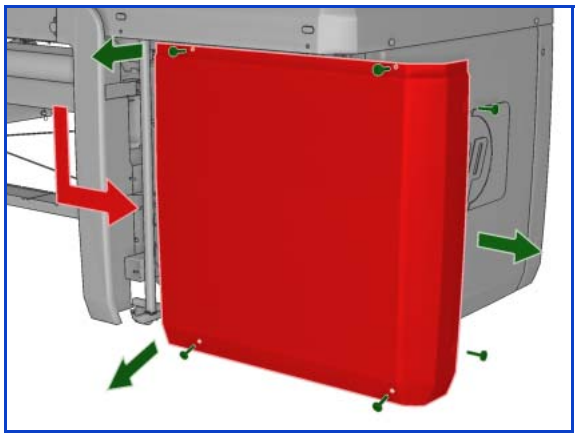
Removal

1. Remove the six T30 screws that secure the Left Side Front Panel, starting at the bottom and working to the top.

NOTE: Save the top left screw until last.

2. Remove the panel down and away to free it from the arc without letting it fall.

Left Side Rear Panel



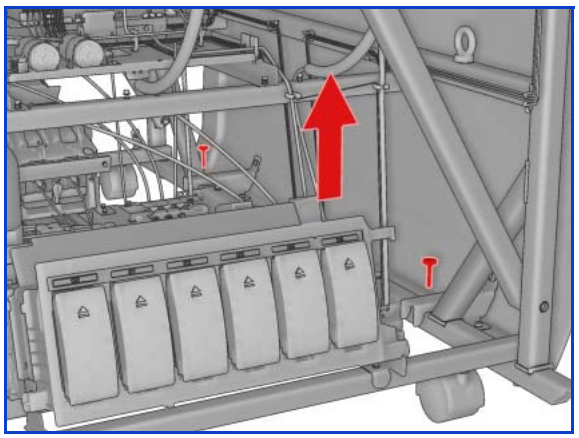
Removal

1. Remove the six T30 screws that secure the Left Side Rear Panel, starting at the bottom and working to the top.

NOTE: Save the top right screw for last.

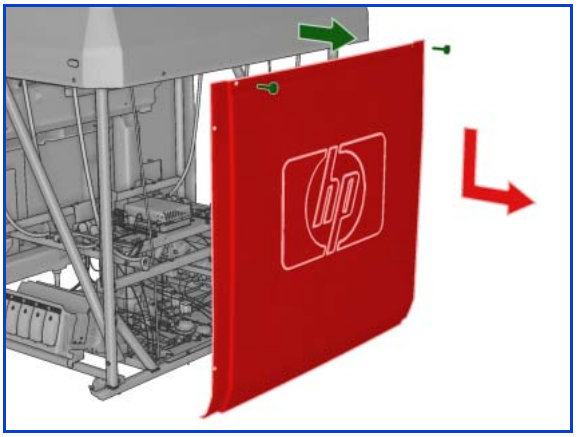
2. Remove the panel down and away to free it from the arc without letting it fall.

Left Side Lateral Panel



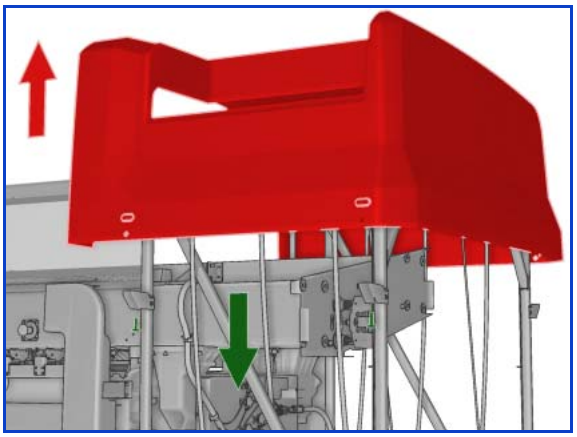
Removal

1. Remove the Left Side Front Panel ⇒ See page 565.
2. Remove the Left Side Rear Panel. ⇒ page 565.
3. Remove the two T30 screws that secure the Left Side Lateral Panel on the inside.



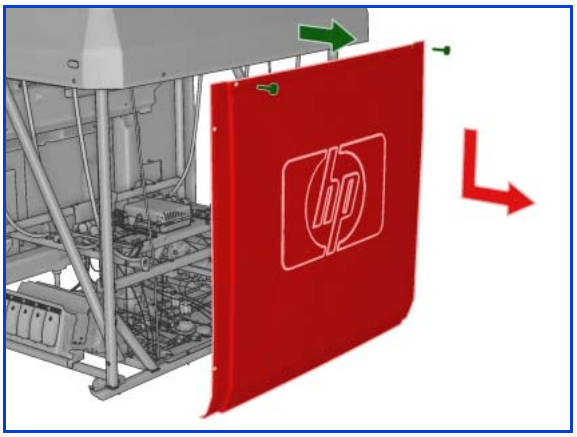
4. Remove the two T30 screws at the top of the Left Side Lateral Panel and remove the panel without letting it fall.

Left Side Top Cover



Removal

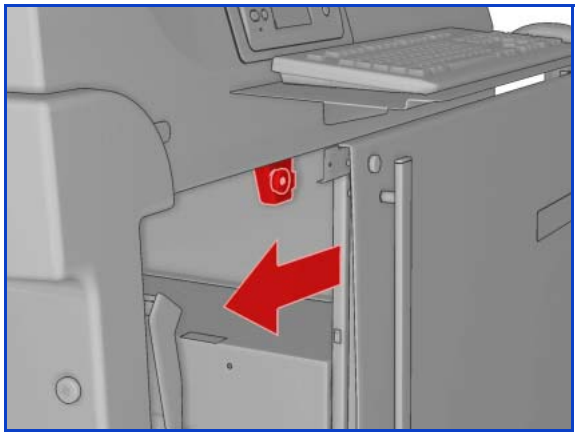
1. Remove the Left Side Front Panel. ⇒See page 565.
2. Remove the Left Side Rear Panel. ⇒See page 565.
3. Remove the Left Side Lateral Panel. ⇒See page 565.
4. Remove the four T30 screws that secure the Left Side Top Cover.



5. Remove the two T30 screws at the top of the Left Side Lateral Panel and remove the panel without letting it fall.

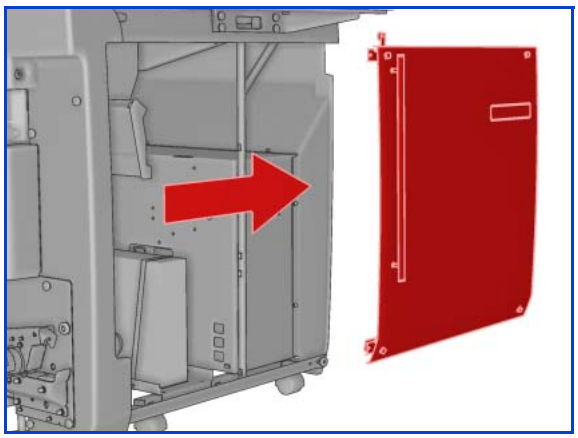
Right Covers

Right Cover Slide Door



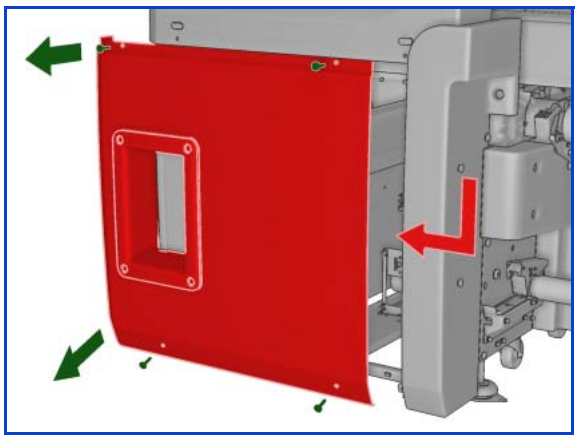
Removal

1. Slide open the Right Cover Slide Door.
2. Remove the screw that secures the rubber stopper and remove it.



3. Slide the door all the way out.

Right Side Rear Panel



Removal

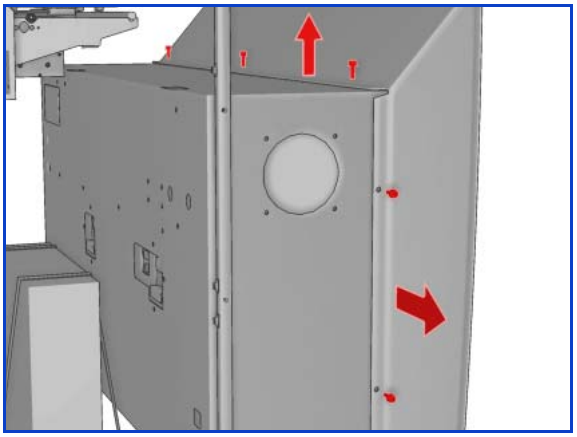
1. Remove the four T30 screws that secure the Right Side Cover Rear Panel and remove the panel without letting it fall.

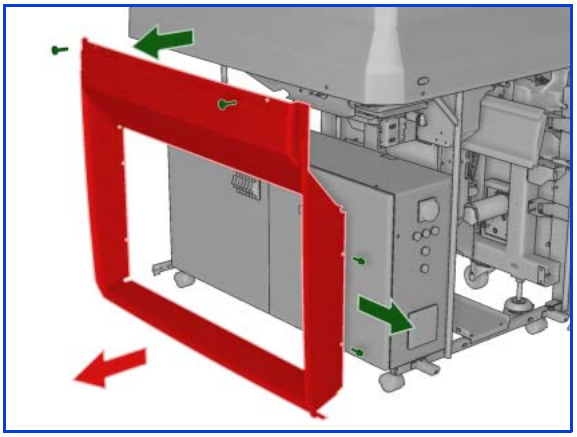
NOTE: Save the top left screw for last.

Right Side Lateral Panel

Removal

1. Remove the Right Cover Slide Door ⇒See page 567.
2. Remove the Right Side Rear Panel ⇒See page 567.





3. Remove the seven nuts, from inside the electrical cabinet, that secure the inside part of the cover to the electrical cabinet.

NOTE: There are two nuts/bolts not shown in the graphic on the far side of the printer.

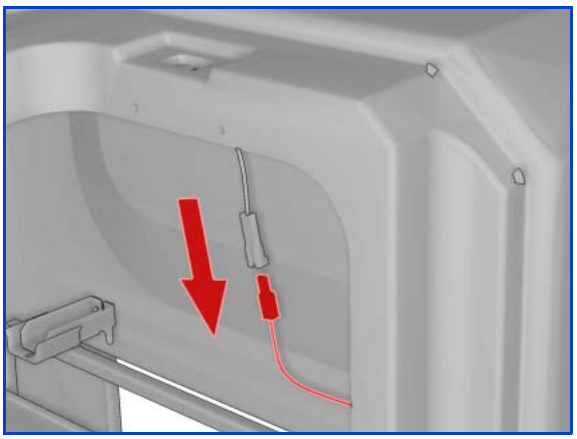
4. Remove the seven bolts after you remove the seven nuts.

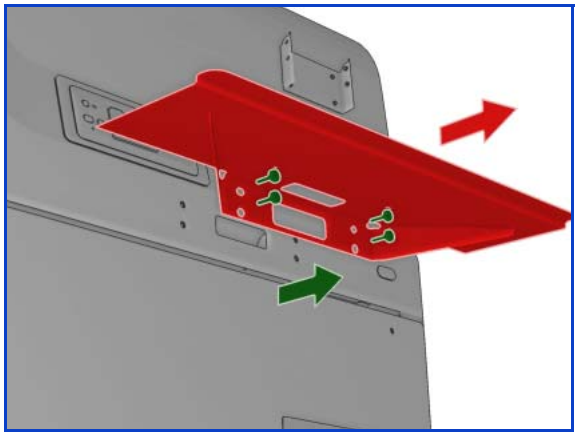
5. Remove the two T30 screws at the top of the Right Side Cover on the outside of the printer and remove the panel without letting it fall.

Right Side Top Cover

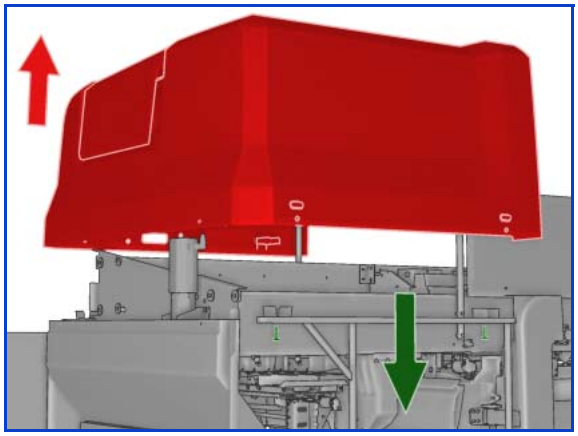
Removal

1. Slide open the Right Cover Slide Door.
2. Remove the Right Side Lateral Panel ⇒Seepage 567.
3. Remove the Right Side Rear Panel ⇒See page 567.
4. Disconnect the Carriage Access Door switch.
5. Disconnect the monitor, mouse, and keyboard cables and unroute the cables connected to the Internal Print Server from the Top Cover.
6. Disconnect the Front Panel cable.
7. Remove the monitor, mouse, and keyboard. To remove the monitor ⇒See page 587.





8. Remove the four T30 screws that secure the keyboard platform and remove it.

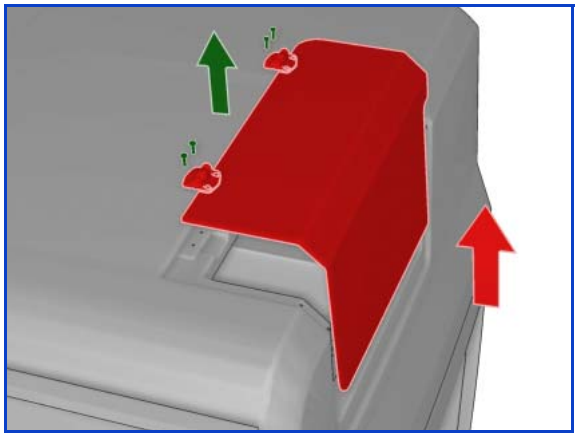


9. Remove the four T25 screws, from inside the Top Cover, that secure the cover and remove the cover without letting it fall.

NOTE: Use the window, slide door, and rear access to remove these screws.

NOTE: This cover is very heavy and requires two persons to remove it.

Right Side Cover Window



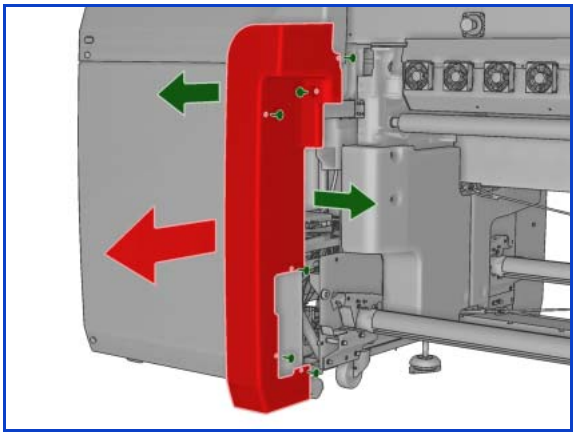
Removal

1. Unclip the small covers on the hinges.
2. While holding the nut inside the window with your hand, remove the two bolts that secure each hinge to the Right Side Top Cover.

NOTE: Do not let the nuts fall into the printer.

Arcs and Trims

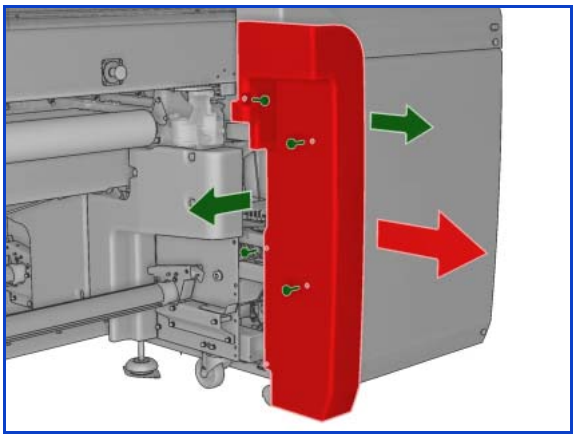
Left Side Front Arc



Removal

1. Remove the six T30 screws that secure the Left Side Front Arc and remove it without letting it fall.

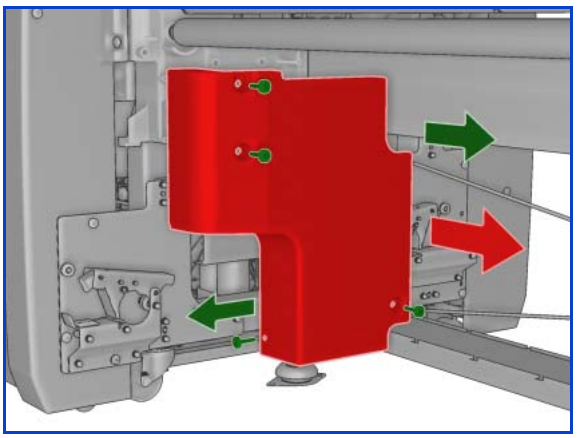
Left Side Rear Arc



Removal

1. Remove the four T30 screws that secure the Left Side Rear Arc and remove it without letting it fall.

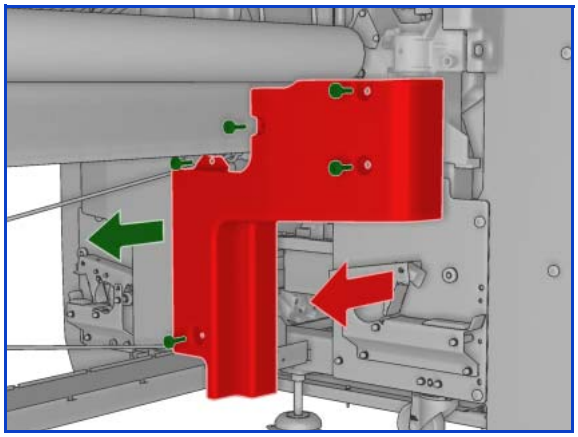
Left Side Front Trim



Removal

1. Remove the four T30 screws that secure the Left Side Front Trim and remove it without letting it fall.

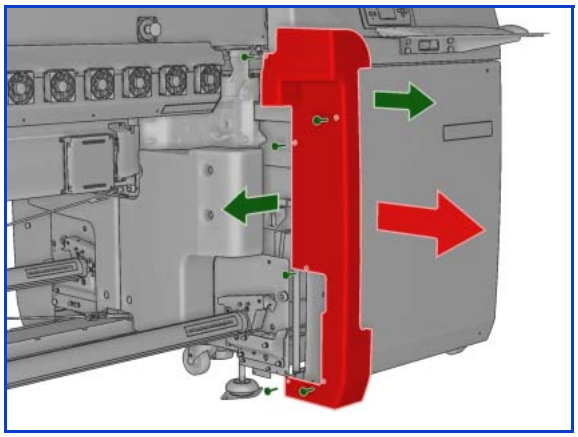
Left Side Rear Trim



Removal

1. Remove the five T30 screws that secure the Left Side Rear Trim and remove it without letting it fall.

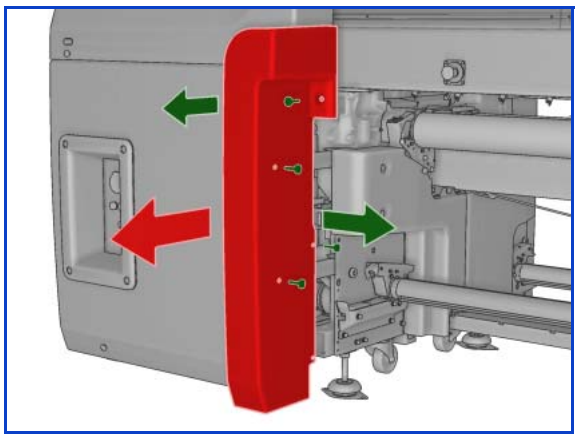
Right Side Front Arc



Removal

1. Remove the five T30 screws that secure the Right Side Front Arc and remove it without letting it fall.

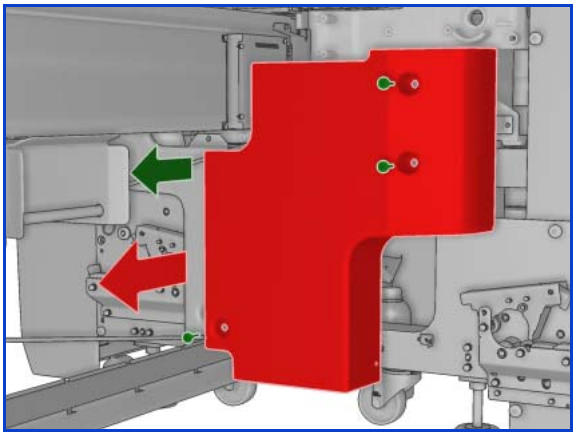
Right Side Rear Arc



Removal

1. Remove the four T30 screws that secure the Right Side Rear Arc and remove it without letting it fall.

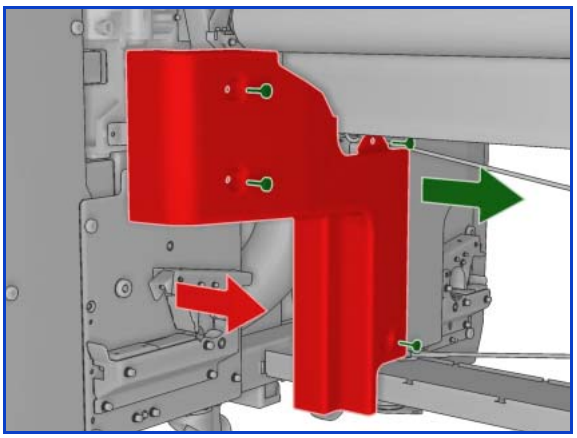
Right Side Front Trim



Removal

1. Remove the three T30 screws that secure the Right Side Front Trim and remove it without letting it fall.

Right Side Rear Trim



Removal

1. Remove the four T30 screws that secure the Right Side Rear Trim and remove it without letting it fall.

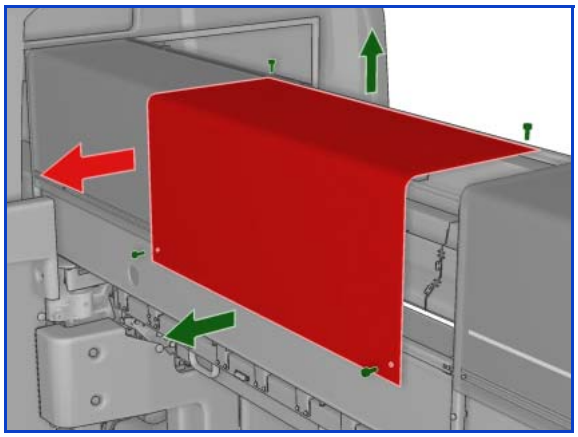
Center Covers

Central Cover Panels

Removal

NOTE: There are four Central Cover Panels. The left and right panels are different to the two central panels.

NOTE: It is recommended to remove the right two panels whenever you move the carriage to the repair position in order to obtain access to the carriage. Perform 6.2 Move the carriage to the repair position, ⇒See page 430.



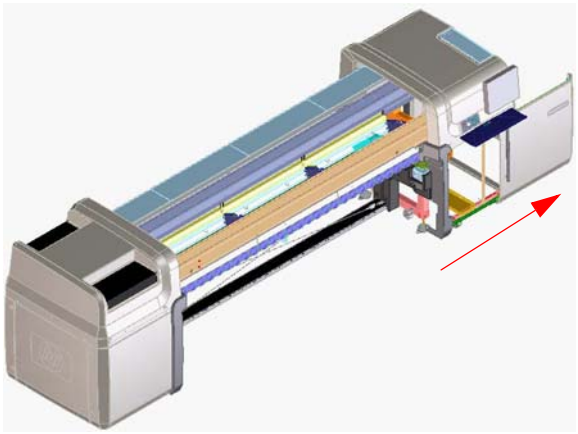
1. Remove the four MH4 screws that secure the Central Cover Panel and remove it without letting it fall.
2. Repeat for the remaining covers if necessary.

Officieability Upgrade Kit

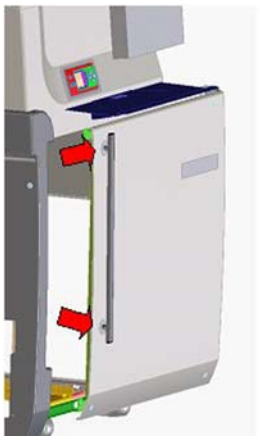
Base Sheet

Removal

WARNING!: Switch off the printer and power enable switch.

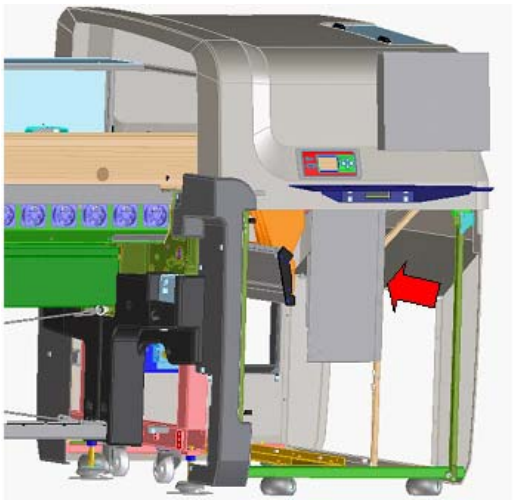


1. Slide open the Right Cover Slide Door.

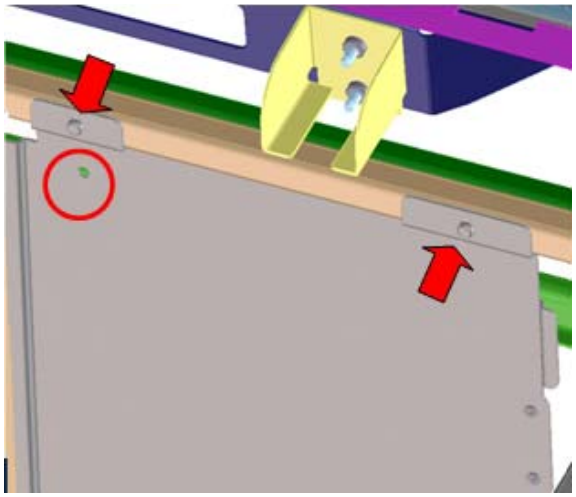


2. Remove two T25 screws that secure the door handle to the door.

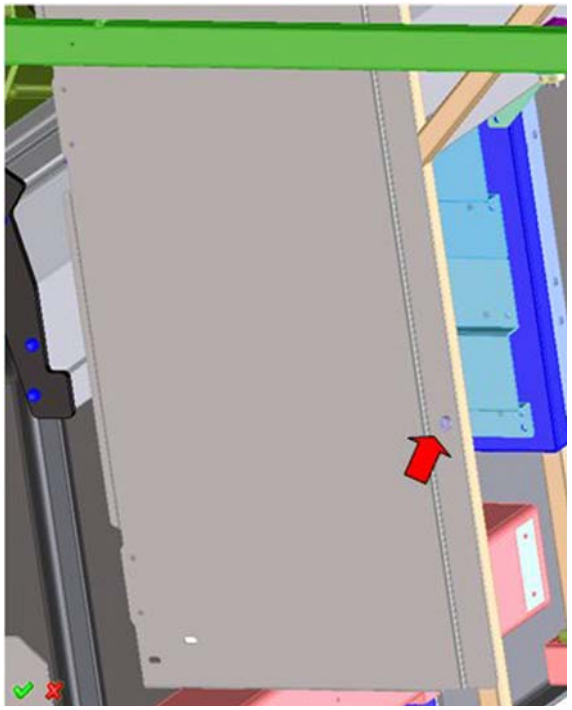
3. Remove four T30 screws that secure the Door to the Door Frame.



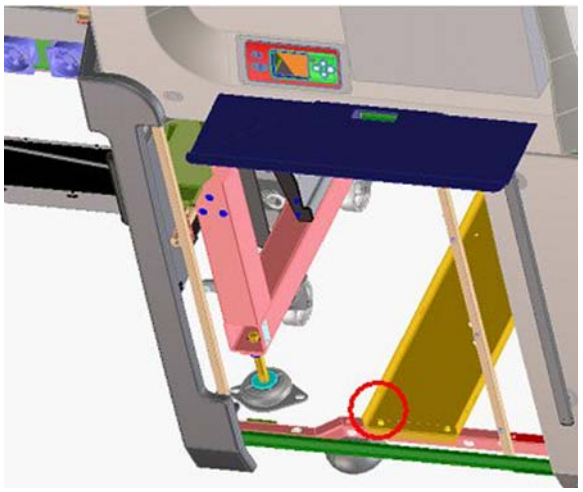
4. Place the Base Plate in position in the printer, removing any cables from the internal structure as required.



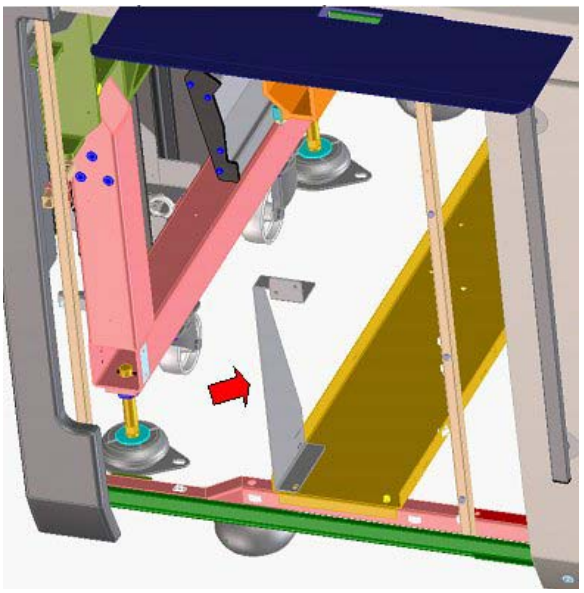
5. Insert two screws to secure the base blate to the inside structure of the printer.



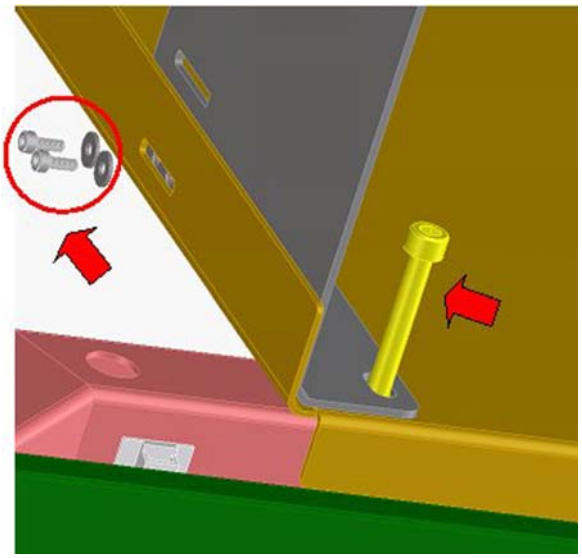
6. Insert one screw into the Base Plate to secure it to the Front Frame Structure.



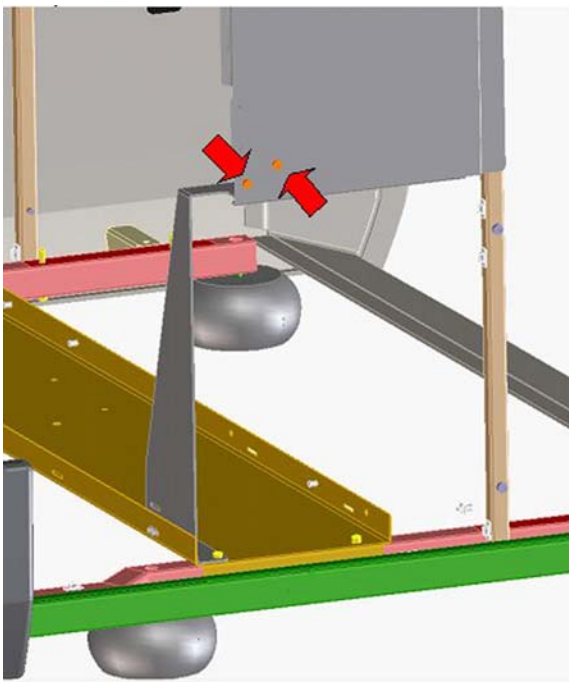
7. Remove the screw indicated, to be reused.



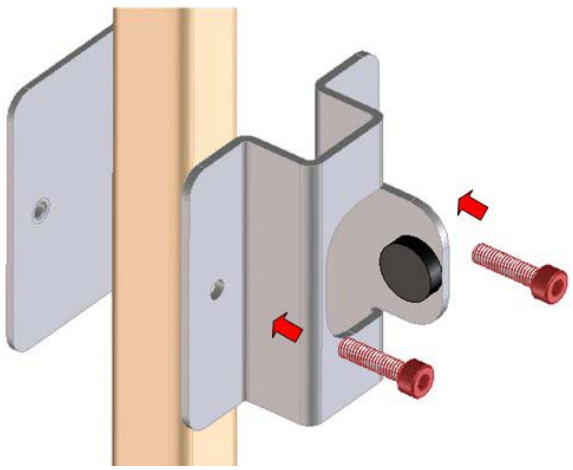
8. Place the Support Beam in the position indicated here.



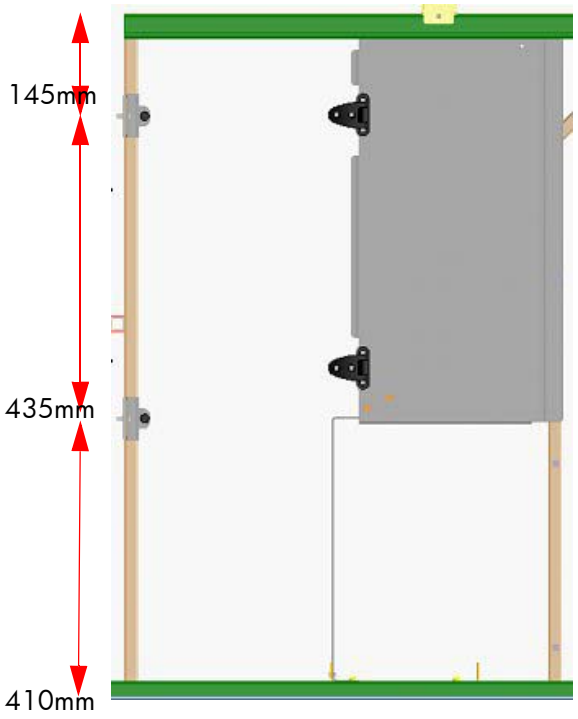
9. Secure the Support Beam in place using the previously removed screw and the two screws and washers which came with the kit.



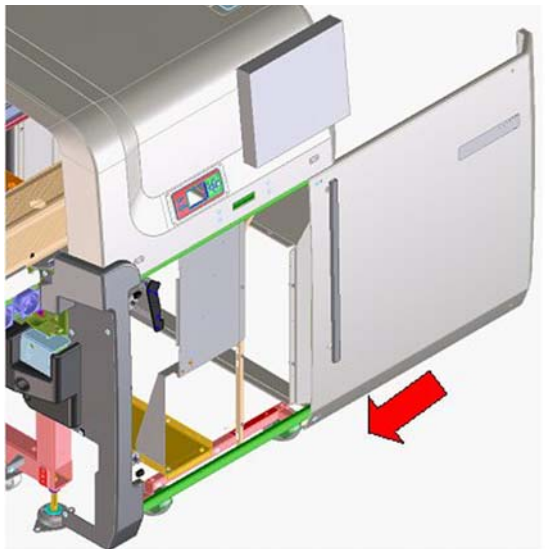
10. Secure the Support Beam to the Base Plate using two M5 X12 screws.



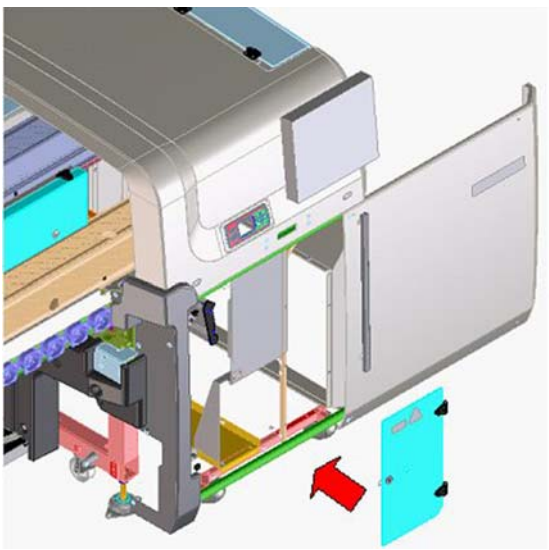
11. Secure the Cover Grip to the printer using two M4X16 screws.



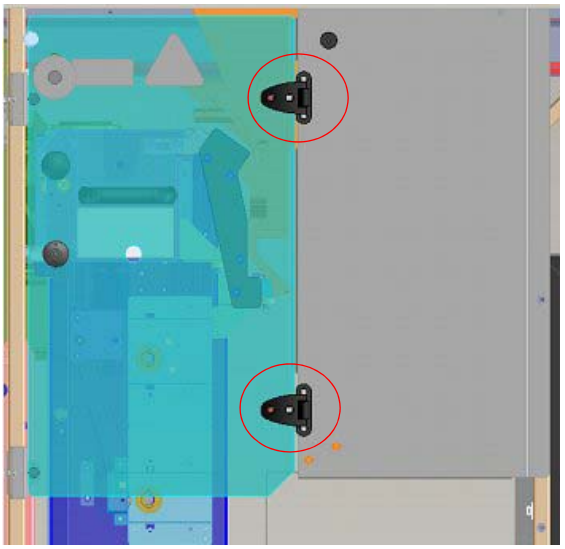
12. Locate the Cover Grip on the printer with the dimensions indicated here.



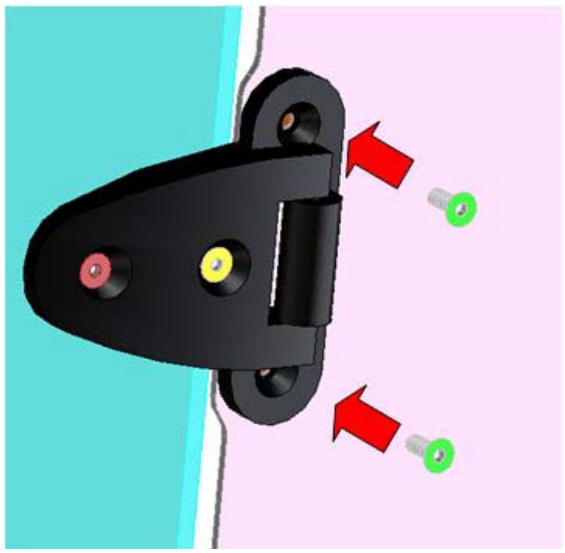
13. Reinstall the Front Door and Handle.

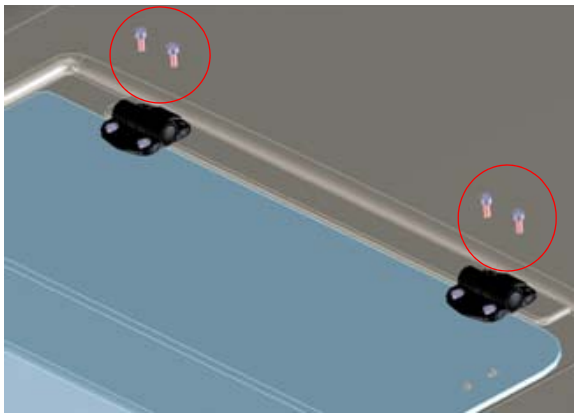


14. Place the Web Wipe Door in the location indicated here.

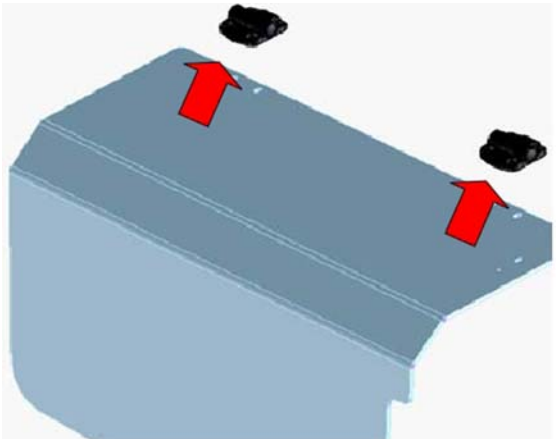


15. Insert two screws in the hinges of the Web Wipe Door to secure it in place.

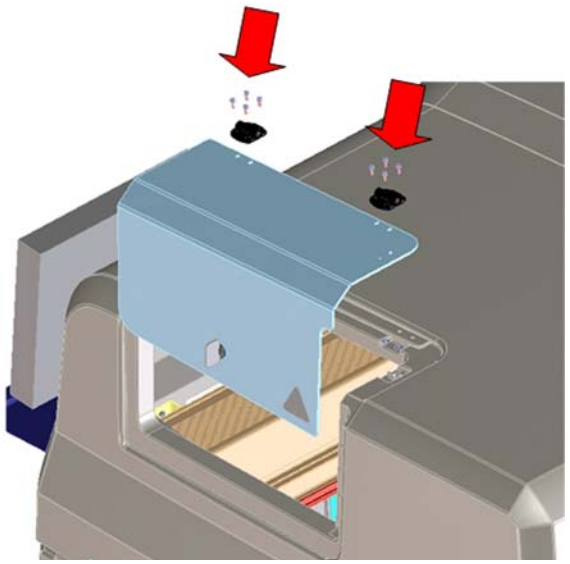




16. Remove four screws from the Top Door Assembly.

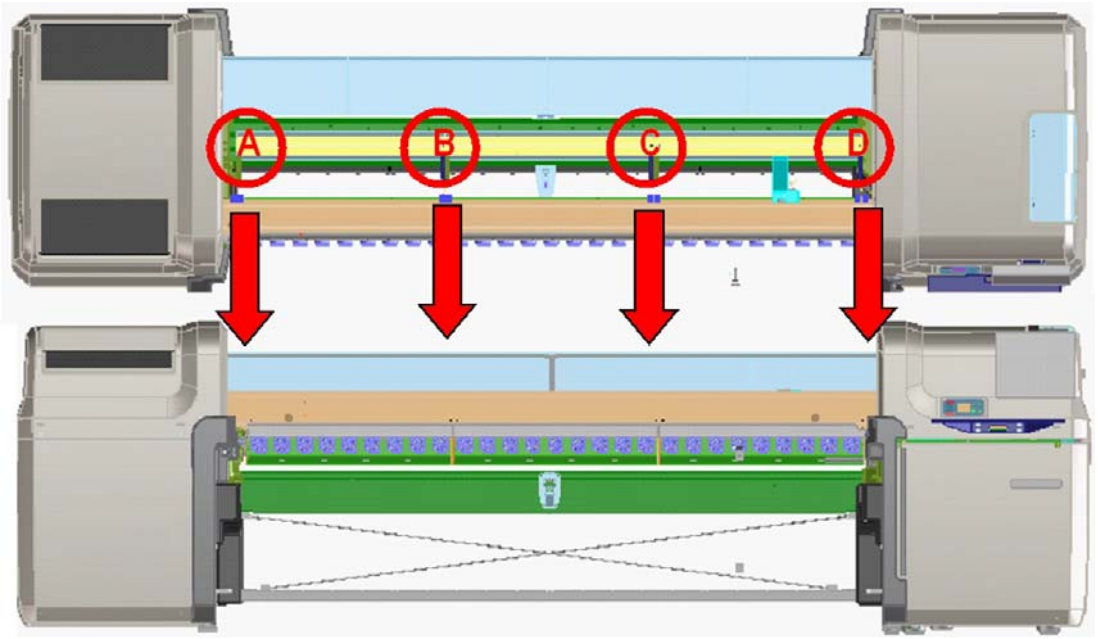


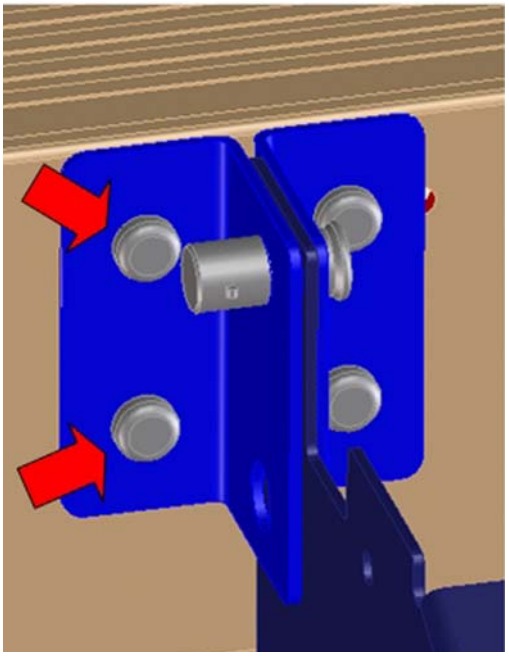
17. Remove the old Top Cover and remove the Hinges and Sensor Actuator from the cover.



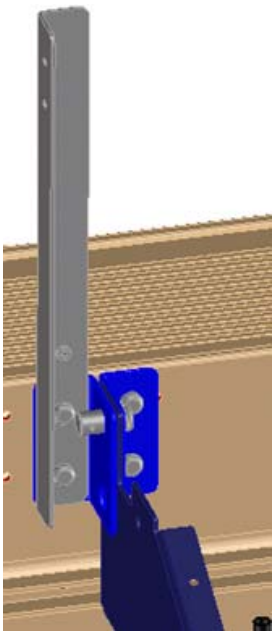
18. Install the old Sensor Actuator, also using the same screws install the old Hinges into the new Officeability Cover. Install the new cover onto the printer.

19. The following steps describe how to install the new officeability covers, in the four areas indicated below (A, B, C, D).

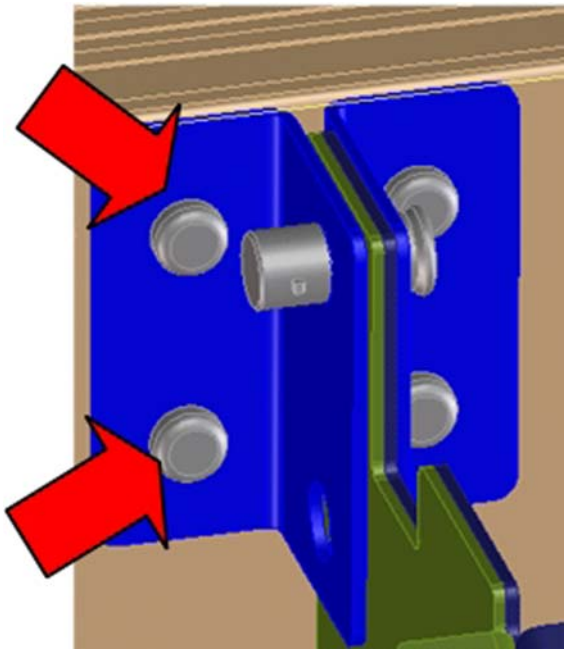




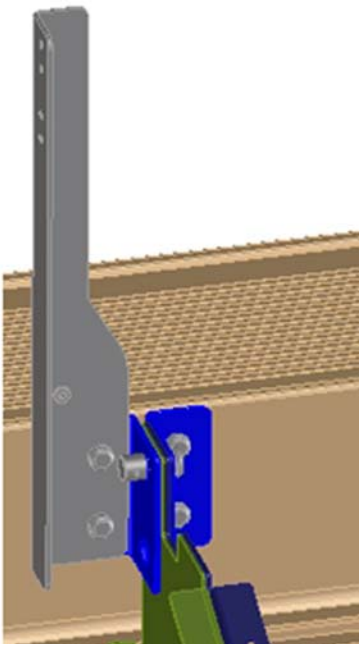
20. In area A remove the two screws indicated from the beam attach of the Print Zone.



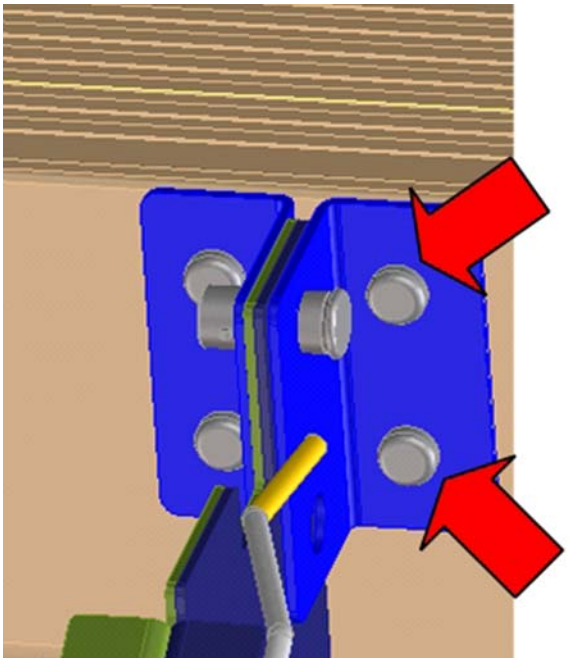
21. Install the new External Right Beam as shown here, using the screws removed in the previous step.



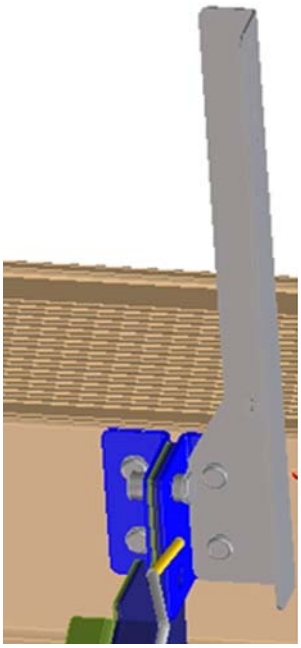
22. In area B remove the two screws indicated from the beam attach of the Print Zone.



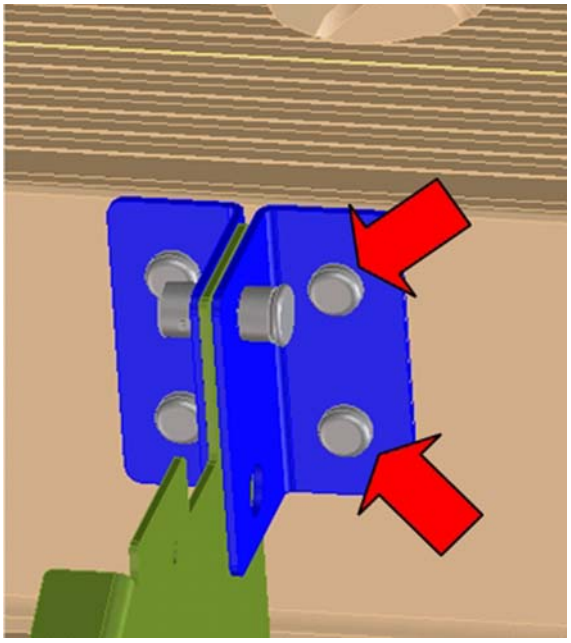
23. Install the new Internal Right Beam as shown here, using the screws removed in the previous step.



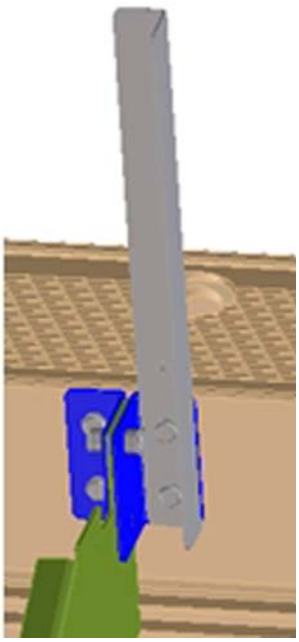
24. In area C remove the two screws indicated from the beam attach of the Print Zone.



25. Install the new Internal Left Beam as shown here, using the screws removed in the previous step.



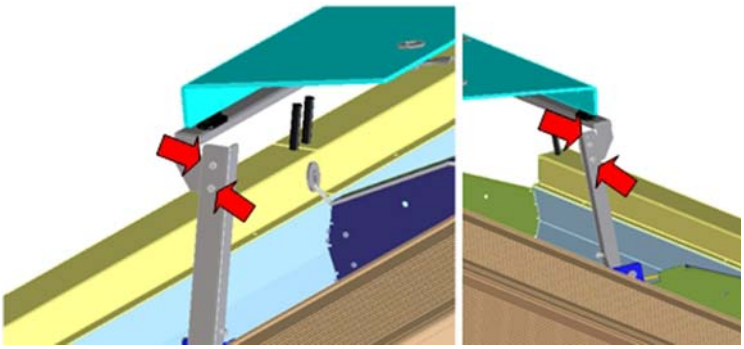
26. In area D remove the two screws indicated from the beam attach of the Print Zone.



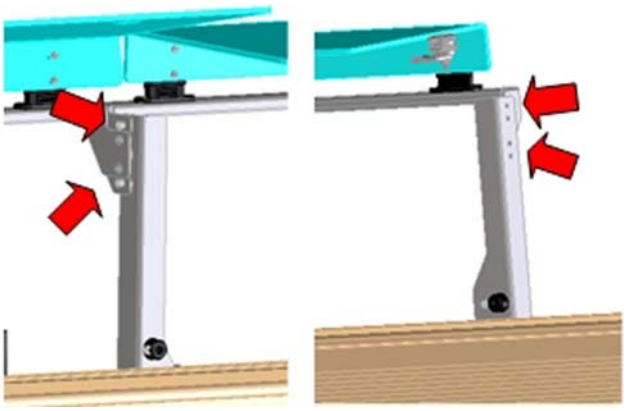
27. Install the new External Left Beam as shown here, using the screws removed in the previous step.

28. The printer now has the four beams installed in areas A, B, C, D

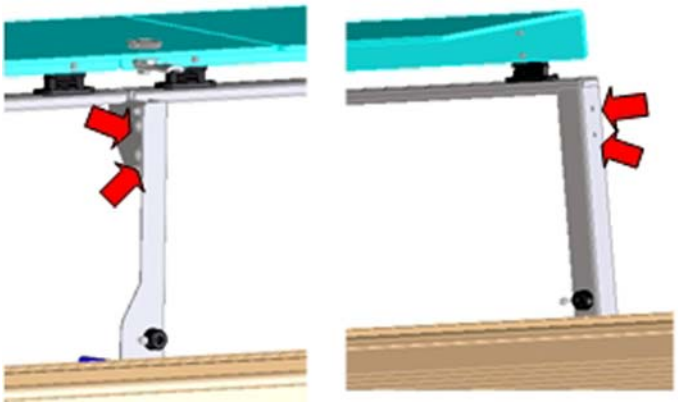
29. Install the Left Cover onto the beams A and B using four M4x10 screws.



30. Install the Central Cover onto the beams B and C using four M4x10 screws.



31. Install the Right Cover onto the beams C and D using four M4x10 screws.



User Interface

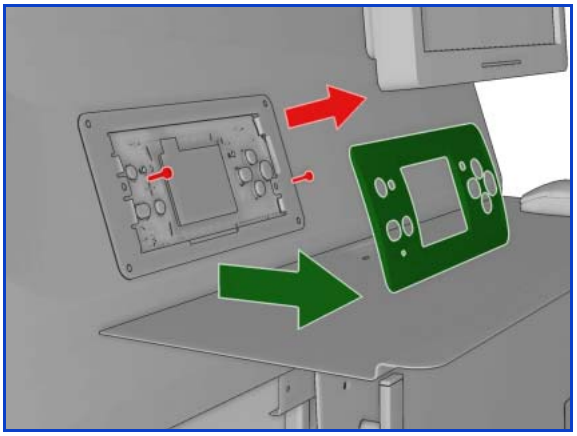
Front Panel

Removal

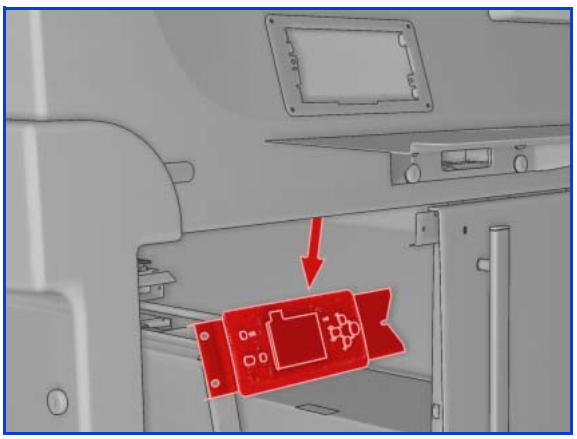
WARNING!: Switch off the printer and power enable switch.

1. Slide open the Right Cover Slide Door.
2. From Right Side Cover Window, disconnect the cable from the Front Panel.

NOTE: Although the service part includes cables, do not replace them unless it is absolutely necessary.



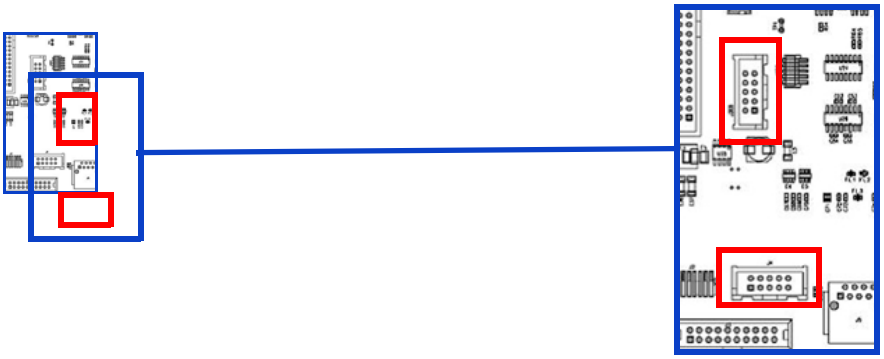
3. Remove the Front Panel Bezel and the two T15 screws that secure the Front Panel.



4. Reach through the Right Cover Slide Door and remove the Front Panel from behind.

Installation

1. Perform the Front Panel diagnostic test to make sure that it works correctly. ⇒See page 351.
2. If it does not work correctly, replace the cables.
3. Unroute the front panel cable all the way to the Main Interconnect Board.
4. Disconnect the Front Panel cable (J4) and data cable (J308) from the Main Interconnect Board.



5. Unroute the data cable (J308) from the Main Interconnect Board to the Formatter and disconnect it. For access instructions, ⇒See page 591.
6. Replace and reroute the cables.

Front Panel Bezel

Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Front Panel Bezel and the two T15 screws that secure the Front Panel.

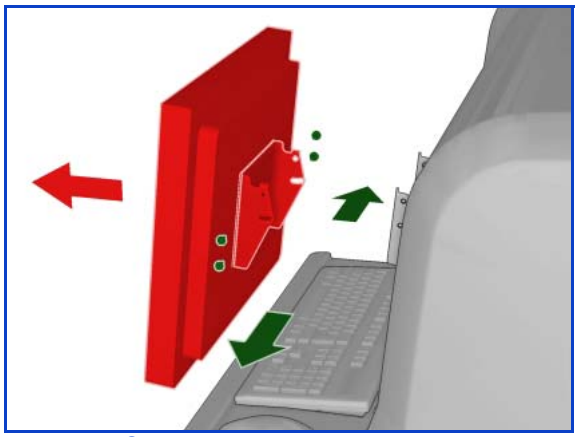
Monitor

Removal

WARNING!: Switch off the printer and power enable switch.

1. Disconnect the two monitor cables.
2. Remove the four T20 screws that secure the monitor and remove it.

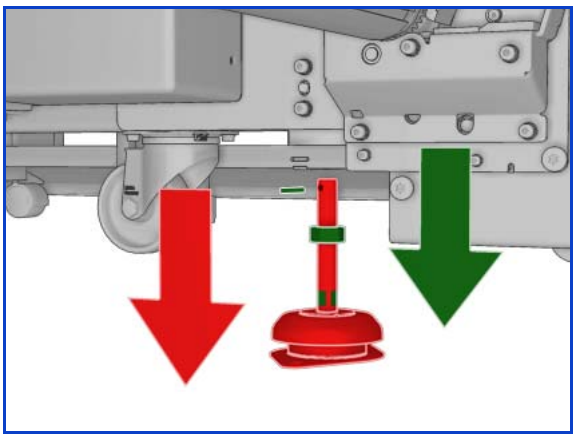
NOTE: Be careful that you do not damage the monitor.



3. From the Internal Print Server, navigate to **Tools** > **Proactive support.** Configure the HP Proactive Support and make sure the customer accepts all disclaimers

Printer Support

Stand Rubber Foot Assembly



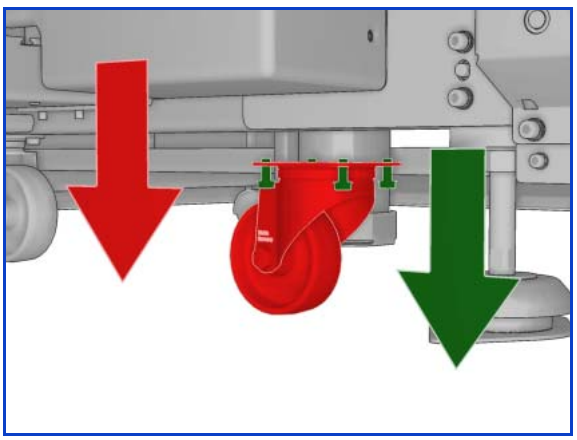
Removal

1. First, you must lift the printer so that the feet are a minimum 90 mm off the ground. This can be done using a forklift or a crane.

NOTE: For more information about lifting and maneuvering the printer, see the *Site Preparation Guide* and the *Installation Guide*.

2. Pull out the pin that secures the foot with a pliers. The pin is located on the part of the foot that is above the printer structure.
3. Loosen the locking nut and unscrew the foot from the lower part of the shaft (see graphic) until it is free from the printer.

Stand Wheel Assembly

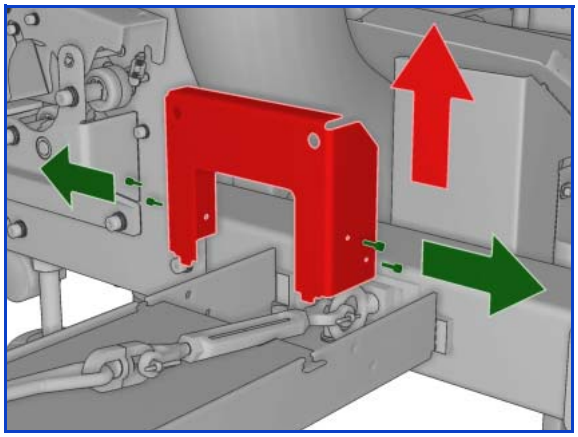


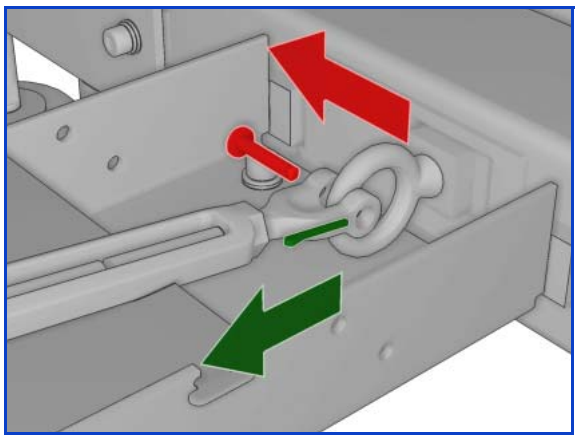
Removal

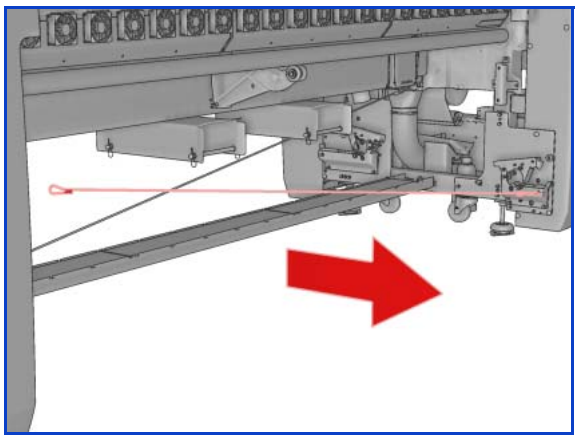
1. Make sure the wheels are not touching the ground and lower the feet if necessary.
2. Remove the four MH8 screws that secure the wheel and remove it.

NOTE: The fourth screw is not shown in the graphic.

Stands Cross Tensioners







Removal

1. Remove the four T20 screws that secure the housing and remove it.
2. Unscrew the tensioner to release the tension.
3. Remove the pin that secures the bolt, then remove the bolt to free the cross tensioner.

NOTE: Save the top left screw for last.

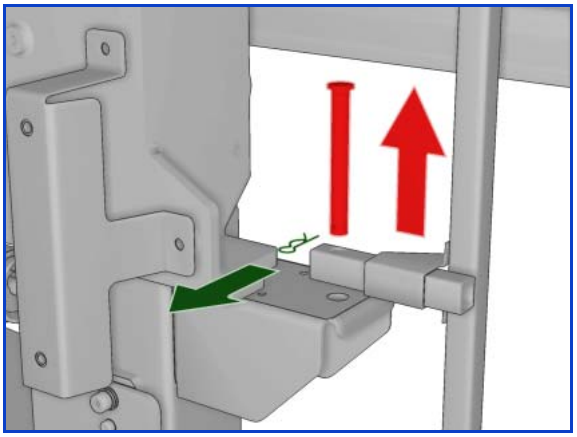
4. Repeat the process for the other side of the cross tensioner.
5. Remove the cross tensioner.

NOTE: Save the top left screw for last.

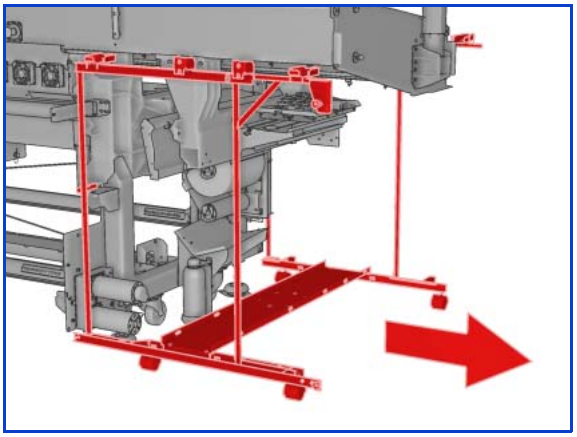
Electrical Cabinet Support

Removal

1. Remove the monitor, keyboard, and mouse. ⇒See page 587.
2. Remove all the right covers (including the top cover and sliding door). ⇒See page 567.
3. Remove the electrical cabinet. ⇒See page 604.
4. Remove the Internal Print Server PC and switch.



5. Remove the two pins and bolts that secure the Electrical Cabinet Support.



6. Remove the Electrical Cabinet Support.

Electronics

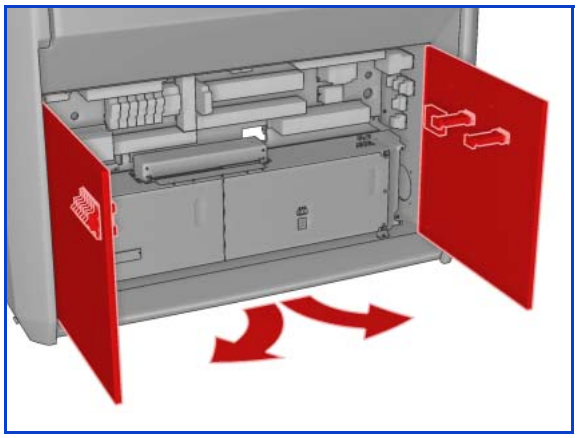
Formatter Board

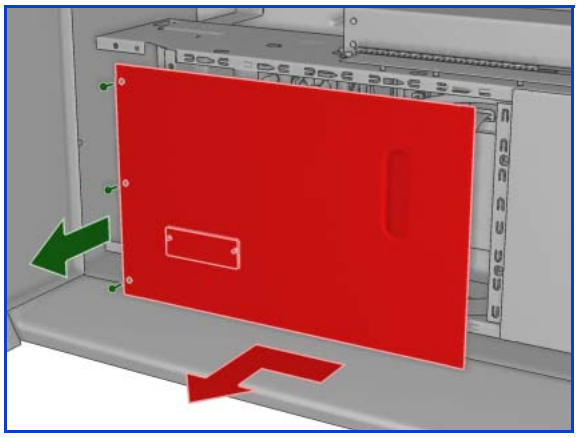
Removal

WARNING!: Switch off the printer and power enable switch.

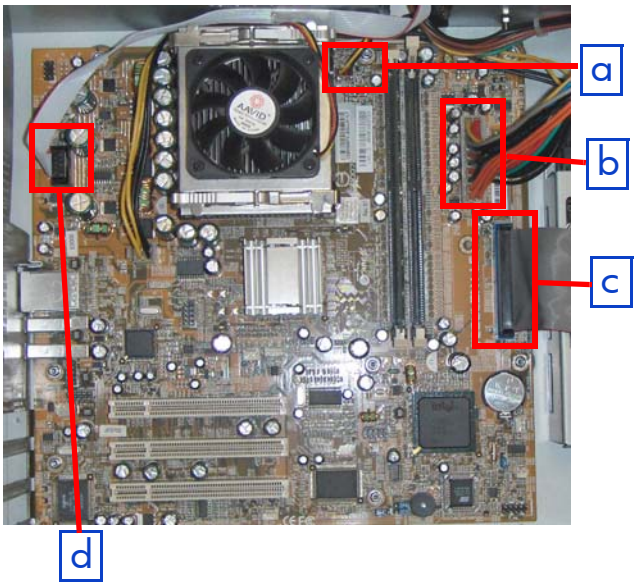
CAUTION: Do NOT remove the Fan or the Processor (located under the Fan) from the Main PCA Formatter - The Fan and the Processor are part of the Main PCA Formatter support part and should be replaced as one assembly.

1. Remove the Upper PCI Board and Lower PCI Board ⇒See page 597 and ⇒See page 599.
2. Open the electrical cabinet doors.



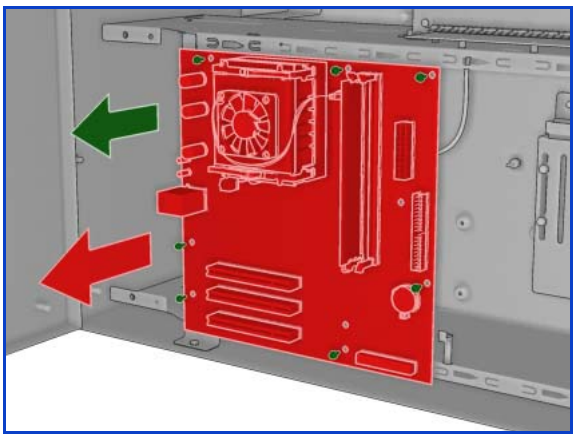


3. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.

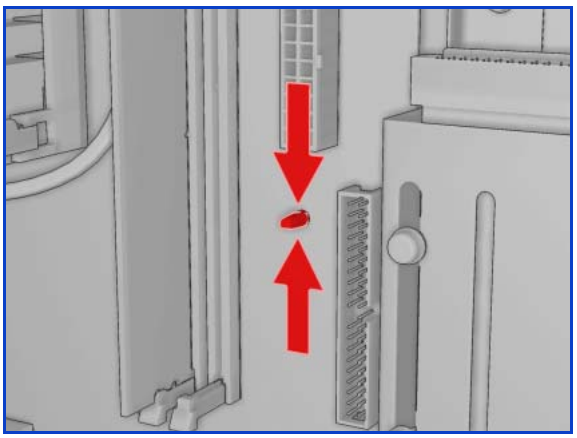


4. Disconnect the four cables connected to the Formatter Board (leave the fan connected).
   a. USB Cable to Front Panel
   b. 3.3V, 5V, 12V Power cable
   c. HDD Cable
   d. 5V Power cable

CAUTION: When reinstalling all the cables, one small cable goes to the Upper PCI board, if this is not connected or if it is connected to the Lower PCI in error, the printer will not fully initialize.



5. Remove the seven T10 screws that secure the Formatter Board.



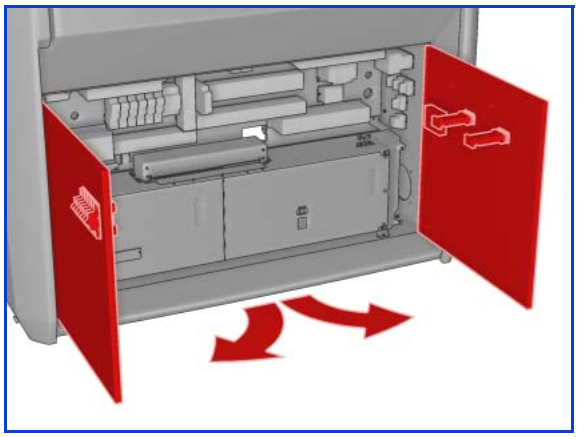
6. Release the board from the locking clip, and remove it.

Formatter CPU Fan

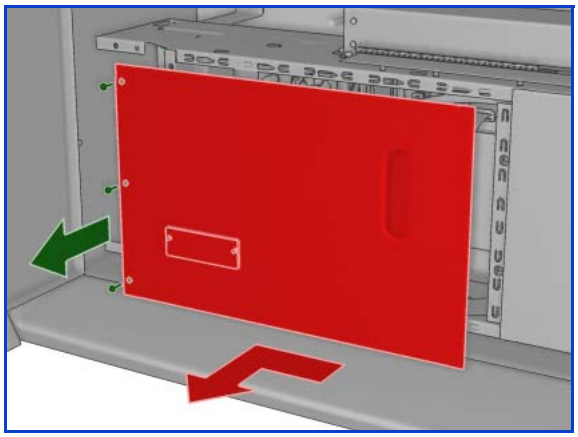
Removal

WARNING!: Switch off the printer and power enable switch.

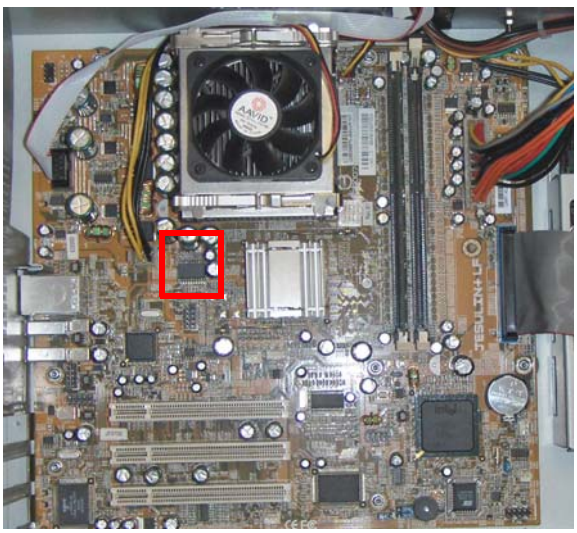
CAUTION: Do NOT remove the Fan or the Processor (located under the Fan) from the Main PCA Formatter - The Fan and the Processor are part of the Main PCA Formatter support part and should be replaced as one assembly.



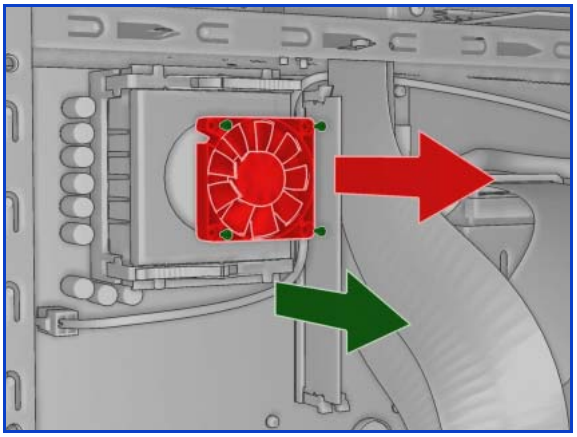
1. Open the electrical cabinet doors.



2. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.



3. Disconnect the Formatter CPU Fan cable.

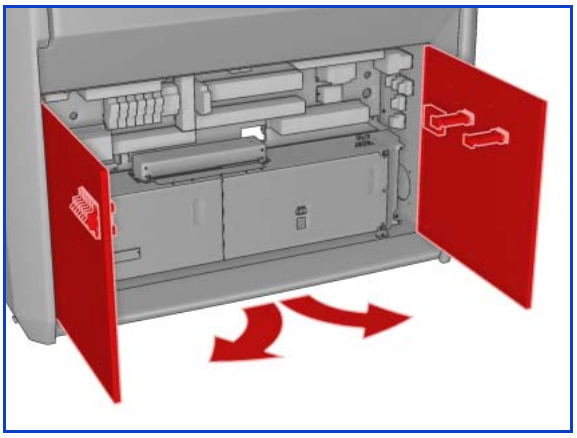


4. Remove the four Phillips PZ1 screws that secure the Formatter CPU Fan and remove it.

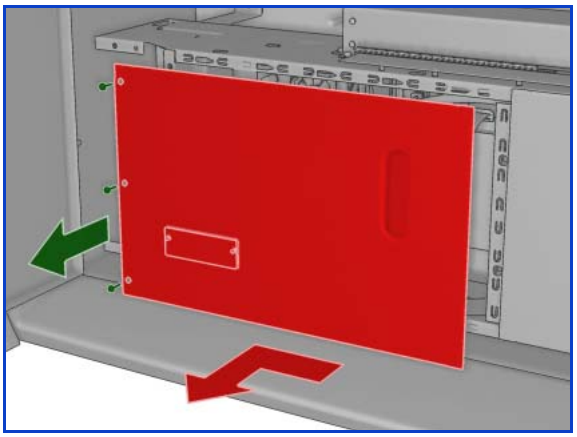
Main Power Supply

Removal

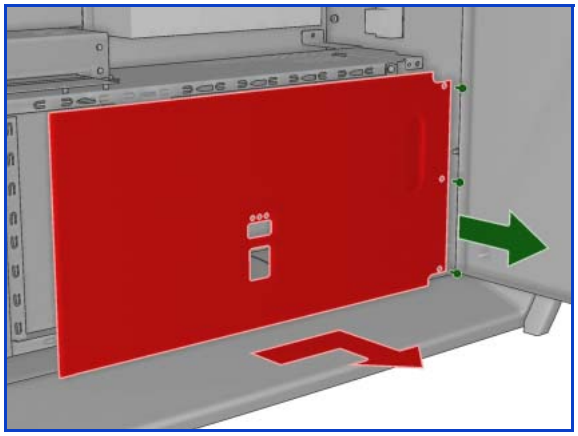
WARNING!: Switch off the printer and power enable switch.



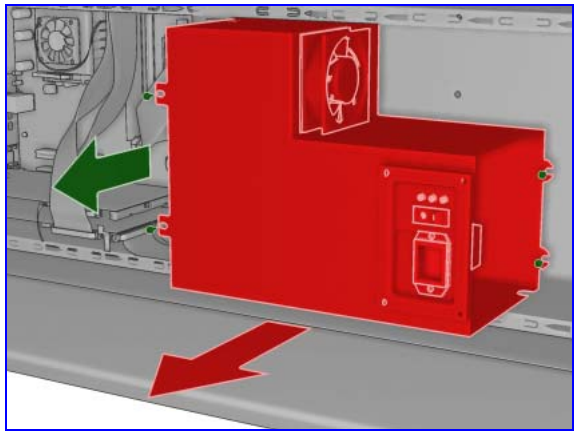
1. Open the electrical cabinet doors.



2. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.
3. Disconnect the main electronics power cord.



4. Remove the three T15 screws that secure the right electronics cover, slide it to the right, and remove it straight out.
5. Follow the three cables connected to the Main Power Supply to their connections and disconnect them (these cables must be replaced with the Main Power Supply).



6. Remove the four T10 screws that secure the Main Power Supply and remove first to the right, then straight out.

NOTE: There is a cable routed underneath the Main Power Supply, so take care that you do not damage it.

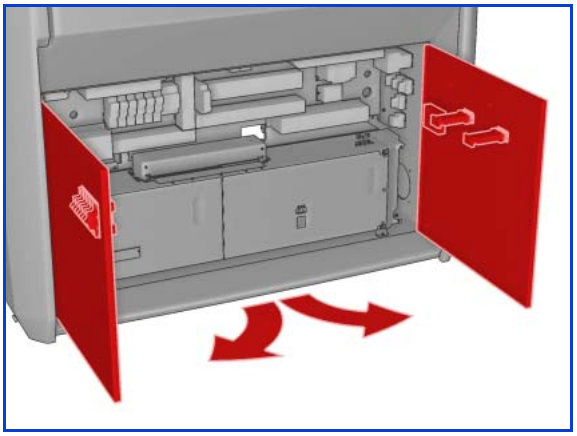
△

CAUTION: When reinstalling all the cables, one small cable goes to the Upper PCI board, if this is not connected or if it is connected to the Lower PCI in error, the printer will not fully initialize.

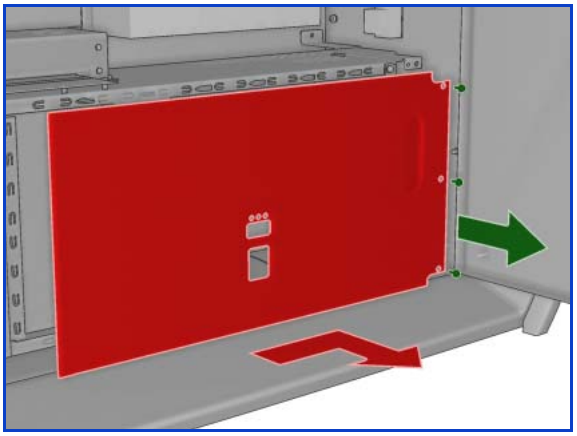
Printmech Board

Removal

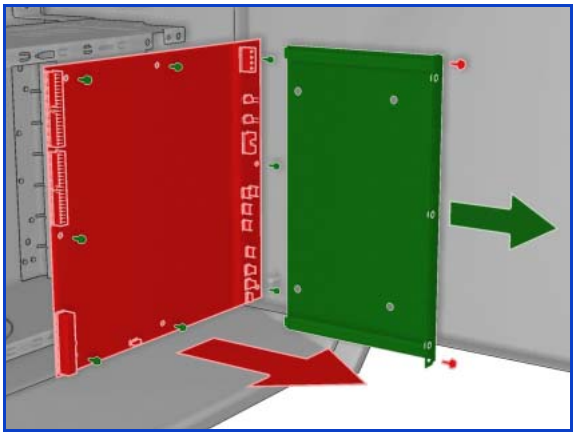
WARNING!: Switch off the printer and power enable switch.



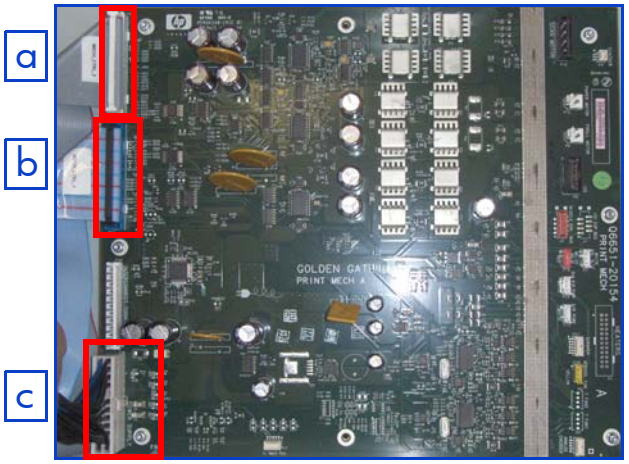
1. Open the electrical cabinet doors.



2. Remove the three T15 screws that secure the right electronics cover, slide it to the right, and remove it straight out.



3. Remove the two T15 screws that secure the sideplate and remove it.

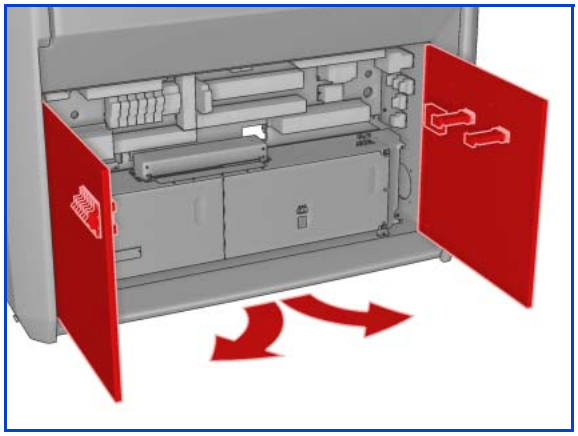


4. Disconnect all cables from the Printmech Board, and take care with the three ferrites.
   a. Data to Lower PCI Board
   b. Data to Lower PCI Board
   c. 42V power
5. Remove the eight T10 screws that secure the Printmech Board and remove it.

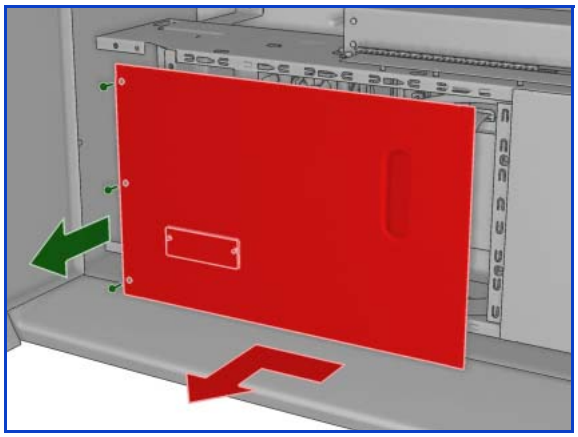
Upper PCI Board

Removal

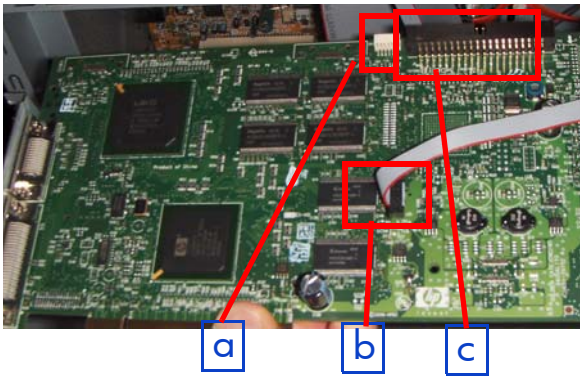
WARNING!: Switch off the printer and power enable switch.



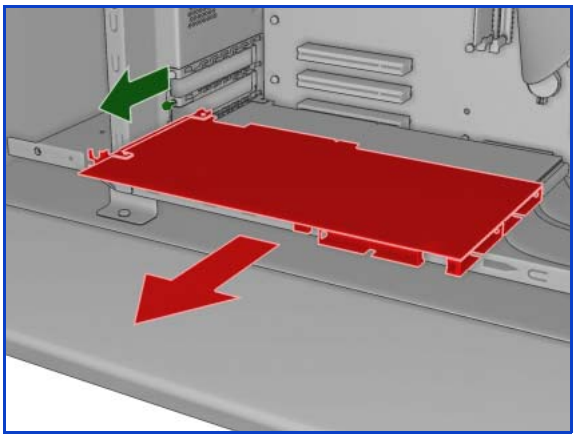
1. Open the electrical cabinet doors.



2. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.



3. Disconnect the cables connected to the Upper PCI Board.
   a. GPIO cable (Cable connector which is directly connected to the power supply)
   b. Encoder cable
   c. Data cable to Main Interconnect Board



4. Loosen the T10 screw that secures the Upper PCI Board and begin to slide it out.

△

CAUTION: When reinstalling all the cables, one small cable goes to the Upper PCI board, if this is not connected or if it is connected to the Lower PCI board in error, the printer will not fully initialize.

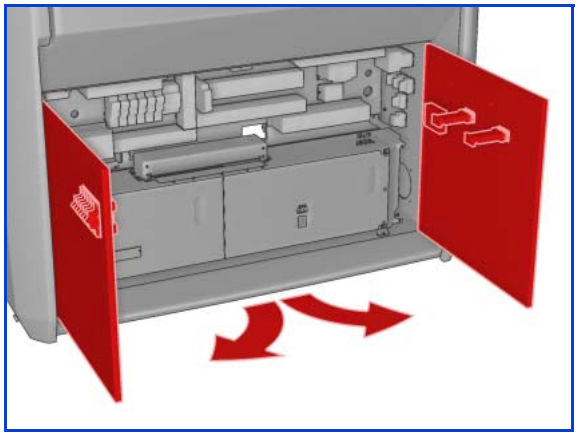
CAUTION: The cable 'b', the encoder cable must be connected as shown in the photo above. This cable must be connected to the Lower PCI board, and NOT the Upper PCI board, or the printer will fail to initialize.

CAUTION: Be careful not to swap the 2 cables in error that go from the lower & upper PCI boards to the main interconnect board, the 2 cables are identical. The cable from the lower PCI board is connected to cable connector J307 of the main interconnect board, and the cable from the upper PCI board is connected to the cable connect J306 of the main interconnect board.

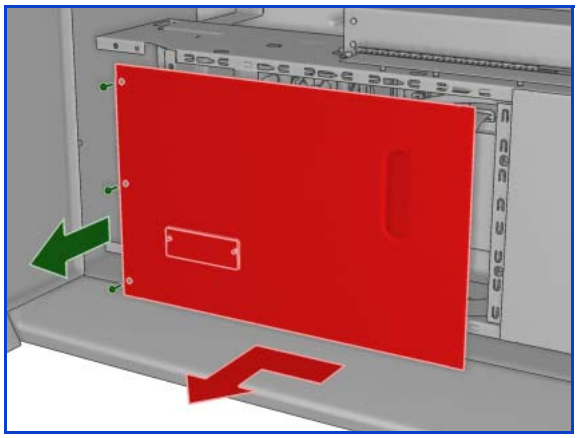
Lower PCI Board

Removal

WARNING!: Switch off the printer and power enable switch.

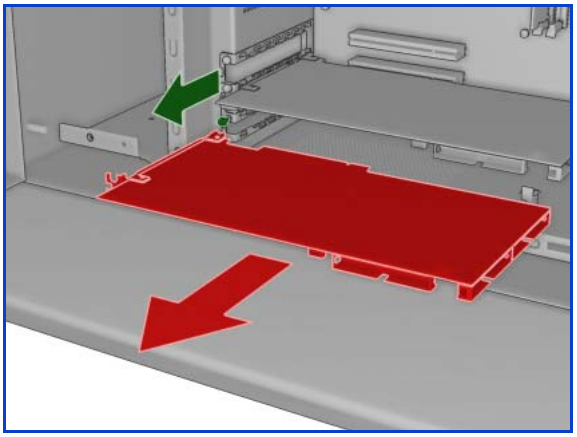


1. Open the electrical cabinet doors.

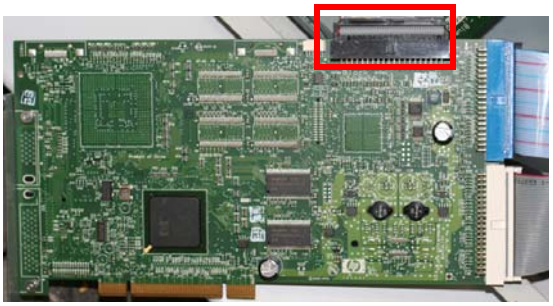


2. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.

3. Disconnect the blue and white flat cables that go to the Printmech PCA. The third cable is not accessible until you pull out the board.



4. Loosen the T10 screw that secures the Lower PCI Board and begin to slide it out.



5. Disconnect the flat cable that goes to the Main Interconnect Board before you completely remove the board.

△

CAUTION: When reinstalling all the cables, one small cable goes to the Upper PCI board, if this is not connected or if it is connected to the Lower PCI in error, the printer will not fully initialize.

△

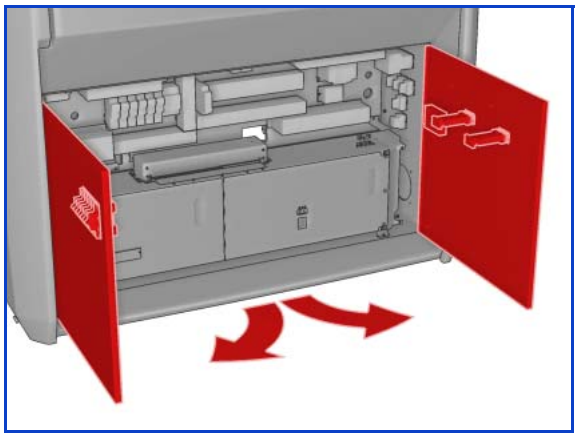
CAUTION: Be careful not to swap the 2 cables in error that go from the lower & upper PCI boards to the main interconnect board, the 2 cables are identical. The cable from the lower PCI board is connected to cable connector J307 of the main interconnect board, and the cable from the upper PCI board is connected to the cable connect J306 of the main interconnect board.

Hard Disk System

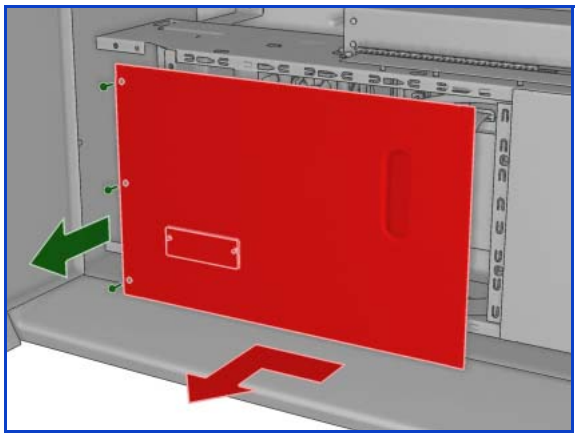
Removal

WARNING!: Switch off the printer and power enable switch.

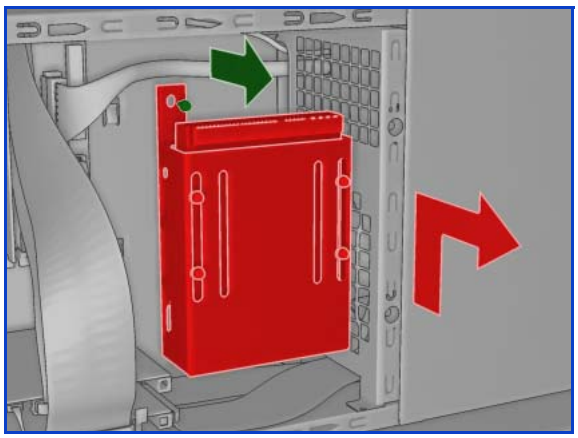
NOTE: NEVER replace the Hard Disk Drive and Main Interconnect Board or Ink System Main Board at the same time. If both parts need to replaced, replace one part, power ON the printer until it completely initializes, power OFF the printer, then replace the second part.



1. Open the electrical cabinet doors.



2. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.
3. Disconnect all cables from the Hard Disk System.

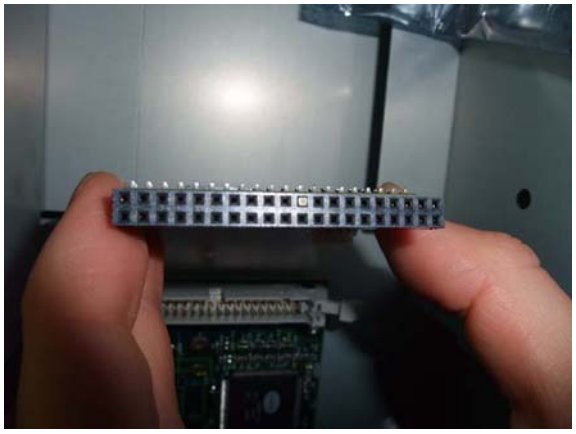


4. Remove the screw that secures the Hard Disk System, slide it up, and remove it straight out.

NOTE: During the first reboot of the replaced HDD, the front panel may display the system error 79:04, this is normal and can be ignored as this is caused as a result of the nvm synchronization, reboot the printer and the system error will not display again.

Installation

When installing the new PCI to IDE converter, make sure the part is installed in the correct orientation. If it will not fit, do not try to force the part in, as this would indicate it is in the incorrect orientation. Check if

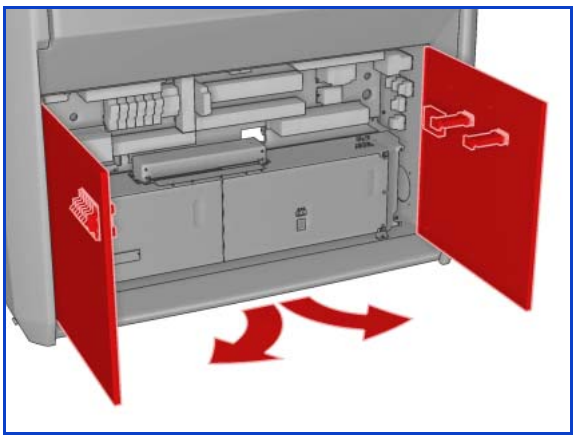


the PATA to SATA has a pìn in one of the connections, do not remove the pin. Ensure the part is installed into the HDD correctly

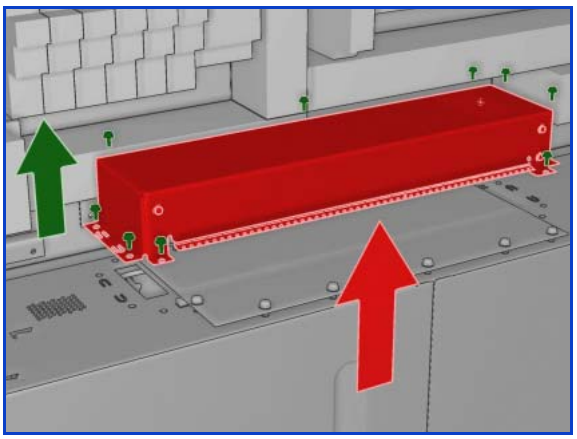
Main Interconnect Board

Removal

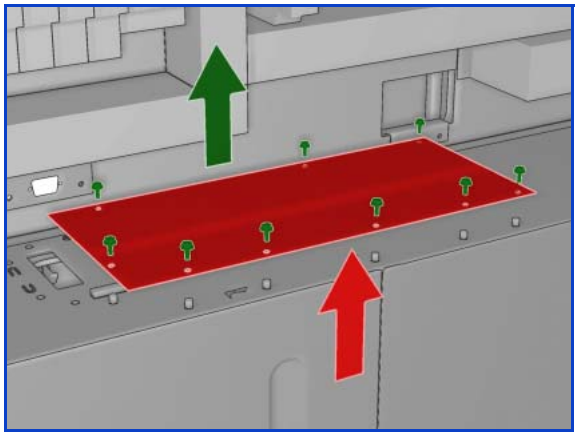
WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.
2. Disconnect the cables on the front of the Main Interconnect Board, outside the cover.



3. Remove the six T20 screws that secure the main interconnect cover and remove it.
4. From the top, disconnect all cables from the Main Interconnect Board.



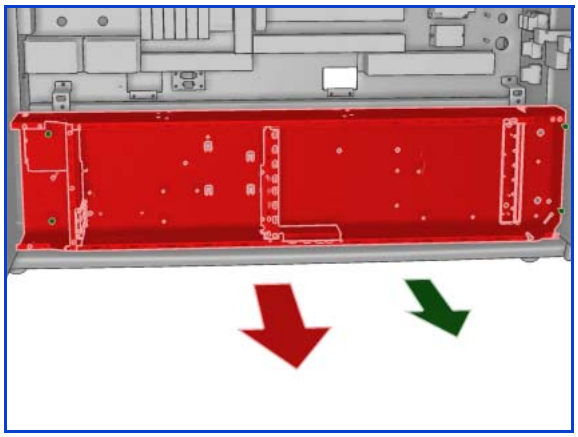
5. Remove the nine T10 screws that secure the Main Interconnect Board and remove it to the right and then out.

Main Electronics Box

Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Upper and Lower PCI Boards. ⇒See page 597.
2. Remove the Formatter Board. ⇒See page 591.
3. Remove the Hard Disk System. ⇒See page 601.
4. Remove the Main Power Supply. ⇒See page 594.
5. Remove the Printmech Board. ⇒See page 596.
6. Remove the three T20 screws that secure the Main Electronics Box and remove it.

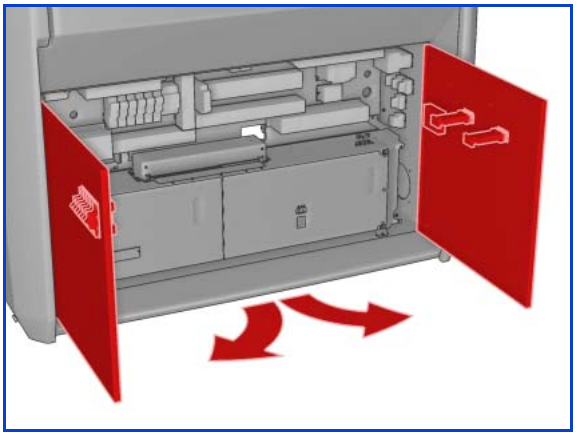


Electrical Cabinet

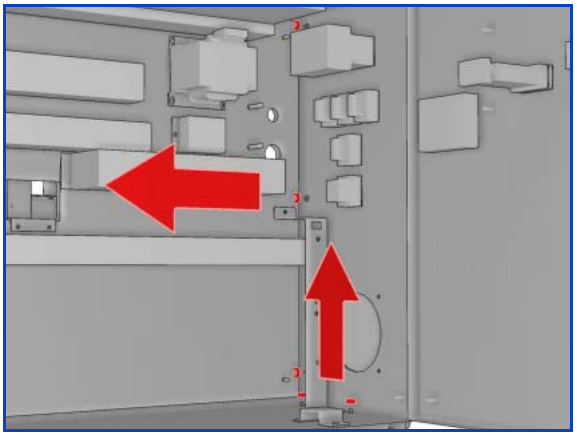
Power Cabinet

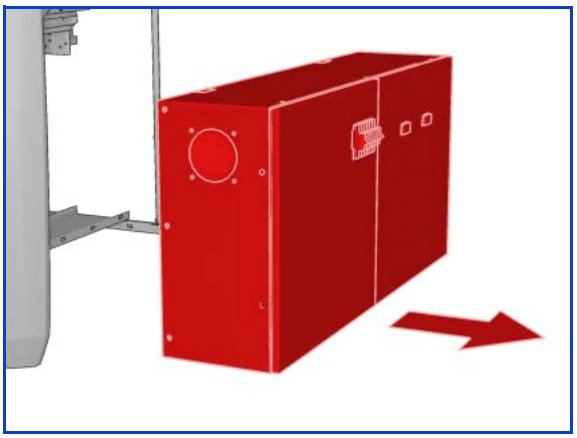
Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.
2. Disconnect all cables coming from outside the electrical cabinet.
   - Left side
     - Trailing cables
     - LAN cable
     - USB cable
   - Center side
     - All Main Interconnect Board connections
     - Electronics box top cable latchings
   - Right side
     - 3 Printmech Board power connections
     - Unroute ferrites
3. Disconnect the main electronics box power connection.
4. Remove the five screws that secure the electrical cabinet on each side.



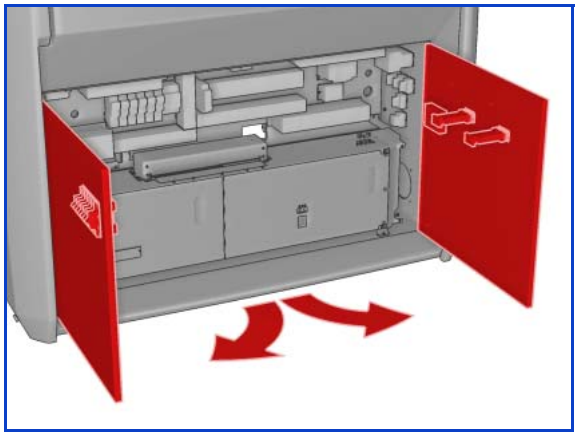


5. Remove the electrical cabinet.

Left Cabinet door

Removal

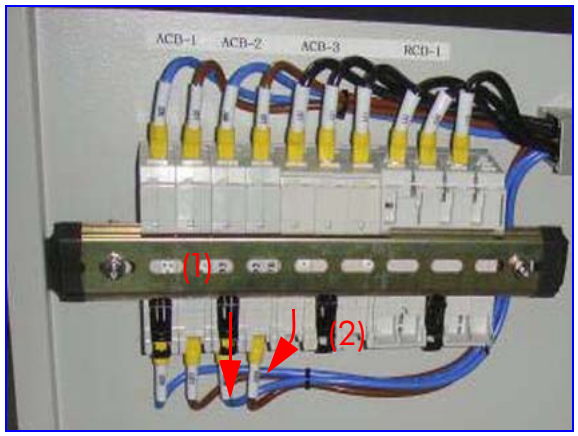
WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

2. Remove the grounding cable from the base of the left cabinet door.

3. Remove the wire duct from inside the left cover by pulling.



4. Remove all the cables from the DIN Rail by pulling down the black crimpers (they sprung loaded). Pull down the black part (1) and twist the component out (2).

5. Remove the lower door holding pin by hitting it from below with a screwdriver.

6. Remove the upper door holding pin by hitting it from below with a screwdriver, and then hitting the protuding head upwards.

Installing

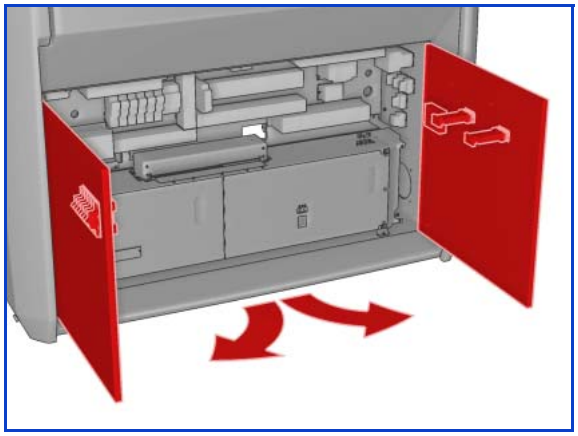
1. When installing the new door, for reasons of safety it is important that the grounding cable is reinstalled at the base of the door.

⚠ Spring + Earth Cabinet + Star + Nut
⚠ Ensure the fasteners are according to the above configuration
⚠ Ensure cable is secured tightly and not able to move

Right Cabinet door

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.
2. Remove the Heating/Curing Temperature controllers ⇒See page 611.
3. Remove the USB_RS486 convertor

4. Remove the right lower door holding pin by hitting it from below with a screwdriver.

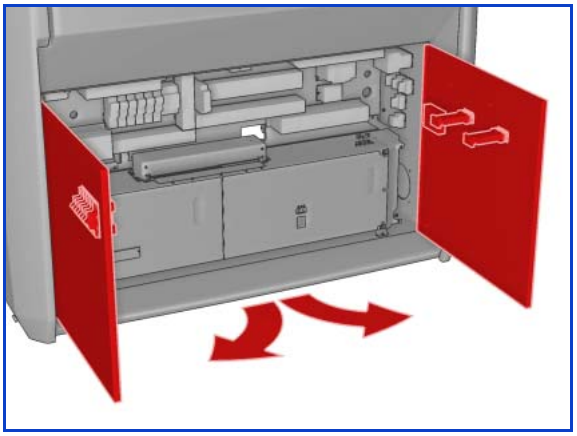
5. Remove the right upper door holding pin by hitting it from below with a screwdriver, and then hitting the protuding head upwards.

Power Fuse Holder Block

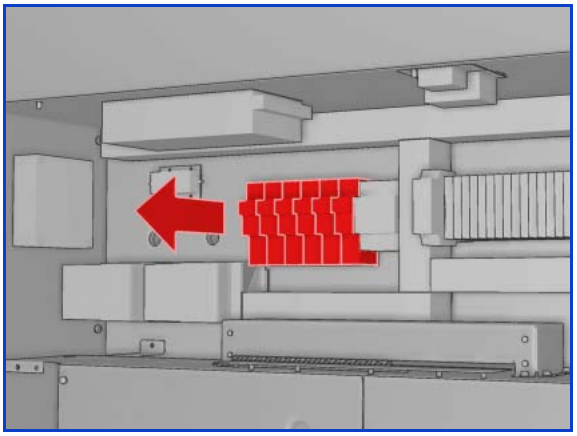
Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: There are two Power Fuse Holder Blocks placed together. Each Power Fuse Holder Block has a compartment for 3 fuses. The units are DIN rail attached to the back plate of the e-cabinet.



1. Open the electrical cabinet doors.



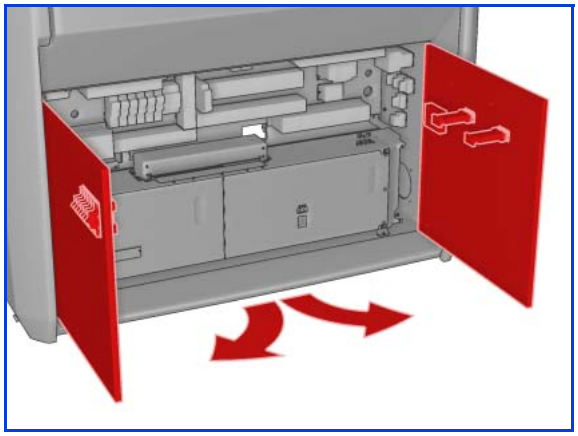
2. Disconnect the 6 power lines (3 Input- Top and 3 Output- Bottom).
3. Remove the two alarm line cables connected at the top of the module.
4. Unclip the release taps of the DIN module.
5. Remove the Power Fuse Holder Block.

NOTE: When mounting back the fuse holder, ensure that the alarm line cables are mount back at the same place, if mounted back at the wrong connector, the printer will display a 14.2:10

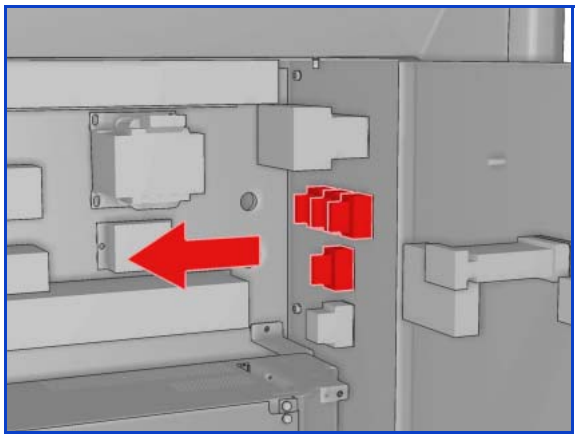
Electrical Cabinet Power Light (L1, L2, L3, L4)

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

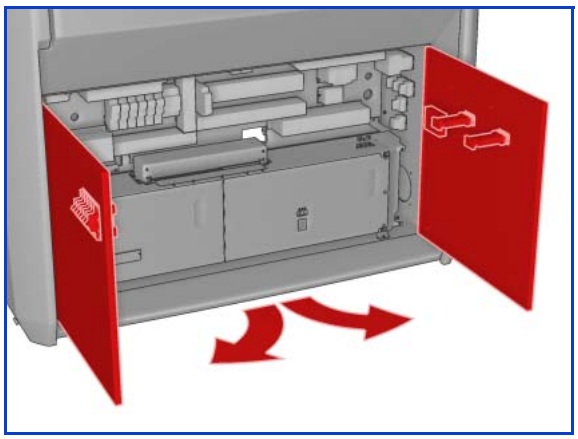


2. Loosen the bottom screw that secures the light.
3. Pull the light out of the hole on the side of the electrical cabinet.
4. Disconnect the two cables and remove it.

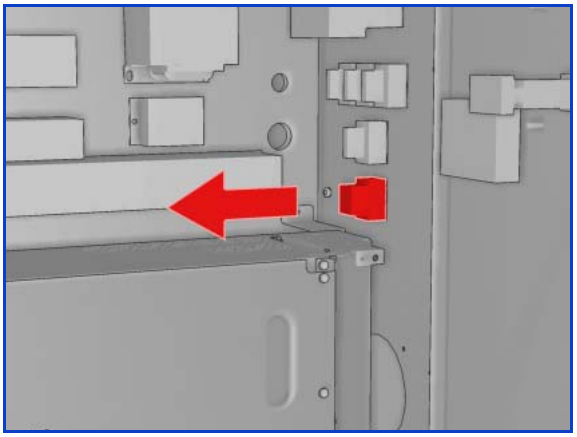
Electrical Cabinet Power Button and Light (L5)

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

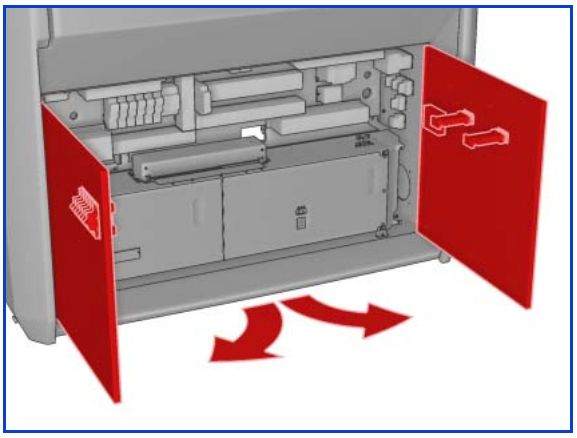


2. Loosen the bottom screw that secures the button and light.
3. Pull the button and light out of the hole on the side of the electrical cabinet.
4. Disconnect the two cables and remove it.

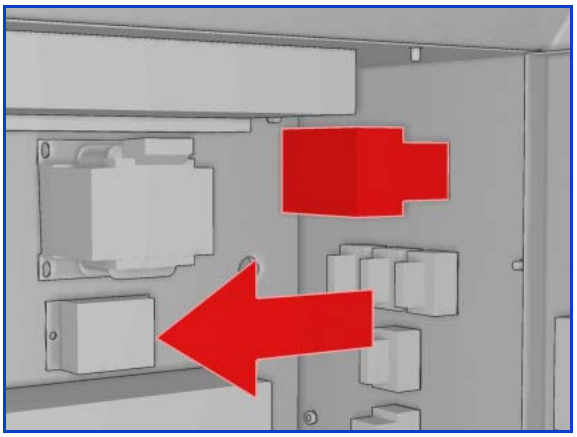
Main Power Switch

Removal

> ⚠ **WARNING!:** Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

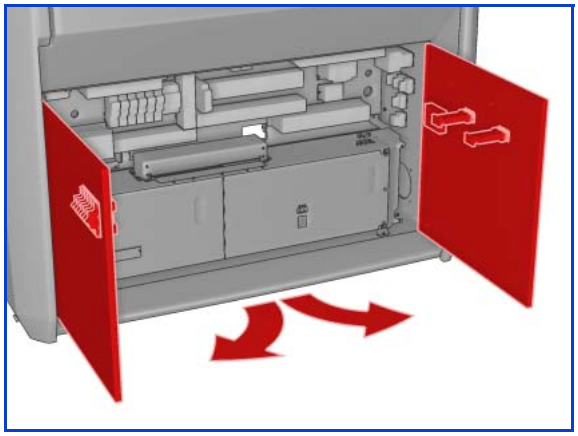


2. Disconnect the single and 3 phase power lines from the installation connection points.
3. Remove all connections from the switch inside the electrical cabinet.
4. Remove the front bezel of the switch.
5. Remove the four slotted screws (4mm max driver width) that secure the Main Power Switch to the electrical cabinet and remove it.

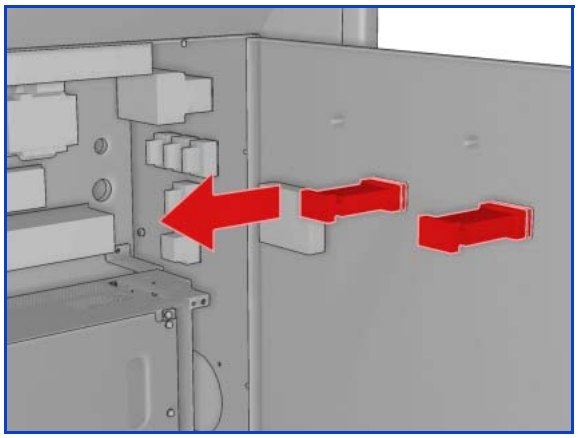
Heating/Curing Temperature Controller

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.



2. Remove the green rear connector blocks from the module (cables will remain attached to the different connection points. The green connection blocks are clipped to the actual temperature controllers.

NOTE: Follow the cables from the modules to the connection block, and make sure that they are not damaged or disconnected.

3. The easiest method to remove the Controller is by inserting two small cards (like a business card for example) on each side of the clips securing the controller.
4. Remove the two A4 screws which attach the modules to the power cabinet doors.

Configuring the new temperature controller from the Front Panel of the controller

NOTE: The new support parts are **not** configured.

1. Power up the system with the e-box main switch OFF and configure the new module with the basic configuration:

   From the front panel, navigate to **Page** > **Communications Menu**.

   - Address Modbus: 1 for Printzone controller
   - Curingzone controller:2
   - Baud Rate Modbus: 19200
   - Protocol: Modbus RTU
   - Parity Modbus: None

2. From the front panel, navigate to **Page** > **Alarm Menu**.
   - Alarm2Type: DeviationAlarm
   - Alarm2Latching: Latching

- The other Alarm2 parameters are the default values:
  - Alarm2Source: AnalogInput
  - Alarm2Hysteresis: 1.0
  - Alarm2Logic: CloseOnAlarm
  - Alarm2Sides: Both
  - Alarm2Blocking: Off
  - Alarm2Silencing: Off
  - Alarm2Display: Off

3. Power up the system with the electronics box main switch ON and start the printer.
4. Perform the heating and curing diagnostic tests. ⇒See page 447 and ⇒See page 449.
5. **LX800:** Replace the the corresponding current sensor. This sensor can be found under the fuse holder in the E-Cabinet.

Disconnect this cable to easliy replace the current sensor

6. From the front panel navigate to > current menu (Curr)
   - Sides (CSD): none/Off (default)
   - Read Enable (Cur): No (default)
   - Detection Tresholds (Cdt): 9 (default)
   - Input current scalling(CSC): configuration values done at the manufacturing side, linked with the current sensor: Default: 50
   - Heater current Offset (CoFS): configuration values done at the manufacturing side, linked with the current sensor: Default: 0
   - Output Source Instance (Cs): 1 (default)

Configuring the new temperature controller from the PID Controller

NOTE: This part of configuration is similar between L6500/LX600 PID controller and the LX8x0 one. Differences will be marked in ( ) example (4 times for LX8x0)

When a PID Controller (printer off, turning on the ACB-1 for example without having the printer starting) is replaced set the menu options to the following settings (until Set is displayed in Green, do not release keys when open is displayed):

1. Turn On the PID Controller, press both the Up and Down keys for approximately 6-10 seconds.

2. Press 5 times on the down key (7 times for LX8x0).

3. Press 2 times on the green button to reach the Modbus Address (press up/down to change):
   - 1 for Heating
   - 2 for Curing

4. Press once on the green key to reach 'baud' and press up once to change to 19.2.

5. Press once on the infinite button, and press 4 times on the down key to reach the 'Alarm' menu.

6. Press once on the green button to reach the 'Alarm submenu'.

7. Press once the up button to select ‘2’.

8. Press once on the green button to reach the Aty menu.

9. Press the down button once to set to ‘dEAL’.

10. Press the green button 5 times to reach ‘Latch’ (4 times for LX8x0).

11. Press the down button once to select ‘LAt’.

12. Press the green button 3 times to reach ‘AdSP’.

13. Press once the up button to set to ‘oFF.

14. Press the infinite button three times to finish.

15. Restart the PID (through ACB1, turning off and on for example) and the changes of settings are done.

LX800 only: Set Calibration Value

The LX800 temperature controller also includes a control of the current consumed which requires a calibration value to be entered into the system in order for it to be accurate for the 8.5.1 Heating Calibration, see page 464, for the 8.5.2 Curing Calibration see page 465.

To restore to factory settings (for LX600/L65500)

1. Turn On the PID Controller (printer off, turning on the ACB-1 for example)
2. Go to the home screen by pressing the Infinity Key for two seconds
3. Go to the Setup from the home page by pressing both the infinity and the green keys for 6-10 seconds:

4. Press the Down key two times to reach this menu shown.

5. Press six times on the green key to each this menu.

6. Press once on the down key to each this menu. Press on infinity key 2 twice to return tho the upper menu.

7. Restart PID (through ACB1, turning off and on for example) -> reset mfg done. Now re-configure the PID controller.

To restore to factory settings (for LX8x0)

To restore the factory settings on LX8x0 (different procedure than the one used on L65500/LX600)

1. Turn on the PID controller (printer off, turning on the ACB-1 for example)
2. Press 2 times on infinity key to ensure to be at the main menu level.

3. Press both the Up and Down keys for approximately 6 seconds.

NOTE: Need to have set displayed in green (And not 'open'). If you see 'open', keep pressed the 2 up and down keys.

4. Press 6 times on down -> 9LbL should be displayed in RED.

5. Press 9 times on green button -> USrr in green is displayed.

6. Press 1 time on down button to have 'FCtY' selected and marked in red.

7. Press 1 time on Infinity -> set Fcty.

8. Press 1 time on Infitity -> PID blinking with 'Err' displayed.

9. Restart PID (through ACB1, turning off and on for example) -> reset mfg done

Then you have to reconfigure the PID controller, including setting the correct values of the current reader.

USB-RS485 box configuration

There are four switches at the bottom side of this box, the correct configuration: SWITCH 1: OFF, 2: OFF, 3: ON, 4: ON

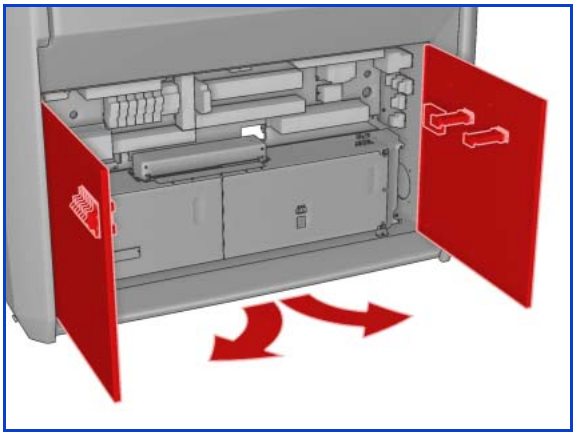
Note that within the support part, in some cases, there is an extra CD and 1 extra cable which are not needed.

Heating and Curing Power Module

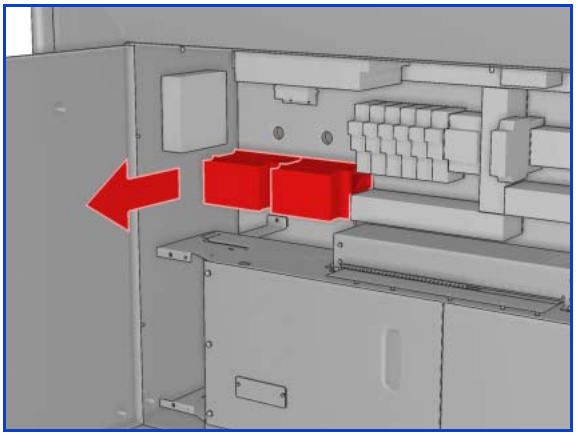
Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: The curing module is on the left, the heating module on the right.



1. Open the electrical cabinet doors.

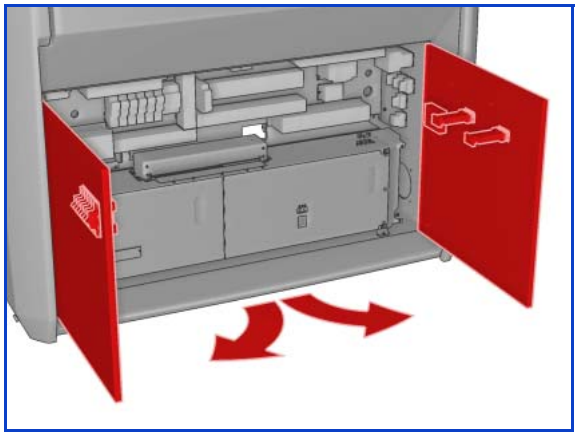


2. Remove the transparent cover of the module.
3. Disconnect the two control cables.
4. Disconnect the six power lines (3 Inputs , Bottom, 3 Outputs, top).
5. Remove the eight T15 screws that secure the modules and remove them.

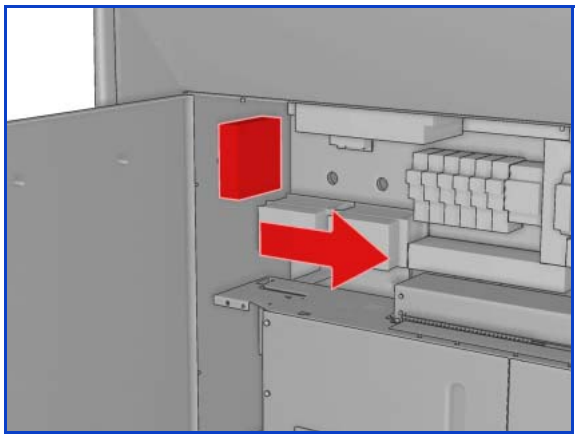
Electrical Cabinet Internal Fan

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.



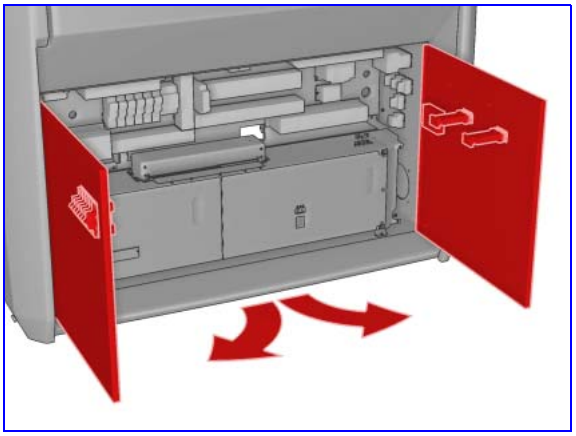
2. Follow the fan cables from the fan to the block connector.
3. Unroute the cables from the fan all the way to the block connector, and cut all necessary plastic ties.
4. Disconnect the fan cables from the connector blocks.
5. Remove the four MH7 screws that secure the Electrical Cabinet Internal Fan to the inner side of the electrical cabinet and remove it.

NOTE: The most powerful e-cabinet FAN, introduced on Fall 2011, is having a reference ending by SHE, example: Model EFB1224SHE.

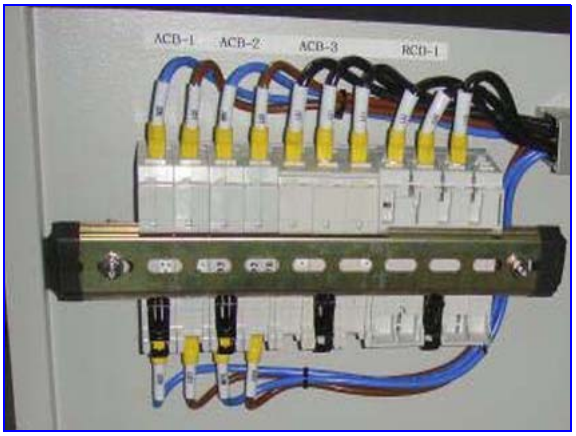
Residual Current Circuit Breaker

Removal

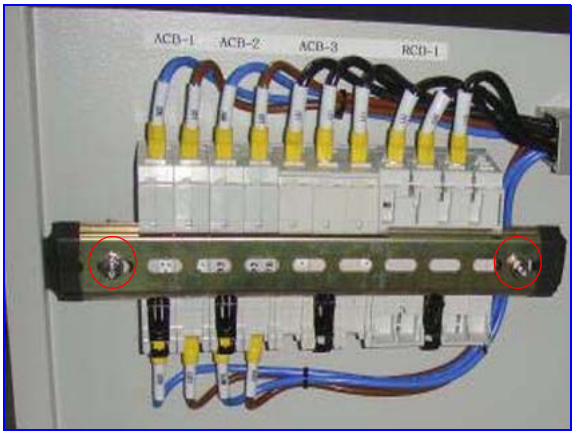
WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

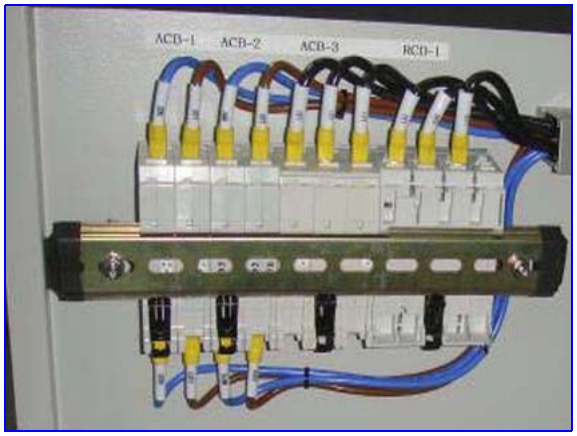


2. Disconnect all the cables from the DIN rail located on the left door by removing their retaining screws.

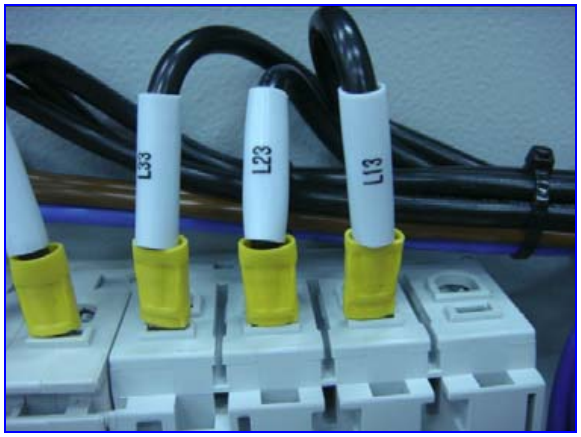


3. Remove the DIN rail by removing the two retaining screws on both sides.

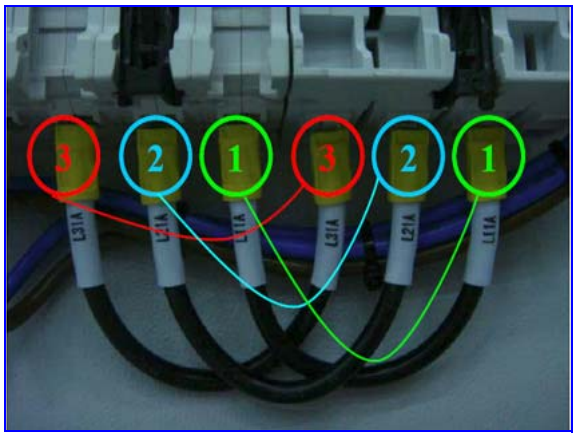
Installation



1. Once the new DIN rail has been installed onto the printer, check the cables are correctly connected.



2. Check the connections to the Residual Current Circuit Breaker are correct.

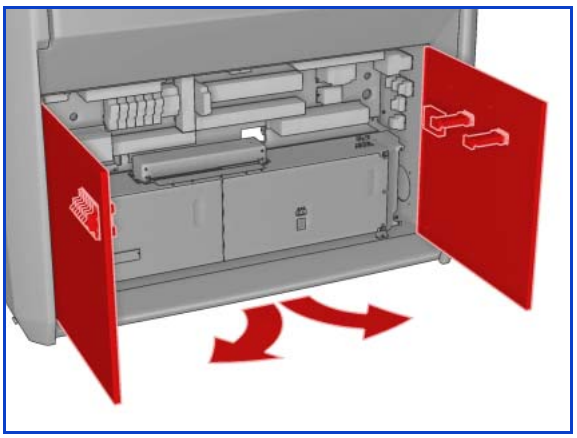


3. Check that the cables below the Residual Circuit breaker are correctly connected using the cable links provided.

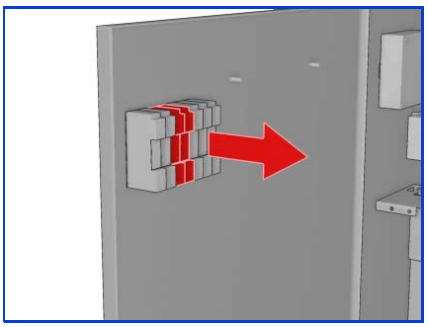
Circuit Breakers (10 A, 20 A, 32A/63A)

Removal

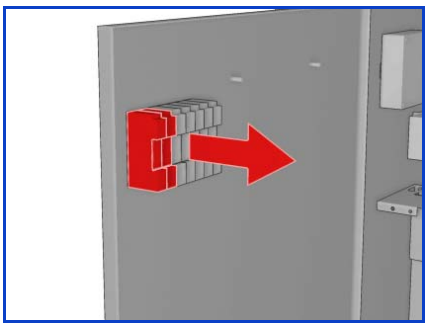
WARNING!: Switch off the printer and power enable switch.



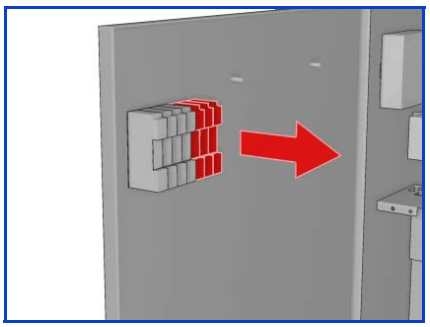
1. Open the electrical cabinet doors.
2. Turn the Main Power Switch off.
3. Disconnect input (top) and output (bottom) cables from the circuit breaker.
4. Remove the two screws of the latching rail (A4 in the front, MH8 in the back).
5. Remove the three circuit breakers together with the holding rail.
6. Unclip and remove the appropriate circuit breaker.



10A



20A



32A/63A

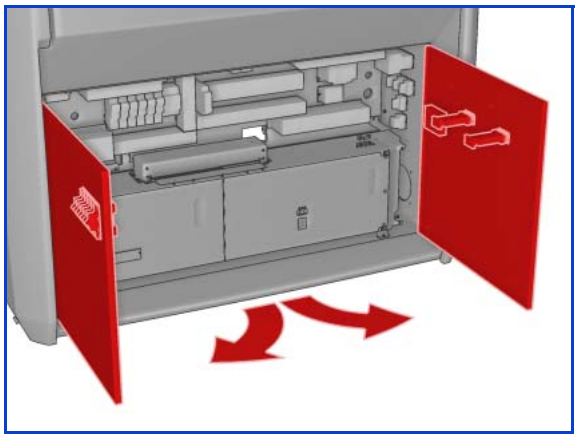
Note: 32A is for the L65500/LX600
Note: 63A is for the LX800 only

Electrical Cabinet Rail Connector

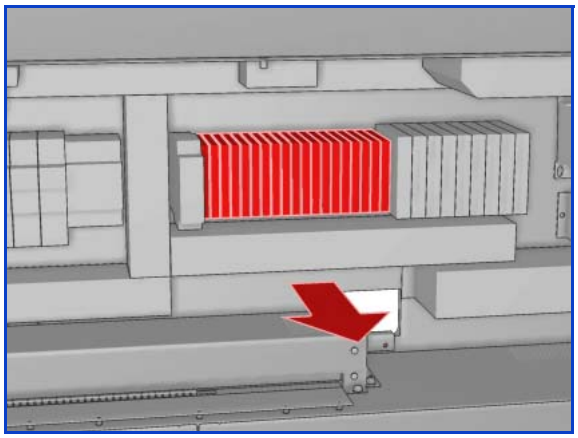
Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: There are six kinds of connectors. For information about these connectors and diagrams of the rail, ⇒See page 16



1. Open the electrical cabinet doors.

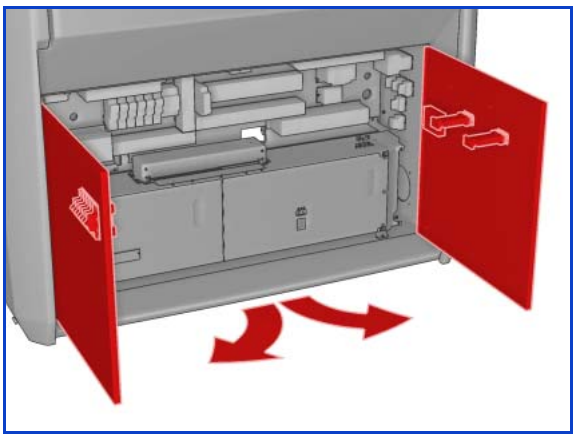


2. Disconnect the cables for the rail connector you need to replace.
3. Use a flat screwdriver to unclip the rail connector from the rail and remove it.

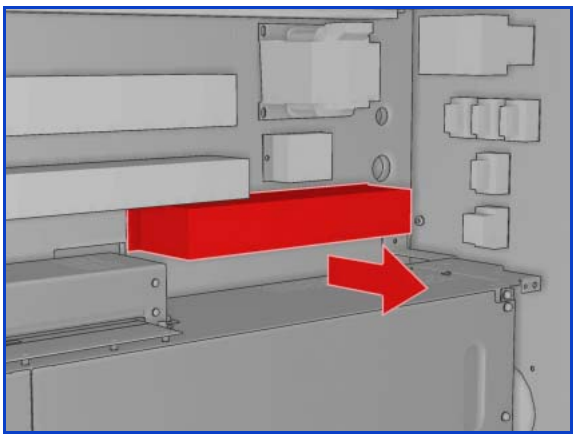
3 Phase Line Filter

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

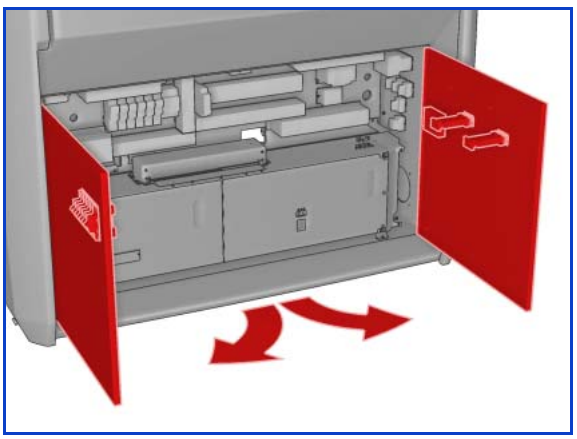


2. Disconnect the six cables connected to the filter (3 on the right [input], 3 on the left [output]).
3. Remove the four A3 screws that secure the 3 Phase Line Filter and remove it.

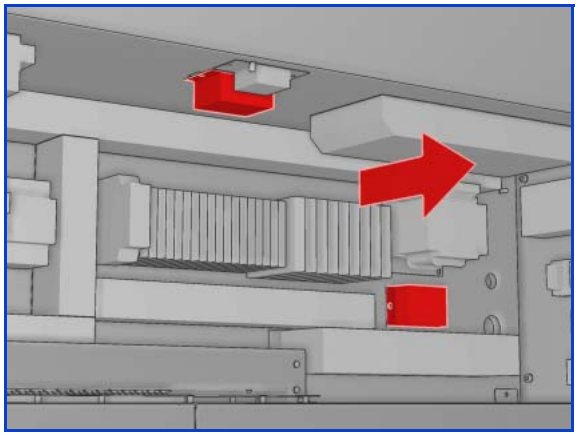
Two Single Phase Line Filters

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

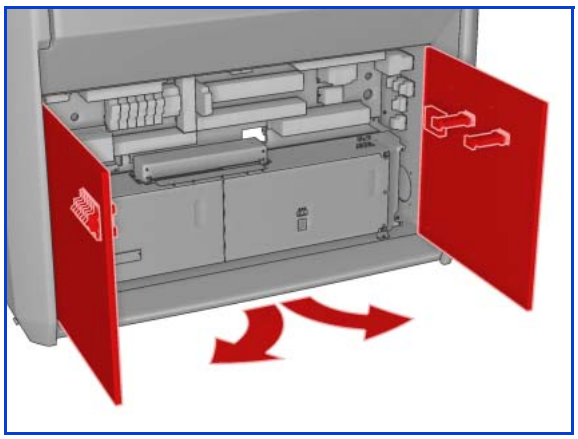


2. Remove the four MH7 nuts of the filter screws.
3. Disconnect the four cables connected to the filter (two on the right [input], two on the left [output]).
4. Remove the four A3 screws that secure the filter and remove it.

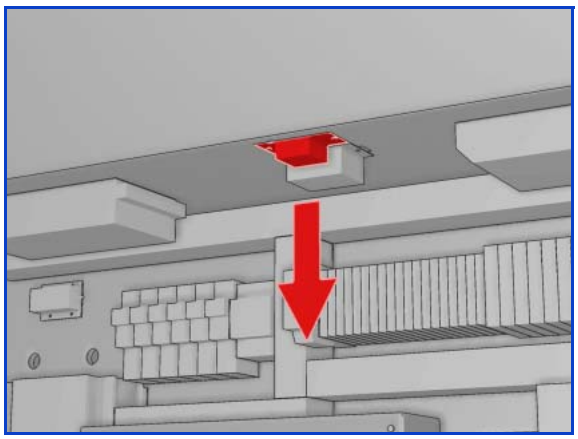
Scan Axis Brake Motor Resistor

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

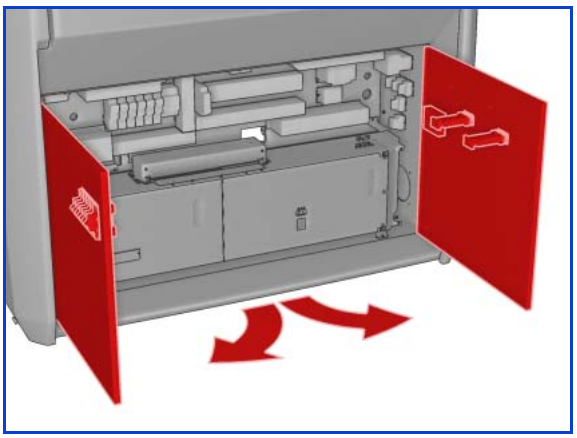


2. Follow the two cables from the Scan Axis Brake Motor Resistor to the block connector.
3. Unroute the cables from the Scan Axis Brake Motor Resistor all the way to the block connector, and cut all necessary plastic ties.
4. Disconnect the two resistor cables from the connector blocks.
5. Remove the four MH7 nuts and bolts that secure the Scan Axis Brake Motor Resistor and remove it.
6. The resistor is soldered on to the part, using a soldering iron, remove the old soldered resistor replace with the new part.

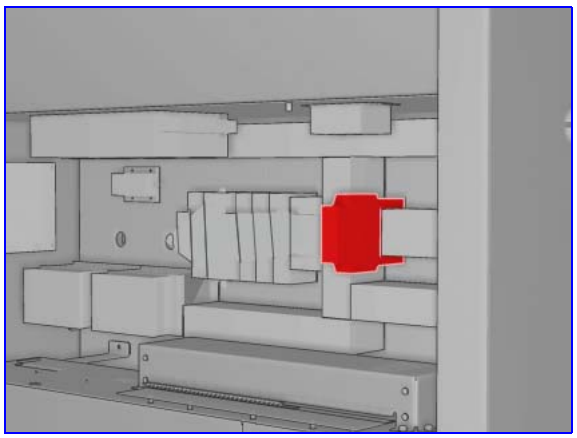
Safety Relay

Removal

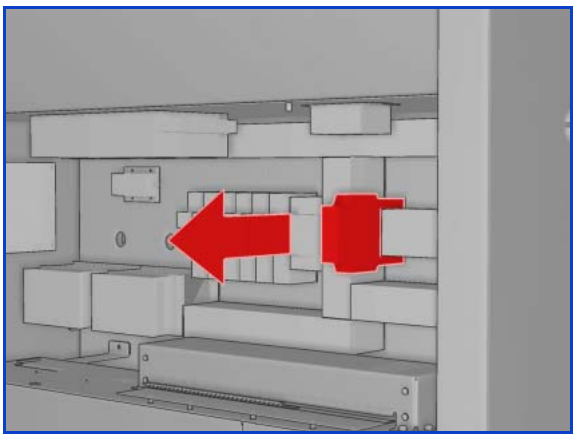
WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.



2. Disconnect all cables from the Safety Relay.

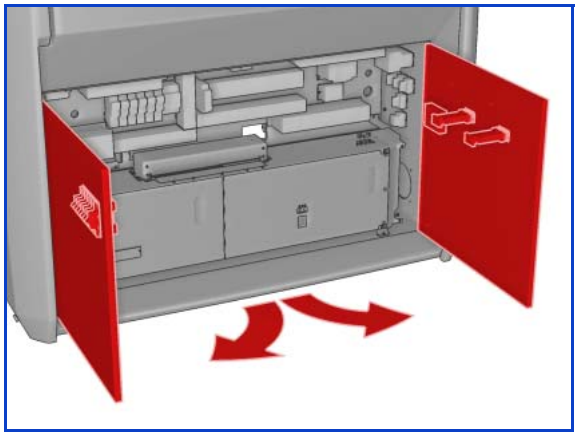


3. Unclip the Safety Relay from the DIN rail and remove it.

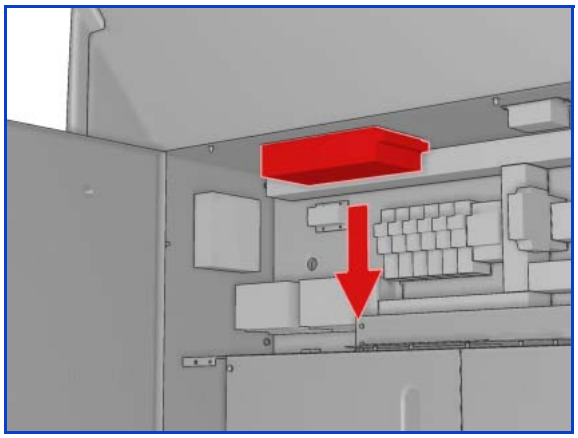
Secondary 24 V Power Supply

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.
2. Slide open the Front Right Slide Door.



3. Remove the four A3 screws that secure the Secondary 24 V Power Supply. The screws are located on the top of the electrical cabinet, and must be accessed through the sliding door.

NOTE: The power supply will fall when you remove the screws, so make sure that someone is there to hold it.

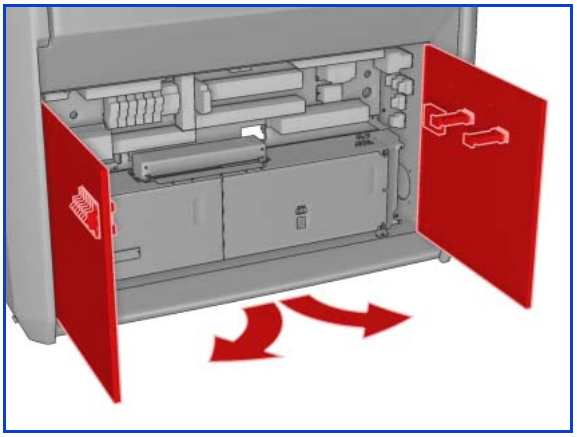
4. Disconnect the three input cables.
5. Disconnect the 24V cables and remove the supply.

Secondary 42 V Power Supply

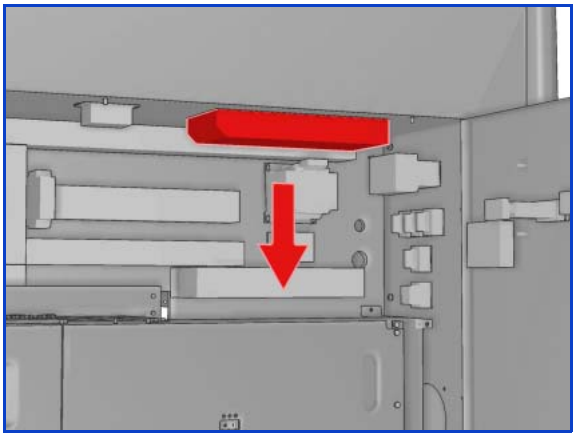
Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Right Side Rear Panel ⇒Seepage 567.



2. Open the electrical cabinet doors.



3. Remove the four A3 screws that secure the Secondary 42 V Power Supply. The screws are located on the top of the electrical cabinet, and must be accessed through the sliding door.

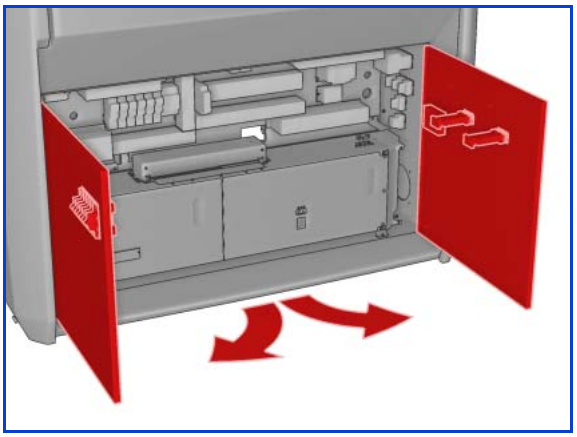
NOTE: The power supply will fall when you remove the screws, so make sure that someone is there to hold it.

4. Disconnect the power input cables.
5. Disconnect the 42V cables and remove the supply.

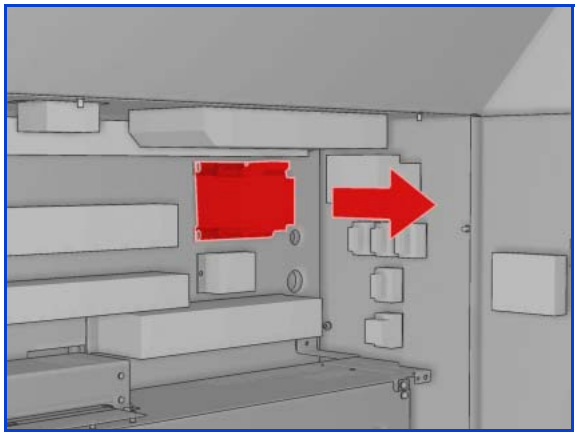
Vacuum Fan Power Transformer

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

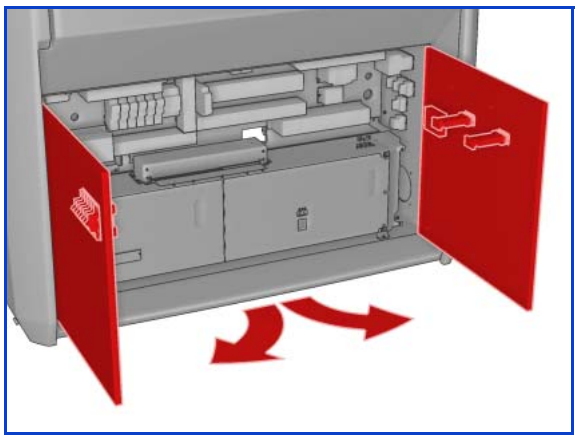


2. Disconnect all cables connected to the transformer.
3. Remove the four A3 screws that secure the Vacuum Fan Power Transformer and remove it.

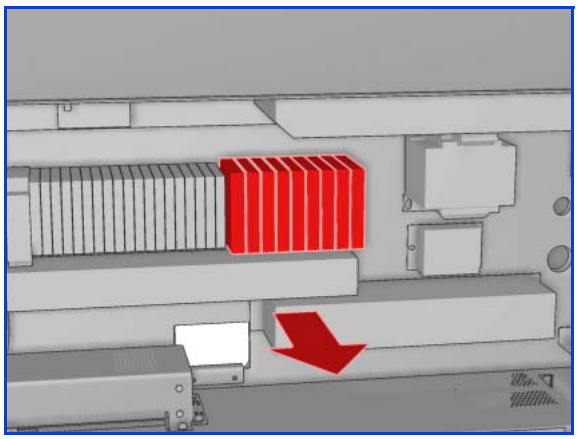
Electrical Cabinet Rail Small Fuse Holder

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.

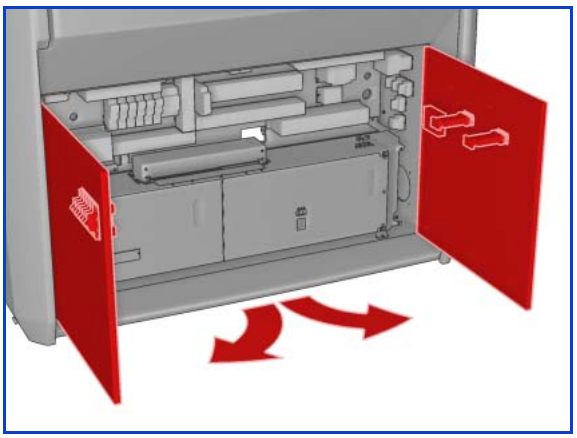


2. Disconnect the cables and unclip it from the DIN rail.

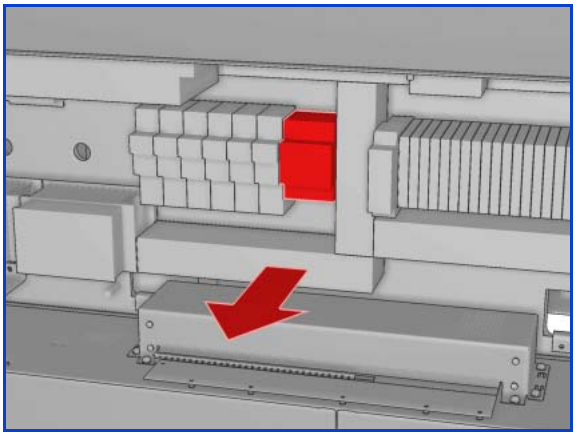
Main Power Breaker (KM)

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the electrical cabinet doors.



2. Disconnect the cables and unclip it from the DIN rail.

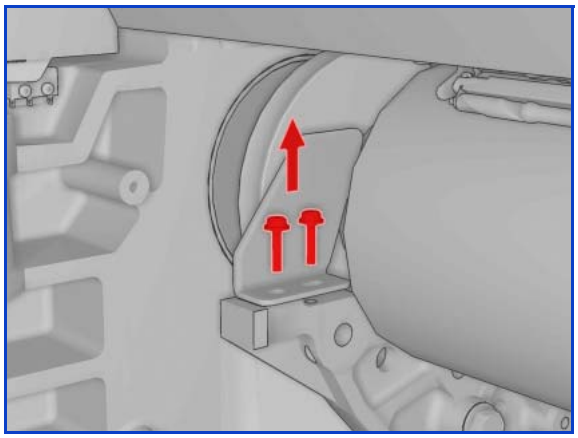
Substrate Path

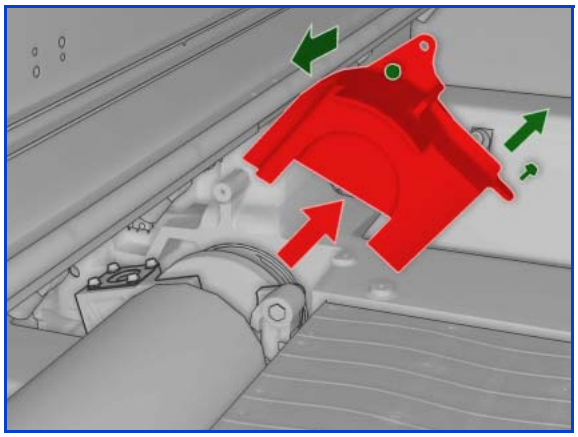
Drive Roller

Removal

WARNING!: Switch off the printer and power enable switch. Also make sure that there are no tools obstructing the operation of the printer.

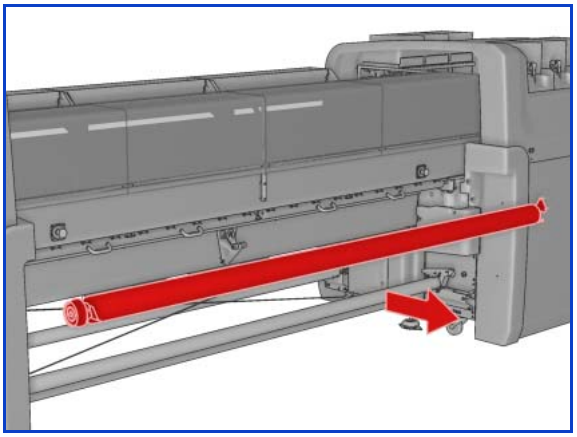
1. From the Front Panel, navigate to **Carriage Beam Position** > **Move to Highest Position** to raise the PPS. If you cannot start the printer in normal boot mode due to failure, use diagnostic mode ⇒See page 332.
2. Remove the Drive Roller Encoder PCA and Encoder Sensor ⇒See page 636.
3. Remove the Drive Roller Transmission Assembly ⇒See page 637.
4. Remove the two A6 screws that secure the top left bearing retainer and remove it.
5. Remove the two A6 screws that secure the top right bearing retainer and remove it.





6. Remove the two T20 Screws that secure the Drive Roller Encoder Disc Cover and remove it.

NOTE: Access the front most screw from the front and the other screw from the top.



7. Using two people, remove the Drive Roller (it weighs 60 kg) from the printer and store it carefully.

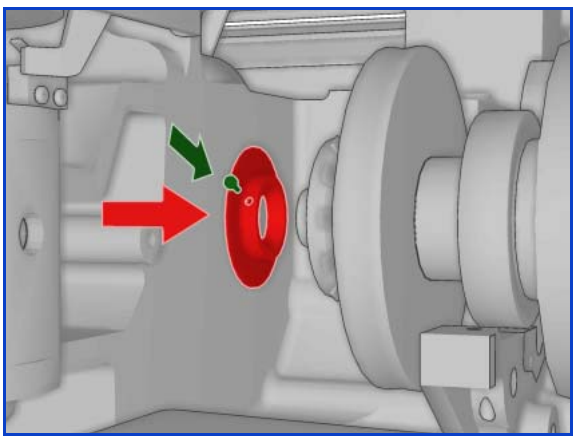
CAUTION: Handle the Encoder Disc carefully. The removal recommendation is to first remove the end near the ink cartridges and then remove the end near the e-cabinet.

Installation

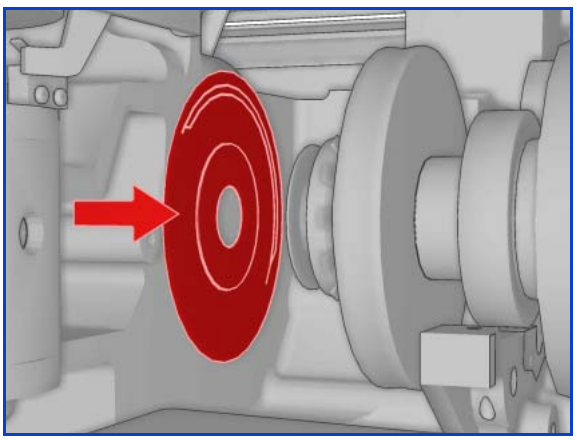
NOTE: Before you replace the Drive Roller, some components must be removed to use with the new Drive Roller.

NOTE: When you replace the Drive Roller, you must use a new encoder disc. Make sure you clean the encoder disc fastener with alcohol before you replace it.

NOTE: We highly recommend to installing back the new encoder reader when the drive roller is not in the printer, as there is a high risk of damaging it.

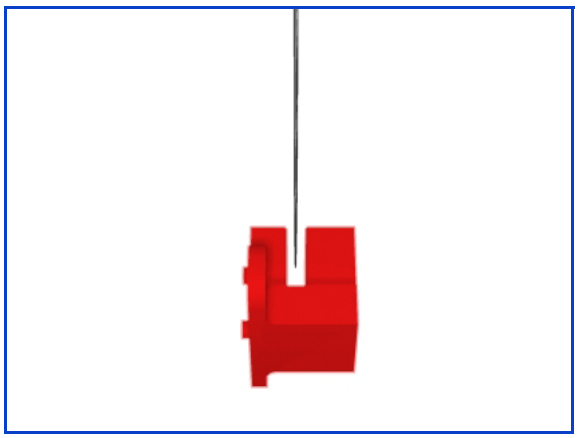


1. Remove the encoder disc and the fastener together.
2. Remove the old encoder disc.
3. Place the fastener on the Driver Roller and tighten the screw.



4. Using the pin as a guide, stick the encoder disc to the fastener.

NOTE: Be very careful that you do not touch the encoder disc. It is advisable to wear fabric gloves during this procedure.



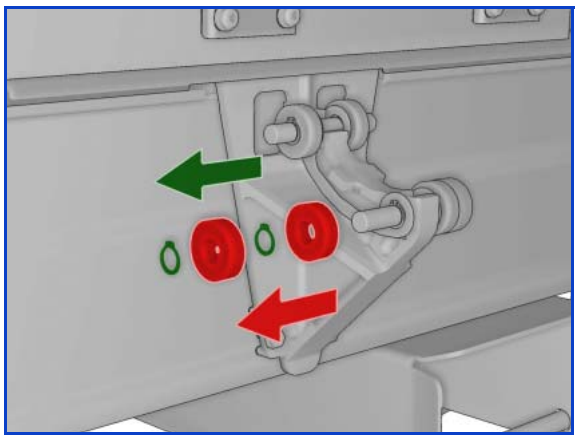
5. Replace the Drive Roller. Use two people as the driver roller is heavy.
6. Replace the old Encoder Disc PCA and Encoder Sensor with the new service part.
7. Make sure that the distance between the encoder disc and both sides of the encoder sensor is the same.
8. Make sure that the encoder disc is not touching the encoder sensor.
9. Use your hand to manually rotate the Drive Roller. Watch the encoder disc to make sure that it is always the same distance from the Encoder Sensor.
10. Perform the following calibrations:
    - 4.3.1 Driver Roller Encoder Calibration ⇒ See page 502.
    - 4.3.4. Drive Roller Calibration ⇒ See page 504.

Drive Roller Support Bearings Set (center)

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: There are six bearings in total, four in the front and two in the back. Each one is secured with a single circlip.



1. Remove the Drive Roller ⇒See page 631.
2. Remove the circlip carefully and remove the bearing.

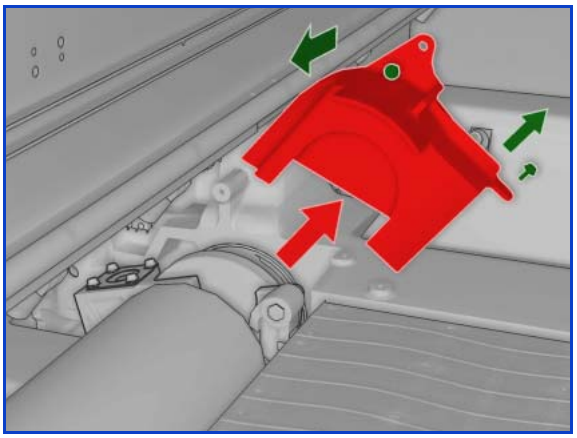
Drive Roller Encoder Disc, Drive Roller Encoder PCA and Encoder Sensor

Removal

WARNING!: Switch off the printer and power enable switch.

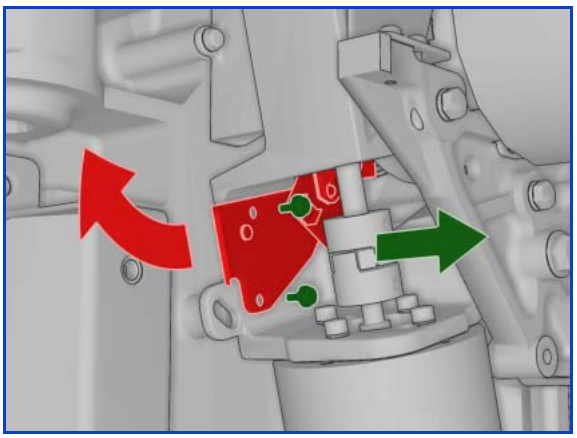
CAUTION: Handle the Encoder Disc carefully. Any finger prints, scratches or stains could cause the Printer to malfunction.

1. Remove the Right Side Rear Arc ⇒See page 570
2. Raise the scan axis.
3. Remove the two T20 screws that secure the Drive Roller Encoder Disc Cover and remove it.

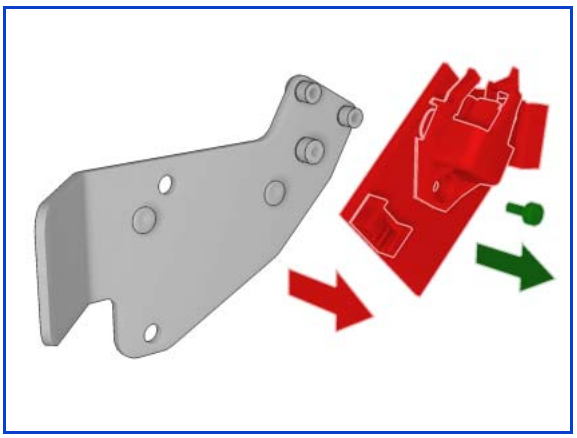


NOTE: Access the front most screw from the front and the other screw from the top.

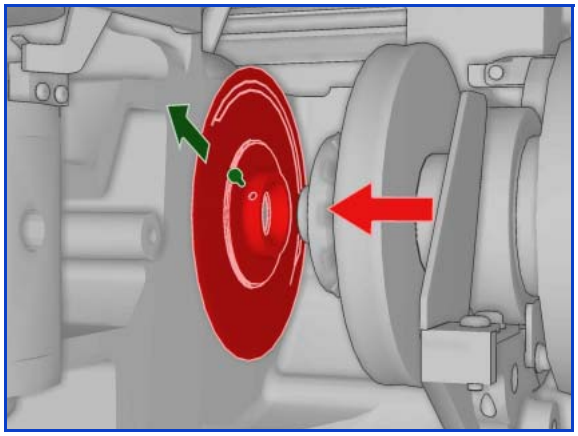
4. Disconnect the encoder cable and power cable from the Drive Roller Encoder PCA.



5. Remove the two T20 screws that secure the Drive Roller Encoder PCA support and remove it together with the Drive Roller Encoder PCA.



6. Remove the T20 screw that secures the Drive Roller Encoder PCA and Sensor to the support and remove them.
7. Remove Driver roller (2 people minimum) ⇒ page 631 to avoid damaging the encoder disk when reinstalling

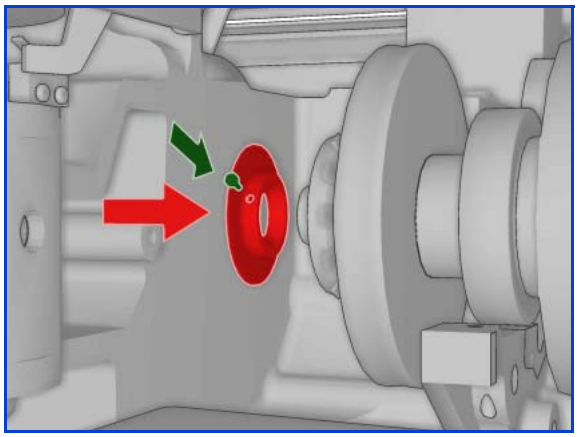


8. Loosen the T8 screw that secures the encoder disc fastener and remove the disc and fastener together.

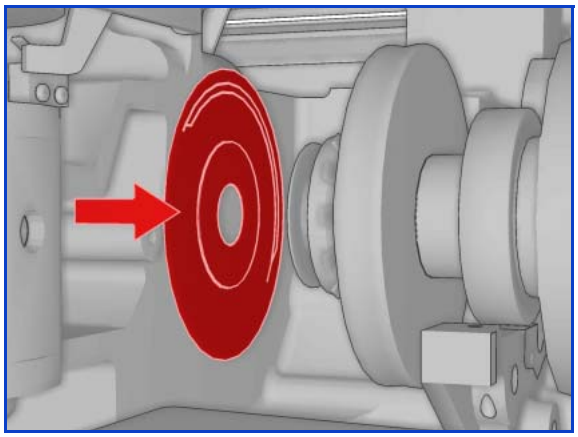
Installation

NOTE: You must replace the Drive Roller Encoder Disc with a new part. Make sure to clean the encoder disc fastener with alcohol before you install it.

NOTE: We highly recommend to installing back the new encoder reader when the drive roller is not in the printer, as there is a high risk of damaging it.



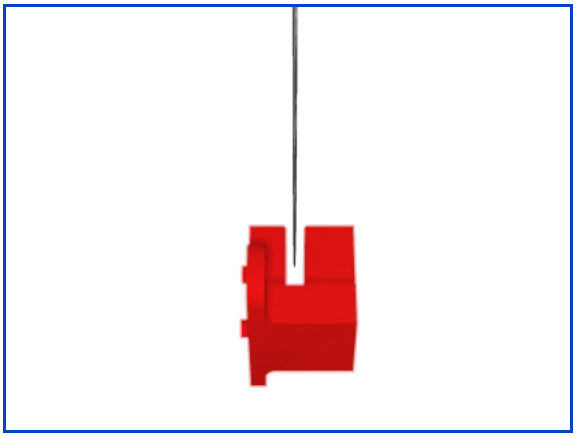
1. Remove the encoder disc and the fastener together.
2. Remove the old encoder disc.
3. Place the fastener on the Driver Roller and tighten the screw.



4. Using the pin as a guide, stick the encoder disc to the fastener.

NOTE: Be very careful that you do not touch the encoder disc. It is advisable to wear fabric gloves during this procedure.

5. Replace the Drive Roller. Use two people as the driver roller is heavy.
6. Replace the old Encoder Disc PCA and Encoder Sensor with the new service part.



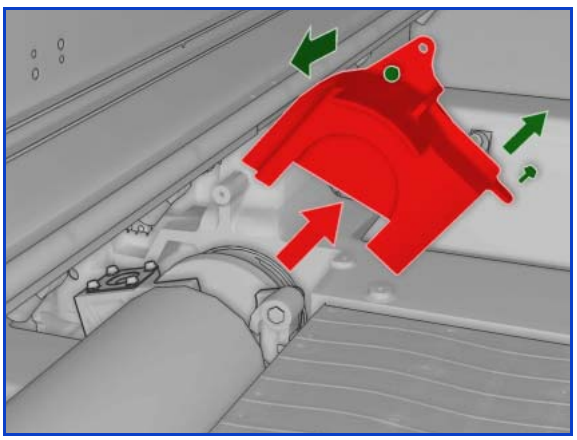
7. Make sure that the distance between the encoder disc and both sides of the encoder sensor is the same.
8. Make sure that the encoder disc is not touching the encoder sensor.
9. Use your hand to manually rotate the Drive Roller. Watch the encoder disc to make sure that it is always the same distance from the Encoder Sensor.
10. Perform the calibration 4.3.1 Drive Roller Encoder Calibration ⇒See page 502.

Drive Roller Encoder PCA and Encoder Sensor

Removal

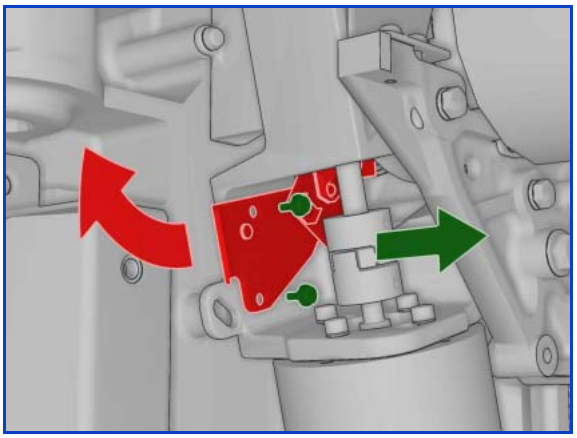
WARNING!: Switch off the printer and power enable switch.

1. Remove the Right Side Rear Arc ⇒See page 570.
2. Raise the scan axis.
3. Remove the two T20 Screws that secure the Drive Roller Encoder Disc Cover and remove it.



NOTE: Access the front most screw from the front and the other screw from the top.

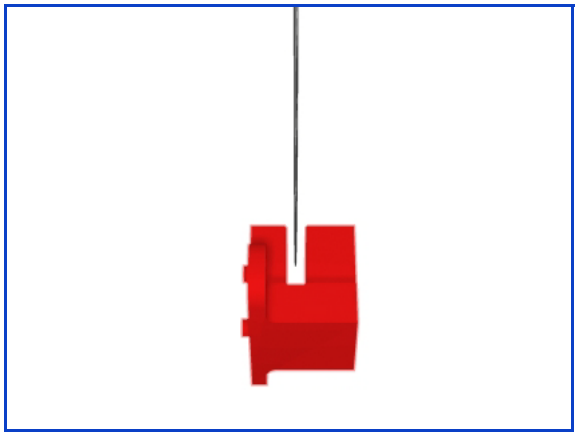
4. Disconnect the encoder cable and power cable from the Drive Roller Encoder PCA.



5. Remove the two T20 screws that secure the Drive Roller Encoder PCA support and remove it together with the Drive Roller Encoder PCA.

Installation

1. Replace the old Encoder Disc PCA and Encoder Sensor with the new service part.

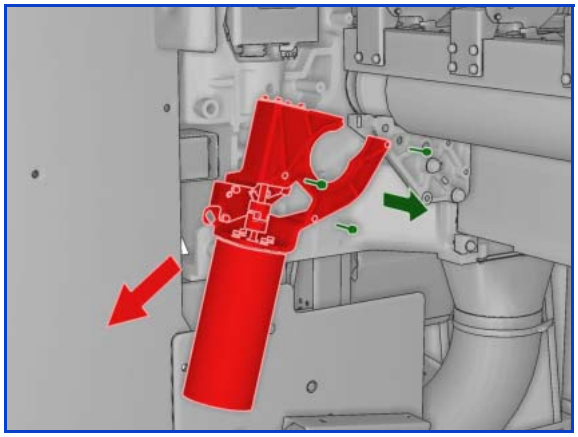


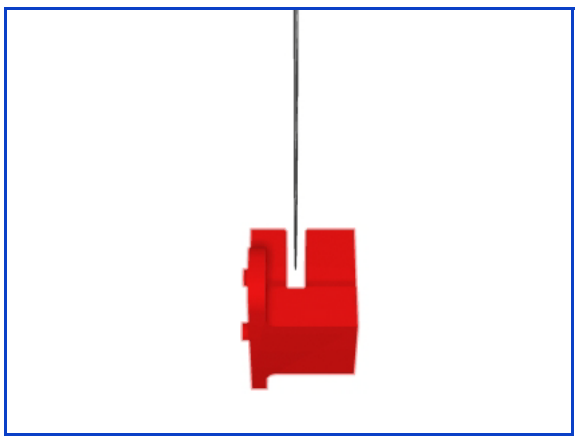
2. Make sure that the distance between the encoder disc and both sides of the encoder sensor is the same.
3. Make sure that the encoder disc is not touching the encoder sensor.
4. Use your hand to manually rotate the Drive Roller. Watch the encoder disc to make sure that it is always the same distance from the Encoder Sensor.
5. Perform the calibration 4.3.1 Drive Roller Encoder Calibration ⇒See page 502.

Drive Roller Transmission Assembly

Removal

WARNING!: Switch off the printer and power enable switch.





1. Remove the Right Side Rear Arc ⇒See page 570
2. Remove the Drive Roller Encoder PCA and Encoder Sensor ⇒See page 636.
3. Raise the scan axis.
4. Remove the three A6 screws that secure the Drive Roller Transmission Assembly and remove it.

NOTE: Access the two front screws from the front of the printer and the last screw from the top of the printer (it will be behind the Drive Roller).

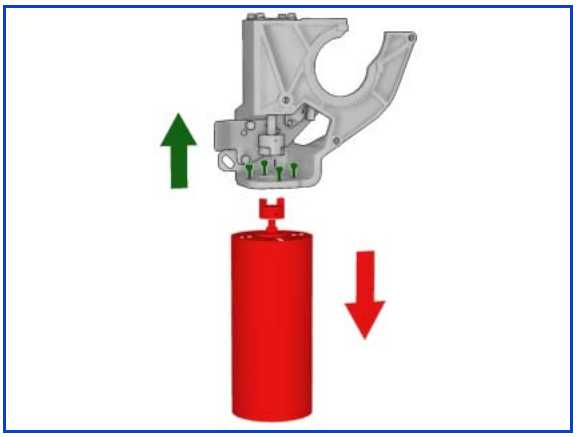
Installation

1. Replace the old Encoder Disc PCA and Encoder Sensor with the new service part.
2. Make sure that the distance between the encoder disc and both sides of the encoder sensor is the same.
3. Make sure that the encoder disc is not touching the encoder sensor.
4. Use your hand to manually rotate the Drive Roller. Watch the encoder disc to make sure that it is always the same distance from the Encoder Sensor.
5. Perform the following calibrations:
   - 4.3.1 Drive Roller Encoder Calibration ⇒See page 502.
   - 3.3.2 Drive Roller Motor Calibration ⇒See page 497.

Drive Roller Motor

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the Right Side Rear Arc ⇒See page 570.
2. Remove the Drive Roller Encoder PCA and Encoder Sensor ⇒See page 636.
3. Remove the Drive Roller Transmission Assembly ⇒See page 639.
4. Disconnect the encoder and power cables from the Drive Roller Motor.
5. Remove the four T25 screws that secure the Drive Roller Motor to the support.

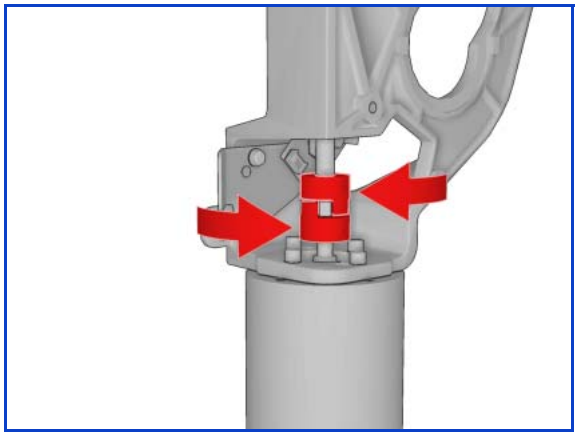
NOTE: These screws are difficult to access. Use an L shaped Torx key.

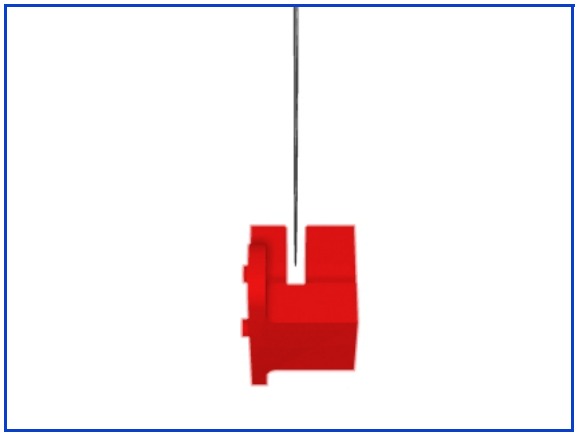
6. Remove the motor together with the lower part of the motor coupling.
7. Loosen the A2 screw that secures the lower part of the motor coupling (attached to the motor), and remove the coupling.

NOTE: Save the lower coupling to use with the new motor.

Installation

1. Place the lower part of the coupling on the new motor.
2. Position the new motor and secure it with the four T25 screws.
3. Slide the upper and lower couplings together. When they are tight together, tighten the lower coupling A2 screw to secure the position.





4. Rotate the motor axis and watch to make sure that they are perfectly aligned and without gaps. If there are any gaps, loosen the screw on the lower coupling and readjust it.

NOTE: There should be a 1 mm gap between the upper and lower coupling or the motor makes a noise.

5. Replace the old Encoder Disc PCA and Encoder Sensor.

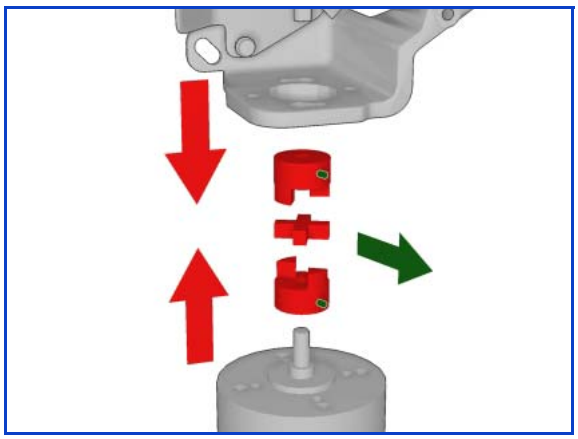
6. Make sure that the distance between the encoder disc and both sides of the encoder sensor is the same.
7. Make sure that the encoder disc is not touching the encoder sensor.
8. Use your hand to manually rotate the Drive Roller. Watch the encoder disc to make sure that it is always the same distance from the Encoder Sensor.
9. Perform the following calibrations:
   - 4.3.1 Drive Roller Encoder Calibration ⇒See page 502.
   - 3.3.2 Drive Roller Motor Calibration ⇒See page 497.

Drive Roller Motor Coupling

Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Right Side Rear Arc ⇒See page 570.
2. Remove the Drive Roller Encoder PCA and Encoder Sensor ⇒See page 636.
3. Remove the Drive Roller Transmission Assembly⇒See page 639.
4. Remove the Drive Roller Motor ⇒See page 638.
5. Loosen the two A2 screws that secure the lower and upper coupling and remove the couplings.



Installation

NOTE: Follow the installation instructions for the Drive Roller Motor (but do not perform calibration 4.3.1) ⇒See page 638.

1. Perform the calibration 4.3.1 Drive Roller Encoder Calibration ⇒See page 502.

Platen_Driveroller Intermediate Cover

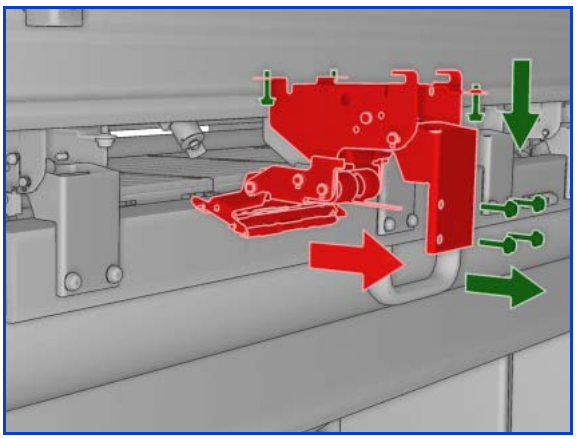
Removal

1. Raise the scan axis.
2. Remove twelve T20 Screws with an L-shaped screwdriver

Pinch Assembly (single)

Removal

NOTE: This procedure explains how to remove one Pinch Assembly. There are nine Pinchwheel Assemblies per module. To remove an entire module ⇒See page 642.



1. Raise the scan axis.
2. Remove the three T20 screws that secure the Pinch Assembly to the scan axis beam.
3. Remove the two (or four) T20 screws that secure the Pinch Assembly to the Pinch Support.
4. Use a screwdriver to help you remove the Pinch Assembly.

Installation

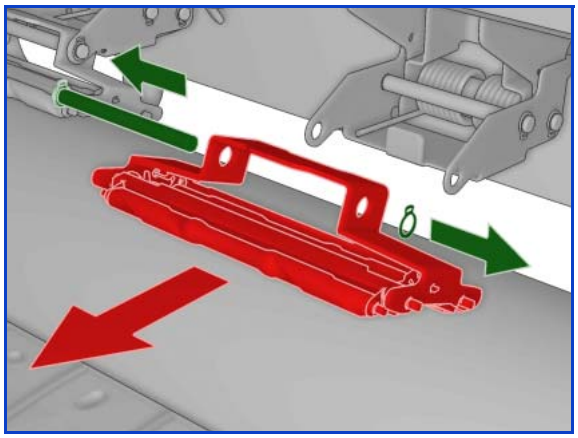
NOTE: The new service part includes four screws and four screw holes. If you are replacing a Pinch Assembly with only two screws, do not use the remaining screws.

Pinch Wheel

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: Every pinchwheel has two wheel assemblies fixed together with one support. The service part includes the two wheel assemblies and the support.



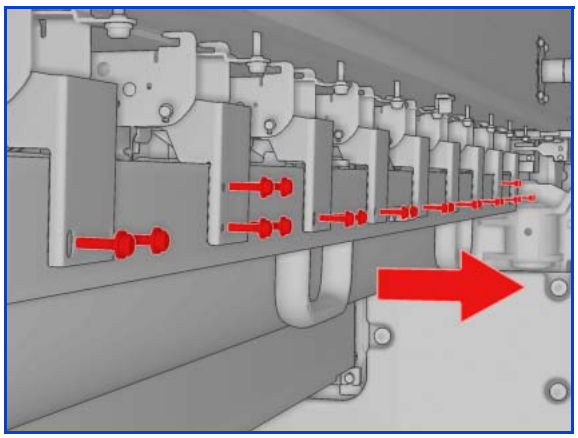
1. Remove the right circlip that secures the pinchwheel rod and remove the pinchwheel rod together with the left circlips.
2. Remove the Pinch Wheel.

Pinch Support

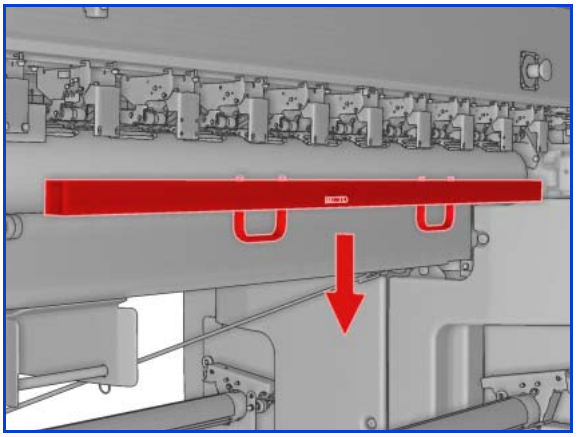
Removal

NOTE: The printer has two Pinch Supports. This procedure explains how to remove a single pinch support.

WARNING!: Switch off the printer and power enable switch.



1. Remove the twenty-two T20 screws that secure the Pinch Support and Pinch Assemblies together.



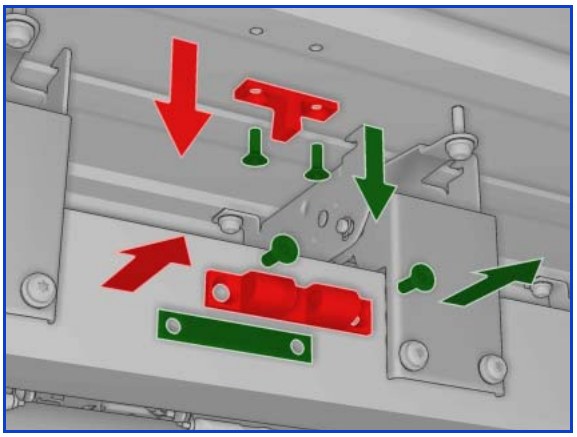
2. Remove the Pinch Support straight down and then away from the printer.

Pinch System Up Retainer

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: Each pinch module has two Pinch System Up Retainers (four retainers total). The Pinch System Up Retainer service part includes two retainers.



1. Remove the two T10 screws that secure both parts of the retainer (and the separator on the lower part) and remove them.

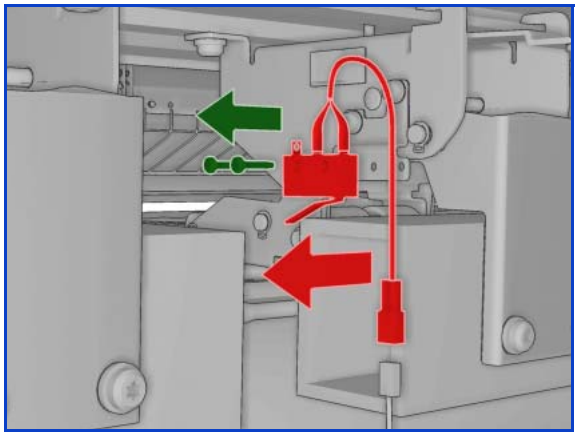
Pinch Sensor Assembly

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: There are two Pinchwheel Sensors, one per Pinchwheel Assembly Module.

1. Follow the Pinch Sensor cable to the first connection point and disconnect it.



2. Remove the two T8 screws that secure the sensor and remove it.

Installation

WARNING!: Switch off the printer and power enable switch.

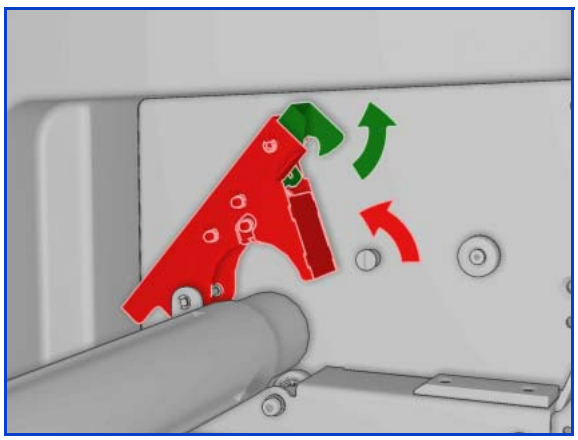
NOTE: The Pinch Sensor Assembly service part comes with the sensor and the cable. Do not replace the cable with the sensor. After replacing the sensor, if the system fails again, then replace the cable.

1. Disconnect the long cable from the new Pinch Sensor Assembly.
2. Replace the sensor and two T8 screws.
3. Reconnect the Pinchwheel Sensor cable.
4. Perform the Pinch Switches diagnostic test to verify that they function ⇒See page 376.
5. If the switches do not function, replace the entire pinch sensor cable, and perform the Pinch Switches diagnostic test again.

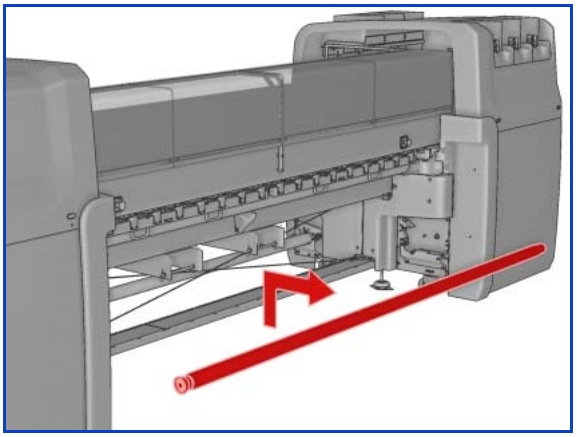
Spindle

Removal

WARNING!: Switch off the printer and power enable switch.



1. Disengage the spindle latch and open it.



2. With two persons, lift the spindle up and remove it straight away from the printer.

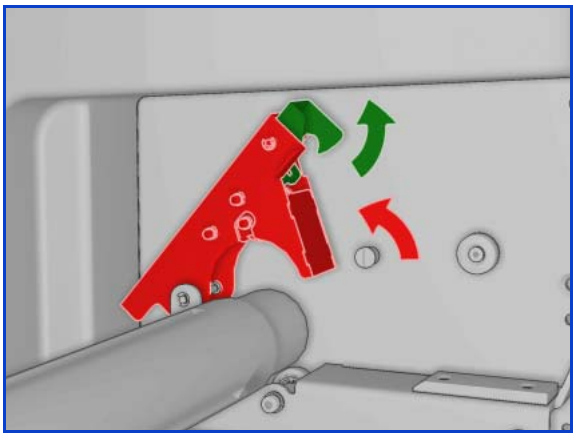
Installation

1. Adjust the spindle latch if required ⇒See page 651.

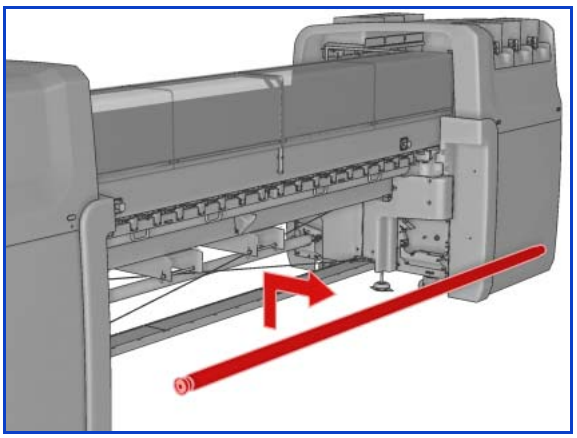
Spindle Gear and Encup Set

Removal

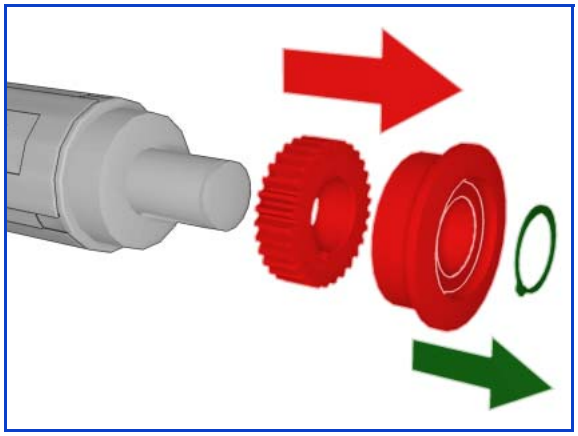
WARNING!: Switch off the printer and power enable switch.



1. Disengage the spindle latch and open it.



2. With two persons, lift the spindle up and remove it straight away from the printer.



3. Remove the circlip that secures the Spindle Gear and Encup Set and remove the set. Some parts may need to be knocked gently with a hammer to remove.

Spindle Air Valve

Removal

1. Use a Double Hex driver or a wrench key of size metric 11 to unscrew the valve .

2. In some cases, by greasing the inner Oring, this can fix the air leakage.
3. If the air leakage from the air valve cannot be fixed, and that the support part of the air valve is not available, replace the complete spindle.

Front Spindle Motor

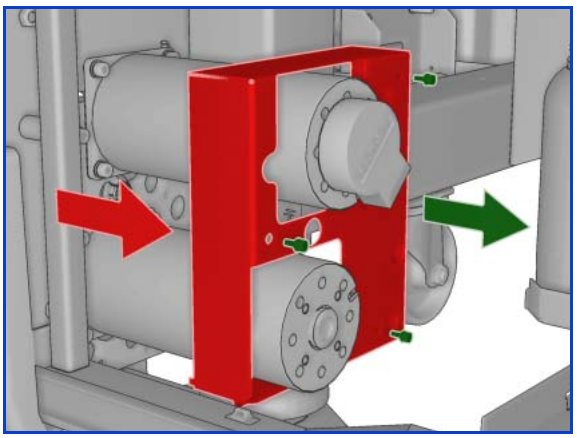
Removal

WARNING!: Switch off the printer and power enable switch.

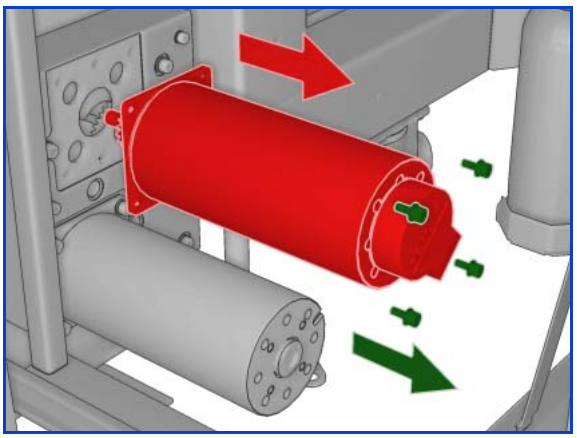
NOTE: Both Front Spindle Motors have encoders, but only the top motor encoder is connected. The service part always includes an encoder, which you do not connect when replacing the lower front spindle motor.

1. To access the Front Spindle Motors, slide open the front right door.
2. To access the Rear Spindle Motor, remove the Right-Rear Cover ⇒See page 567.
3. Disconnect the cable. If you are removing the lower Front Spindle Motor, skip this step.

NOTE: The front spindle motors are connected in series, with the top motor connected first. Make sure to take care that you connect them correctly.



4. Remove the three T30 screws that secure the spindle transmission housing.

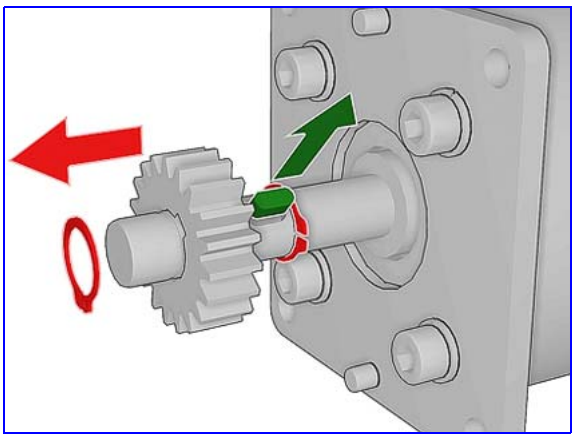


5. Remove the four T30 screws that secure the motor to the sideplate and remove the motor together with the adapter ring (the graphic shown is for the Top Front Spindle Motor).

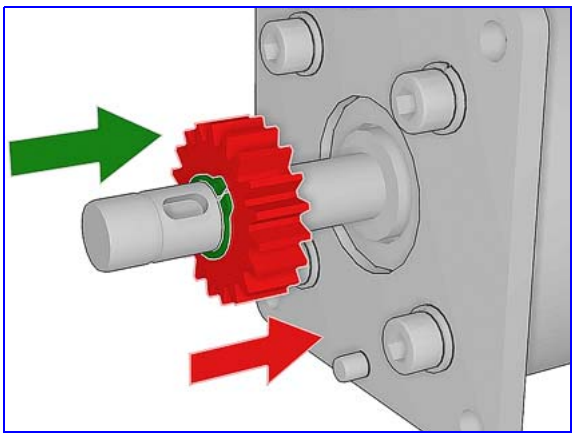
Installation

NOTE: The spindle motor service part comes with the gear in the far position. This gear must be moved to the inside position before installing a Front Spindle Motor.

NOTE: If you are installing the Rear Spindle Motor, you do NOT need to move the gear. You can skip these steps and install the motor ,as is.,



1. For the front spindle motors, remove the outer circlip and move the inner circlip to the inside position, marked on the motor shaft.
2. Remove the Pin, marked in green.



3. Move the gear to the inside position and replace the outer circlip.
4. If you are replacing the top front Spindle Motor or the rear Spindle Motor, connect the encoder cable.

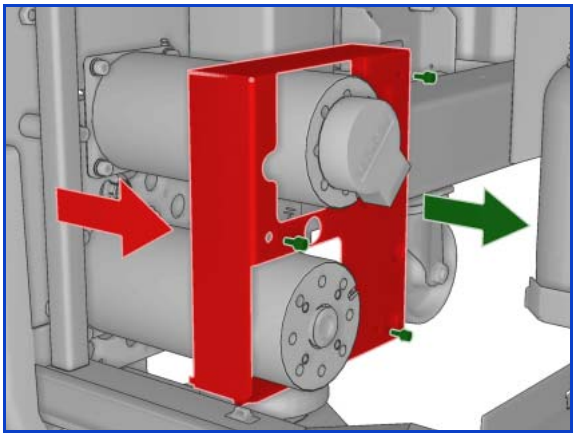
NOTE: If you are replacing the Bottom Front Spindle Motor, leave the encoder on the motor (it does not need to be removed).

Rear Spindle Motor

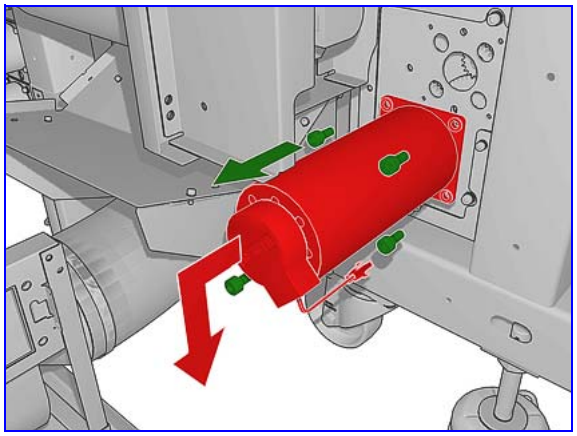
Removal

WARNING!: Switch off the printer and power enable switch.

1. To access the Rear Spindle Motor, remove the Right-Rear Cover ⇒See page 567.
2. Disconnect the cable.



3. Remove the three T30 screws that secure the spindle transmission housing.



4. Remove the four T30 screws that secure the motor to the sideplate and remove the motor together with the adapter ring.

Installation

NOTE: The spindle motor service part comes with the gear in the far position. For the Rear Spindle Motor, you do NOT need to move the gear. Perform the reset procedure 3.3.1 Back Spindle motor ⇒ page 497.

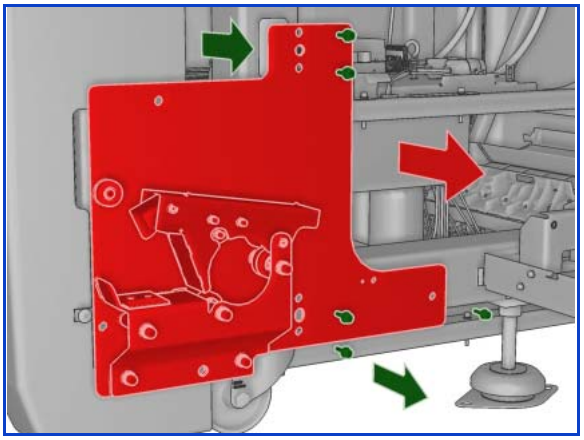
Front Left Sideplate Spindle Driver Gear Assembly

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: The Front Left Sideplate Spindle Driver Gear Assembly service part includes the sideplate, spindle bearing, latch, gears, and gears protector.

1. Remove the spindle ⇒See page 643.
2. For LX800 & LX850, need to remove the complete Roll to Floor Module ⇒See page 679.



3. Remove the five A6 screws that secure the Front Left Sideplate Spindle Driver Gear Assembly and remove it.

Installation

1. Adjust the spindle latch ⇒See page 651.

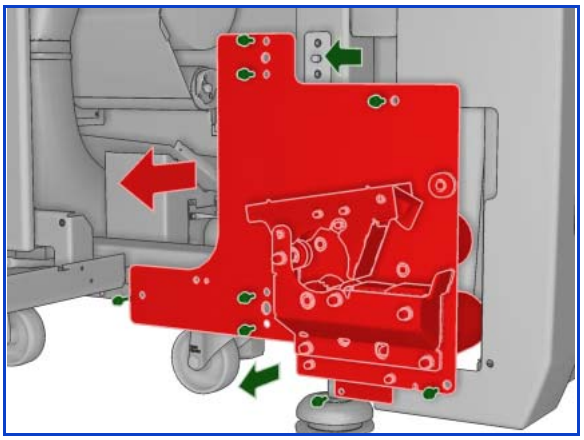
Front Right Sideplate Spindle Support Assembly

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: The Front Left Sideplate Spindle Driver Gear Assembly service part includes the sideplate, spindle bearing, and latch.

1. Remove both Front Spindle Motors ⇒See page 646.
2. For LX800 & LX850, need to remove the complete Roll to Floor Module ⇒See page 679.
3. Remove the spindle ⇒See page 643.
4. Remove the seven A6 screws that secure the Front Right Sideplate Spindle Support Assembly and remove it.



Installation

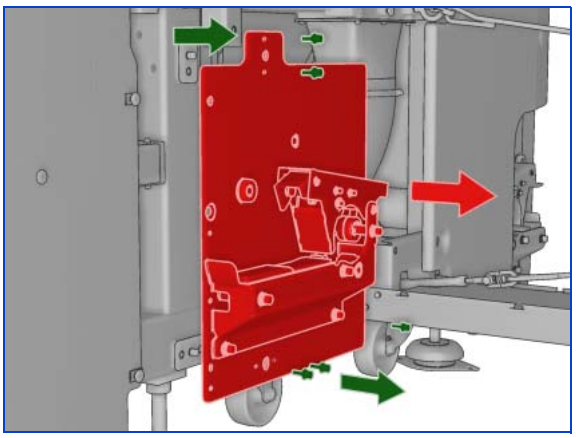
1. Adjust the spindle latch ⇒See page 651.

Back Right Sideplate Spindle Driver Gear Assembly

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: The Back Right Sideplate Spindle Driver Gear Assembly service part includes the sideplate, spindle bearing, latch, gears, and gears protector.



1. Remove the Rear Spindle Motor ⇒See page 650.
2. Remove the spindle ⇒See page 643.
3. Remove the five A6 screws that secure the Back Right Sideplate Spindle Driver Gear Assembly and remove it.

Installation

1. Adjust the spindle latch ⇒See page 651.
2. Perform the reset procedure 3.3.1 Back Spindle motor ⇒ page 497

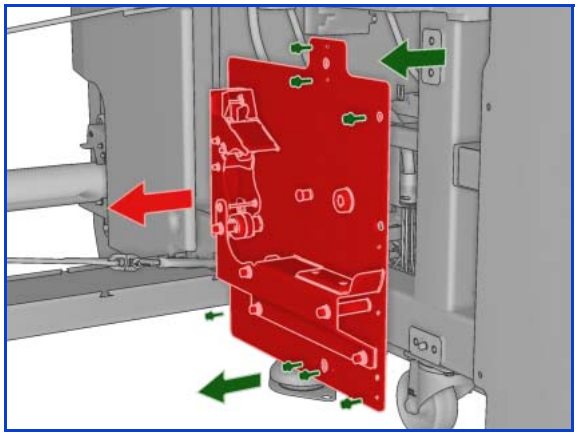
Back Left Sideplate Spindle Support Sideplate Assembly

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: The Back Left Sideplate Spindle Support Sideplate Assembly service part includes the sideplate, spindle bearing, and latch.

1. Remove the spindle ⇒See page 643.



2. Remove the six A6 screws that secure the Back Left Sideplate Spindle Support Sideplate Assembly and remove it.

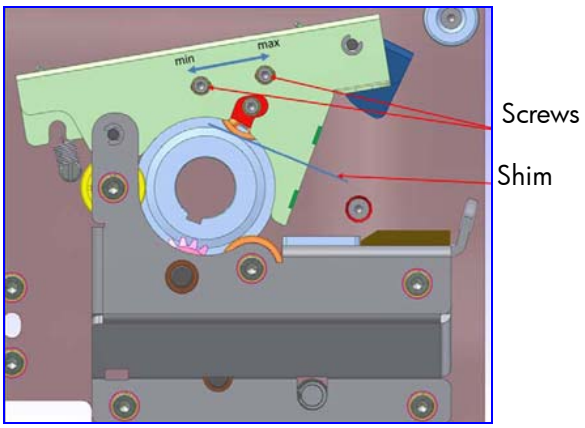
Installation

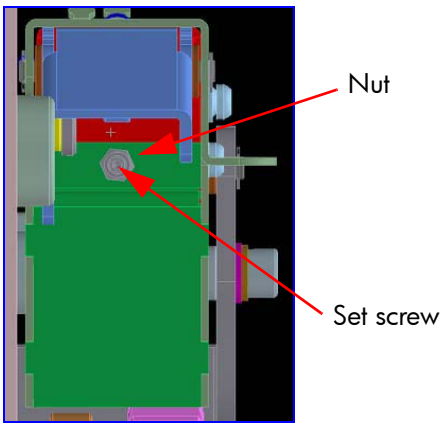
Refer to the following adjustment procedure for the spindle latch

How to adjust the latch

Use the following procedure to adjust the Spindle Latch

1. Loosen slightly the two lateral screws and the nut and set screw below the blue handle to be able to slide the upper bearing.
2. Open the latch
3. Insert a spindle
4. Close the latch by holding a shim of 0,1mm between the spindle and upper bearing.
5. Push the set screw toward the minimum position with minimal finger force to make the upper bearing touch the spindle and fasten the nut and the lateral screws.





6. Open the latch and remove the shim.
7. Close the latch again and make sure by moving with the hand that the spindle is not caught due to excessive bearing pressure, and that there is a minimal clearance available.

Spindle Latch Assembly A

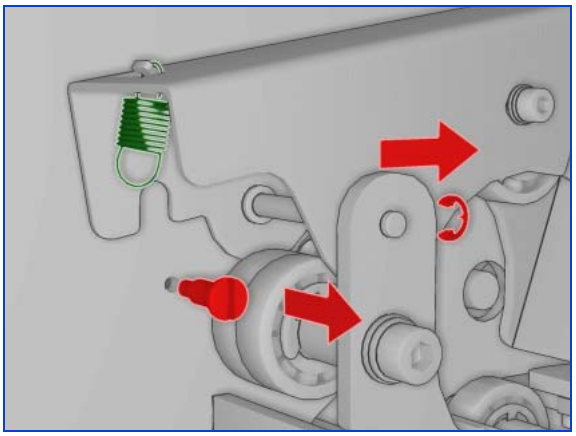
Removal

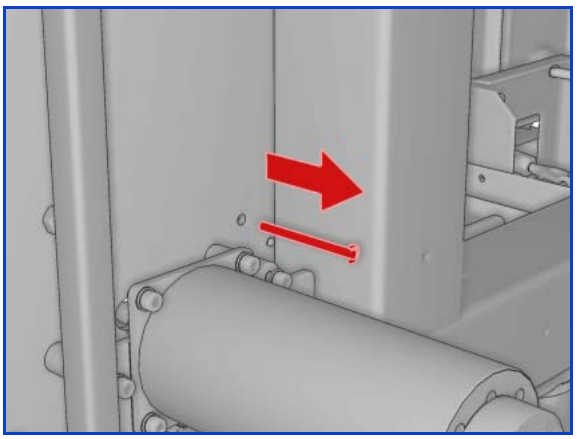
WARNING!: Switch off the printer and power enable switch.

NOTE: Spindle Latch Assembly A is attached to:

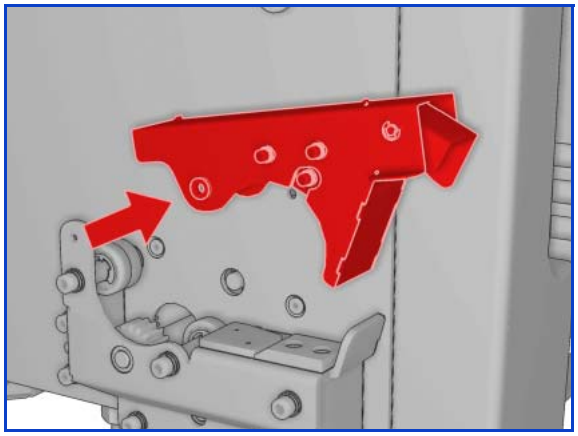
- Back Right Sideplate Spindle Driver Gear Assembly
- Front Left Sideplate Spindle Support Assembly

1. Remove the spindle ⇒See page 643.
2. To access the latch axle shaft next to the Rear Spindle Motor, remove the Right Side Rear Panel ⇒See page 567.
3. Remove the screw that secures the latch spring, the circlip, and finally the whole latch spring.





4. Remove the spindle latch axle shaft.



5. Remove the spindle latch.

Installation

1. Adjust the spindle latch ⇒See page 651.

Spindle Latch Assembly B

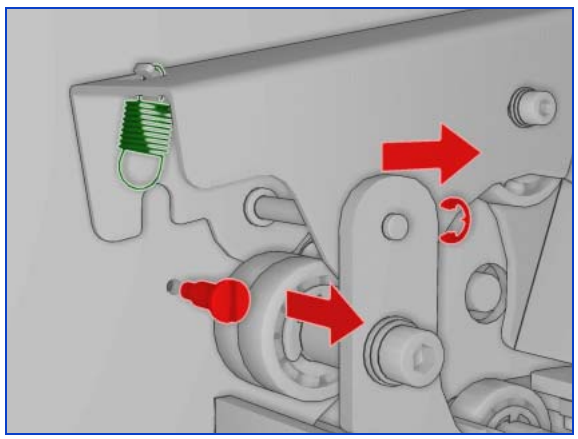
Removal

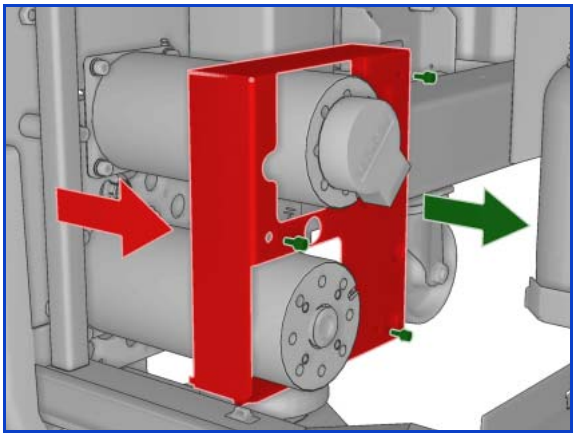
WARNING!: Switch off the printer and power enable switch.

NOTE: Spindle Latch Assembly B is attached to:

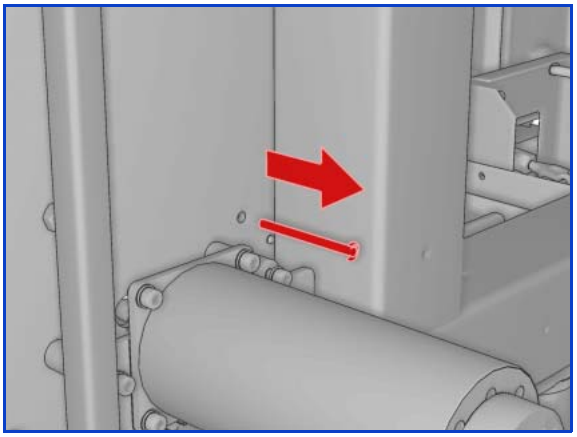
- Back Left Sideplate Spindle Support Sideplate Assembly
- Front Right Sideplate Spindle Driver Gear Assembly

1. Remove the spindle ⇒See page 643.
2. To access the latch axle shaft next to the Front Spindle Motors, slide open the front door.
3. Remove the latch spring and circlip.

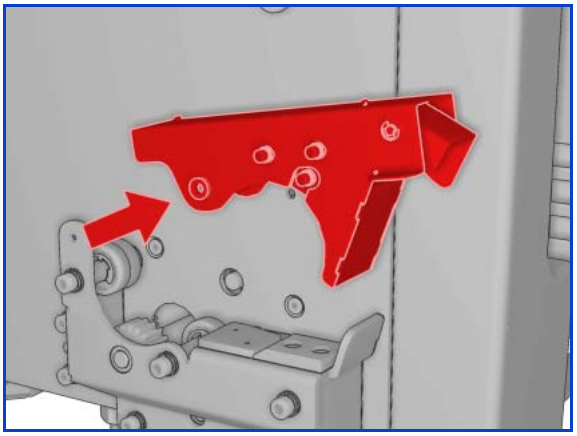




4. If you are removing the Spindle Latch Assembly B in the front (with motors), remove the three T30 screws that secure the spindle transmission housing.



5. Remove the spindle latch axle shaft.



6. Remove the spindle latch.

Installation

1. Adjust the spindle latch ⇒See page 651.

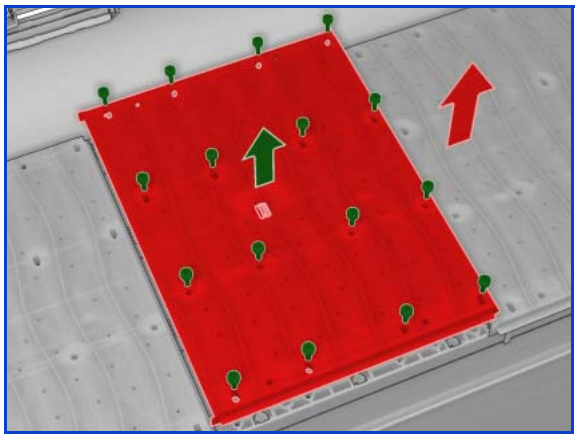
OMAS Platen Assembly

Removal

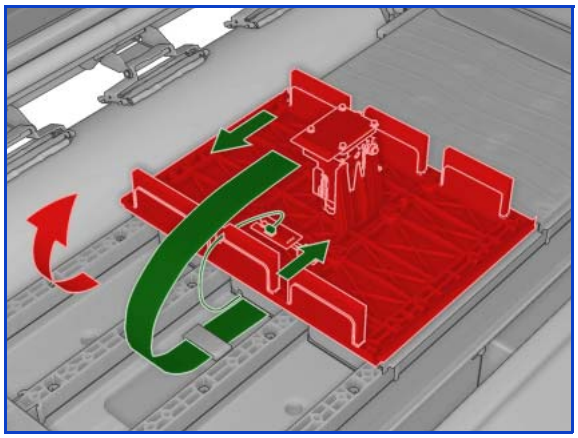
WARNING!: Switch off the printer and power enable switch.

NOTE: The OMAS sensor is replaced together with the platen.

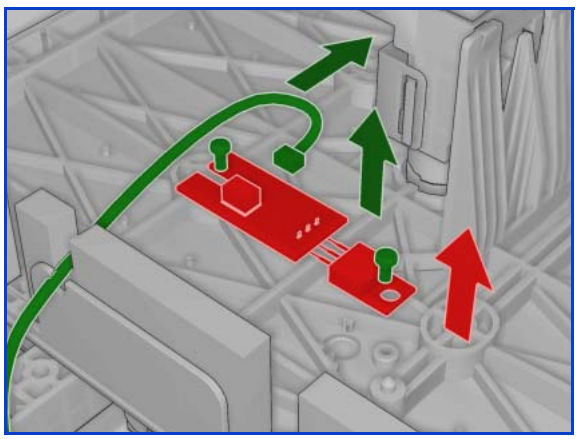
NOTE: When you move the OMAS Platen Assembly, take care to protect the OMAS Sensor window.



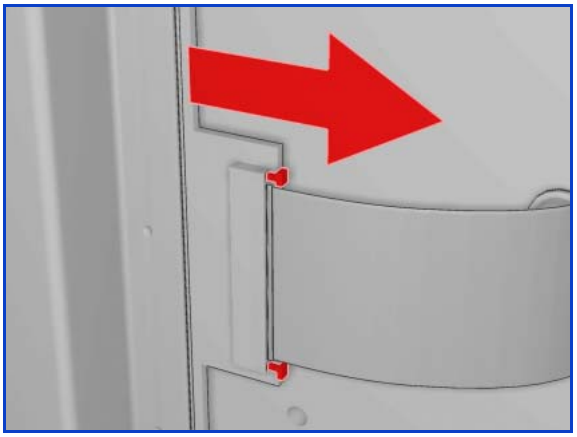
1. Remove the sixteen T20 screws that secure the OMAS Platen Assembly. The OMAS sensor is attached below the print platen.



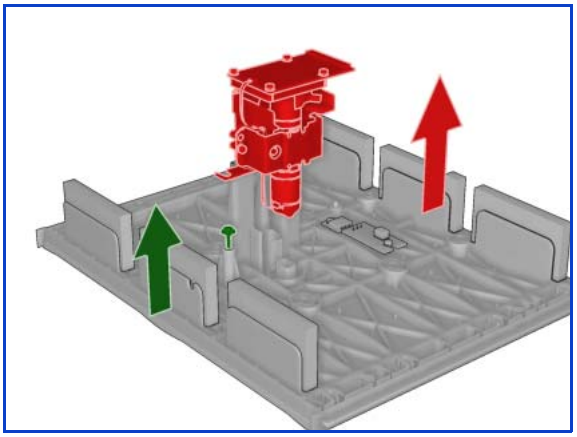
2. Turn the OMAS Platen Assembly 180 degrees to access the OMAS sensor.



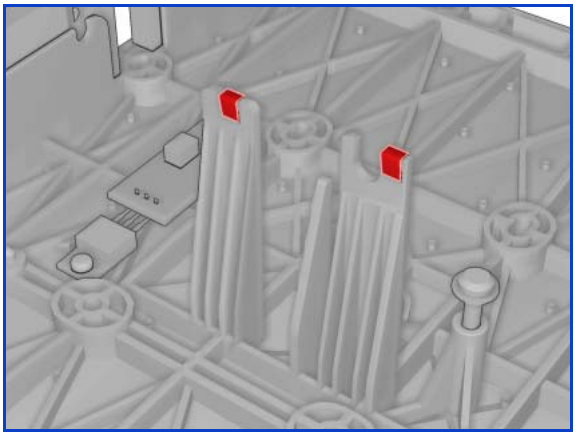
3. Remove the two T10 screws that secures the Temperature Sensor and remove it.



4. Release the two OMAS Sensor Cable clips (one on each side) by carefully pulling them away from the connection and disconnect the cable from the OMAS Sensor.



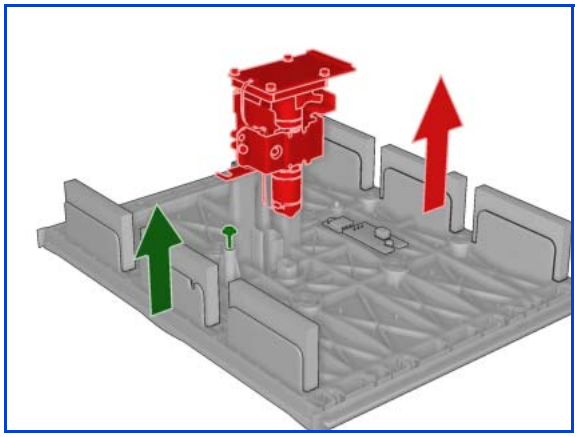
5. In order to check for any shims present, remove the T20 screw that secures the OMAS sensor and remove it.



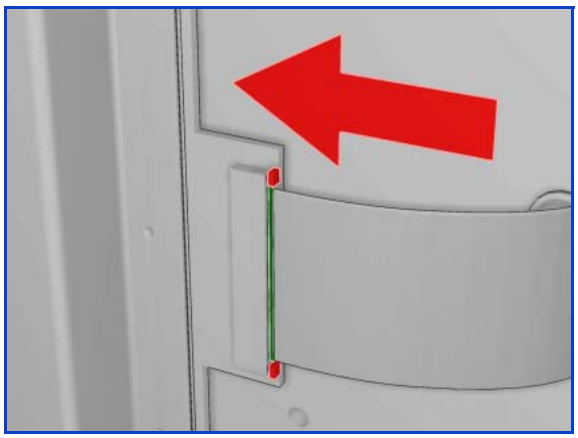
6. Check to see if there are any shims present. If shims are present, take note of the exact placement of the shims. They must be placed in the new service part.

Installation

NOTE: As with any platen, make sure and install the foams correctly when you install the OMAS Platen Assembly.



1. If there were any shims with the old OMAS sensor, you must replace them in the new service part. Remove the T20 screw that secures the new OMAS sensor and remove it.
2. Replace the shims in the same position as they were placed in the original OMAS sensor and reassemble the new service part.

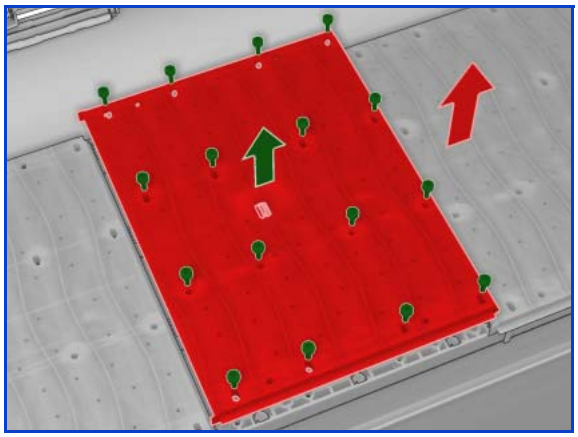


3. When you connect the OMAS Sensor Cable, make sure that all the pins are connected correctly, then lock the pins on both sides at the same time.
4. Take care that you do not damage the OMAS or Temperature Sensor cables when you reinstall the platen. As you lower the platen with one hand, make sure the cables are not bent or damaged with the other.
5. Perform the OMAS calibration ⇒See page 378.
6. Perform the reset procedure 3.3.3 Reset OMAS sensor (from service menu) ⇒ page 497

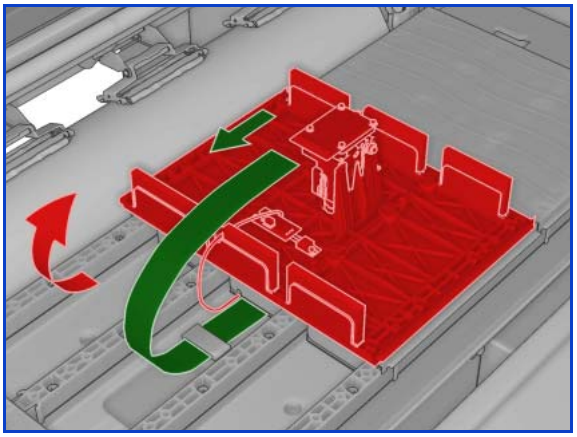
OMAS Sensor Cable

Removal

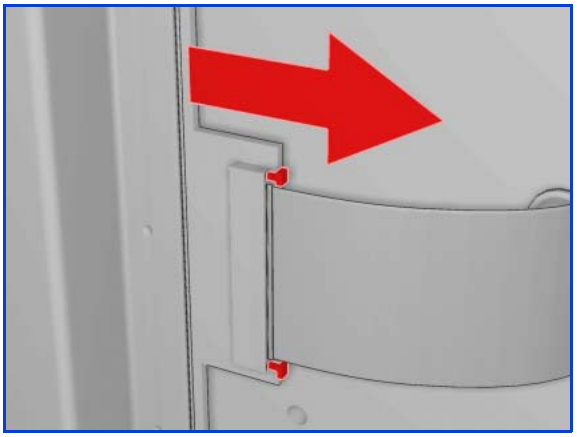
WARNING!: Switch off the printer and power enable switch.



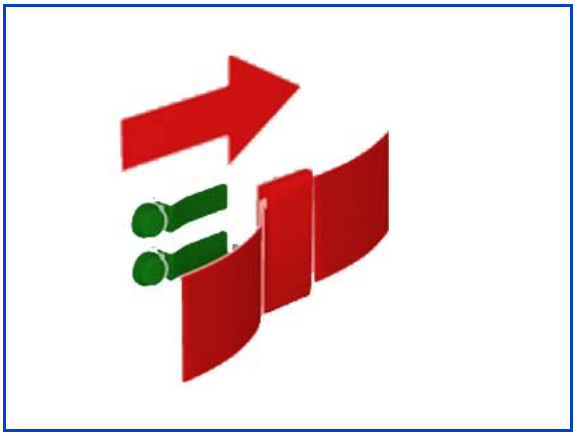
1. Protect the OMAS window by taping a piece of paper over the window.
2. Remove the sixteen T20 screws that secure the OMAS Platen Assembly. The OMAS sensor is attached below the print platen.



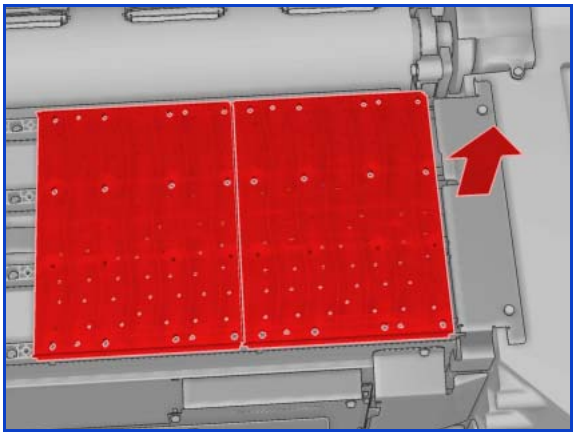
3. Turn the OMAS Platen Assembly 180 degrees to access the OMAS sensor.



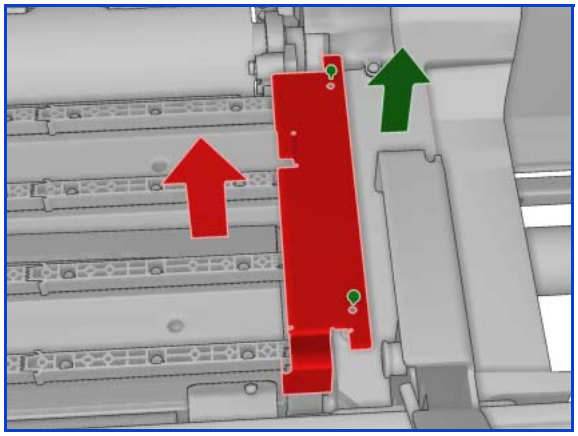
4. Release the two OMAS Sensor Cable clips (one on each side) by carefully pulling them away from the connection and disconnect the cable from the OMAS Sensor.



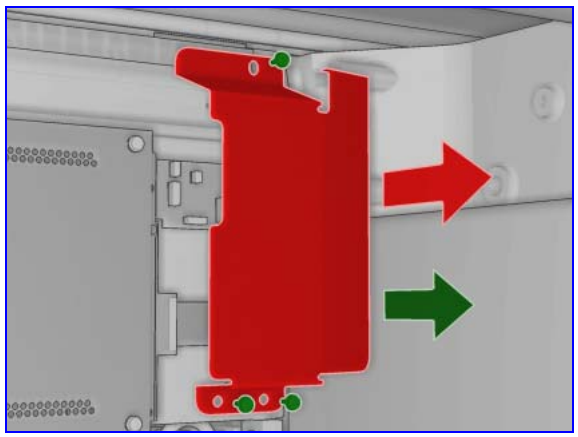
5. On the sensor side of the cable, unclip the ferrite from the ferrite clips and slide it off the cable.



6. Remove the sixteen T20 screws that secure each of the two platens to the right of the OMAS platen (thirty-two screws total).

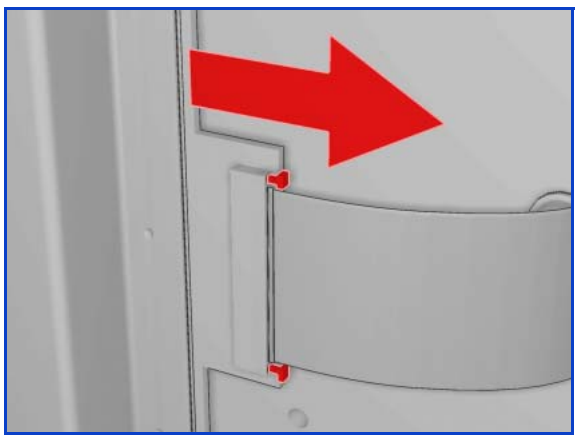


7. Remove the three T20 screws that secure the OMAS Sensor Cable Lid and remove it.

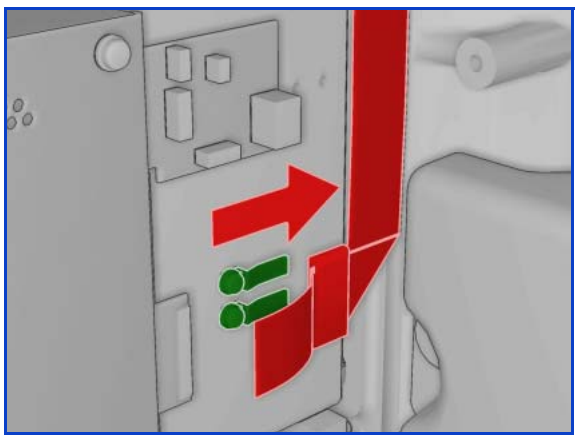


8. Remove the three T20 screws that secure the OMAS Sensor Cable Cover and remove it.

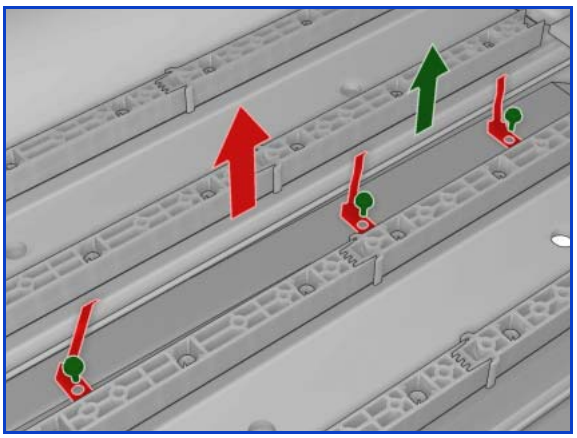
NOTE: Be careful not to damage the parts under the cable cover when you remove it.



9. Release the two OMAS Sensor Cable clips (one on each side) by carefully pulling them away from the connection and disconnect the cable.



10. Free the OMAS Sensor Cable ferrite from the clips.
11. Slide the ferrite off the cable.

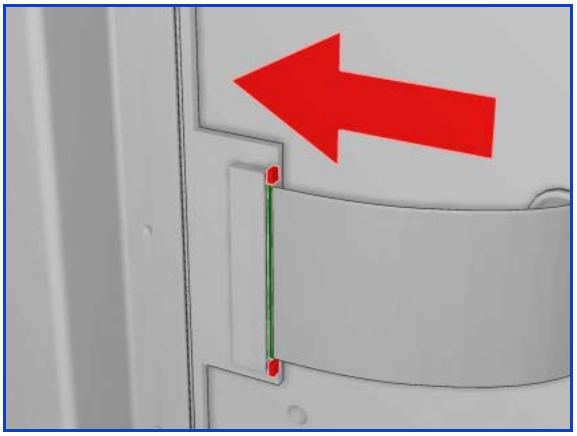


12. Unroute the OMAS Sensor Cable from the three clips by removing the T20 screw securing each clip and finally the clip.
13. Carefully remove the OMAS Sensor Cable.

Installation

NOTE: When you install the new OMAS Sensor Cable, take care that you do not damage the cable. The cable is delicate, and any scratches could cause it to malfunction.

NOTE: As with any platen, make sure and install the foams correctly when you install the OMAS Platen Assembly.

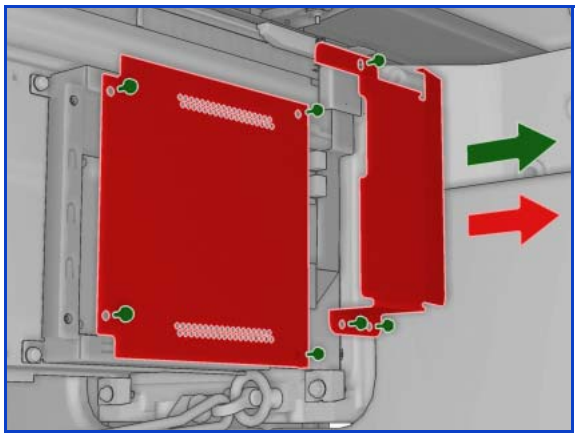


1. When you connect the OMAS Sensor Cable, make sure that all the pins are connected correctly, then lock the pins on both sides at the same time.
2. Take care that you do not damage the OMAS or Temperature Sensor cables when you reinstall the platen. As you lower the platen with one hand, make sure the cables are not bent or damaged with the other.

OMAS and Vacuum Control Box

Removal

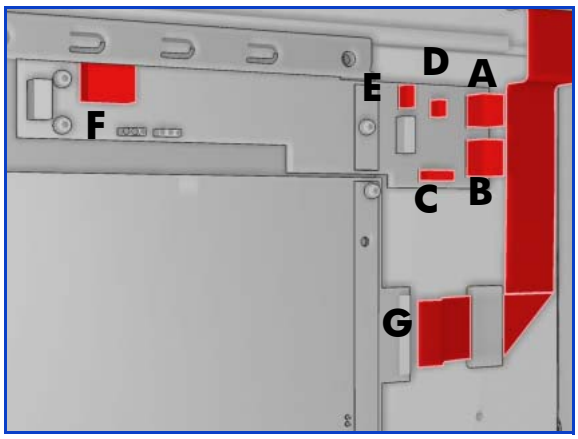
WARNING!: Switch off the printer and power enable switch.



1. Remove the three T20 screws that secure the OMAS Sensor Cable Cover and remove it.

NOTE: Be careful not to damage the parts under the covers when you remove it.

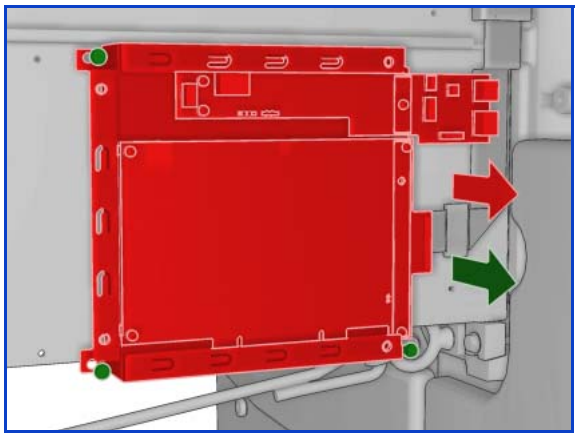
2. Remove the four T20 screws that secure the OMAS and Vacuum Control Box Cover and remove it.



3. Disconnect all seven cables connected to the OMAS and Vacuum Control Box, including the vacuum tube that is connected to the vacuum sensor.
   a. LAN connector (I2C)
   b. Power connector (5 & 24 V)
   c. Vacuum pump connector
   d. Temperature sensor connector
   e. Vacuum pump encoder connector
   f. Vacuum tube connected to sensor
   g. OMAS sensor connector

NOTE: Make sure to release the OMAS Sensor Cable clips before removing the cable.

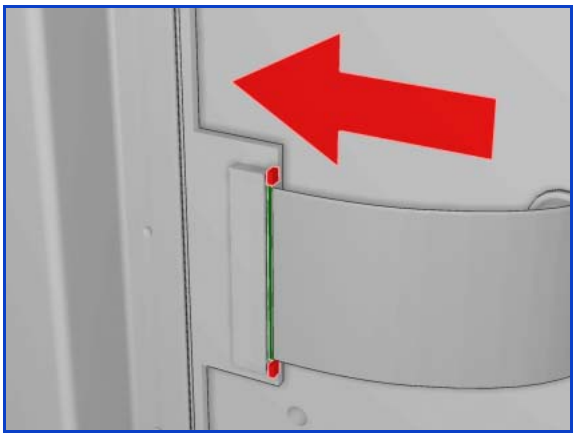
NOTE: Be careful with the small vacuum tube.



4. Remove the three T20 screws that secure the OMAS and Vacuum Control Box and remove the entire component.

Installation

NOTE: When you install the new OMAS Sensor Cable, take care that you do not damage the cable. The cable is delicate, and any scratches could cause it to malfunction.

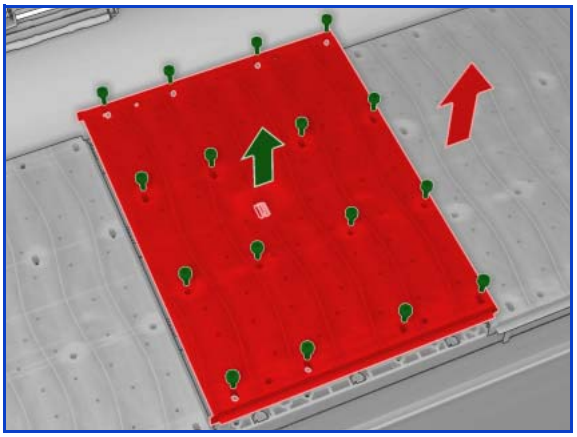


1. When you connect the OMAS Sensor Cable, make sure that all the pins are connected correctly, then lock the pins on both sides at the same time.

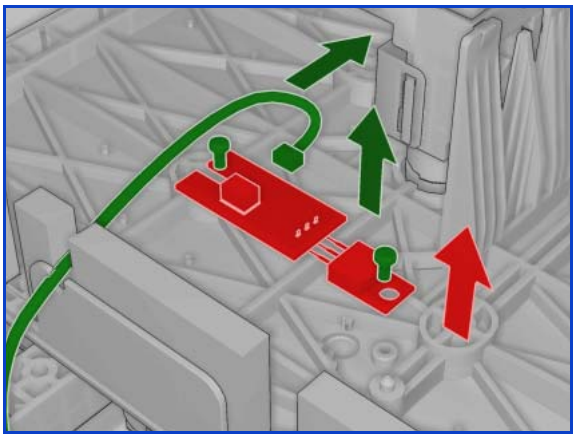
OMAS Temperature Sensor Assembly

Removal

WARNING!: Switch off the printer and power enable switch.



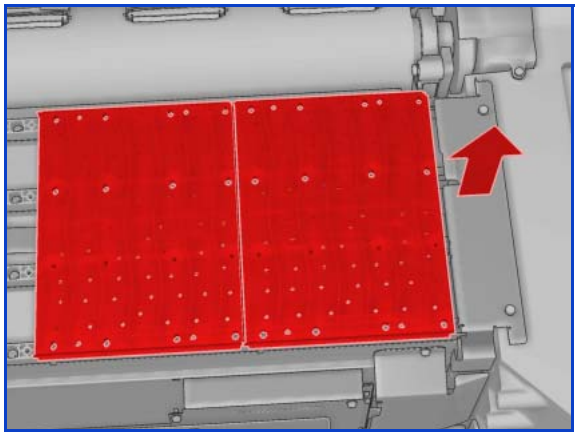
1. Protect the OMAS window by taping a piece of paper over the window.
2. Remove the sixteen T20 screws that secure the OMAS Platen Assembly. The OMAS Temperature Sensor Assembly is attached below the print platen.
3. Turn the OMAS Platen Assembly 180 degrees to access the OMAS Temperature Sensor Assembly.



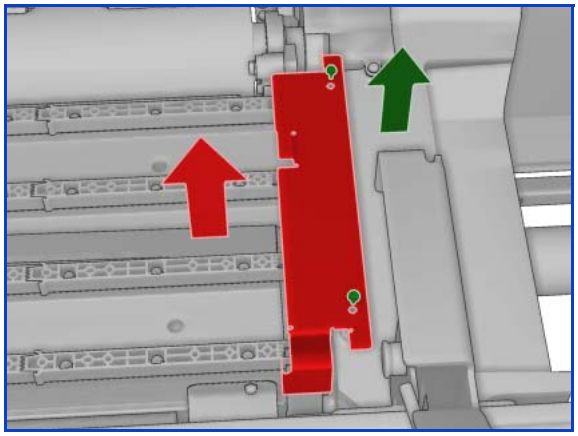
4. Remove the two T10 screws that secures the OMAS Temperature Sensor Assembly and remove it.

Installation

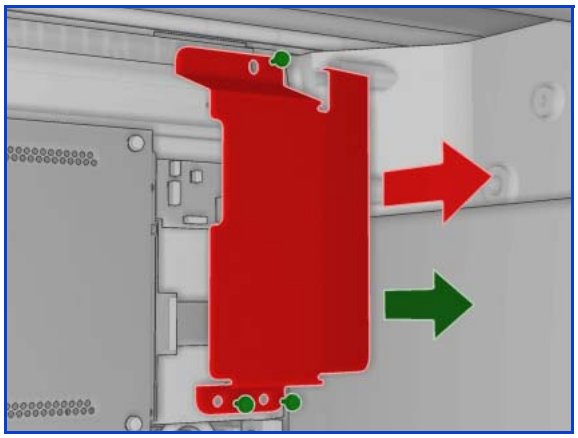
1. Replace the OMAS Temperature Sensor Assembly without replacing the cables.
2. Perform the 3.3.3 OMAS Temperature Sensor test to see if the sensor works correctly ⇒See page 497.
3. If it does not work correctly, replace the OMAS Temperature Sensor Assembly cable.



4. Remove the sixteen T20 screws that secure each of the two platens to the right of the OMAS platen (thirty-two screws total) and remove them.



5. Remove the three T20 screws that secure the OMAS Sensor Cable Lid and remove it.

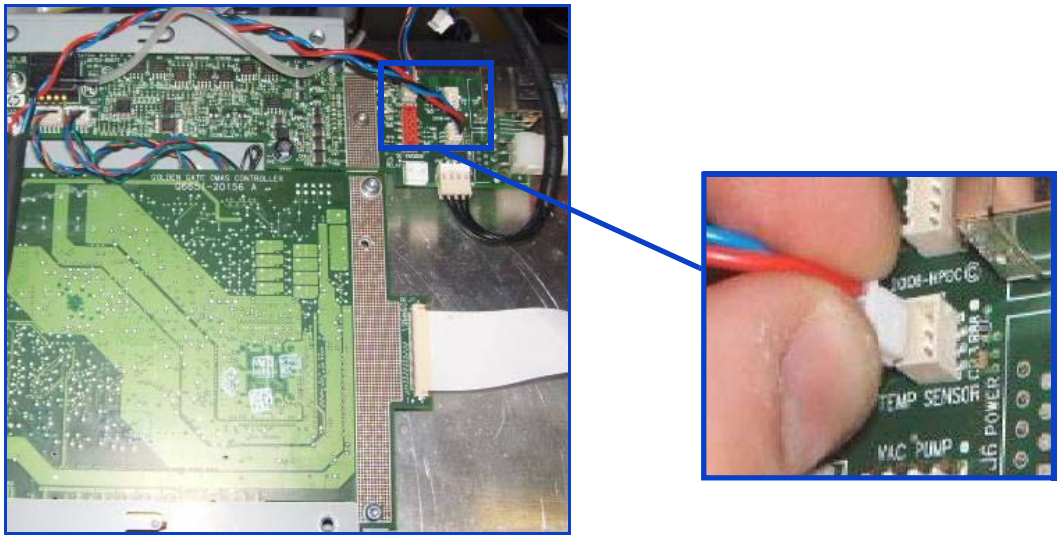


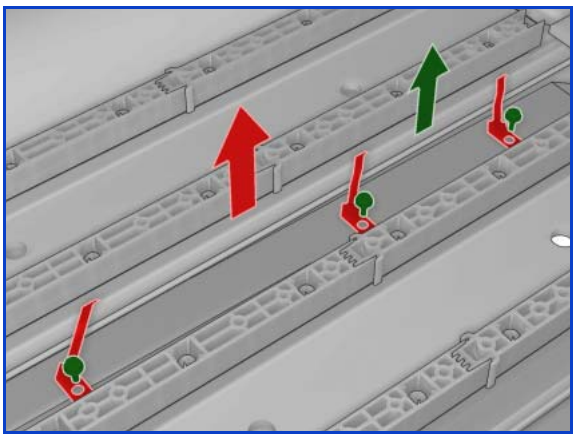
6. Remove the three T20 screws that secure the OMAS Sensor Cable Cover and remove it.

NOTE: Be careful not to damage the parts under the cable cover when you remove it.

7. Disconnect the Temperature Sensor cable from the

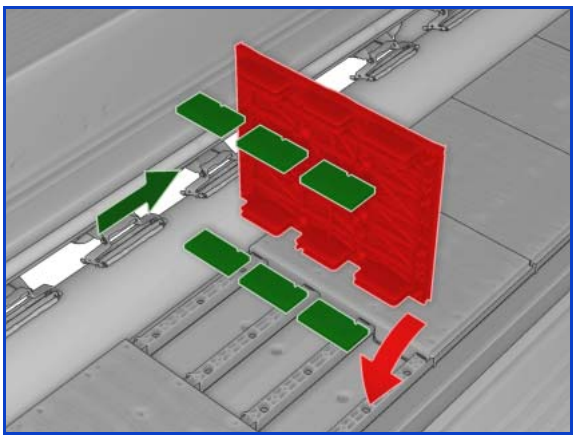
Vacuum Controller PCA.





8. Unroute the Temperature Sensor cable from the three clips by removing the T20 screw securing each clip and finally the clips.

NOTE: The OMAS Sensor Cable is very delicate. The temperature sensor cable is routed together with the OMAS Cable, so be very careful that you do not damage it.



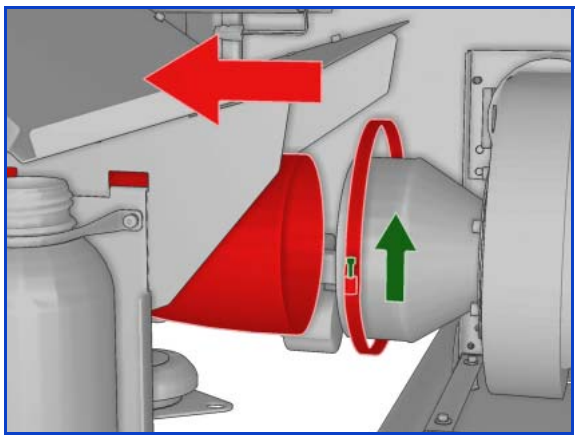
9. Make sure and install the foams perfectly whenever you reinstall a Platen Assembly.
10. Perform the OMAS calibration ⇒See page 502.
11. Perform the OMAS Temperature Sensor test ⇒See page 497.

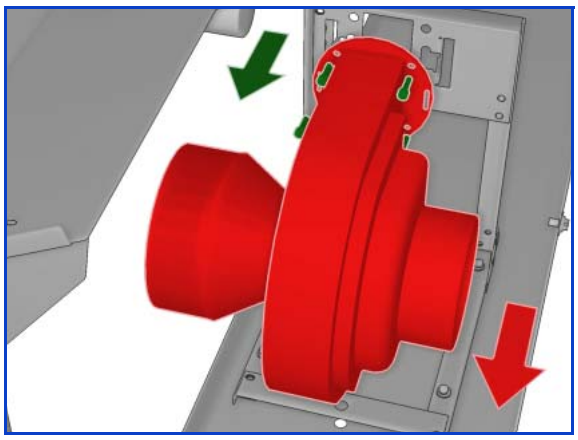
Vacuum Pump

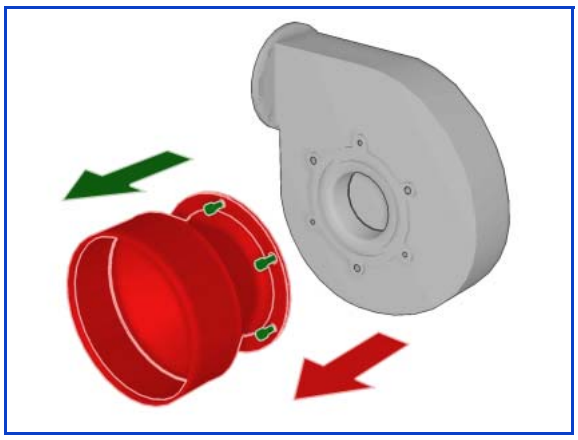
Removal

WARNING!: Switch off the printer and power enable switch.

1. Slide open the front right door.
2. Remove the Right Side Rear Panel ⇒See page 567.







3. Disconnect the two cables (control and power) from the Vacuum Pump.
4. Loosen the screw of the hose clamp that secures the Vacuum Tube Assembly to the Vacuum Pump.
5. Carefully pull the Vacuum Tube Assembly off the Vacuum Pump.
6. Remove the four MH8 nuts / A4 screws that secure the Vacuum Pump to the support and remove it.
7. Remove the three A5and three T15 screws that secure the rubber funnel and remove it.
8. Perform the reset procedure 3.3.4 Reset Vacuum Pump (from service menu) ⇒ page 497

Vacuum Pump Support Assembly and Vacuum Dampers

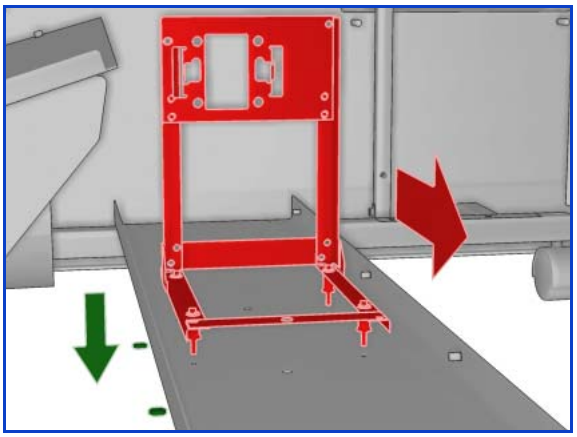
Removal

⚠ **WARNING!:** Switch off the printer and power enable switch.

1. Slide open the front right door.
2. Remove the Vacuum Pump from the support without disconnecting the vacuum tube and pump ⇒See page

664.

NOTE: Because you will leave the vacuum tube attached to the pump, be careful that you do not damage the tube.



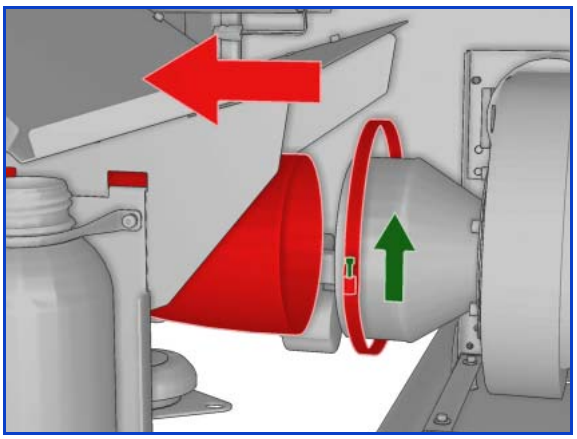
3. Remove the four T20 screws that secure the Vacuum Pump Support Assembly and remove it.

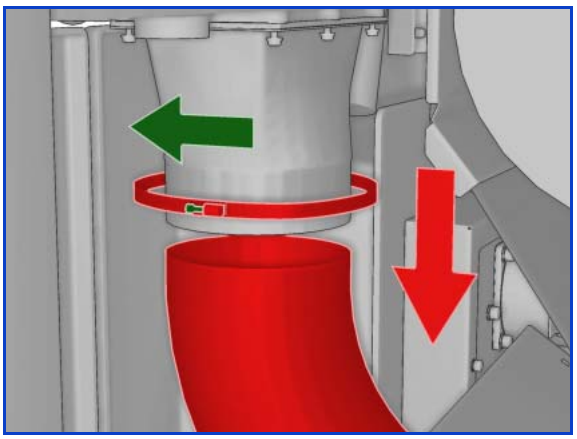
Vacuum Tube Assembly

Removal

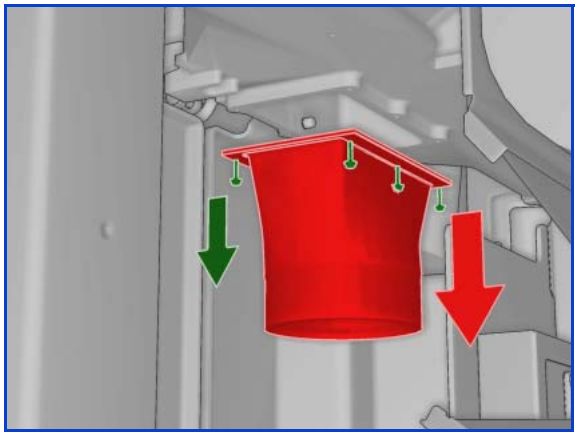
WARNING!: Switch off the printer and power enable switch.

1. Slide open the front right door.
2. Loosen the screw of the hose clamp that secures the Vacuum Tube Assembly to the Vacuum Pump.
3. Carefully pull the Vacuum Tube Assembly off the Vacuum Pump.

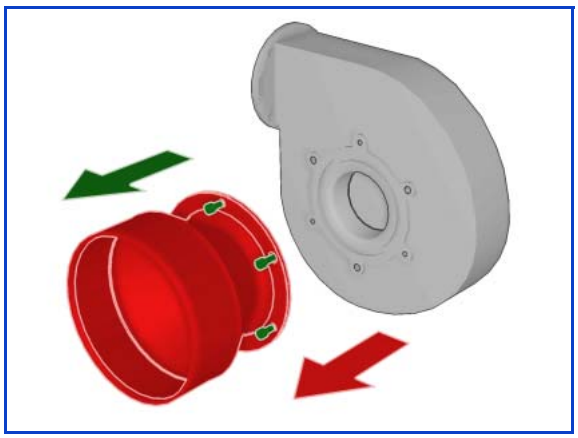




4. Loosen the screw of the hose clamp that secures the Vacuum Tube to the Rubber Inlet.
5. Carefully pull the Vacuum Tube off the Rubber Inlet and remove it completely.



6. Remove the six T15 screws that secure the rubber inlet and remove it.



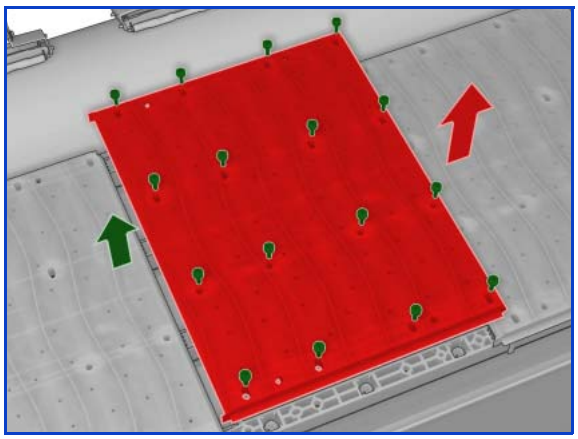
7. Remove the six screws that secure the rubber funnel and remove it.

Platen Assembly

Removal

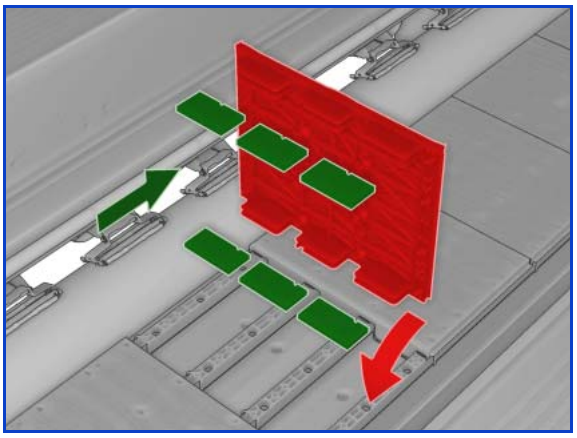
WARNING!: Switch off the printer and power enable switch.

NOTE: If you want to remove the OMAS Platen Assembly ⇒See page 655.



1. Remove the sixteen T20 screws that secure the Platen Assembly.
2. Remove the Platen Assembly.

Installation



1. Make sure and install the foams perfectly whenever you reinstall a Platen Assembly.

Diverter Assembly

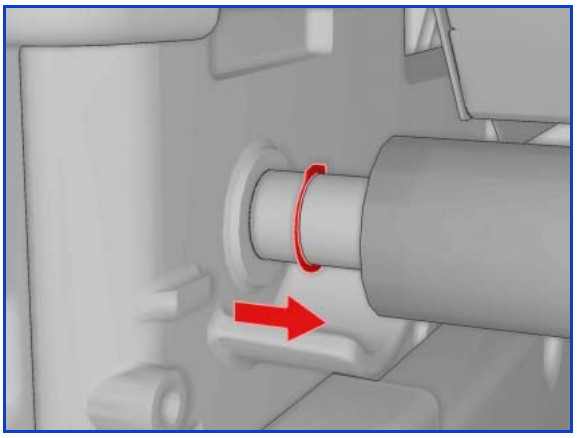
Removal

WARNING!: Switch off the printer and power enable switch.

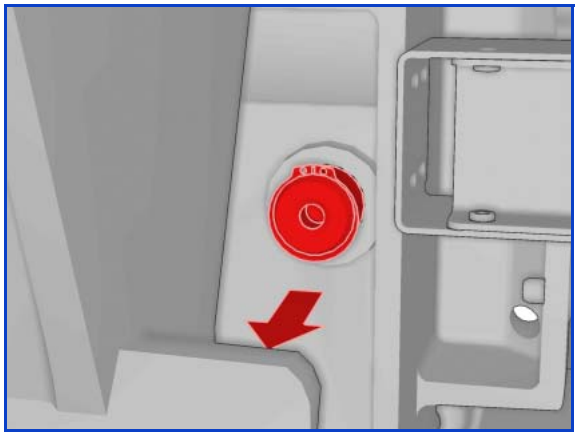
NOTE: The Diverter Assembly is held on the **left side** by a removable axis pin that fits inside the roller and inside the sidewall. The left axis pin is secured with two circlips, one on each side of the sidewall. To remove the Diverter Assembly on the left side, you only need to pull the axis pins far enough to free the Diverter Assembly.

NOTE: The Diverter Assembly is held on the **right side** by a fixed axis pin that is permanently attached to the diverter. You must therefore free the left side first, then move the entire Diverter Assembly to free the fixed axis pin on the right side.

1. Slide open the front right door.
2. Remove the Left Side Front Panel ⇒See page 565.
3. Remove the circlips that secures the right side of the Diverter Assembly, accessing it from the sliding door.
4. On the left side, move the inside circlip toward the Diverter Assembly.



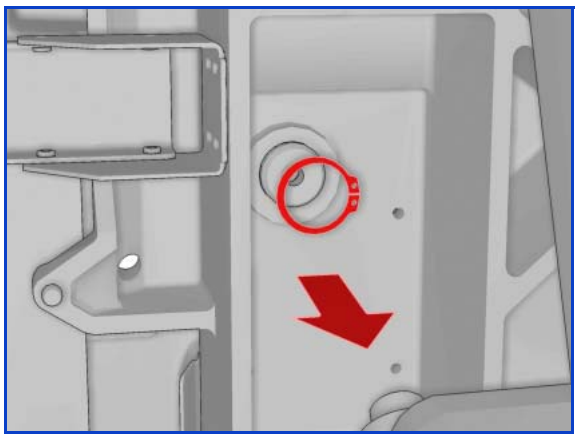
NOTE: Be careful that you do not damage the axis pin when moving the circlip.



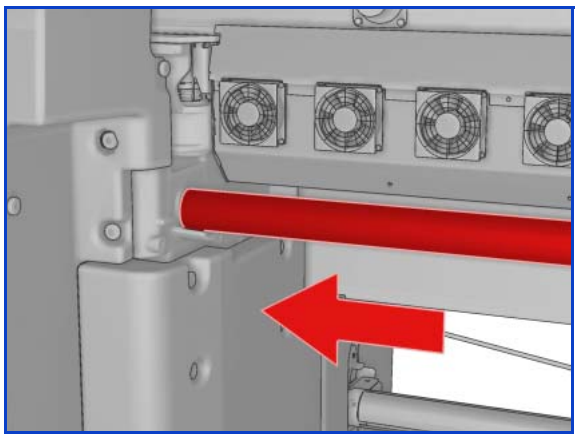
5. Use the extraction tool to pull the axis pin out of the Diverter Assembly. You must hold the diverter so that it does not drop.

WARNING!: Do not let the diverter fall. You could damage the right side of the diverter.

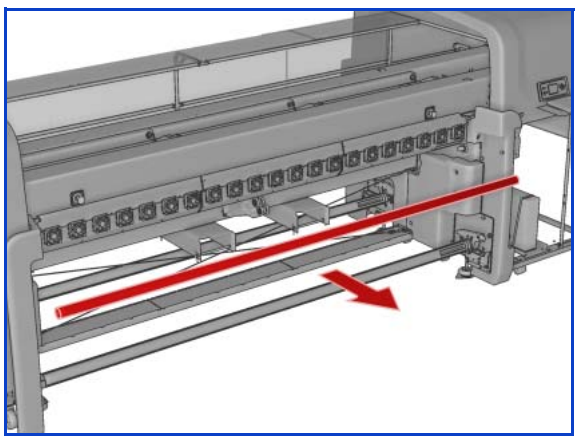
NOTE: In case the support of the diverter is stuck, it is possible to pull it out from the left side, by using a screw with a large head, and with a thread size of Metric 10. Screw this screw within the support of the left diverter, and after a few turns, pull out the head of the screw -> it should then remove the support of the diverter. Two people required.



6. Remove the circlip securing the fixed axis pin on the right side.



7. With two strong persons, move the Diverter Assembly to the left to free the fixed axis pin on the right side.



8. With two strong persons, remove the Diverter Assembly away from the printer.

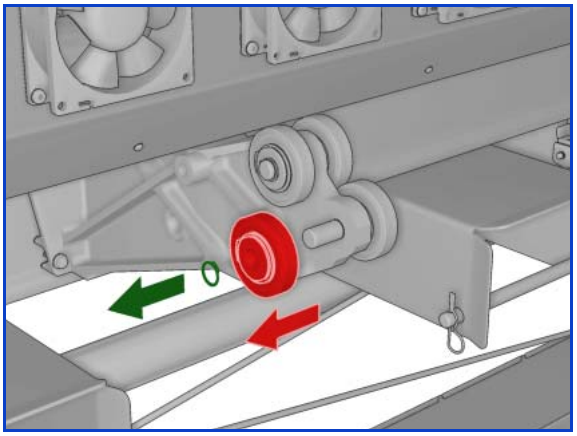
NOTE: The Diverter Assembly is heavy. Do not attempt to lift it by yourself.

Diverter Support Bearings Set

Removal

WARNING!: Switch off the printer and power enable switch.

NOTE: The left and right bearings must be replaced with the **Diverter Assembly**. Only the four central bearings can be replaced as a service part.



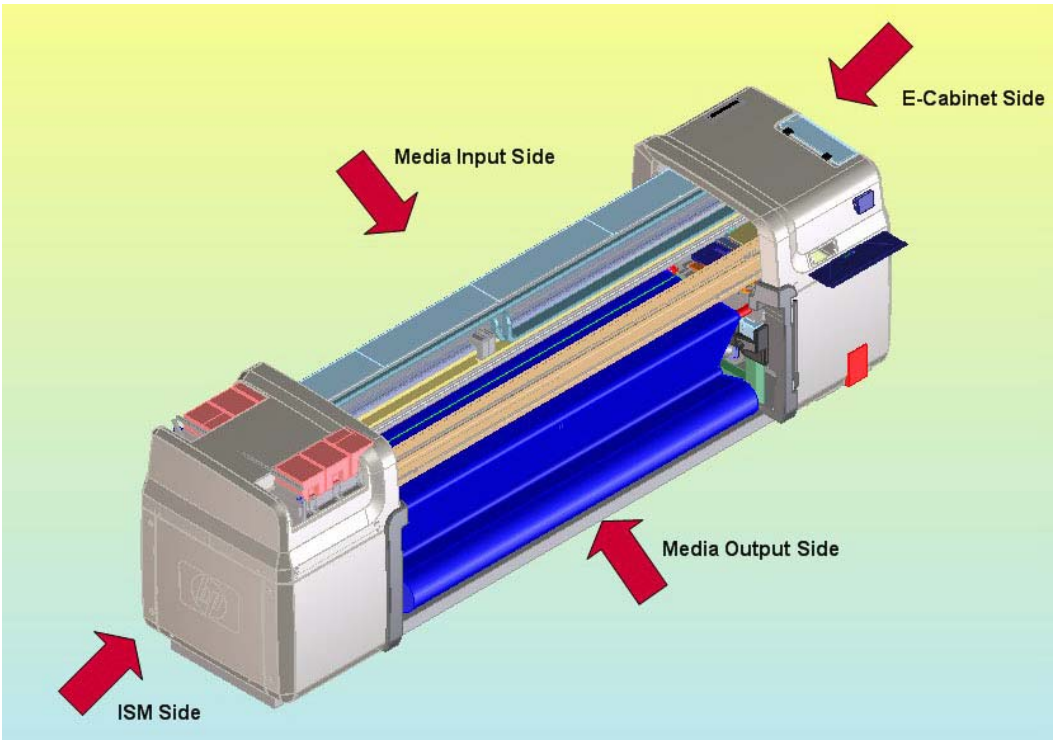
1. Remove the Diverter Assembly ⇒See page 668.
2. Remove the small circlip that secures the bearing and remove the bearing.
3. Repeat for all the bearings.

Oil Collection Upgrade Kit

This kit prevents oil droplets from falling from the printer chassis into the printer's substrate path, it also prevents excess oil dropping into the Ecabinet and ISM. The kit contains the following components:

- 34 Oil Reservoirs:
- 34 Oil Reserviroir holding brackets
- 2 Oil Capture trays
- 1 Spring

The Excess Oil Capture Kit is installed on the **Media Input Side** and the **Media Output Side**:



- Small oil reservoirs are installed along the length of the Carriage Rod by means of holding brackets. The oil reservoirs capture excess oil as it drops from the screws along the Carriage Rod.
- Two Oil Capture trays are installed on brackets at both ends of the printer's chassis to capture excess oil coming from the Carriage Rods, preventing oil dropping into the ECabinet and ISM.

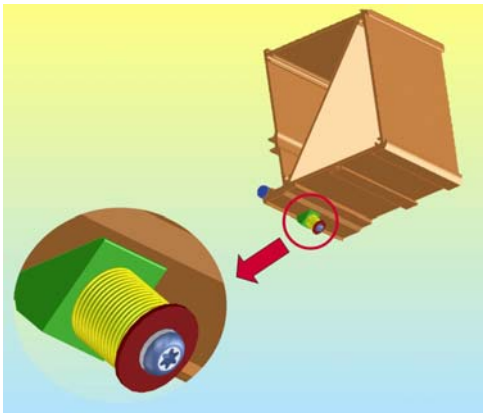
Excess Oil Capture Kit Installation Procedure

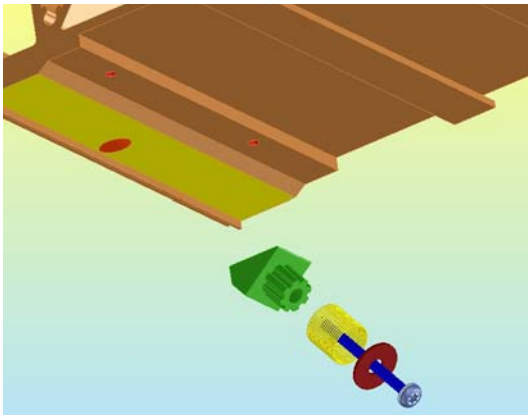
Removing the Panels

1. Remove the Left Side Front Panel ⇒See page 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Right Cover Slide Door ⇒See page 567.
4. Remove the Right Side Rear Panel ⇒See page 567.

Installing the Oil Reservoirs

5. Use a T-25 screwdriver to remove the Rod Screws and Screw Supports, which also contain a washer and spring.





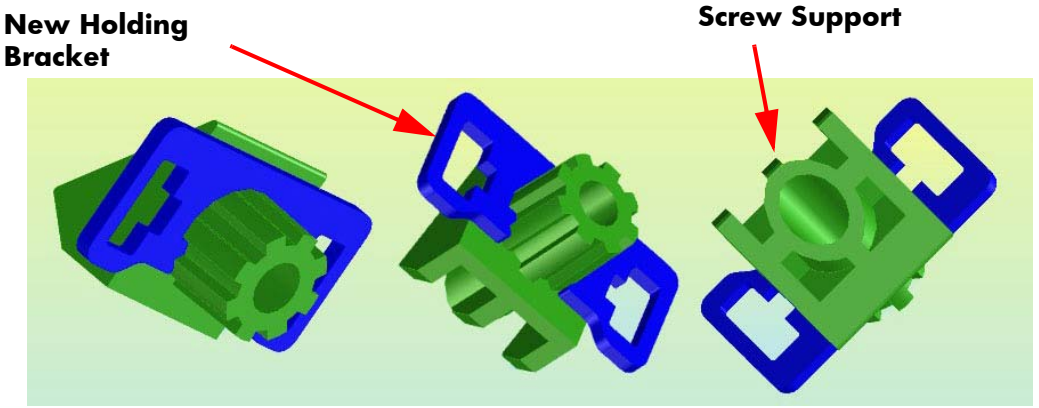
6. Once the Rod screw is removed, use a lint-free cloth to clean off any excess oil from the screw hole.

7. Start at one end of the Carriage Rod and move along the length.

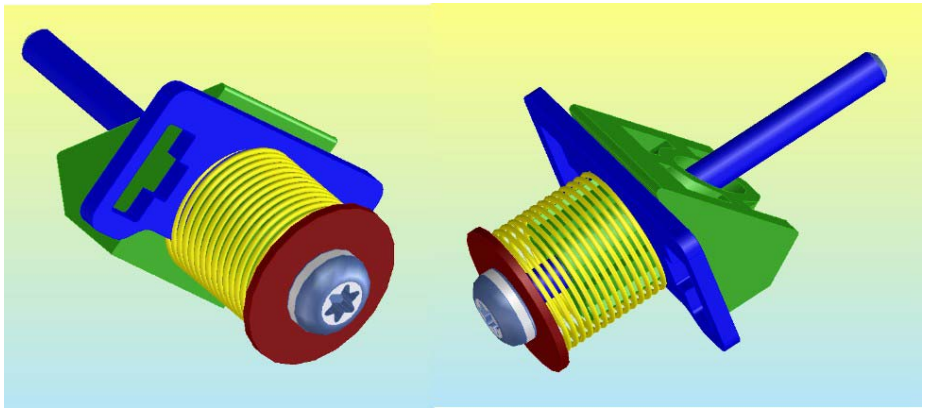
△ **CAUTION:** Only remove one screw at a time and install the new Holding Bracket, do not remove more than one Rod Screw at any time.

CAUTION: When removing the Carriage Rod screw, be careful not to drop it into the media path, or to drop any excess oil.

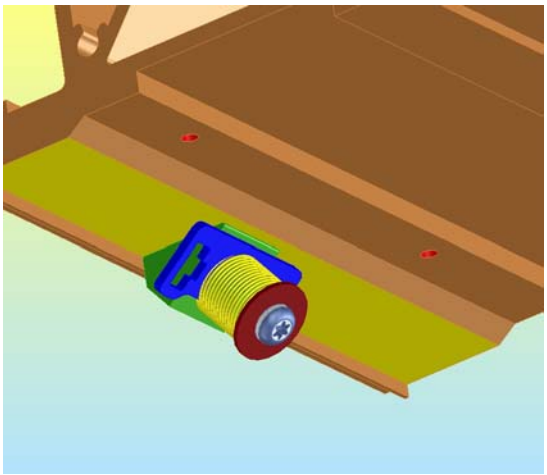
8. Install the new Oil Reserviroir Holding Bracket onto the Screw Support.



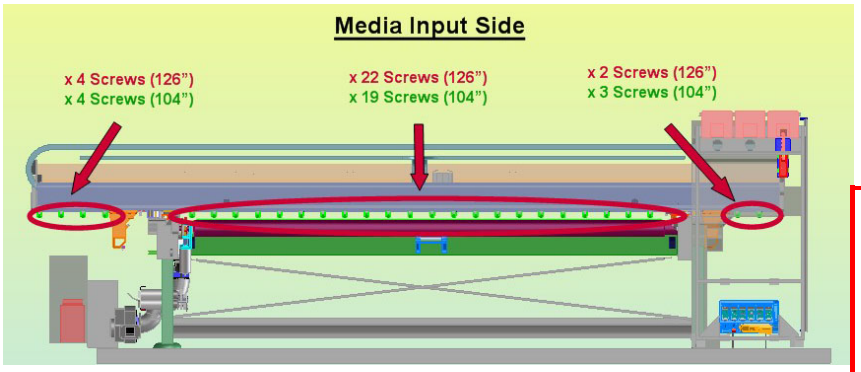
9. Install the Rod Screw, washer and spring into the Screw Support.

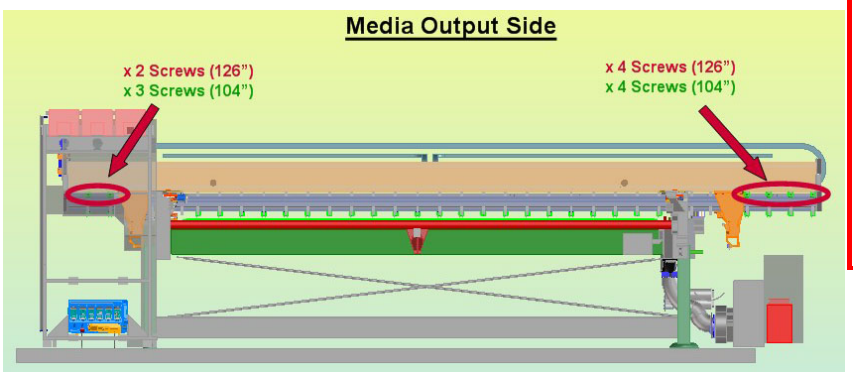


10. Install the parts back into the printer. Do not over tighten ther rod screw. TIP: Once the screw has reached the end of its thread, unscrew two rotations.



11. Repeat the procedure for the other Rod Screws, removing one at a time and reinstalling with the bracket.

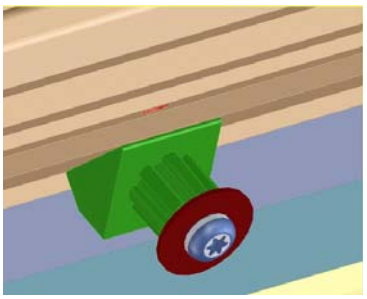




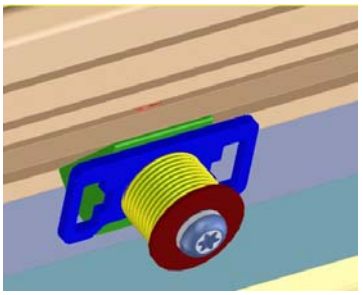
The number of screws and rods removed and replaced from the Input and Output Sides depends on the size of the printer. Shown here are the number of screws required and their locations for the 104" and the 126" printer

HP Designjet L65500 (104")
HP Scitex LX600 (104")
HP Scitex LX800 (126")
HP Scitex LX820 (126")
HP Scitex LX850 (126")

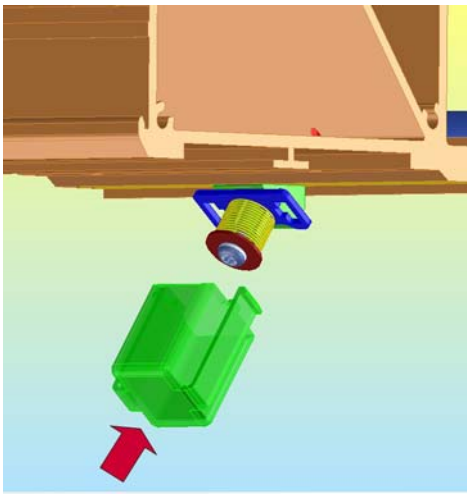
12. The middle Rod Screw on the Input side does not have a spring, and the screw is shorter.



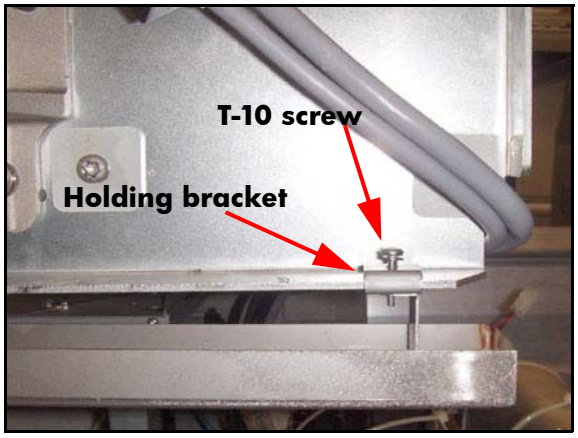
13. When removing and installing this part, add the spring which comes with this kit. This specific screw must be screwed in so that the washer comes into contact with the Screw Support.

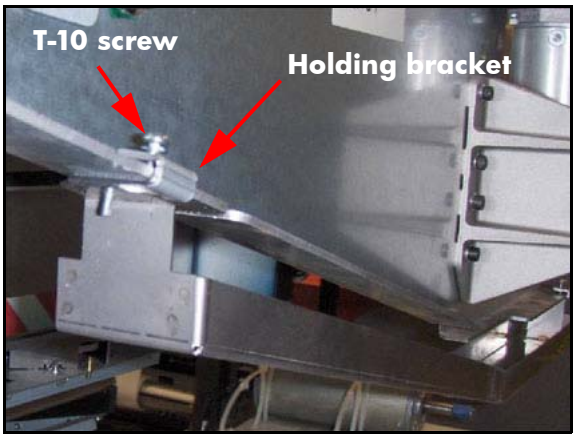


14. When all the Rod Screws have had the Reservoir Holding Brackets installed, install the Oil Reservoirs, by inserting the clips located on both sides into the bracket.



Installing the Oil Capture Trays

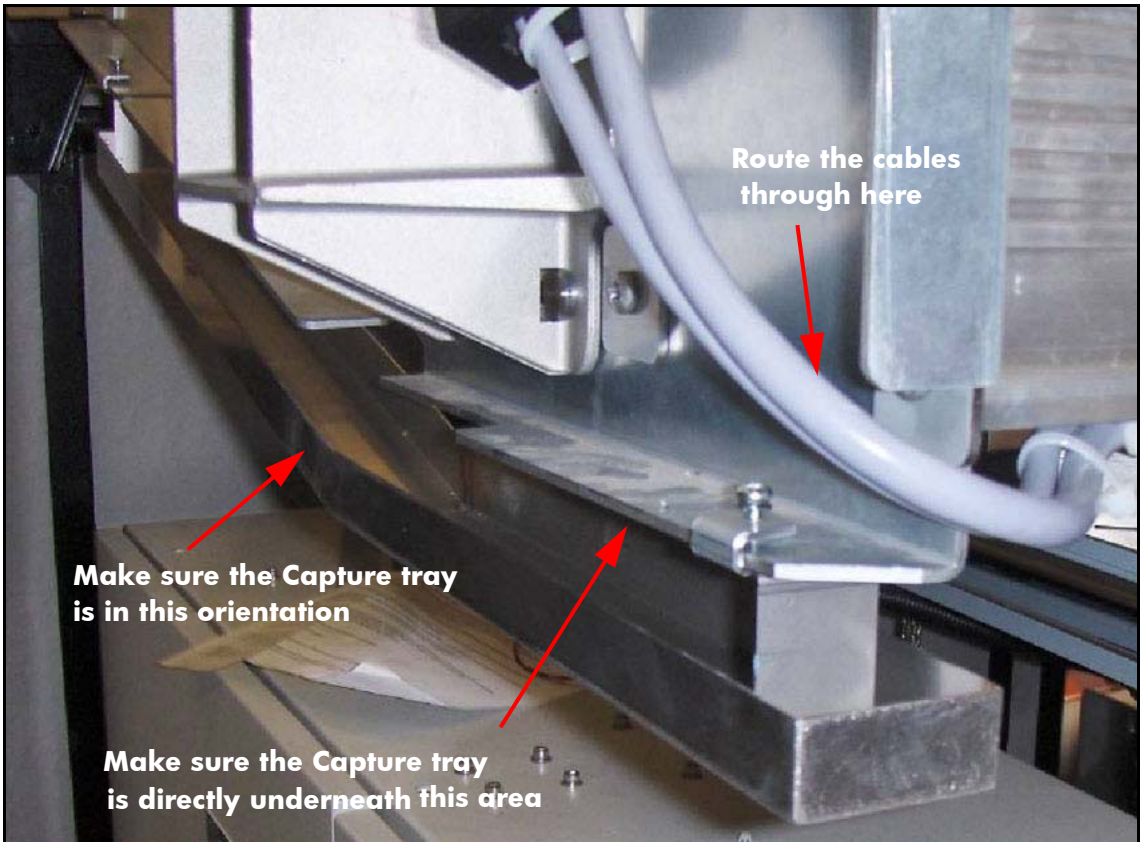




1. Attach the Oil Capture Trays on both ends of the chassis with the screws provided.

NOTE: If there is a hole in the chassis for the screw, the holding brackets are not required and can be removed.

2. When both Capture Trays have been installed, turn on the printer and while the system intializes, check that the Carriage does not come into contact with either of the Oil Capture Trays.
3. Replace the Printer Panels when the checks below have been completed.

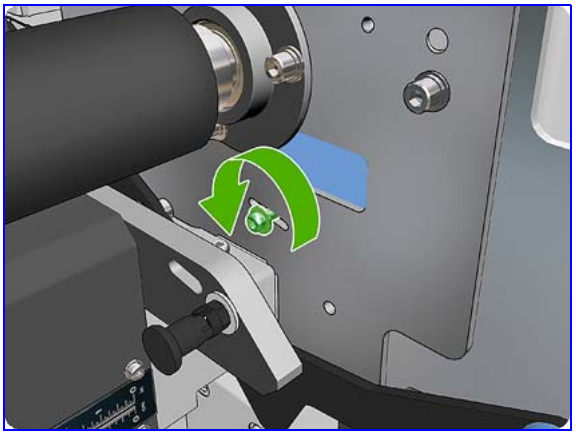


Roll to Floor

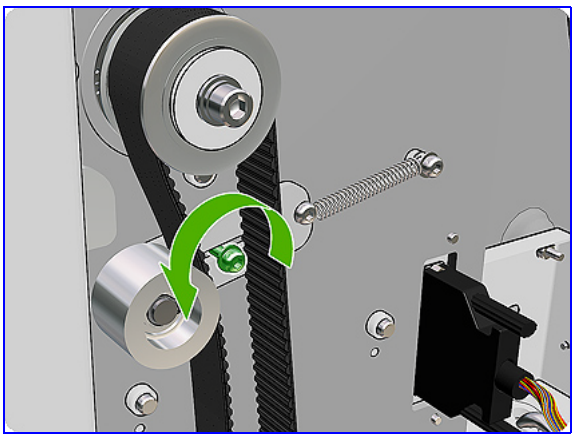
Roll to Floor Roller

Removal

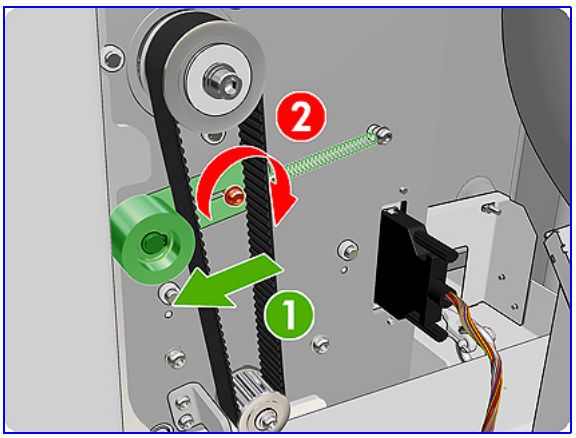
WARNING!: Switch off the printer and power enable switch.



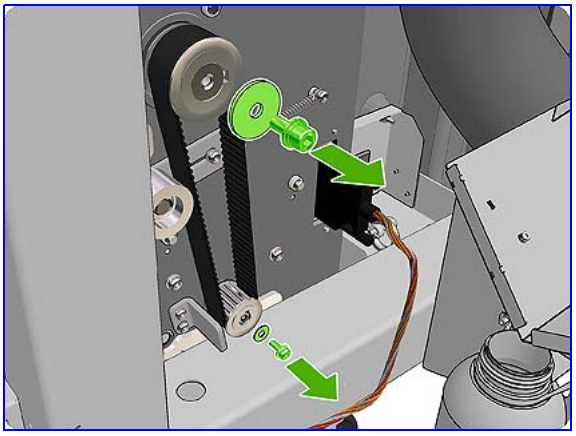
1. Remove one screw from the right side of the Roller.



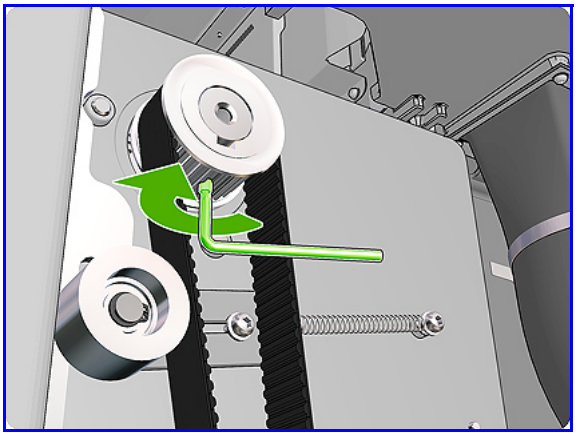
2. Loosen the screw on the right side of the Roller that secures the belt tensioner.



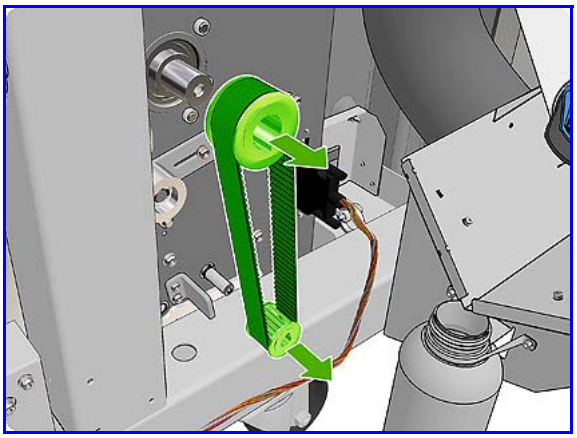
3. Pull the Belt Tensioner forwards (1) and tighten the screw (2).



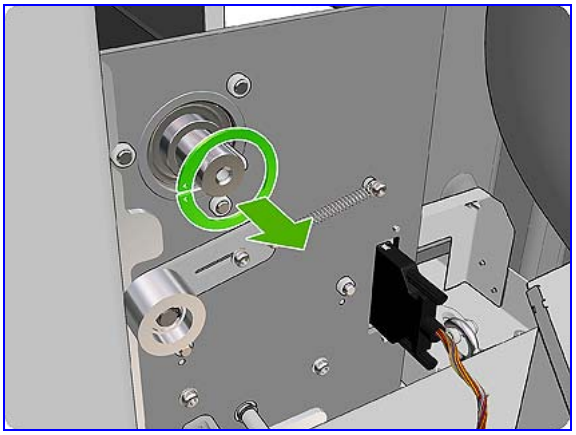
4. Remove the two screws and washer from the Upper and Lower Belt Pulleys.



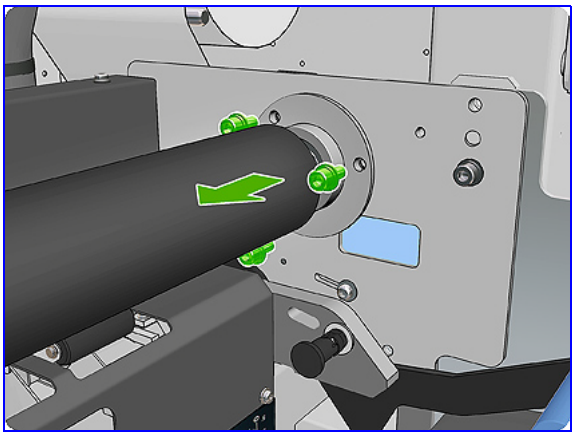
5. Using a wrench key, remove the screw from the Upper Belt Pulley.



6. Remove the Upper and Lower Belt Pulleys and Belt.

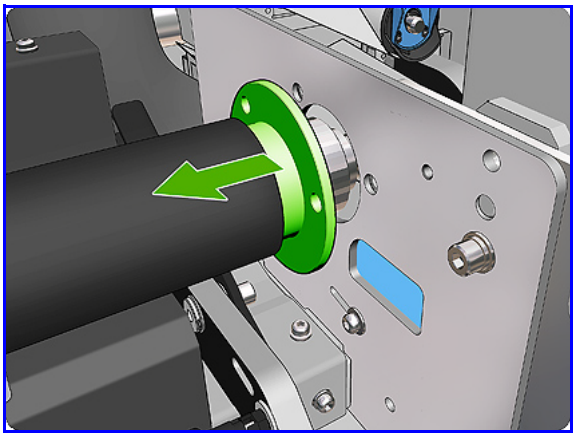


7. Remove the large Circ-Clip from the right side of the Roll to Floor Roller.

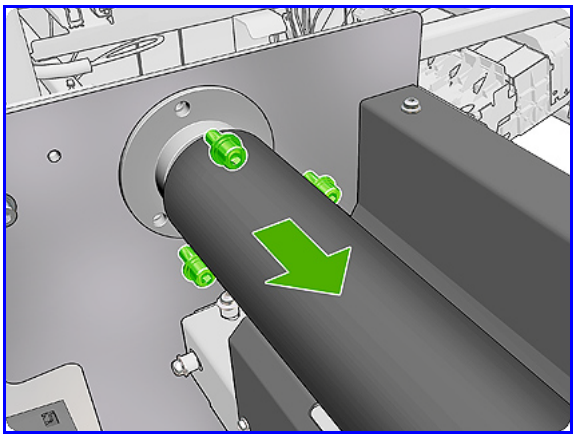


8. Remove three T30 screws from the right side of the Roll to Floor Roller.

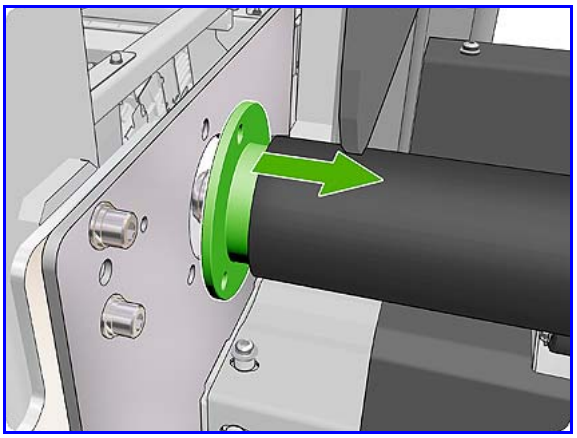
NOTE: Newer versions of the printer, the three screws will be on the other side in order to increase the accessibility of these screws.



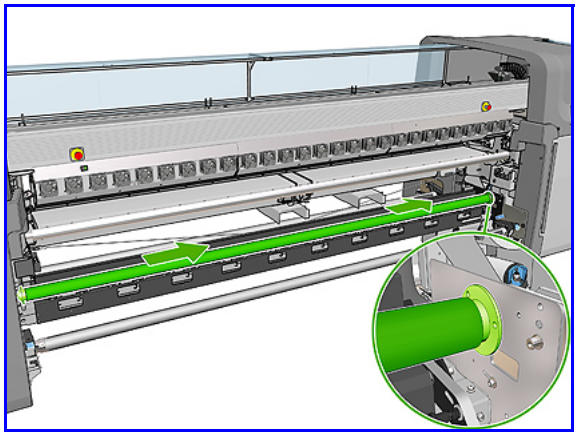
9. Pull the bearing of Roll to Floor Roller to the left.



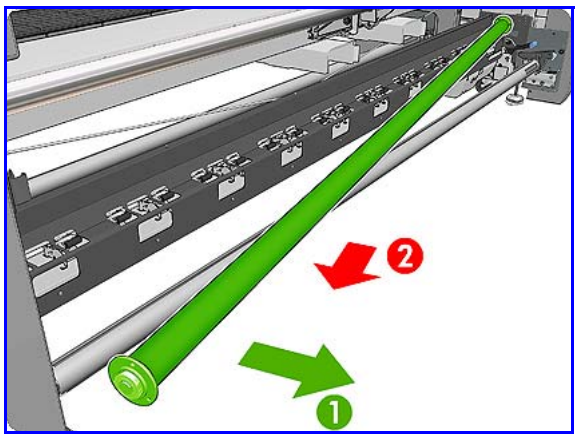
10. Remove three T30 screws from the left side of the Roll to Floor Roller.



11. Pull the bearing of Roll to Floor Roller to the right.



12. Slide the whole Roll to Floor Roller to the right.

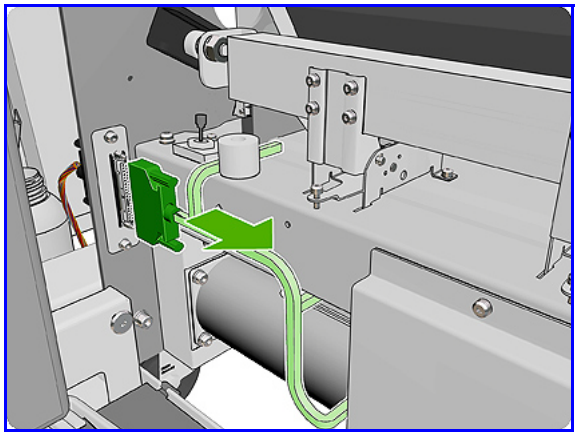


13. With two strong persons, remove the left side of the Roller (1) and slide to the right (2).

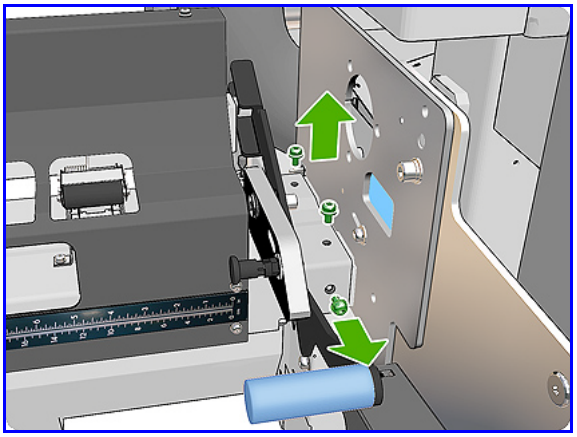
Roll to Floor Module

Removal

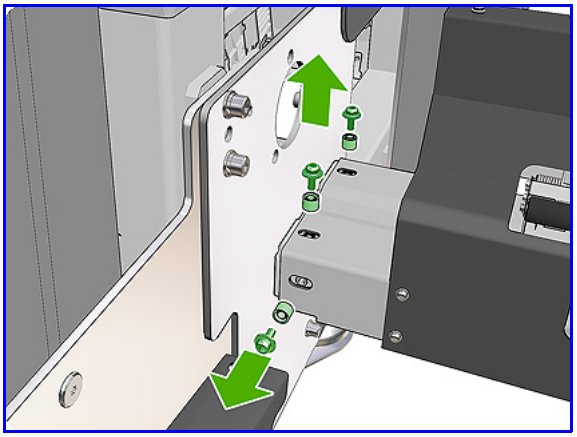
> ⚠ **WARNING!:** Switch off the printer and power enable switch.



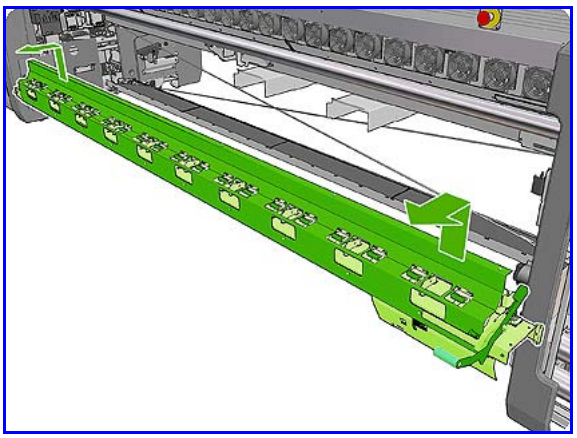
1. Disconnect the connector on the left side of the printer.



2. Remove three T15 screws on the right side of the Roll to Floor Module.



3. Remove three T15 screws on the left side of the Roll to Floor Module.

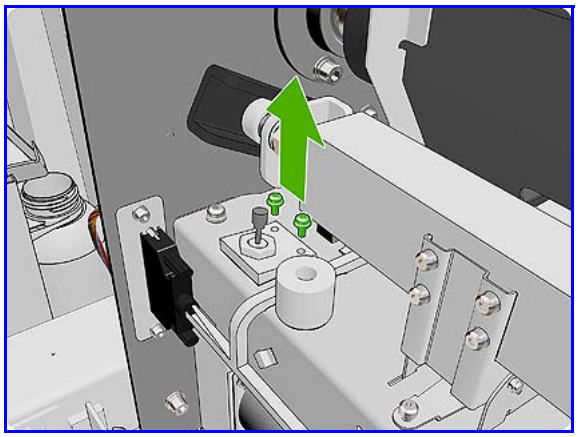


4. With two strong persons, remove the Roll to Floor Module.

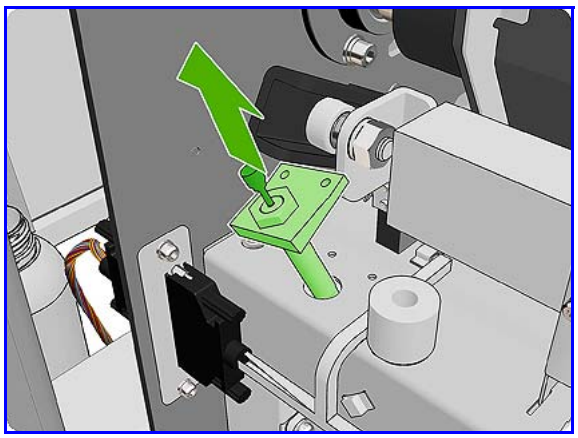
Roll to Floor Damper

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove two T15 screws from the Damper.

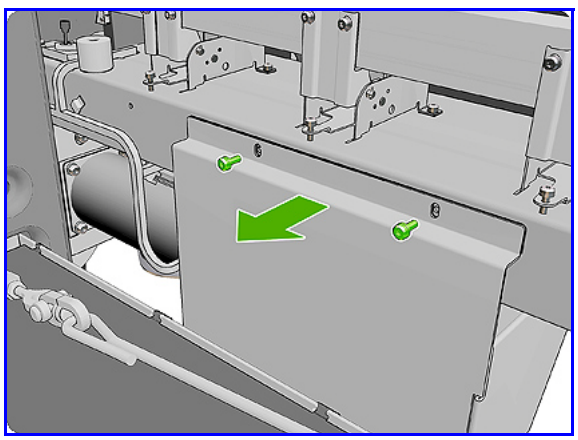


2. Remove the Damper.

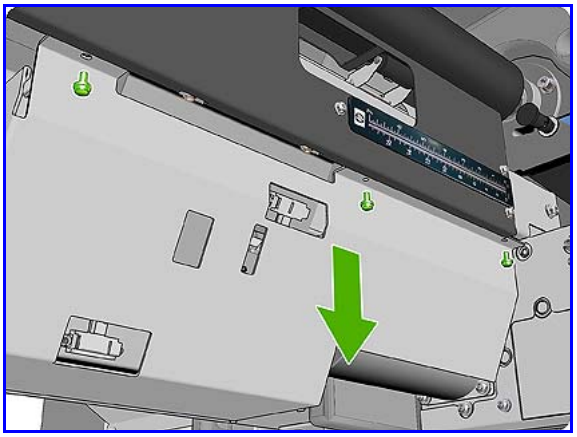
Media Presence Sensor Support

Removal

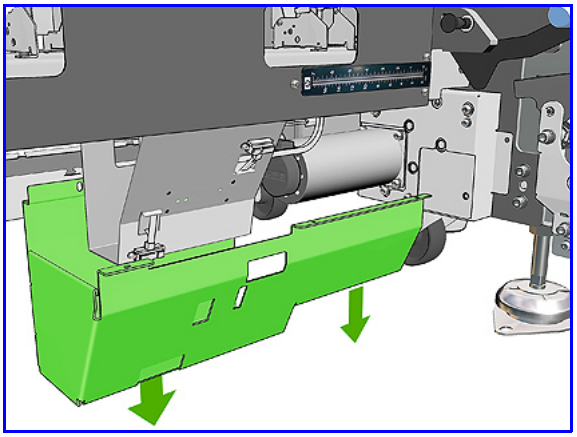
WARNING!: Switch off the printer and power enable switch.



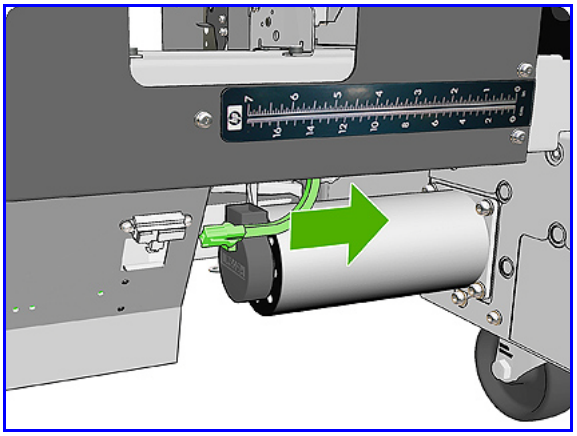
1. Remove two T15 screws from the front of the Roll to Floor Sensor Cover.



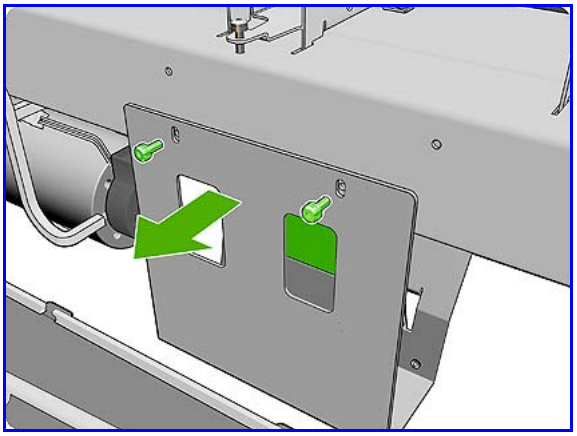
2. Remove three T15 screws from the rear of the Roll to Floor Sensor Cover.



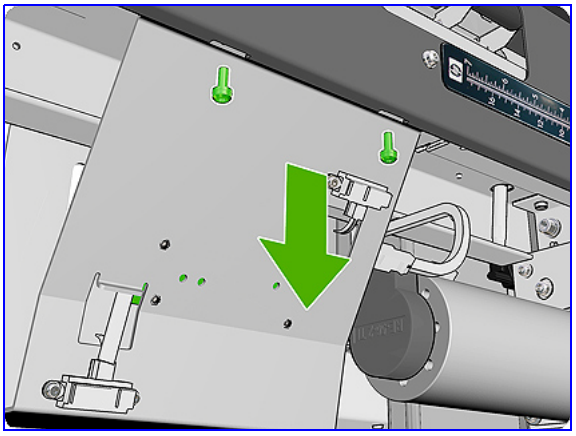
3. Remove the Roll to Floor Sensor Cover.



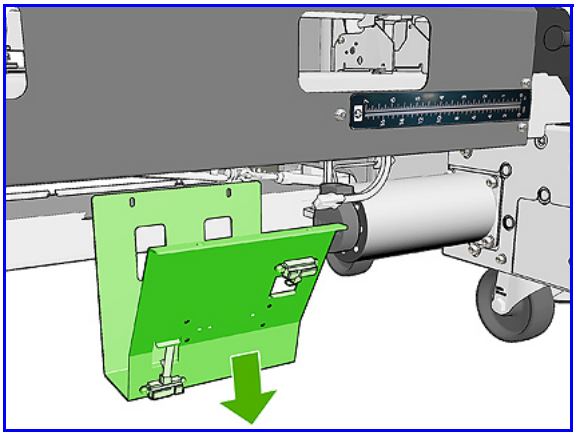
4. Disconnect the cables fom the Media Presence Sensor.



5. Remove two T15 screws from the front of the Media Presence Sensor Support.



6. Remove two T15 screws from the rear of the Media Presence Sensor Support.

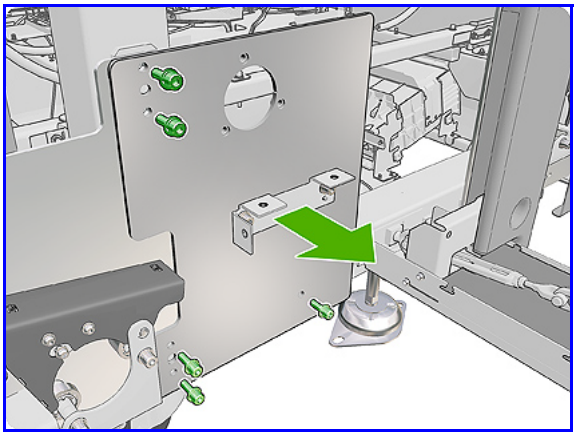


7. Remove the Media Presence Sensor Support.

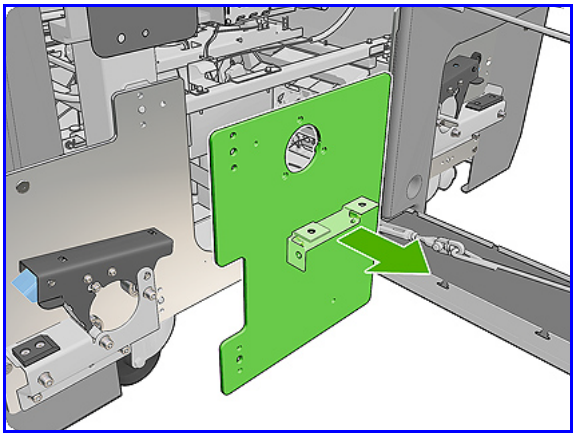
Left Side Plate

Removal

> ⚠ **WARNING!:** Switch off the printer and power enable switch.



1. Remove the Roll to Floor Roller ⇒See page 676.
2. Remove five T15 screws from the Left Side plate.

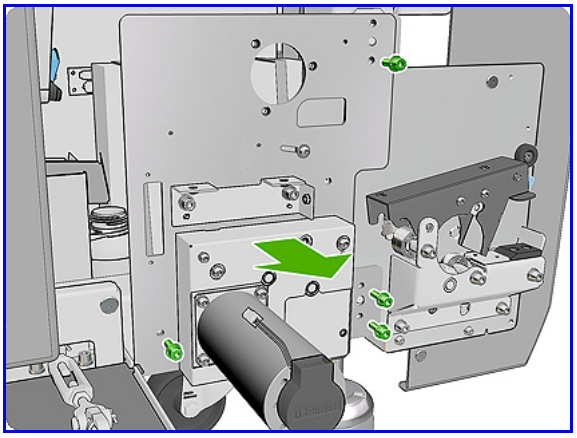


3. Remove the Left Side Plate.

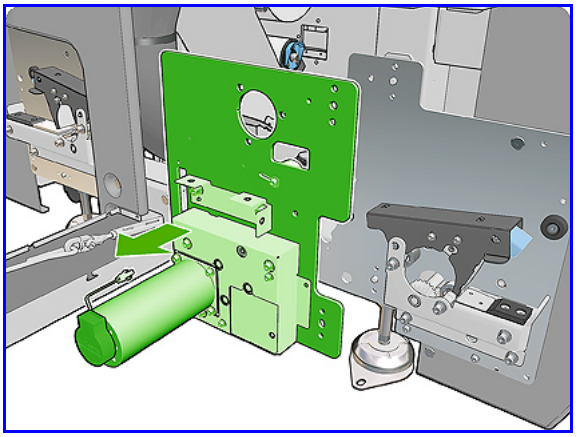
Right Side Plate

Removal

> **WARNING!:** Switch off the printer and power enable switch.



1. Remove the Roll to Floor Roller ⇒See page 676.
2. Remove three T15 screws from the Right Side plate.

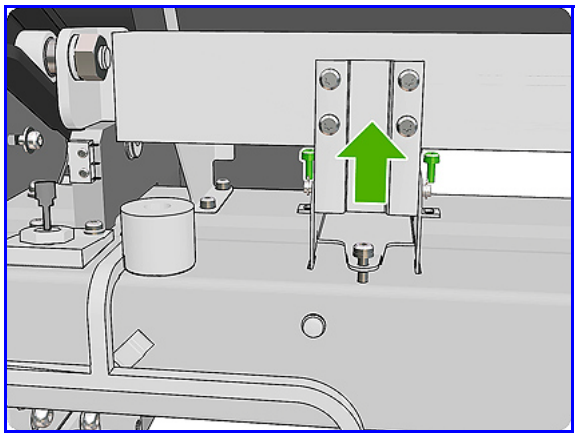


3. Remove the Right Side Plate.

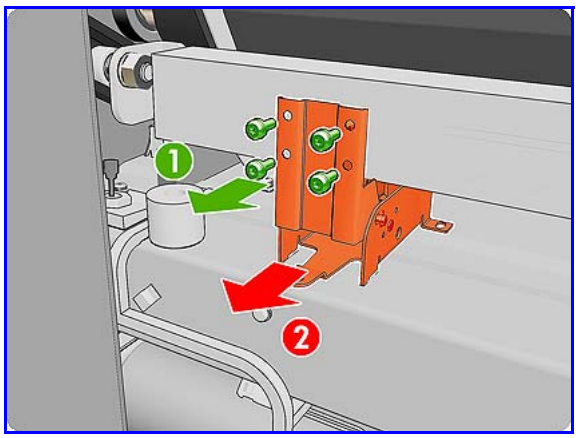
Outer Pinch Assemblies

Removal

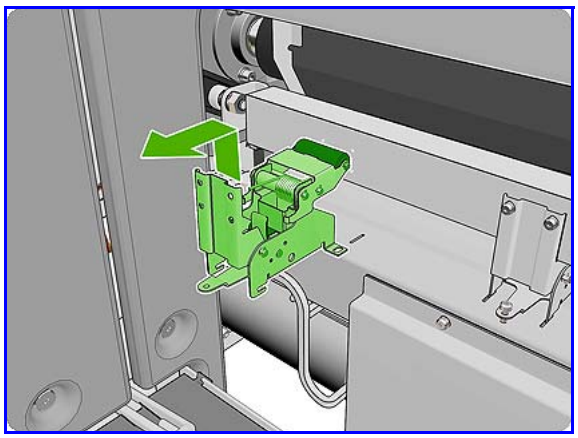
WARNING!: Switch off the printer and power enable switch.



1. Remove two T15 screws from the sides of the Pinch Assembly.



2. Remove four T15 screws from the front of the Pinch Assembly (1) and pull the assembly forwards (2).

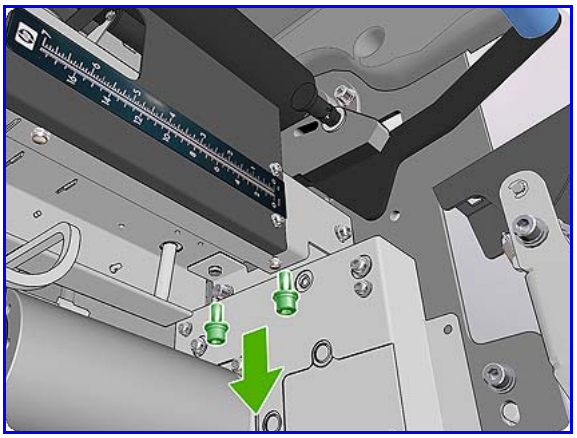


3. Lift up the Pinch Assembly and remove.

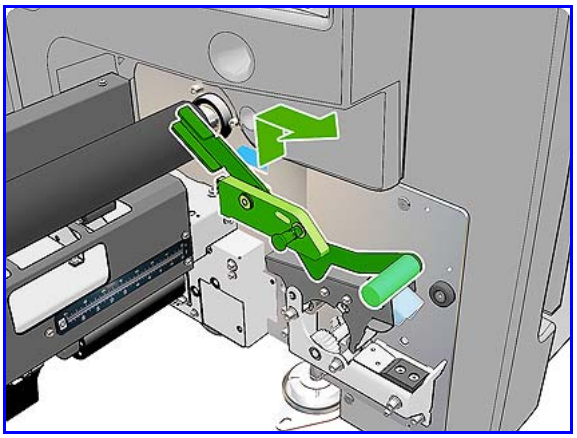
Roll to Floor Pinch Lever Assembly

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove two T15 screws from under the Pinch Lever Assembly.



2. Lift up the Pinch Lever Assembly and remove.

Ink System

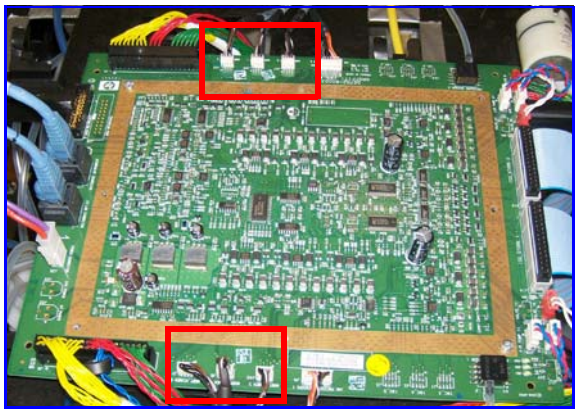
Ink Cartridge Connector Set

Removal

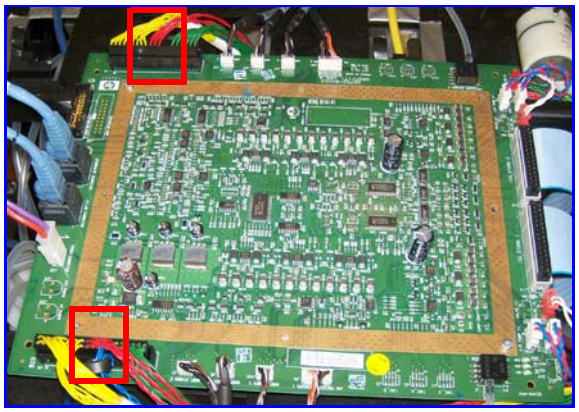
WARNING!: Switch off the printer and power enable switch.

1. Remove the Left Side Front Panel ⇒See page 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Left Side Lateral Panel ⇒ See page 565.
4. Flush the affected line ⇒ See page 701.
5. Disconnect the appropriate acumen cable (the cables that exit from the bottom of the cable protector) from the Ink System Main Board.

   Label: Moby Acumen x
   Route: Ink Cartridge Connector > Ink System Main Board



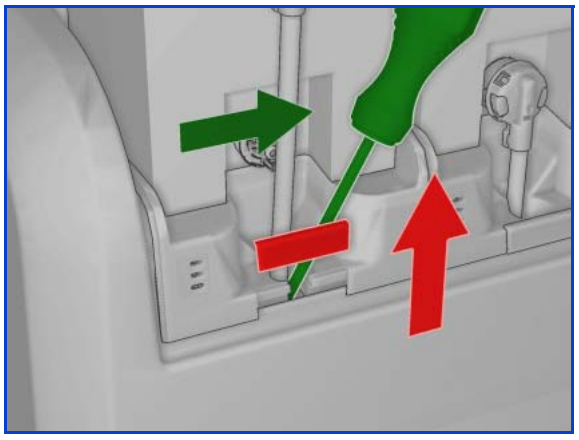
NOTE: Keep track of the connector placement because it is possible to mismatch connections between ink supplies.



6. Disconnect the appropriate connector switch cables (the cables that exit from the bottom of the cable protector) from the Ink System Main Board. The right cables are the red ones.

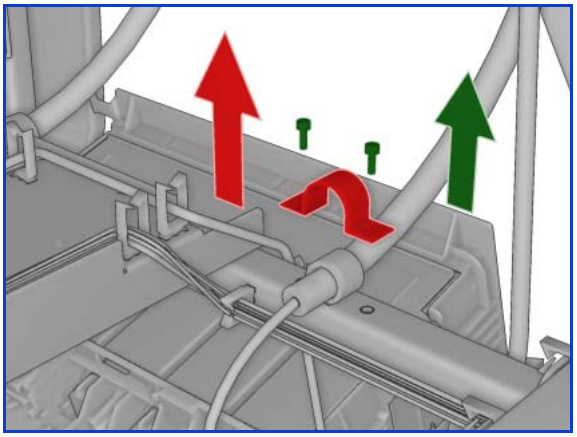
   Label: J5 (the red cables)
   Route: Ink Cartridge Connector > Ink System Main Board

7. Disconnect the Ink Cartridge Connector from the ink cartridge.

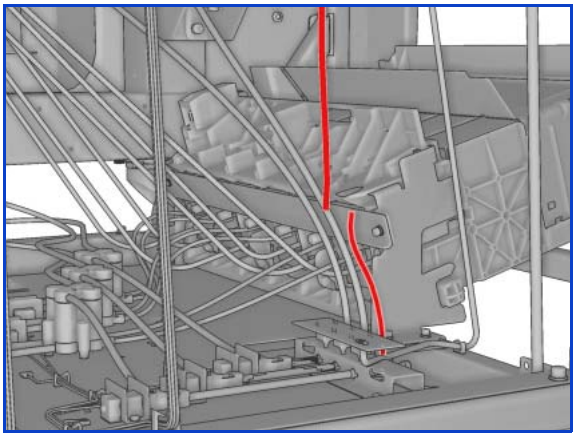


8. Use a screwdriver to bend the tray (separate the two sides of the connector lock). While keeping the tray bent, remove the connector lock with your hand.

NOTE: In this case, you do not use the screwdriver on the connector lock itself. Instead, you use the screwdriver to bend the tray, and you pull the connector lock out with your hand.

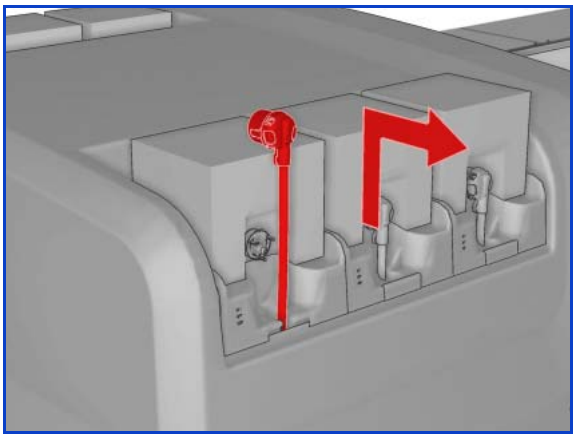


9. Remove the two A3 screws that secure the connector tube clip and remove it.



10. Use the tube cutter to cut the ink connector tube about ten to twenty centimeters above the first fitting.

NOTE: Use a rag to avoid spilling ink. Before you remove the ink cartridge connector, let all the ink run out.



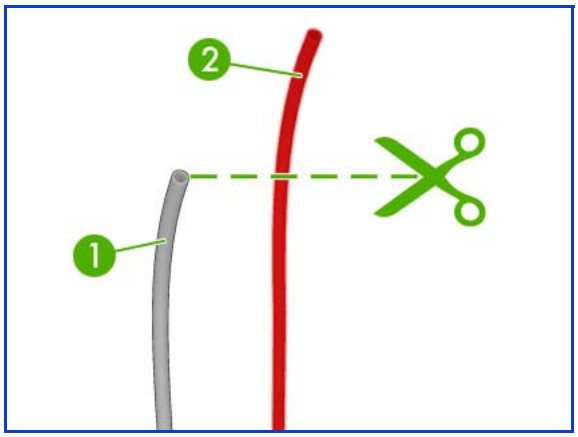
11. Pull the Ink Cartridge Connector Set out of the printer.

Installation

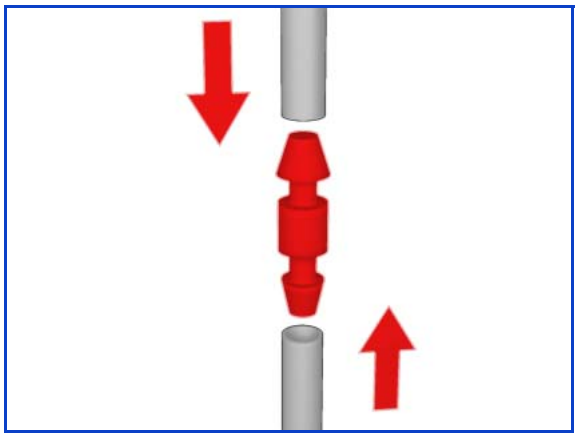
NOTE: The Ink Cartridge Connector Set service part comes with:

- A tube equal to the full length of the original tube installed on the machine
- A connector fitting to connect the new tube to the old tube.

NOTE: Look for the connector fitting when you open the service part.



1. Put the new Ink Cartridge Connector Set side by side with the Ink Cartridge Connector Set.
2. Cut the new tube so that it is the same length as the old tube using the specific cutter provided in the ISM repair kit.



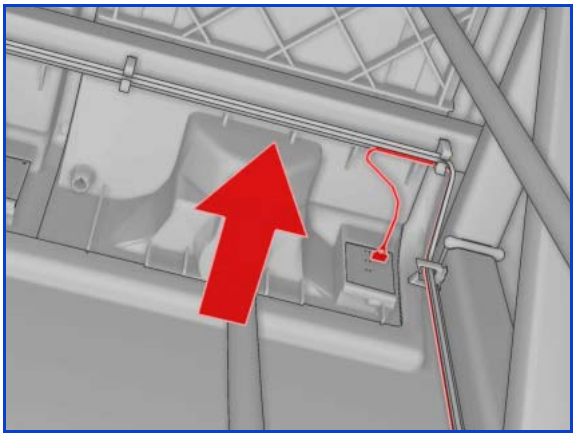
3. Install the new Ink Cartridge Connector Set, and join the lower tube to the upper tube using the connector fitting. Make sure that the upper and lower tubes are pushed completely onto the connector, as you insert them, make sure that you use a pushing motion, and not a twisting motion, as this can damage the tubes.
4. Connect the acumen data cable and switch cable, taking care that you do not mismatch them.
5. Perform 0.3 Purge the tubes ⇒See page 342.
6. Perform the following reset procedures:
   - 3.4.17 for black ⇒See page 499
   - 3.4.18 for yellow ⇒See page 499
   - 3.4.19 for cyan ⇒See page 499
   - 3.4.20 for magenta ⇒See page 499
   - 3.4.21 for light magenta ⇒See page 499
   - 3.4.22 for light cyan ⇒See page 499

Ink System LED Interface Board

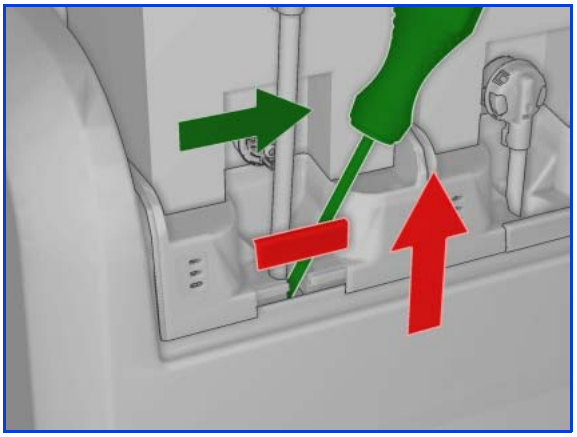
Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Left Side Front Panel ⇒See page 565.

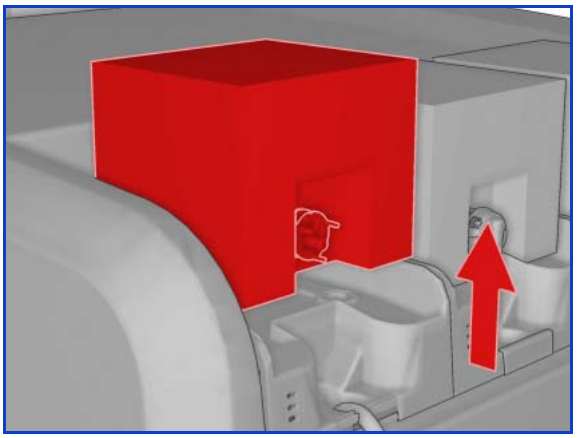


2. Disconnect the Ink System LED Interface Board cable.
3. Disconnect the Ink Cartridge Connector from the ink cartridge.

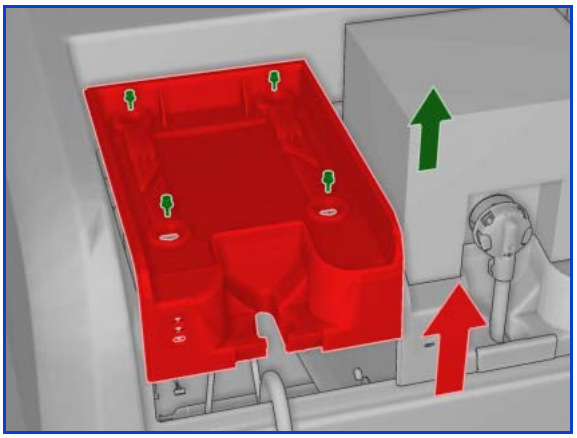


4. Use a screwdriver to bend the tray (separate the two sides of the connector lock). While keeping the tray bent, remove the connector lock with your hand.

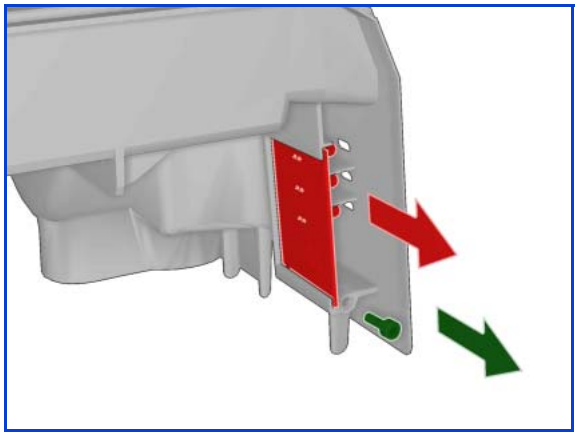
NOTE: In this case, you do not use the screwdriver on the connector lock itself. Instead, you use the screwdriver to bend the tray, and you pull the connector lock out with your hand.



5. Remove the ink cartridge.



6. Remove the four T15 screws that secure the Ink Cartridge Tray and move it upward.



7. Remove the T12 screw that secures the Ink System LED Interface Board and slide out the board.

Installation

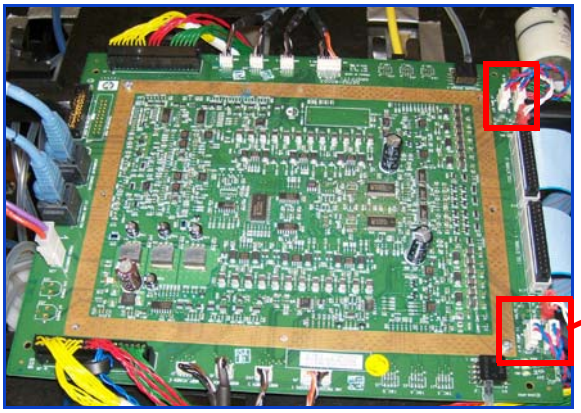
1. Perform the 4.10 Ink Cartridge LEDs diagnostic test to verify that the new service part works correctly ⇒See page 391.

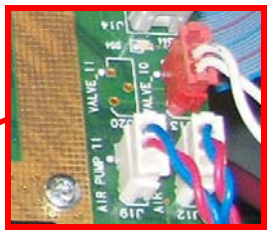
ISM Air Circuit Module

Removal

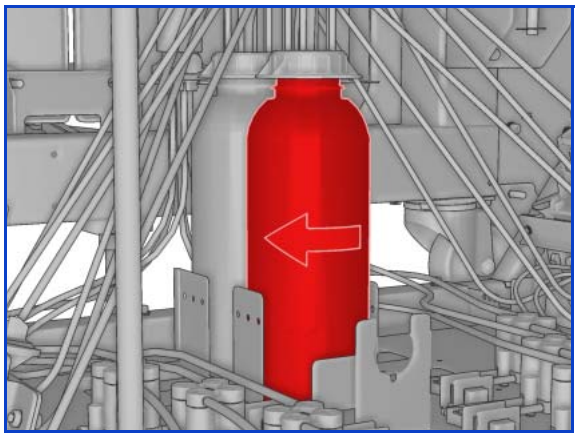
WARNING!: Switch off the printer and power enable switch.

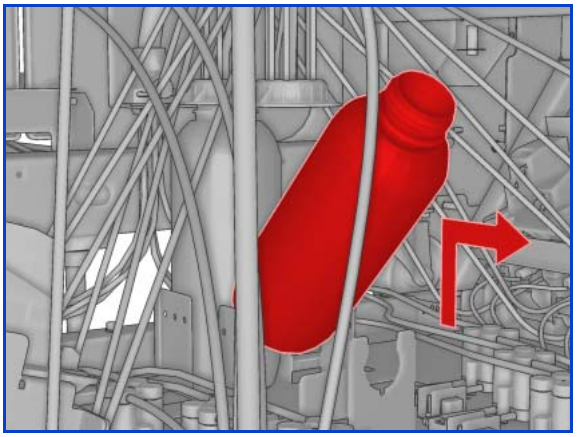
1. Remove the Left Side Front Panel ⇒See page 565.
2. Remove the Left Side Rear Panel ⇒Seepage 565.
3. Remove the Left Side Lateral Panel ⇒See page 565.
4. Disconnect the two air pump cables and the relief valve cable from the Ink System Main Board.
   a. Relief valve cable
   b. Air pump cables



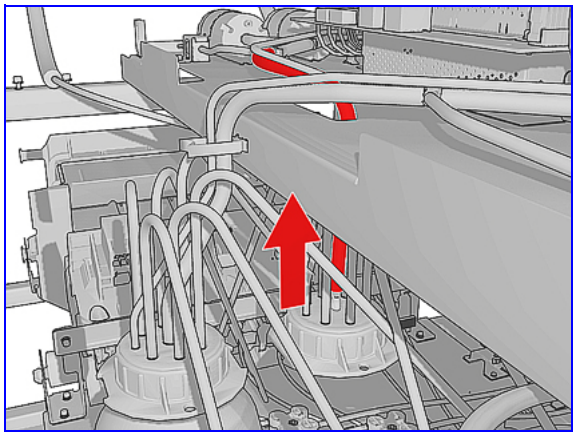


5. Unscrew the bottle from the bottle cap by turning the bottle. Do not try to turn the cap.



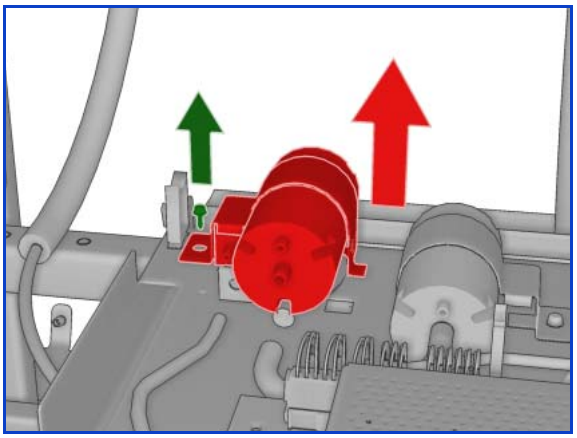


6. Remove the bottle.

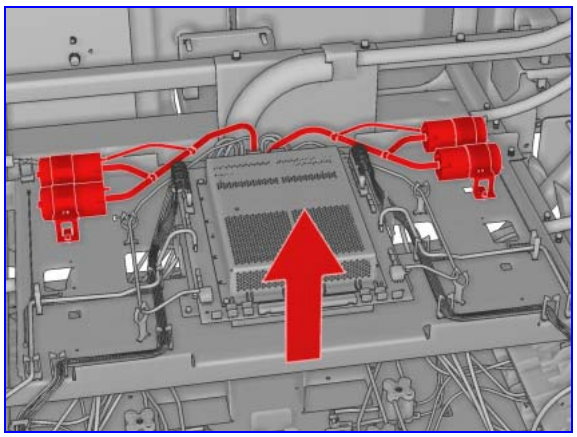


7. Remove the main air tube from the bottle cap (the tube shown in this graphic, which arrives directly from the motors.

NOTE: We also recommend replacing the cap of the bottle, the new part comes with a cap, 6 tubes for the air going to the intermediate tank, and the fittings. Cut each of the air tubes at the middle distance between the intermediate tank and the cap of the bottle.



8. Remove the T10 screw that secures the air pump and remove it. Repeat for all the air pumps.

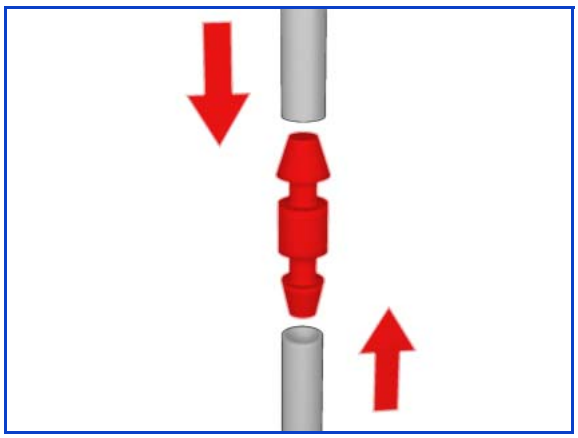


9. Remove the pumps and all the air tubes connected to the pumps.

Installation

1. Reinstall the air pumps, and reconnect the air pump and relief valve cables.

2. Connect the air tube to the bottle cap.



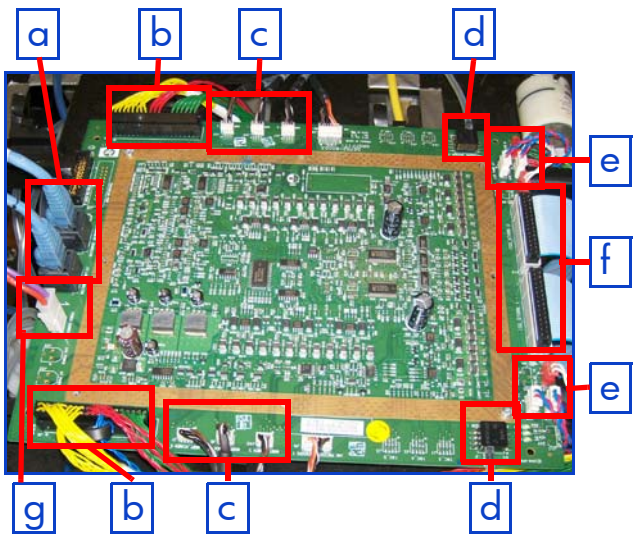
3. Using the six fittings to reconnect the six air tubes coming from the bottle cap to the six tubes going to the intermediate tanks. Try to avoid damaging the tubes as they are being connected, use a pushing motion, as opposed to a twisting motion as this can damage the tubes.
4. Perform the 4.2 Air Pressure System diagnostic test to verify that it works correctly ⇒See page 384.

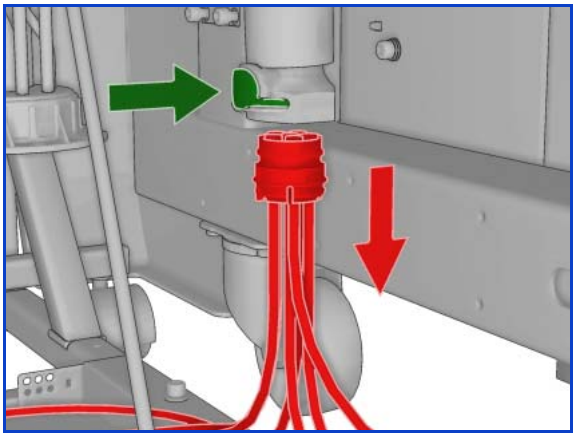
ISM Ink Circuit Module

Removal

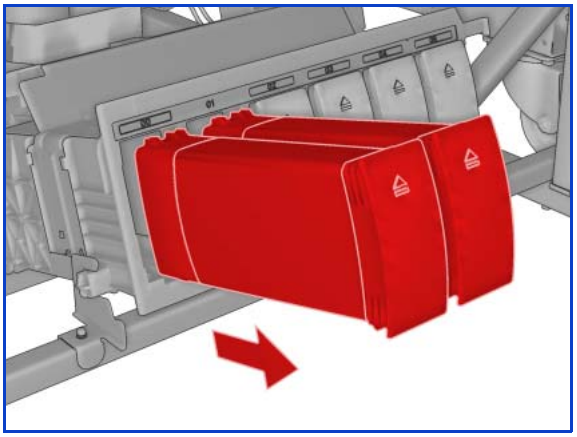
⚠ **WARNING!:** Switch off the printer and power enable switch.

1. Remove the Left Side Front Panel ⇒Seepage 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Left Side Lateral Panel ⇒See page 565.
4. Disconnect the necessary cables from the Ink System Main Board.
   a. LAN data cables
   b. LEDs (yellow), leakage sensor (blue), connector switches (red), electrovalves (green).
   c. Acumen supplies (J40, J6, J7) (J20, J27, J28)
   d. Air tube for sensor
   e. Two air pump cables, one relief valve cable
   f. Broken bag detector cables
   g. 24V power cable
5. Disconnect all six Ink Cartridge Connectors.





6. Release and disconnect the quick connector.

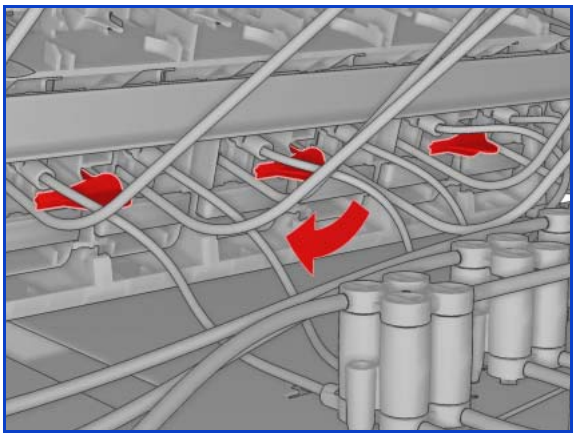


7. Carefully remove all of the intermediate ink tanks.

NOTE: Store the intermediate ink tanks vertically. Failure to store them vertically can cause a broken bag.

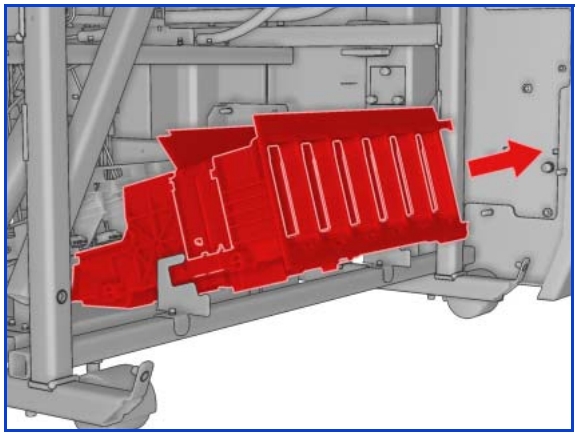
8. For all the colors, disconnect the tubes from the ink pressure sensor mount by using the tube cutter, and cutting the end of the tube off (about 1cm from the end), when the new part is installed, the end of the tube will be ok for reconnecting.

NOTE: Use a rag to avoid spilling ink. and do not re-use the extremity of each tube: it is important to cut the part which has been 'enlarged' to fit in the ink pressure sensor mount connector.

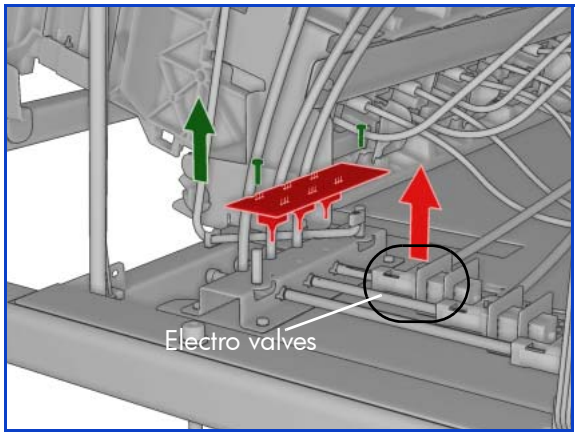


9. Turn the latches that secure the intermediate ink tank housing.
10. Disconnect the air tubes from the Intermediate Ink Tanks.

NOTE: The air tubes do not contain ink and are easily identified.

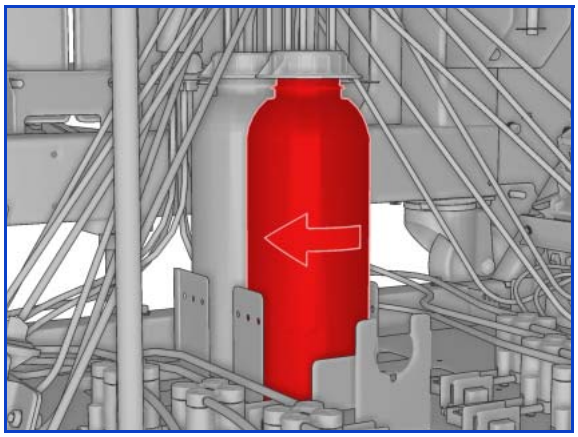


11. Remove the intermediate ink tank housing.

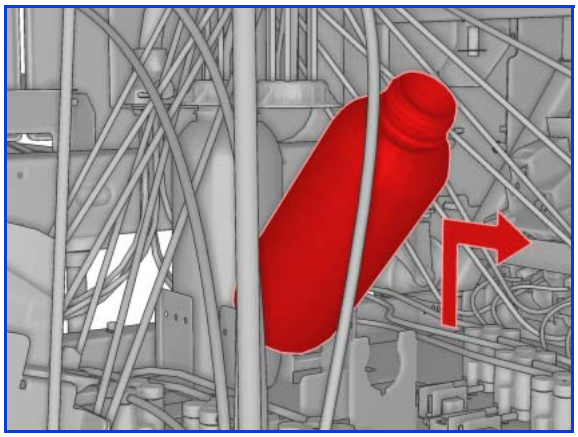


12. Remove two A2 screws that secure the two Ink Sensors Board and remove both of them.

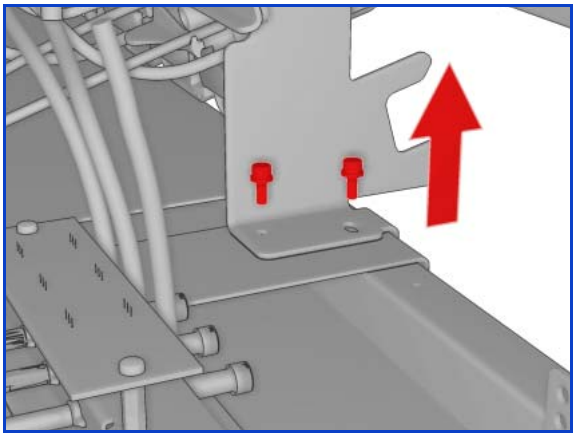
NOTE: The Ink Sensors Boards cannot be changed or mismatched. Label the boards **front** and **rear** to make sure that each board is replaced where it was originally installed.



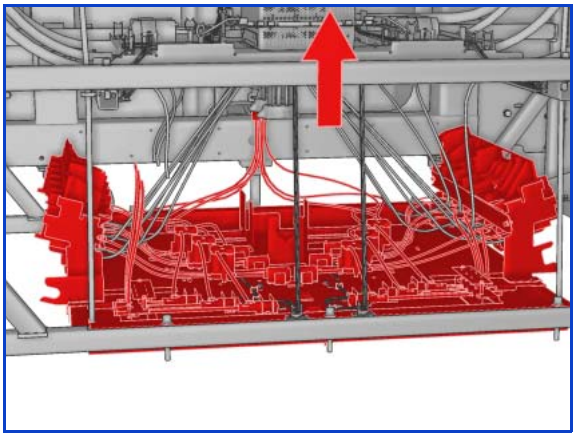
13. Unscrew the bottle from the bottle cap by turning the bottle. Do not try to turn the cap.



14. Remove the bottle.



15. Remove the eight T15 screws that secure the ISM Ink Circuit Module.



16. Remove the ISM Ink Circuit Module.

NOTE: You need at least two people to remove the ISM Ink Circuit Module.

NOTE: It is best to remove it either from the front or the rear.

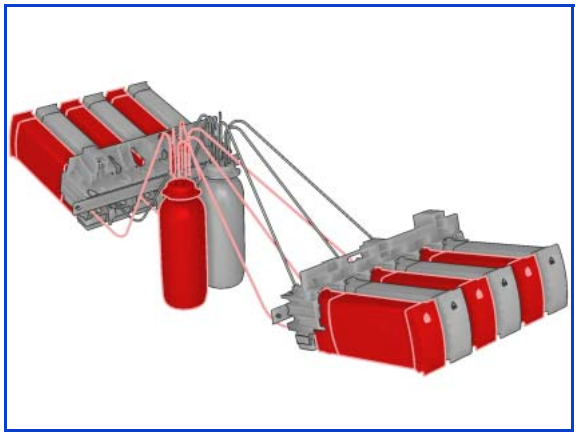
Installation

1. For each color, install the tube coming from the ink cartridge connector to the ink pressure mount assembly.

CAUTION: When connection the tubes, use a pushing motion, do not twist the tubes into place as this can cause damage to the tubes subsequently causing an air leakage at a later time.

NOTE: If an ink pressure board is already installed, remove it as it does not have ink pressure calibration values, place back the previous ink pressure sensor PCAs, making sure you do not mis match them.

2. Perform 03 Purge the tubes ⇒See page 342.



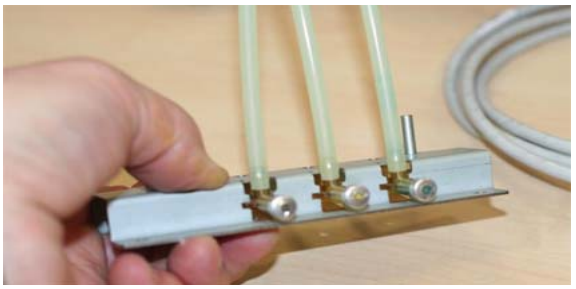
3. When you reconnect the air tubes, use this diagram as a guide to know which tubes are connected to which bottle.

Ink Pressure Sensor Board

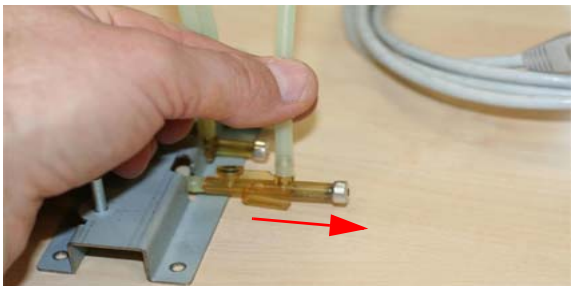
Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Ink Cartridges.
1. Remove the Left Side Front Panel ⇒See page 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Left Side Lateral Panel ⇒See page 565.
4. Remove the four screws that secure the metal support part to the printer and pull out the assembly.
5. Remove two screws that secure the Ink Pressure Sensor Board to the metal support part and remove the board.



6. Press on a latch that secures the Ink Pressure Sensor Mount to the metal support part.



7. Slide out the Ink Pressure Sensor Mount from the metal support.

Installation

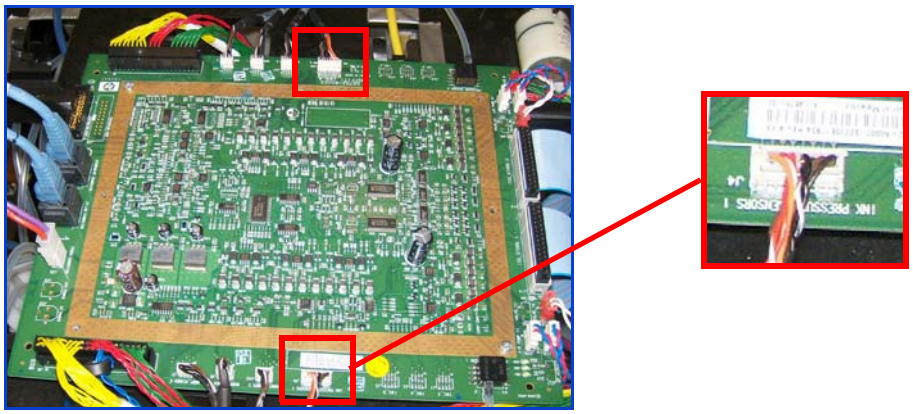
For the tube going to the cartridge, cut it as close as possible to the ink pressure sensor mount. And reconnect this tube on to the new ink pressure sensor mount (without screwing it). For the tube going towards the main electrovalve, follow the same procedure as the one explained within the electrovalve replacement (ISM repair kit) ⇒ page 708.

Ink Sensors Board

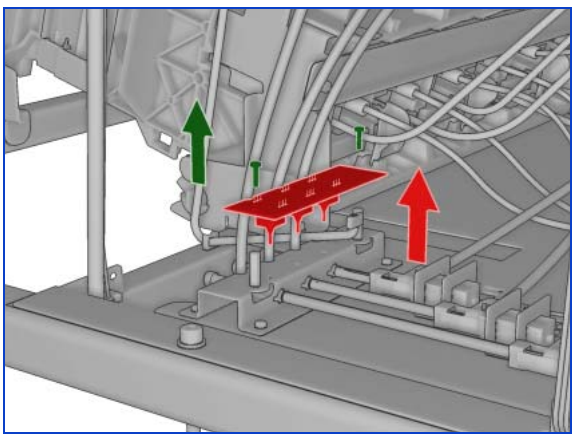
Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Left Side Front Panel ⇒See page 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Left Side Lateral Panel ⇒See page 565.
4. Disconnect the Ink Sensors Board cable (J4/J26).



5. Disconnect the Ink Cartridge Connectors.
6. Remove the two A2 screws that secure the Ink Sensors Board and remove the board.



NOTE: The Ink Sensors Boards cannot be mismatched. Make sure that each board is replaced where it was originally installed.

Installation

1. Replace the Ink Sensors Board with the new service part.

NOTE: Do not remove the power jumper.

2. Connect the Ink Sensors Board cable.

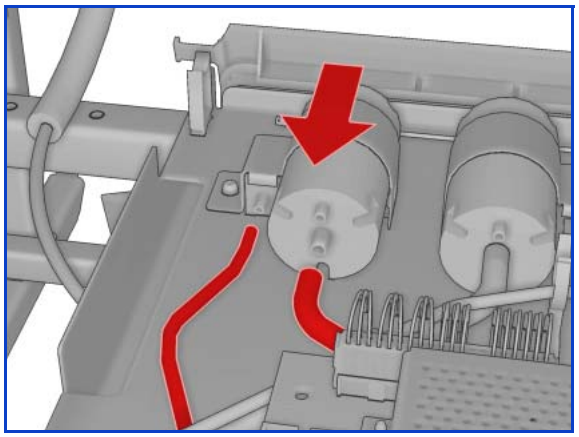
3. Connect the ink cartridge connector.
4. Run the Ink Pressure Sensor Calibration ⇒See page 406.
5. Finally, remove the power jumper when indicated by the test.

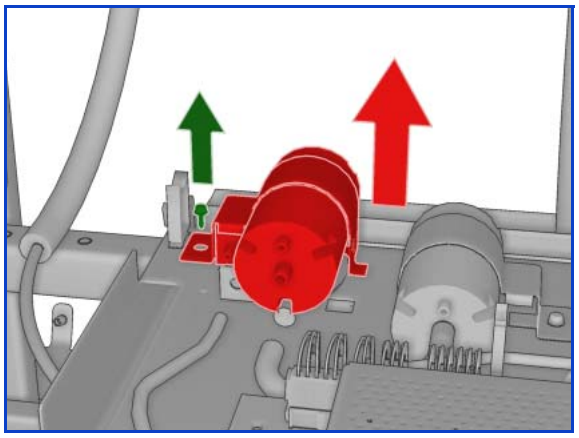
Ink System Pressurization Pump and Relief Valve

Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Left Side Front Panel ⇒Seepage 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Left Side Lateral Panel ⇒See page 565.
4. Disconnect the two air tubes.





5. Disconnect the pump cable and the relief valve cable.
6. Remove the T10 screw that secures the Ink System Pressurization Pump and Relief Valve and remove the pump.

Installation

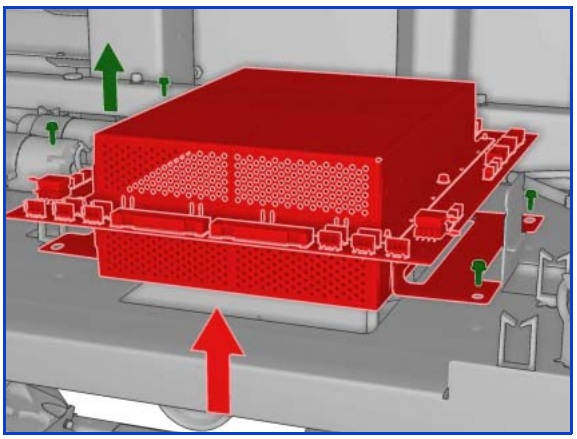
1. Perform the 4.2 Air Pressure System diagnostic test to verify that it works correctly ⇒See page 384.

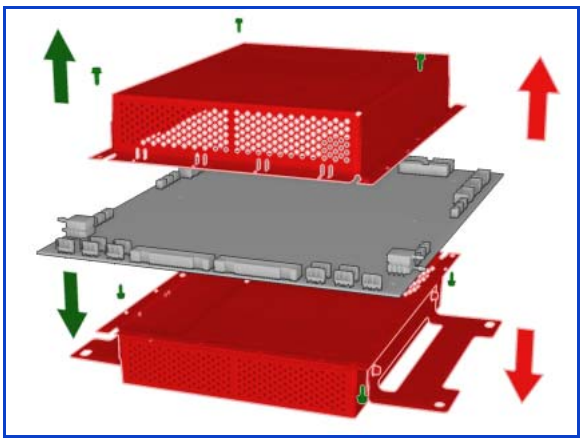
Ink System Main Board

Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the Left Side Front Panel ⇒See page 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Left Side Lateral Panel ⇒ See page 565.
4. Disconnect all electrical cables and air tubes connected to the Ink System Main Board. For a complete diagram ⇒See page 48.
5. Remove the four T20 screws that secure the cover of the Ink System Main Board and remove the board.





6. Remove the six T10 screws that secure the top and bottom covers and remove them.

NOTE: The service part does not include these covers, so make sure to keep them to use with the new service part.

Intermediate Tank Set

In order to replace an Intermediate Tank Set, the procedure must be done using the **Intermediate Tank Change Process** utility, located in Diagnostic Mode. For more information about the Intermediate Tank Change Process ⇒see page 389.

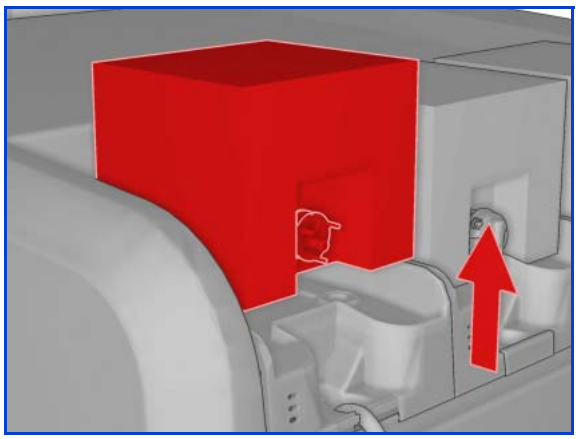
The intermediate ink tanks must be changed according to service needs and preventive maintenance. For more information on the preventive maintenance of the intermediate ink tanks ⇒See page 881.

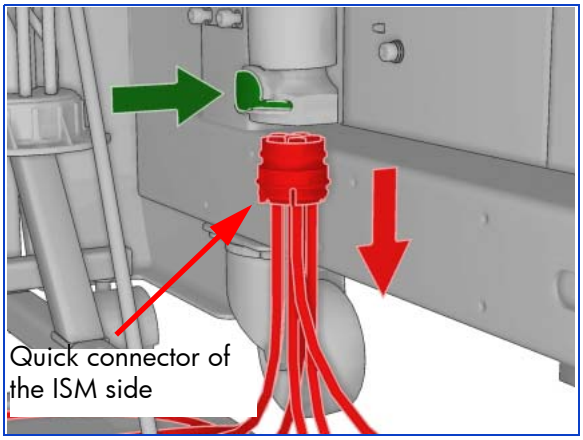
After replacing intermediate tanks, preform the reset procedure 3.4.13 ⇒ see page 498(for all tanks) or use the individual reset procedures applicable to the replaced tanks.

ISM Flush and clean a single ink system line

Flushing the ink lines with distilled water and then with air removes the ink from the tubes, this enables you to remove and replace parts of the ink system. The flushing procedure is done one ink line at a time.

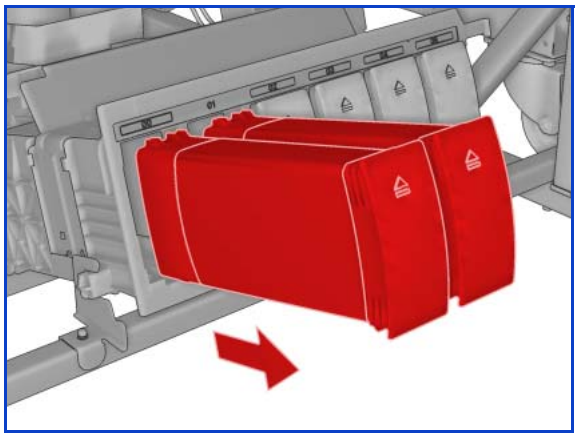
1. Remove the printheads and store them in their caps.
2. Remove the Left Side Front Panel ⇒See page 565.
3. Remove the Left Side Rear Panel ⇒See page 565.
4. Remove the Left Side Lateral Panel ⇒See page 565.
5. Remove the Ink Cartridge.





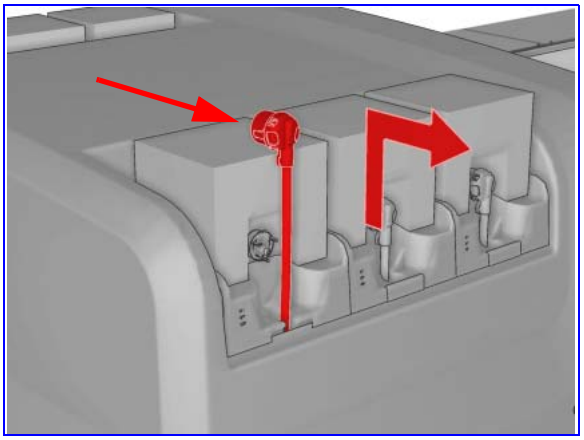
6. Release and disconnect the Quick Connector.

7. Connect the Quick Connector Purging Tool into the matching Quick Connector of the ISM side.

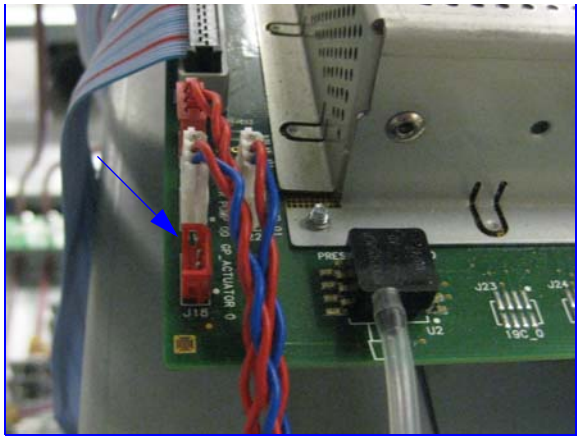


8. Carefully remove the intermediate tanks of the color you are going to flush.

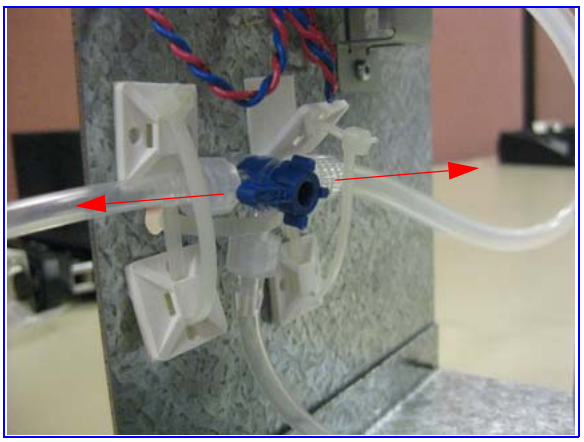
NOTE: Store the intermediate ink tanks vertically. Failure to store them vertically can cause a broken bag.



9. Place the Flushing Tool in the space left when the ink cartridge was removed, and connect the ink connector to the connection port of the tool.



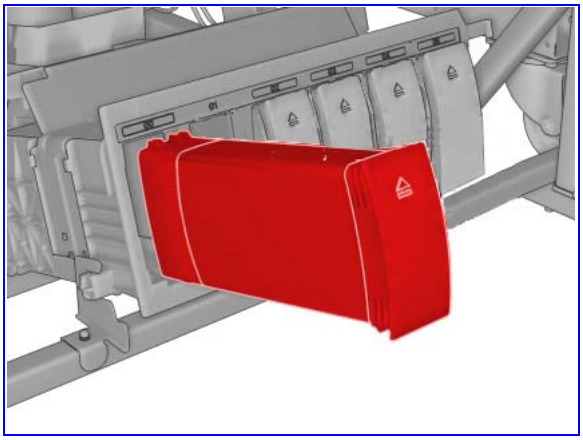
10. Connect cable from the Flushing Tool to J18 on the ISM Board.
11. From the Front Panel go to the Diagnostic Menu and select Ink System Menu 4.0>Flushing procedure>Activate Flushing tool Pump.
12. Open the Entry Electrovalve of the color you are flushing Ink System Menu 4.0>Flushing procedure>Operate Entry electrovalve-> “Color to flush”.
13. Unscrew the top of the Cleaning Tool and fill the bottle with 500cc of distilled water.
14. Insert the needle into the tube of the air pressure waste bottle, supplied with the flushing kit.
15. Insert the needle into the correct colored port of the Quick Connector Purging Tool.



16. Ensure the path switch is in the horizontal position.

17. Turn On the Flushing Tool with the switch located on top.

    The Cleaning Tool slowly pumps the distilled water into the tubes and ink system of the color you are cleaning. The pumping action cleans ink out of the tubes and into the draining bottle.



18. When the level of distilled water is half finished:

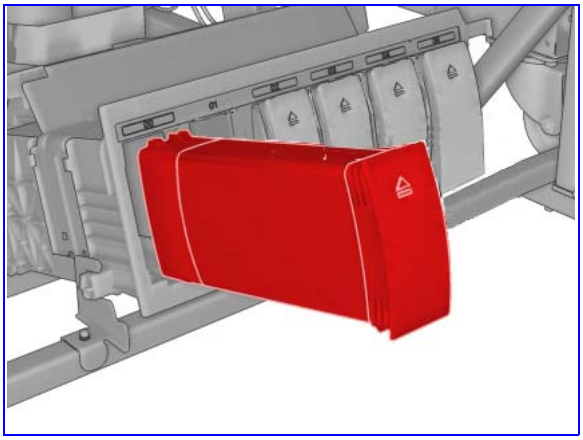
a. Install the New Empty Intermediate Flushing Tank (that came with the flushing kit) into the Left Intermediate slot, wait 10 seconds for the ink to be cleaned from this area and then remove the tank.

b. Install the Intermediate Flushing Tank into the Right Intermediate slot, wait 10 seconds for the ink to be cleaned from this area and then remove the tank.

NOTE: If the distilled water in the Cleaning Tool bottle becomes low before the ink system has been cleaned of ink, you must refill the bottle with more water. You must stop the Flushing tool to add more water.

19. When the Ink system has been cleaned of ink and the Flushing tool becomes empty of water, the pump of the Cleaning Tool will then push air into the ink system tubes, which will push the water out into the draining bottle of the Quick Connector Flushing Tool, this process will last for approximately 5 minutes.

20. When five minutes has past:



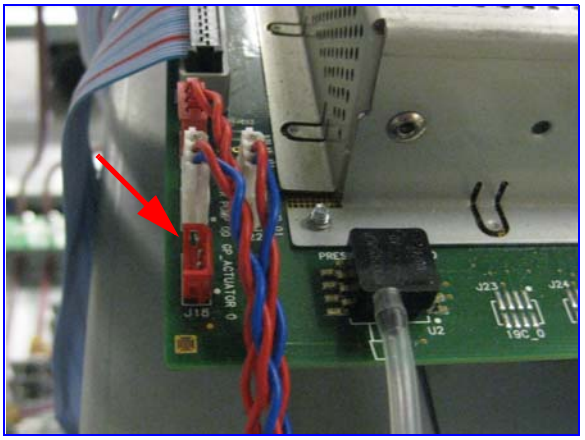
a. Install the Intermediate Flushing Tank (that came with the flushing kit) into the Left Intermediate slot, wait 10 seconds for the water to be removed from this area and then remove the tank.

b. Install the Intermediate Flushing Tank into the Right Intermediate slot, wait 10 seconds for the water to be removed from this area and then remove the tank.

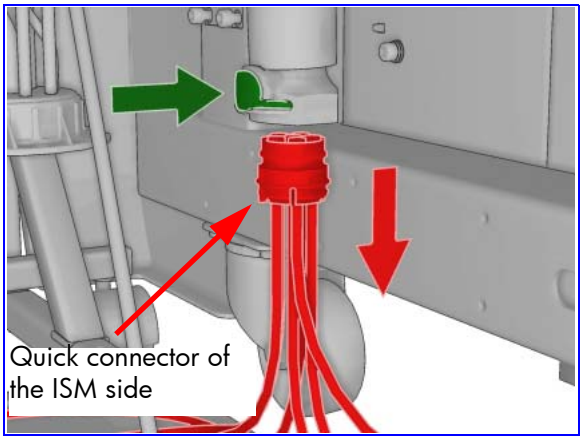
TRS flushing and cleaning a single ink system line

Flushing the ink lines with distilled water and then with air removes the ink from the tubes, this enables you to remove and replace parts of the ink system. The flushing procedure is done one ink line at a time.

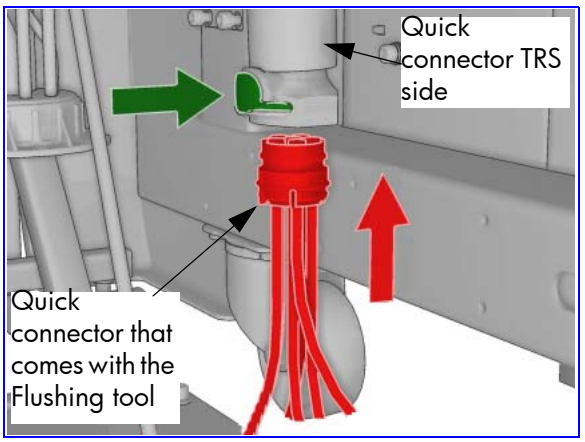
1. Remove the printheads and store them in their caps.
2. Remove the Left Side Front Panel ⇒See page 565.
3. Remove the Left Side Rear Panel ⇒See page 565.
4. Remove the Left Side Lateral Panel ⇒See page 565.



5. Connect cable from the Flushing Tool to J18 on the ISM Board.
6. From the Front Panel go to the Diagnostic Menu and select Ink System Menu 4.0>Flushing procedure>Activate Flushing tool Pump.
7. Open the Entry Electrovalve of the color you are flushing Ink System Menu 4.0>Flushing procedure>Operate Entry electrovalve-> “Color to flush”.
8. Unscrew the top of the Cleaning Tool and fill the bottle with 500cc of distilled water.

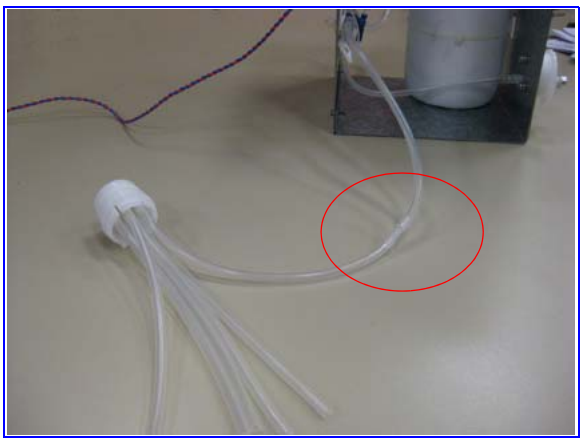


9. Release and disconnect the Quick Connector.



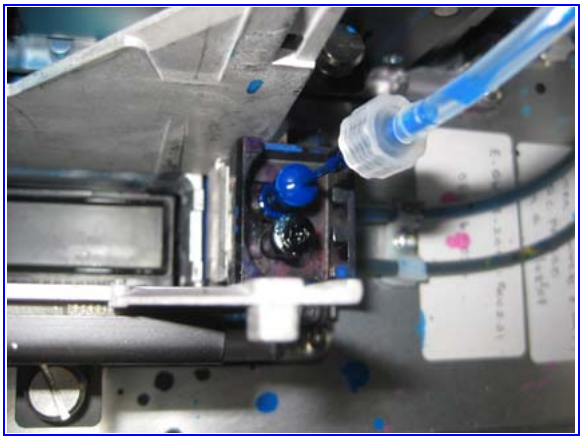
10. Install the Quick Connector that comes with the Flushing Tool into the Quick Connector of the TRS side.

NOTE: A small amount of ink will be discharged, use a cloth to clean any ink that may spill.

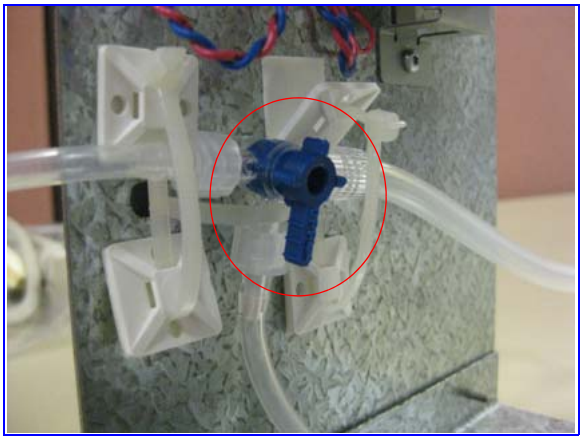


11. Connect the long tube from the from the Quick connector that comes with the Flushing tool to the long tube of the flushing tool. The picture shown here is a prototype, the actual length of the tube will be much longer.

12. Insert a needle into the tube coming from a waste bottle



13. Insert the needle into the Printhead Ink Connector of the Carriage assembly. Ensure you insert it into the correct color.



14. Ensure the path switch is in the down position.

15. Turn On the Flushing Tool with the switch located on top.
    The Cleaning Tool slowly pumps the distilled water into the tubes and ink system of the color you are cleaning. The pumping action cleans ink out of the tubes and into the draining bottle.

16. When the Ink system has been cleaned of ink and the Flushing tool becomes empty of water, the pump of the Cleaning Tool will then push air into the ink system tubes, which will push the water out into the draining bottle of the Quick Connector Flushing Tool, this process will last for approximately 5 minutes.

Refill a tube from the ink cartridge connector to the ink pressure sensor mount/main ink electro-valve

Removal

WARNING!: Switch off the printer and power enable switch.

1. Open the ink cartridge and using a syringe retrieve 40cc of ink from the ink cartridge.

2. Place the empty waste bags into the connectors.

3. Place a piece of cloth under the purging port to avoid ink spills.

4. Enter 40cc of ink into the purging port, the ink will flow into two paths, up until the empty bag and down the tubes passing the 4 way valve.
5. After 40cc, check that the ink has reached into the waste bag (if not introduce more ink) and then quickly disconnect it (waste bag) to continue introducing the remaining syringe ink WHILE the syringe is still in place and while still maintaining a slight positive pressure on the syringe. This will generate additional pressure pushing the ink down the tubes and will ensure the column of ink from the purging port to the supply is completely full.

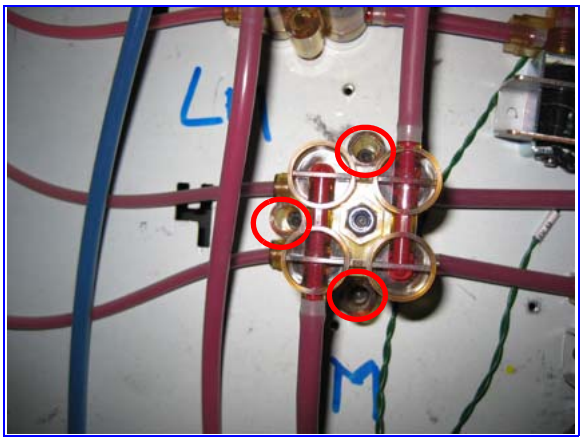
NOTE:

⚠ **WARNING!:** Never hit the syringe with the hand using a hammer motion, this will damage the ink pressure sensor board.

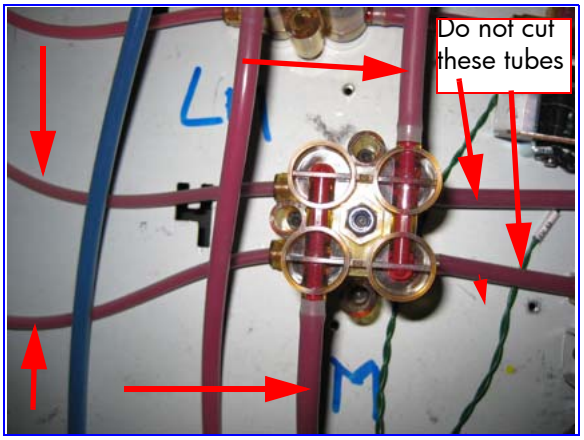
4 Way Valve

Removal

⚠ **WARNING!:** Switch off the printer and power enable switch.

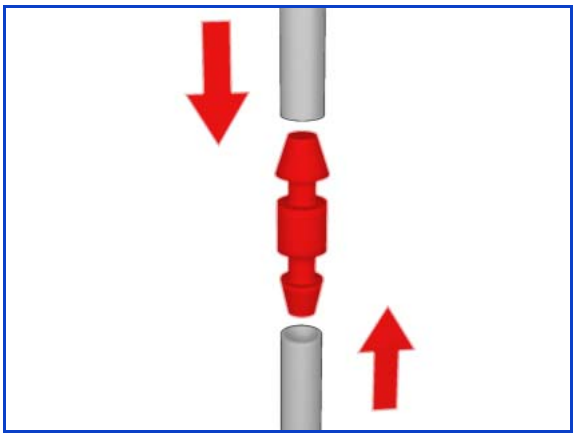


1. Flush the affected line ⇒See page 701.
2. Remove the Left Side Front Panel ⇒See page 565.
3. Remove the Left Side Rear Panel ⇒See page 565.
4. Remove the Left Side Lateral Panel ⇒See page 565.
5. Remove three screws that secure the 4 Way Valve.



6. Cut the tubes indicated at least 10 cm away from the 4-Way Valve you are replacing.

Installation



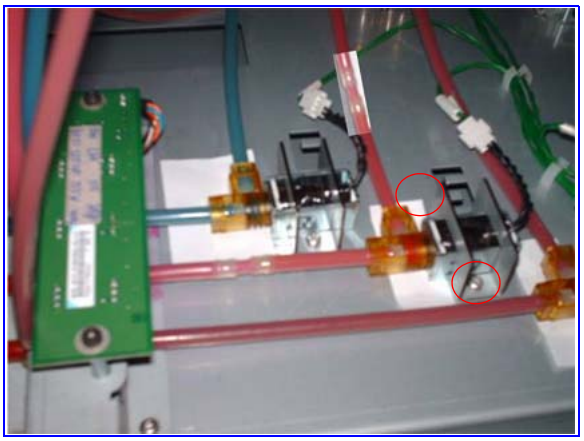
1. Join the tubes from the new 4-Way Valve to the existing tubes using the connector fitting. Make sure that the tubes are pushed completely onto the connector.

NOTE: When installing the tubes, never twist the tubes, this will damage them. Always push/slide the tubes until they are completely installed onto the fitting.

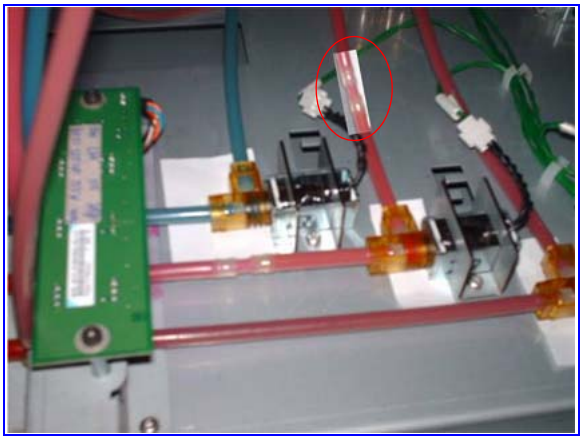
Electro Valves

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the Ink Cartridge.
2. Flush the affected line ⇒See page 701.
3. Remove the Left Side Front Panel ⇒See page 565.
4. Remove the Left Side Rear Panel⇒See page 565.
5. Remove the Left Side Lateral Panel ⇒See page 565.
6. Remove two T10 screws.



7. Cut the tube 3-4 cm from the Electrovalve.

Scan Axis Impelling System

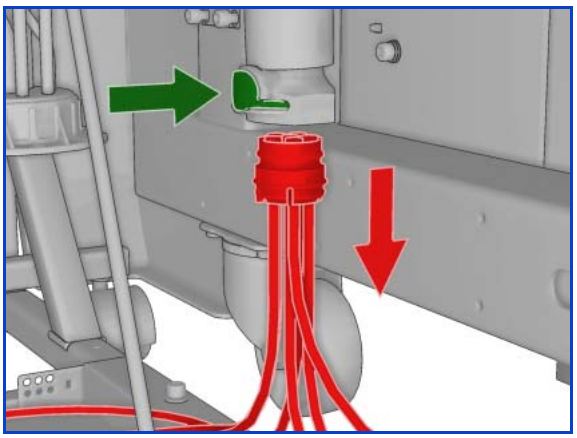
Ink System Compartment

Removal

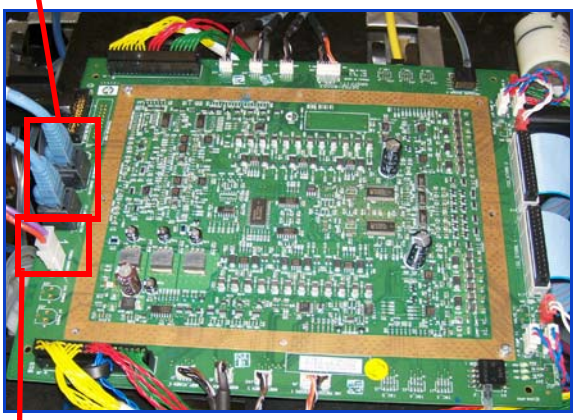
WARNING!: Switch off the printer and power enable switch.

NOTE: The Ink System Compartment must be removed in order to service some components of the scan axis.

1. Remove the Left Side Rear Panel ⇒Seepage 565.
2. Remove the Left Side Front Panel ⇒See page 565.
3. Disconnect the quick connector.

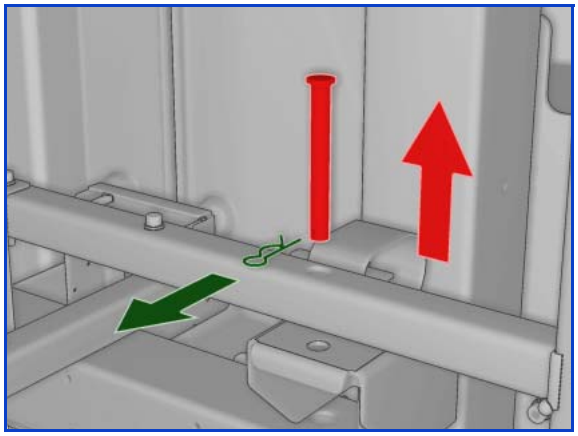


a

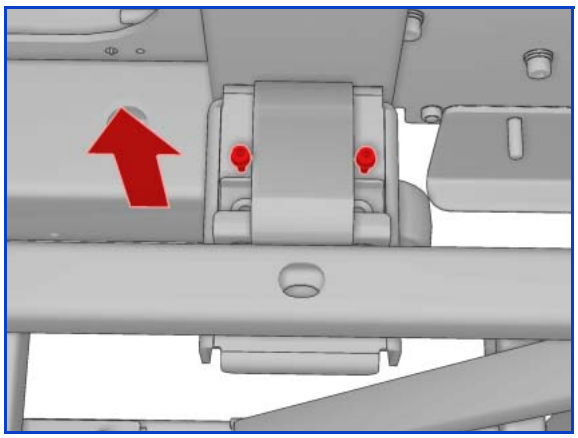


b

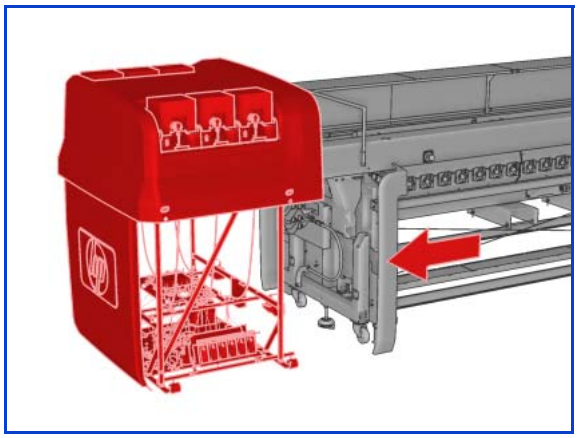
4. Disconnect all power and data cables attaching the ISM to the printer.
   a. Two LAN data cables
   b. Power cable (J35)
5. Unroute these three cables from any clips or ties.



6. Remove the two pins that secure the Ink System Compartment.



7. Remove the four TXYZ screws that secure the Ink System Compartment to the frame.



8. Roll the Ink System Compartment away from the printer (it has wheels).

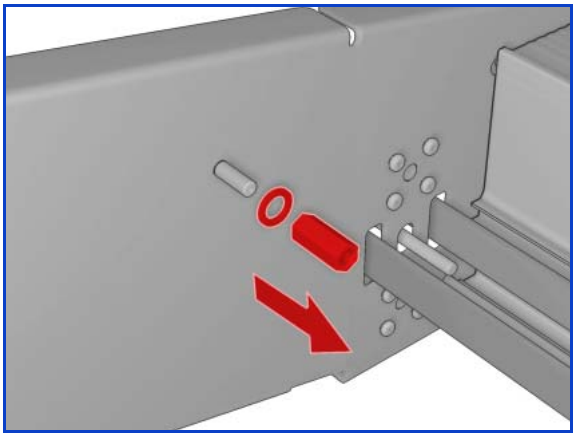
Scan Axis Motor

Removal

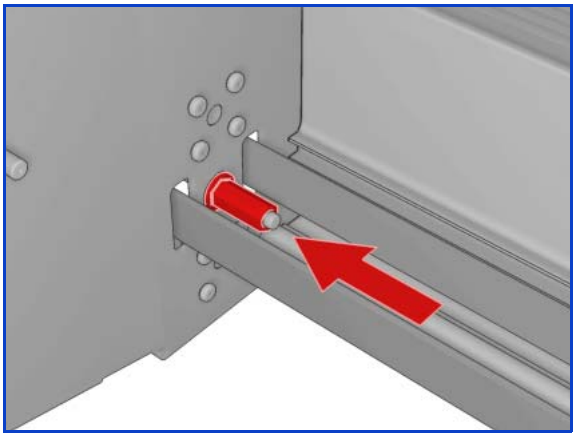
WARNING!: Switch off the printer and power enable switch.

1. Remove the Left Side Front Panel ⇒See page 565.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the Left Side Lateral Panel ⇒See page 565.

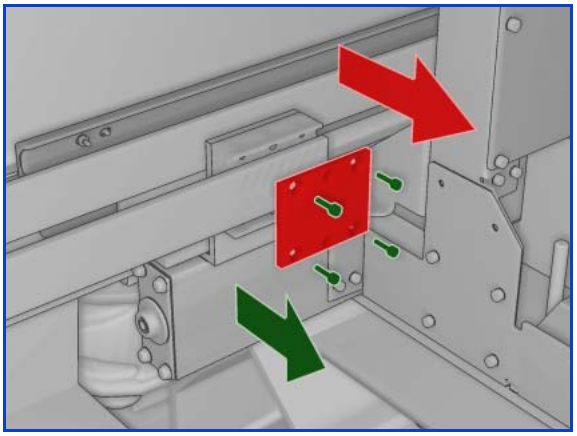
NOTE: You can also remove the ink system compartment for completely free access⇒See page 710.



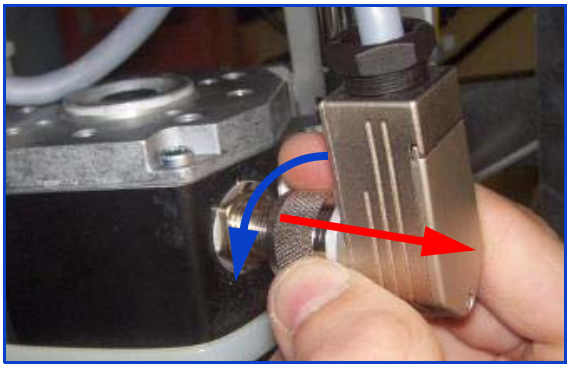
4. Remove the tension nut and washer from the holder.



5. Screw the tension nut and washer onto the Scan Axis Belt Tensioner to loosen the tension. Continue screwing until you have completely released the tension on the belt.

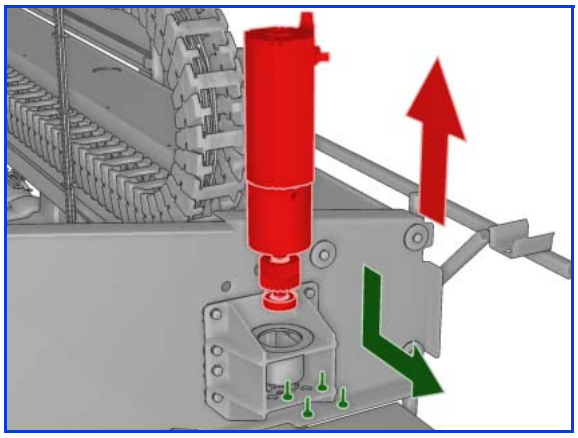


6. Remove one of the belt clamps to completely release the tension by removing the four T15 screws.



7. Unscrew the data cable connector and remove it.

8. Unscrew the power cable connector and remove it.



9. Remove the four A5 screws that secure the Scan Axis Motor. Access them from underneath.
10. Remove the motor straight up. Access it from the window.

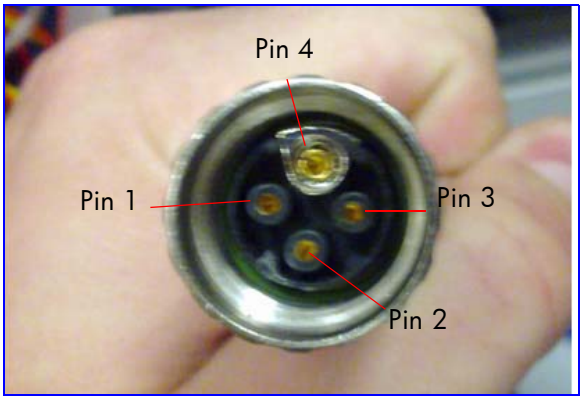
NOTE: There are 2 types of scan axis motor: one with 2 connectors and one with 3 connectors (of the 3 connector, one is all the time unused). Both of them can be swapped and have exactly the same function (the printer will detect the correct type of motor)

There is a slight difference of movement between the motors: the 2 connector one will have a tendency, when positioning the carriage to a specific point, to move the carriage slightly around the point until it finds the right position, while the other one (3 connectors) does not have this behavior of oscillating' around the 'target' position. There is no change of throughput between the two motors, they are fully replaceable.

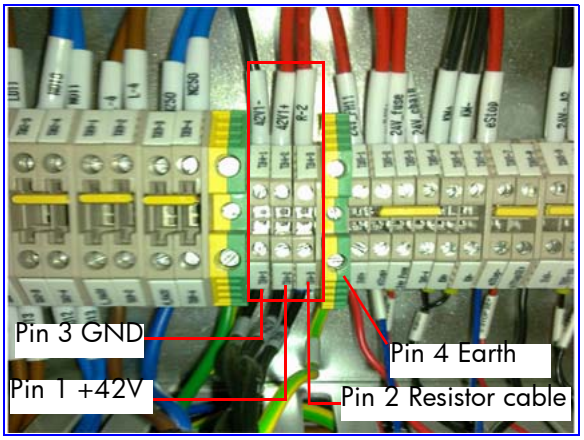
On the picture shown previously, the '3 connectors' type is shown.

Installation

If the power cable of the scan Axis Motor is replaced, use the following information to correctly install the cables to the E-Cabinet.



1. Identify the pins of the power cables from the Scan Axis motor.

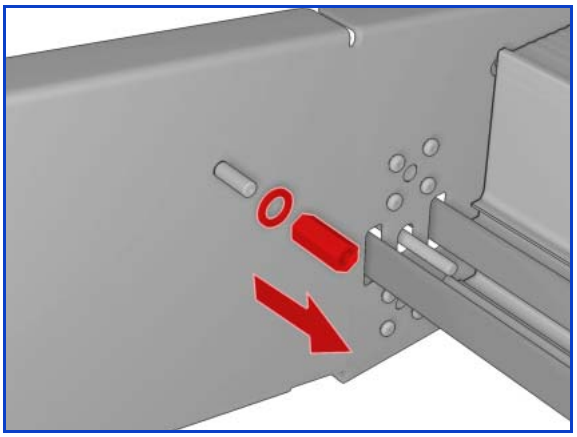


2. Connect the pins shown above to the correct location on the fuse block in the E-Cabinet (after having identified them with an multimeter):
   - Pin 1 connects to TB4-2 (42v1+)
   - Pins 2 connects to TB4-3 (R-2)
   - Pin 3 connects to TB4-1 (42v1-)
   - Pin 4 connects to Earth (Ecabinet safety ground: Green/Yellow).
3. Perform the reset procedure 3.5.4 Scan axis Motor ⇒See page 501.

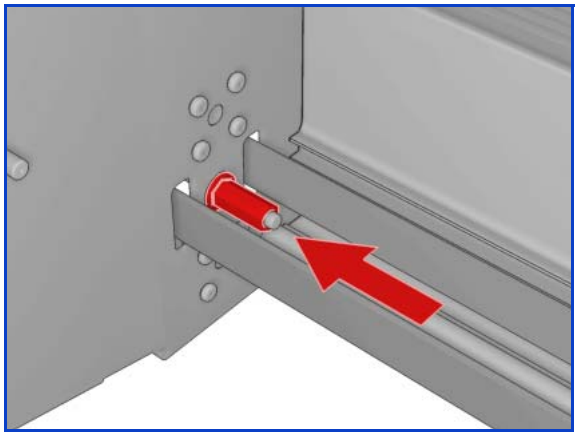
Scan Axis Impelling Belt

Removal

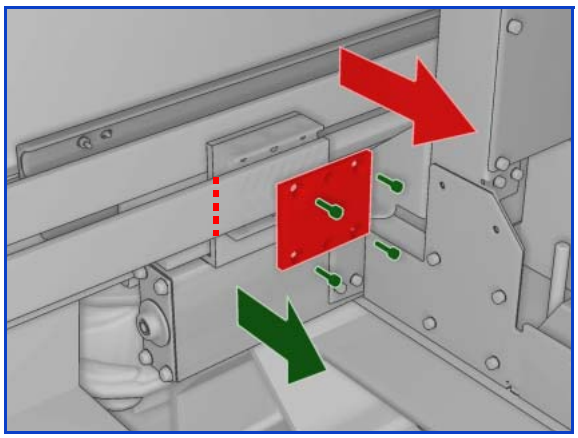
WARNING!: Switch off the printer and power enable switch.



1. Remove the Ink System Compartment ⇒See page 710.
2. Remove the tension nut and washer from the holder.



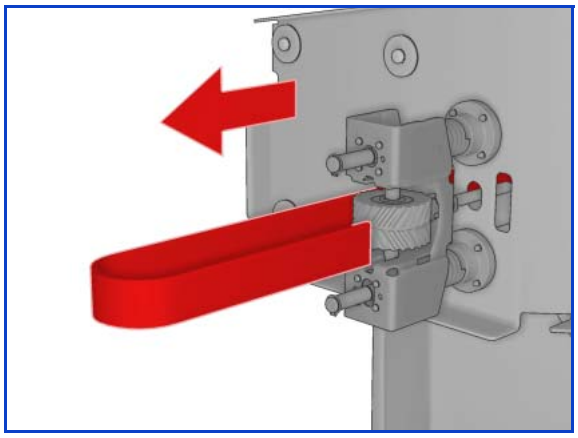
3. Screw the tension nut and washer onto the Scan Axis Belt Tensioner to loosen the tension. Continue screwing until you have completely released the tension on the belt.



4. Use a marker to make a mark on the belt where it met with the edge of the clamp.
5. Remove the four T15 screws that secure both belt clamps and remove the clamps.

NOTE: The four screws and second belt clamp are not shown in the graphic.

NOTE: If the carriage is in the capping position, access the right clamp from the Top Cover Window.

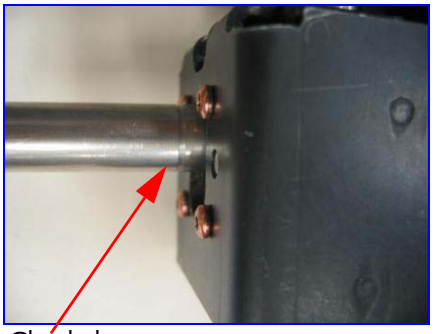


6. Remove the Scan Axis Impelling Belt.

Installation

1. Put the new belt side by side with the old belt.
2. Transfer the mark you made from the old belt to the new belt. If there is too much extra belt, you can cut it with a hacksaw (metal cutting saw).
3. Route the new belt through the side plates and around the Scan Axis Belt Tensioner and Scan Axis Motor so that the belt is ready to be attached to the carriage.
4. Use a belt clamp to secure the side of the belt that was even with the old belt to the carriage.
5. Pull on the loose end of the belt to bring the belt into position. Make sure the belt engages the motor and tensioner correctly on each end.
6. Line up the belt clamp with the mark you made on the new belt, and secure it with the screws.
7. Remove the tensioner nut from the Scan Axis Belt Tensioner to set the tension.
8. Check the **tensioning limit marks** on the central screw of the Scan Axis Belt Tensioner. This will indicate if

the belt must be lengthened or shortened by adjusting the clamp secured to the carriage.



Check that you can see only one mark on each spring axis of the tensioner

Need to lengthen belt: No marks visible

Need to shorten belt: Two marks visible

9. If the tension is **Out of Limits**, use the tension nut to release the tension on the on the Scan Axis Belt Tensioner, and then adjust the belt inside the clamp to make it longer or shorter.

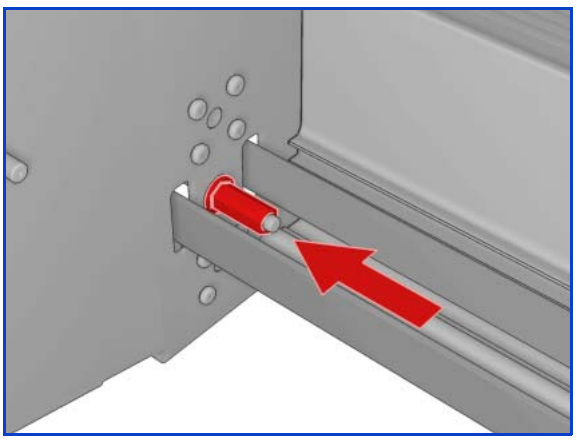
NOTE: One tooth of the belt = 4 mm of adjustment on the belt tensioner.

10. Repeat this process until the tension is correct.
11. Remove the tension nut and washer and return it to the holder.
12. Perform the reset procedure 3.5.1 Reset Belt ⇒See page 501.

Scan Axis Belt Tensioner

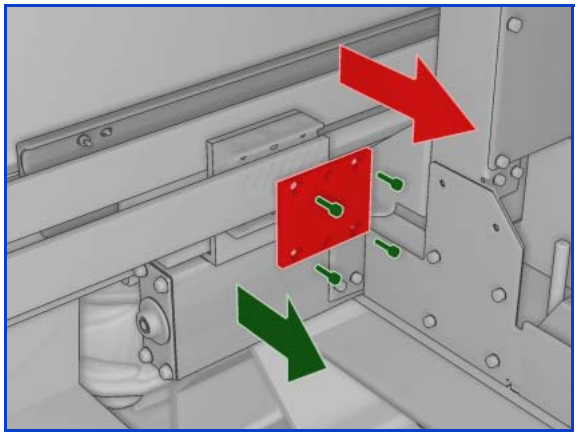
Removal

WARNING!: Switch off the printer and power enable switch.

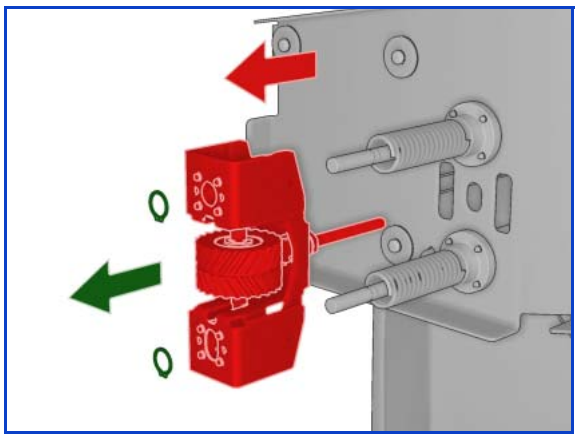


1. Remove the Ink System Compartment ⇒See page 710.
2. Screw the tension nut and washer onto the Scan Axis Belt Tensioner to loosen the tension. Continue screwing until you have completely released the tension on the belt.

NOTE: Make a mark on the belt where it meets with the edge of the clamp.



3. Remove the four T15 screws that secure the belt clamp and remove the clamp. You only need to remove the clamp shown.



4. Remove the two circlips that secure the Scan Axis Belt Tensioner and remove the tensioner.

Installation

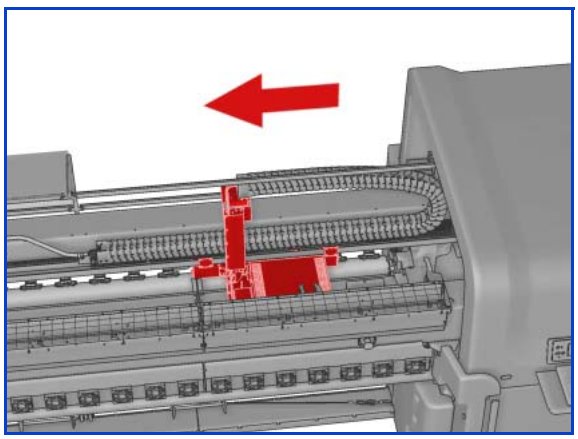
1. When reinstalling the left belt with the carriage, line up the belt clamp with the mark that you made when removing it, and secure it with screws.

NOTE: Adjust the belt when you replace the Scan Axis Belt Tensioner, refer to the installation procedure ⇒See page 714.

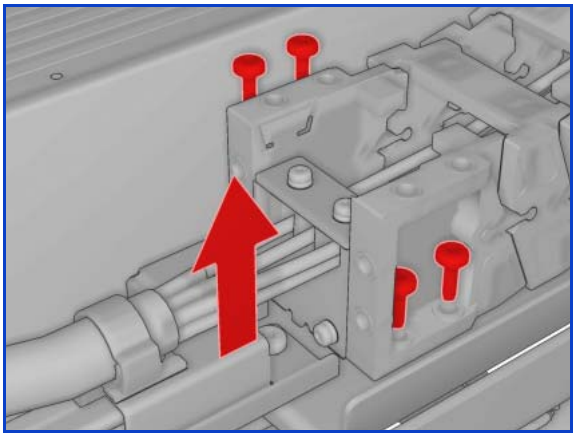
Scan Axis Tube Shelf

Removal

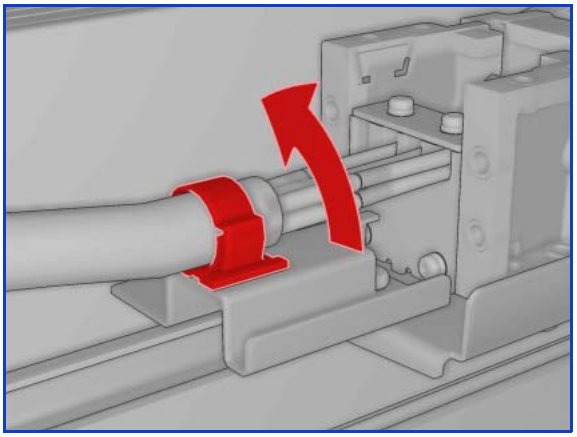
WARNING!: Switch off the printer and power enable switch.



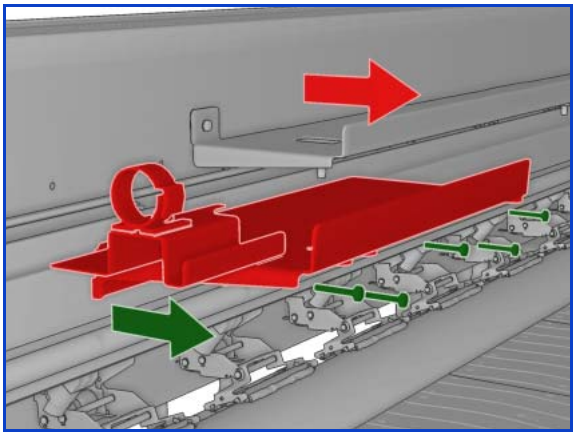
1. Remove the two right Center Covers ⇒See page 573
2. Move the carriage to the 6.2 Repair Position ⇒See page 430.



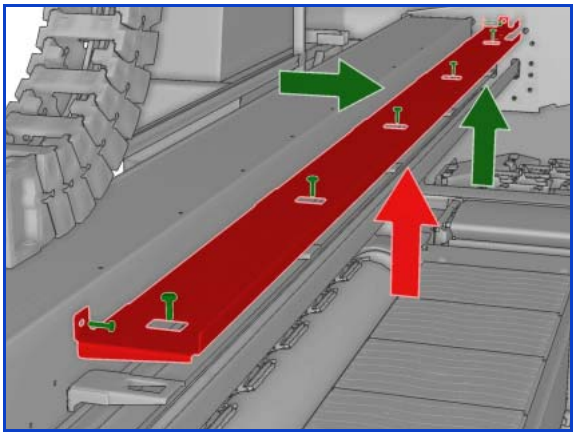
3. Remove the four T30 screws that secure the Carriage Chain to the Scan Axis Tube Shelf.



4. Open the cables clip and unroute the cables.



5. Remove the five T10/T20 screws that secure the Scan Axis Tube Shelf and remove it.



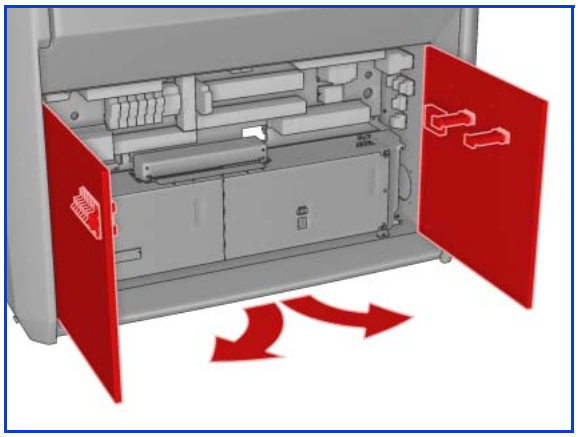
6. Remove seven T10/T20 screws that secure the Scan Axis Tube Shelf and remove it.

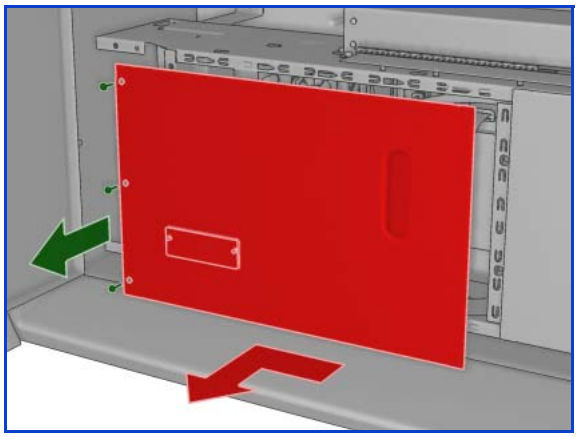
Carriage Chain Assembly

Removal

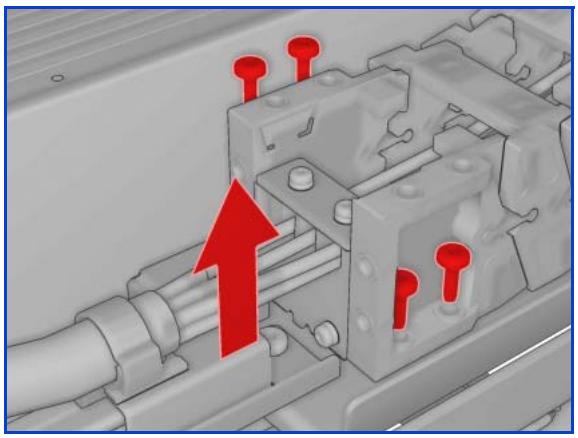
WARNING!: Switch off the printer and power enable switch.

1. Remove the Ink System Compartment ⇒See page 710.
2. Remove the Left Side Rear Panel ⇒See page 565.
3. Remove the four Central Cover Panel ⇒ See page 573.
4. Open the electrical cabinet doors.

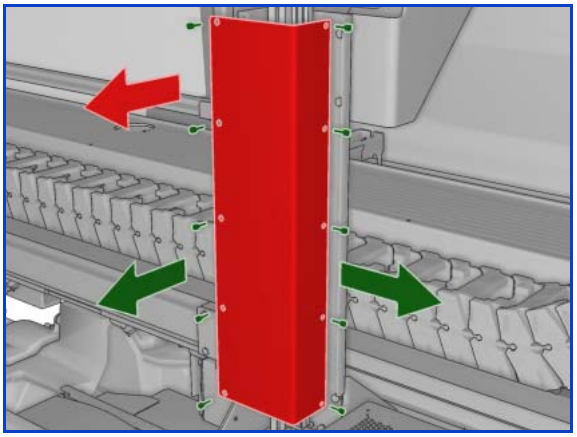




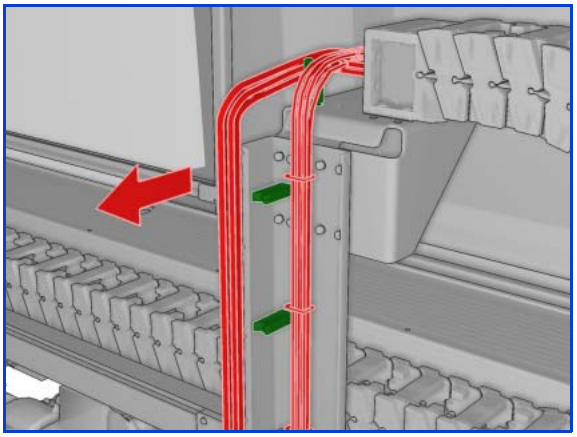
5. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.
6. Disconnect the trailing cables from the Upper PCI Board.
7. Disconnect the 42V and 24V cables from the Main Interconnect Board.
8. Unroute the trailing cables, 24V and 42V power cables from any clips or cable ties from the Electronics box all the way to the Carriage Chain Assembly.



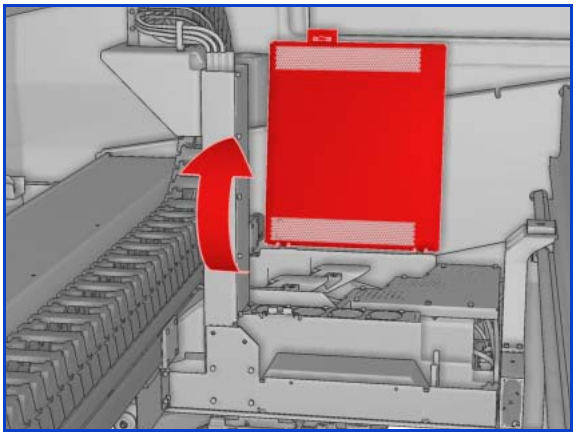
9. Remove the four T30 screws that secure the Carriage Chain to the chain anchor.



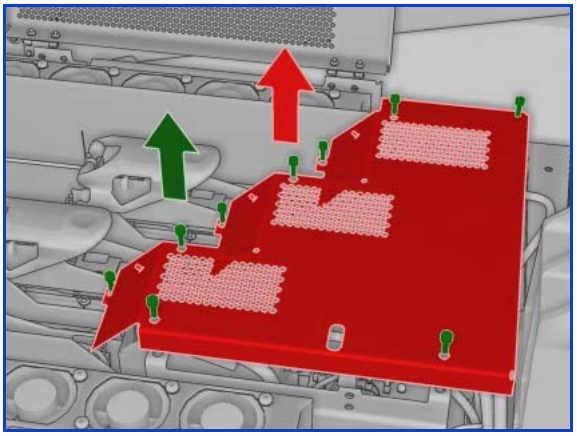
10. Remove the ten T10 screws of the Carriage Tower Assembly to open the tower.



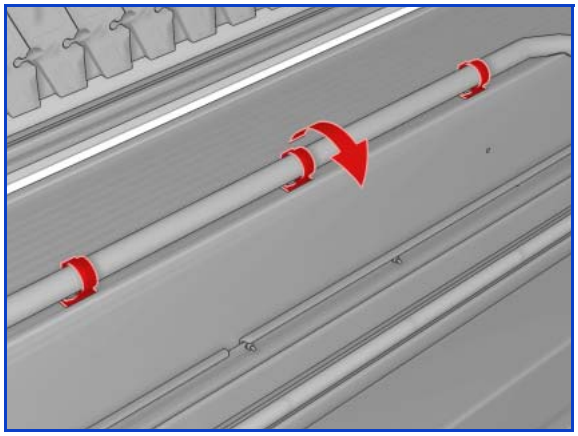
11. Unroute all the tubes and cables inside the Carriage Tower Assembly.



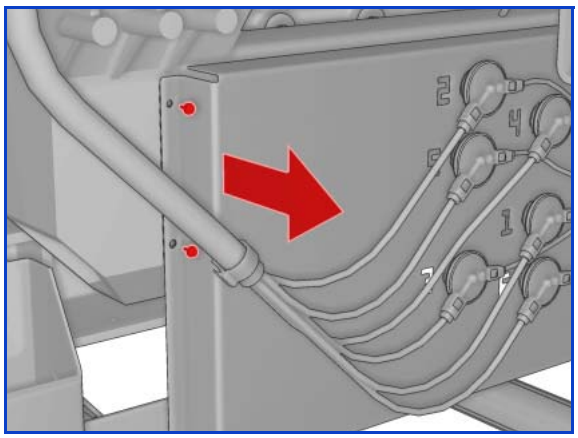
12. Open the carriage lid.



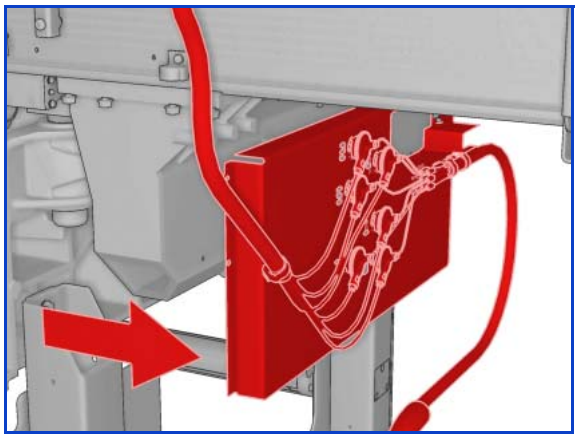
13. Remove the nine T15 screws of the carriage electronics cover and remove it.
14. Disconnect the trailing cables from the Carriage Printhead Interconnects.
15. Disconnect the 24V and 42V power cables from the Carriage Printhead Interconnects.



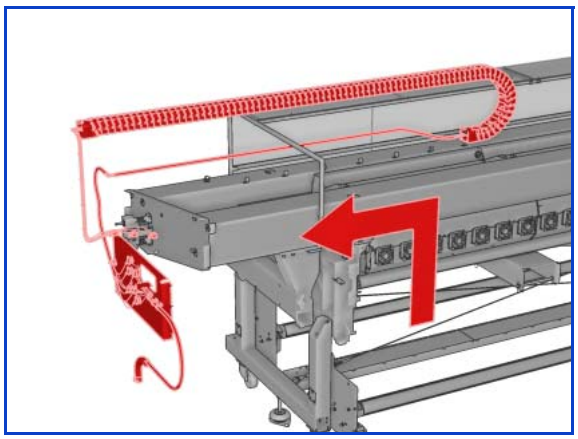
16. Open the cables clips and unroute the cables.



17. Remove the four screws that secure the back flow valve sideplate.



18. Remove the entire sideplate.



19. Remove the Carriage Chain Assembly.

Installation

1. Install the air purgers provided and refill the tubes using the procedure in diagnostics ⇒See page 335.

2. Perform the following reset procedures:
   - 3.0.5 Reset PMK5 ⇒See page 497.
   - 3.5.2. Reset Carriage Chain ⇒See page 501.

Scan Axis Encoder Strip

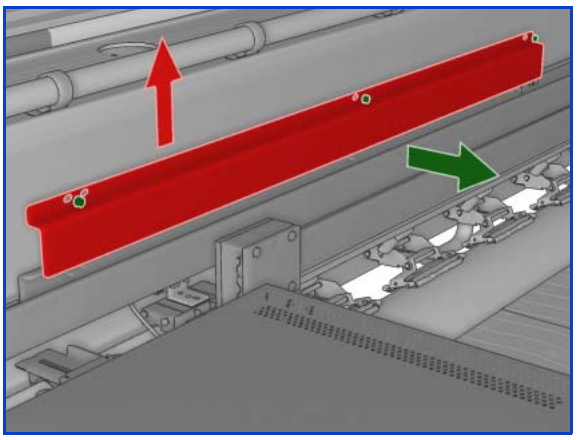
Removal

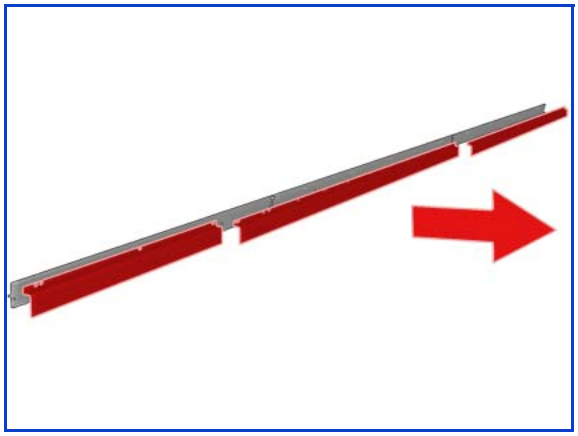
WARNING!: The Encoder Strip is very sharp. Wear protective gloves whenever you need to touch the encoder strip to prevent cutting yourself.

1. Place the Scan Beam in the high position to get more room in which to work: Go to the front panel>Media> Carriage Beam>Move to load position.
2. Switch off the printer and power enable switch.
3. Remove all the Center Cover Panels ⇒See page 573.
4. Remove the Right Side Rear Panel ⇒See page 567.
5. Remove the Right Side Lateral Panel ⇒See page 567.
6. Remove the printheads and store them in their protective caps.
7. Manually uncap the service station.
8. Remove the Carriage Encoder Set ⇒See page 746.

NOTE: You do not need to disconnect the sensor cable in the carriage. Just remove the sensor from the encoder strip so that you can remove the encoder strip.

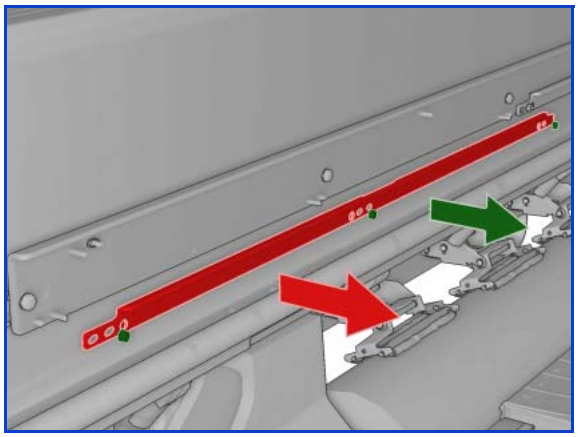
9. Move the carriage to the far right of the printer.
10. Remove the Scan Axis Tube Shelf ⇒See page 717.
11. Note the location of the MH6 nuts for the encoder protectors removed for the Carriage Encoder Set.





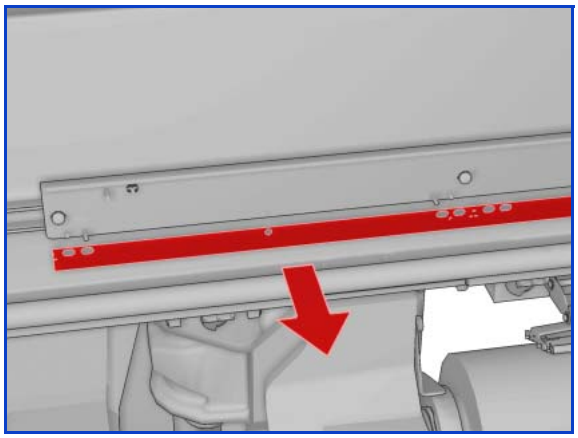
12. Remove the remaining two encoder protectors (15 hand removable nuts) as with the Carriage Encoder Set.

NOTE: The graphic shown is only separated from the printer so you can see the encoder protectors clearly.



13. Remove the three hand removable nuts that secure each encoder protector sheet and foams.

NOTE: The protector sheet in the graphic is small, and has three nuts. The remaining sheets are longer, and have six nuts.

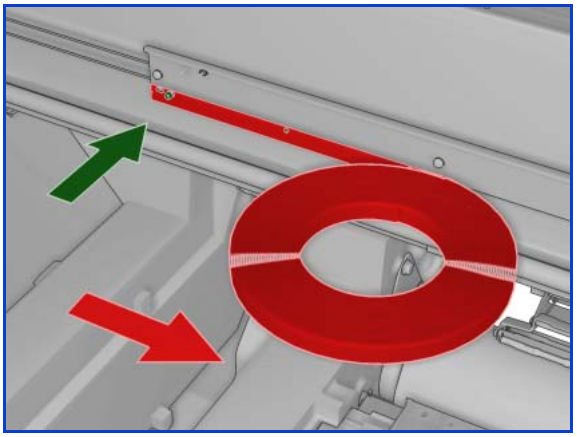


14. Remove the encoder strip from the pins and carefully remove the encoder strip from the printer.

CAUTION: The encoder strip is very sharp. Use protective gloves to avoid cutting yourself.

Installation

1. When you reinstall the encoder strip, start on the right side, place the carriage in the UNCAP on the left side.



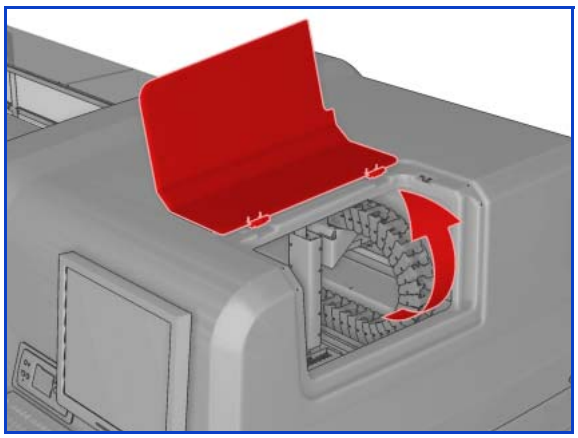
2. The encoder strip service part comes as a roll. Place it on the pins one at a time, without unrolling the encoder strip all at once. Secure the encoder strip with the nuts as you go from left to right (without securing the protector, without putting any pressure to avoid the encoder falling).
3. Pass the encoder under the encoder reader while the carriage is on the left side.
4. Make sure the strip is secure on each pin. It must be positioned precisely.
5. Make sure the foams are correctly placed between the encoder strip and protector sheet.
6. Remove the nuts and install the protector sheets one at a time.
7. Perform the reset procedure 3.5.3 Reset Encoder Strip ⇒ see page 501.

Scan Axis Service Station

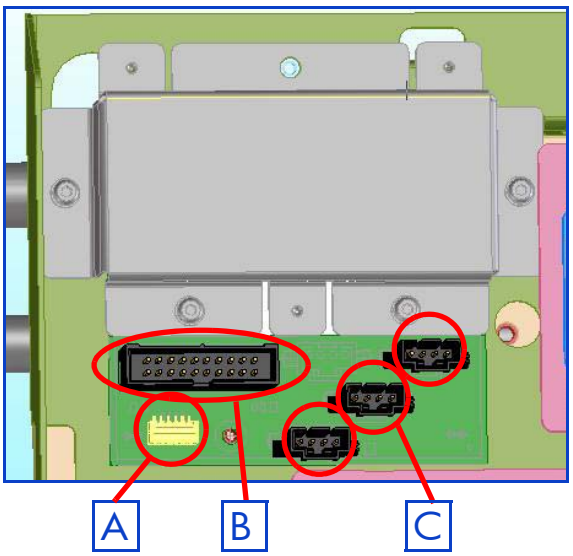
Service Station Connection Board

Removal

WARNING!: Switch off the printer and power enable switch.

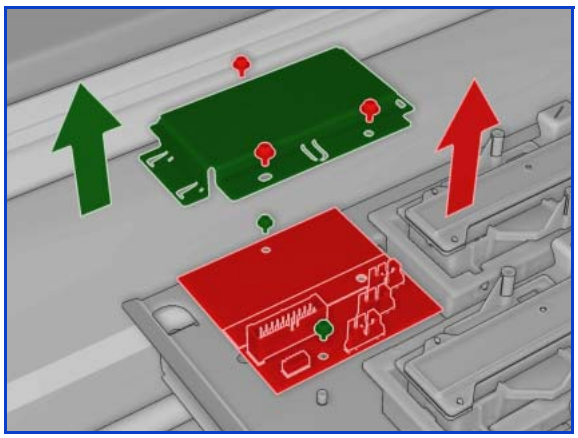


1. Open the Right Side Cover Window.



2. Disconnect the five cables connected to the Service Station Connection Board.
   a. Encoder cable (P1)
   b. 5V Power cable (J5)
   c. Three drop detector cables (J1, J2, J3)

NOTE: The drop detector cables cannot be mismatched. Keep track of which cable is connected in which position, and make labels if necessary.



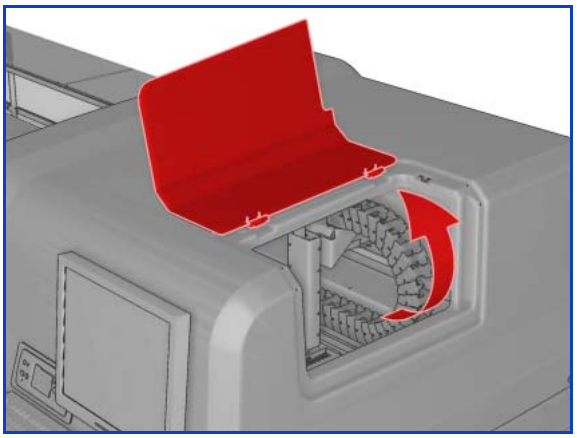
3. Remove the four T10 screws that secure the cover and two T10 screws that secure the Service Station Connection Board and remove the board.

NOTE: The graphic is missing a red screw.

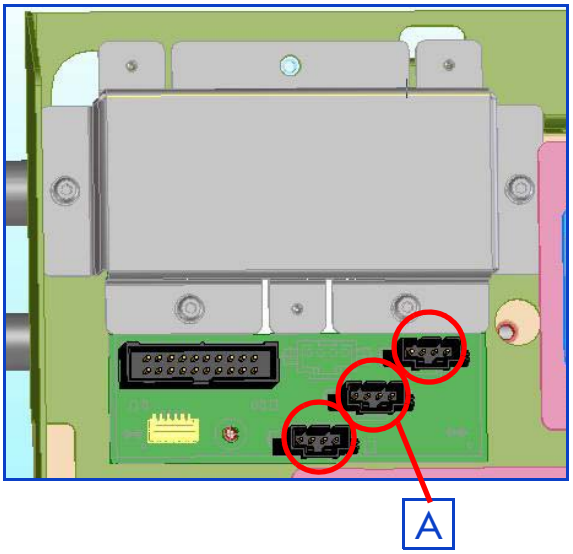
Drop Detectors Set

Removal

WARNING!: Switch off the printer and power enable switch.

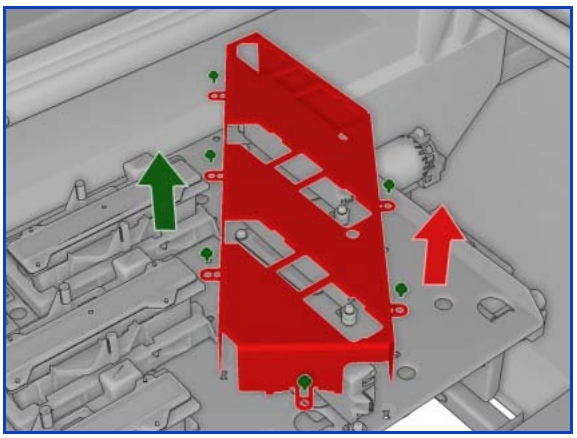


1. Open the Right Side Cover Window.

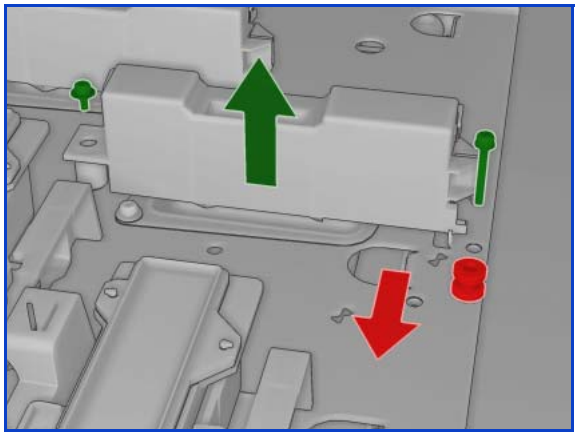


2. Disconnect the three drop detector cables connected to the Service Station Connection Board, and unroute the cables all the way to the drop detectors, taking care to free the cable from any routing clips.
   a. Three drop detector cables (J1, J2, J3)

NOTE: The drop detector cables cannot be mismatched. Keep track of which cable is connected in which position, and make labels if necessary.

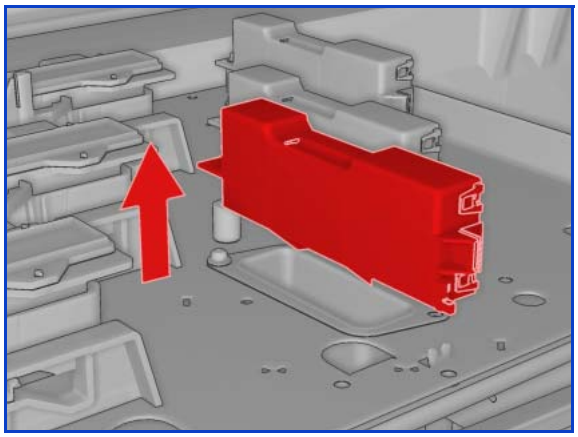


3. Remove the six T10 screws and washers that secure the upper spittoons. Take care not to damage any cables.



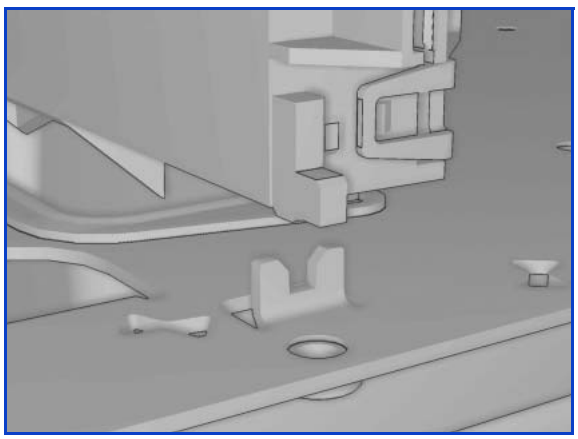
4. Remove the two T10 screws and the vertical locator that secure the Drop Detector.

NOTE: Do not lose the vertical locator and screw, shown in the graphic on the left, while unscrewing it.



5. Remove the Drop Detector.

Installation



1. Align the drop detector with the vertical locator and tighten the vertical locating screw.
2. Align the drop detector with the horizontal locator and tighten the horizontal locating screw.
3. Correctly route the cables back to the original positions.

CAUTION: When reinstalling the Upper Spittoon, be careful not to damage any of the cables in the vicinity. If a cable becomes damaged the printer can display a "Failure of the Main Interconnect board"

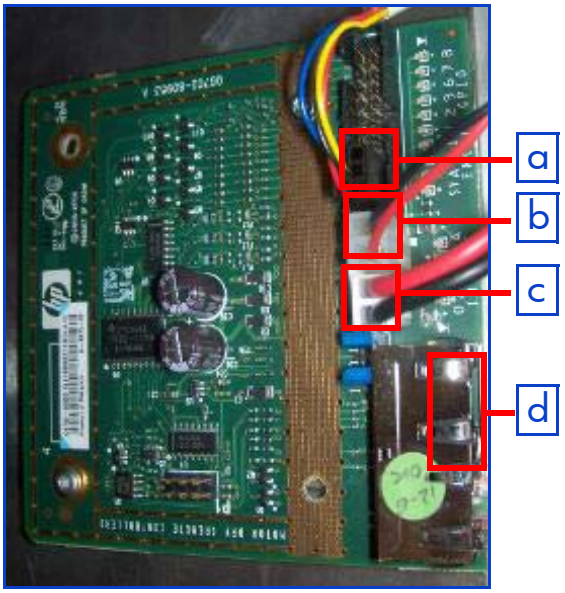
4. Perform the following calibrations 4.5.1 Drop Detector Calibration ⇒See page 508.
5. Perform the reset procedure 3.5.6 Service Station Drop detectors ⇒See page 501.

CAUTION: Check that the printheads are in good condition, perform the Printhead Alignment check and check the section which shows the health of the nozzles.

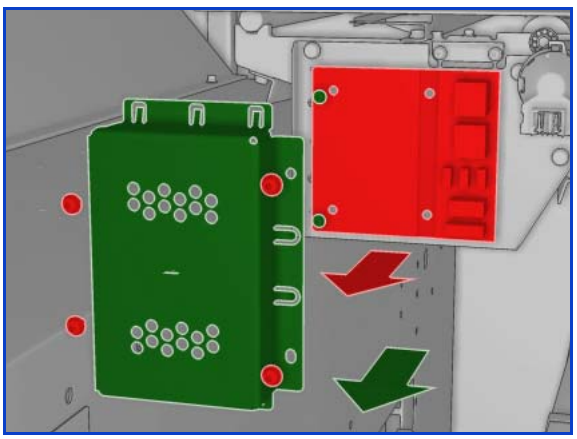
Remote Controller Board (Service Station)

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the Right Side Rear Panel ⇒See page 567.
2. Disconnect the four cables connected to the Remote Controller Board.
   a. Encoder cable
      Route: Service station motor > Remote controller
   b. Power Cable
      Route: Remote Controller > service station motor
   c. 24V power cable
      Main Interconnect > Remote Controller
   d. LAN data cable
      Route: Main Interconnect > Remote Controller



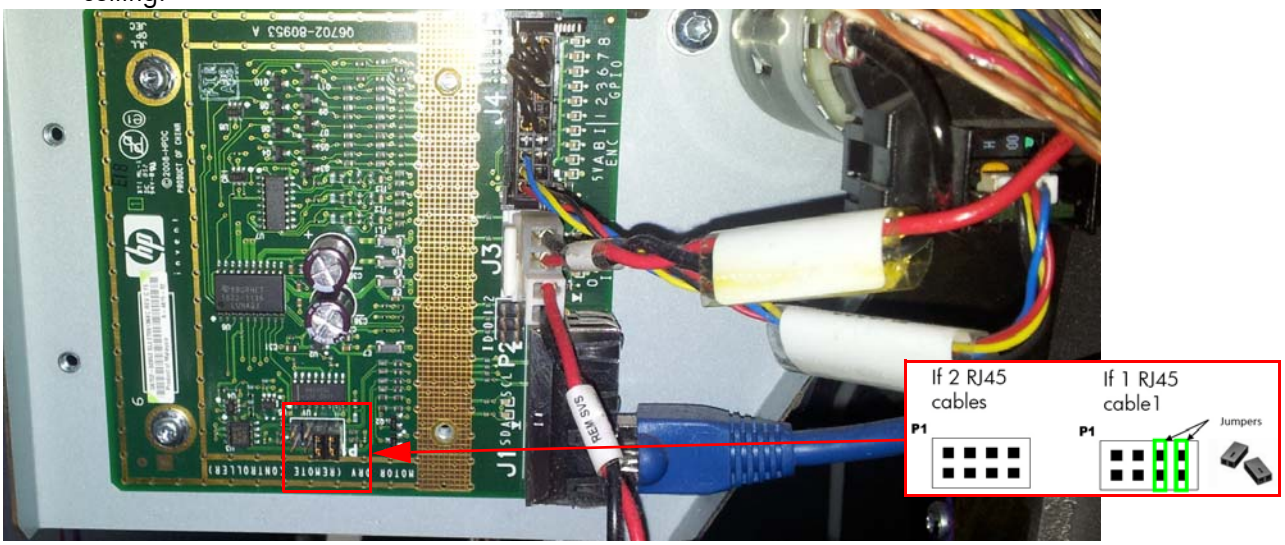
3. Remove the four T10 screws that secure the cover and the two T10 screws that secure the board and remove it.

Installation

When installing the remote controller board, the serial BUS must be electrically terminated, jumpers must be installed if it is the last card on the BUS, one RJ45.

When the card is in the middle (2 RJ45 connections) -> NO termination jumpers.

The jumpers are NOT visible when the card is in place. NEED to remove the metal cover to check this setting.

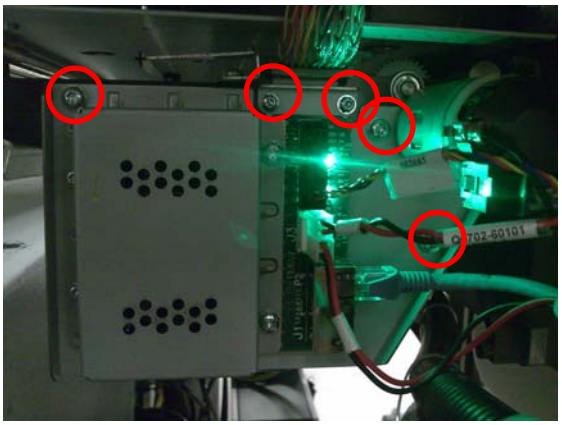


4. Perform the following calibrations 4.5.1 Drop Detector Calibration ⇒See page 508.
5. Perform the reset procedure 3.5.6 Service Station Drop detectors ⇒See page 501.

Service Station Motor

Removal

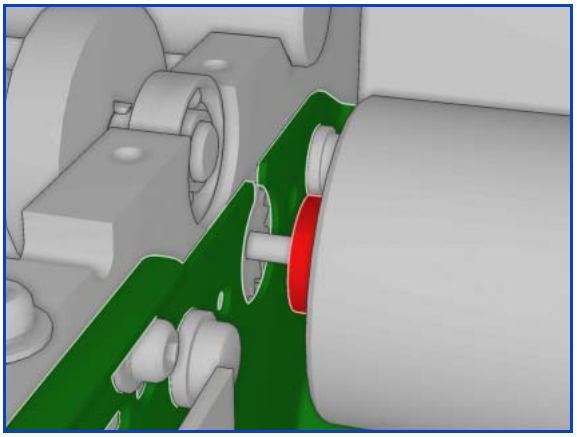
WARNING!: Switch off the printer and power enable switch.



1. Remove the Right Side Rear Panel ⇒See page 567.
2. Disconnect the power and encoder cables from the motor.
3. Remove the four T20 and two T10 screws that secure the motor/controller plate.
4. Remove the two T10 screws that secure the motor to the plate.

Installation

1. Take care not to mismatch the T10 screws from the plate and the T10 screws from the motor. The screws for the motor are longer and with smaller washers.



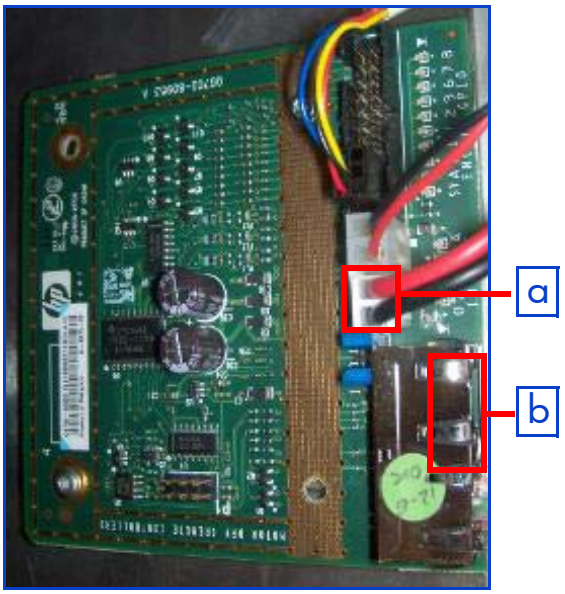
2. The motor is referenced in the V of the hole. Make sure that the V holds the motor's neck to accurately position the motor.
3. Make sure that the gears engage correctly.
4. It is possible to fit the motor correctly, in the position that it is held only by the screws and not by the V support. Before securing the motor with the screws, make sure that it enters the V support perfectly.

Service Station Chassis

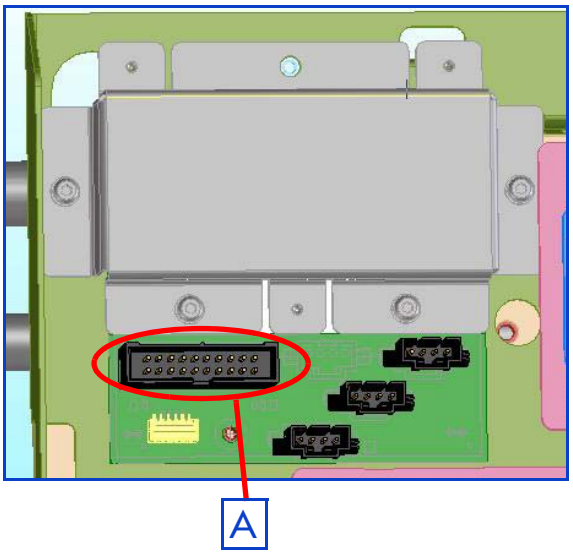
Removal

WARNING!: Switch off the printer and power enable switch.

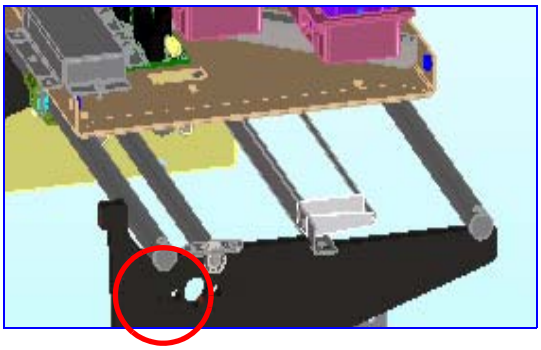
1. Slide open the Right Cover Slide Door ⇒See page 567.
2. Remove the Right Side Rear Panel ⇒See page 567.
3. Remove the Right Side Lateral Panel ⇒See page 567.
4. Disconnect the cables connected to the Remote Controller Board that come from outside the subsystem.
   a. 24V power cable (J3)
   Route: Main Interconnect > Remote Controller Board
   b. LAN data cable (J3)
   Route: Main Interconnect > Remote Controller Board



NOTE: The graphic shows the Remote Controller Board cover removed. You do not need to remove this cover.



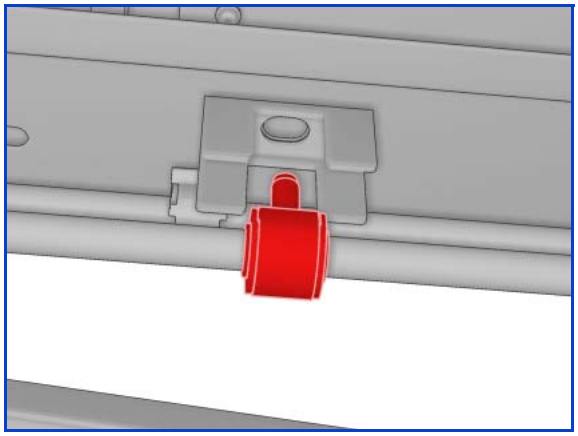
5. Disconnect the cable connected to the Service Station Connection Board that come from outside the subsystem.
   a. 5V power cable
      Label: J5
      Route: Main Interconnect > Service Station Connection Board
6. Manually move the capping station to a middle position so that you can access both ends of the service station rods.



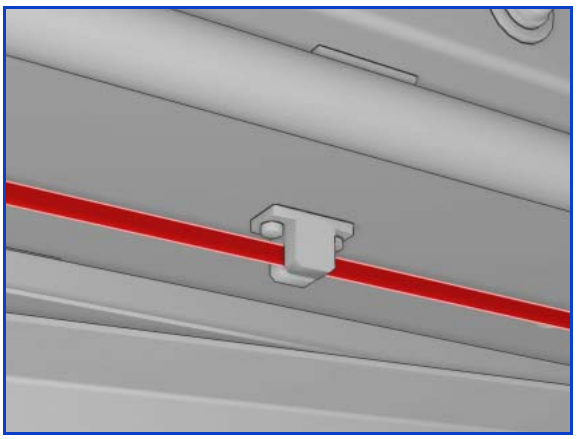
7. Remove the two T10 screws of the left rod from the front.
8. Remove the linear encoder strip.
9. Remove the shuttle system together with the left rod.
10. Remove the rod from the shuttle bushings once the shuttle is outside.

NOTE: The removal and insertion of the rods from and in the bushings is a delicate operation.

Installation



1. Place the rod in the shuttle bushings.
2. Make sure the pin is inserted into the underside of the Service Station correctly. Otherwise, the service station will not move.



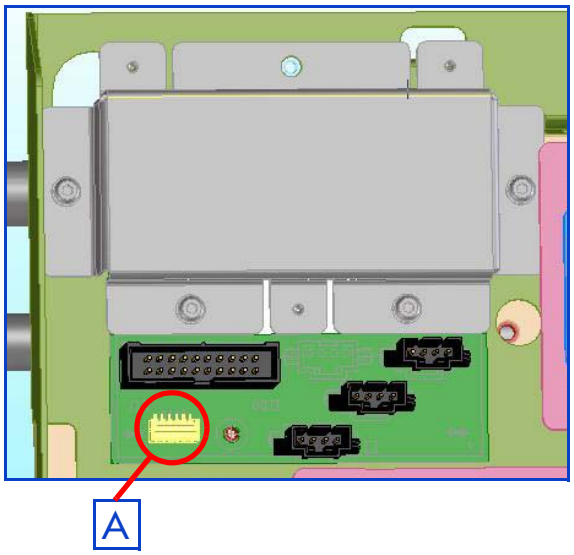
3. Make sure the Service Station Encoder Strip is correctly placed.
4. Perform the following calibrations:
   - 4.5.2 Service Station Compensation calibration ⇒ see page 510.
   - 5.3.4. Service Station Calibration ⇒ see page 421.
   - 4.5.1. Drop Detector Calibration ⇒ see page 508.
   - 3.5.6. Service Station Drop Detector ⇒ see page 501.

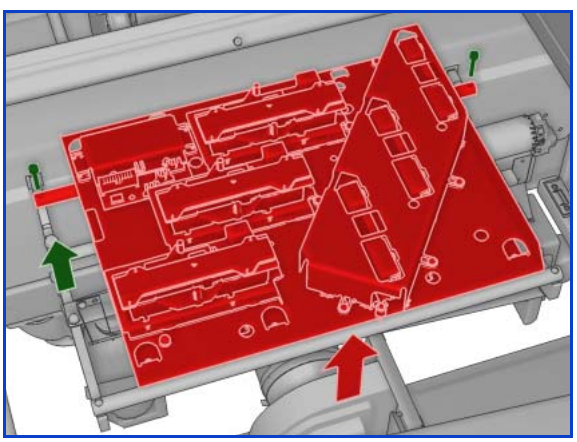
Service Station Screw Assembly

Removal

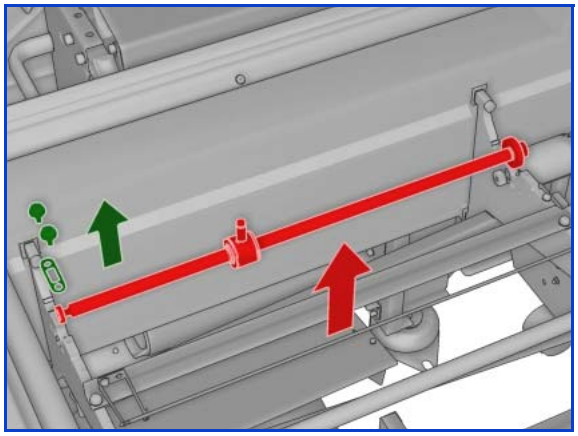
WARNING!: Switch off the printer and power enable switch.

1. Remove the Right Side Rear Panel ⇒ see page 567.
2. Slide open the Right Cover Slide Door.
3. Move the service station to the middle, so that the rods on both ends are accessible.
4. Disconnect the encoder cable.
   a. Encoder sensor cable (P1)
   Route: Encoder sensor > Service Station Connection Board
5. Unroute the encoder cable down through the hole to free the service station.



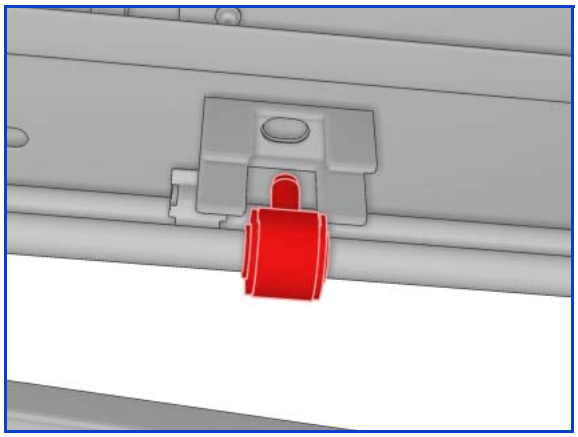


6. Remove the two T10 screws that secure the station and remove it.

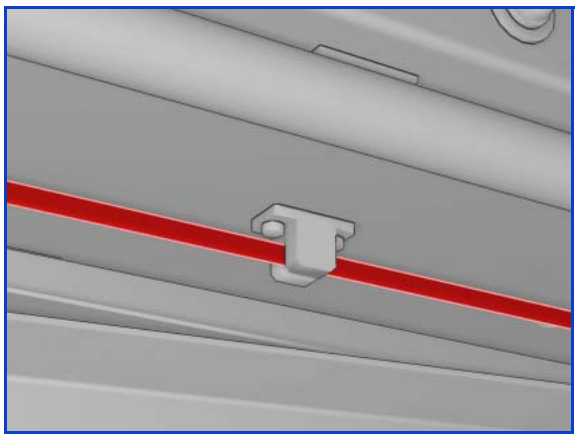


7. Remove the two T20 screws that secure the bearing plate and remove the Service Station Screw Assembly.

Installation



1. Make sure the pin is inserted into the underside of the Service Station correctly. Otherwise, the service station will not move.

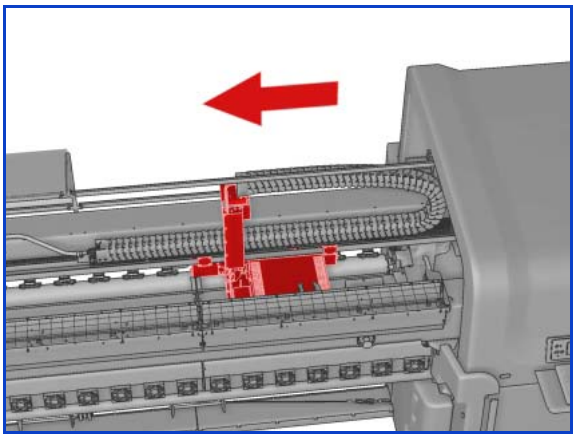


2. Make sure the Service Station Encoder Strip is correctly placed.
3. Perform the following calibrations:
   - 4.5.2 Service Station Compensation calibration ⇒ see page 510.
   - 5.3.4. Service Station Calibration ⇒ see page 421.
   - 4.5.1. Drop Detector Calibration ⇒ see page 508.
   - 3.5.6. Service Station Drop Detector ⇒ see page 501.
   - 4.5.2. Service Station Compensation ⇒ see page 510.

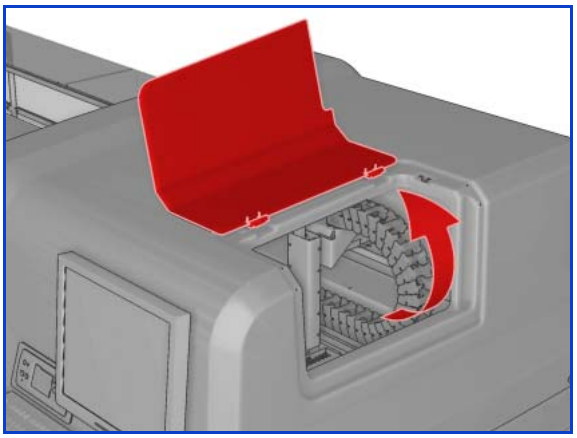
Printhead Capping Module

Removal

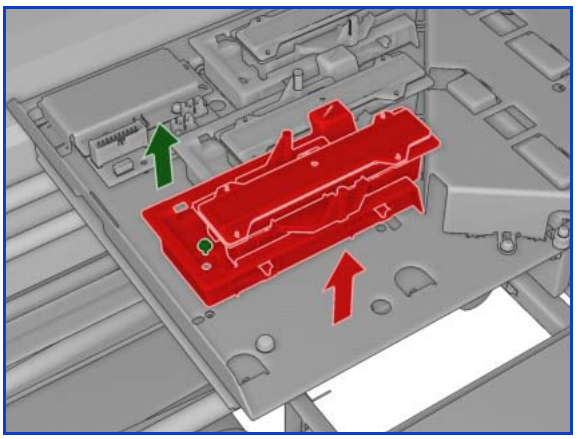
WARNING!: Switch off the printer and power enable switch.



1. Remove the two right Center Covers ⇒See page 573
2. Move the carriage to 6.2 Repair Position ⇒See page 430.
3. Remove the printheads and store them in their protective caps.



4. Open the Right Side Cover Window.



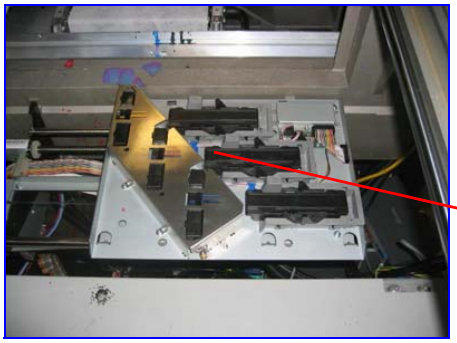
5. Move the cap down and remove the T10 screw that secures the Printhead Capping Module.

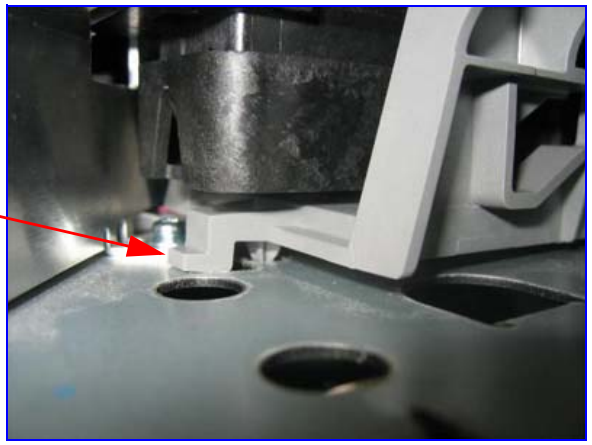
NOTE: If you only need to replace the top part of the capping module, instead of removing the screw, lift it out and unclip the spring attached.

6. Raise the Printhead Capping Module by the screw to release the clip.
7. Move the Printhead Capping Module to the left to release the second clip.

Installation

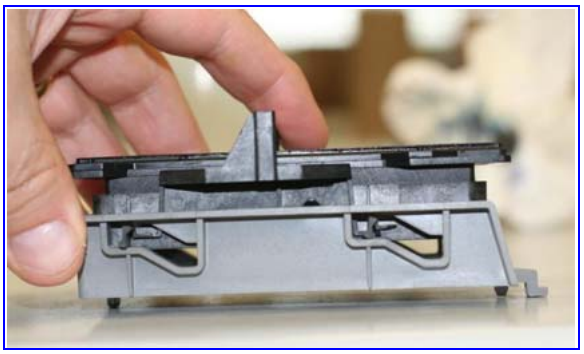
The photo below shows an incorrectly installed capping Module.





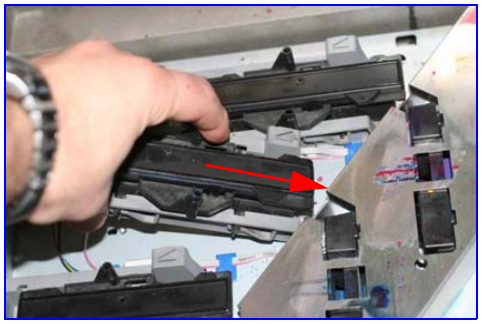
- If incorrectly installed as shown as the picture, there is a high probability of destroying the 2 pins at the side of the CAP.
- The plastic part has to be inserted within a hole in the capping station, before screwing it (one screw).

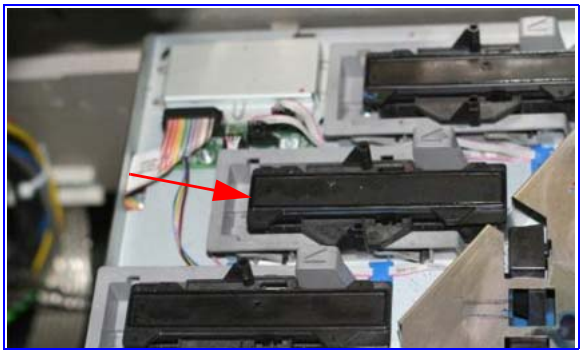
To correctly install a CAP assembly use the following procedure:



1. Raise and keep the CAP assembly in the up position.

2. Maintaining the CAP assembly in the up position, slide the part into the correct space at an angle, as shown here.



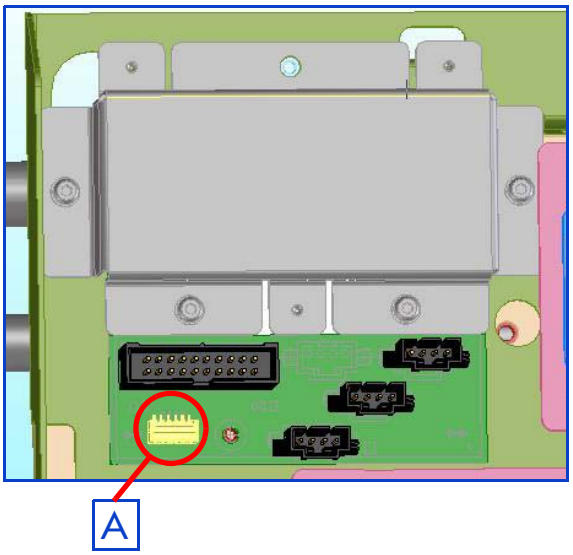


3. Secure the CAP assembly in position with a screw.

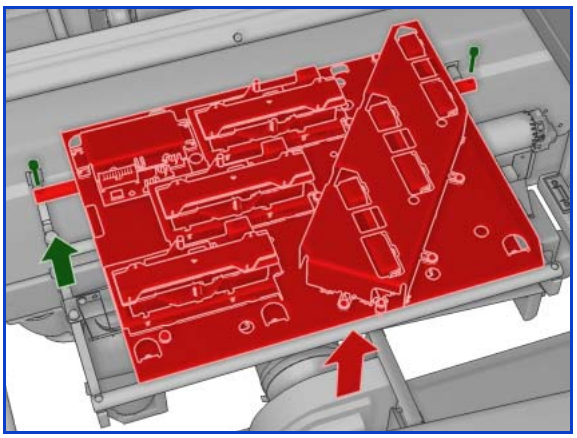
Service Station Encoder Strip and Sensor

Removal

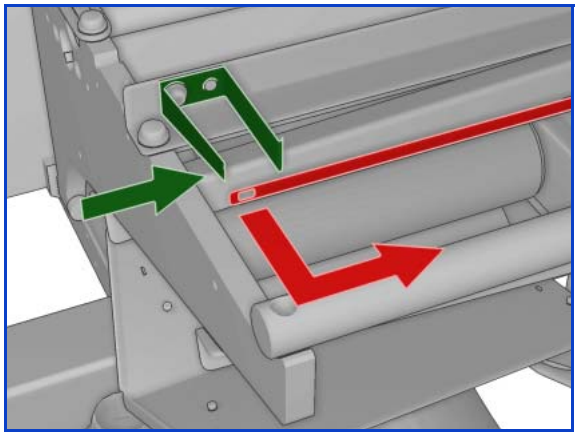
WARNING!: Switch off the printer and power enable switch.



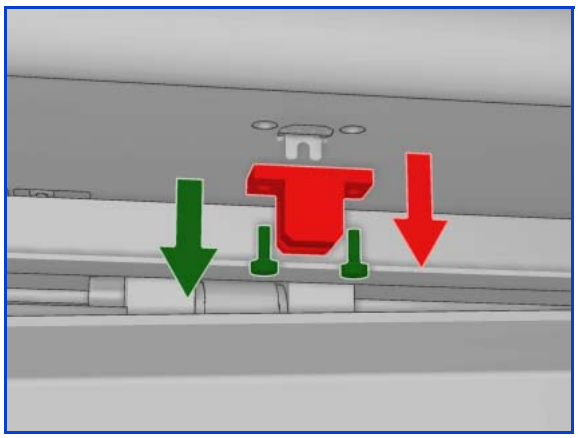
1. Disconnect the encoder cable.
   a. Encoder sensor cable (P1)
   Route: Encoder sensor > Service Station Connection Board
2. Unroute the encoder cable down through the hole to free the service station.



3. Remove the two T20 screws that secure the station and remove it.

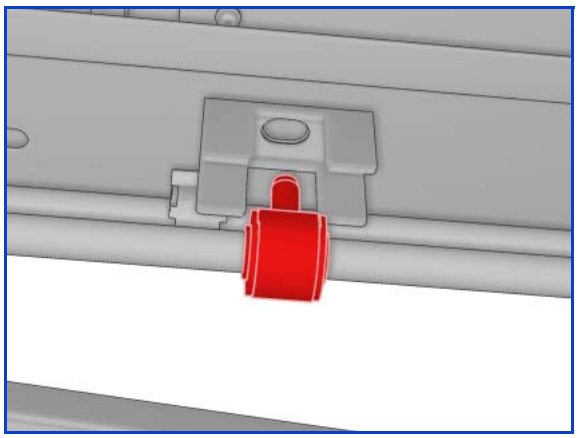


4. Apply pressure to the encoder strip bracket and pull the encoder strip away and then over.

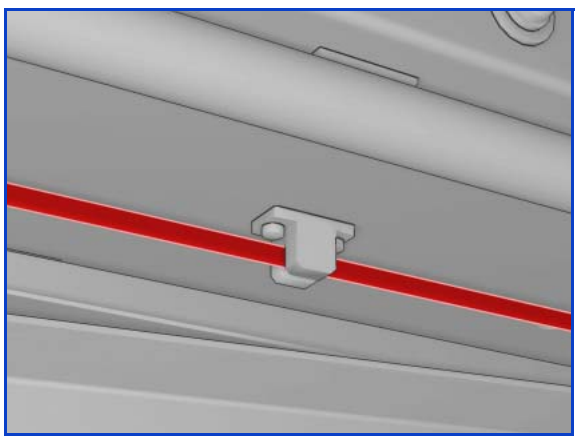


5. Remove the two TXYZ screws that secure the encoder sensor and remove it.

Installation



1. Make sure the pin is inserted into the underside of the Service Station correctly. Otherwise, the service station will not move.



2. Make sure the Service Station Encoder Strip is correctly placed.

Manual Service Station Capping

Removal

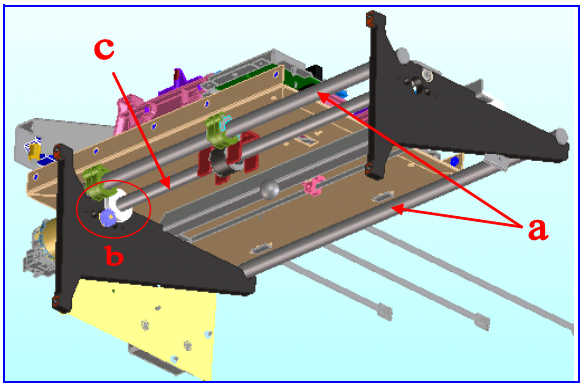
WARNING!: Switch off the printer and power enable switch.

1. Move the Service Station to the front side, nearest to the Internal Print Server, to do this, use a slot screwdriver to unscrew the service station screw from the from the front.
2. Move the carriage over the Service Station.
3. Manually align the carriage with the Service Station so that the capping modules are directly under the printheads.
4. Use a flathead screwdriver to screw the service station screw from the front and move the service station until the printheads are capped.

Service Station Oiling

Removal

WARNING!: Switch off the printer and power enable switch.



1. Put oil on each end of the service station rods (A).
2. Put grease on the service station gears (B).
3. Put grease on the section of the shuttle screw that is used the most (C).

Different oils and grease to be used:

A: Need to apply the oil which is provided with each printer, within the cleaning kit (available also within the support part: Q6702-60546)

B: Grease Shell Alvania EP2 available on the support part Q6702-60546 Shell Alvania EP2

C: Grease Shell Alvania EP2 available on the support part Q6702-60546 Shell Alvania EP2

Clean the Service Station Upper Spittoon

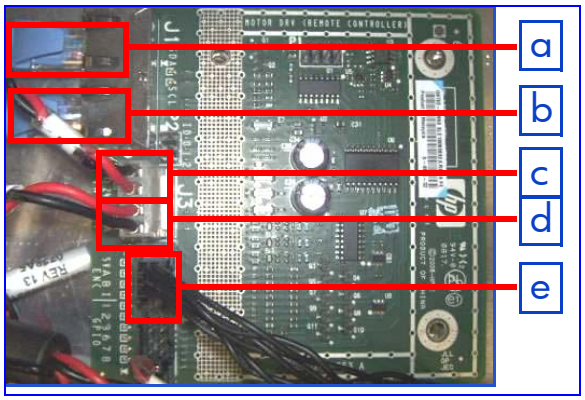
This procedure is available in the 'Maintenance and Troubleshooting Guide' under the section 'clean the ink deposits'. Go to the front panel under the 'Preventative Maintenance menu' and select 'Clean Ink Deposits'.

Scan Axis PPS

Remote Controller Board (PPS)

Removal

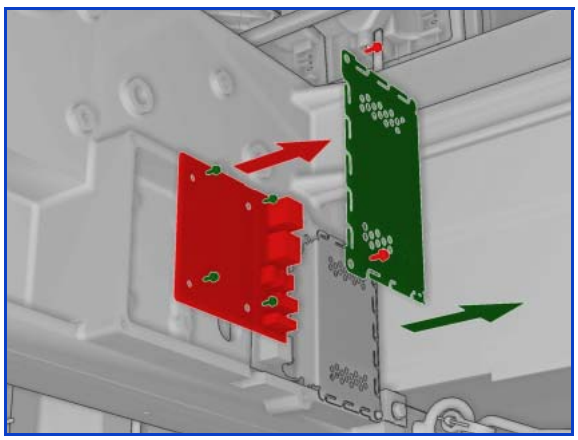
WARNING!: Switch off the printer and power enable switch.



1. Remove the appropriate trim ⇒See page 570.
2. Disconnect all cables connected to the Remote Controller Board.
   a. LAN data cable (J1)
   b. LAN data cable (P2)

NOTE: One of the Remote Controller Boards will only have one LAN connection. Make sure to connect it to the right connector when you install the new service part.

   c. 24V power cable (J3)
   Route: Main Interconnect Board > Remote Controller Board
   d. PPS motor power cable (J3)
   Route: Remote Controller Board > PPS motor
   e. Encoder and switch cable (J4)
   Route: Encoder and switch > Remote Controller Board
3. Remove the two T10 screws that secure the cover and the four T10 screws that secure the board and remove it.

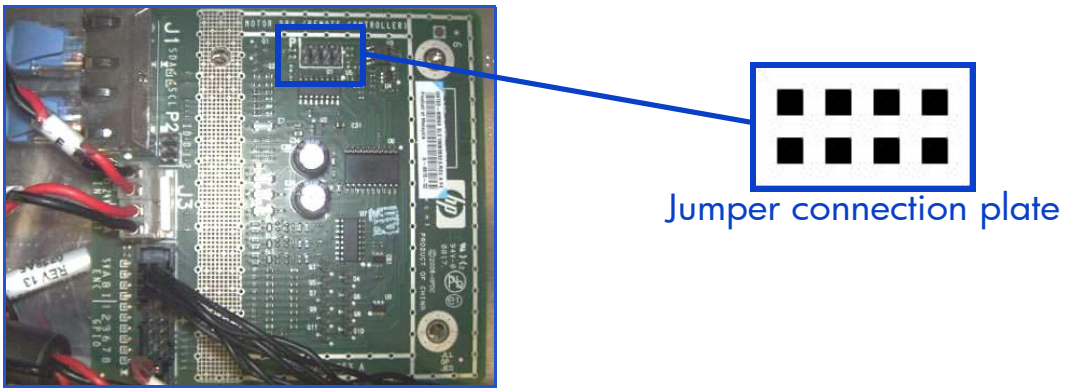


Installation

NOTE: There are two Remote Controller Boards to control the two left PPS motors. One of the boards has two LAN connections (one from the previous, one to the next Remote Controller Board), and one of the boards has only one LAN connection, but includes two jumpers. **The following instructions only apply to the board with one LAN connection.**

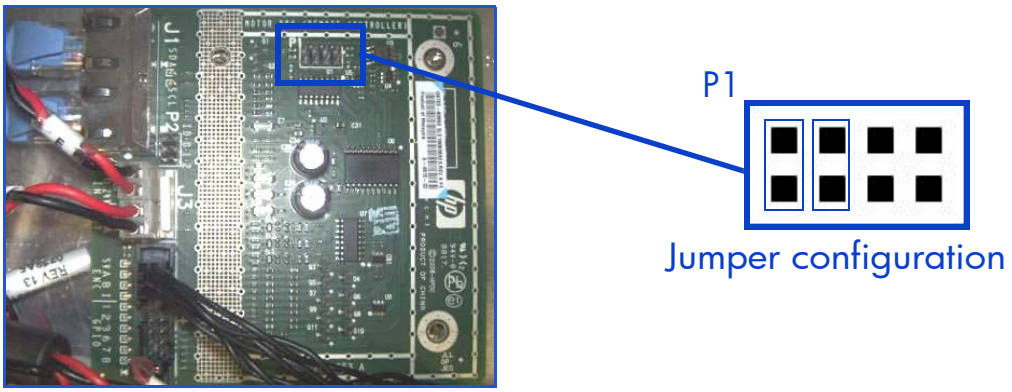
1. Only perform the following if you are replacing the board with only one LAN connection.
2. Locate the jumper connection plate on the Remote

Controller Board, labeled P1.



3. Locate the jumpers included in the service part.

4. Insert the two jumpers in the two jumper slots on the left.



For the one with two LAN cables, make sure there is no jumper installed in P1

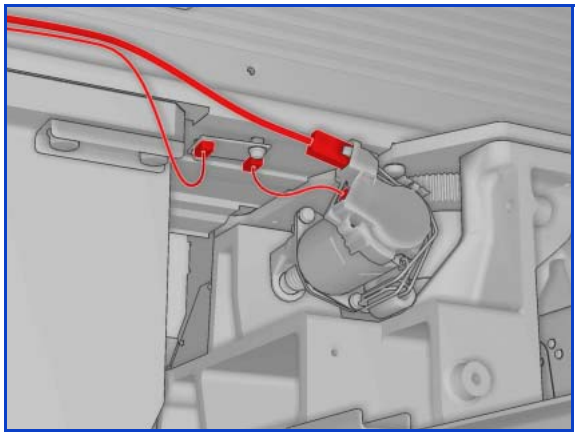
PPS Motor Assembly

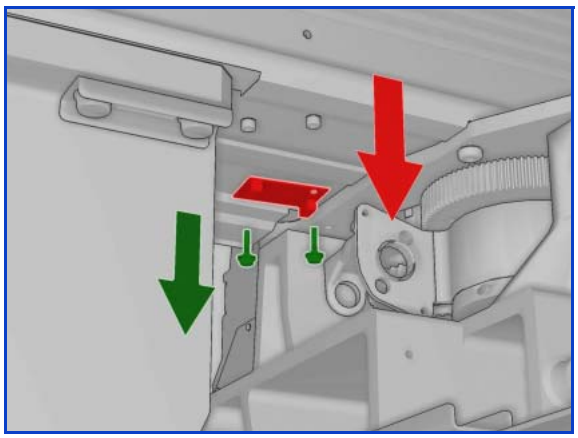
Removal

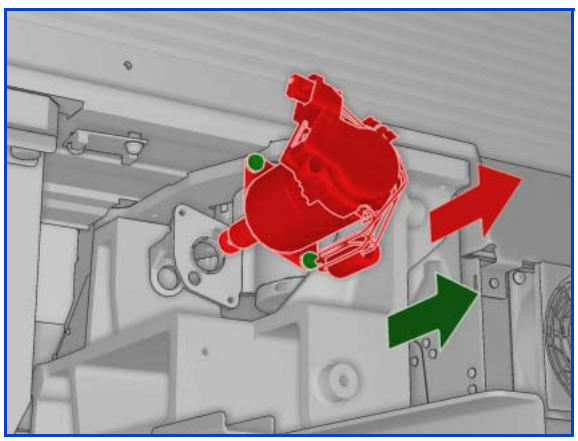
WARNING!: Switch off the printer and power enable switch.

NOTE: The PPS Motor Assembly service part comes with a new differential encoder PCA, which is positioned differently for each PPS Motor Assembly, but is always secured with two TXYZ screws. To locate the differential encoder PCA, you can always follow the encoder cable from the motor.

1. Remove the relevant arc ⇒See page 570.
2. Disconnect the power cable from the motor (Remote Controller Board > Motor).







3. Disconnect the cable that connects the Remote Controller Board to the differential encoder PCA.
4. Disconnect the cable that connects the Remote Controller Board to the PPS motor.

NOTE: You can leave the cables connected to the Remote Controller Board.

1. Install the new motor and verify if it works. If it does now, replace the differential encoder PCA that comes with the service part.
2. Remove the two screws that secure the differential encoder PCA.

3. Remove the two T15 screws that secure the PPS Motor and remove it.

Installation

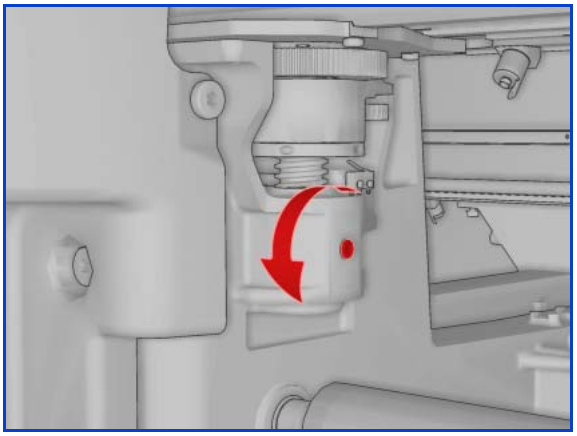
1. Install the new motor and verify if it works. If it does now, replace the differential encoder PCA that comes with the service part.

PPS Screw Assembly

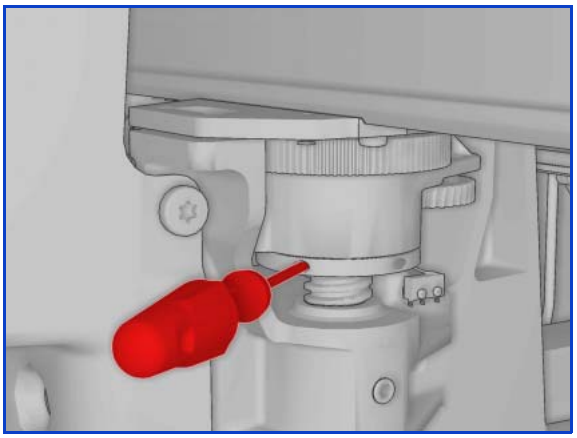
Removal

1. From the Front Panel, navigate to **Carriage Beam Position** > **Move to Home Position** to lower the PPS all the way. If you cannot start the printer in normal boot mode due to failure, use diagnostic mode ⇒See page 332.
2. **Important**: Turn off the printer and power enable switch.

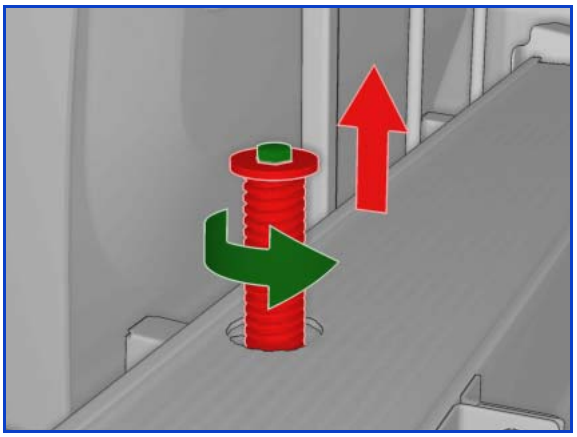
3. Remove the PPS Motor Assembly ⇒See page 740.
4. Loosen the A6 locking screw about two full revolutions.



NOTE: Access the screw through the hole in the mount and use an L shaped key.



5. Position the lower part of the motor mount so that you can insert the screwdriver.
6. Insert the screwdriver. This will prevent the mount from moving, so that when you turn the PPS Screw, it will come out.



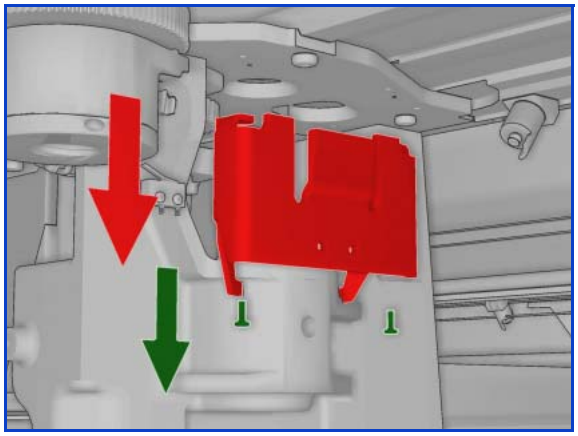
7. Remove the pipe 17 bolt (in green) that secures the PPS Screw.
8. Remove the PPS Screw.

PPS Motor Mount Assembly

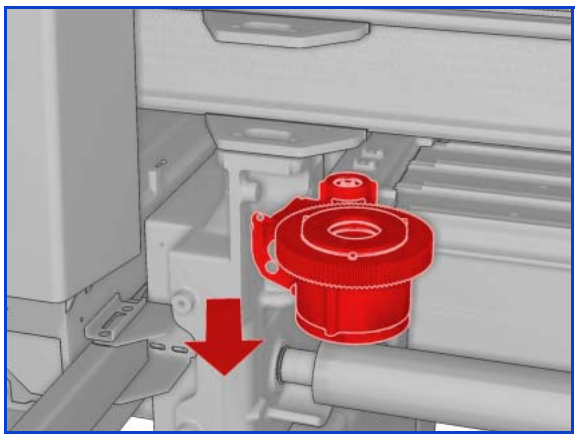
Removal

WARNING!: Switch off the printer and power enable switch.

1. Remove the PPS Motor Assembly ⇒See page 740.
2. Remove the PPS Screw Assembly ⇒See page 741.
3. Remove the necessary curing module if you are removing a front PPS Motor Mount Assembly ⇒See page 820.



4. Remove the two T15 screws that secure the holder.

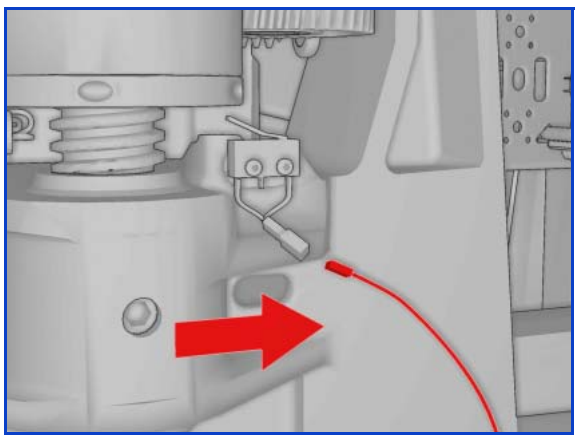


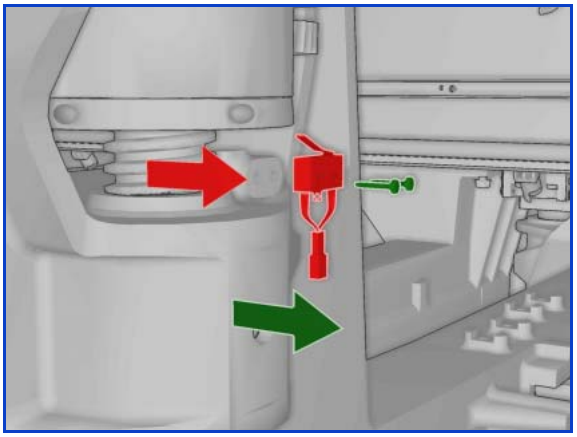
5. Remove the PPS Motor Mount Assembly.

PPS Low Switch

Removal

1. From the Front Panel, navigate to **Carriage Beam Position** > **Move to High Position** to raise the PPS all the way. If you cannot start the printer in normal boot mode due to failure, use diagnostic mode ⇒See page 332.
2. **Important**: Turn off the printer and power enable switch.
3. Disconnect the PPS Switch cable.





4. Remove the two T8 screws that secure the PPS Low Switch and remove it.

Carriage

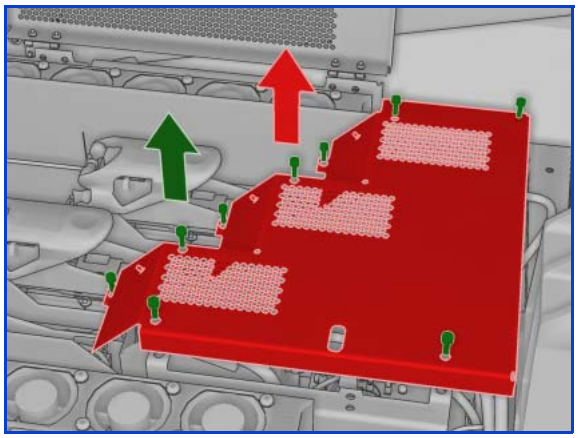
Pen Pocket Kit

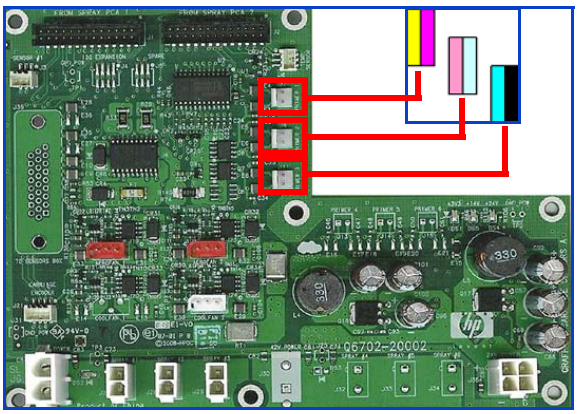
Removal

WARNING!: Switch off the printer and power enable switch.

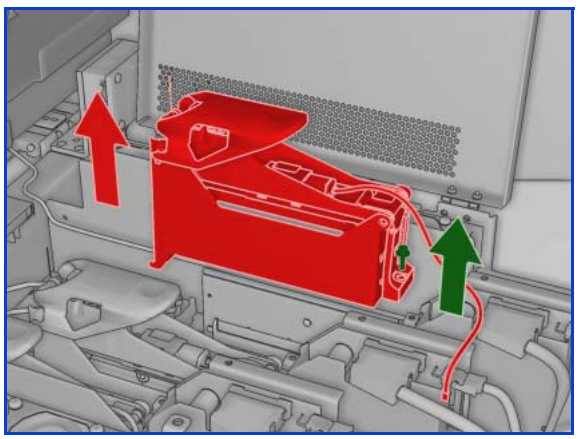
CAUTION: Before switching off the printer uncap the Carriage by performing procedure '6.2 Move Carraige to Repair position' ⇒See page 430. If the Carriage is not uncapped there is a risk of damage to the caps.

1. Remove the printhead and store it in their caps.
2. Remove the Carriage Printhead Interconnect that corresponds to the Pen Pocket Kit you want to remove ⇒See page 749.
3. Remove the nine T15 screws of the carriage electronics cover and remove it.



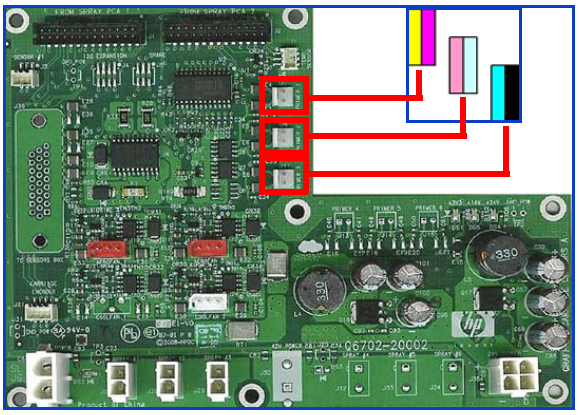


4. Disconnect the primer cable (J7, J9, J11) from the Carriage Interconnect Board.



5. Remove the slotted MH3 screw that secures the pen pocket kit and remove it.

Installation



1. If you replaced more than one Primer Assembly, make sure that you connect the primer cable to the right connection.
2. Force a priming to ensure that the new Primer Assembly works.

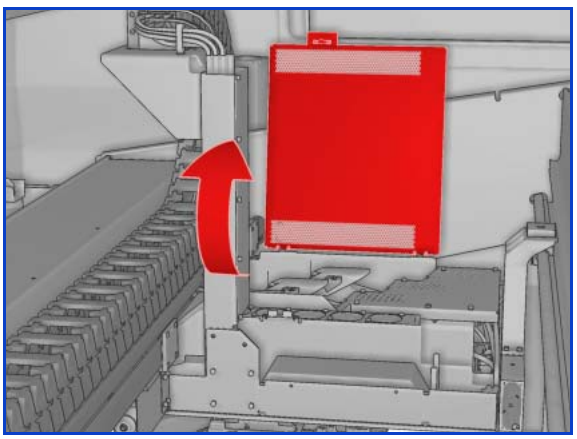
Carriage Encoder Set

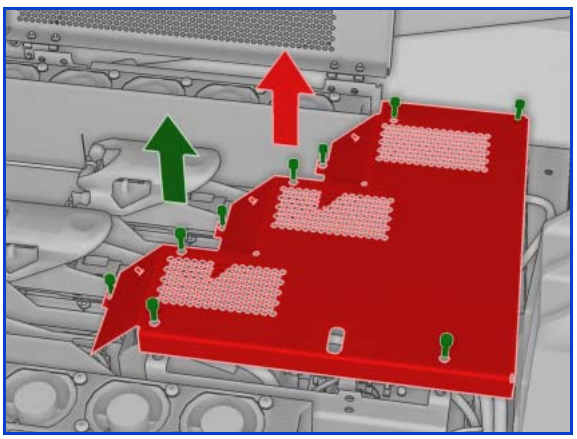
Removal

1. Move the carriage to the far left side of the printer, use diagnostic procedure '6.2 move to repair position'.

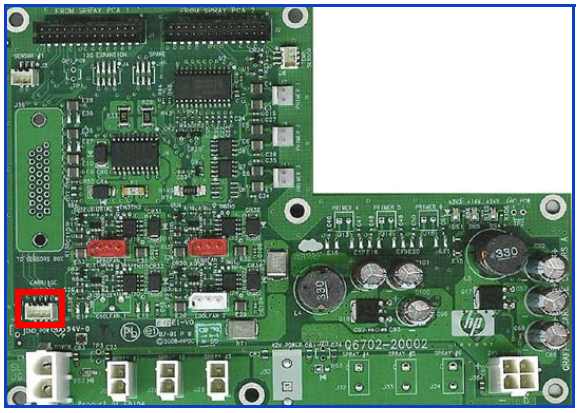
WARNING!: Switch off the printer and power enable switch.

2. Remove the left most Center Cover Panel ⇒See page 573.
3. Open the carriage lid.

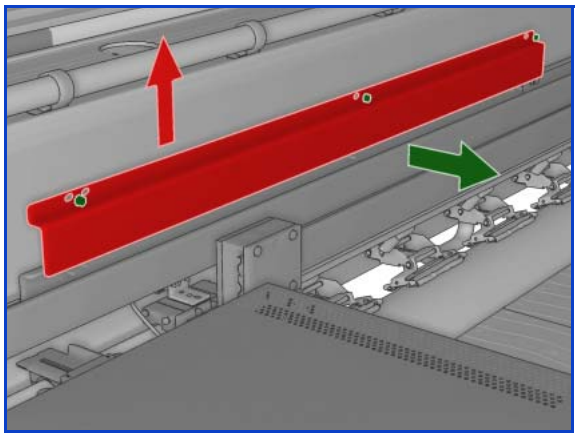




4. Remove the nine T15 screws of the carriage electronics cover and remove it.

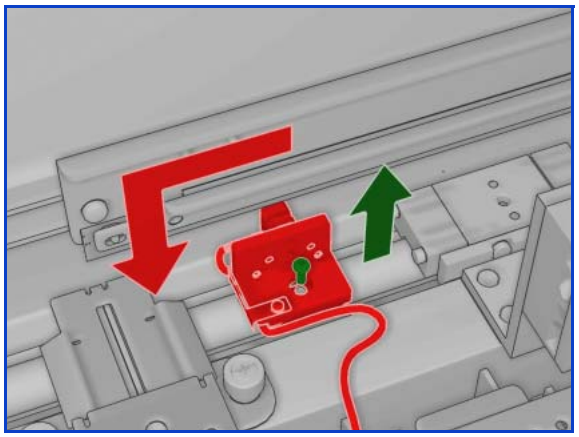


5. Disconnect the Carriage Encoder Sensor cable (J21) from the Carriage Interconnect Board.
6. Unroute the encoder cable from any clips or plastic ties until it reaches the sensor.



7. Remove the three hand removable nuts that secure the encoder protector and remove it.

> ⚠ **WARNING!:** The encoder strip is very sharp. Be careful that you do not cut yourself, and if possible, wear protective gloves.

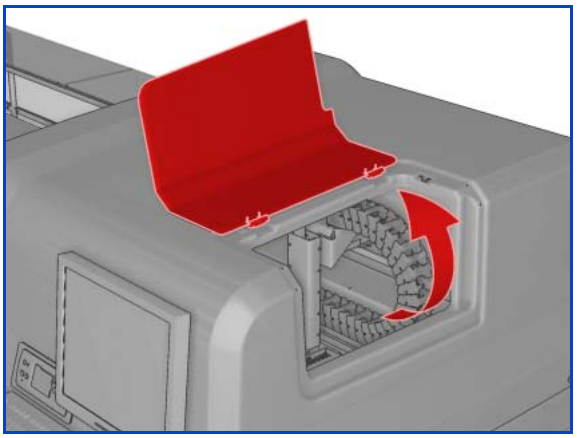


8. Remove the T10 screw that secures the Carriage Encoder Set.
9. Slide the sensor to the left, toward the end of the encoder strip, until it reaches the gap shown in the graphic.
10. Move it straight down through the gap to free it from the encoder strip and remove the entire assembly.

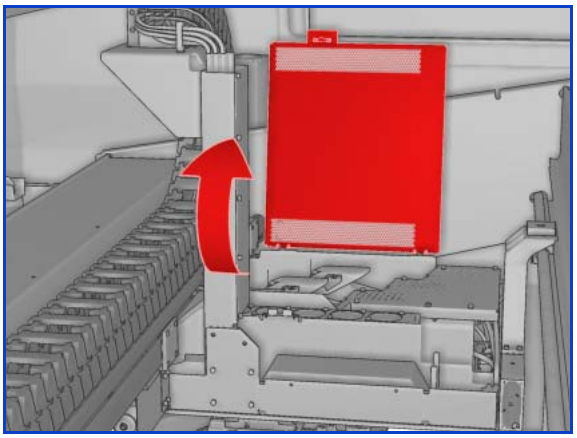
Carriage Interconnect Board

Removal

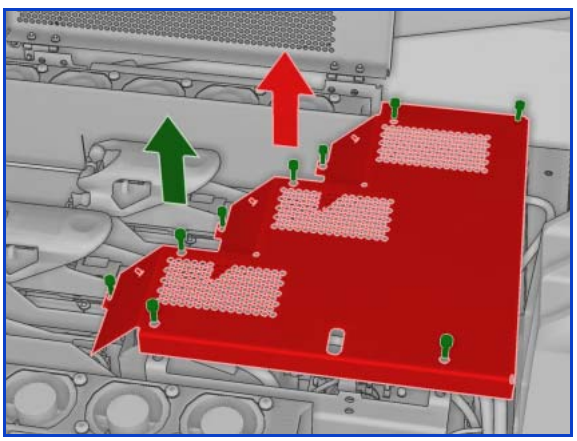
WARNING!: Switch off the printer and power enable switch.



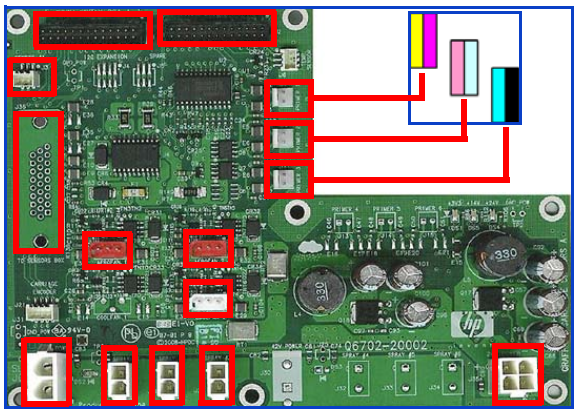
1. Open the Right Side Cover Window.



2. Open the carriage lid.



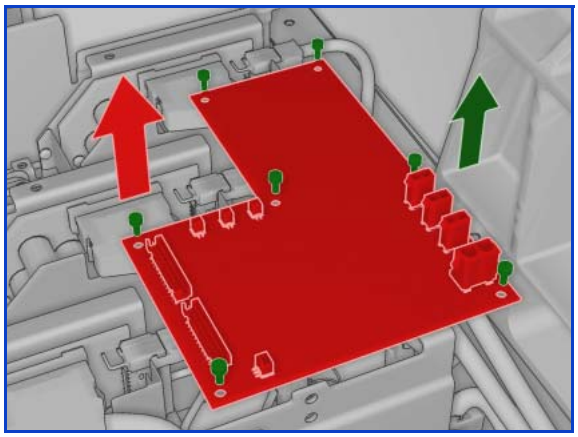
3. Remove the nine T15 screws of the carriage electronics cover and remove it.



4. Disconnect the fifteen cables connected to the Carriage Interconnect Board. For more information about these connections, see the diagrams located in Printer systems ⇒See page 69.

NOTE: When you disconnect the flat data cables for the Printhead Boards, make sure that you only pull from the connector.

NOTE: Keep track of the cables and connections by looking at the labels on the board and on the cables.



5. Remove the seven T10 screws that secure the Carriage Sensors PCA to the carriage and remove it.

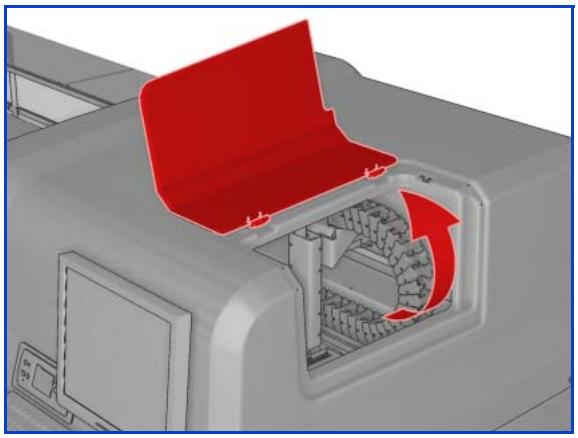
Carriage Printhead Interconnect

Removal

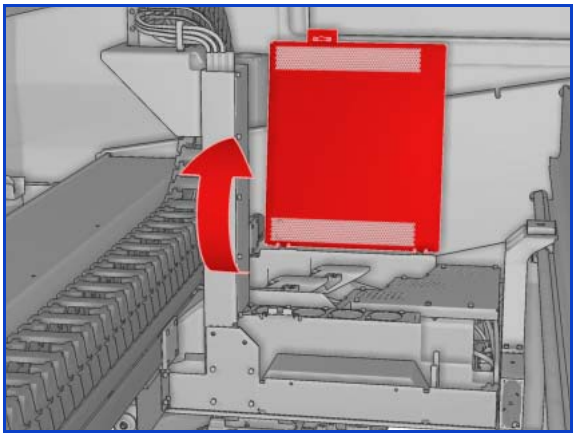
WARNING!: Switch off the printer and power enable switch.

CAUTION: Before switching off the printer uncap the Carriage by performing procedure '6.2 Move Carriage to Repair position' ⇒See page 430. If the Carriage is not uncapped, there is a risk of damage to the caps.

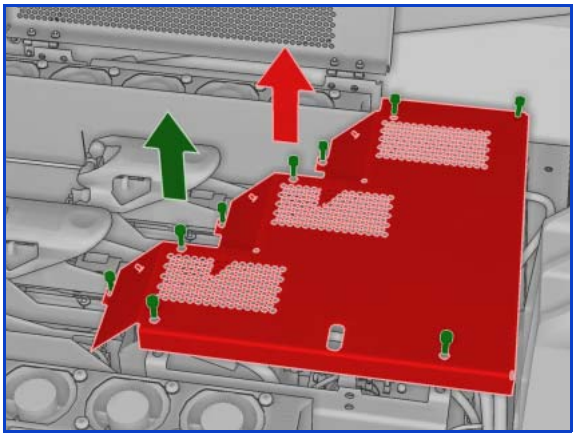
NOTE: There are three boards, one for each printhead. Two of these three boards (1 and 2) have three connections (Trailing Cable, 42 V power, and the connection with the Carriage Interconnect Board). The other Printhead Board (3) only has two connections (Trailing Cable and 42 V power).



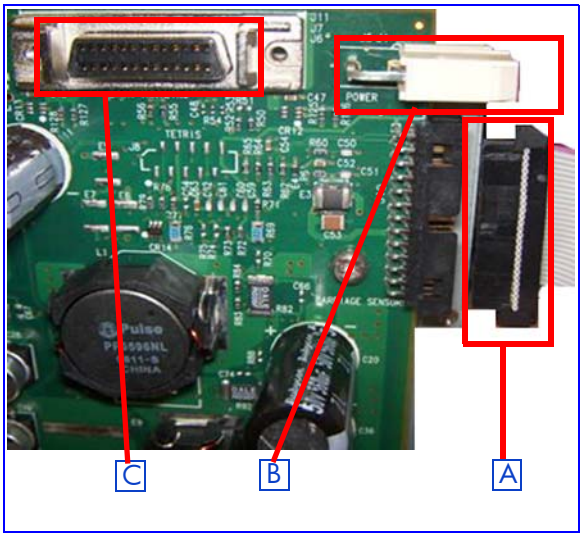
1. Open the Right Side Cover Window.



2. Open the carriage lid.

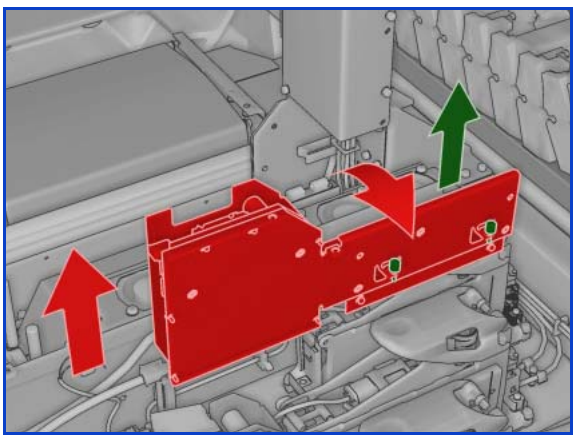


3. Remove the nine T15 screws of the carriage electronics cover and remove it.



4. Disconnect the three cables from the Carriage Printhead Interconnect.
   a. Trailing cable (J11)
      Route: Upper PCI Board > Carriage Printhead Interconnect
   b. 42V power cable (J4)
      Route: Carriage Interconnect Board > Carriage Printhead Interconnect
   c. Data cable (J10)
      Route: Carriage Interconnect Board > Carriage Printhead Interconnect

NOTE: One of the boards does not have the data cable connection from the Carriage Interconnect Board.



5. Loosen the two T8 screws that secure the Carriage Printhead Interconnect and remove it, tilting it slightly.

NOTE: These screws are self-locking and must be reused. Do not lose these screws!

Trailing Cable

Use this procedure to replace either of the following parts:

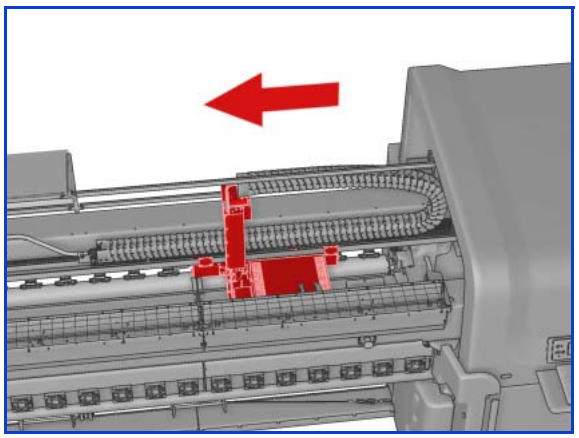
- Single data cable which connects to the Yellow/Magenta Printhead Interconnect PCA.
- Double data cable which connects to the Light Cyan/Light Magenta and Cyan/Black Printhead Interconnect PCAs.

Tools required:

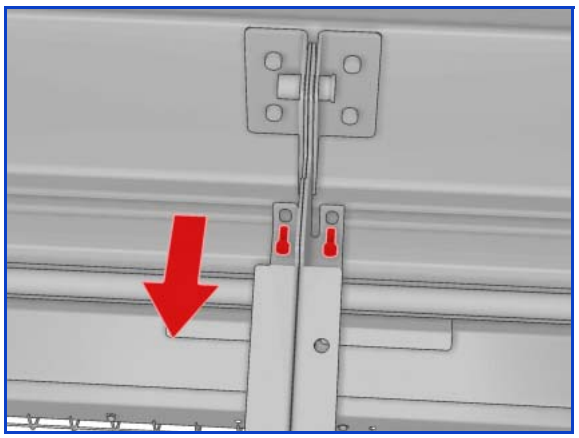
The following tools are required to perfrom the procedures in this document:

- Flat end screw driver with a tip wider than 4mm but no wider than 5mm.
- Plastic headed hammer
- The standard set of tools: Torx screwdriver etc.

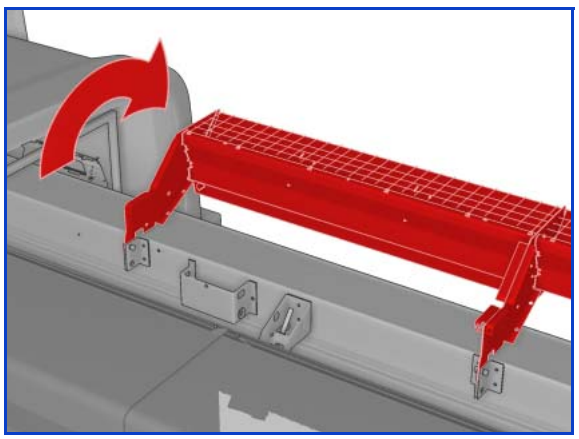
Removal



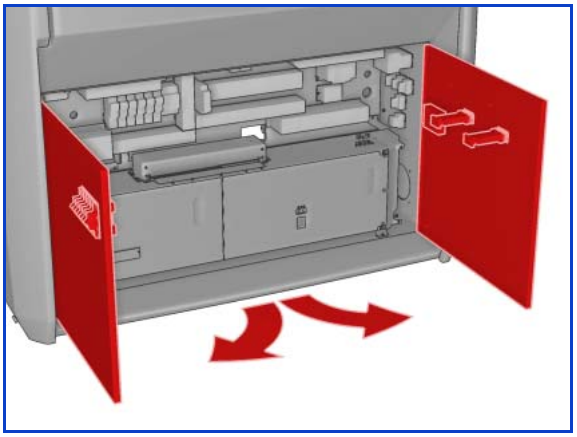
1. Remove the Center Covers ⇒ See page 573
2. Remove the Right side cover rear panel ⇒ See page 567.
3. Move the carriage to the repair position using the procedure '6.2 Repair position' from Diagnostic mode ⇒ See page 430.
4. Switch off the printer and power enable switch.
5. Remove the printheads and store them in their caps.



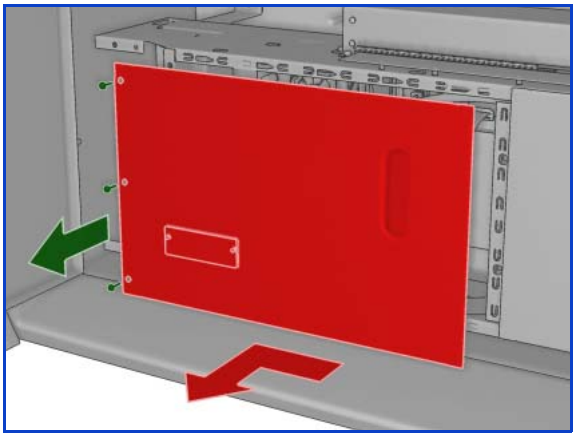
6. Remove the six T10 screws that fix the Heating Module Assembly in place.



7. Lift and turn the heating module over.

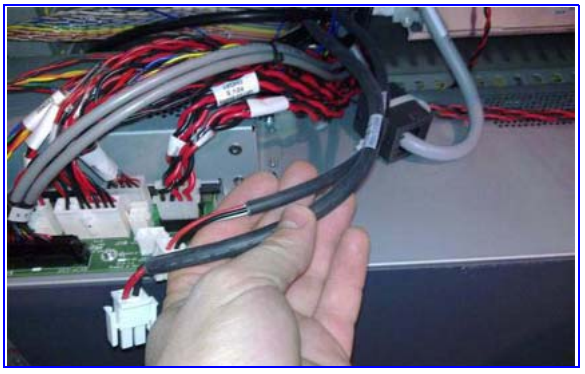


8. Open the electrical cabinet doors.



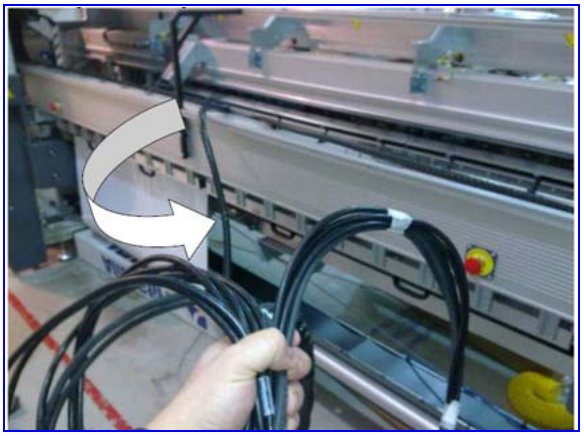
9. Remove the three T15 screws that secure the left electronics cover, slide it to the left, and remove it straight out.

10. Disconnect the trailing cables from the Upper PCI Board.

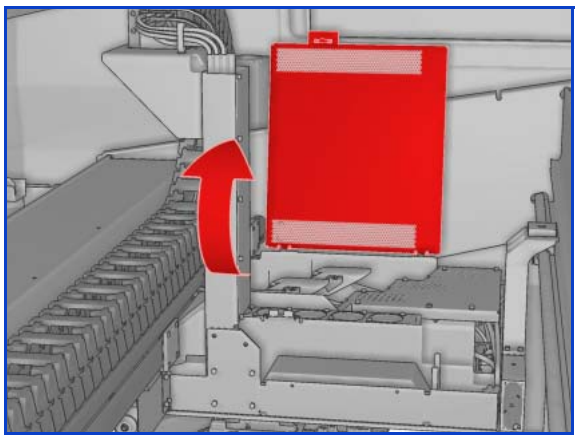


11. Disconnect the 42V and 24V cables from the Main Interconnect Board.

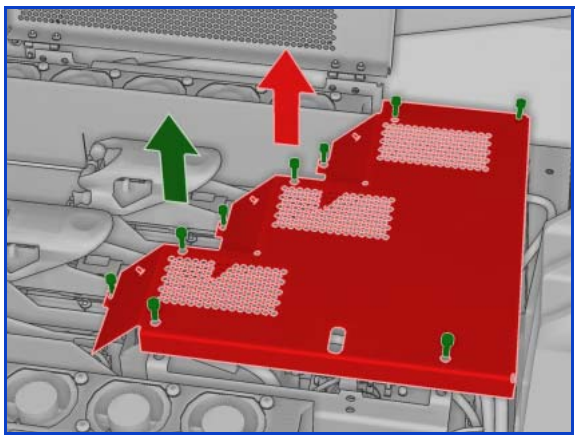
12. Unroute the trailing cables, 24V and 42V power cables from any clips or cable ties from the Electronics box.



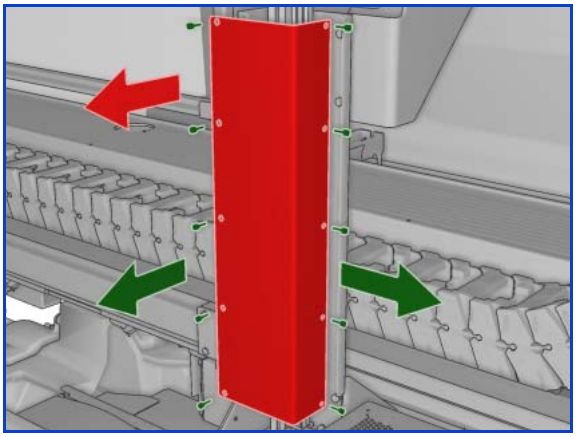
13. Unroute the trailing cables, 24V and 42V power cablesall the way to the base of the Carriage Chain Assembly, by unclipping the cable shell protector from top of the rear scan axis beam.



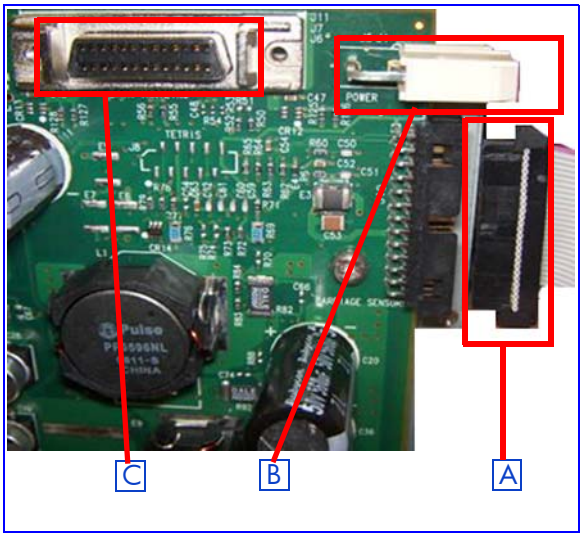
14. Open the carriage lid.



15. Remove the nine T15 screws of the carriage electronics cover and remove it.
16. Disconnect the trailing cables from the Carriage Printhead Interconnects.

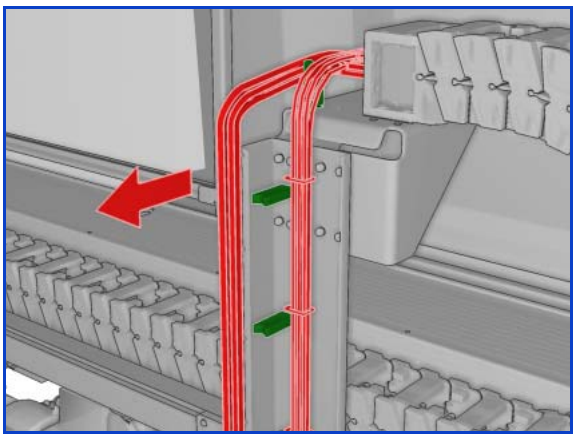


17. Remove the ten T10 screws of the Carriage Tower Assembly to open the tower.

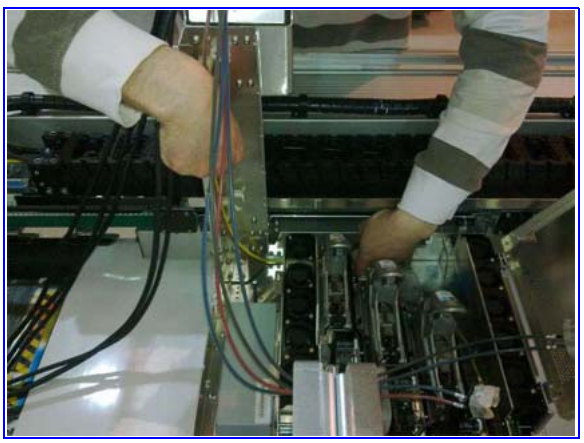


18. Disconnect the three cables from the Carriage Printhead Interconnect.
    a. Trailing cable (J11)
    Route: Upper PCI Board > Carriage Printhead Interconnect
    b. 42V power cable (J4)
    Route: Carriage Interconnect Board > Carriage Printhead Interconnect
    c. Data cable (J10) Carriage Interconnect Board > Carriage Printhead Interconnect.

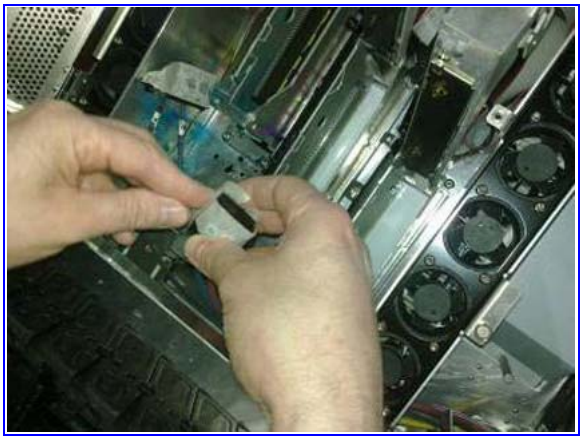
NOTE: One of the boards does not have the data cable connection from the Carriage Interconnect Board.



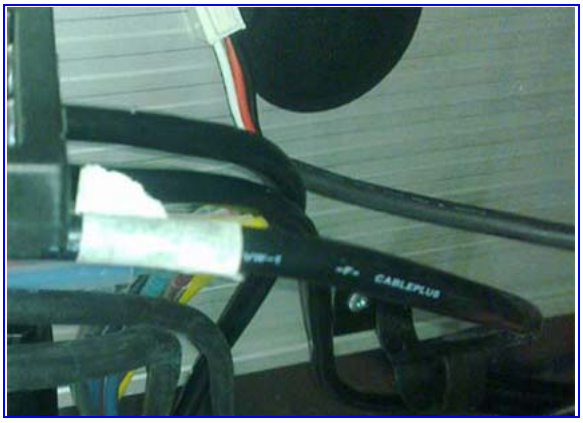
19. Unroute all the tubes and cables until the top part of the Carriage Tower Assembly.



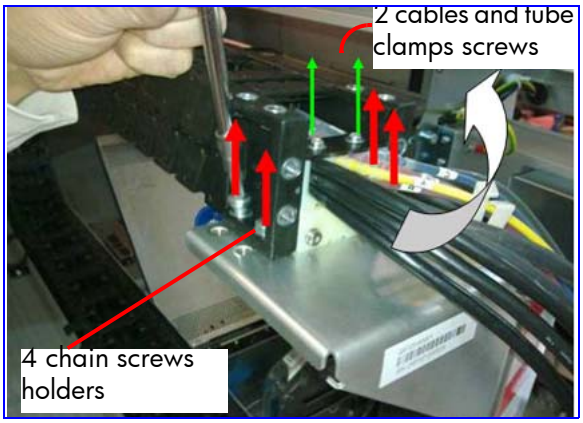
20. Remove the Fluid Interconnect fixtures by removing the screw of the ink tube holders. Unroute the tubes of the carriage pair by pair.



21. Place tape over the fluid interconnects to prevent any unwanted ink leakage.



22. IMPORTANT: Mark the position of each of the trailing cables, power cables and ink tubes at the beginning and end of the carriage chain. This will be used a reference position for the assembly of the new trailing cable and the other cables in case they move.



23. Remove the Ink tubes protectors from the crimp clips on top of the scan axis beam and move aside.

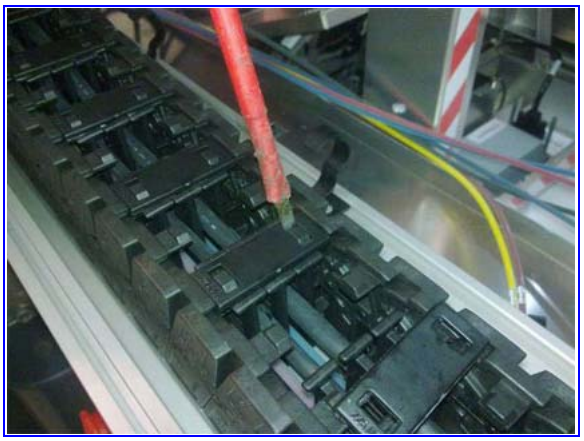
24. Release the Chain from the carriage tower and the scan axis self support (at both ends).

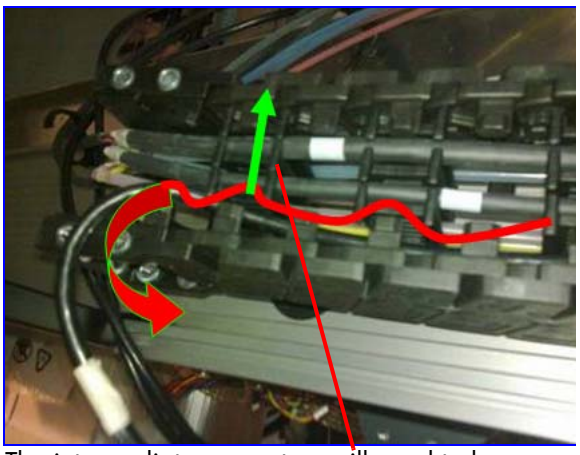
25. Remove the tubes and cable clamps (at both ends of the carriage chain).

26. Once the chain is completely released, place it on top of the Scan Axis beam.

NOTE: For a single trailing cable (Yellow/Magenta), the replacement can be done directly with the carriage chain in this position. **For the double trailing cable** (Light Cyan/Light Magenta & Cyan/Black) **turn the chain 180 Degrees**. With the side of the chain touching the cables on the top side. **To perform this rotation is recommended to disconnect the Ink tubes by the quick connector of the ISM side.**

NOTE: If there is a requirement to replace both the single and double data cables, replace first one cable completely into the Igus Chain and close the chain, then rotate the chain and replace the second cable. **Do not replace both cables at the same time into the chain.**





The intermediate separators will need to be moved in order to make space to remove the cable.

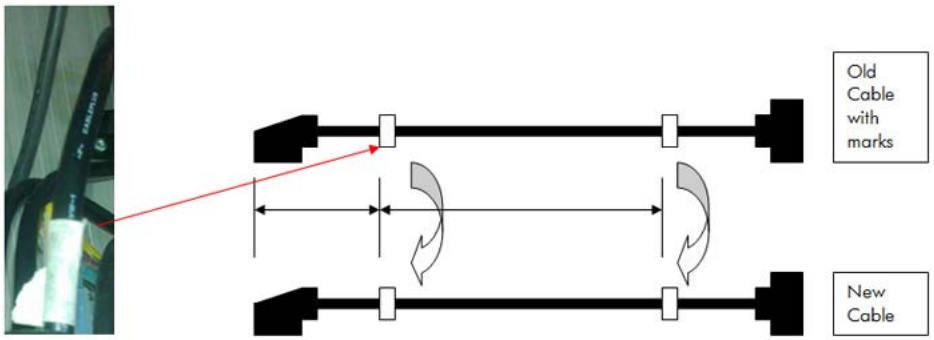
1. Remove the carriage chain links by inserting a flat screw driver deep into the slot and turning it.

NOTE: Ensure the head of the screw driver is min width 4mm, max width: 5mm as it will not be inserted correctly and can cause damage to the carriage link when performing the turning action.

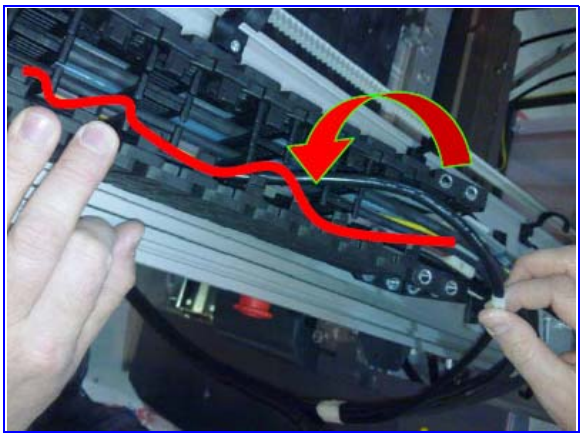
NOTE: NEVER place back a broken link into the chain as it could fall while printing operation causing severe damage to the printer.

2. Once all links are removed unroute the trailing cable from the chain and remove the cable from the cable protector to release it completely from the printer.

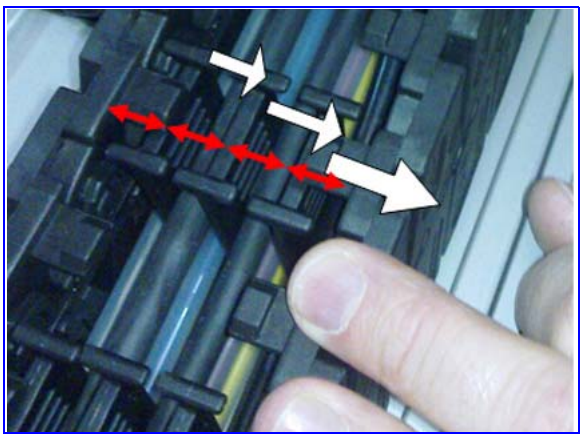
3. Before inserting a new trailing cable, mark it with the same distances as the one that was removed . Use as reference the connector which goes on the Printhead interconnect side. (Angled connector).



NOTE: If the new replacement service part is longer than the part removed, put the excess cable into aloop shape in the cavity of the E-Cabinet (shown in step 19).

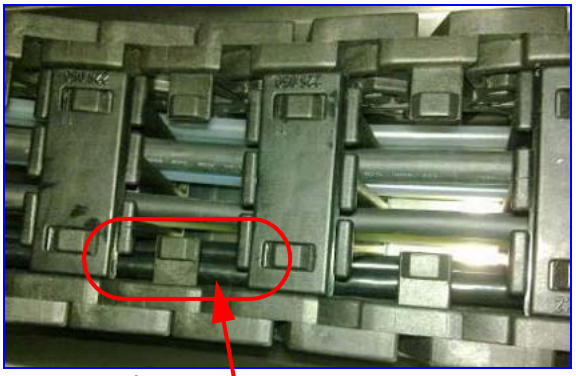


4. Route the new cable into the chain, use the marks as reference for cable location.
5. Place all cables back in approximate correct position using the cable and tube marks.



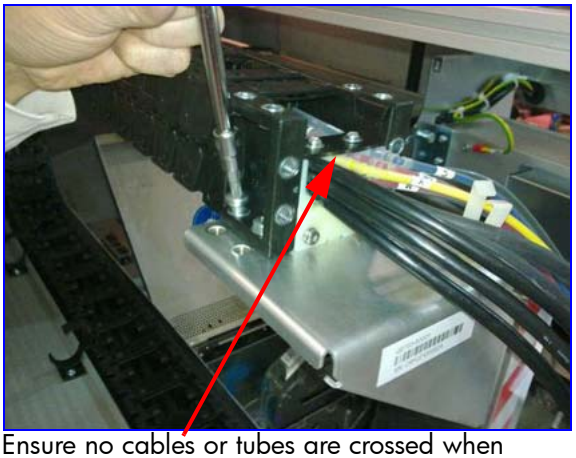
6. Ensure all separators are placed back in a central position.

7. Place the chain links back by placing in position one side and gently hitting the other until the complete link latches. Use a plastic head hammer to prevent link damage.



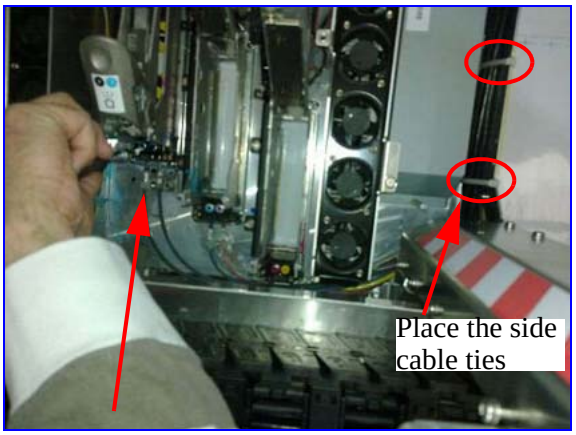
Example of cables pinched between each other.

8. Perform a double check to ensure all f the cables are back into position, pull slightly first from one end and then the other to ensure there are no tubes or cables crossed or pinched by the chain links.



Ensure no cables or tubes are crossed when placing them in the clamp holder.

9. Screw the Chain back to the carriage tower and scan axis tube shelf . Place the tubes and cables back in the marked positions and screw the clamps.



Route ink tubes pair by pair back into position

10. Place back the tubes and cables. Screw back the tube holders as requried.
11. Ensure all cable connections are reconnected. PH Interconnects, 24V and 42V cables.
12. Close back the Carriage tower cover and the carriage electronics cover.

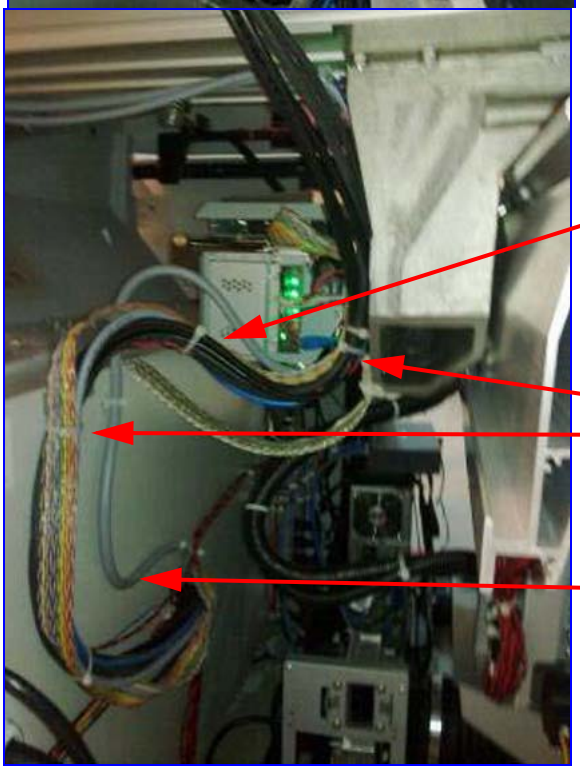
13. Place all cables together using tape.

14. Place back the cables back into the cable protector.

15. Place back the assembly into the scan axis position. Ensure that the protector is not pinching or bending the cables.

16. Close all latches to fix the cable protector in position. Perform the same action with the ink tubes protector.

17. Re-route at the back of the e-cabinet. Place all the cable ties back. Ensure the appropriate loop is left for the PPS movement.



18. Leave the appropiate cable loop for the PPS Scan Axis movement

18. DO NOT cable tie strongly the drop detector multicolour cable. Place it on top of the complete cable bundle and cable tie it gently on top of it

18. Try to keep the 42V Scan Axis motor power cable as separate as possible from the other cables of the bundle.

19. Reroute and reconnect all cables inside the e-cabinet.

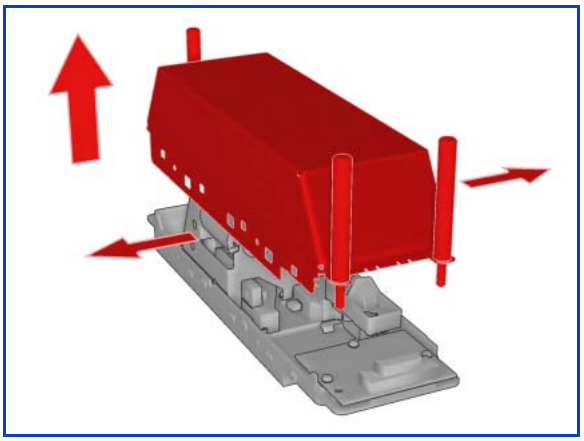
Test the Assembly

1. Move the carriage form right to left bump ensure carriage path and check the chain ensure there are imperfections on the chain links. Ensure correct cable and tube routing inside the chain. Ensure that the cables and the tubes are **not too loose or tense on the chain bent**
2. Place the heating system back in position and secure it appropriately
3. Place the Print Heads Back in the carriage and close the carriage lead
4. Turn the printer on in printer mode
5. Raise the PPS to High Load Possition and ensure there is no problem with the cables loop.
6. Perform the service test 1.5.1. To secure correct operation of the system at different carriage speeds.
7. Perform a final visual inspection.

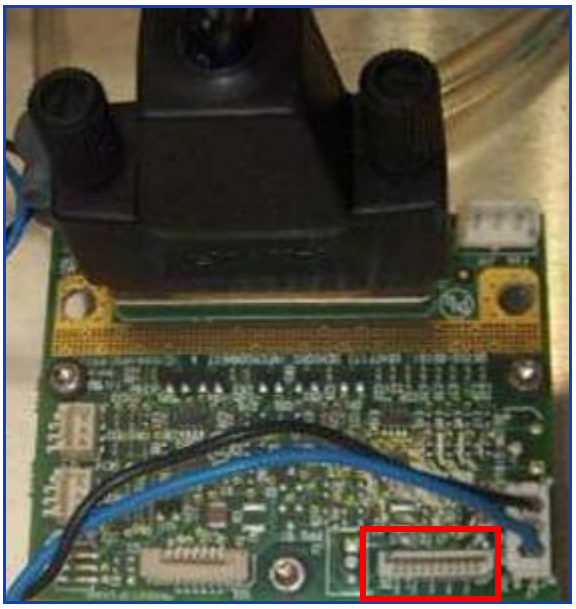
Line Sensor Assembly

Removal

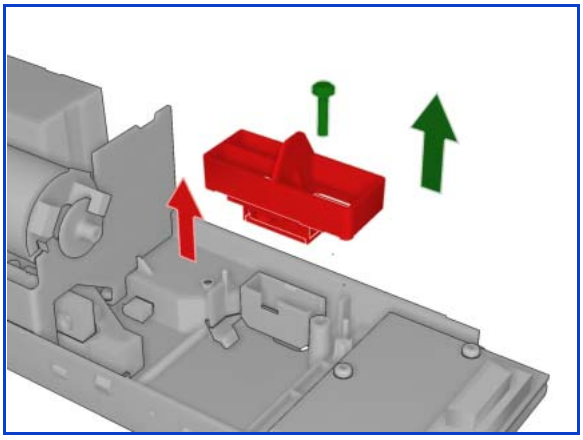
WARNING!: Switch off the printer and power enable switch.



1. Remove the Carriage Sensor Box ⇒See the Maintenance Troubleshooting Guide: 'Replace the line sensor box'. Refer to the maintenance menu in the Front Panel.
2. While lifting the cover upward, use a flathead screwdriver to set the tabs. When all the tabs are set, you can freely remove the cover.



3. Disconnect the cable connected to the Line Sensor Assembly.



4. Remove the T15 screw that secures the Line Sensor and remove it.

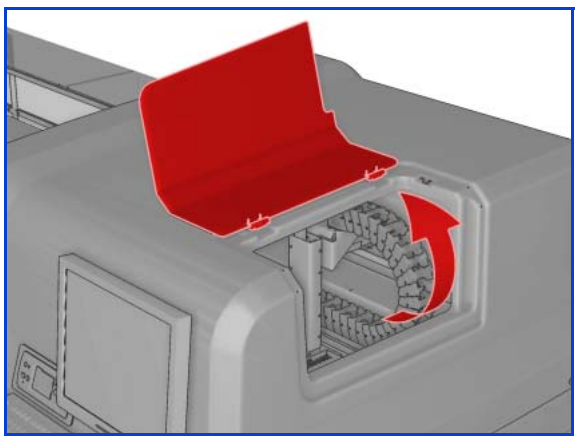
NOTE: Take note of the line sensor configuration so that you can correctly position it during installation.

5. Perform the reset procedure 3.6.3 Reset line Sensor ⇒See page 501

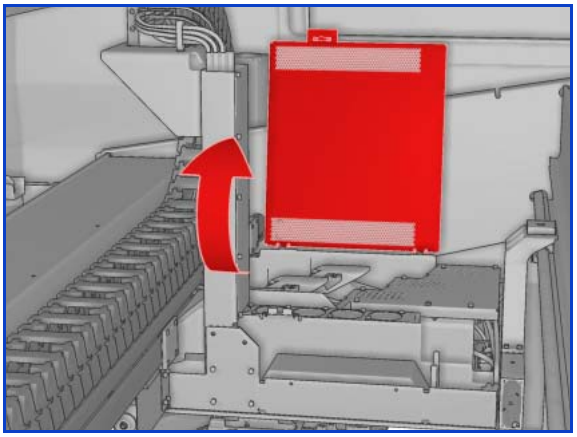
Primer Assembly

Removal

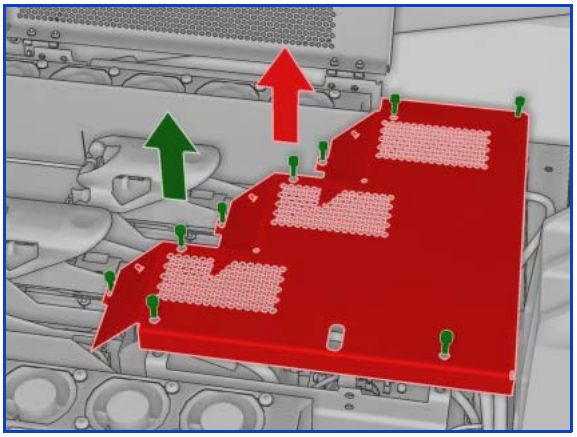
WARNING!: Switch off the printer and power enable switch.



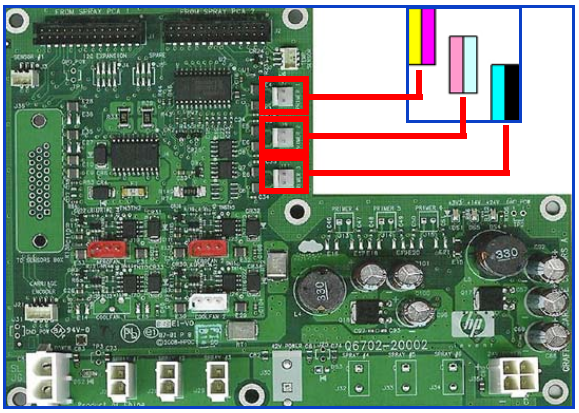
1. Open the Right Side Cover Window.



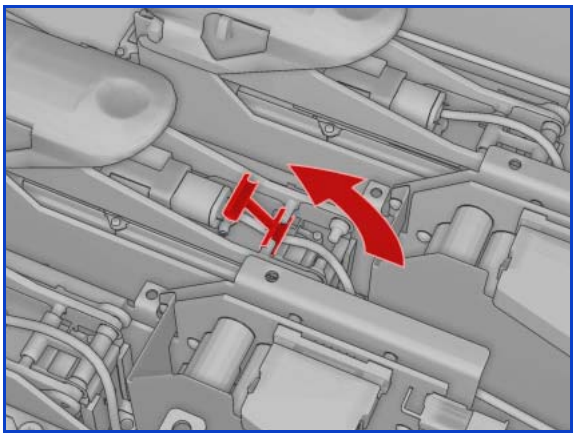
2. Open the carriage lid.



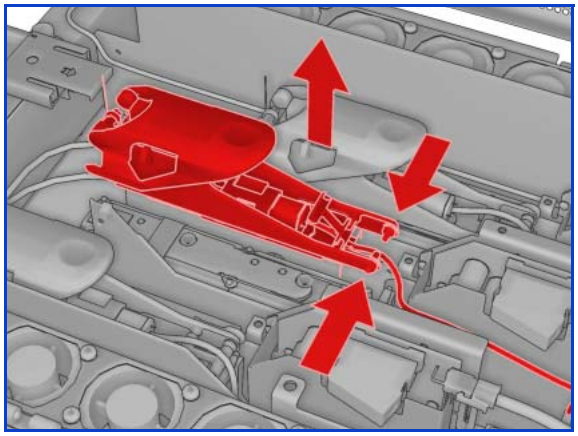
3. Remove the nine T15 screws of the carriage electronics cover and remove it.



4. Disconnect the primer cable (J7, J9, J11) from the Carriage Interconnect Board.



5. Open the Primer clip.



6. Squeeze the two ends of the Primer Assembly together until it is free. Then remove the Primer Assembly.

Installation

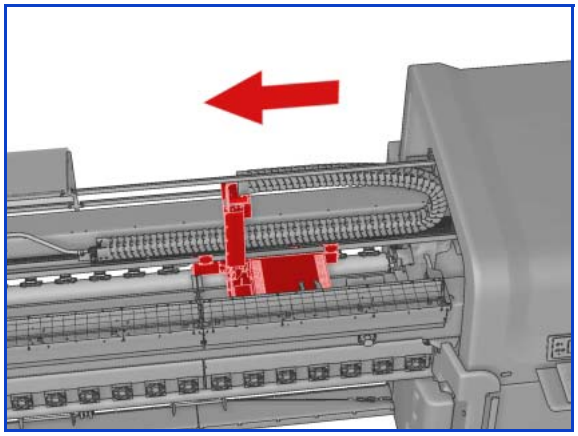
1. The cable must follow the correct route, check the two other primers for the cable routing.
2. Place the correct label on the correct latch

Aerosol Fan Assembly (Left)

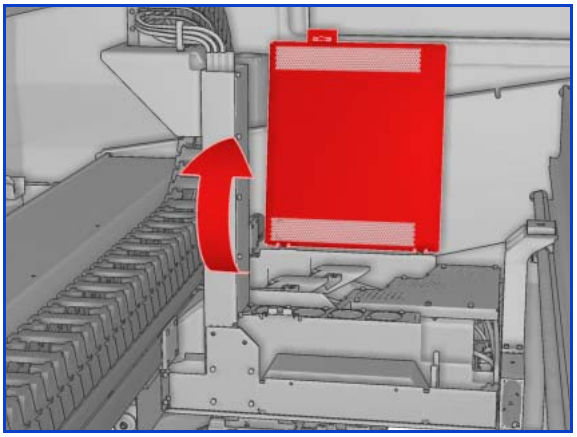
Removal

WARNING!: Switch off the printer and power enable switch.

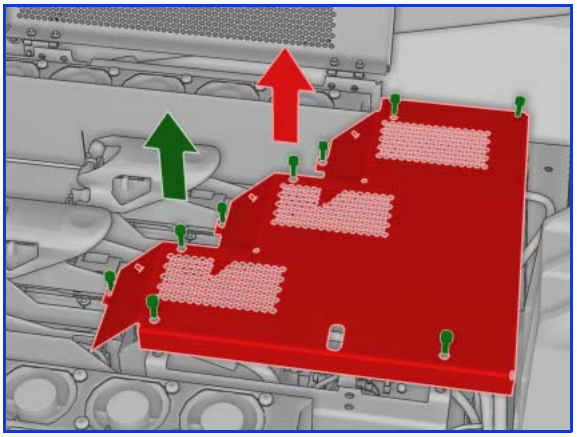
NOTE: On each side of the carriage, there is set of five fans. If one of the fans does not work, the entire set must be replaced.



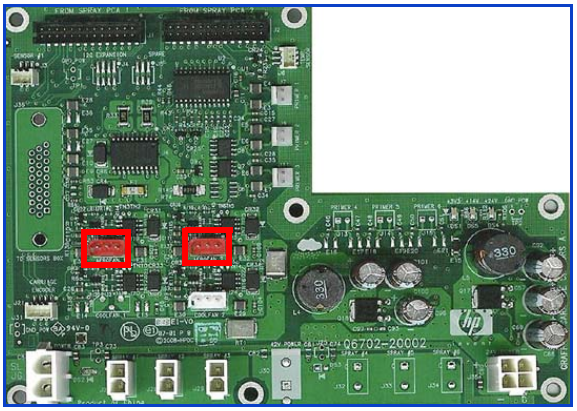
1. Remove the two right Center Covers ⇒See page 573
2. Move the carriage to the 6.2 Repair position ⇒See page 430.
3. To access the screw that secures the left fan array, remove the Carriage Sensor Box ⇒See page 750.



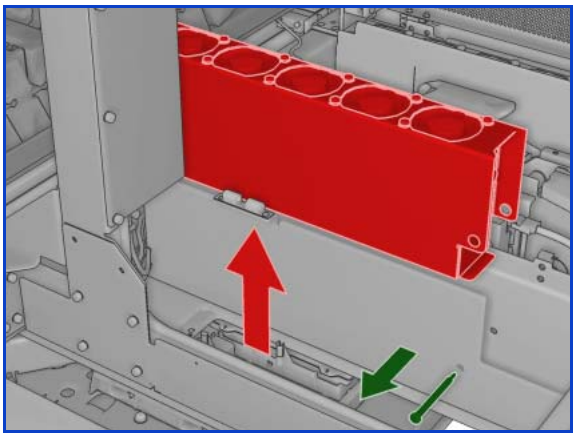
4. Open the carriage lid.



5. Remove the nine T15 screws of the carriage electronics cover and remove it.



6. Disconnect the two fan cables (Left fan-J19, Right fan-J23).



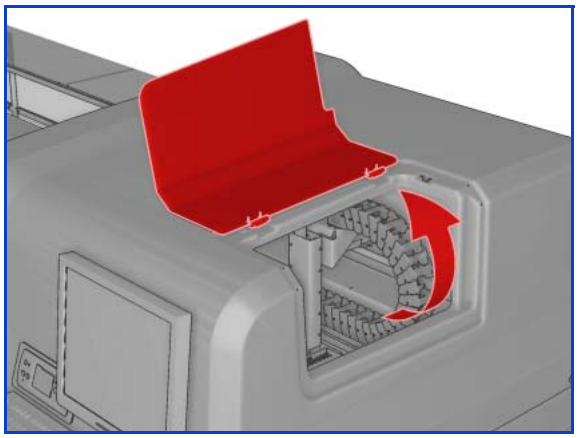
7. Remove the A3 screw that secures the fan to the carriage and remove it.

Aerosol Fan Assembly (Right)

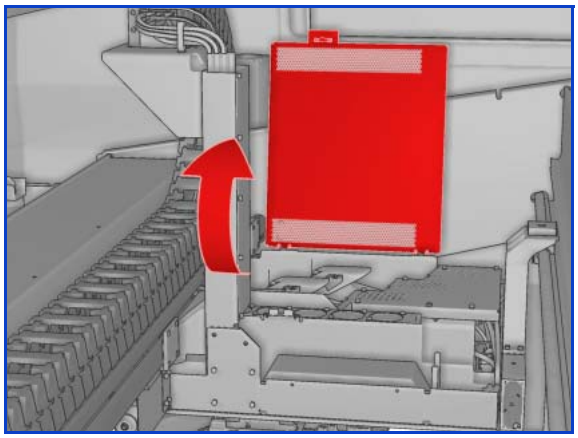
Removal

WARNING!: Switch off the printer and power enable switch.

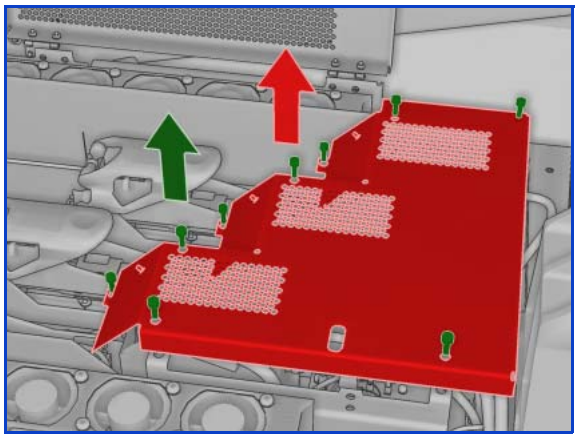
NOTE: On each side of the carriage, there is set of five fans. If one of the fans does not work, the entire set must be replaced.



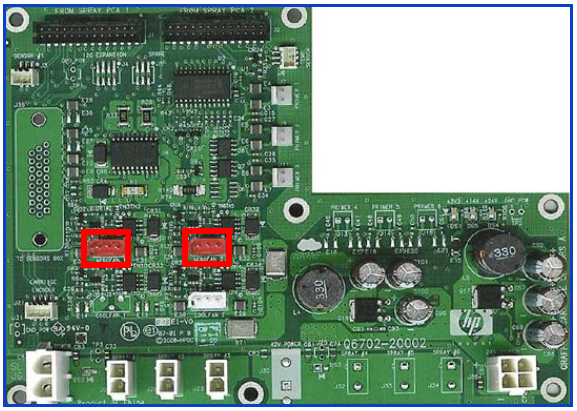
1. Open the Right Side Cover Window.



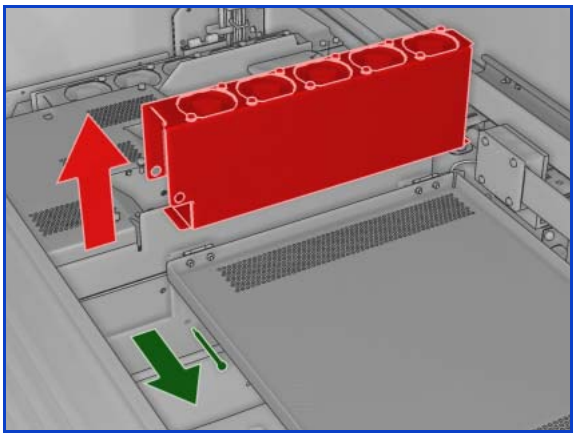
2. Open the carriage lid.



3. Remove the nine T15 screws of the carriage electronics cover and remove it.



4. Disconnect the fan cable (Right fan-J23).

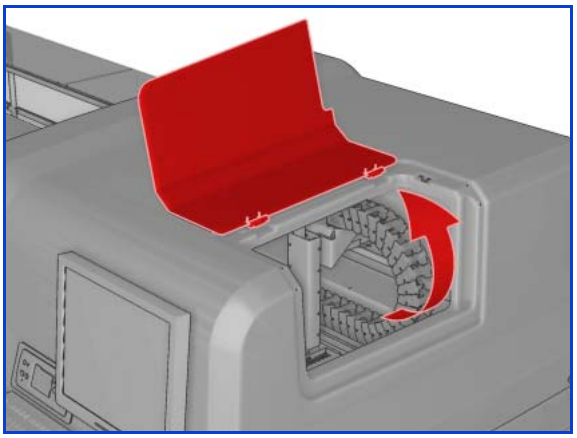


5. Remove the A3 screw that secures the fans to the carriage and remove it.

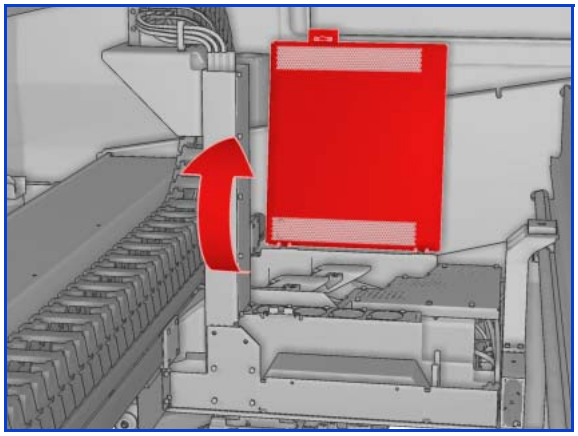
Carriage Oiling Foam Retainer

Removal

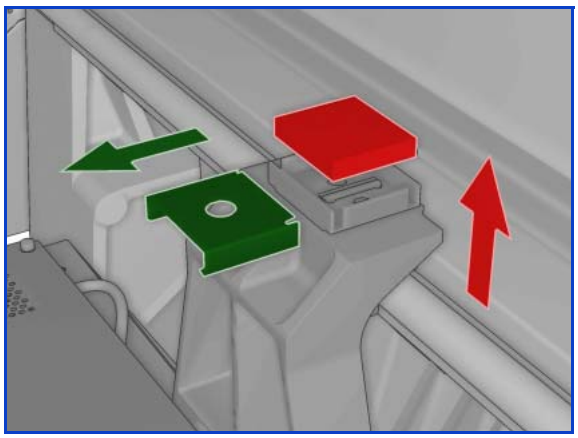
WARNING!: Switch off the printer and power enable switch.



1. Open the Right Side Cover Window.



2. Open the carriage lid if you need to access the rear Carriage Oiling Foam Retainer.



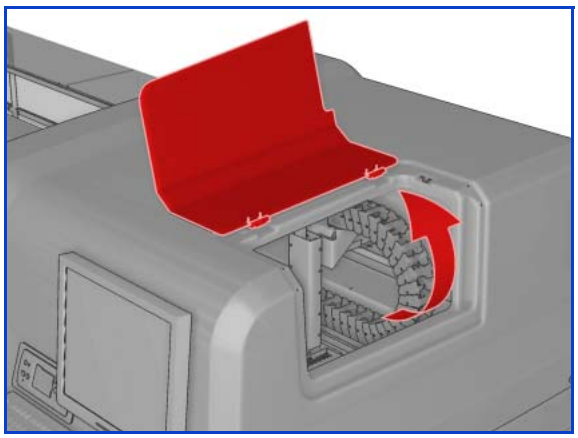
3. Slide the retainer out and remove the retainer and foam.

NOTE: The FRONT Carriage Oiling Foam Retainer is shown in the graphic.

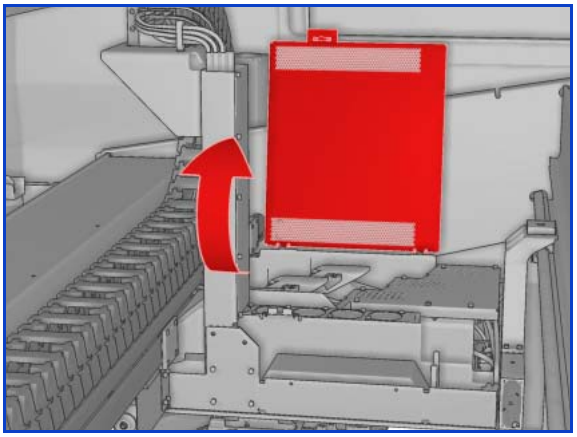
Carriage Oiling Foam Retainer and Rear Support Set

Removal

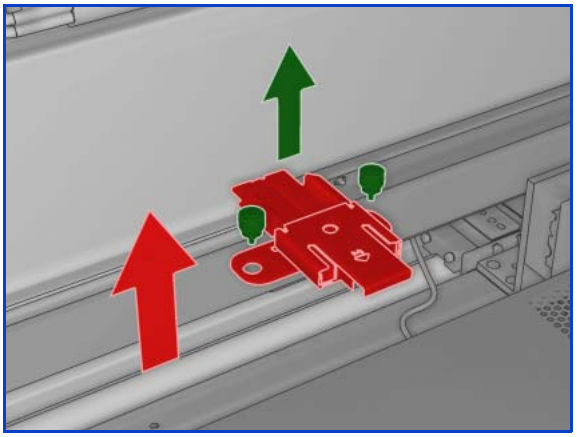
WARNING!: Switch off the printer and power enable switch.



1. Open the Right Side Cover Window.



2. Open the carriage lid.

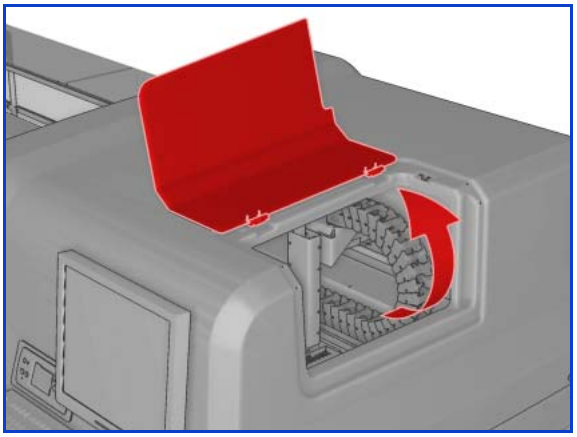


3. Remove the two slotted MH4 screws that secure the Rear Support and remove the retainer and support together.

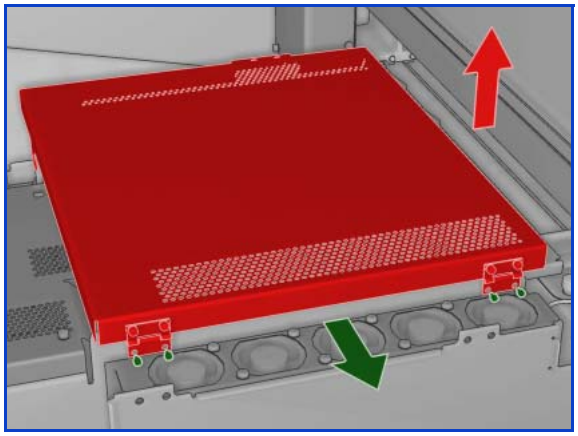
Carriage Lid

Removal

WARNING!: Switch off the printer and power enable switch.



1. Open the Right Side Cover Window.



2. Remove the two T10 screws that secure each hinge to the carriage and remove the Carriage Lid Assembly.

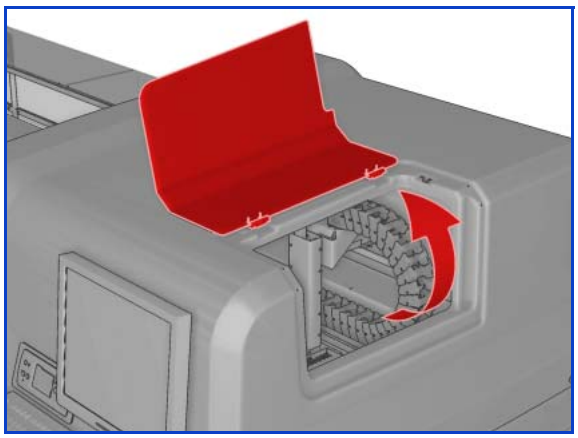
Installation

1. Perform the reset procedure 3.6.2 Reset Carriage Lid ⇒See page 501

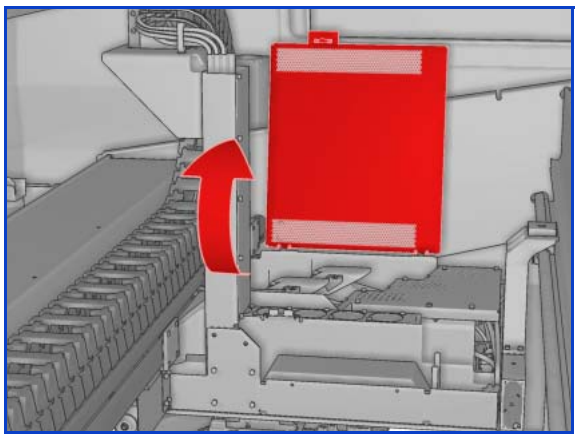
Carriage Lid Switch

Removal

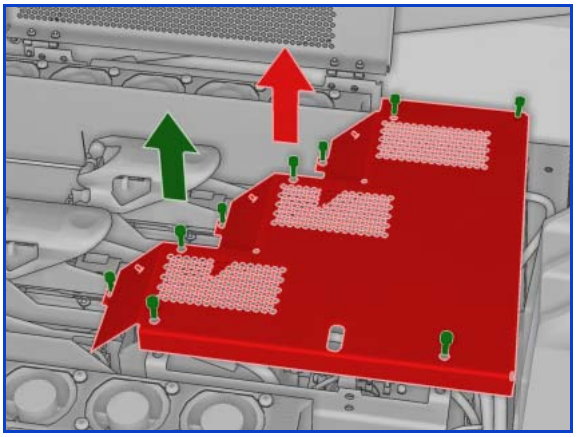
WARNING!: Switch off the printer and power enable switch.



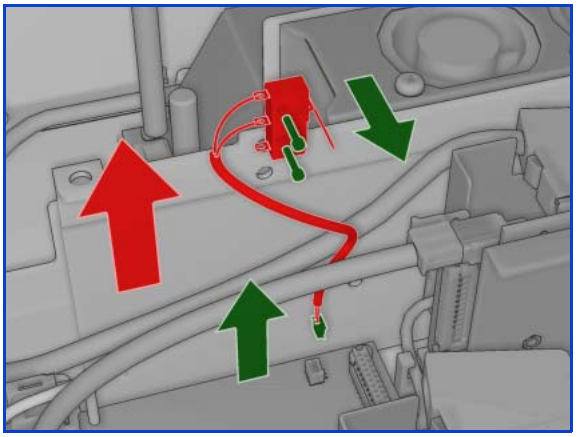
1. Open the Right Side Cover Window.



2. Open the carriage lid.



3. Remove the nine T15 screws of the carriage electronics cover and remove it.

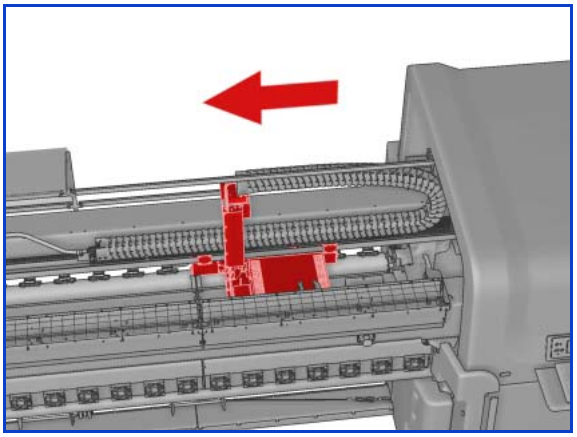


4. Disconnect the lid switch and remove the two T10 screws that secure the Carriage Lid Switch
5. Remove the switch with the cable.

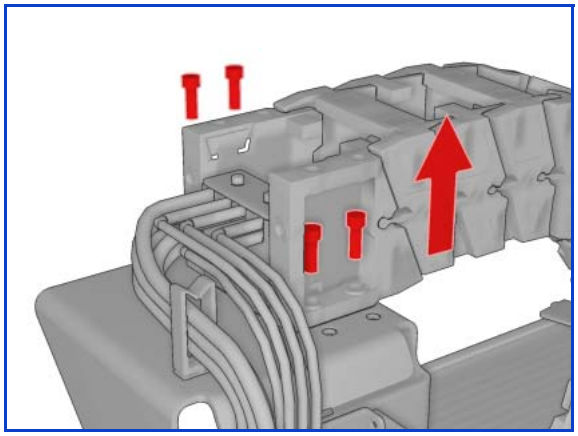
Carriage Tower Assembly

Removal

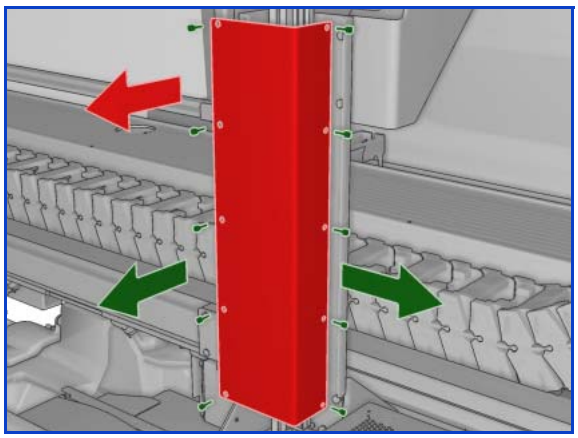
WARNING!: Switch off the printer and power enable switch.



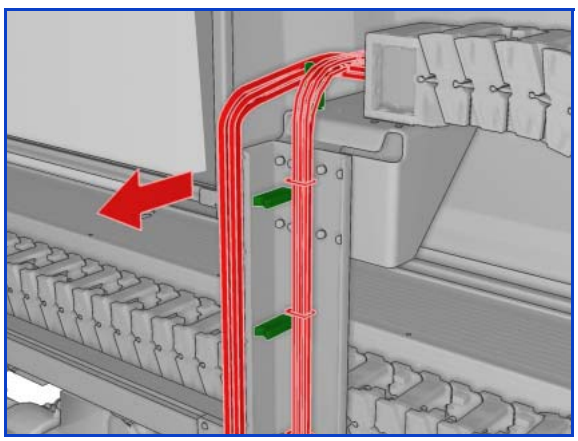
1. Remove the two right Center Covers and move the carriage to the 6.2 Repair position ⇒See page 430.



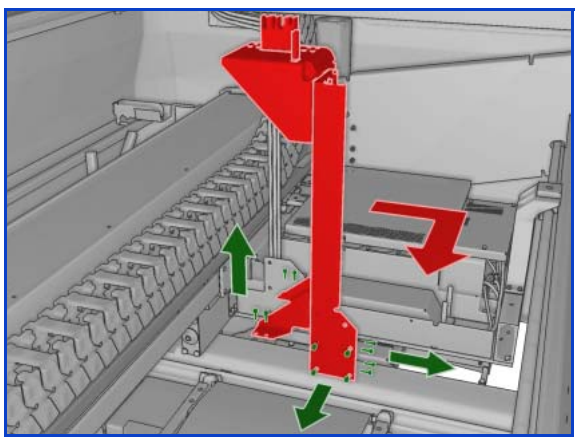
2. Remove the four T30 screws that secure the Carriage Chain.



3. Remove twelve T10 screws of the Carriage Tower Assembly to open the tower.



4. Unroute all the tubes and cables inside the Carriage Tower Assembly.



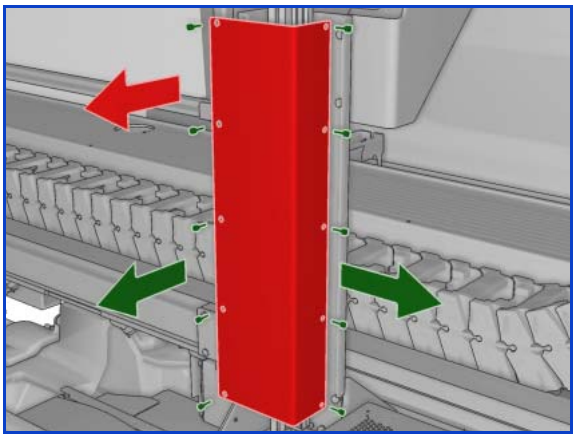
5. Remove the fourteen T20 screws that secure the Carriage Tower Assembly and remove it.

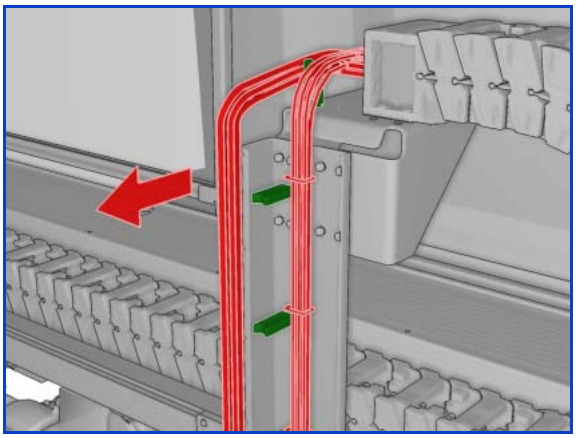
Carriage Assembly

Removal

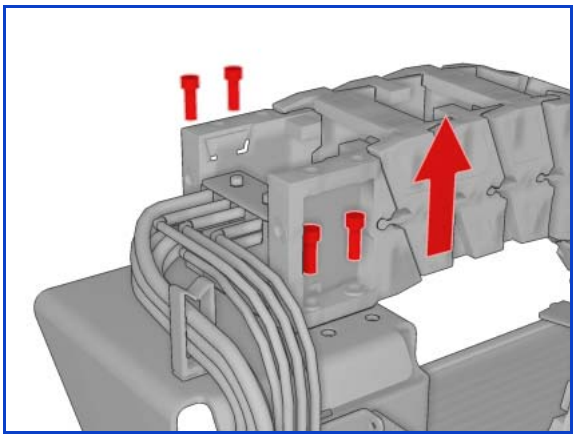
WARNING!: Switch off the printer and power enable switch.

1. Remove the printheads and store them in their caps.
2. Remove the ink system compartment ⇒See page 710.
3. Remove the Scan Axis Impelling Belt ⇒See page 714.
4. Remove twelve T10 screws of the Carriage Tower Assembly to open the tower.

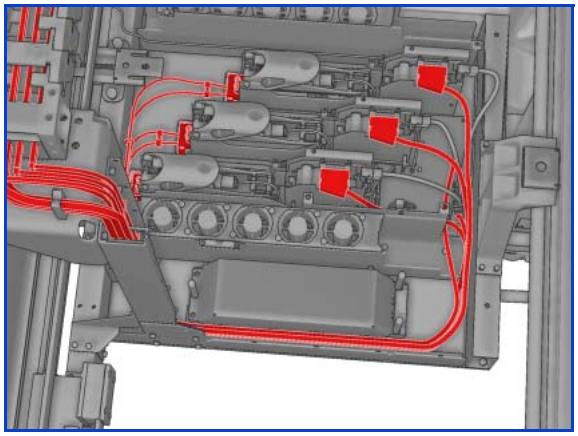




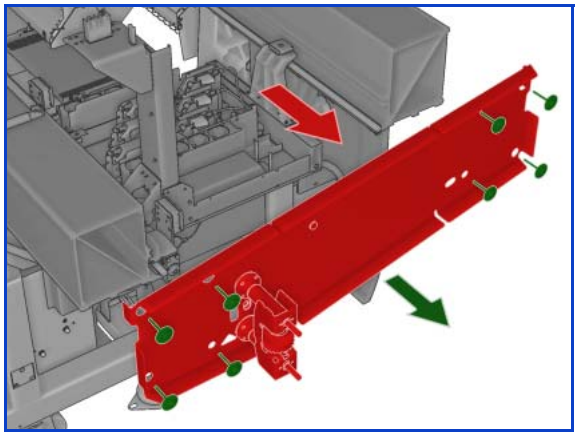
5. Unroute all the tubes and cables inside the Carriage Tower Assembly.



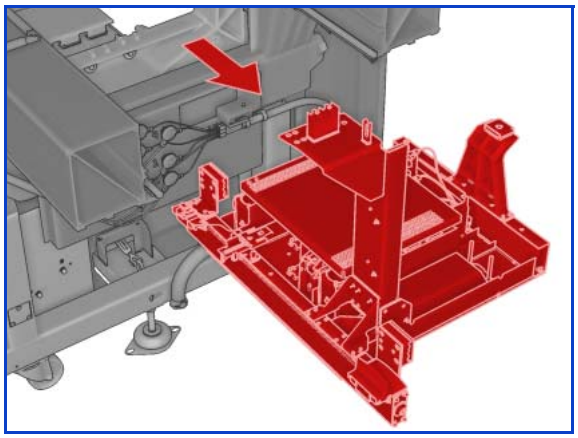
6. Remove the four T30 screws that secure the Carriage Chain.



7. Disconnect and unroute the trailing cables from the Carriage Printhead Interconnect to the chain assembly.
8. Disconnect and unroute the 42 V and 24 V power cables to the chain assembly.



9. Remove the left side plate of the scan axis.



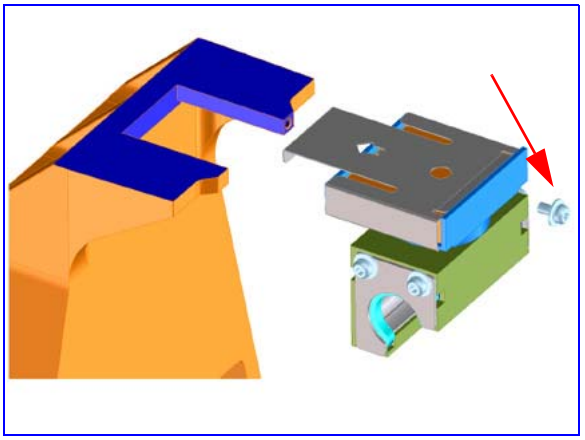
10. Slide out the carriage assembly. This part is heavy.

Front bushing Assembly

Removal

NOTE: Do not try to save time by just sliding out the bushng from the carriage, as you could damage the rear bushing, perform this procedure.

1. Remove the Carriage Assembly ⇒See page 774.



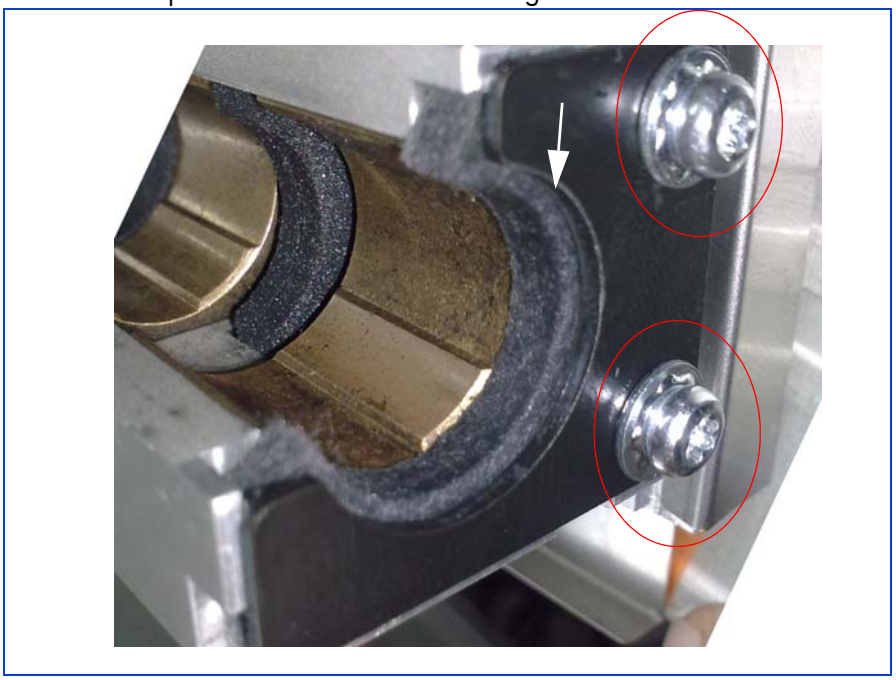
2. Place the Carriage on a table.
3. Remove the screw indicated here.
4. Remove the front bushing assembly.

Felts in the Carriage Bushing Assembly

- In case there is only the need to replace the wick material, refer to the Maintenance Guide, in the chapter 'Clean the carriage rails' under hardware maintenance. (operation can be done by the customer).
- In case there are the felts of the front or rear bushing that need to be replaced, use the following procedure:

NOTE: Do not try to save time by just sliding out the carriage, as you could damage the rear bushing, perform this procedure.

1. Remove the Carriage Assembly ⇒ See page 774
2. Place the Carriage on a table.
3. For the felt in the front bushing, unscrew the side metal plate which secures the felt in place at each side of the bushings.
4. For the felt in the rear bushing, return the carriage onto the table and unscew the side cover which secures the felt in place at the sides of the bushing



FI Tower

Removal

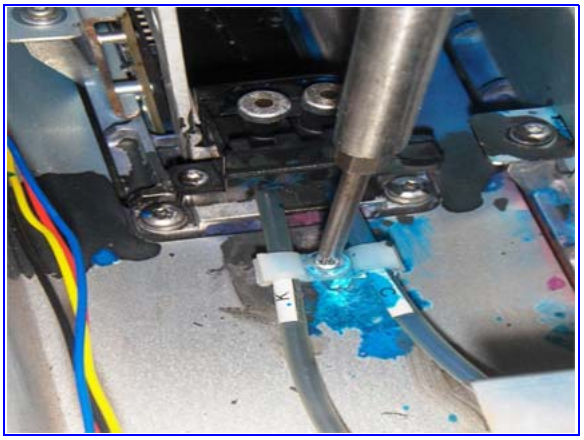
NOTE: The FI tower removal should be performed before purging the ink whenever possible. It is still possible to replace the FI tower after purging the tube, in this case:

- Switch off the printer normally through the on/off button in order to ensure that there is no ink pressure within the ink system. In case of any doubt, before opening the support of the FI tower, you can insert a syringe (with piston in place) within the FI tower to ensure that there is really no ink pressure (the piston does not move when there is no ink pressure).
- Use a cloth to absorb any drops of ink.
- It is not mandatory to remove the small bubble of air after having mounted back the FI tower (the bubble of air that can be taken by the Printhead without any problem is up to 20 cm / 8" in the tube).

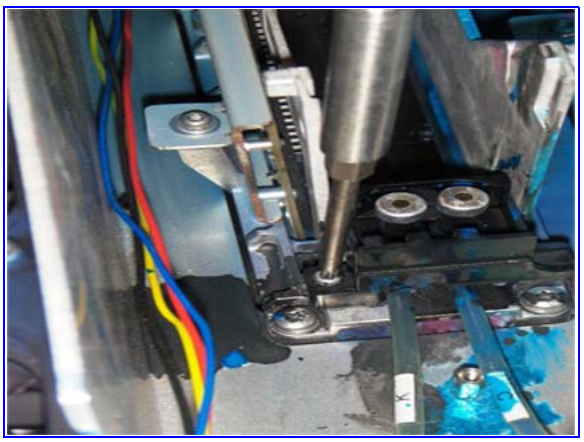
1. Turn on the printer in diagnostics mode.
2. Remove some screws and rotate the drying system.

3. Remove the central left transparent cover to access the carriage.
4. Select 'Carriage Menu' (#6) and 'Move to Repair Position' (#6.2) -> carriage will move to the left.
5. Switch off the printer.
6. Move the carriage manually until it is accessible through the central cover just removed.

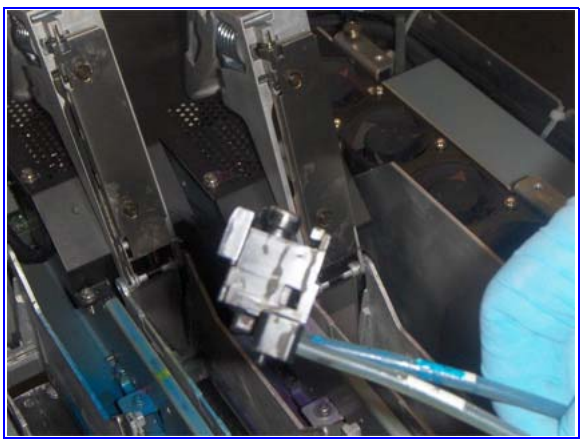
7. Remove the printhead and store them face down in the orange protection caps.



8. Remove one screw from the bottom plate and tube holder and remove the parts.



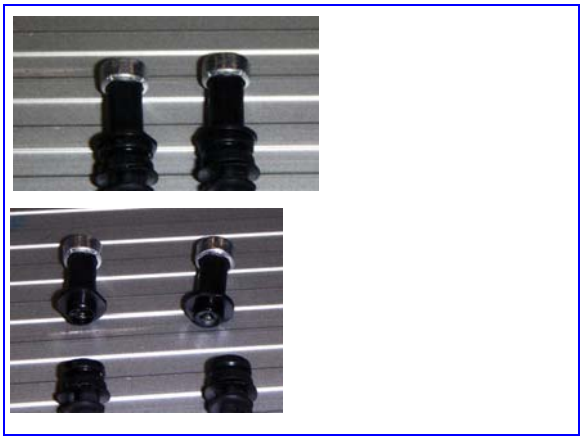
9. Remove one T10 screw from the FI holder.



10. Carefully disassemble the FI Cover,

11. The FI Cover has two snap fit parts.

Installation

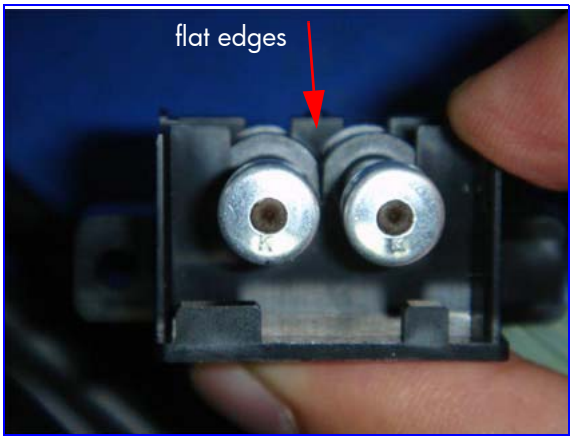


12. Disassemble the new FI Tower.

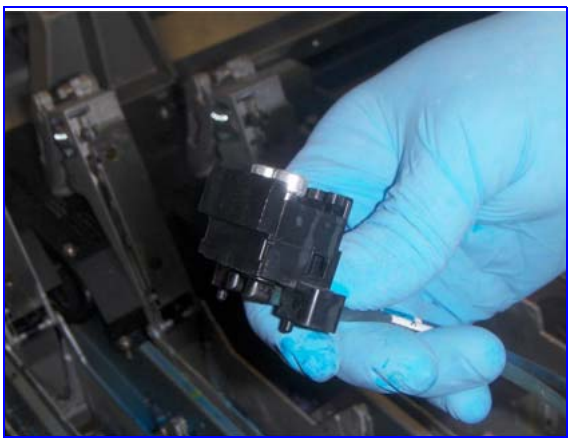
WARNING!: Do not remove the ink tube from the bottom of the FI tower.

13. Replace the FI tower with the new ones provided, the elbow with the fitting attached can remain attached to the tubes.

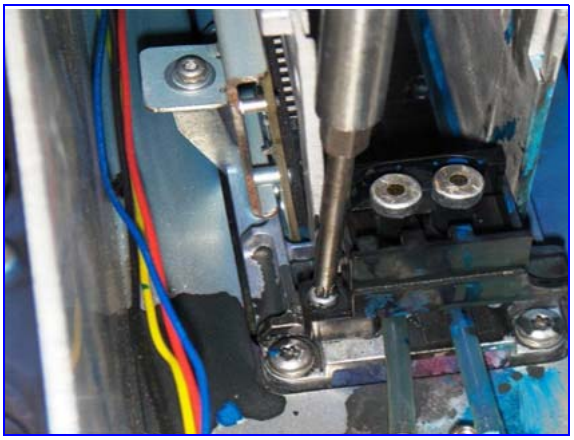
14. Install the FI Towers inside the FI Holder. At this point it is important to remember the position of the colors.



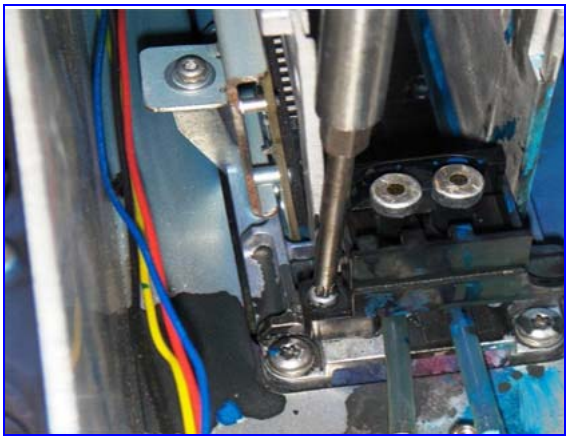
15. The orientation of the FI tower is very important. The flat edges must go together.



16. Assemble the FI Cover by snapping it together.

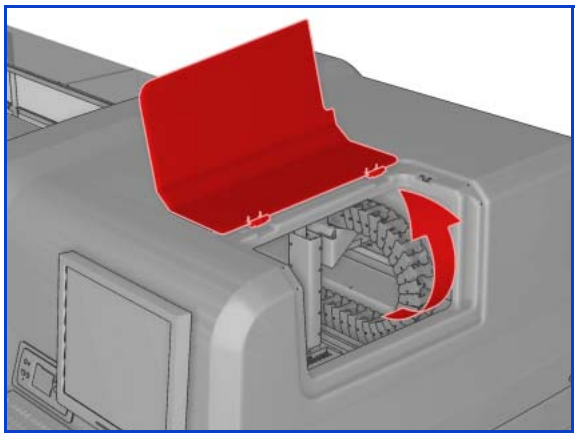


17. Install the FI Holder into the carriage assembly using a T10 screw.

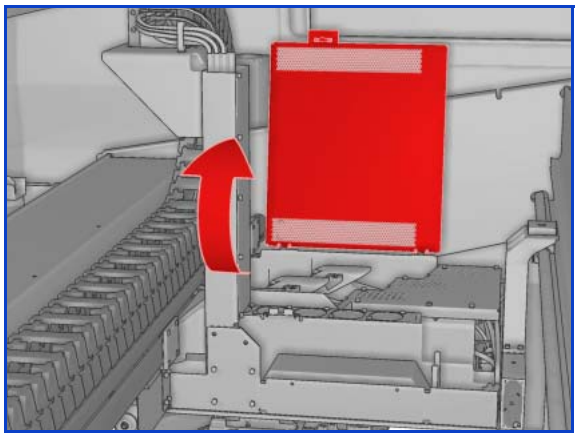


18. Install the bottom plate and tube holder and secure with a T8 screw.

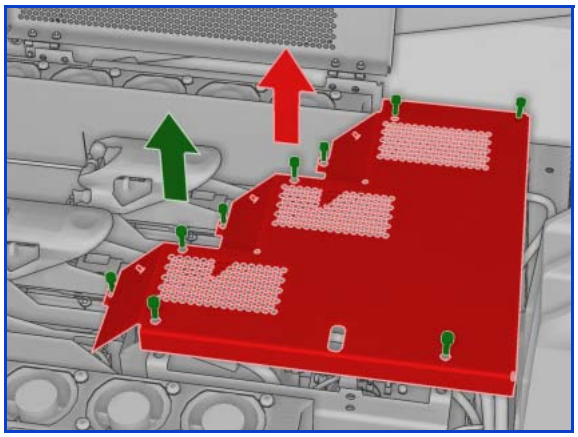
Printhead Interconnect Board Protection kit



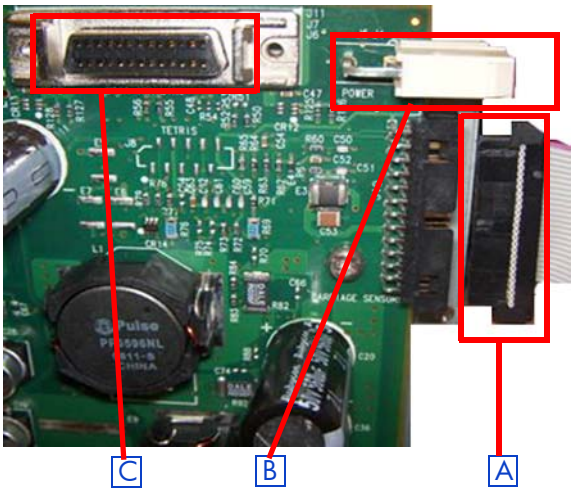
1. Open the Right Side Cover Window



2. Open the carriage lid..

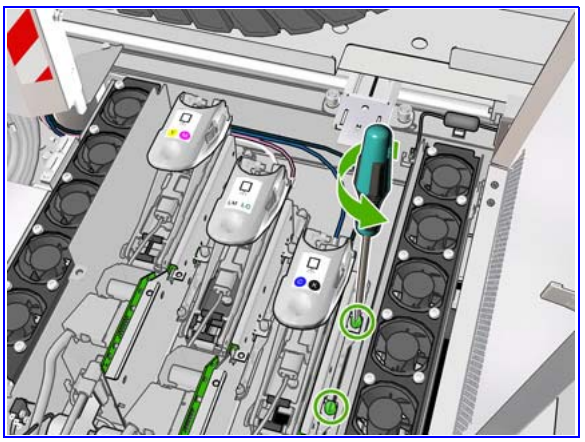


3. Remove the nine T15 screws of the carriage electronics cover and remove it.



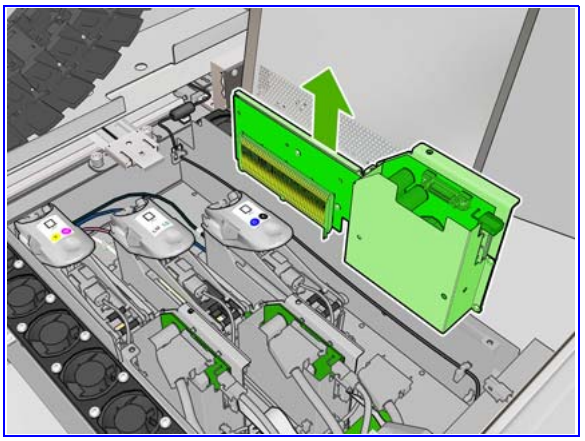
4. Disconnect the three cables from the Carriage Printhead Interconnect.
   a. Trailing cable (J11)
      Route: Upper PCI Board > Carriage Printhead Interconnect
   b. 42V power cable (J4)
      Route: Carriage Interconnect Board > Carriage Printhead Interconnect
   c. Data cable (J10)
      Carriage Interconnect Board > Carriage Printhead Interconnect

NOTE: One of the boards does not have the data cable connection from the Carriage Interconnect Board.

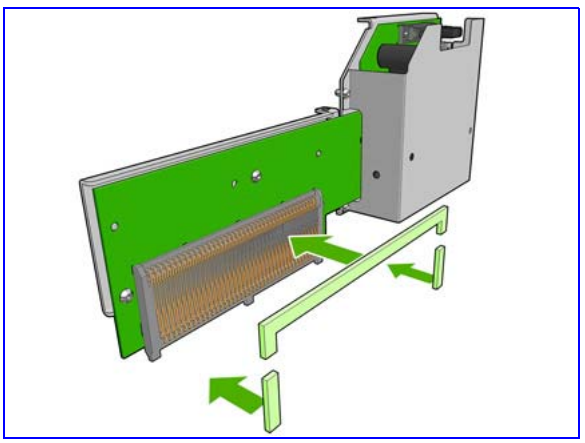


5. Remove two T-8 screws from the Carriage Printhead Interconnect.

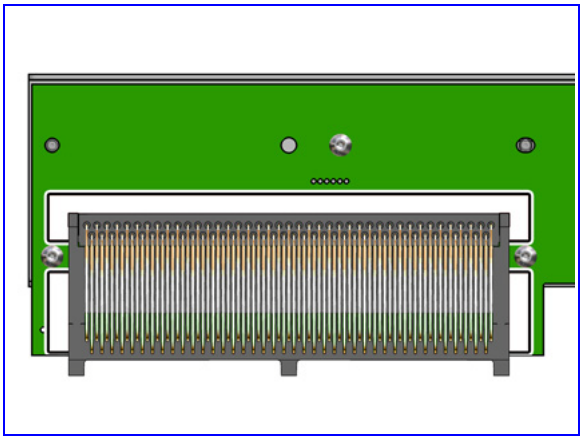
NOTE: These screws are self-locking and must be reused. Do not lose these screws!



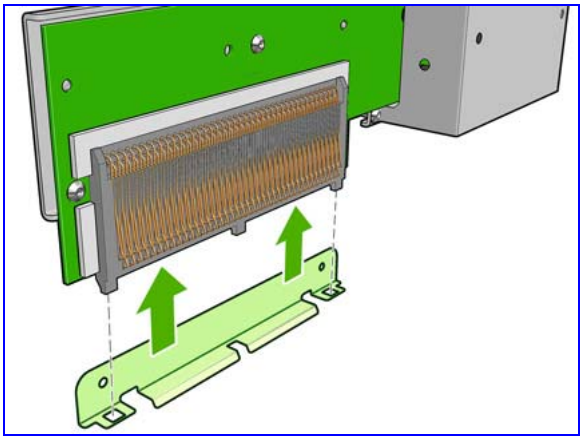
6. Remove it, tilting it slightly.



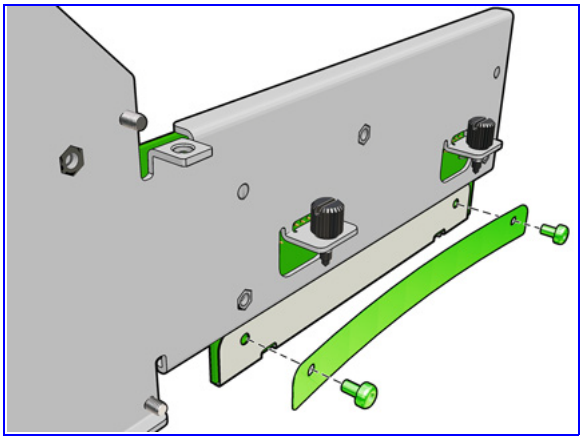
7. Install the protection foam pads on to the Carriage Printhead Interconnect.



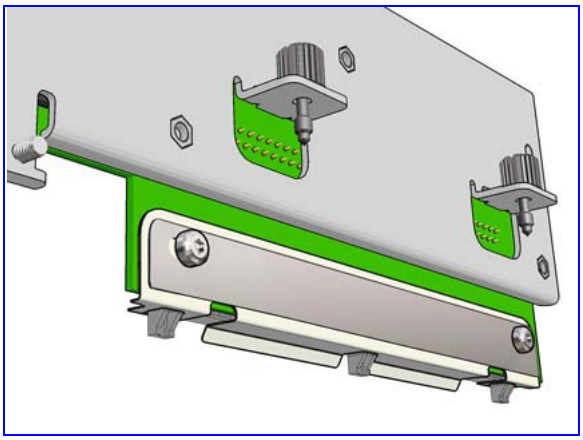
8. Ensure the foam pads are placed as shown in the picture.



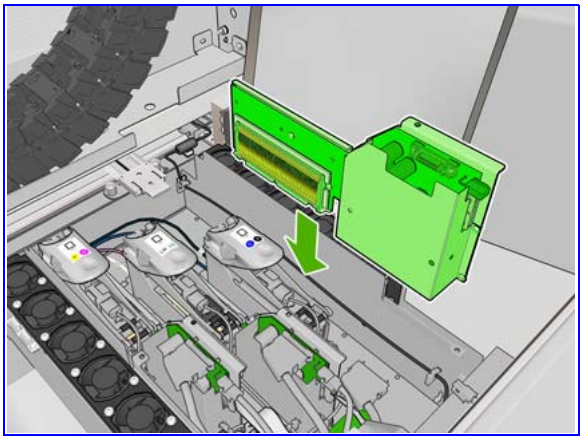
9. Install the dam protection on the Carriage Printhead Interconnect.



10. Install the spring leaf bracket over the top of the dam protection and secure with two screws.



11. Check the new parts are fully secured and installed correctly.



12. Install the Carriage Printhead Interconnect and secure with two T8 screws.

Dynamic TRS Replacement Procedure

Introduction

This procedure should only be followed when replacing the ink tubes that are held within the Igus Chain (support part number Q6702-67011) and when the 'preventive maintenance #5' message is displayed.

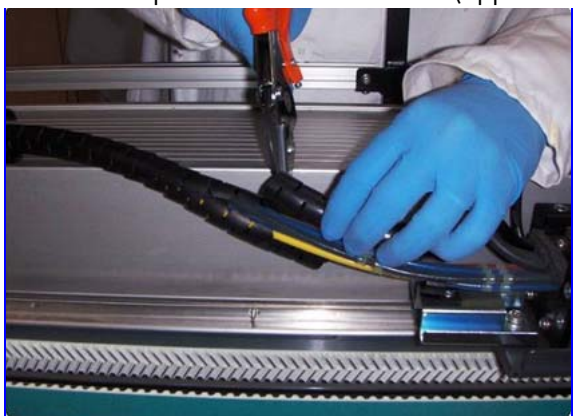
In order to complete this removal and installation procedure, you will also need to have the Tubes Cleaning Kit (Q6702-60690).

Removal

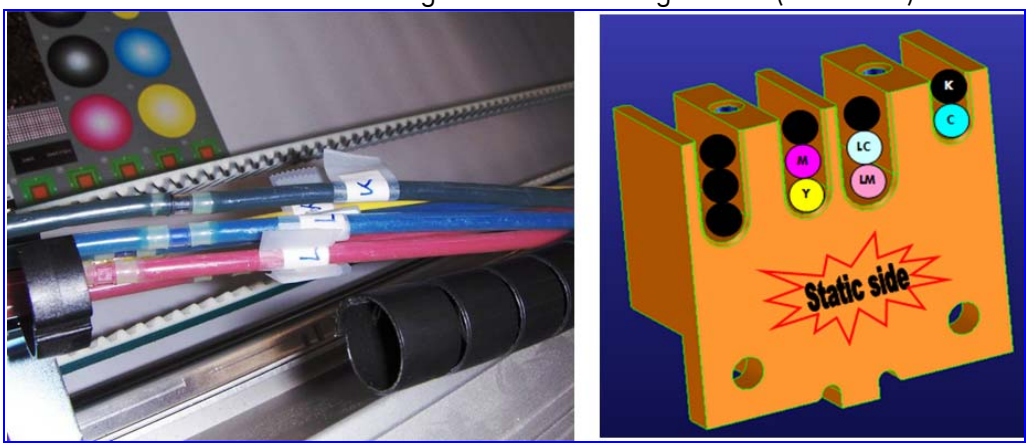
1. Start the printer in **Diagnostic Mode**. See ⇒ Service Manual: Tests and Calibrations
2. Select the Carriage Menu (number 6) and move the Carriage to the repair position (number 6.2) ⇒ see page 430.
3. Lift up the Drying System.
4. Remove the Central Covers ⇒ see page 573.
5. Remove the Left Covers ⇒ see page 565.
6. Restart the printer in **Diagnostic Mode**.
7. Remove all the Printheads and store them with the nozzles face-down into the orange protection caps.

⚠ **WARNING!:** Switch off the printer and power enable switch.

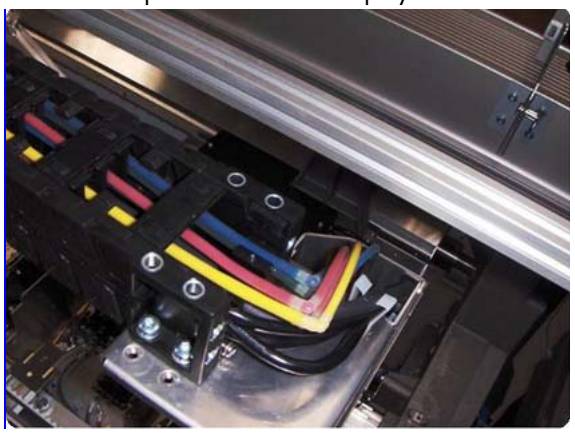
8. Cut the black protector at the TRS Static (approx. 10 cm) and keep it for later use.



9. Mark all the ink tubes at TRS Static within the portion of tubes that appear after removing the protector (previous step) with their corresponding color names. Do it visually after following the tube distribution into slots as shown here and taking into account that light colors (LM and LC) are in the third position.

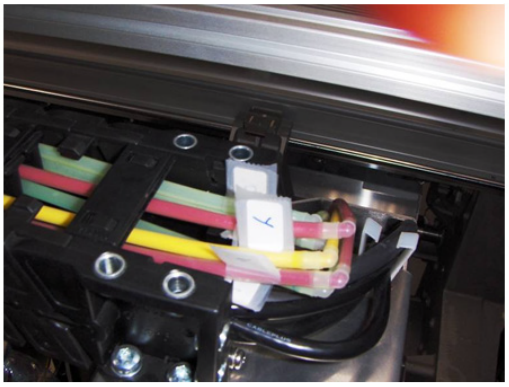


10. Remove the plate from the clamp system at the Tube Static side and Carriage Tower side.



11. Mark with the corresponding color name on each tube at the Carriage Tower side before and after the elbow fitting.

NOTE: Proceed as you did in the previous steps, but note the different color order due to the tube routing inside the chain.

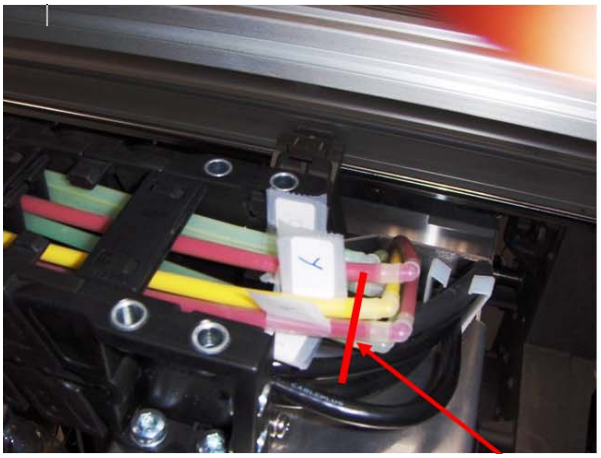


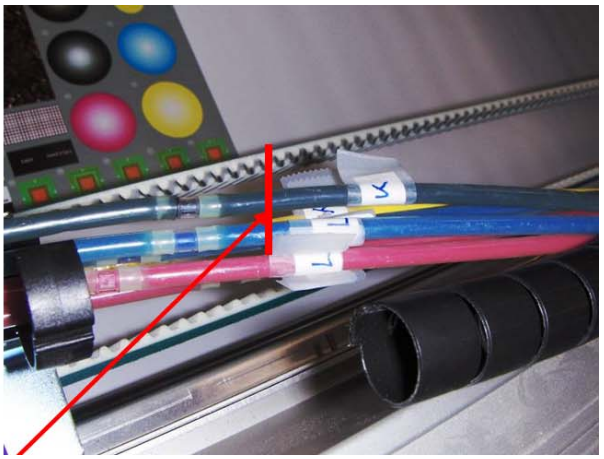
12. Disconnect the Quick Connector and connect the Flushing kit.

13. Perform the TRS Purge Procedure as described in the Service Manual: 'TRS Flush and clean a single ink system line'.

14. Once the tubes have been flushed (purged), disconnect the Quick Connector from the flushing kit.

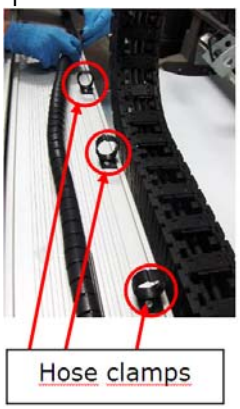
15. Cut the tubes to be replaced. Cut the tube between the color marking made previously and its fitting.



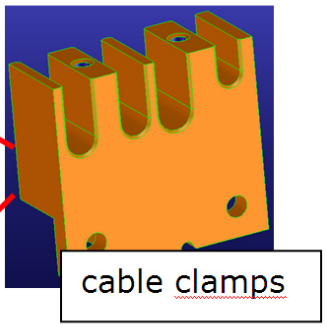


Cut here

16. Unscrew the Chain (only at the bottom fixing point and lay it back down on to the Tube Shelf in a straight position. Release the hose clamps on the beam as necessary to allow the chain to be moved backwards.

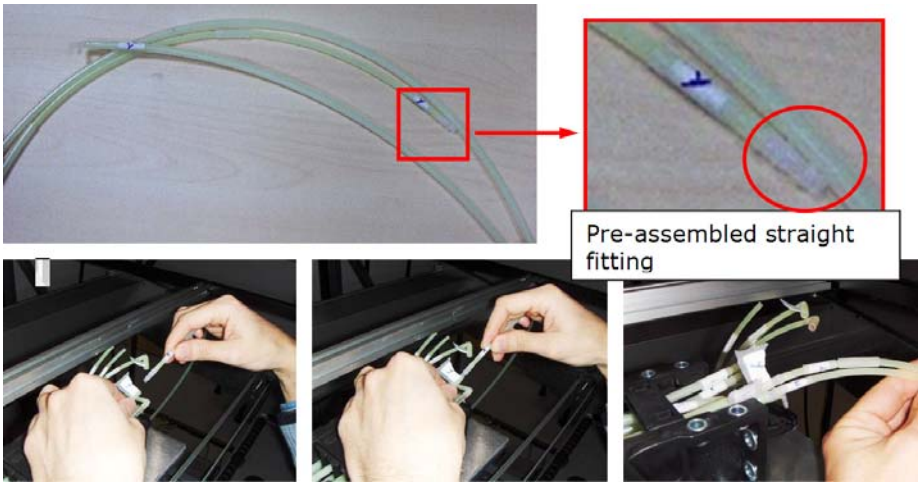


17. Replace both Cable Clamps.

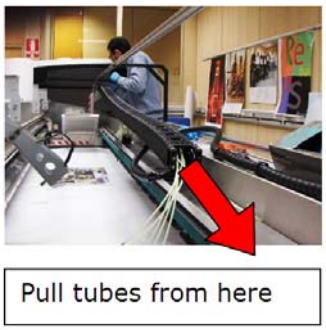


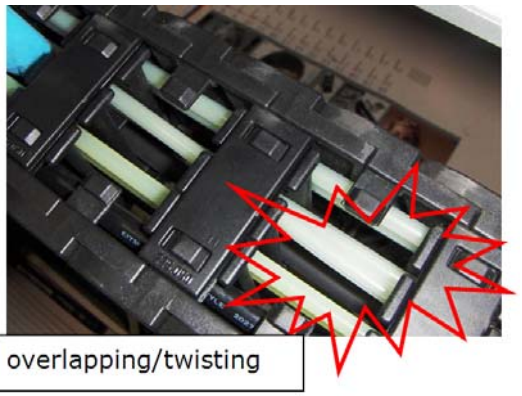
18. Take one pair of new tubes either:
    - Yellow and Magenta
    - Light Magenta and Light Cyan
    - Cyan and Black

    Join the pre-assembled straight fitting to the tubes to be replaced following the matching color marked. Perform this at the Carriage Tower Side.



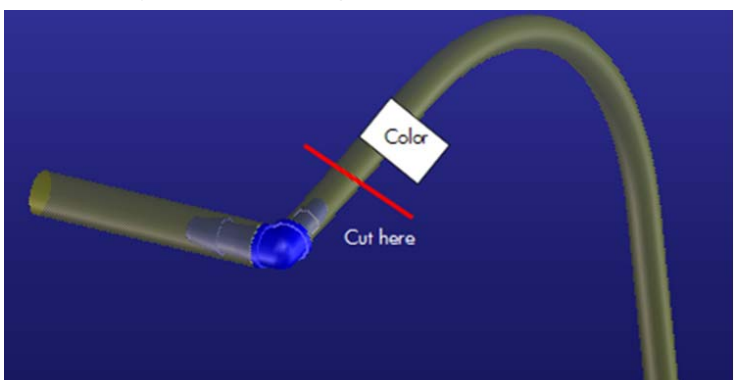
19. Pass the pair of service tubes through the chain by pulling from the replaced tubes making sure that the inner/outer position is kept and avoiding any overlapping.





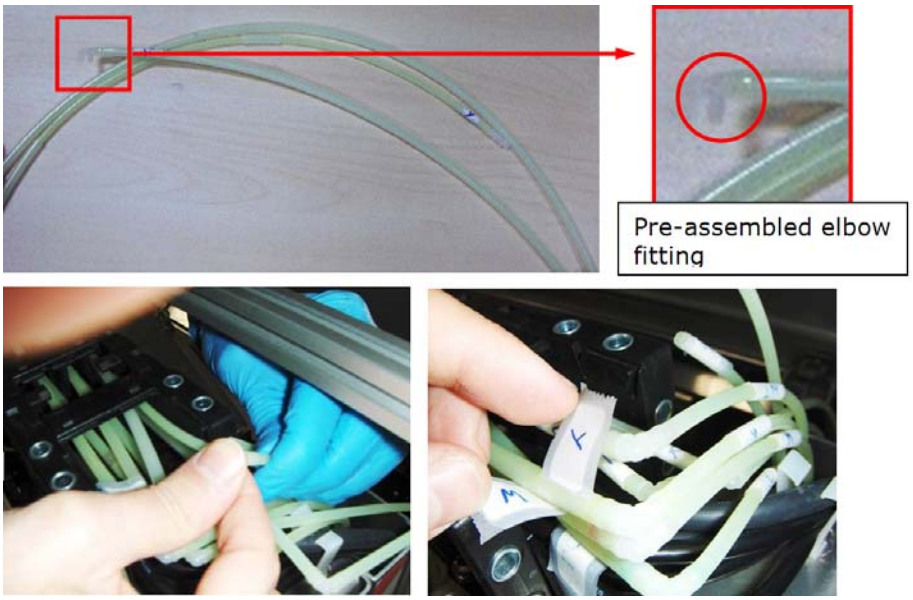
NOTE: Make sure that new service tubes do not get stuck due to the elbow fitting acting like a hook. also be careful not to step on the tubes damaging them.

20. Repeat steps 18 and 19 for the other pairs of tubes.
21. Cut the tubes coming through the Carriage Tower, just below the elbow making sure that the labeling with the color markings remains in the printer.



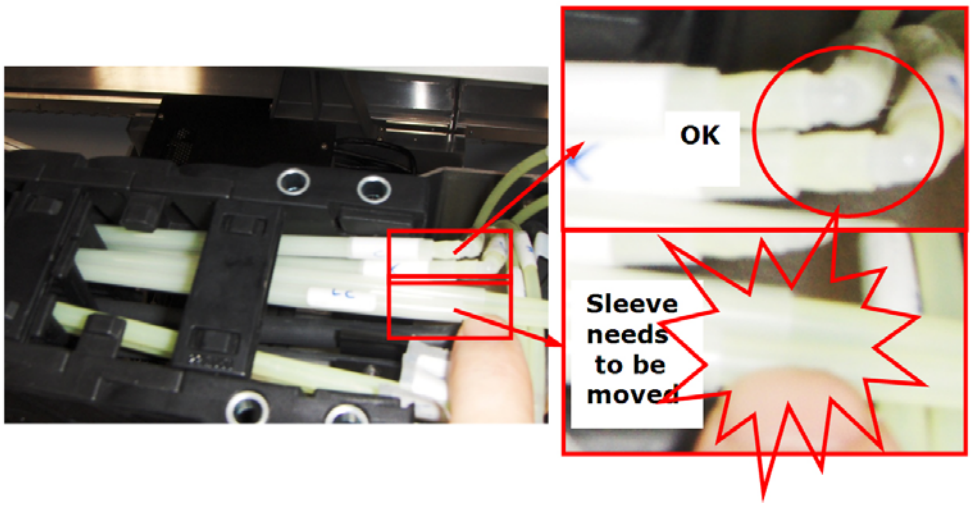
22. Connect the new set of tubes to the tubes going down the Carriage Tower (the ones just cut previously) using

the pre-assembled elbow fitting and making sure to match the color with the color indication labels.



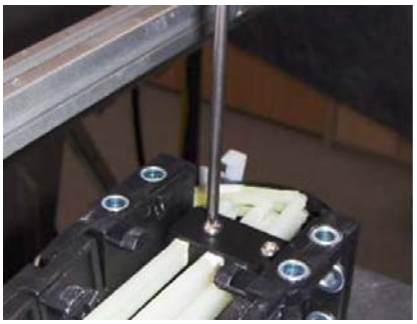
NOTE: The connection is difficult so hold firmly, connect the fitting and the tube as close to its end as possible to avoid any kinking during the insertion.

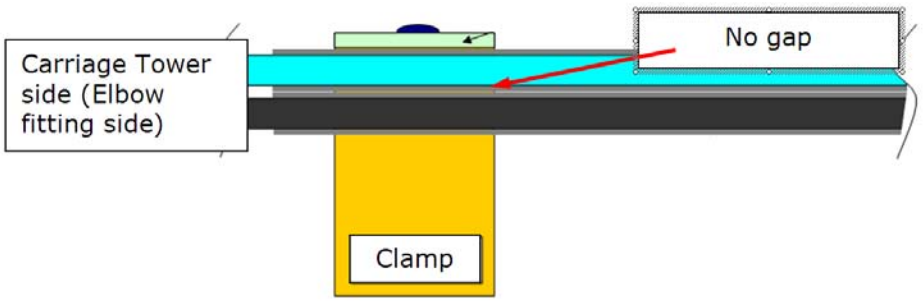
23. Pull the protection sleeve of the new tube so that it comes into contact with the new elbow fitting.



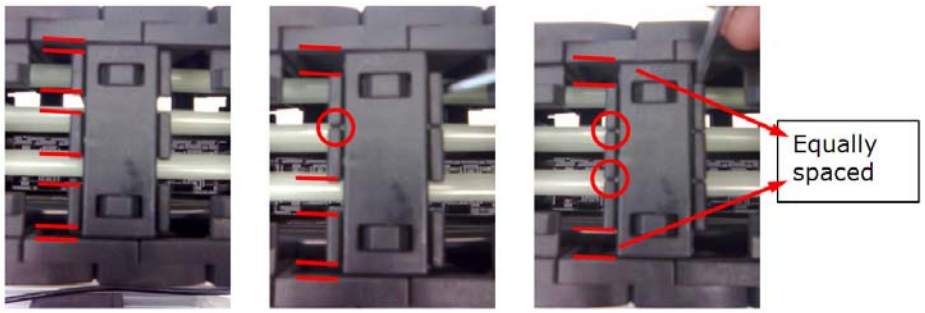
24. Position the tubes at the carriage side in relation to the clamp so that the other end of the sleeve is kept inside the chain and does not protrude from the last chain bracket.

25. Fix the clamp at Carriage Tower side holding the sleeve together with the tube. Ensure physical contact between plate and clamp so tubes and electrical cables are held tight (Note that the protection sleeve of the tubes will become noticeably deformed).

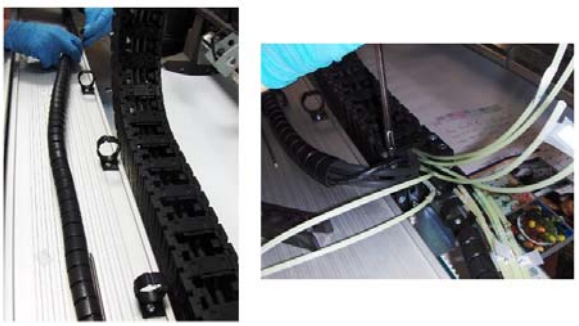




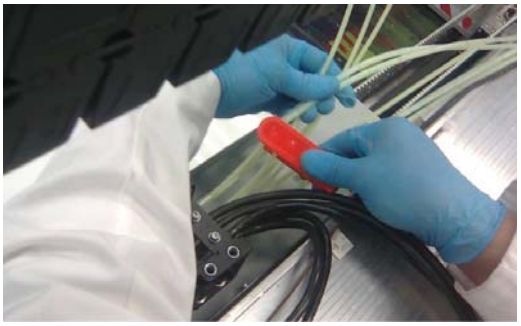
26. Make sure the tubes are not pinched with the vertical separators of the chain or overlapping with each other along all the chain length, reposition the verticals separators if required. To do this, move the vertical separators so they touch each other and gap until the chain border is the same at both sides.



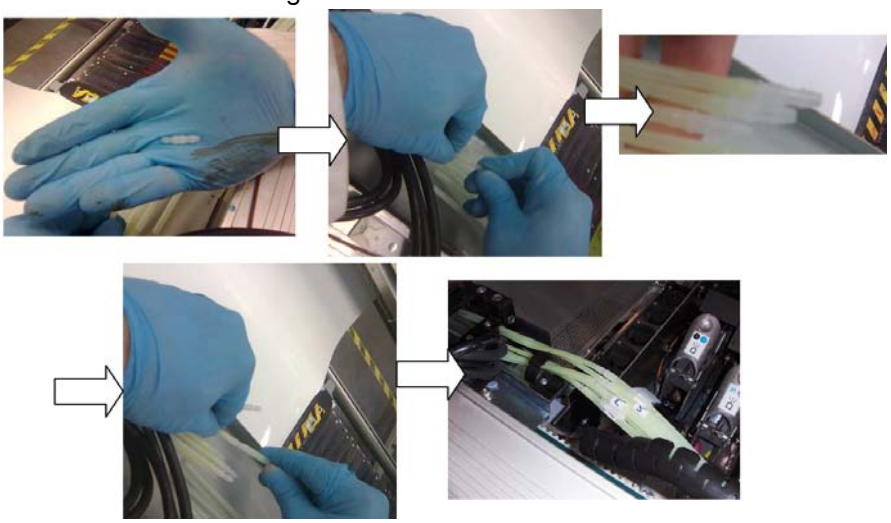
27. Cut the old tubes beyond the fitting and put the chain back to its original position.



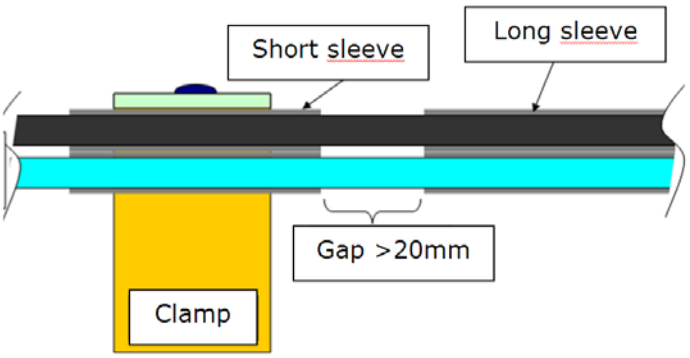
28. Preassemble the bottom clamp plate letting the tubes and cables move freely within the slots.
29. Decide the tube cutting position for a pair of tubes inside the chain presenting them with the mating ones from the tubes static side.



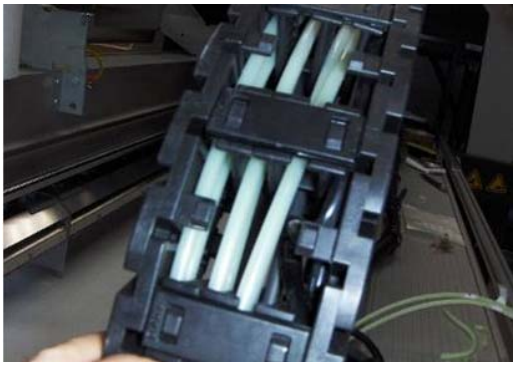
30. Cut the tubes and join them with the TRS Static ones, use the separate straight reducer fitting provided, be sure to take notice of the color markings on the tubes.



31. Repeat step 28 and 29 for all the remaining pairs of ink tubes.
32. Pull the inner tubes of the chain from the clamp so they just touch the intermediate shelf of the chain at the chain curvature with a minimum of looseness.
33. Pull the outer tubes of the chain from the clamp so they "gently" contact the inner tubes avoiding at the same time any overlapping at the chain curvature.
34. Fix the tubes/cables set in the chain input clamp using the short protection sleeve and making sure that there is a gap between that and the long protector sleeve.

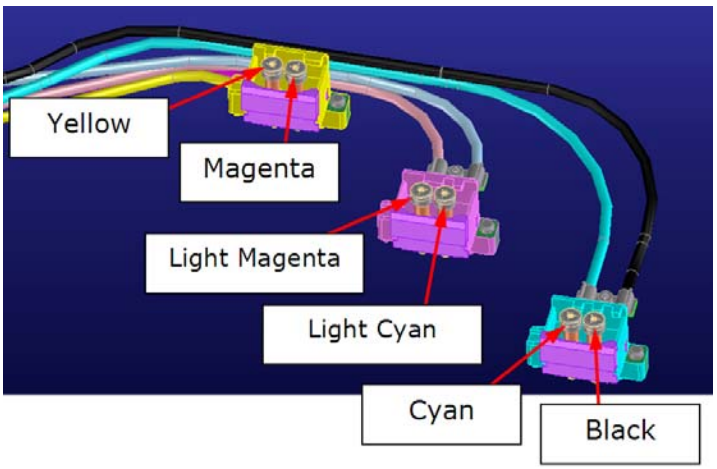


35. Move the carriage from one side of the printer to the other while checking that tubes are not twisted, overlapped with each other are pinched with the chain border or vertical separators. Adjust the vertical separators position as described previously if necessary.



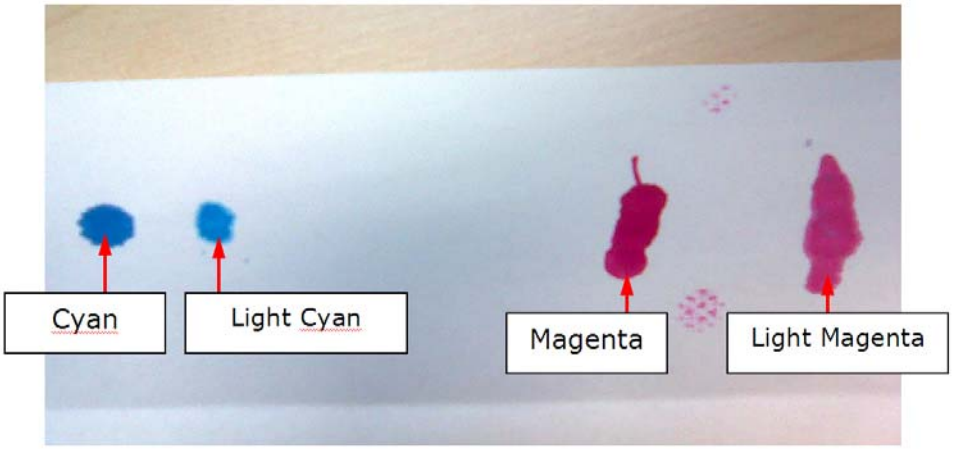
36. Add the section of the tube protector that was cut away previously from step 8.

37. Connect the Quick Connector of the TRS and ISM.
38. Switch on the printer in Diagnostics Mode (entry 0.3 Purge Printer Tubes)
39. Follow TRS Purging Procedure (DO NOT USE THE SET-UP PRINTHEADS BUT A NEEDLE-TUBE-BOTTLE SET FOR THE INK DUMP)
40. Extremely important: Confirm that the tubes are filled with the correct color:



41. To help distinguish between the Light Cyan and the Cyan and the Light Magenta and the Magenta, take a small amount of ink from the corresponding FI with the help of the syringe and place a drop on a plain paper. After letting the ink dry for a while, it will be clear to see the difference (shown below):

    TIP: The time the ink takes to dry will depend on the amount of ink, to speed up the process try folding the paper a few times.



NOTE: If any mismatching is detected, TRS Flushing and purge must be performed again and the mixed tubes corrected.

42. Reinstall the Drying System
43. Reinstall the Central Covers
44. Insert back the Printheads and restart the unit in printer mode (from diagnostic boot mode, 0.6 Force Normal Boot, and restart the printer).
45. Reset the tubes counters (from service menu, run '3.0.5 Reset PMK5) and do a printhead alignment.
46. In case of important number of nozzles out, perform hard cleaning to recover them.

Printhead Cleaning System

Printhead Cleaner Roll Assembly

Removal

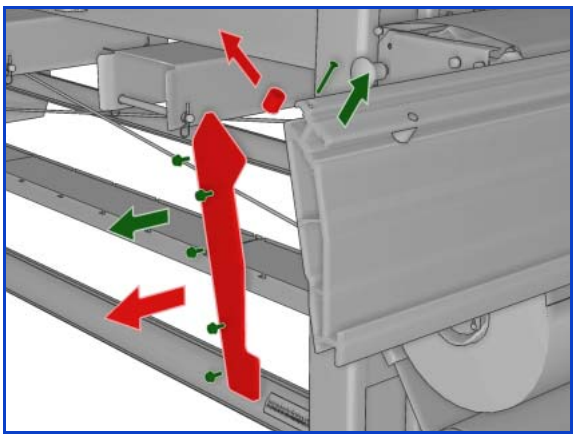
WARNING!: Switch off the printer and power enable switch.

1. Remove the printhead cleaner roll.

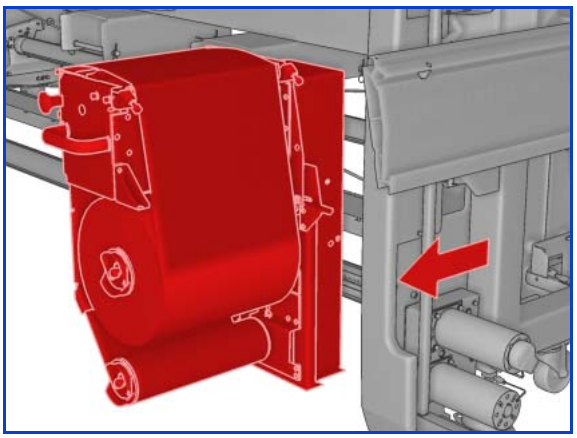
NOTE: It is recommended that you unload the printhead cleaner roll to avoid damaging the assembly.

2. Disconnect all power and data cables the connect the Printhead Cleaner Roll Assembly to the rest of the printer.

NOTE: These cables are located on the rear-right of the assembly.



3. Remove the five screws that secure the end plate and remove it.
4. Remove the screw stop for the roller and remove the roller.



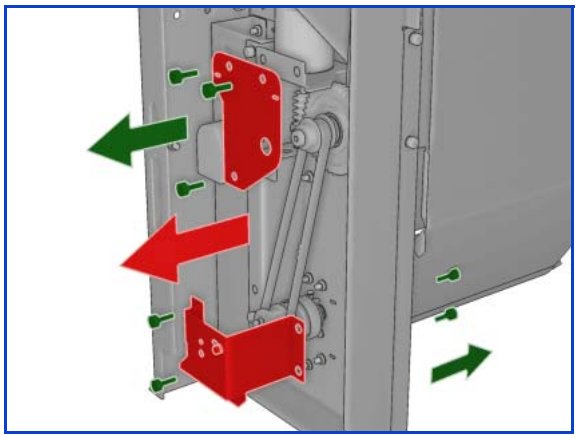
5. Completely remove the entire Printhead Cleaning Assembly.

Printhead Cleaner Roll Belts Set

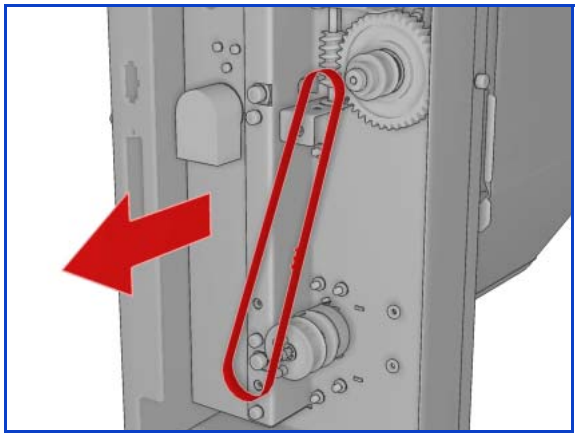
Removal

WARNING!: Switch off the printer and power enable switch.

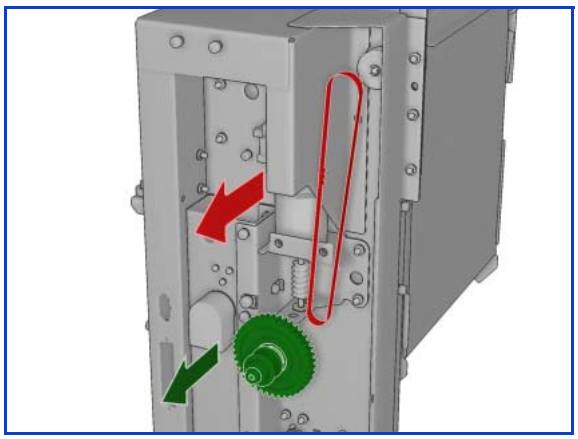
1. Remove the Printhead Cleaner Roll Assembly ⇒See page 794.
2. Remove the Right Side Rear Panel ⇒See page 567.
3. Remove the seven TXYZ screws that secure the two gear covers.



NOTE: Two of the screws must be accessed from the other side, as shown in the graphic.



4. Remove the lower belt.



5. Remove the upper belt together with the driver gear.

NOTE: Keep all of the gears together, as a small pin may fall away.

Installation

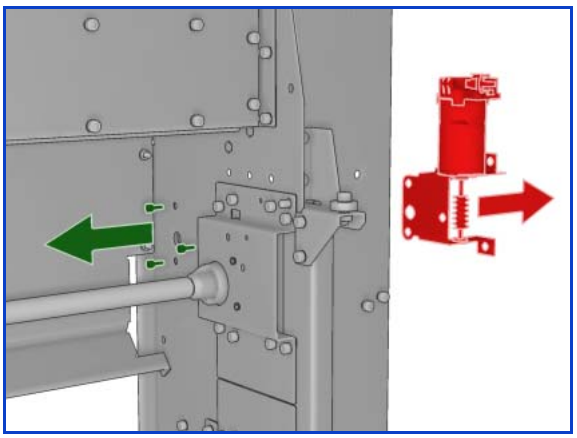
1. Place the bottom belt to tension.

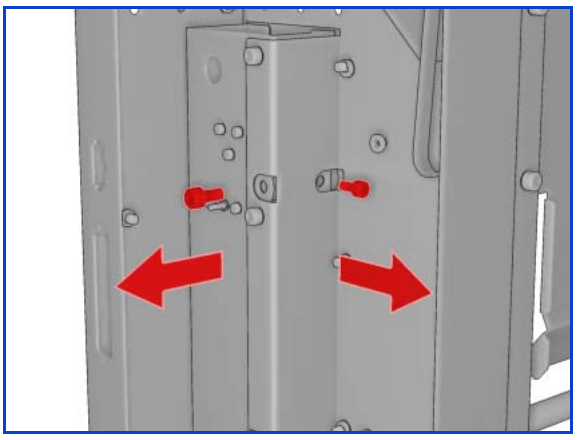
Printhead Cleaner Roll Driver Assembly

Removal

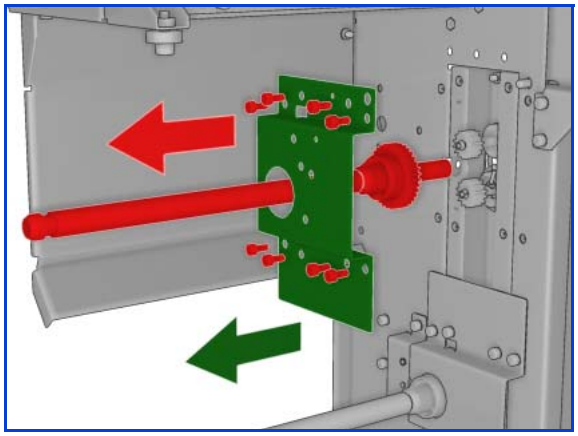
> **WARNING!:** Switch off the printer and power enable switch.

1. Remove the Printhead Cleaner Roll Assembly ⇒See page 794.
2. Remove the Printhead Cleaner Roll Belts Set ⇒See page 795.
3. Disconnect the advance motor cable from the motor.
4. Remove the three TXYZ screws that secure the advance motor and support and remove them together.





5. Remove the two TXYZ screws that secure the spindle from behind.



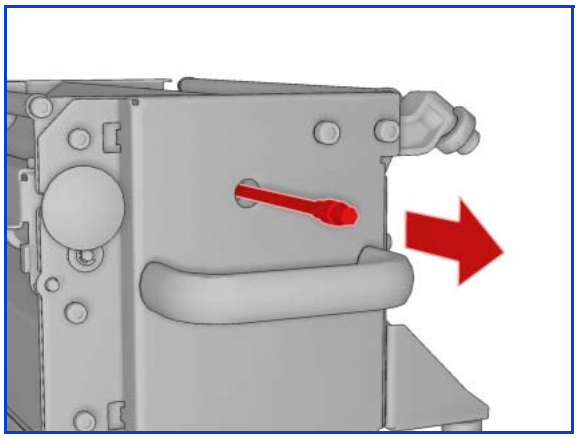
6. Remove the eight TXYZ screws that secure the transmission housing and remove it together with the spindle.

Printhead Cleaner Roll Rubber Roller

Removal

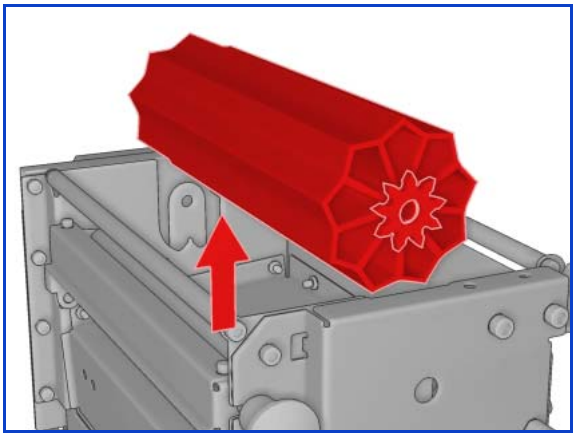
WARNING!: Switch off the printer and power enable switch.

1. Remove the Printhead Cleaner Roll Assembly ⇒See page 794.
2. Locate a MH7 driver like the one shown in the graphic. Any other kind of driver will not be able to access the Rubber Roller spindle.



3. Unscrew the Rubber Roller spindle and remove it.

NOTE: The spindle must be unscrewed with a XYZ mm socket wrench, placed through the hole shown in the graphic.



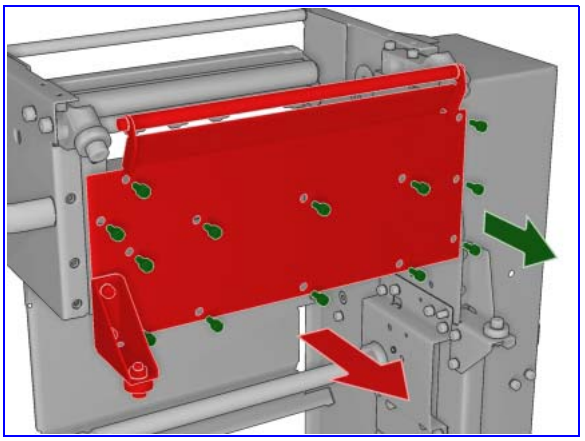
4. Remove the rubber roller, lifting it straight up.

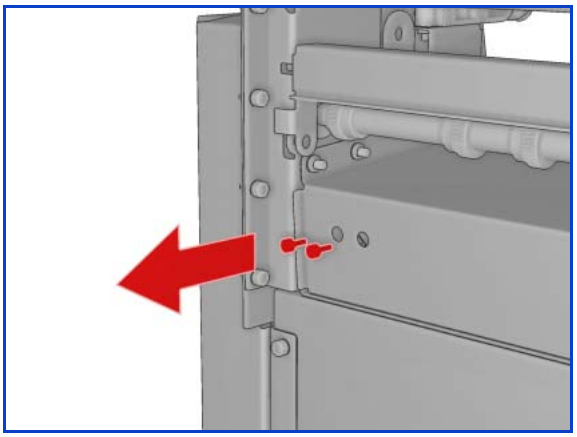
Printhead Cleaner Roll Rubber Roller Up/Down Assembly

Removal

NOTE: Switch off the printer and power enable switch.

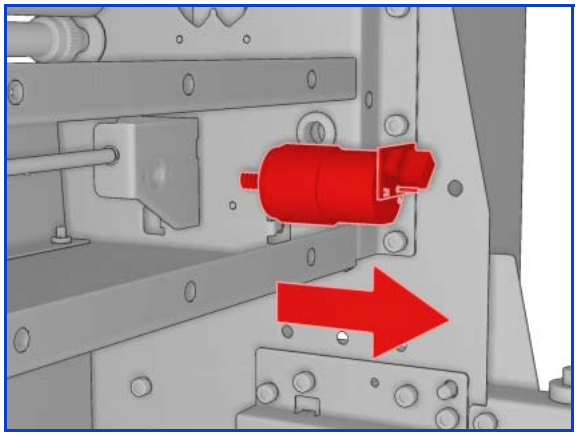
1. Remove the Printhead Cleaner Roll Assembly ⇒See page 794.
2. Remove the thirteen TXYZ screws that secure the sideplate.
3. Disconnect the Rubber Roller motor cable.





4. Remove the two screws that secure the Rubber Roller motor.

NOTE: These to screws are accessed through the holes shown in the graphic.



5. Remove the rubber roller motor.

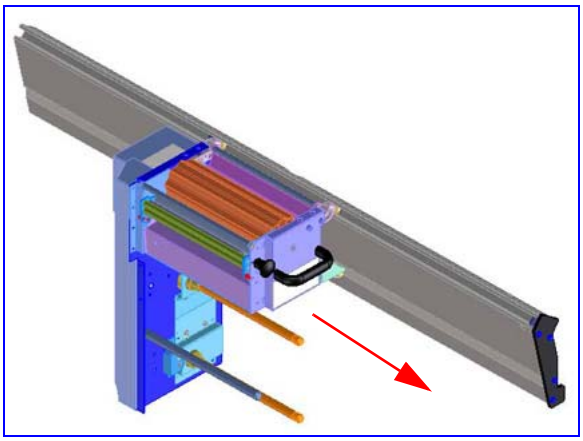
Installation

6. Perform the reset procedure '3.7.1 Up/Down assembly'⇒ page 501

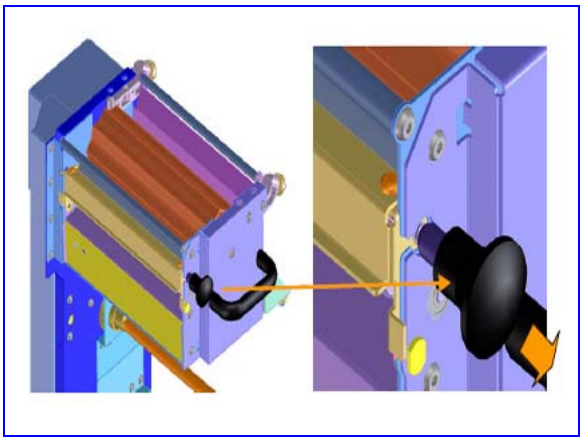
Printhead Cleaner Roll Pinch Assembly

Removal

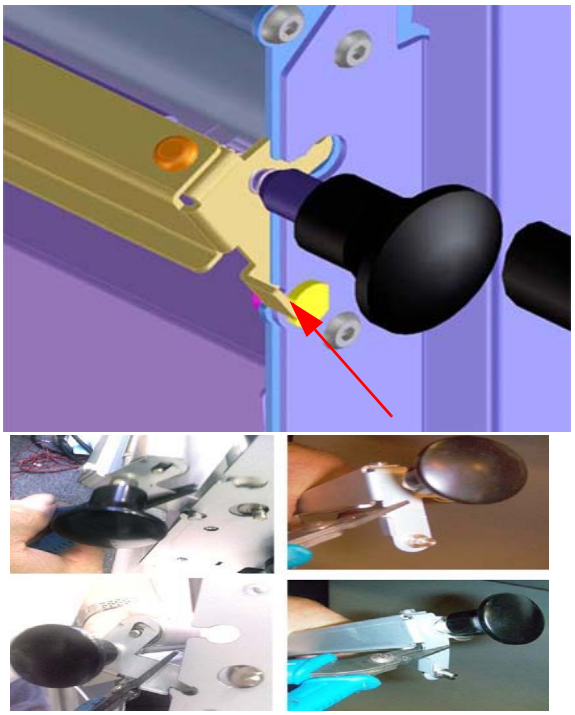
WARNING!: Switch off the printer and power enable switch.



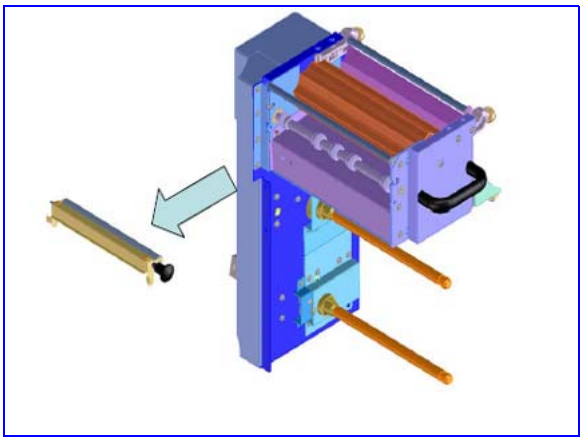
1. Remove the Web Wipe Module, disconnecting the cables as you remove.



2. Pull the black knob to open the pinch assembly.



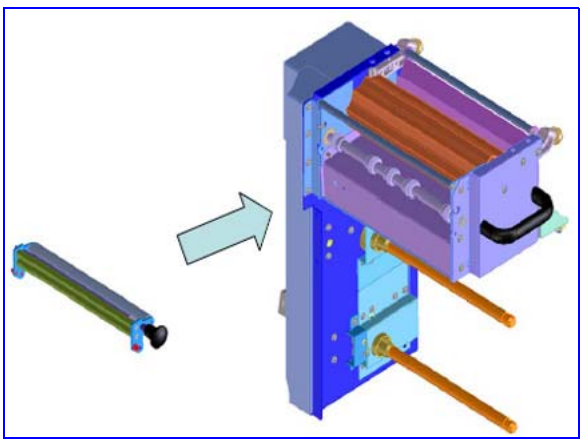
3. Use pliers to bend the sheet metal near to the hinge.



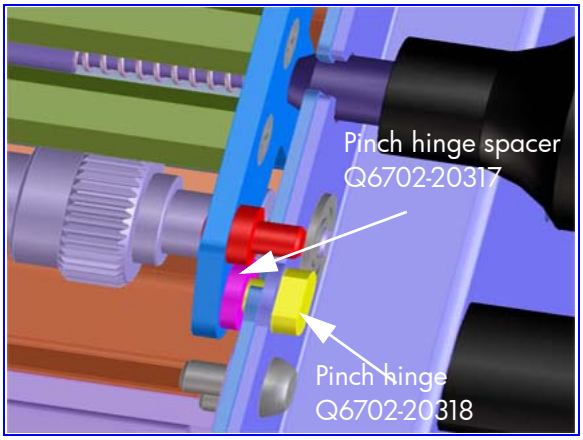
4. Remove the Printhead cleaner Roll Pinch Assembly.

Removal

WARNING!: Switch off the printer and power enable switch.



1. Insert new Printhead Cleaner Roll Pinch Assembly.

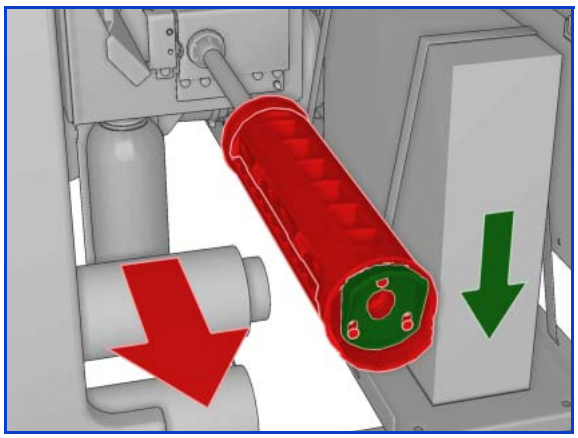


2. Add spacer Q6702-20317 in between Pinch assembly and the Web Wipe assembly, and screw in the Pinch hinge.

Printhead Cleaner Roll Support Kit

Removal

WARNING!: Switch off the printer and power enable switch.



1. Slide the retainer to free the Printhead Cleaner Roll Support Kit.
2. Slide the support kit off the spindle to remove it.

Printhead Cleaning System Encoder

NOTE: There are 2 different versions of the Printhead Cleaning Encoder. Described below is the replacement procedure for both types.

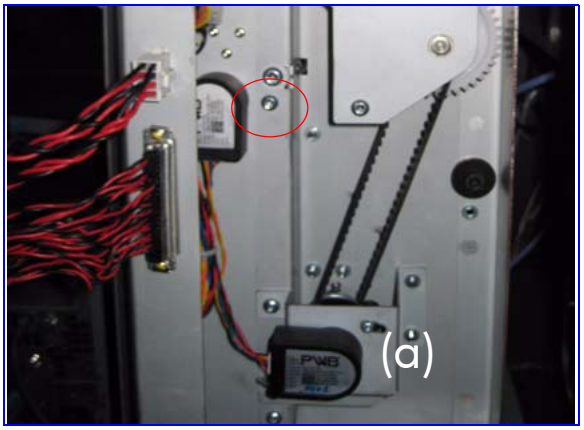
NOTE: The lower encoder reader (a) is no longer used, on new printers this part will not be present.

Removal of the old type of encoder

WARNING!: Switch off the printer and power enable switch.

CAUTION: Before installing a new Encoder Reader onto the Printhead Cleaner Roller, DO NOT remove the red tab from the component. This should only be removed once the part is completely installed.

1. Remove the Right Side Rear Panel ⇒ page 567
2. Remove the screw (T25).



3. Disconnect the cable from the Encoder.

4. Slide the bottom part of the encoder around in the direction shown to remove.

Installing the old type of Encoder

1. Place the new encoder in position on the Printhead Cleaner Roller Assembly, in the orientation shown, and push firmly in place.

2. Slide the bottom part of the encoder in the direction shown, to lock the part in position.

3. Remove the red tab from the encoder reader.

> ⚠ **CAUTION:** If the red tab is removed before step 7, the new encoder disc will be incorrectly placed in the Encoder Reader, which will create intermittent printhead cleaning roller jams. The part might work without any problem for days. and the specific tests available from diagnostics will not detect this intermittent failure.

4. Push firmly in the Encoder housing.

5. Reconnect the cables below to the encoder reader.

NOTE: Once the Encoder Reader is removed, the same one cannot be replaced again, it is not designed to be reused.

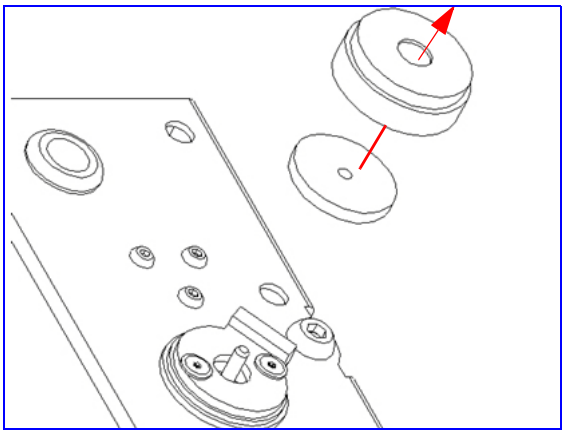
6. Reinstall the T25 screw.

NOTE: The lower encoder reader is no longer used

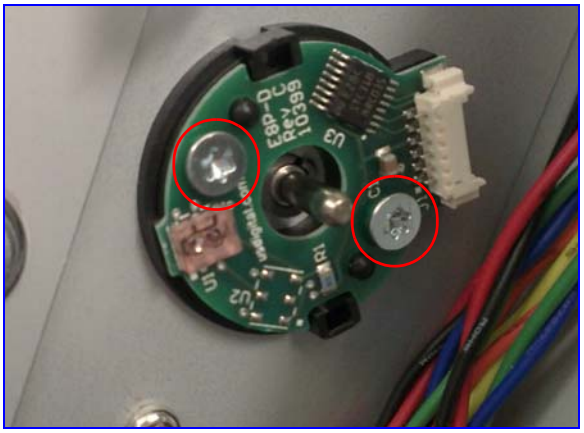
Removal of the new type of encoder

Use this procedure for removing the new type of encoder.

WARNING!: Switch off the printer and power enable switch.



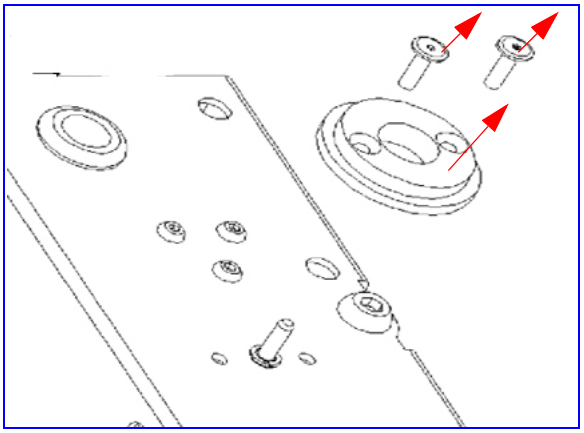
1. Remove the Right Side Rear Panel ⇒ page 567
2. Disconnect the cable from the encoder.
3. Remove the new type of encoder.



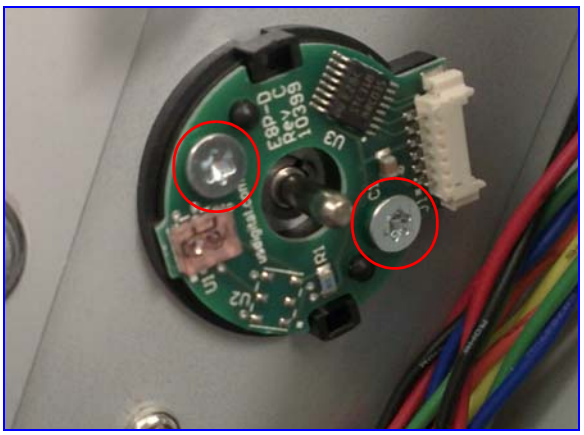
4. Remove two screws that secure the new type of encoder mount to the printer, and remove the mount.

Installing the new type of Encoder

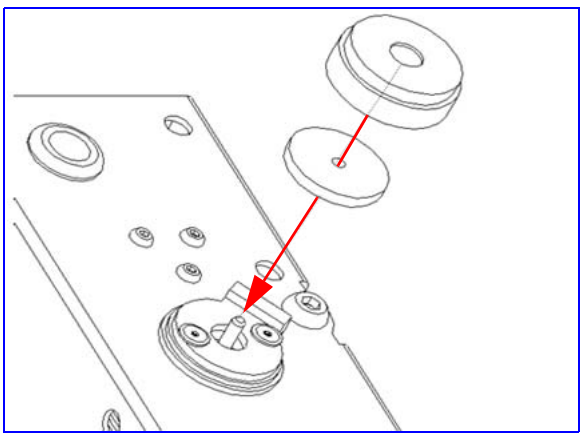
Use this procedure for installing the new type of encoder.



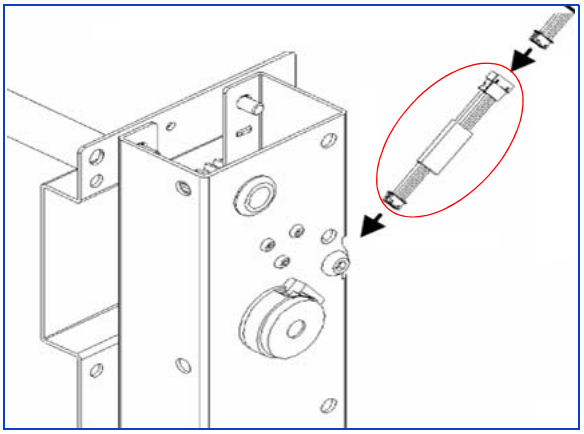
1. If the printer had the old type of encoder previously, remove two screws that secure the old type of encoder mount from the printer, and remove the mount.



2. Using two screws install the new type of encoder mount to the printer.



3. Install the new type of encoder.

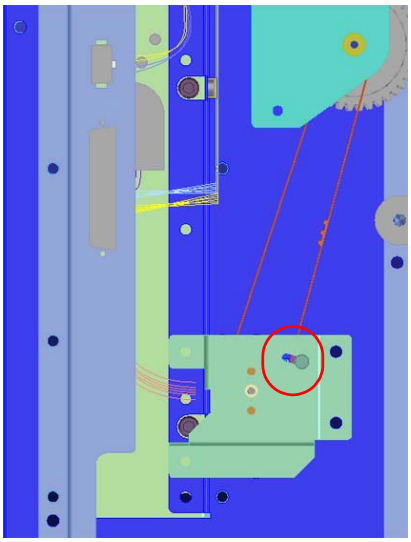


4. If the printer had previously installed an old version of the encoder a cable adapter is required for the encoder cable, otherwise the cable should connect with no issue. Note: The cable is supplied with the encoder service part.

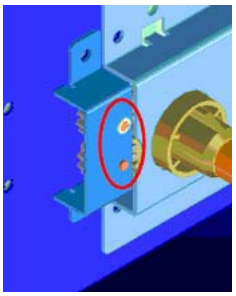
Lower gears in the Printhead Cleaner Assembly

Removal

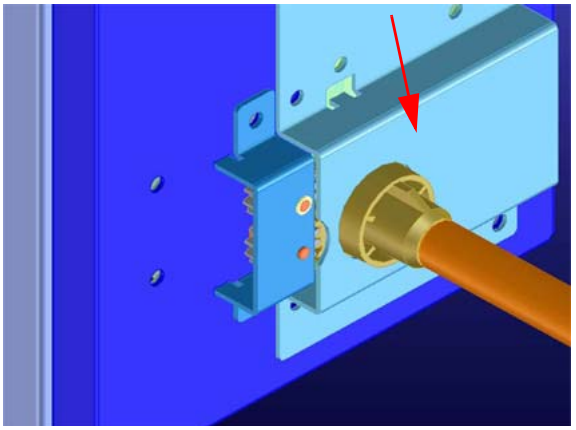
WARNING!: Switch off the printer and power enable switch.



1. Loosen the screw indicated to loosen the belt tensioner

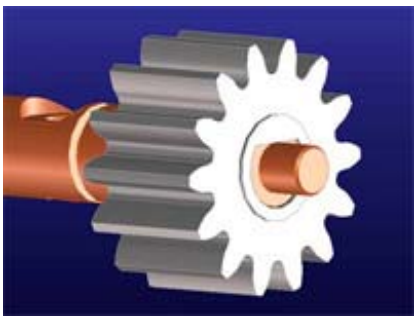


2. Remove the cover from the two lower gears.



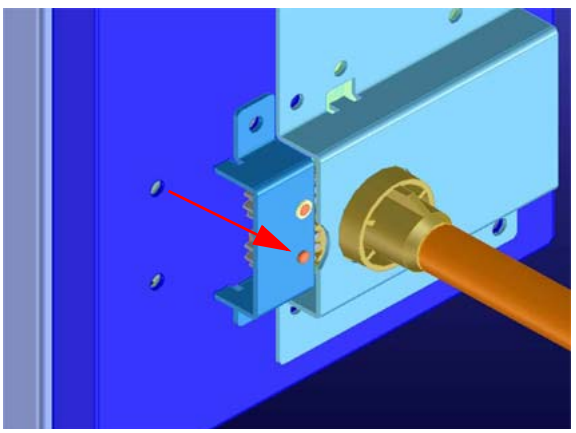
3. Remove four screws to remove the cover indicated.
4. The two lower gears can now be replaced.

Installation

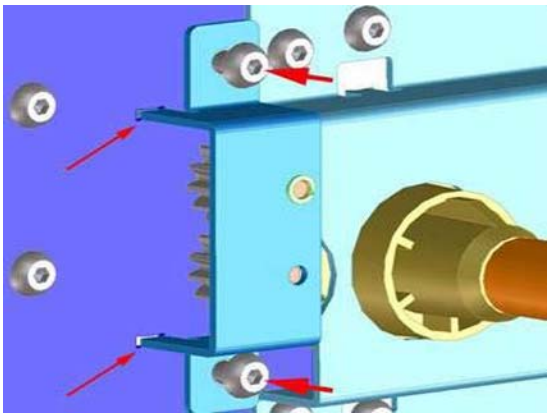


1. When install the new gear, make sure the gear is correctly installed onto the shaft, first align both flat surfaces and then push it until it is completely inserted. You will have to force it quite a bit. Make sure that both vertical surfaces are aligned as much as possible.

2. Tighten the belt tensioner back in place.



3. Verify that Overdrive Front Mount is correctly assembled and this means that both axis are retained by the sheet metal part and they 'pop-out' from the front side.

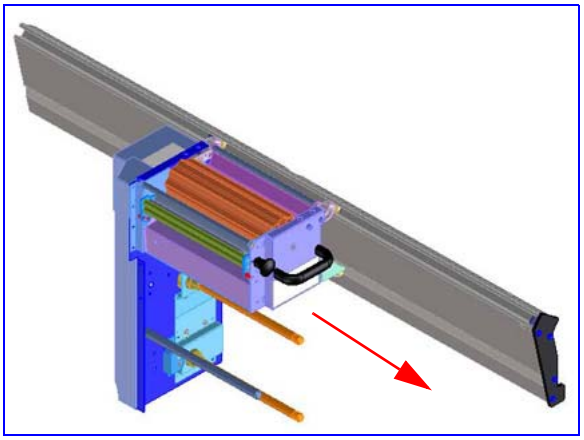


4. Ensure that the reference tabs are aligned and fully inserted into the corresponding slots.

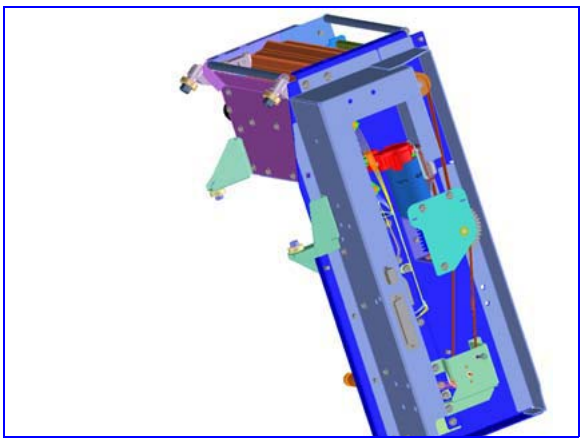
Drive Shaft main white gear

Removal

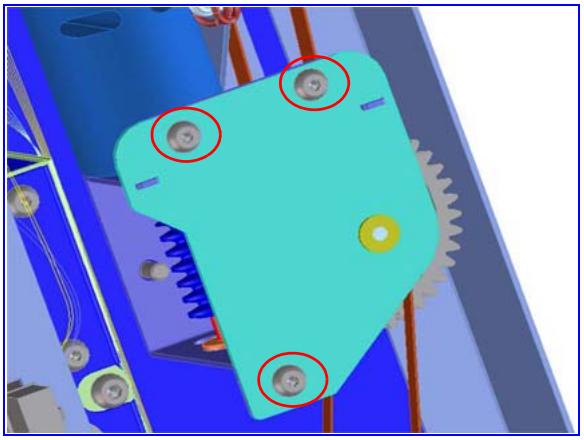
WARNING!: Switch off the printer and power enable switch.



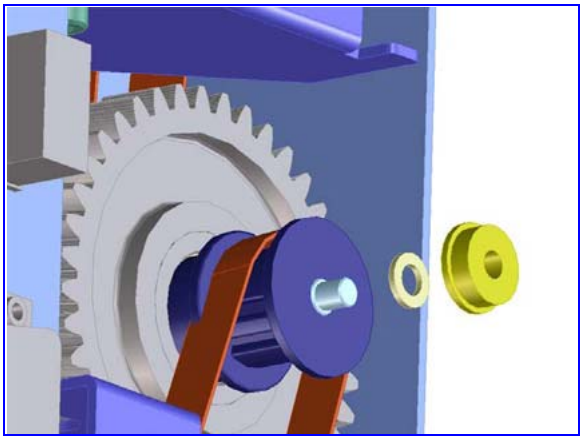
1. Remove the Web Wipe Module, disconnecting the cables as you remove.



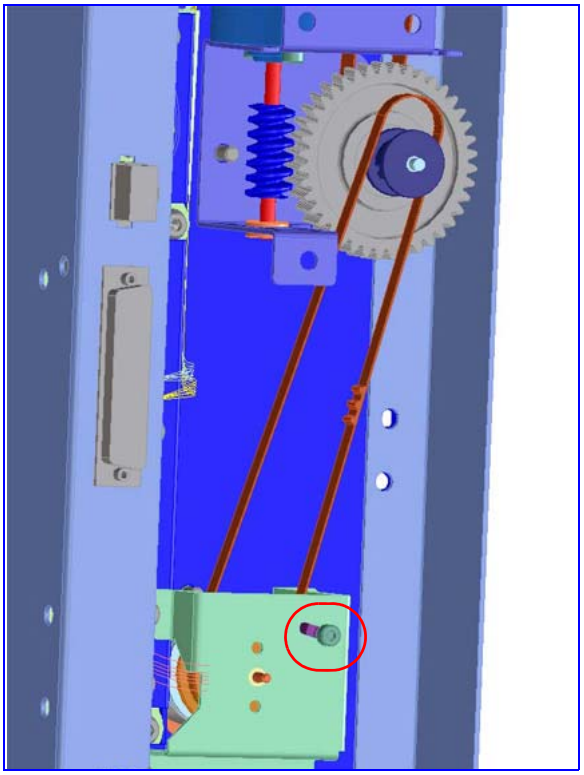
2. Go to the rear of the module.



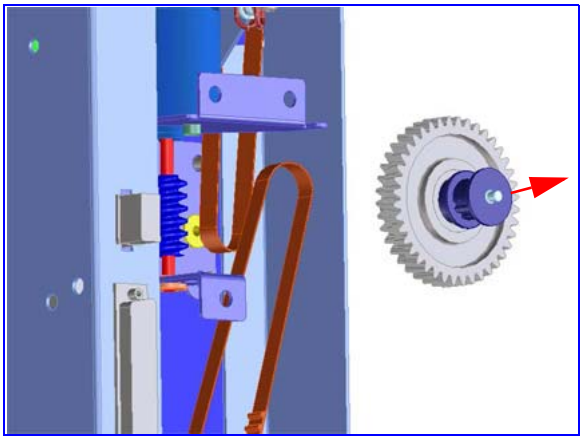
3. Remove three T20 screw that secure the bearing retainer.



4. Remove the bearing and washer.



5. Loosen the belt by loosening the screw indicated.



6. Remove the drive shaft gear.

Installation

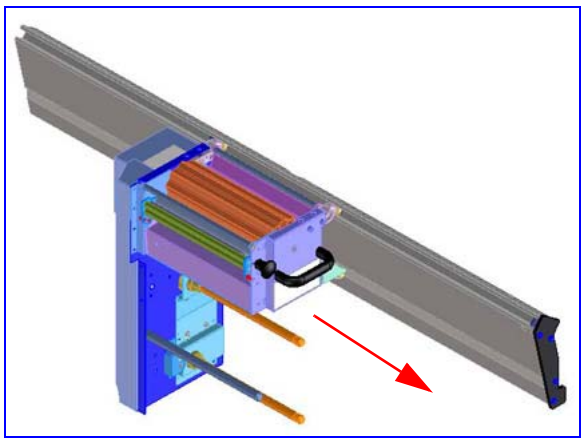
1. Place the bottom belt to tension after installing the new parts

Printhead Cleaning Clutch

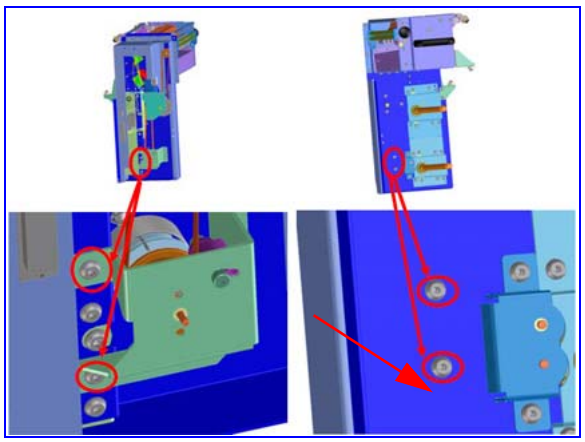
There are two types of Printhead clutch, the removel and installation process shown below describes the old version of the Printhead Cleaning Clutch. For the new version of the Printhead Cleaning Clutch refer ⇒ to page 804.

Removol the old Printhead Cleaning Clutch

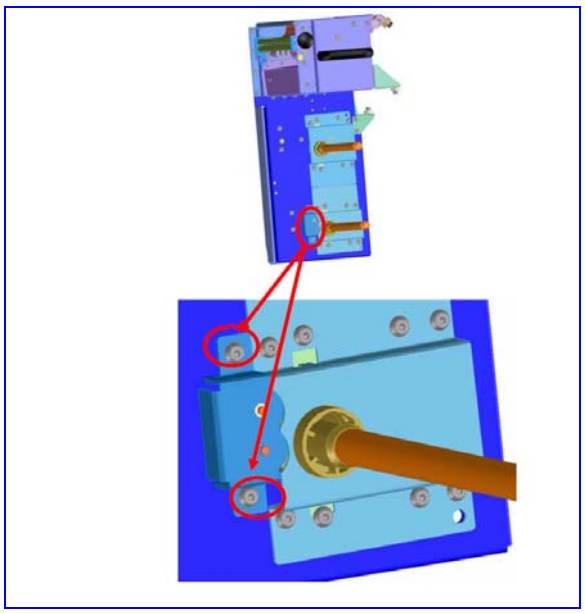
WARNING!: Switch off the printer and power enable switch.



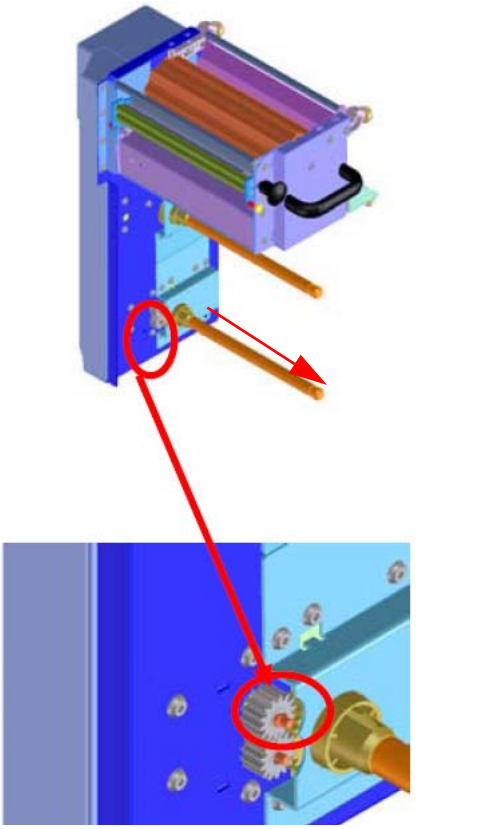
1. Remove the Web Wipe Module, disconnecting the cables as you remove.



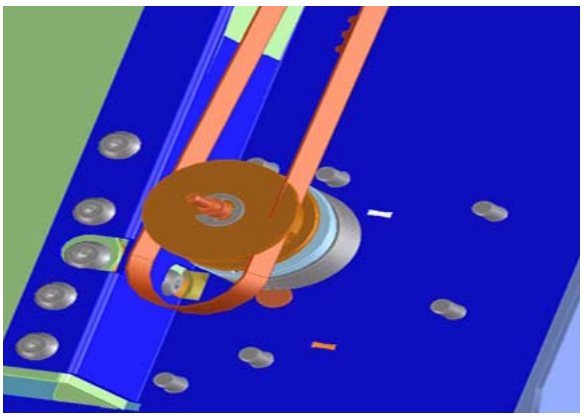
2. Loosen four T20 screws from the left and right side of the assembly.



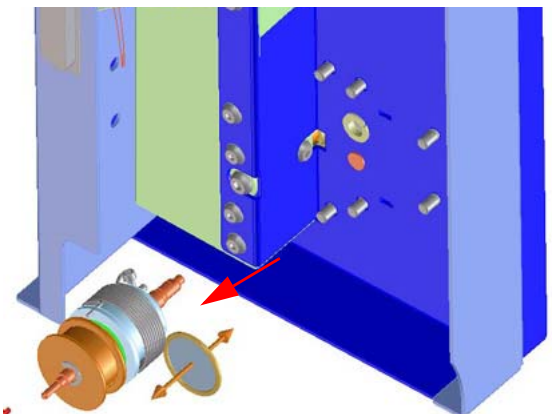
3. Loosen two T2 screws that secure the lower gears mount to the assembly.



4. Remove the gear indicated here, which is connected to the clutch assembly.



5. Loosen the belt.



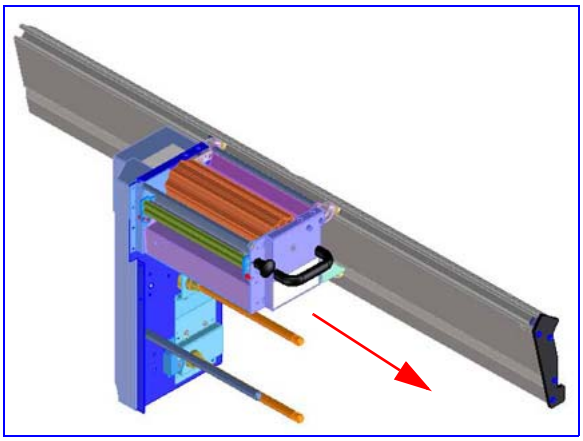
6. Remove the Clutch assembly.

Installation of old Printhead Cleaning Clutch

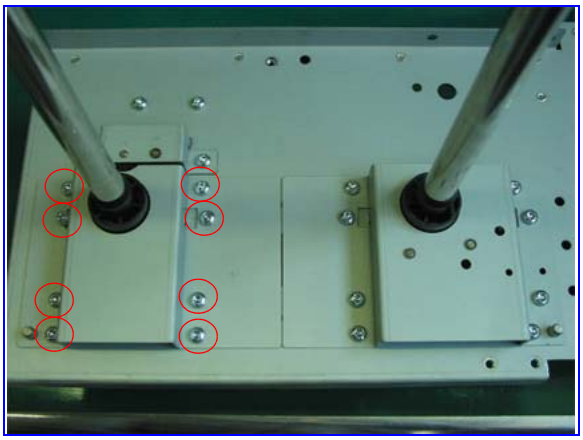
1. Place the bottom belt to tension after installing the new parts.

Removol the new Lower Printhead Cleaning Clutch

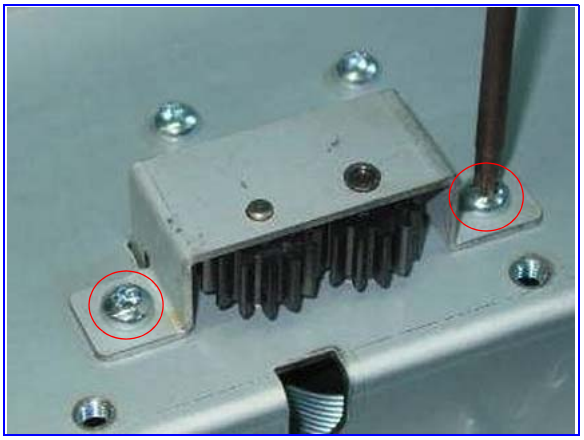
WARNING!: Switch off the printer and power enable switch.



1. Remove the Web Wipe Module, disconnecting the cables as you remove.

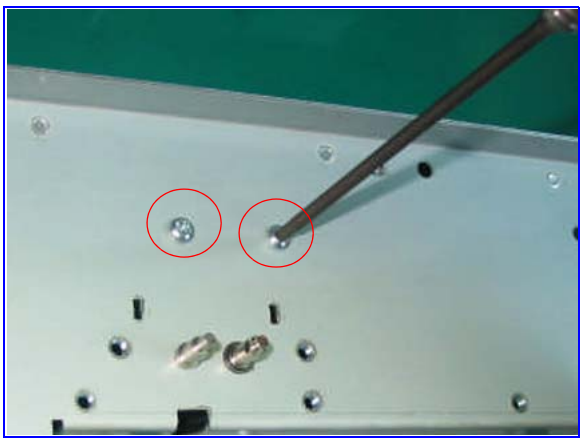


2. Remove eight T10 screws that secure the Front Mount Takeup Cover, and remove the cover.

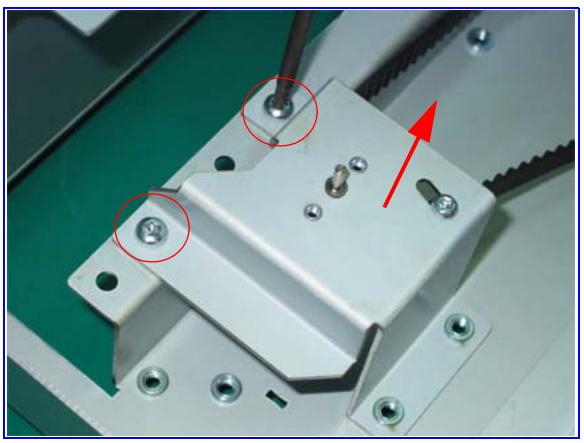


3. Remove two T10 screws that secure the Over Drive Front mount, and remove.

4. Remove the two Brake Gears.



5. Remove two T10 screws from the side of the chassis.

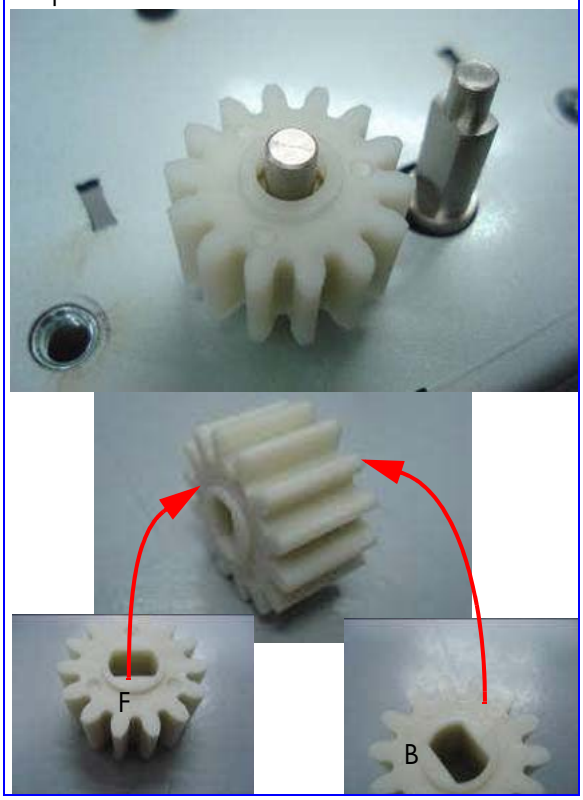


6. Remove two T10 screws from the Back of the Overdrive Mount, and remove.

7. Remove the Printhead Cleaner Clutch.

Installation of the new Lower Printhead cleaning clutch

Install the gear (14t) with the letter 'F' on the gear facing outwards. The letter 'B' must face towards the printer.

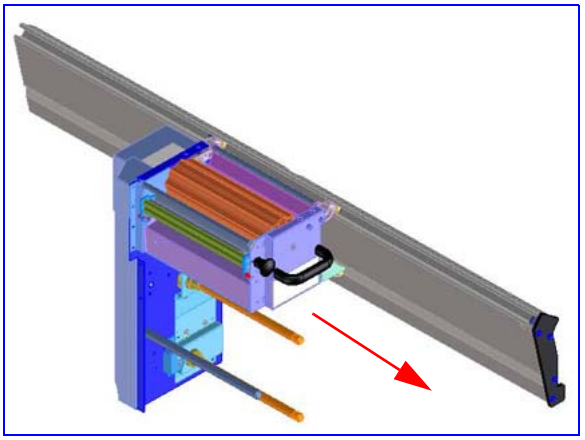


1. When installing the new Printhead cleaning clutch assembly it is critcal to the correct functioning of the Printhead Cleaner that the Clutch Gear (14t) is installed in the correct orintation.

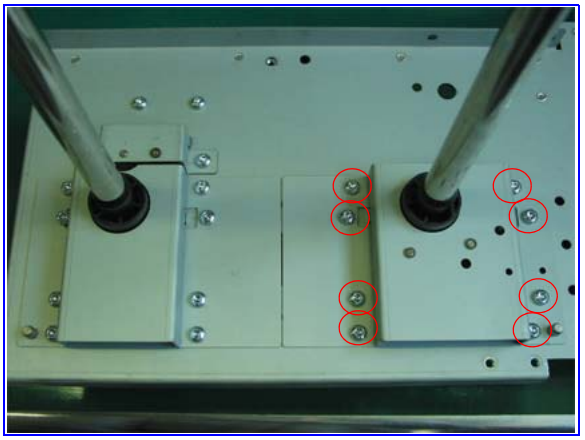
Upper Printhead Cleaning Clutch

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the Web Wipe Module, disconnecting the cables as you remove.



2. Remove eight T10 screws that secure the Rear Mount Takeup Cover, and remove the cover.

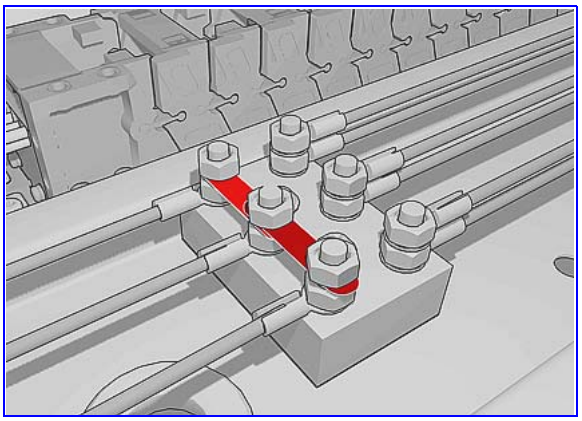
3. Remove the gear from the Brake Axis Assembly.

4. Slide out the Belt Tensioner Assembly.

Heating and Curing

Delta/Star configuration

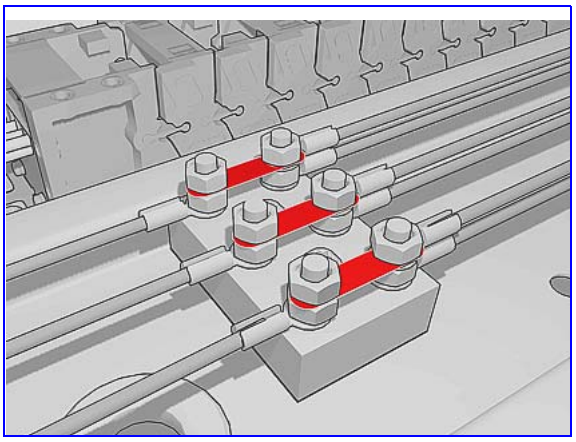
NOTE: The graphics shown are for the heating module.



- Star configuration

NOTE: The nut is size MH7.

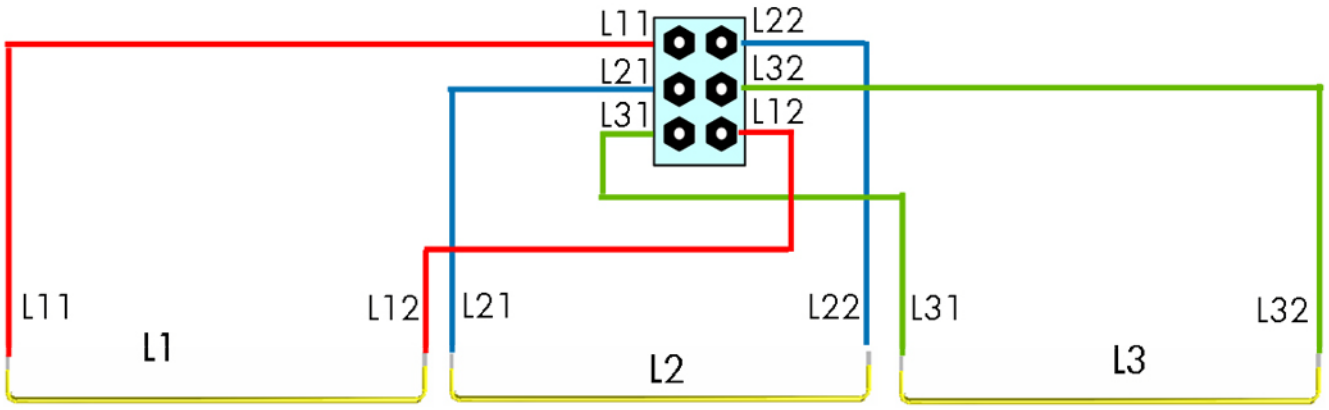
NOTE: The graphic is shown looking at the heating module terminal block from the front of the printer.



- Delta configuration

NOTE: The nut is size MH7.

- The following diagram may help you to better understand this connection.



How to check the Resistors

Check the resistance at the output of the static relay, as shown below, through the hole protecting the static relay.

WARNING!: Ensure all power lines are **off** before working in the power side. Follow all necessary precautions when operating in the 3 ph power line.

Also check the resistance between A2-B2, A2-C2, B2-C2 (marked on the static relay and on the heating and curing cables: 1, 2, 3).

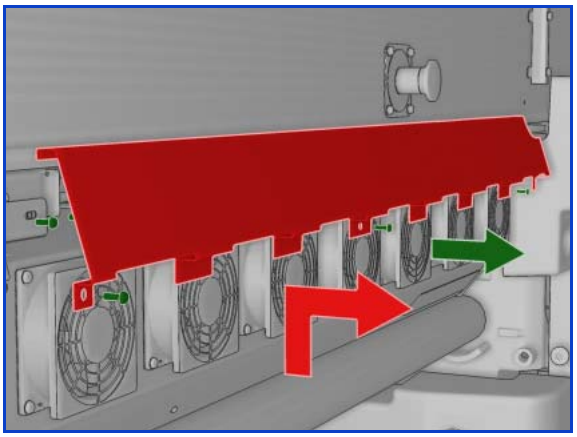
The acceptable values are as follows:

- **L66550/LX600 only:** Triangle configuration (low input tri-phase, 200-220 V between phases): resistance should be 10.7 ohms (min: 10 ohms, max : 11.3 ohms) (calculation details: 2/3 * 16 ohms, minimum: 2/3* 15 ohms, maximum 2/3 * 17 ohms).
- **LX 800 only:** Triangle configuration (low input tri-phase, 200-220 V between phases): resistance should be 8.3 ohms (min 7.7 ohms, Max : 9 Ohms) (calculation details: 2/3 * 12.5 ohms) (minimum: 2/3 11.5 ohms, maximum: 2 / 3 13.5 ohms).
- **L66550/LX600 only:** Star configuration (high input tri-phase, 380-415 V between phases): resistance should be 32 ohms (minimum: 30 ohms, maximum: 34 ohms).
- **LX 800 only:** Star configuration (high input tri-phase, 380-415 V between phases): resistance should be 25 ohms; (minimum: 23 ohms, maximum: 27 ohms).

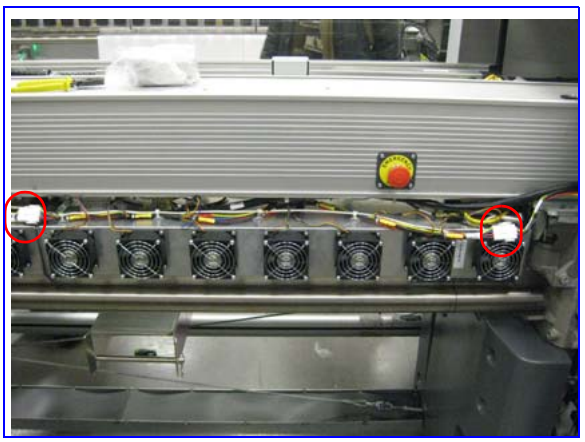
Curing Module Assembly

Removal

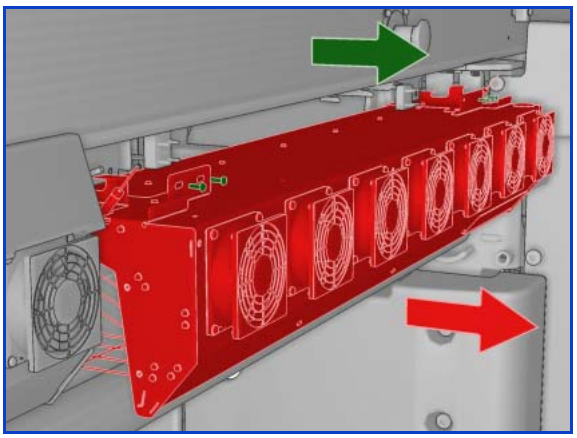
WARNING!: Power off the Printer from the Power Distribution Unit (PDU) by the Branch Circuit Breaker, the support part comes with two resistors, the two other resistors have also to be replaced, to ensure power balance between the phases.



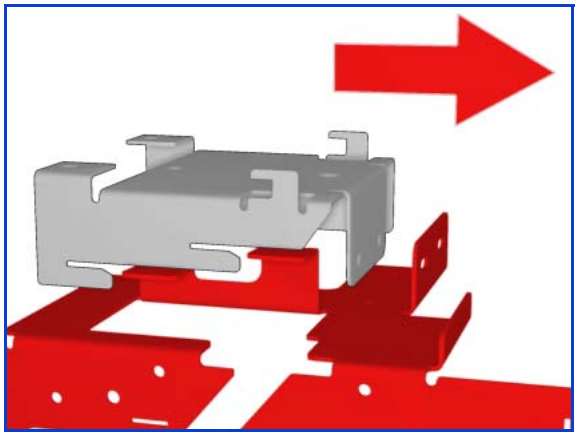
1. Remove the three T10 screws that secure the Curing Module cover.



2. Disconnect the two connectors of the fan array power cable which are located on the left and right side of the module. The individual fans do not need to be disconnected.
3. Remove ALL the screws/nuts that secure the electrical cables at the back of the printer and release the cable ties. Remove the Cables.



4. Remove the four T10 screws that secure the Curing Module Assembly.

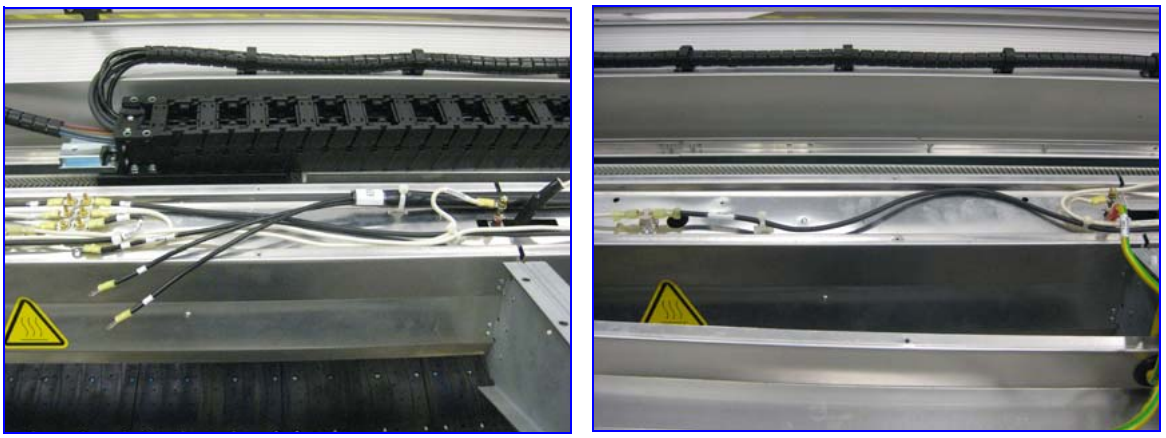


5. Free the Curing Module Assembly from the fixture and remove it.

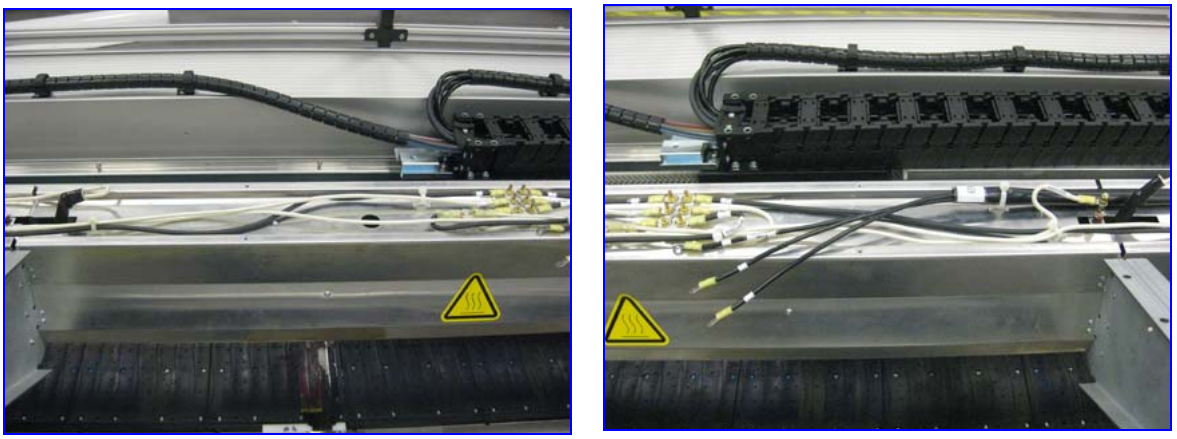
Installation

> **NOTE:** The service part for the Curing Module has a left and right sideplate, each secured with four T10 screws.

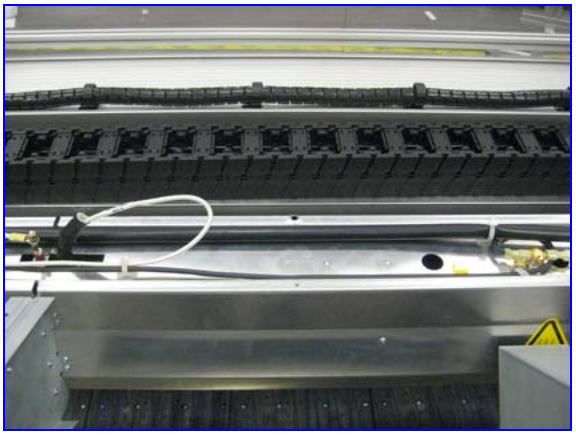
1. If you are replacing the right module, remove the right side plate.
2. If you are replacing the center module, remove both side plates.
3. Slide the insulator onto the cable.
4. If you are replacing the left module, remove the left side plate.
5. Use the photos below as a guide to reconnecting and installing the power cables at the rear of the printer.

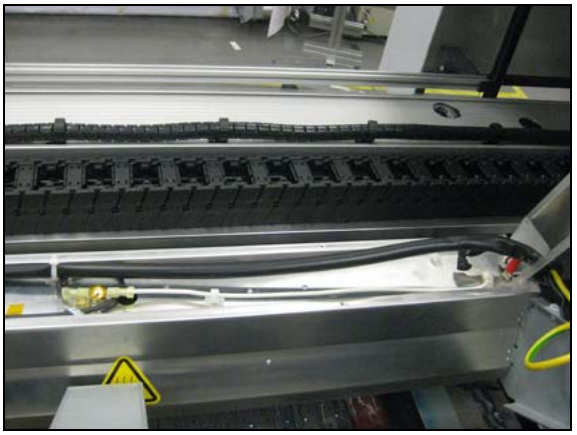


Left module cables



Centre module cables





Right module cables

6. Once all parts have been reinstalled, before turning on, do a quick check of the resistances ⇒See page 819.

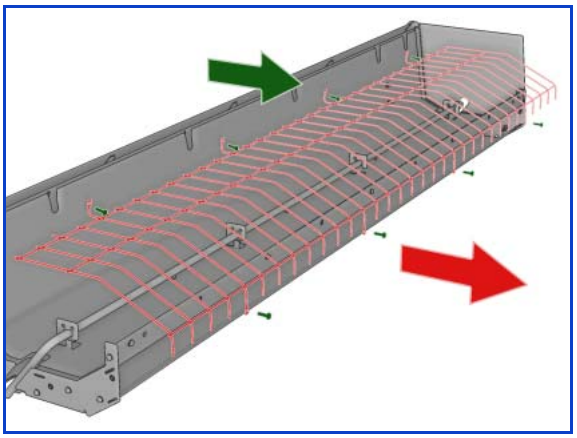
Curing Resistors

Removal

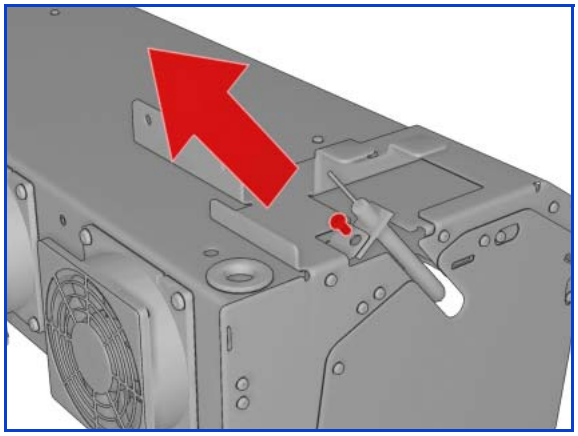
WARNING!: Switch off the printer and power enable switch.

CAUTION: There are two types of resistors that are available to install, the procedure below describes both types.

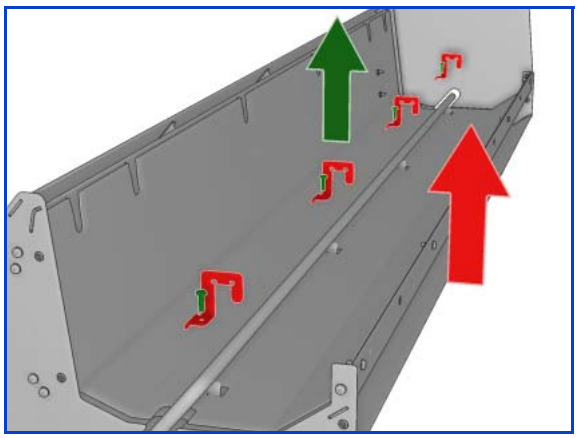
NOTE: The support part contains all three resistors (and even a curing module or a heating module contain 2 additional resistors). The reason for this is when replacing at least 1 resistor (heating or curing), you must replace ALL three resistors (from the same heating or curing), to ensure a good balance between the phase (the 3 resistors provided within the support kit have been checked and the differences between the resistors are within specification, to ensure the right balance between phase).



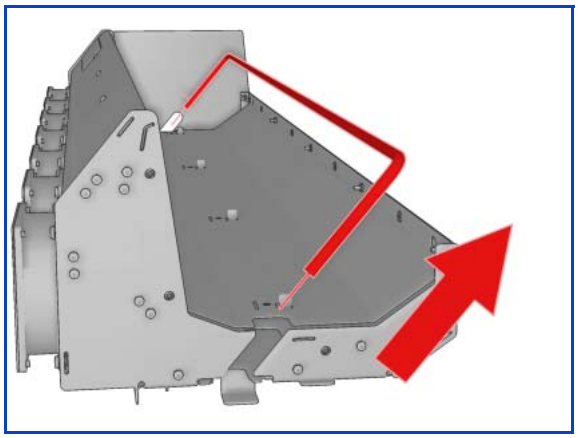
1. Remove the Curing Module Assembly⇒See page 820.
2. Remove eight T10 screws that secure the protection nets.



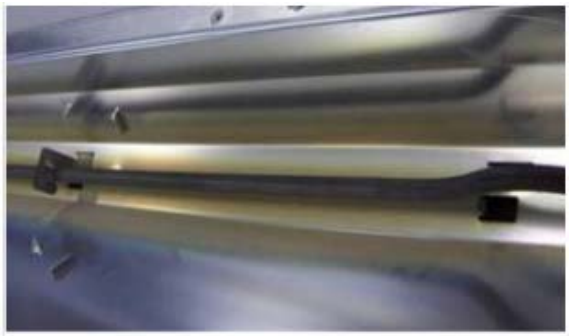
3. Remove the T25 screw that secures the resistor, grounding cable, and washer.



4. Remove the T10 screw that secures each of the four resistor brackets.



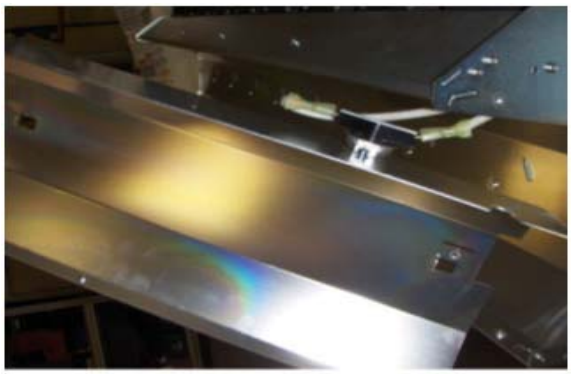
5. Carefully remove the Curing Resistor by pulling it straight out of the module.
6. Once all parts have been reinstalled, before turning on, do a quick check of the resistances ⇒See page 819.



7. Clean the reflectors behind the resistors, even if there is only a little yellow staining, shown here is an example of a reflector that requires cleaning.

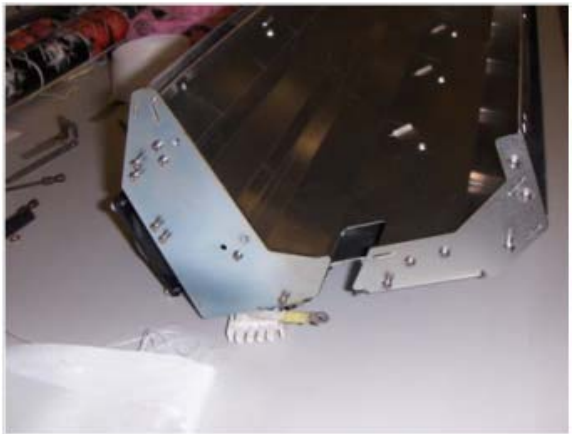
8. Loosen two screws (same on the other side).

9. Remove five screws.

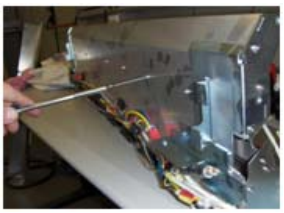


10. Remove the first metal part.
11. When removing this part, disconnect as soon as possible the safety thermostat to avoid damage.

12. Clean this metal part (both sides)
13. Unscrew the safety thermostat and clean the surfaces in contact between thermostat and this metal part.



14. Before removing the screws maintaining the 2nd metal part, loosen on each side ALL the other screws which are NOT securing it to the module. The objective is to be able to remove the 2nd metal part easily.



15. Remove the screws maintaining this second metal part to the module.

16. Remove this 2nd metal parts, and fully clean this part.

17. Clean the remaining part of the module.

Installation of the new type of resistor

There are two different resistor designs. Shown below are the two types of resistor supports and resistors that are available to install.

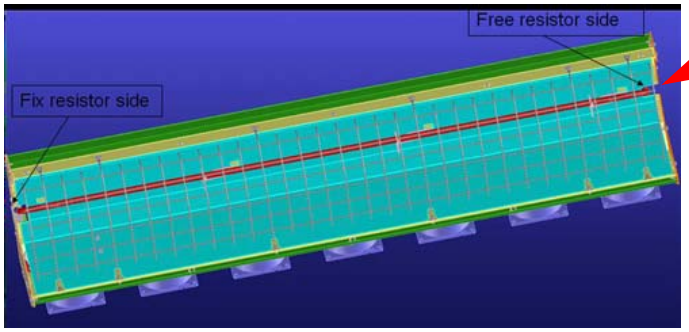
New type of resistor and support

3 off, no washers

Old type of resistor and support

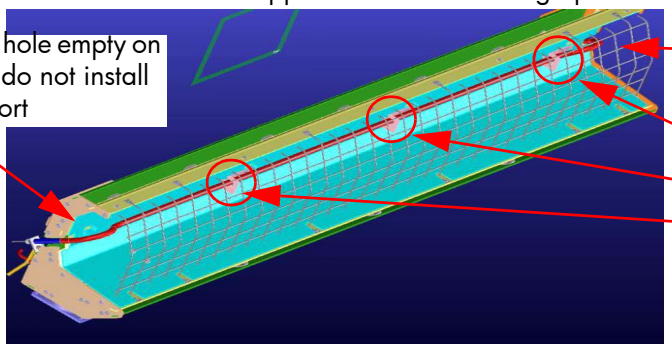
4 off with washers

1. When installing the resistors of the new type, you may need to enlarge the opening of the side of the curing module where the resistors are free, do not force the resistor through the opening.



Enlarge the opening here (10mm) to enable installation of the new type of resistor.

2. When installing the supports of the new type of resistor, there are only three, compared to the previous type, which had four. Install the supports as shown in the graphic leaving a hole empty of a support.

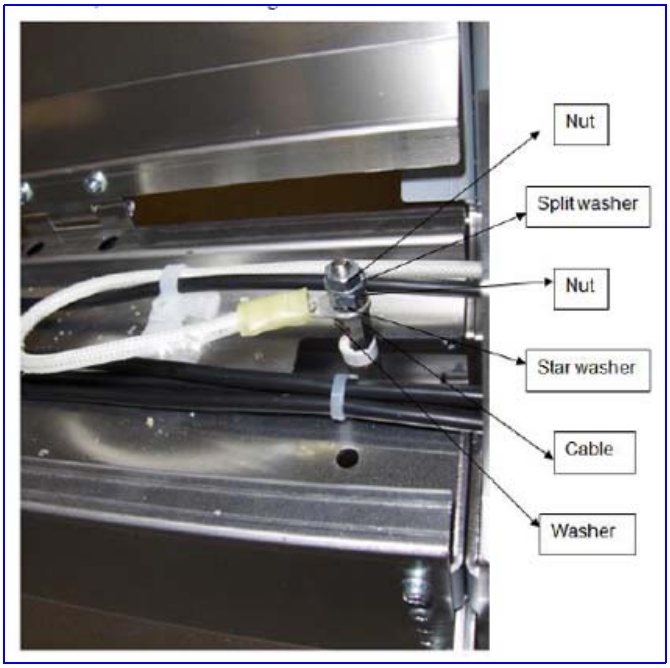


Leave the hole empty on this side, do not install any support

Free side

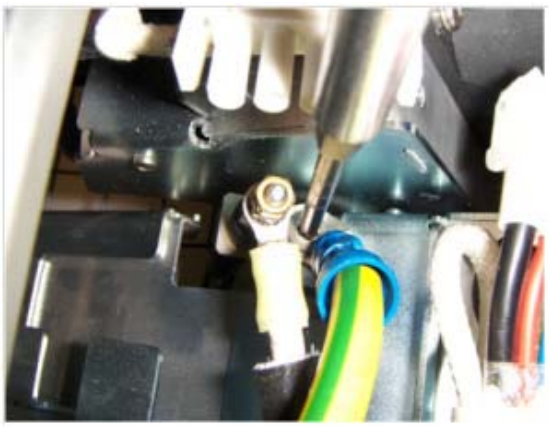
Only install the supports at these locations

3. When placing back the washer & nuts to connect the power cable to the resistance, use the following order:



4. Important to place back the back the isolator around the connection electrical cable <-> resistor.

5. Important: connect a ground cable on one side of each resistor (the isolator has been shifted to the side to better see the connection of the ground cable, but the isolator is mandatory to be in place as shown at the previous step).

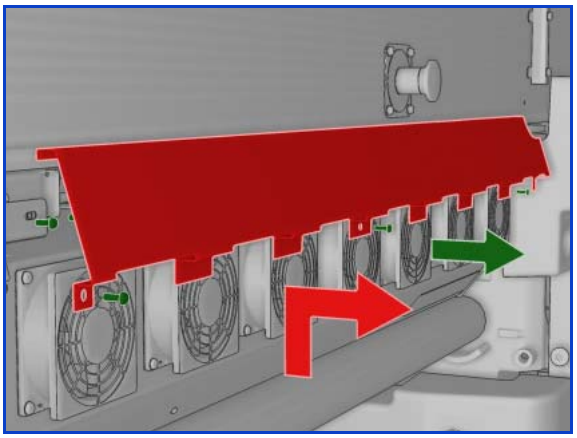


6. Once all parts have been reinstalled, before turning on, perform a check of the resistances ⇒See page 819.

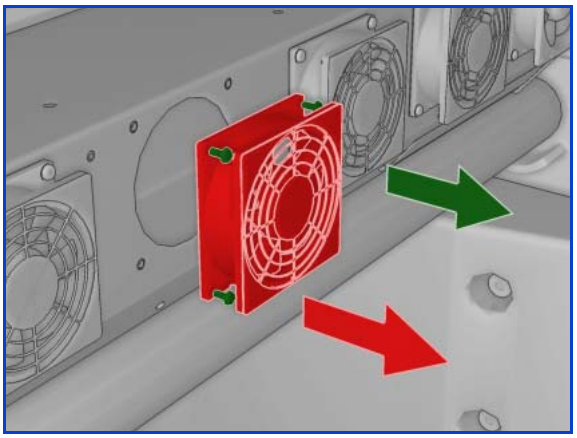
Curing System Fan

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the three T10 screws that secure the Curing Module cover.
2. Disconnect the Curing System Fan cable.

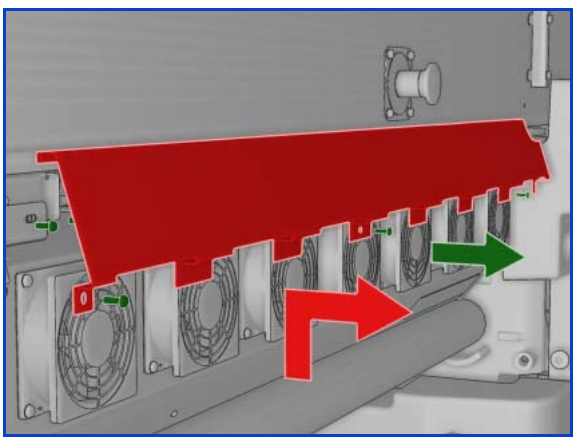


3. Remove the four T15 screws that secure the Curing System Fan and remove it.

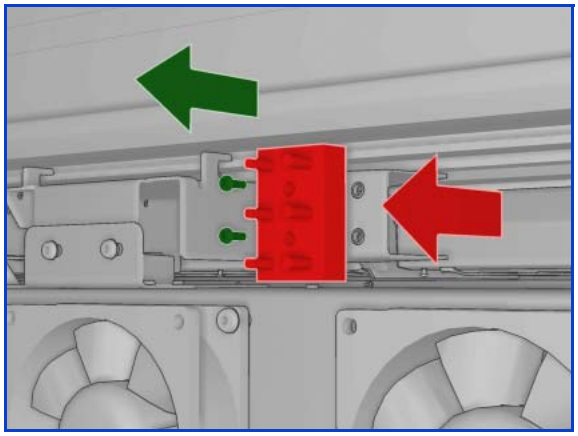
Curing Star - Triangle Configuration Box Set

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the three T10 screws that secure the Curing Module cover.
2. Disconnect the power cables connected to the Star - Triangle Configuration Box Set and remove the metal connectors.



3. Remove the two T15 screws that secure the Curing Star - Triangle Configuration Box Set and remove it.

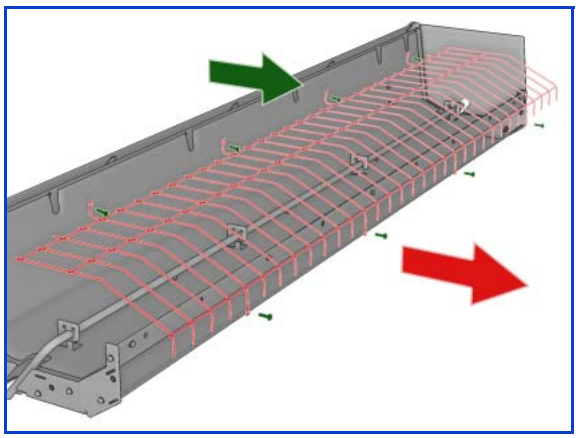
Installation

1. When mounting back, refer to the Delta/Star configuration ⇒See page 818.
2. Once all parts have been reinstalled, before turning on, do a quick check of the resistances ⇒See page 819.

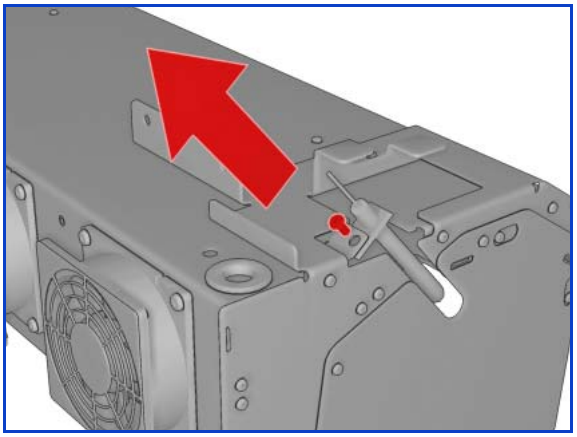
Curing Safety Thermostat

Removal

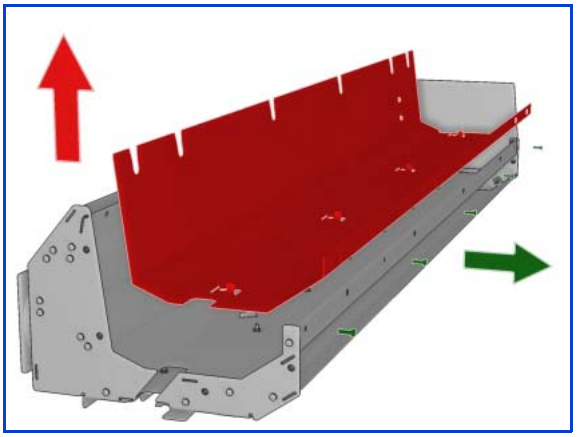
WARNING!: Switch off the printer and power enable switch.



1. Remove the Curing Module Assembly ⇒See page 820
2. Remove the eight T10 screws that secure the protection nets.

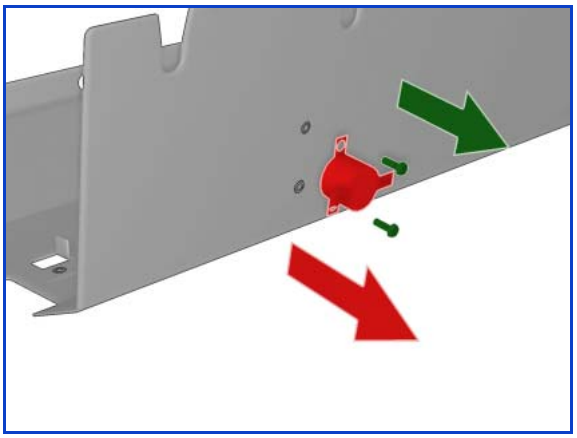


3. Remove the T25 screw that secures the resistor, grounding cable, and washer.



4. Remove the four T10 screws that secure the reflector and remove it.

NOTE: The resistor is not fixed to anything, so be careful that you do not damage it.



5. On the back side of the reflector, remove the two T10 screws that secure the Safety Thermostat, disconnect the cable, and remove it.

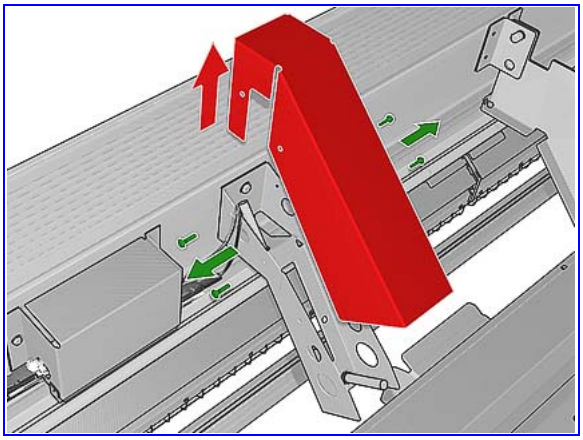
6. Once all parts have been reinstalled, before turning on, perform a check of the resistances ⇒See page 819.

Curing Temperature Sensor

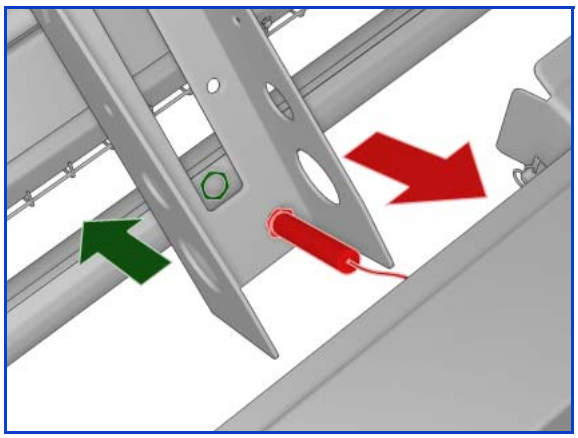
Removal

WARNING!: Switch off the printer and power enable switch.

1. Follow the cable from the Temperature Sensor to the first connection, and disconnect it.



2. Remove the four T10 screws that secure the Temperature Sensor cover and remove it.
3. To avoid damaging the sensor, remove the T30 screw that secures the sensor support to free the support to create more working space.

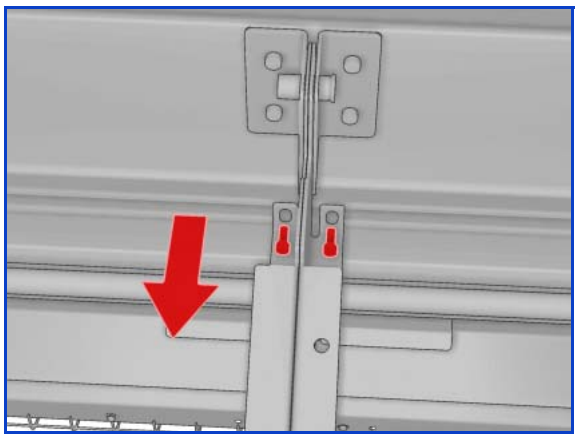


4. Remove the MH14 nut that secures the Temperature Sensor and remove it.

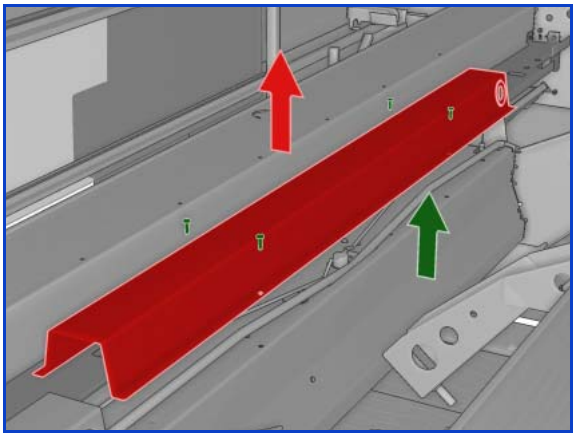
Heating Module Assembly

Removal

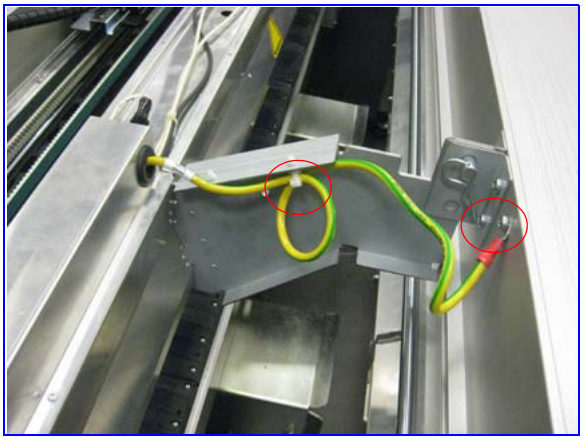
WARNING!: Switch off the printer and power enable switch.



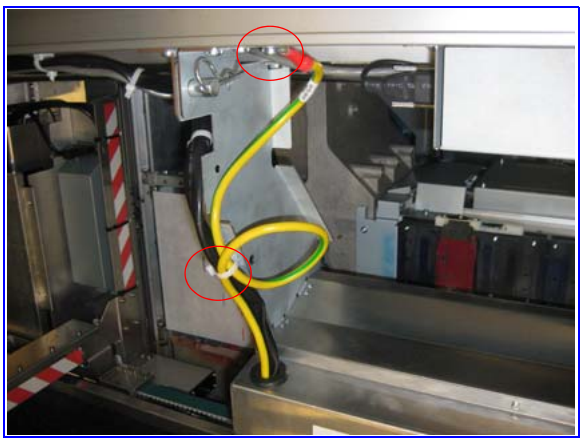
1. In case the Officeability kit is in place, the part in the middle at the top of the scan beam must be removed.
2. Remove the six T10 screws that fix the Heating Module Assembly in place.



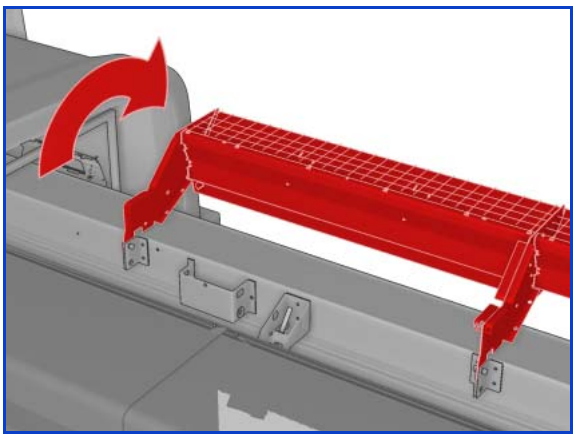
3. Remove the four T10 screws that secure the Heating Module cover.



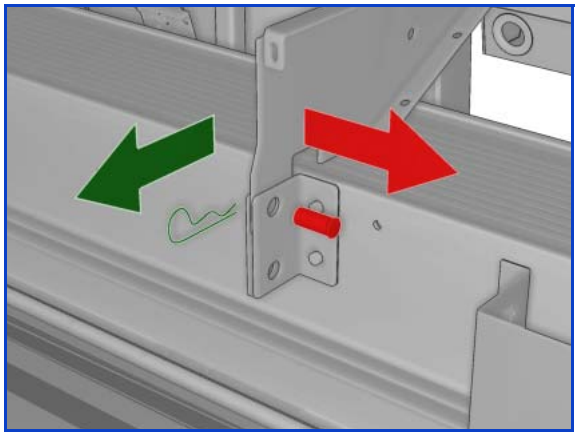
4. Remove the screw from the grounding cable on the left module and release the cable tie.



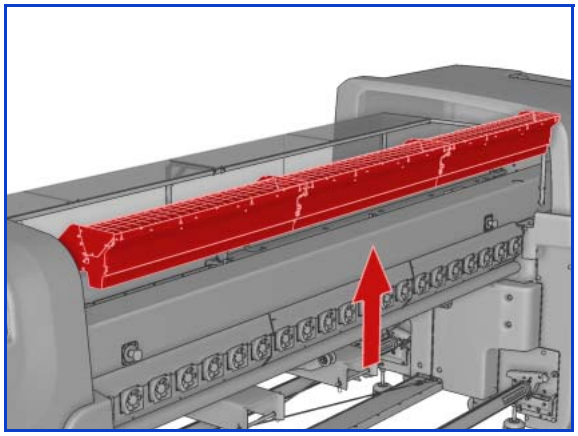
5. Remove the screw from the grounding cable on the right module and release the cable tie.



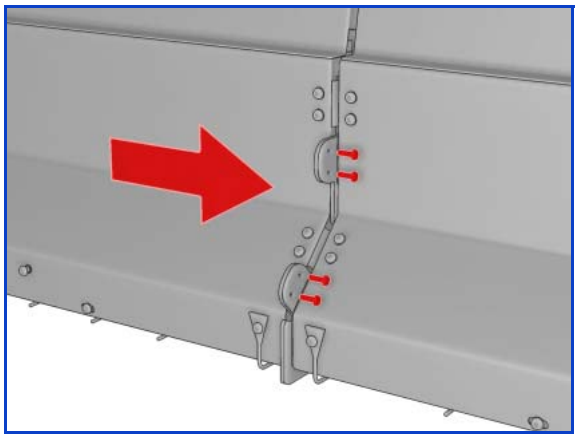
6. Lift and turn the heating module over.



7. Remove the three pins and axis shafts that secure the heating module.



8. Remove the entire heating module.



9. Remove the four T10 screws that fix the modules together.

NOTE: If you are removing the center module, you must remove four screws on each side.

NOTE: Also remove and replace the two other resistors (provided with the support part) in order to ensure image quality and power balance between the 3 phases.

Installation

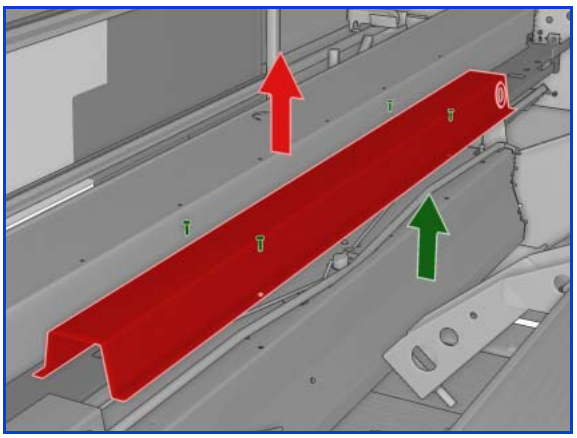
1. Once all parts have been reinstalled, before turning on, do a quick check of the resistances ⇒See page 819.

Heating Resistors

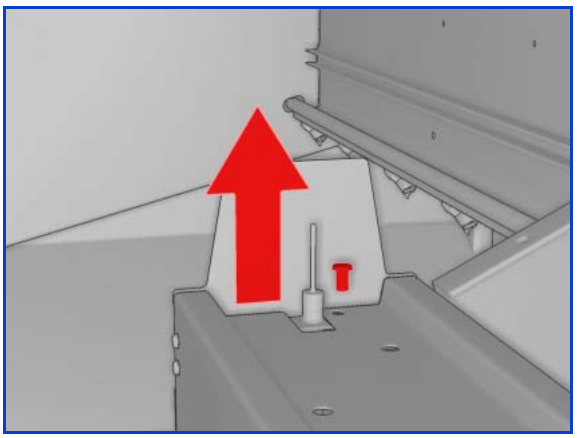
Removal

WARNING!: Switch off the printer and power enable switch.

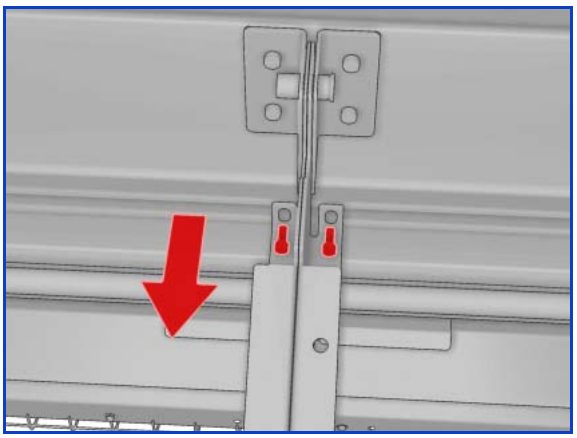
NOTE: The support part contains all three resistors (and even a curing module or a heating module contain 2 additional resistors). The reason for this is when replacing at least 1 resistor (heating or curing), you must replace ALL three resistors (from the same heating or curing), to ensure a good balance between the phase (the 3 resistors provided within the support kit have been checked and the differences between the resistors are within specification, to ensure the right balance between phase).



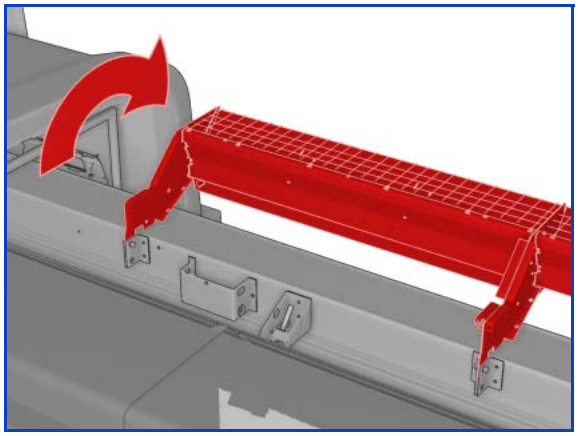
1. In case the Officeability kit is installed, need to remove the front part with the windows. Follow the instructions on pages ⇒See page 574.
2. Remove the four T10 screws that secure the Heating Module cover.



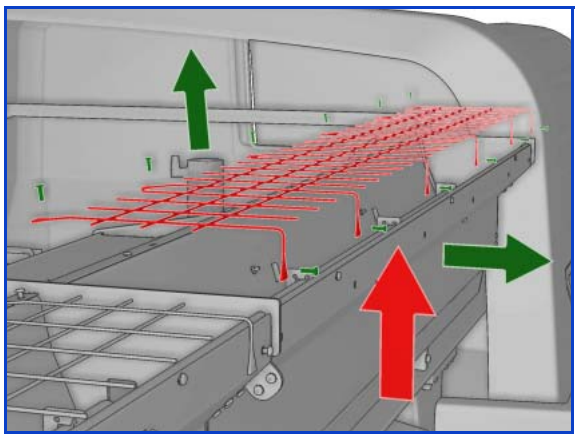
3. Remove the T25 screw that secures the resistor, grounding cable, and washer.



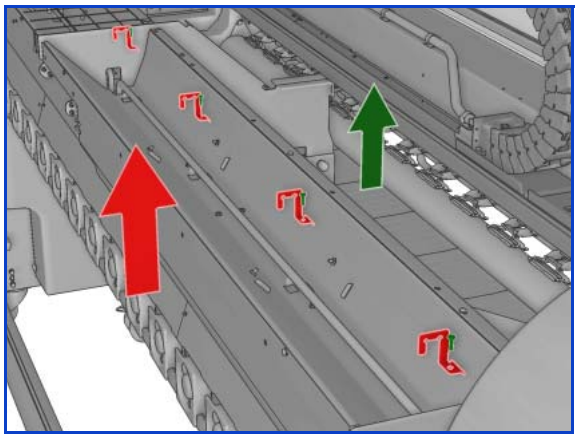
4. Remove the six T10 screws that fix the Heating Module Assembly in place.



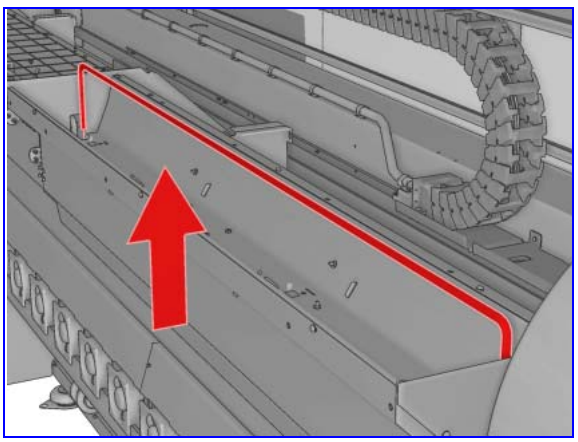
5. Lift and turn the heating module over.



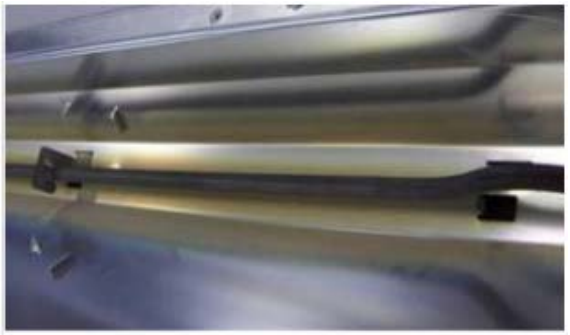
6. Remove the twelve T10 screws that secure the protection nets.



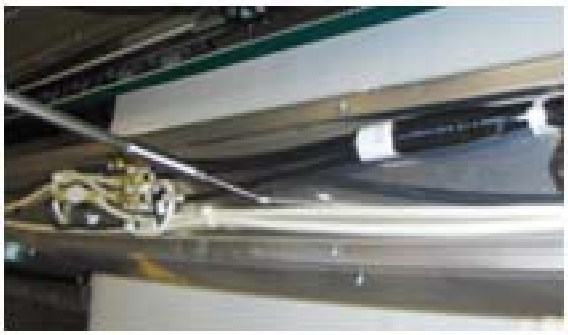
7. Remove the T10 screw that secures each of the four resistor brackets.



8. Carefully remove the Heating Resistor by pulling it straight out of the module.

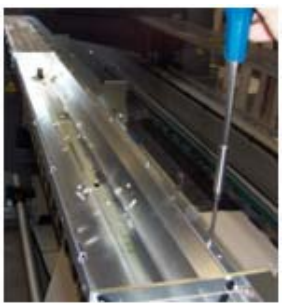


9. Clean the reflectors behind the resistors, even if there is only a little yellow staining, shown here is an example of a reflector that requires cleaning.



10. The intermediate metal part must be removed to clean it.

11. While resistors support are not rotated, remove the screws as shown on the pictures.

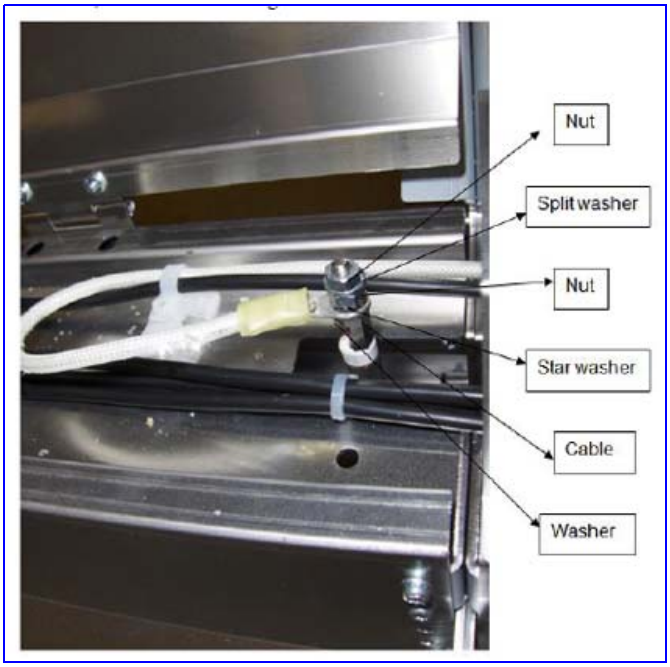


12. Then after having rotated the modules, remove the following screws:

13. Clean all of the inner metal part with water and a lint free cloth.

14. Clean the rest of the reflectors module.

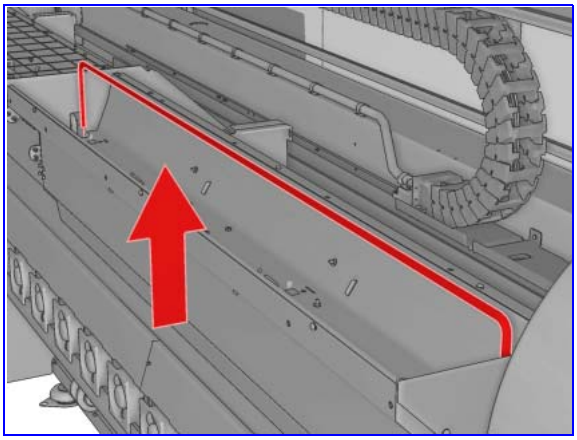
15. When placing back the washer & nuts to connect the power cable to the resistance, use the following order:



16. Important to place back the back the isolator around the connection electrical cable <-> resistor.

17. Important: connect a ground cable on one side of each resistor (the isolator has been shifted to the side to better see the connection of the ground cable, but the isolator is mandatory to be in place as shown at the

previous step).



18.

Heating Supports Set

Removal

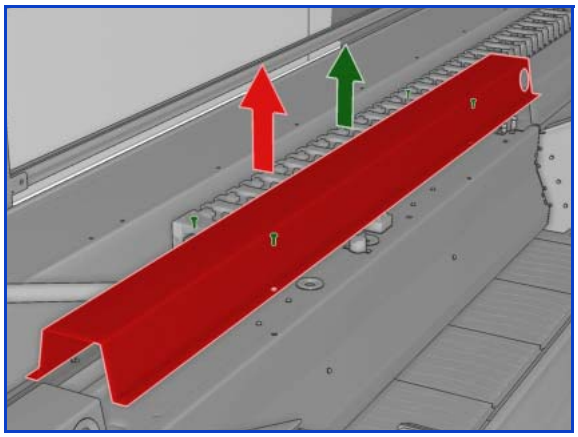
WARNING!: Switch off the printer and power enable switch.

1. Remove the Heating Module Assembly ⇒See page 831.
2. Remove the two T30 screws that secure each support remove it.

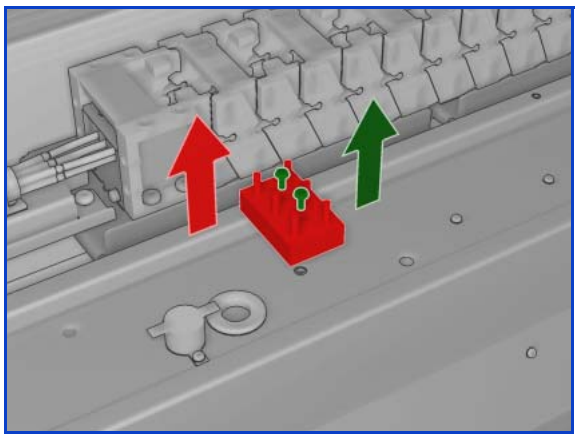
Heating Star - Triangle Configuration Box Set

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the four T10 screws that secure the Heating Module cover.
2. Disconnect the power cables connected to the Star - Triangle Configuration Box Set.



3. Remove the two T15 screws that secure the Curing Star - Triangle Configuration Box Set and remove it.

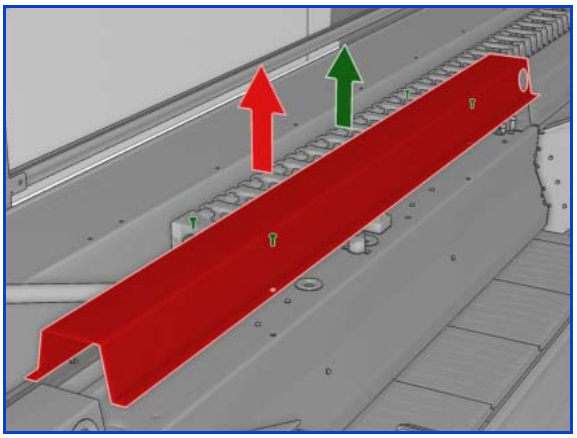
Installation

1. When mounting back, refer to the Delta/Star configuration ⇒See page 818.
2. Once all parts have been reinstalled, before turning on, do a quick check of the resistances ⇒See page 819.

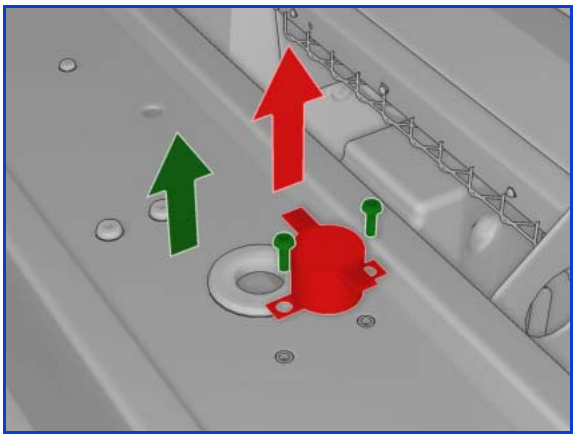
Heating Safety Thermostat

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove the four T10 screws that secure the Heating Module cover and remove it.



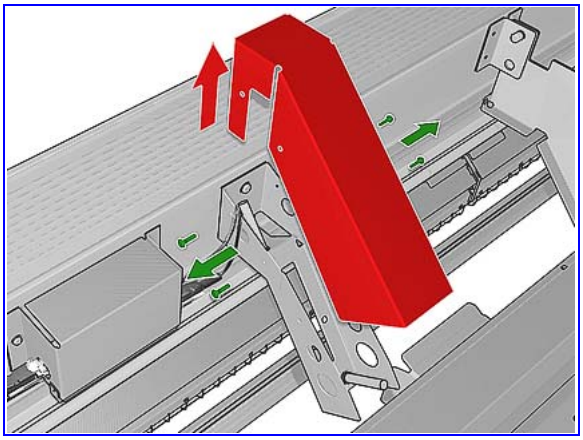
2. Remove the two T10 screws that secure the Safety Thermostat, disconnect the two cables, and remove it.

Heating Temperature Sensor

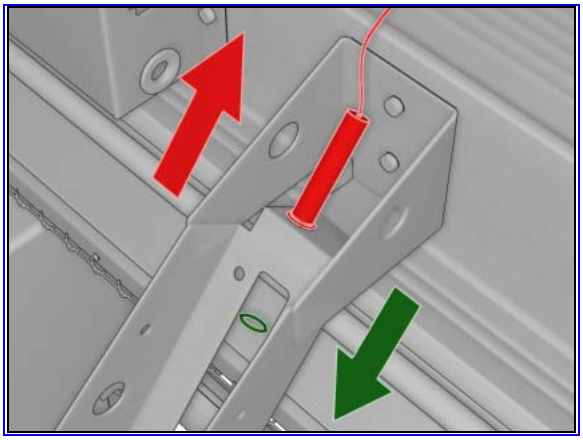
Removal

WARNING!: Switch off the printer and power enable switch.

1. Follow the cable from the Temperature Sensor to the first connection, and disconnect it.



2. Remove the four T10 screws that secure the Temperature Sensor cover and remove.
3. To avoid damaging the sensor, remove the T30 screw that secures the sensor support to free the support and create more working space.

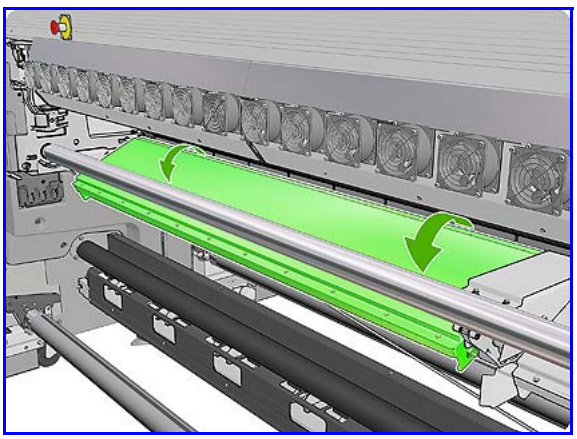


4. Remove the MH14 nut that secures the Temperature Sensor and remove it.

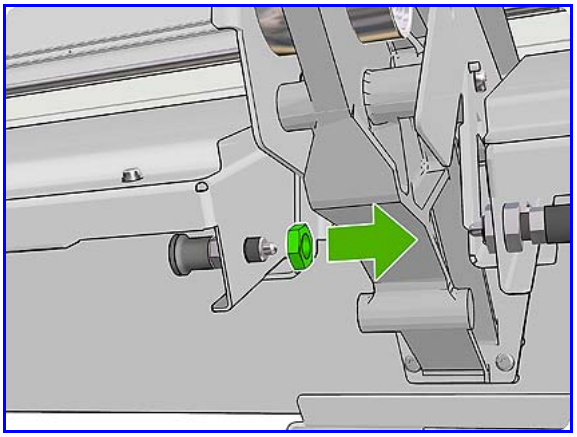
Curing Bottom Plate Stoppers

Removal

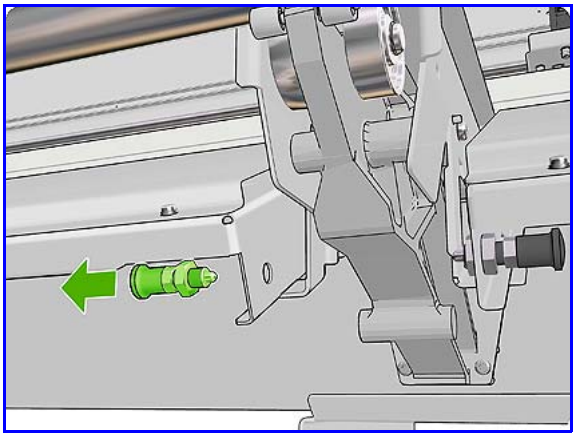
WARNING!: Switch off the printer and power enable switch.



1. Push the Botttom Curing Plates to the down position.



2. Remove the hexagonal nut from the right Curing Bottom Plate Stopper.

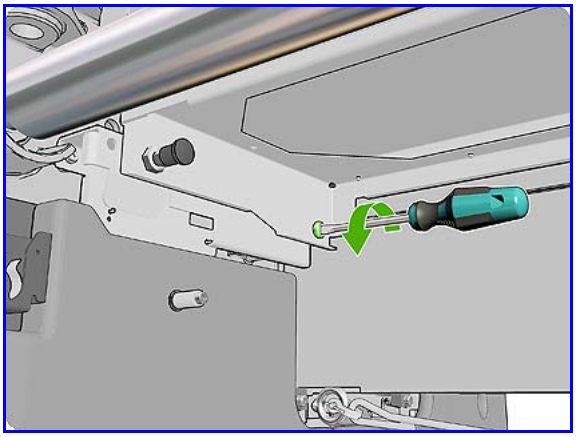


3. Remove the right Curing Bottom Plate Stopper.

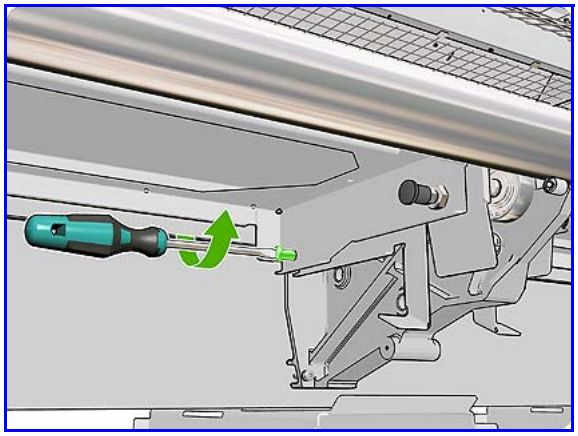
Curing Bottom Plate

Removal

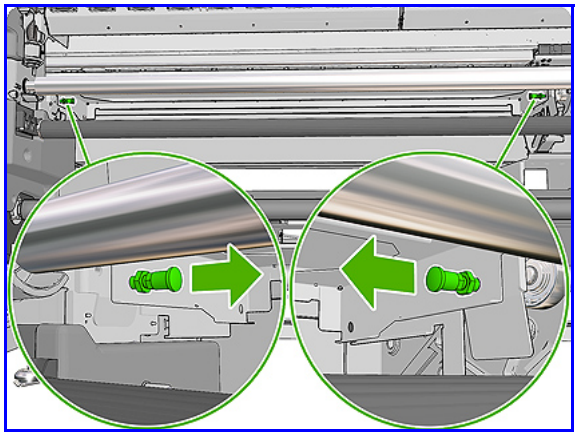
WARNING!: Switch off the printer and power enable switch.



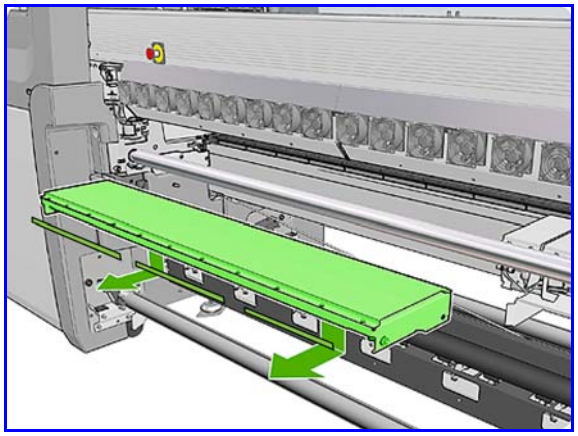
1. Remove one T15 screw from underneath the left side of the Curing Bottom Plate.



2. Remove one T15 screw from underneath the right side of the Curing Bottom Plate.



3. Pull the Bottom Plate Lockers.

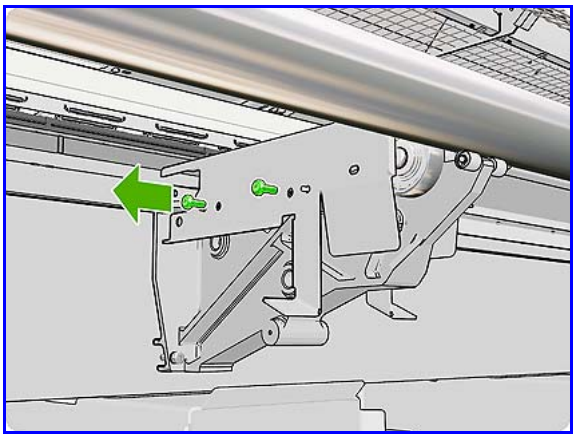


4. Remove the Curing Bottom Plate, remove the Mesh Holders.

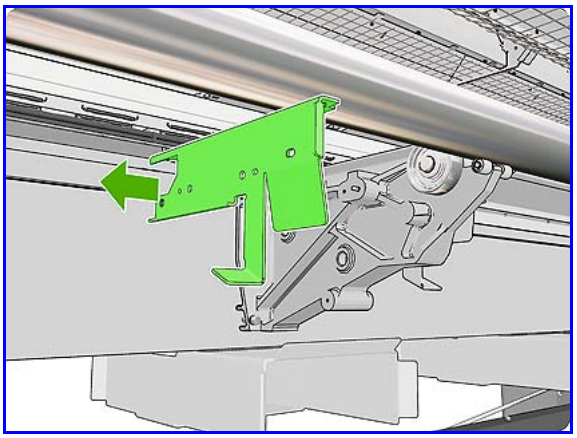
Curing Bottom Plate Support

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove two T10 screws from the Curing Bottom Plate Support.

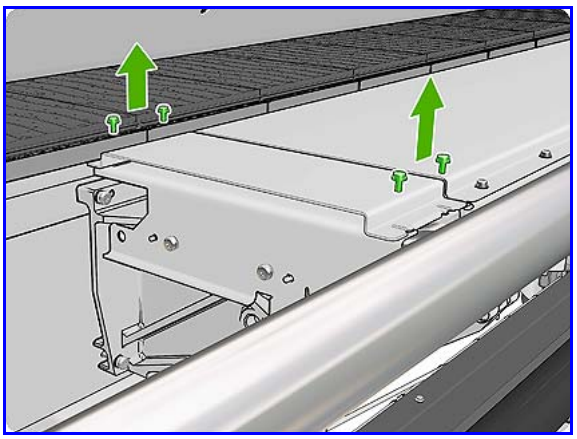


2. Remove the Curing Bottom Plate Support.

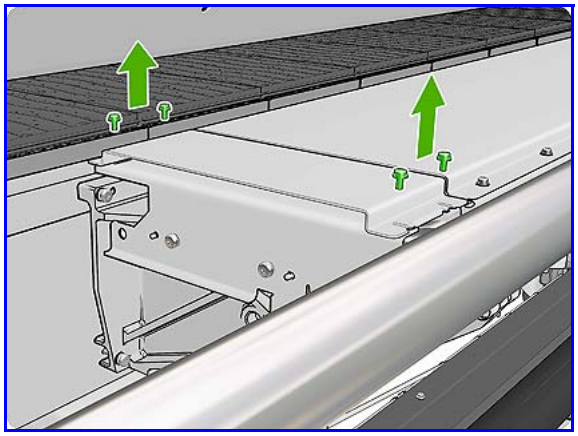
Central Support Plate

Removal

WARNING!: Switch off the printer and power enable switch.



1. Remove two screws from the Central Support Plate.



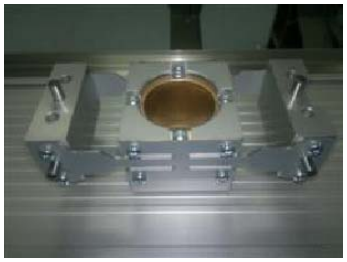
2. Remove the Central Support Plate.

PPS Column and Bushing XY

Removal

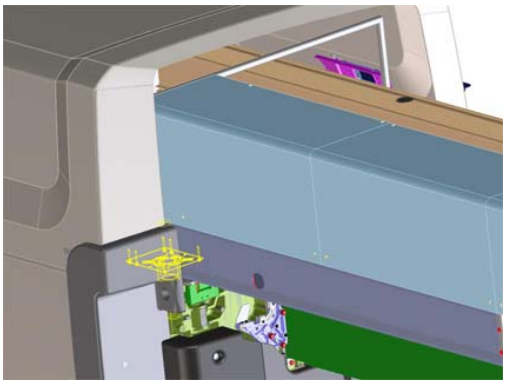
The parts referred to here are not service parts, but in case of a failure, the replacement procedure is documented, and the parts could be obtained through an official request sent to the HP support team -> division, with a detailed explanation of the issue faced by the customer.

The procedure described here is for replacing the main guidance of the PPS system, the PPS column and the bushing XY and Y. The locations can be seen in the following graphic:.



XY bushing (ink system side)

Y bushing (IPS PC side)



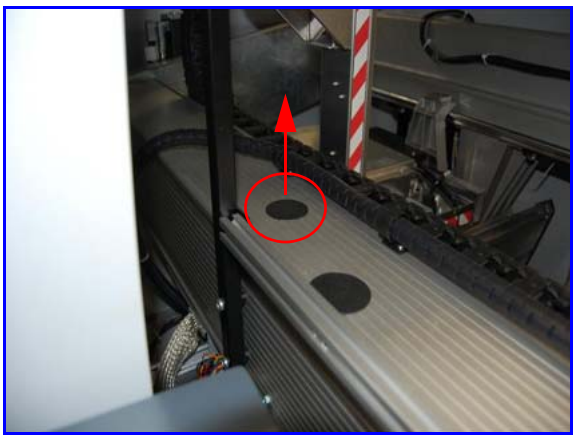
PPS XY busing (from the rear on the ink system side)

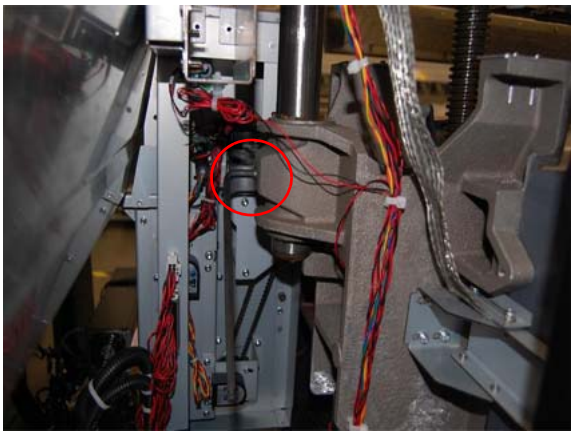
PPS Column and XY bushing removal

1. Move the Scan Axis to the Load position ⇒See page 410.

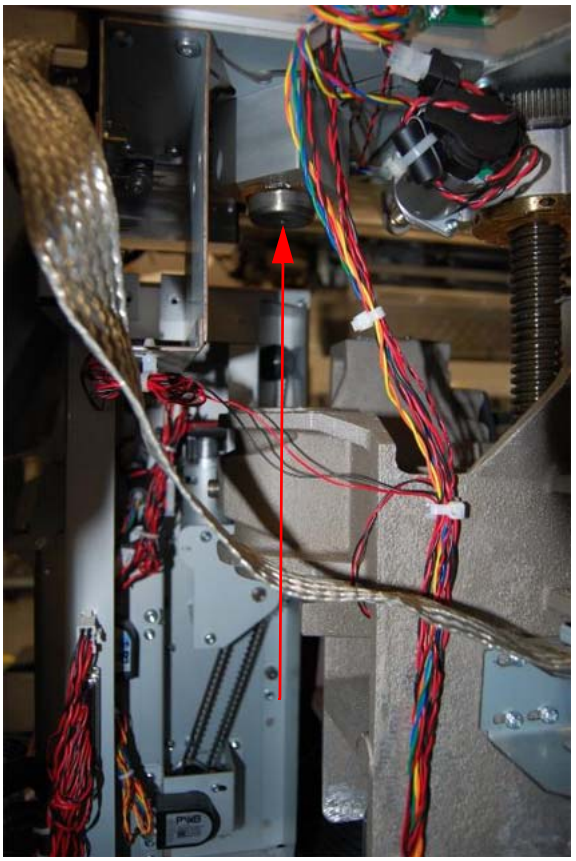
WARNING!: Switch off the printer and power enable switch.

2. Remove the Central Cover ⇒See page 573.
3. Remove the Right side Top Cover ⇒See page 568
4. Remove the Right Side Rear Panel ⇒See page 567.
5. Remove the PPS Column Cap from the top of the scan beam face.



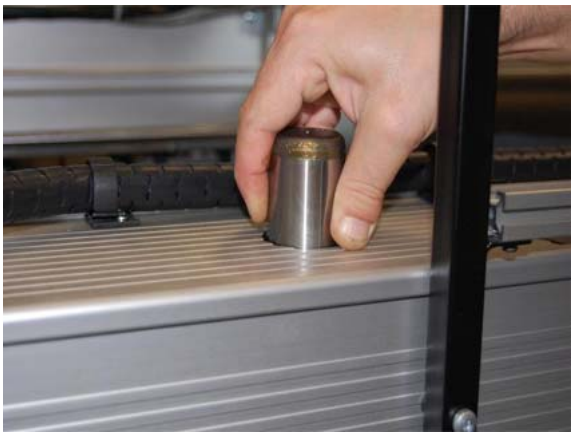


6. Using a 6mm allen key, loosen the locking screw a few turns.

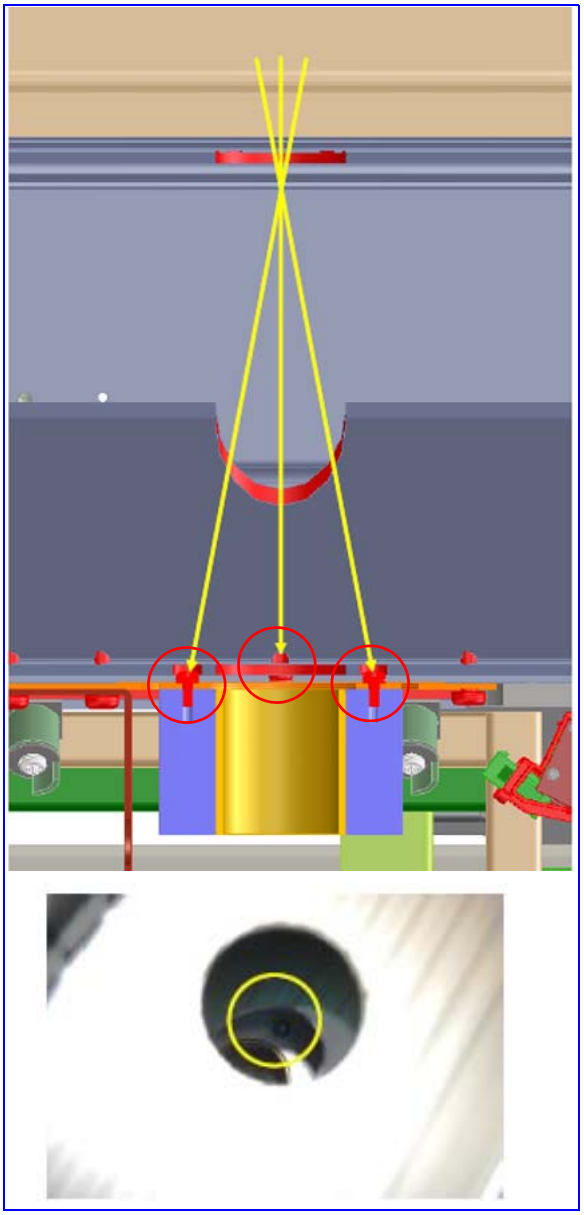


7. Push the PPS Column upwards, until it is accessible from the top side.

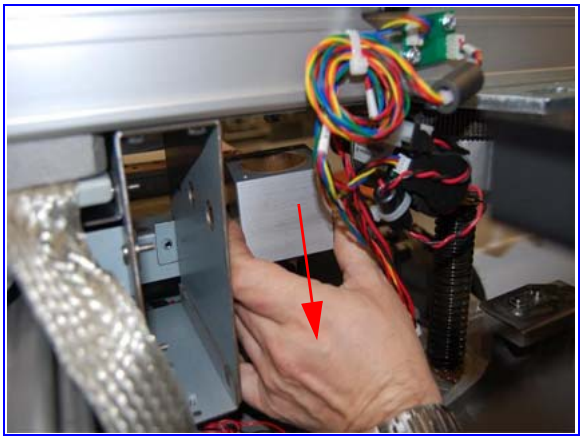
NOTE: In case the PPS column is blocked against the bushing, the bushing can be removed by using a steel bar and the Nylon hammer. Put the steel bar in vertical position in contact with the bottom face of the column and knock carefully with the hammer. Repeat it until the column has been released from the top part of the scan beam.



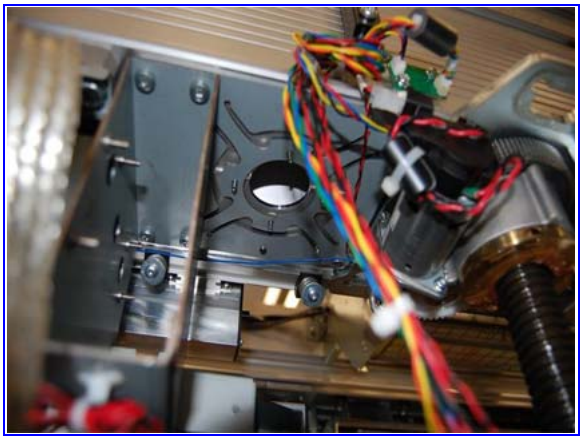
8. Remove the PPS Column.



9. From inside the scan beam, remove three T20 screws from the bushing XY, these can be accessed with a long screwdriver, as seen in the graphics here.



10. Remove the bushing XY.



11. Photo showing the underside without the bushing.

Installation

1. When installing a new PPS Column, use grease to lubricate the surface.

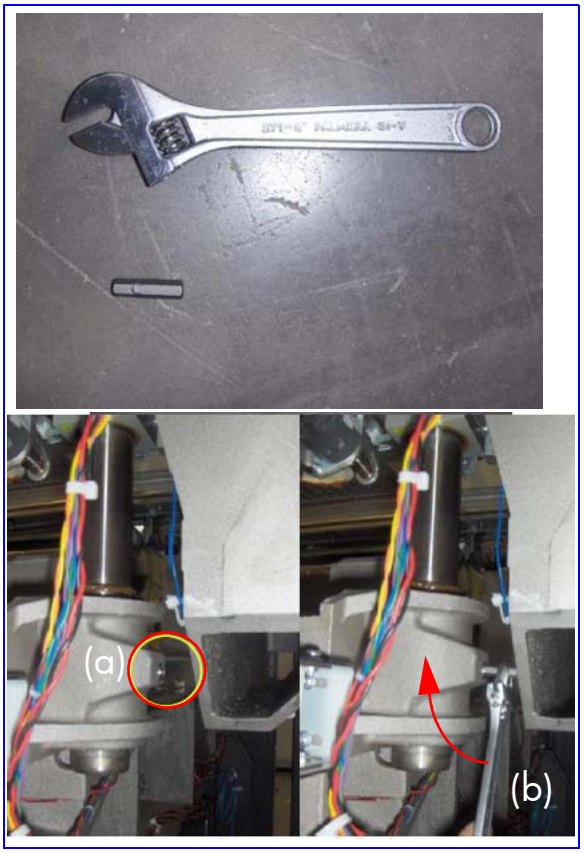
PPS Column and Y Bushing removal

1. Move the Scan Axis to the Load position ⇒See page 410.

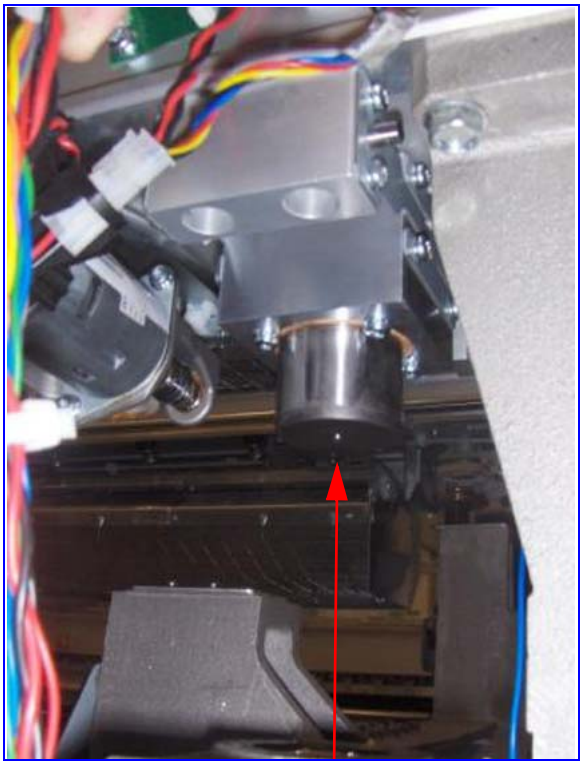
WARNING!: Switch off the printer and power enable switch.

2. Remove the Central Cover ⇒See page 573.
3. Remove the Left Side Top cover ⇒See page 566
4. Remove the Left Side Front Panel ⇒See page 565
5. Remove the Left Side Rear Panel ⇒See page 565

6. Remove the PPS Column Cap from the top of the Scan Beam face.

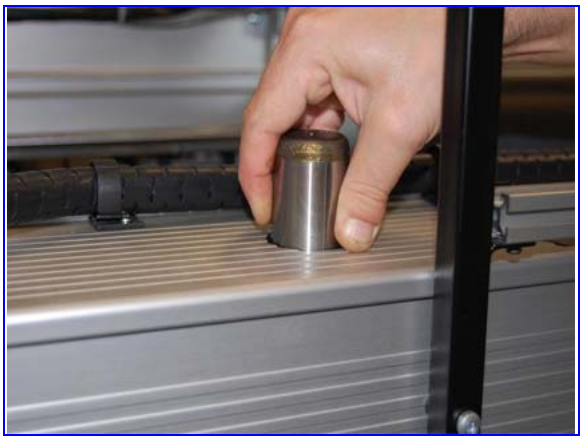


7. Using a 6mm allen key and a spanner or adjustable spanner (shown here), loosen the locking (a) screw a few turns (b).

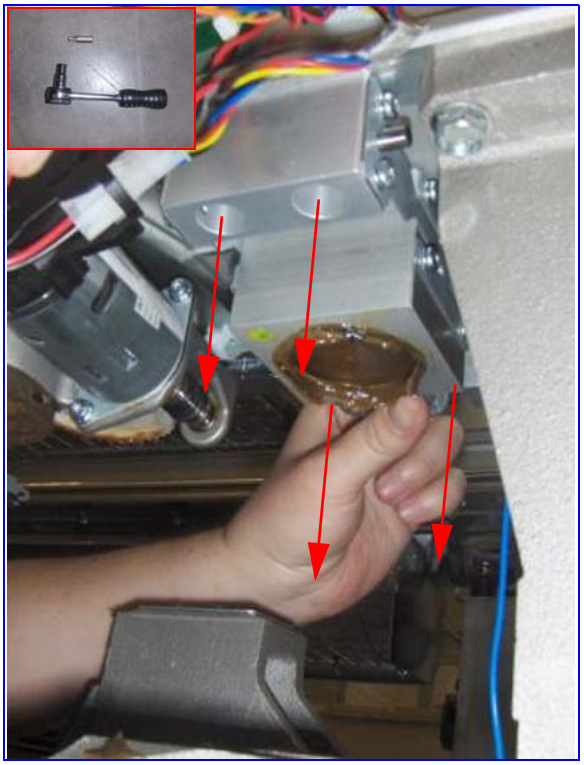


8. Push the PPS Column upwards, until it is accessible from the top side.

NOTE: In case the PPS column is blocked against the bushing, the bushing can be removed by using a steel bar and the plastic headed hammer. Put the steel bar in vertical position in contact with the bottom face of the column and knock carefully with the hammer. Repeat it until the column has been released from the top part of the scan beam.

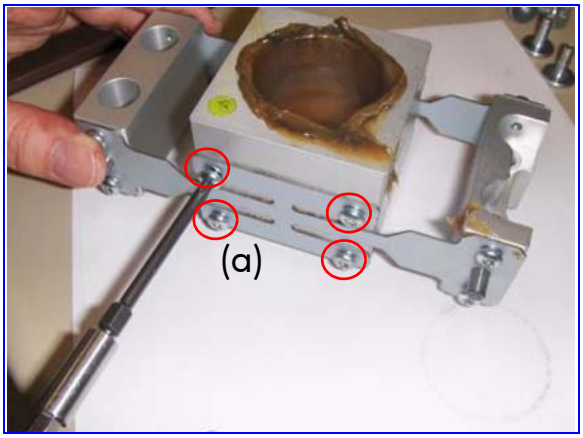


9. Remove the PPS Column.



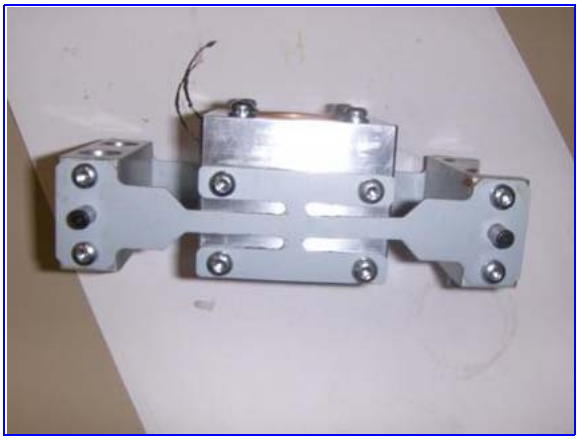
10. From inside the scan beam, remove four T30 screws from the Bushing Y, these can be accessed with an L shaped wrench, as seen in the graphics here.

11. Remove the Bushing Y.

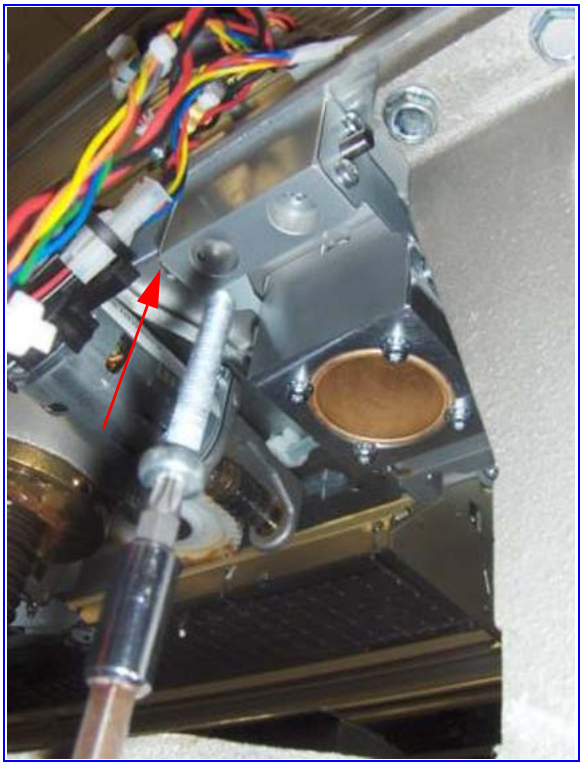


12. Remove eight taptite screws from both sides of the Bushing Y holder, and remove the Bushing holder

Installation



1. Install the Bushing holder on to the new replacement Bushing Y (b) using eight taptite screws.



2. When installing the new Bushing Y, use the location pins on the underside of the scan beam to position the part correctly in place.

Reinstalling the software on the IPS PC

The reinstallation of the software in the PC should only be performed under the following circumstances:

- In case of an intermittent communication failure (in some cases, we have seen that, after applying all the patches/Windows VISTA upgrades, windows / upgrade (where applicable), this can cause intermittent communication failures. The following procedure does NOT recommend installing all the VISTA patches & upgrades; as it cannot be guaranteed which patch was creating the instability).
- Any IPS PC intermittent failure that cannot be recovered.
- A Virus has been detected and cannot be removed.

NOTE: The IPS PC with L65500 includes Windows Vista, while the IPS PC coming with a LX series include Windows.

Dvd's/CD required for installation

Each IPS PC comes with a kit of DVDs/CDs.

- HP rp5700 Documentation and Diagnostics CD
- HP Restore Plus! DVD-ROM
- Operating System DVD 1 of 2
- Operating System DVD, 2 of 2 ('Multiple Language Pack').
- Here is a picture of the 4 DVDs-CDs that come with the L65500.

- If the printer is an LX600 or LX800, there may be a Windows 7 upgrade DVD also included, this will depend on the manufacturing date of the printer. For the complete installation procedure to upgrade to Window 7, refer to page 863.

Installing the software from the DVDs

This installation can be performed easily by the customer, with the guidance from support personnel over the phone. Re-installation time takes approximately 1-2hour. Here is the process to follow:

1. Reboot the PC with the DVD marked 'HP Restore Plus!'
2. Follow the instructions (the Hard Disk Drive has to be reformatted, Operating system to install: Windows Vista or Windows 7 (depending on the printer, English version (HP does not support other localization/languages of the Operating system of the IPS PC).

3. When requested, insert the DVD marked 'Operating System DVD (1 of 2)
4. When requested, insert the DVD marked 'Operating System DVD, (2 of 2) ('Multiple Language Pack').
5. When requested to insert another supplemental DVD-ROM, click on skip.
6. Create two users. Create an administrative user called "HPAdmin" and create a non-administrative user called 'HPL65500' or HPLX800 or HPLX600, depending on the printer.

TIP: HP recommends that you password protect all users.

7. Follow the instructions below: "Prepare the HP Internal Print Server (IPS)".
8. The IPS application can be found on the www.hp.com, under support & drivers: Select the applicable HP Designjet printer
9. Follow the instructions: "How to change the language of the IPS" if the default language is not acceptable

Prepare the HP Internal Print Server (IPS)

The following procedure must specifically be performed in Japan and Russia in order to correctly prepare the Internal Printer Server in Japanese and Russian. The estimated time to complete is one person for 45 minutes.

1. Power up the HP Internal Print Server computer.
2. Choose the language for the Windows operating system.

TIP: Remember that the HP Internal Print Server software will automatically be installed in the language you choose for Windows operating system.

3. Create two users. Create an administrative user called "HPAdmin" and create a non-administrative user called "HPL65500 or HPLX800 or HPLX600, depending on the printer.

TIP: HP recommends that you password protect all users.

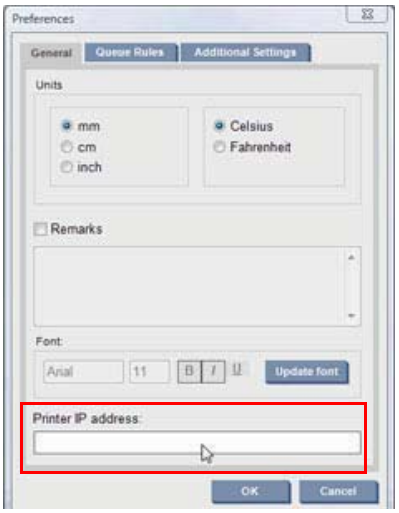
4. Create a computer name that makes sense. HP recommends a name like HPL65500–n, where n is any number.

Installing the HP Internal Print Server (L65500)

TIP: If necessary, the HP Internal Print Sever executable file can be found on the web at http://www.hp.com under the **Support & Drivers** tab.

1. Find the setup.exe icon on the desktop, double click on the icon and follow the on-screen instructions.

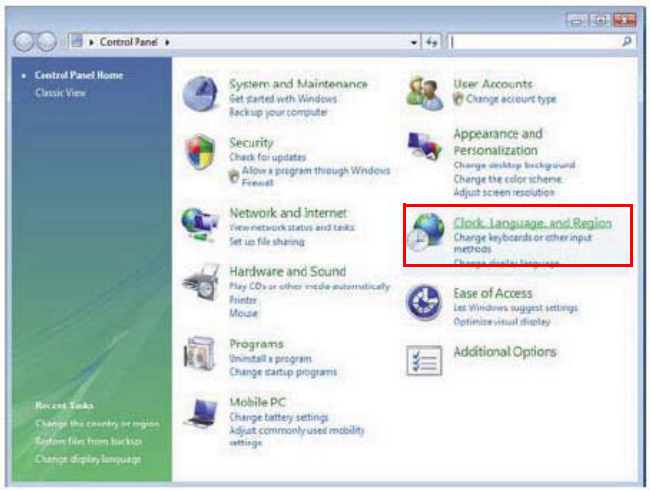
2. From the Internal Print Server, navigate to Tools > Proactive support. Configure the HP Proactive Support and make sure the customer accepts all disclaimers.



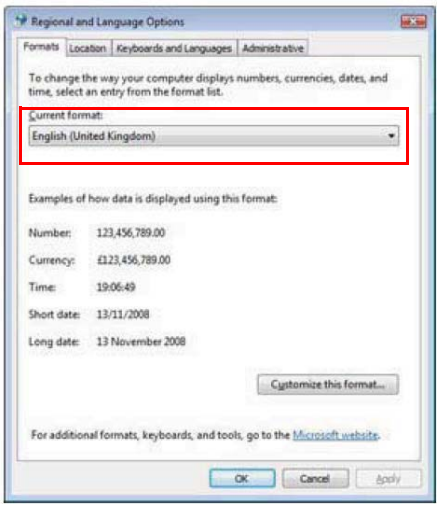
3. From the Internal Print Server, navigate to **Tools** > **Proactive support.** Configure the HP Proactive Support and make sure the customer accepts all disclaimers

How to change the country language of the IPS

1. Navigate to the Control Panel on the Internal Print Server and select Clock, Language, and Region

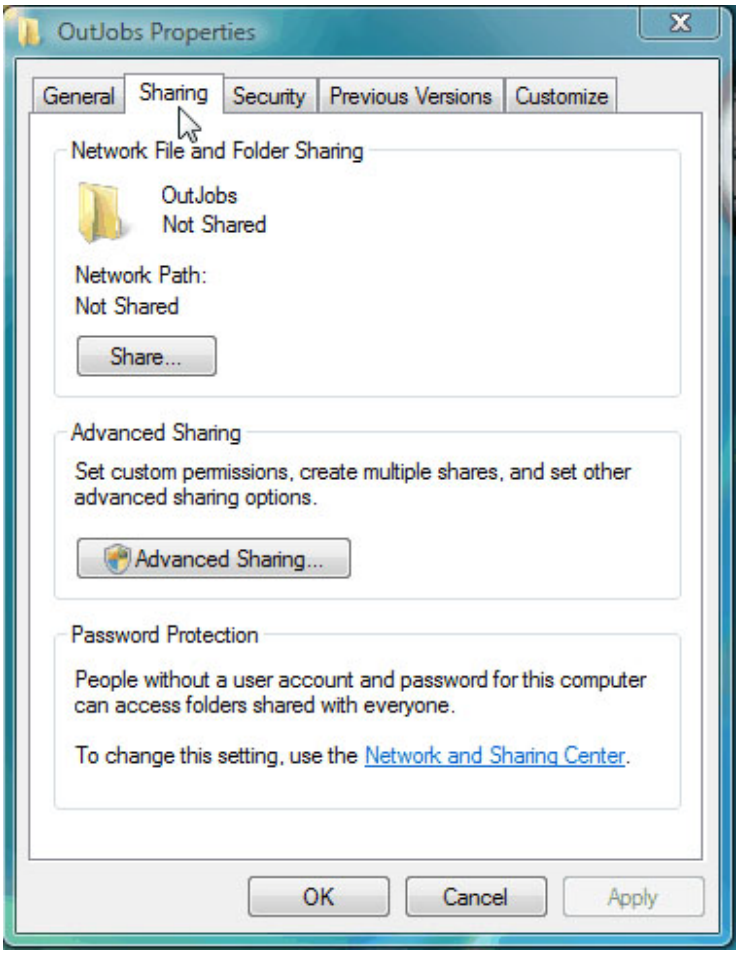


2. Select the appropriate entry from the format list.

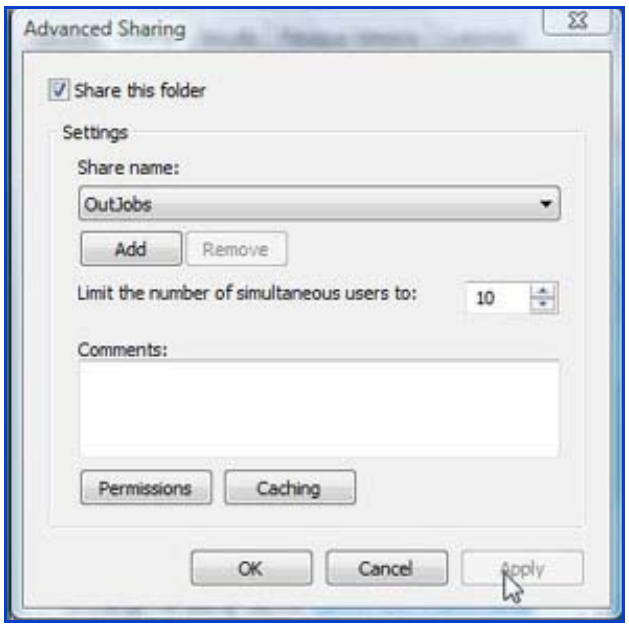


Create a shared folder

1. Create a folder named OutJobs on the HP Internal Print Server PC.
2. Open the folder properties for the new OutJobs folder and navigate to the Sharing tab.
3. Click on Advanced Sharing to set the sharing properties.

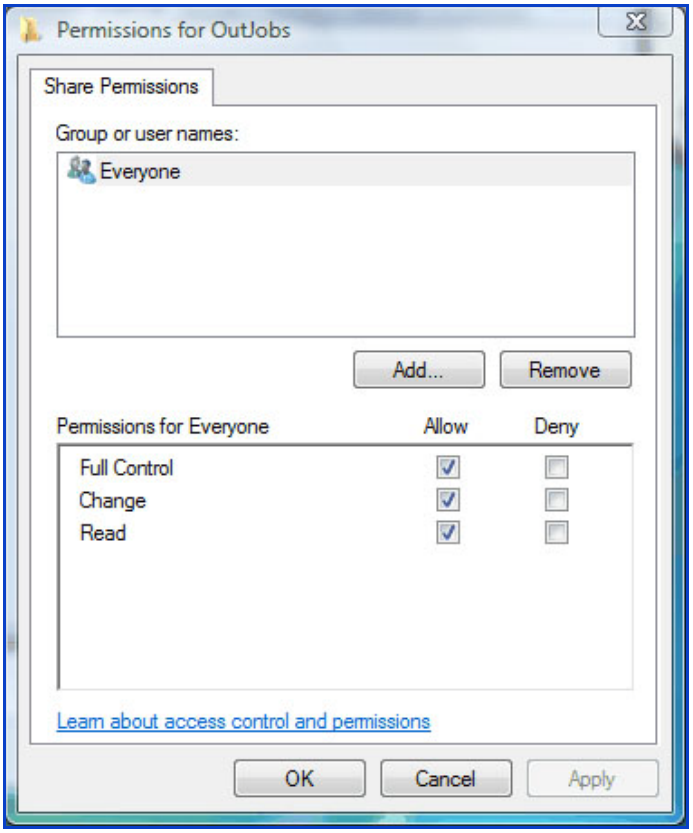


4. Make sure that Share this folder is selected.



5. Set the other settings to your requirements, then click on Permissions.

6. Add any groups or users required, and set the permissions as required by the customer.

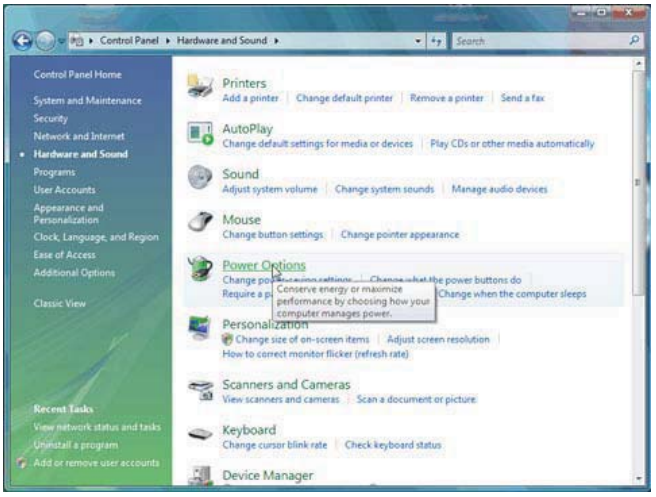


7. Navigate to Control Panel/Network and Internet/Network and Sharing Center on Windows Vista, and make sure that File Sharing is turned on.

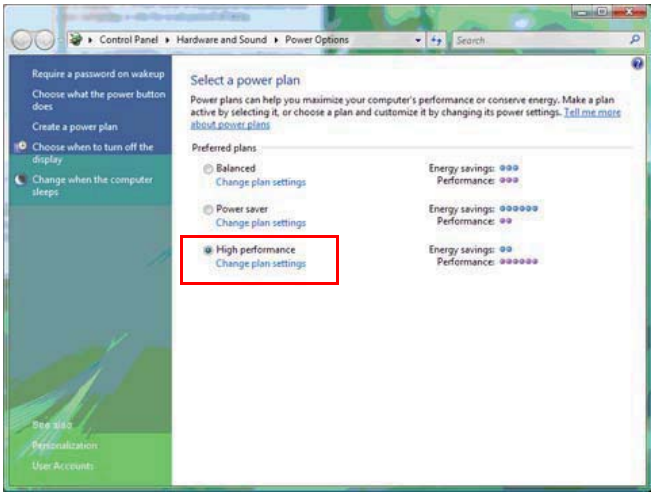
Configuring the Operating System (Vista: L65500)

Change the power settings

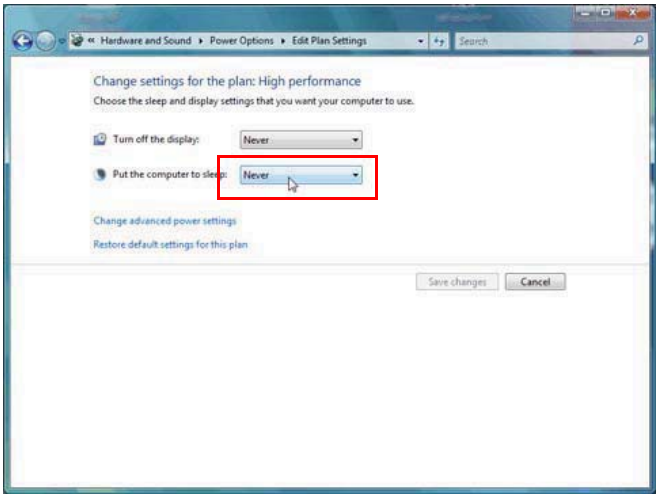
1. Select Control Panel > Hardware and Sound > Power Options.



2. Select High performance and click on Change plan settings.



3. In the Put the computer to sleep field, select Never.

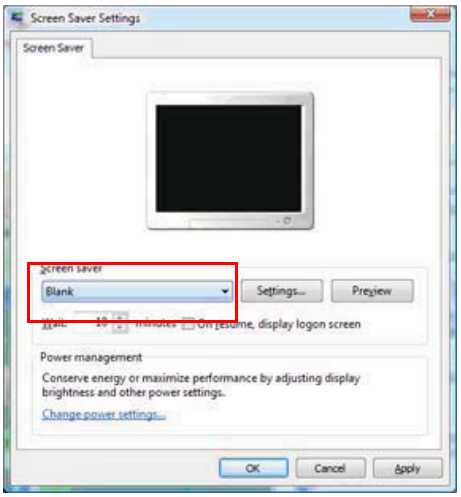


Set a blank screen saver

1. Right click anywhere on the desktop and select Screen Saver.

TIP: The Screen Saver Settings window is also available under Control Panel > System and Maintenance > Performance Information and Tools.

2. In the Screen Saver drop down menu, select Blank.



Configure the hard disk

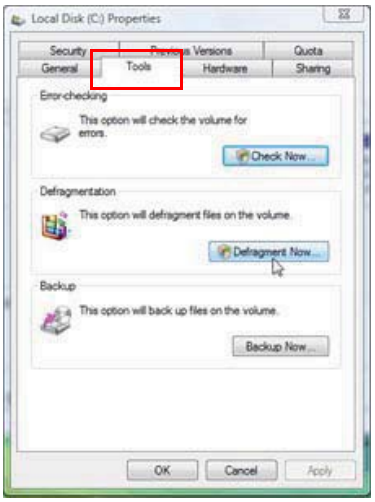
1. Select Start > Computer > (Right click) Manage > Device Manager >Disk drives > HDD >Properties > Policies (tab).

2. Check the following:

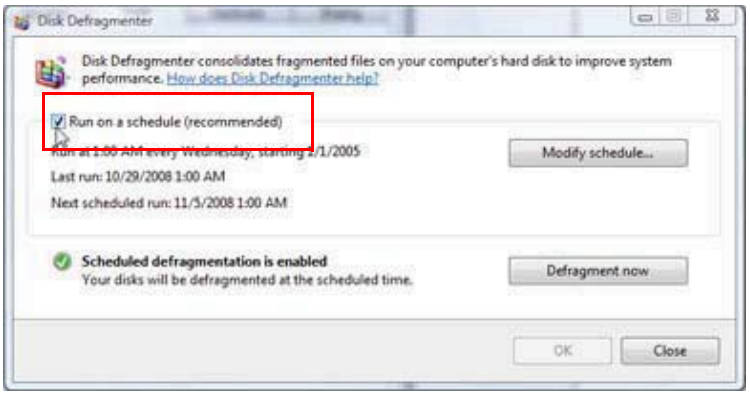
- Optimize for performance
- Enable write caching on the disk
- Enable advanced performance

Enable scheduled defragmentation

1. Select Start > Computer > (Right click) Manage > Disk Management >(Right click) C: > Properties > Tools.



2. Check Run on a schedule.

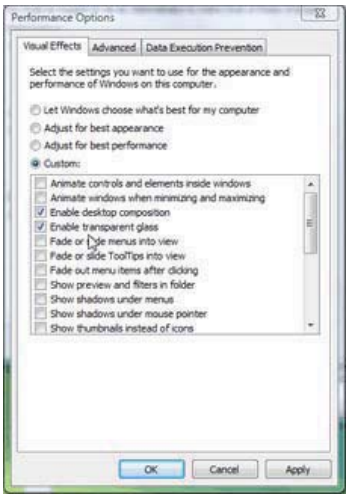


Configure visual effects

1. Select Control Panel > System and Maintenance > System > Advanced system settings (left column) > Advanced >Performance > Visual Effects > Custom.
2. Only the following should be checked:

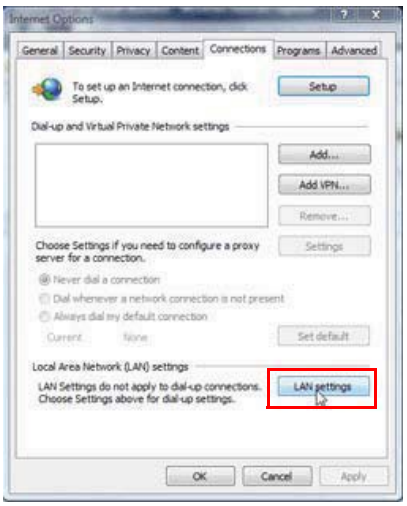
- Enable Desktop composition
- Enable transparent glass
- Smooth edges of screen fonts

- Use visual styles on windows and buttons

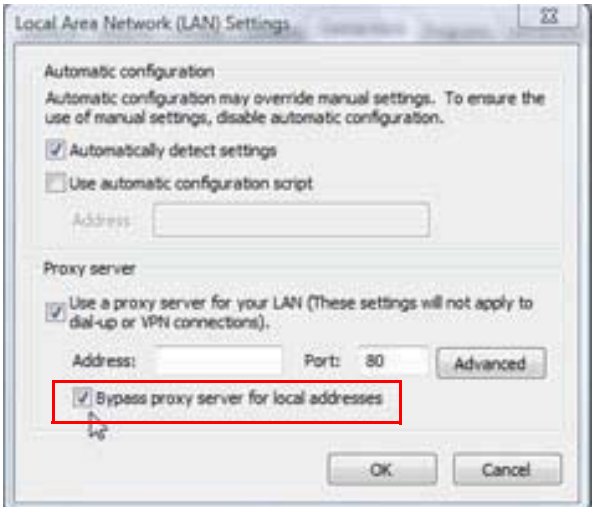


Configure the proxy

1. Log in with the printer's account.
2. In Internet Explorer, select Tools > Internet options > Connections > LAN settings.



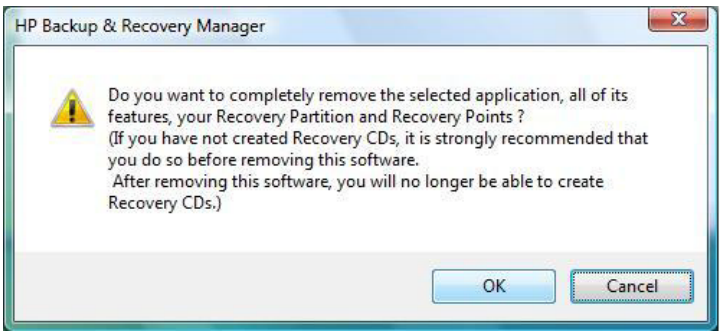
3. Check By-pass proxy server for local addresses.



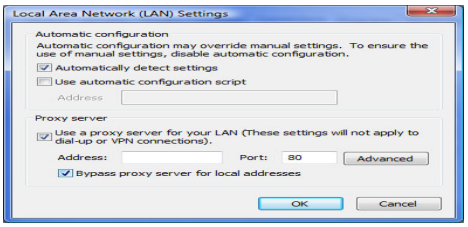
Upgrading the OS from Vista to Windows 7 (LX600/LX800

Early editions of the HP Designjet LX600/LX800 printers come with Windows Vista installed as the OS in the IPS PC. These printers will come with a Windows 7 upgrade DVD. The following procedure describes the upgrade steps. Note: This is only applicable to the HP Designjet LX600/LX800 Printers.

1. Uninstall the application 'HP Backup & Recovery Manager': Go to the Control Panel>Programs> Click on 'HP HP Backup & Recovery Manager>
2. Click on OK to uninstall the application and restart the computer to finish the uninstall procedure.



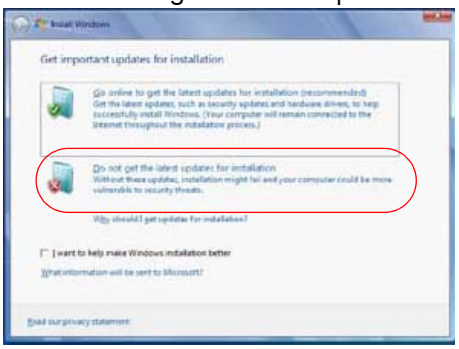
3. Insert the DVD 'Win Vista Bus to Win 7 Pro UPG Fulfill' and select 'Run setup.exe'.
4. Select 'My language is English' in the menu.



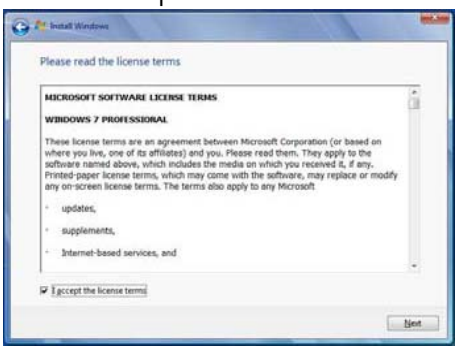
5. Select "Language to install" and "Time and currency format" and click on "Next".

6. Click on "Install now".

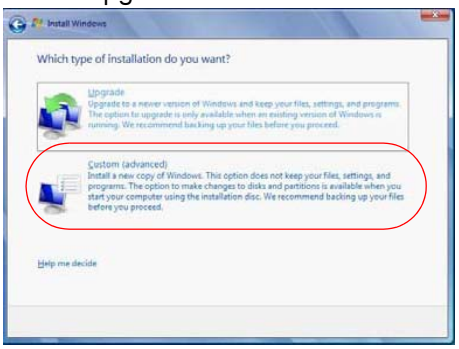
7. Select “Do not get the latest updates for installation”.



8. Check “I accept the license terms” and click on “Next” button.



9. Select “Upgrade”



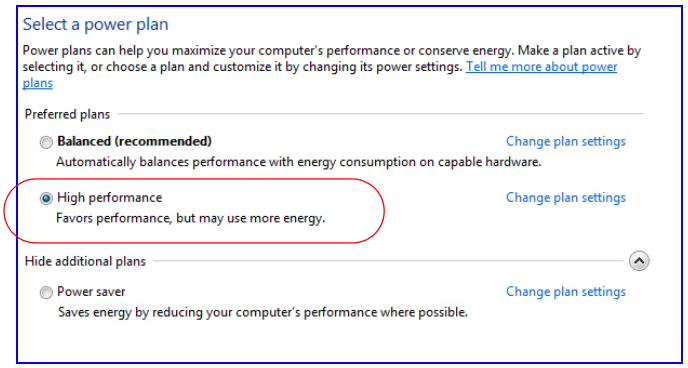
10. Windows will start the upgrade process.

11. Insert the code on the label from your DVD when you are prompted “Type your windows product key” and click “next”.

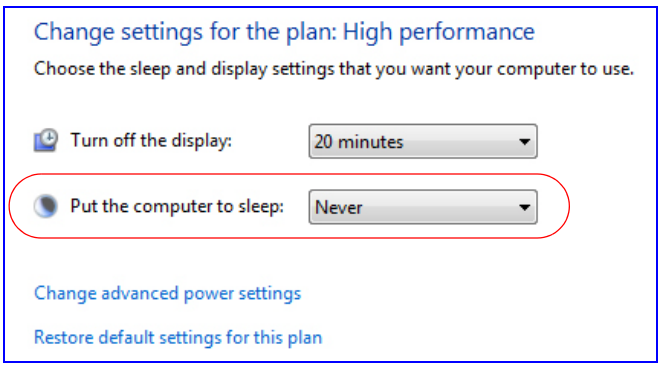
12. Select time zone to complete the process.

Configuring the Operating System (Windowa 7: LX600/LX800)

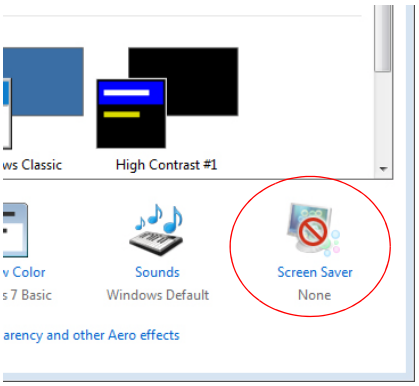
1. Log into the system using the account name previosuly setup.
2. Go to the Control Panel>System and Security>Power Options and select ‘High Performance’ and select ‘Change Power Options’.

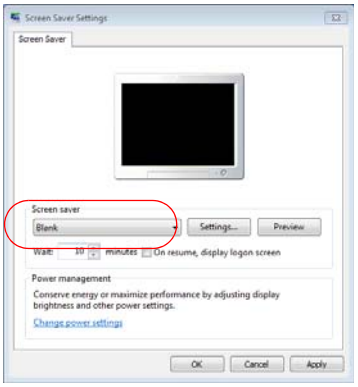


3. Select ‘Put the computer to sleep’: Never.

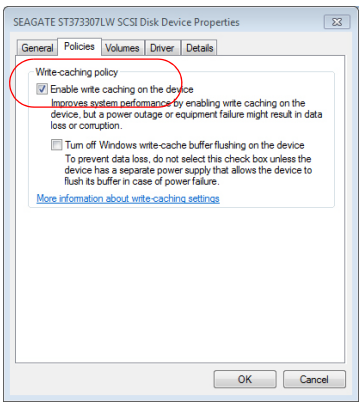


4. Select a blank screen saver to avoid potential performance issues. Right click on the desktop -> Personalize -> Screen Saver.

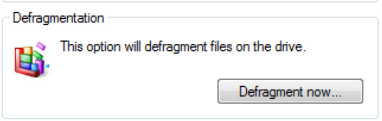




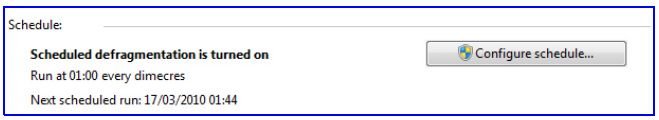
5. HDD configuration: Start->Computer->(Right click)Manage->Device Manager->Disk drives->(select the HDD) Properties->Policies-> "Enable write caching on the disk".

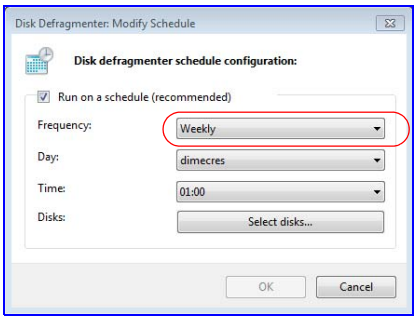


6. Ensure that scheduled defragmentation is activated: Start->Computer->(Right click)Manage->Disk Management -> (Right click on C:) -> Properties -> Tools -> Defragment Now...



7. While the PC is defragmenting, configure the schedule to weekly.





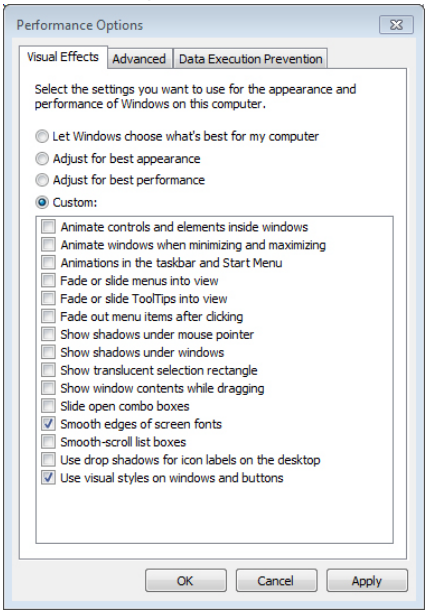
8. Go to Control Panel->System and Security -> System->Advanced system settings (left column)->Advanced->Performance->Visual Effects -> Custom and UNSELECT everything except for:

   a. Enable Desktop composition

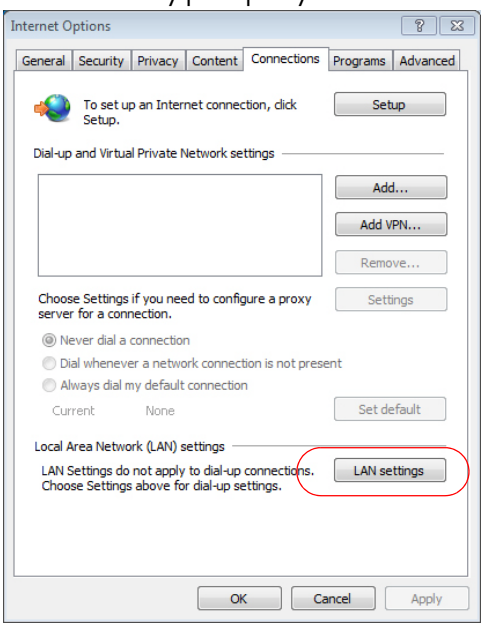
   b. Enable transparent glass

   c. Smooth edges of screen fonts

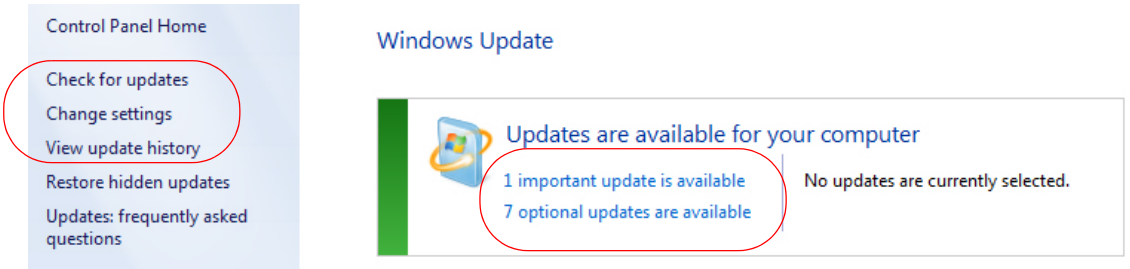
d. Use visual styles on windows and buttons



9. Go to Internet Explorer> Tools> Internet options > Connections > LAN settings and set the Proxy configuration. Check "By-pass proxy server for local addresses", if needed.

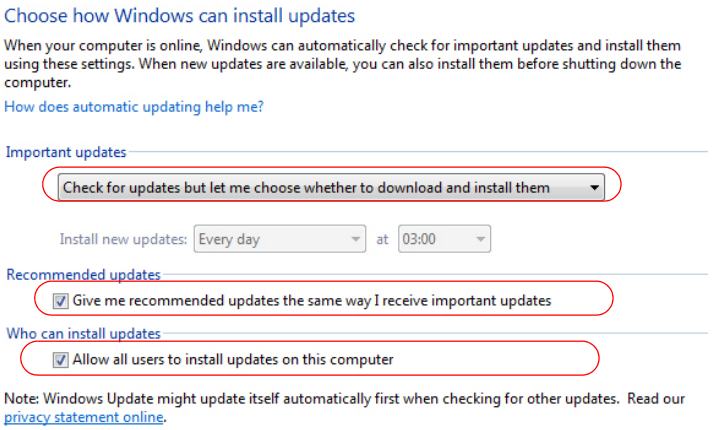


10. Windows Update (Start->All programs->Windows update). Ensure that the PC is connected to internet, has access to http://windowsupdate.microsoft.com/. Perform the following operations:



- **Check for updates:** Install all available updates. The process may need to be done several times (some updates require reboots).
- Select "View update history" to ensure that everything was installed correctly.

- Change settings -> select: “Download updates but let me choose whether to install them”.

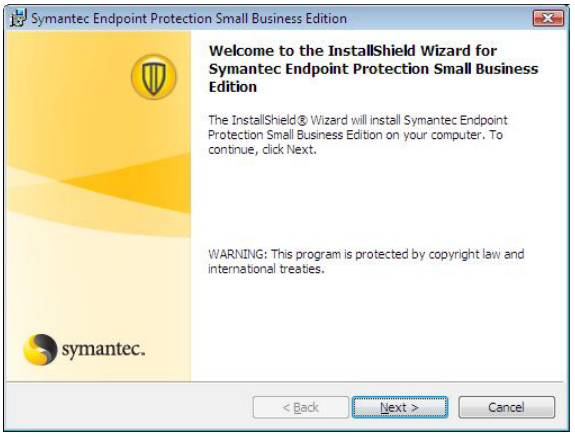


Install the HP Internal Print Server (LX600/LX800)

1. Install IPS software in the IPS computer as user “ScitexLX”. Releases are currently being published in a shared disk: \\npdfilesrv1.bpo.hp.com\SWLOrg\CoreConnectivity\ClientConnectivitySW\Programs\Baobab\Latest_Good_Release\IPS
2. On the above shared folder, the official IPS version is available for LX600/LX800 (April’10) is V4.0
3. Download both the *.msi and the setup.exe files and copy them in the desktop of the IPS PC.
4. Run the setup file and click the “next” buttons until a message “IPS was installed successfully” is displayed.
5. Once the IPS is installed, delete both the *.msi and the setup.exe files from the PC’s desktop.

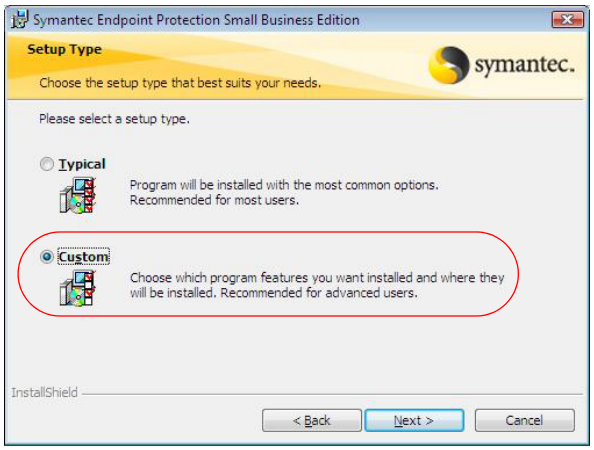
Install and Configure the Symantec Antivirus software

1. Install Symantec Endpoint Protection Small Business Edition by downloading the setup.exe file into the IPS PC (the desktop can be used). This application is not available from the www.hp.com, but can be found from the support zone site.
2. Execute Setup.exe.
3. Select ‘Next’ and agree to the license agreement.



4. Select 'Unmanaged client'.

5. Select 'Custom'.



6. Uncheck 'Virus Email Protection'.

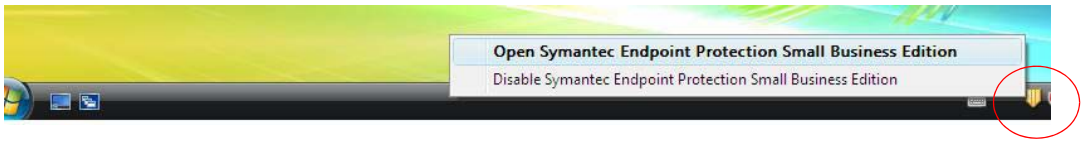
7. Check all three boxes.

8. Continue to click on 'Next' until the installation is complete.

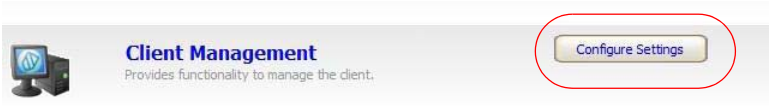
9. At the end of the installation, DELETE the setup.exe file from the IPC PC.

Configure the schedule for virus scan and updates

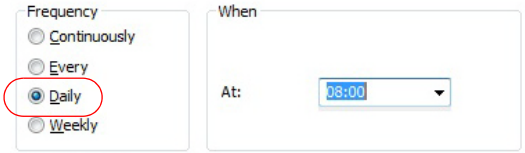
1. Once the installation has finished, configure right button over the Golden shield icon and select "Open Symantec Endpoint Protection Small Business Edition".



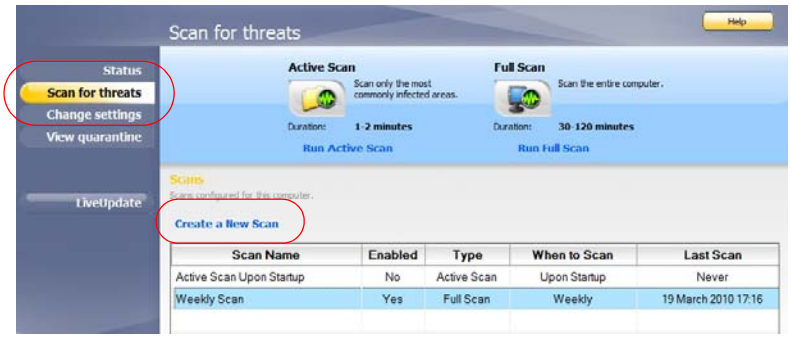
2. Click on "Change settings" and on "Client Manager" select "Configure Settings".



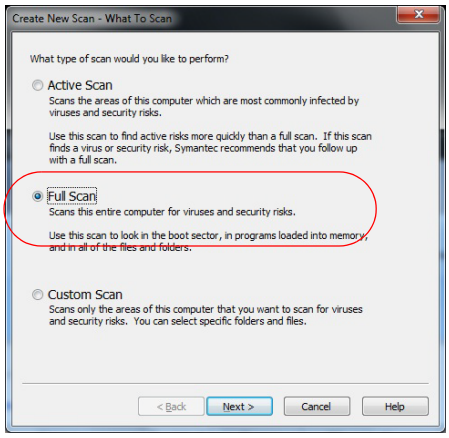
3. On the 'Schedule Updates' tab select 'Daily' at a convienient time as agreed with the customer and click on OK to apply the setting.



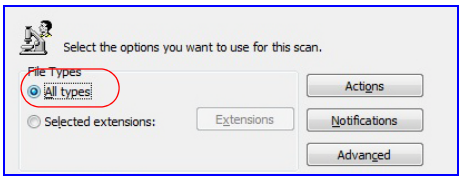
4. Click on 'Scan for threats' and select 'Create a new scan'.



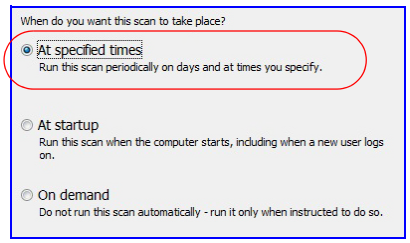
5. Select 'Full' and click on 'Next'.



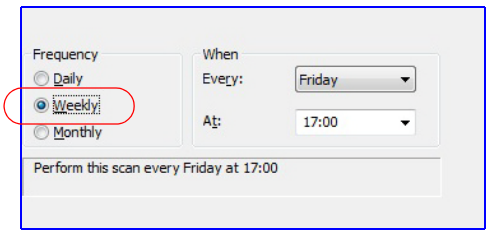
6. Select "All types" and click "Next".



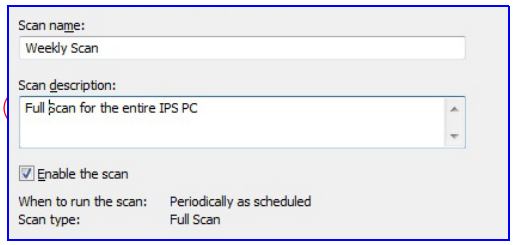
7. Select "At specified times" and click 'Next'.



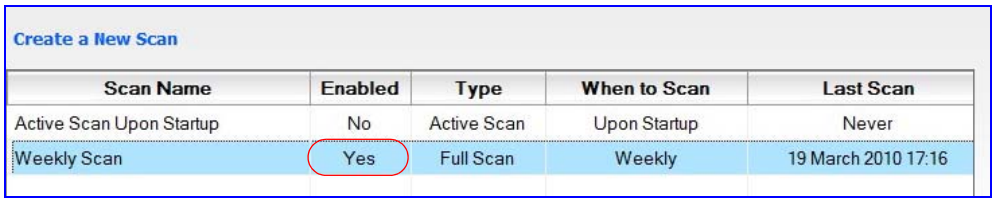
8. Select "weekly" and click "Next".



9. Type "Weekly Scan" in the "Scan name" and "Full Scan for the entire IPS PC" in the "Scan Description" then click "Finish".



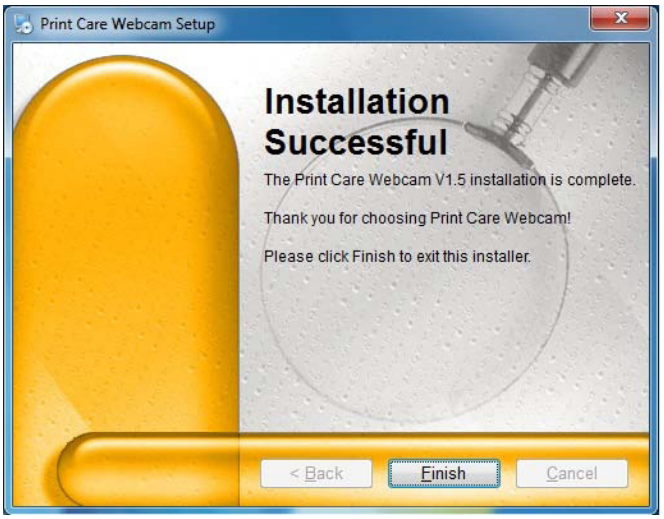
10. Verify “Yes” Enabled for the “Weekly Scan”.



Install CallMe@hp Camera software

1. Download the callme@hp software from hp.com into the IPC . You can download it to the PC desktop or run it from an external HDD or memory stick.
2. Execute the setup file and follow the on-screen instructions.
3. Click on “Next”

4. Click on “Finish’ and the following is displayed.

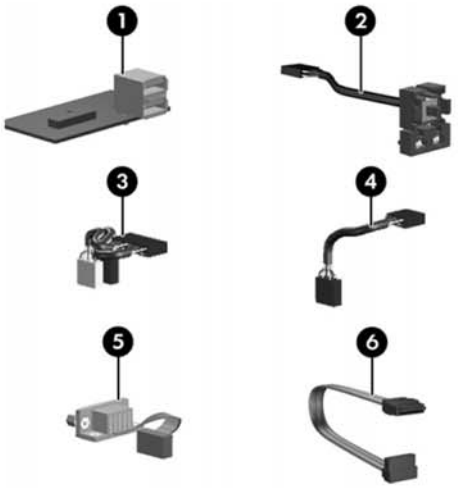


Internal Print Server PC

If the printer is in Warranty, the PC can be replaced. One exception is in Russia, the different parts have be ordered as the complete PC and cannot be imported in Russia. Please order the specific reference of 'standard system board for Russia', which can be ordered from the standard HP support systems of HP support organization. When it is out of Warranty, the complete PC can still be replaced, using the separate support parts from the www.hp.com web site.

HP rp5700 Business System

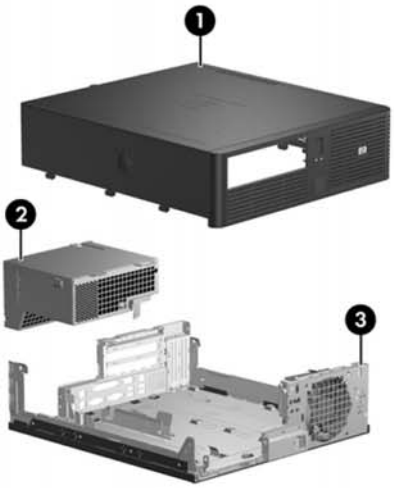
Document Number 447884-001. 1st Edition April 2007



Key Specifications

Processor Type:	Intel Celeron D, Intel Pentium 4, or Intel Core 2 Duo
RAM Type:	DDR PC2-5300 667 MHz, non-ECC
Maximum RAM Supported:	4 GB
Expansion Bus:	PCI 2.3
Graphics Adapter	Integrated controller. ADD2 support.
Hard drive interface:	SATA 3.0 Gb/s
I/O Interfaces:	Serial (2 std. or powered optional some models), parallel (1), USB 2.0 (6 std. + 4 powered optional some models), RJ-45 (1), front and rear audio jacks (2 each), PS/2 (2 ea), video DSUB

Spare Parts



System Unit

1	Hood assembly with front bezel	445765-001
2	Power supply, 80Plus	445771-001
3	Chassis	not spared

Cables

1	Front USB device with cable	445759-001
2	Power switch/LED assy with cable	445760-001
Expansion card cable kit, includes:		445777-001
3	Powered USB card cable (445792-001)	
4	Powered serial card cable (445791-001)	
5	Flying serial port with cable	445768-001
SATA drive cable kit, includes:		445763-001
6	11.8-inch cable (381868-013)	
6	19.7-inch cable (381868-012)	
6	20.9-inch cable (381868-011)	

**Not shown*

Mass Storage Devices (not illustrated)

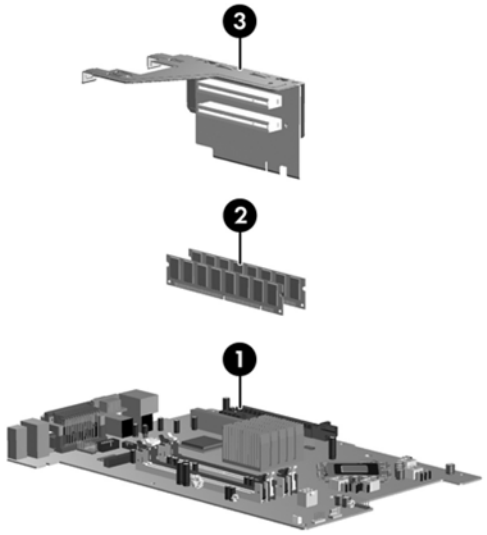
	16X SATA DVD-ROM drive	419496-001
	16X SATA DVDRW L drive with LightScribe	419498-001
	80-GB\7200 RPM SATA hard drive, 8MB buffer	440754-001
	160-GB\7200 RPM SATA hard drive, 8MB buffer	440499-001
	250-GB\7200 RPM SATA hard drive, 8MB buffer	440747-001

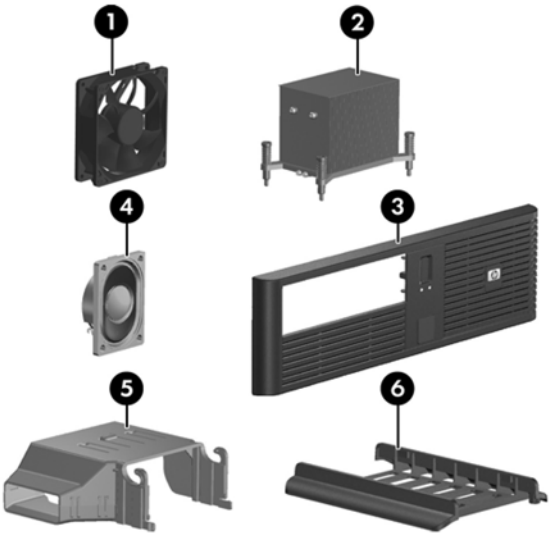
Keyboards (not illustrated)

PS/2, Basic Vista	**435302-xxx**
USB, Basic Vista	**435382-xxx**
USB, Basic Vista (BG 1650 certified)	**435384-xxx**

Arabic[1]	-171	LA Spanish[1]	-161
Belgian	-181	Netherlands[1]	-331
BHCSY[1]	-B41	Norwegian[1]	-091
Czech[1]	-221	Polish[1]	-121
Danish	-081	Portuguese[1]	-131
Finnish[1]	-351	Russian[1]	-251
French	-051	Slovakian[1]	-231
French Arabic[1]	-DE1	Spanish[1]	-071
German	-041	Swedish	-101
Greek[1]	-151	Swiss	-111
Hebrew[1]	-BB1	Turkish[1]	-141
Hungarian[1]	-211	U.K.[1]	-031
International	-B31	U.S.[1]	-001
Italian	-061		

[1] Not for 435384-xx1





Standard and Optional Boards

System Boards with thermal grease, alcohol pad, and CPU socket cover		
1	Standard system board with thermal grease, alcohol pad, CPU socket cover, and mounting screws	445757-001
*	Standard system board with thermal grease, alcohol pad, CPU socket cover, and mounting screws (for Russia only)	445764-001
Intel Celeron Processors with alcohol pad and thermal grease		
*	#440, 512K cache, 2.0 GHz, 533 MHz FSB	449166-001
Intel Pentium 4 Processors with alcohol pad and thermal grease		
*	#E2160, 1 MB cache, 1.8 GHz, 800 MHz FXSB	449168-001
Intel Core 2 Duo Processors with alcohol pad and thermal grease		
*	#E6400e, 2 MB cache, 2.13 GHz, 1066 FSB	450470-001
Memory modules		
2	512 MB, PC2-5300, CL5	396520-001
*	1 GB, PC2-5300, CL5	398038-001
3	Riser card with mounting bracket and screws	445758-001
Other boards		
*	Powered serial port expansion card with cable	445775-001
*	Powered USB expansion card with cable	445776-001
*	DVI-D ADD2 graphics, LP	398333-001
*	Agere International 56K Modem, FH	398661-001
*	Wireless LAN adapter, 802.11 ABG, WorldWide	391866-001
*	Wireless LAN adapter, 802.11 ABG, North America	391866-002

** Not shown*
LP = Low profile
FH = Full height

Miscellaneous Parts

1	Chassis fan	445761-001
2	Heatsink with alcohol pad and factory-applied thermal grease	445774-001
*	Mouse, PS2, scroll type	390937-001
*	Mouse, PS2, optical	417966-001
*	Battery, real-time clock	153099-001
3	Front bezel without mounting screws	445766-001
4	Internal speaker	445762-001
5	Fan duct	445767-001
6	Tower stand	445770-001

**Not shown*

Power Supply Cable Connections

CABLE DESIGNATOR	DEVICE
P1	System board., 24-pin
P2	CPU power, 6-pin
P3	Powered USB port expansion card
P4	Powered serial port expansion card
P5	2nd SATA hard drive
P6	1st SATA hard drive
P7	Optical drive

7 Preventive Maintenance

Introduction

About Preventive Maintenance

The purpose of scheduled preventive maintenance is to perform maintenance operations as required, in order to avoid possible failures before they start and ensure a good performance throughout the product life.

For each scheduled preventive maintenance action, there is an internal life counter in the firmware that counts a variable related to the life of the component, like the number of liters of ink used, the square meters of substrate printed, or the number of scan axis cycles (depending on the component/maintenance action) since the last time the preventive maintenance action was performed.

When the internal life counter reaches the limit for a preventive maintenance action (set according to testing and development), an alert is displayed on the HP Internal Print Server.

Preventive Maintenance Alerts and Actions

There are two types of preventive maintenance alerts: alerts that require a service engineer to complete the action, and alerts that require only that the customer complete the action.

Service maintenance alerts

The HP Internal Print Server displays alerts whenever a maintenance action is required. There are four alerts that require a Service Engineer, and must be performed according to the life counter value on the right (which is calculated into a percentage automatically).

These procedures are included in this chapter ⇒See page 880.

Alert	Action Required	Life Counter Value	
		Counter threshold	Qty of ink/ media
Maintenance #1 required	Clean the Heating and Curing modules and replacement of 6 resistors	1608 (note 1)	1608 liters
Maintenance #2 required	Replace the Carriage Chain Assembly	6000000 cycles (note 2)	225000 square meters
Maintenance #3 required	Replace the Intermediate Tank Set	1400 cycles (note 3)	1260 liters
Maintenance #4 required	Grease the PPS Screws	2000 > 8000 cycles (note 4)	121045 square meters
Maintenance #5 required	Replace Ink Tubes	900 000 cycles (depending on the SN)(note 5)	28125 sqm

Note 1: Corresponding counter in component usage of the service plot: 'Heater deflector usage since last cleaning (cc)' and 'Curing deflector usage since last cleaning (cc)' Then the new threshold is set from FW version GF-BOB-7.x or from FW version GF-BOO-8.x, Note that, when using the ink collector (LX800 and LX850 only), the counter will count 2 times faster as there are usually dust and ink quicker on the deflectors when using the ink collector.

Note2: Corresponding counter in component usage of the service plot: ‘Carriage # cycles’.

Note 3: Corresponding counter is in intermediate tanks values, life cycles column, preventive maintenance #3 will be displayed when one of the counter reaches this limit. 1 cycle = 1 refill done. (this info is available only from FW 14.2.2.1).

Note 4: Corresponding counter is in component usage of the service plot : PPS # cycles, the thresholds will be moved from 2000 to 8000 within a future firmware version after version 14.2.2.1.

The reason for this is when doing a cycle of the PPS (raising up and lowering back), the counter does not increase by 1, but by 4 on average, so the threshold will be increased to 8000 instead of 2000.

Note 5: Corresponding counter in component usage of the service plot: Tube ISS # cycles.

Printer with serial number ok (SG94S1F001), on one which the preventive maintenance #5 has not been performed (tube not replaced), will have a preventive maintenance #5 displayed with the number of cycles of the scan axis reaches 900 000 (from FW version 14.2.2.1).

Once the preventive maintenance #5 has been applied, and the reset from the service menu has been done (PMKIt#5), this preventive maintenance #5 is disabled (even if it is all the time displayed). It remains the preventive maintenance #2 (carriage chain assy replacement).

It is very important to reset the maintenance kit usage each time you perform preventive maintenance action ⇒See page 496.

Operator maintenance alerts

The HP Internal Print Server displays alerts whenever a maintenance action is required. The following seven alerts require action from the customer, and must be performed according to the life counter value on the right (which is calculated into a percentage automatically).

For more information about these procedures, refer to the *Maintenance and Troubleshooting Guide*.

Alert	Life Counter Value (Values are Approximate)
Clean the Temperature Sensor	80 liters (see note 1)
Clean the Line Sensor	80 liters (see note 2)
Replace the Sensor Box	No limit
Replace the oil reservoirs	6250 square meters (see note 3)
Clean the carriage rails	37501 square meters (see note 4)
Clean the carriage cover	80 liters (see note 5)
Clean the ink deposits	136 liters (see note 6)

Note 1: The corresponding counter in not visible in the service plot, but can be calculated from the preventive maintenance chapter, by applying, at the line 'heating sensor', the column 'capacity'*'current usage'.

Note 2: The corresponding counter is available in the service plot, in the component usage section, Line sensor since last clean (milliliters) with a corresponding threshold: 80 000 000 (80l), number reported with 000 more than ml.

Note 3: The corresponding counter is available in the service plot, in the component usage section: Usage oil reservoir (m), with a corresponding limit of 500 000 m (500km of the carriage movement distance).

Note 4: The corresponding counter is available in the service plot, in the component usage section: Usage slider rods (m), with a corresponding limit of 3 000 000 m (3000km of the carriage movement distance).

Note 5: The corresponding counter is available in the service plot, in the component usage section, Carriage lid usage (milliliters), with a corresponding threshold: 80 000 000 (80l), number reported with 000 more than ml.

Note 6: The corresponding counter is available in the service plot, in the component usage section, Ink deposit level (cc) , with a corresponding threshold: 136 000 (136l).

Check for alerts

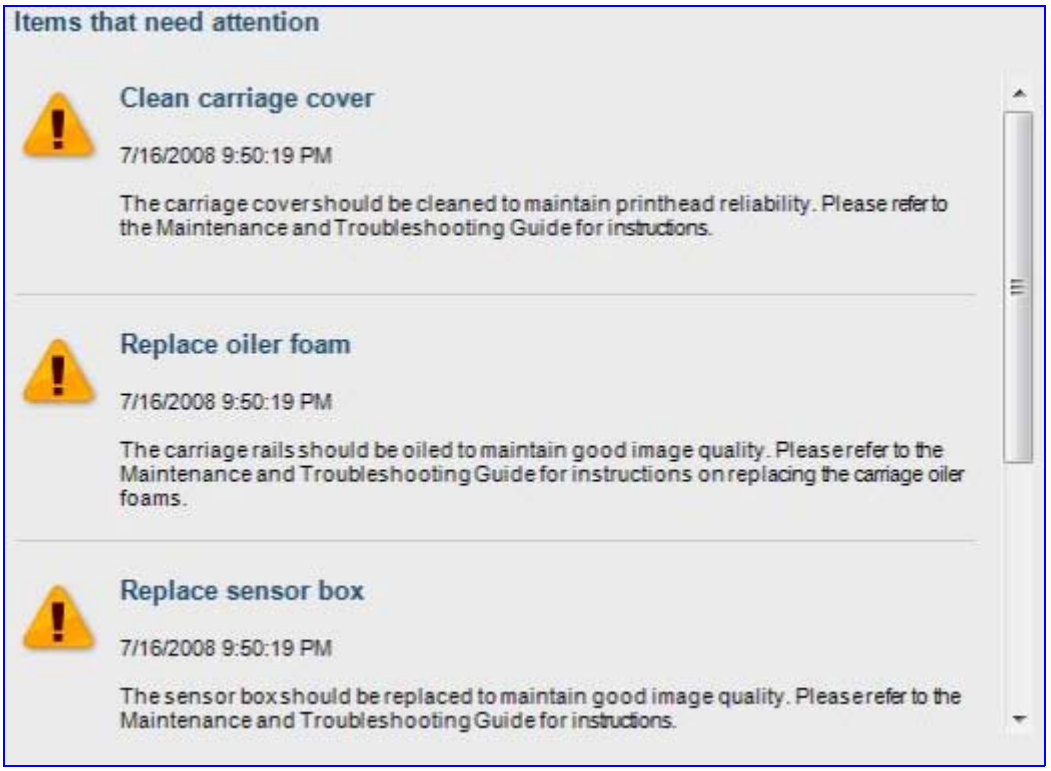
You can check the maintenance usage levels on the HP Internal Print Server, which are automatically converted to a percentage according to the life counter values.

NOTE: You can also check the maintenance usage levels or life counters for individual components using the Reset Life Counters utility⇒See page 496.

To check the maintenance usage levels on the HP Internal Print Server, use the following procedure.

1. From the HP Internal Print Server, navigate to **Information** > **Alerts**.

2. The HP Internal Print Server displays the current alerts.



WARNING!: These percentages are estimations only.

Check the maintenance usage levels on the HP Internal Print Server

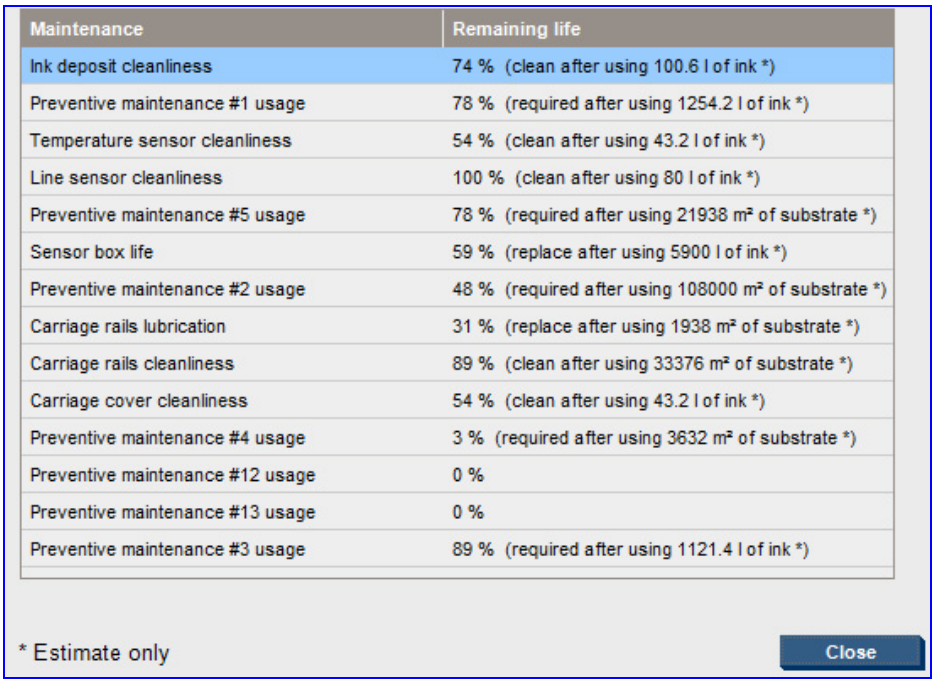
You can check the maintenance usage levels on the HP Internal Print Server, which are automatically converted to a percentage according to the life counter values.

NOTE: You can also check the maintenance usage levels or life counters for individual components using the Reset Life Counters utility⇒See page 496.

To check the maintenance usage levels on the HP Internal Print Server, use the following procedure.

1. From the HP Internal Print Server, navigate to **Information** > **Maintenance**.

2. The HP Internal Print Server displays the maintenance usage levels.



Maintenance	Remaining life
Ink deposit cleanliness	74 % (clean after using 100.6 l of ink *)
Preventive maintenance #1 usage	78 % (required after using 1254.2 l of ink *)
Temperature sensor cleanliness	54 % (clean after using 43.2 l of ink *)
Line sensor cleanliness	100 % (clean after using 80 l of ink *)
Preventive maintenance #5 usage	78 % (required after using 21938 m² of substrate *)
Sensor box life	59 % (replace after using 5900 l of ink *)
Preventive maintenance #2 usage	48 % (required after using 108000 m² of substrate *)
Carriage rails lubrication	31 % (replace after using 1938 m² of substrate *)
Carriage rails cleanliness	89 % (clean after using 33376 m² of substrate *)
Carriage cover cleanliness	54 % (clean after using 43.2 l of ink *)
Preventive maintenance #4 usage	3 % (required after using 3632 m² of substrate *)
Preventive maintenance #12 usage	0 %
Preventive maintenance #13 usage	0 %
Preventive maintenance #3 usage	89 % (required after using 1121.4 l of ink *)

Preventive maintenance service procedures

When a preventive maintenance number is displayed, before dispatching the part, a check is required to see if there are no other preventive maintenance alerts which are about to be displayed. If there is another maintenance about to be performed (another percentage of a calibration to be done by service for example), propose to the customer to do the other one.

This can be done by asking the customer to send the service plot, and check the section preventive maintenance section.

Preventative maintenance Usage	
Kit Name	Current Usage (%)
|Drop Detector Outside Spittoon Ink Volume|	26
|Curing Lamps|Heating Lamps|	22
|Heating Sensors|	46
|Total ink consumed since last tetris sensor cleaning|	0
|Tubes Cycles|	0
|Total ink consumed since last color sensor clean/replace|	41
|Chain Cycles|	52
|Sliders rods run distance since last lubing|	69
|Sliders rods run distance since last lubing and cleaning|	11
|Total ink consumed since last carriage lid cleaning|	46
|Pps Cycles|	97
0	0
0	0
|Ids buffer supply number of cycles|	11

Conversion preventive maintenance # <-> name on service plot

1 <-> Curing Lamps Heating Lamps

2 <-> Chain cycles

3 <-> Ids buffer number of cycles

4 <-> Pps Cycles

5 <-> Tubes Cycles

Remember for the preventive maintenance 5 this has to be done only if the printer S/N less than SG94S1F001 and that the tubes have not been already replaced.

How to know the equivalent remaining qty of ink / media before the preventive maintenance is displayed?(100%-percentage)*capacity (from the preventative maintenance Usage part of the service plot). This information is available within the IPS, maintenance status.

Preventive maintenance #1: Clean heating/curing module

For preventive maintenance, the Heating and Curing Module Reflectors must be cleaned in the following circumstances:

- Whenever the service maintenance alert for Preventive Maintenance # 1 appears.

Service Part: Preventive Maintenance Kit #1

- For L65500/LX600: 2 * Q6704-67009 heating/curing 104" resistance new version
- For LX8x0: 2* Q6703-67017 Heating and Curing Resistor Set (3 off) (LX8x0).

Procedure

3. Following standard heating and curing resistor replacement + complete cleaning process, refer to page page 822 and to page 834
4. And do the 'cleaning of ventilation filters of ecabinet' refer to page 883.

NOTE: It is very important to reset the maintenance kit usage each time you perform preventive maintenance action ⇒See page 496.

Preventive maintenance #2: Replace the Carriage Chain Assembly

For preventive maintenance, the Carriage Chain Assembly must be replaced in the following circumstances:

- Whenever the service maintenance alert for Preventive Maintenance # 2 appears.

Service Part: Preventive Maintenance Kit #2

- Carriage Chain Assembly PN # Q6702-60484
- 2 Ink Pressure Sensors PN # Q6702-60424

Procedure

For the replacement procedure for the Carriage Chain Assembly and Ink Pressure Sensors ⇒See page 722.

NOTE: It is very important to reset the maintenance kit usage each time you perform preventive maintenance action ⇒See page 496.

Preventive maintenance #3: Replace the Intermediate Tank Set

The Intermediate Tank Sets must be replaced in the following circumstances:

- Whenever the service maintenance alert for Preventive Maintenance # 3 appears.

NOTE: Under these conditions, all of the Intermediate Tank Sets must be replaced at the same time.

NOTE: When a broken bag is detected and the Intermediate Tank Sets have been installed for less than one year, it is only necessary to replace the damaged Intermediate Tank Sets (both tanks for that color) ⇒ page 386.

Service Part: Preventive Maintenance Kit #3

- Intermediate Tank Set PN # Q6702-60432

Procedure

1. Clean the ventilation filter foams of the E-Cabinet ⇒ page 883.
2. Clean the encoder reader on the carriage with a cloth and alcohol Isopropyl.
3. For the replacement procedure for the Intermediate Tank Sets, ⇒ see page 389.

NOTE: It is very important to reset the maintenance kit usage each time you perform preventive maintenance action ⇒See page 496.

Preventive maintenance #4: Grease the PPS Screw Assembly

You must grease the PPS Screw Assembly in the following circumstances:

- Whenever the service maintenance alert for Preventive Maintenance # 4 appears.
- Whenever you replace the PPS Screw Assembly.

Service Part: Preventive Maintenance Kit #4

- Grease Kit PN # Q6702-60546

Procedure

1. Navigate to **Carriage Beam Position** > **Move to Highest Position**.
2. Put on the gloves and put some grease on your finger.
3. Apply the grease on the exposed, middle part of the PPS Screw by moving your finger up and down the PPS Screw, filling the threads with grease. Continue applying the grease until the whole middle section of the screw, all the way around the screw, is greased.

NOTE: You do not need to put grease on the outside of the threads.

NOTE: You do not need to put grease on the bottom or top of the screw. Moving the mechanism up and down the screw is sufficient.

4. Repeat step 3 for each PPS Screw.
5. Return to the Carriage Beam Position menu and select **Move to Printing (Normal)** to move the carriage beam height back to the normal position and spread the grease.
6. Return to the Carriage Beam Position menu and select **Move to Highest Position** to move the carriage beam height back to the highest position and spread the grease.
7. Repeat steps 5 and 6 two more times to fully spread the grease.
8. Remove any extra grease.
9. Make sure that the PPS Low Switch does not have any grease that will prevent it from working correctly. If grease is interfering with the switch, remove it and gently clean the grease from the switch.
10. Clean the encoder reader on the carriage, with a cloth and alcohol Isopropyl.
11. For the replacement procedure for the Intermediate Tank Sets, ⇒ see page 389.
12. Return to the Carriage Beam Position menu and select **Move to Printing (Normal)** to move the carriage beam height back to the normal position.

NOTE: It is very important to reset the maintenance kit usage each time you perform preventive maintenance action ⇒See page 496.

Preventive maintenance #5: Replace Ink Tubes

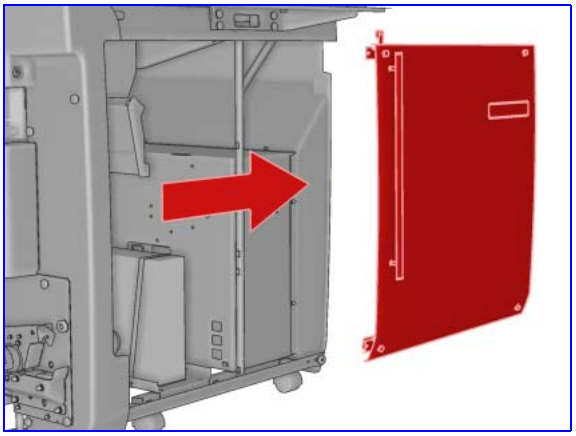
The following parts must be dispatched to the customer for installation by an onsite engineer: Q6702-67011 (tube kit) and Q6702-60690 (Tubes Cleaning Kit)

The tubes replacement procedure can be found on ⇒ page 784.

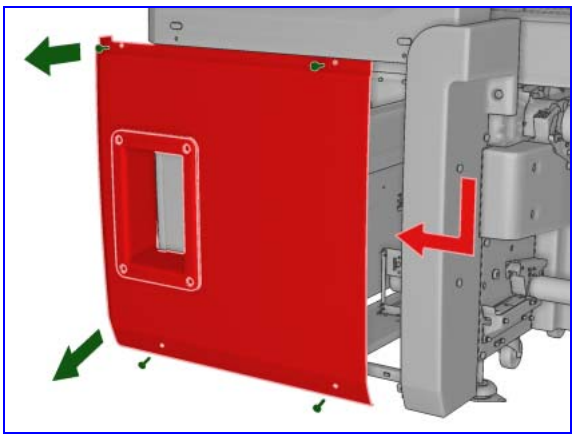
Cleaning the ventilation filter foams of the E-Cabinet

It is important that the E-Cabinet is correctly ventalated, and so part of the maintenance procedures is to periodically clean the foam filters of the left and right E-Cabinet ventalation fans.

1. Remove the Right Cover Slide Door ⇒ page 567.



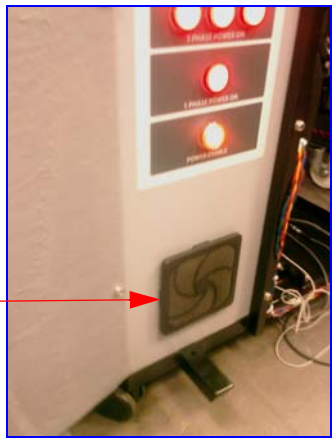
2. Remove the Right Side Rear Panel ⇒ page 567.



3. There are two ventilation fans for he E-Cabinet; on the Left and Right.

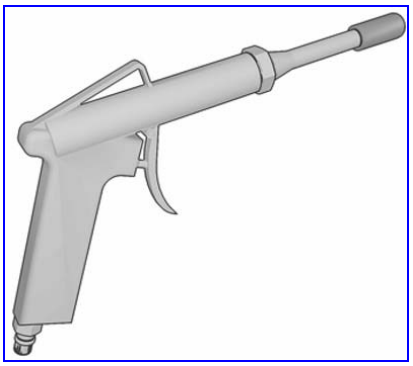
Left side ventilation fan

Right side ventilation fan



4. On each of the fans remove the plastic holding frame by unclipping it, this will expose the filter and fan.

5. Use the the compressed air gun (the one used to inflate the spindle), to blow dust and dirt from the filter and fan.



8 Remote Support

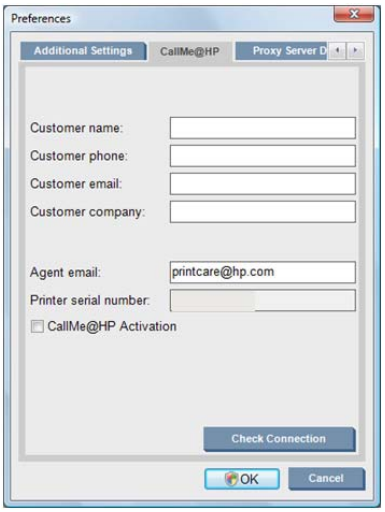
Callme@HP Configuration

Installation

This information is also included in the Printer´s Installation guide.

During installation process, specific information must be introduced into the IPS preferences to correctly route the Remote Support Calls to the Support Agent (HP or Authorized Service Provider approved to provide this Remote Support Service).

1. Go to the IPS menu “Tools”, then press “Preferences” and look for the tab “Callme@HP”.



2. Enter in information into all 6 fields:

   The first four fields are related to customer data. They can be generic and are intended to be automatically loaded as default data into the Remote Support Application.

   a. **Printer Serial Number:** Check that the serial number is correctly entered into the text field.

   b. **Agent E-mail:** This parameter is VERY important as it establishes the call routing to the appropriate support organization. If the configuration of this field is not correct any support calls made will not reach the intended recipient.

      - If the Reseller partner is going to provide the support for the unit AND has been approved for using this tool and has the account setup and permissions setup, enter in this field the E-mail of the reseller engineer supporting this printer, using the reseller's domain used for creating the account.
      - If the reseller is not entitled to use the “Callme@hp” remote troubleshooting tool, then leave the default value: printcare@hp.com.

3. Launch the “callme@HP” application under the “tools” menu option and verify the information entered loads correctly into the template.

   Important: The application will ask for software to be installed, select yes to all the requirements.

   If no window is displayed, go to the Site Preparation document under the section where the network requirements are described, and check that all the requirements for network connectivity have been met.

4. Ensure that the 'UAC level' is set to the minimum (mandatory to be able to doa remote control session).

5. Click on ‘Check connection’ (preferences of call me @ hp). This will check that both ports 443 and 80 are opened, as requested in the site preparation. The anther method to check it is to check that both connection are working through internet explorer:

   https://h50203.www5.hp.com:443 and http://h50203.www5.hp.com:80

6.

7. From the control panel -> Users click on 'Change' User Account Setting' and set it to 'Never notify'.

8.

9. Submit a Testing Call including the following text in the comment box: “Customer Name Installation Call. Remote Support Configuration Check”.

Troubleshooting the setup

If after the Callme@HP software is installed the calls are not reaching the desired queue, verify that the agent email field is correct. If the email address ends in ‘hp.com’ the call will be routed to the generic GBU queue.

NOTE: If the agent is qualified to support the printer through the remote tool, the email can be different from the default ‘printcare@hp.com’.

The reseller is qualified if the following is true

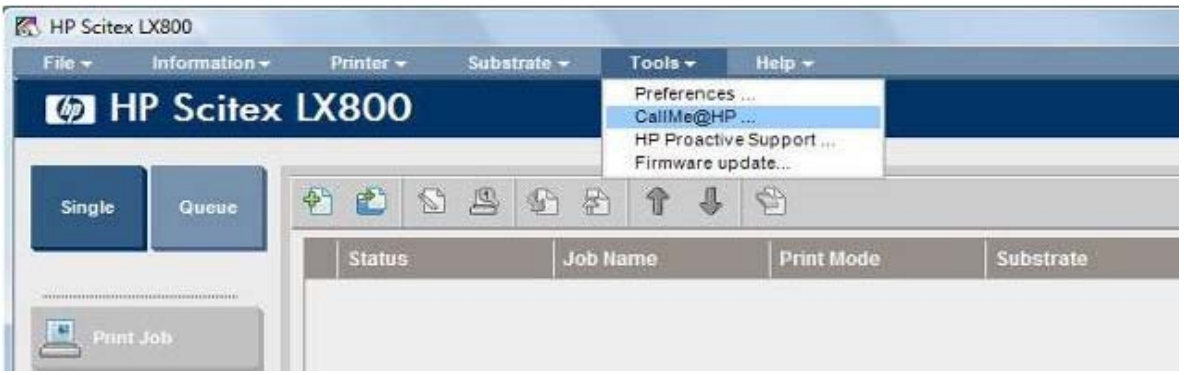
- The reseller has been trained to support the printer.
- An HP digital badge has been supplied.
- Access to ‘Callme@hp’.
- A reseller queue has been created

If the reseller queue has not been created and the agent’s email does not end in ‘hp.com’, the call will be sent to an incorrect queue and the call will be lost.

Callme@HP Operation

How to launch a call from Customer Printer

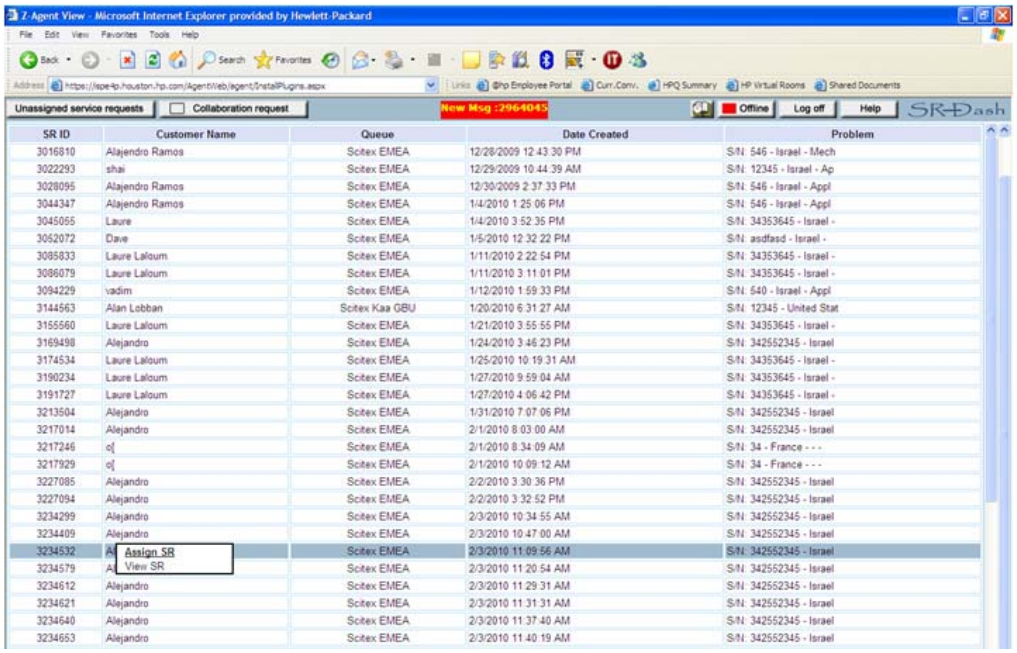
1. Go to the Callme@HP option in the “Tools” drop-down menu in the IPS.



2. Accept all requirements to install additional software.
3. If correctly configured, the web page will open with all parameters filled. Special attention should be made to the Agent e-mail option. The mail domain MUST match the Reseller Domain (“@hp.com” for HP direct supported units). If not correctly configured, please go to the appropriate chapter in the installation guide.
4. HP agents have access to all reseller queues. There is no need to modify parameters. In second level escalations, use the reseller queue.
5. Please make sure the customer fills in correctly the comments field with the issue description.
6. Press the ‘Accept’ button.

How to access a call from the Customer

1. Login to Callme@Hp page: https://ispe4p.houston.hp.com/AgentWeb/login.aspx
2. After login, identify the corresponding call from the list and select “Assign SR”.



How to receive a file from a customer

To receive files go to the Callme@HP **customer** screen, ask the customer to select the "send file" option, or do it yourself in a Remote IPS PC Control session. Browse the IPS PC folders and select the files.

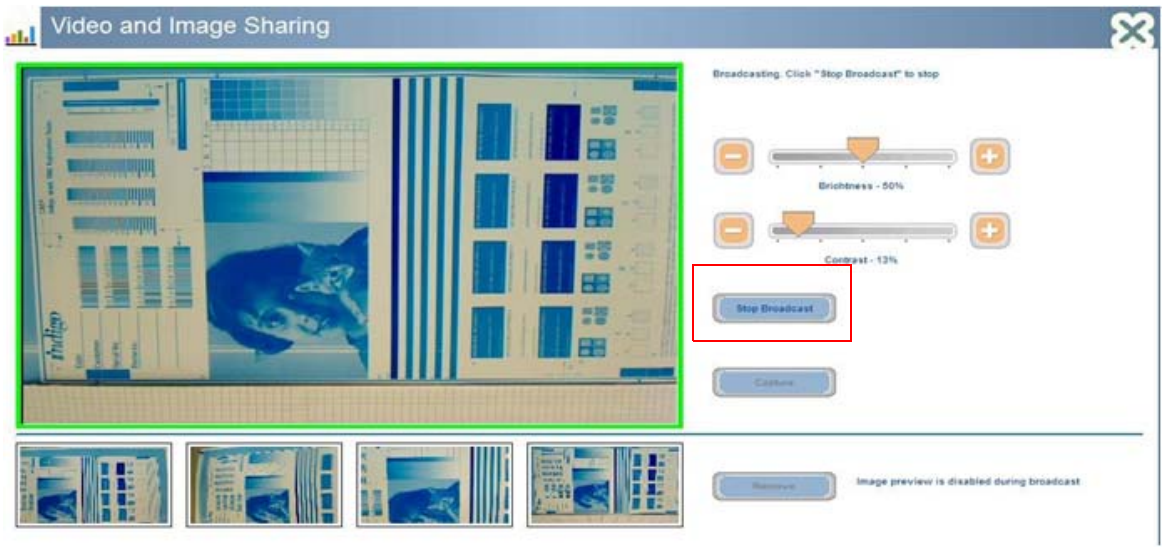
On each Remote Troubleshooting Session, **always** capture the Service Plot and send to the HP Division Customer Assurance contact.

How to Video stream and make snapshots

Video Streaming

LX Series printers come equipped with an HP Web Cam and 5m of USB extension cable.

1. Connect the USB extension cable to the IPS PC and the web cam to the USB extension cable.
2. Click on the 'video' tab in the Callme@HP tool.
3. The customer must start the 'Print Care Webcam' application in 'Start> All Programs'
4. Customer must select 'Start Broadcast'.

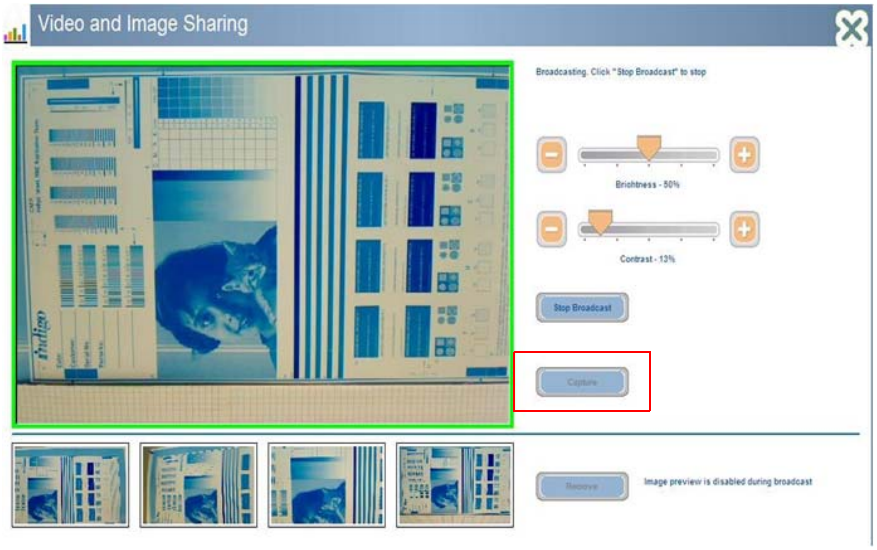


5. The HP Support engineer must select 'Receive video'. A video screen will open and after a few seconds it will start to buffer the video.

- Note that there is around 5 seconds of delay on the video.
- Avoid video streaming and using the remote IPS PC at same time.
- To reinstall the camera software refer to page 872.

Taking snapshots

1. With the 'Print Care Webcam' tool activated, select the 'Capture' button.
2. Images can be seen in the small windows below Web Cam display.

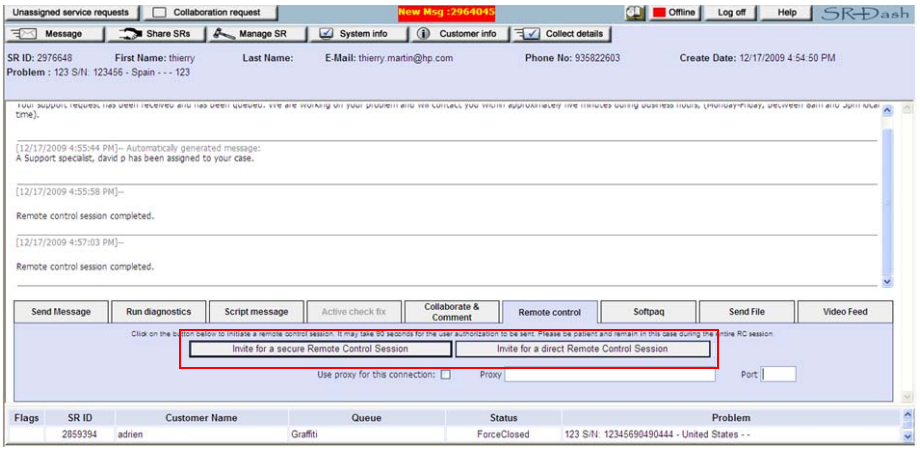


3. You can transfer the pictures through the 'send file option'. The snapshots are placed in the following path: C:\Program Files\PrintCare\webcam\images.

How to initiate a Remote Connection

It is mandatory to install a new specific application called 'SR-Dash'but even if the screens displayed here are now different compared to the following, the concepts remain the same, there is still one button to 'invite for a remote control session'. Specific training on this tool 'SR-Dash' is available from HP.

1. Login to Callme@Hp page: https://ispe4p.houston.hp.com/AgentWeb/login.aspx.



2. Select 'Invite for a secure remote control session' or 'Invite for a direct remote control session', depending on the level of security required.
3. The customer must accept the remote connection on the chat screen.

4. Once a remote session has started the customer's IPS PC can be seen through window with VNC logo.

5. The customer can see the VNC icon at the bottom right of the screen.

How to view the Service Plot via a Remote Connection

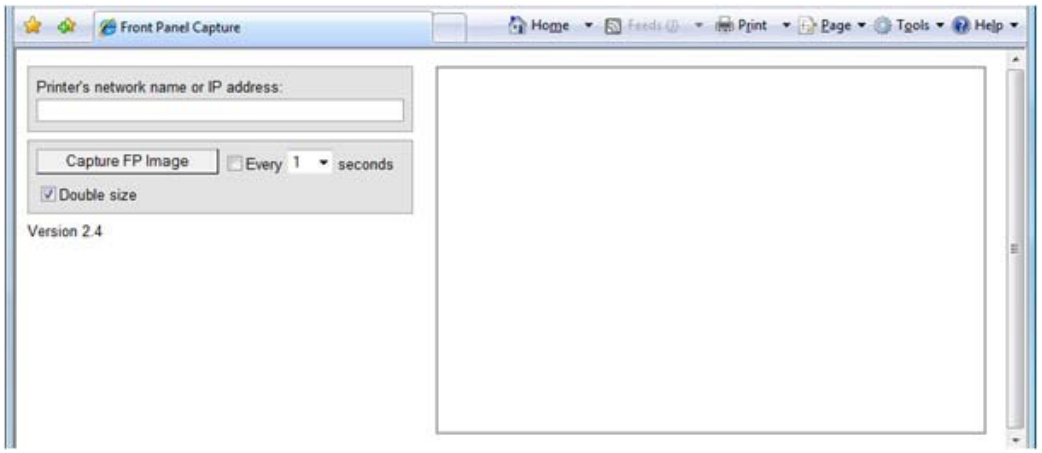
1. From the IPS, click on Information -> Service information and an internet explorer window is opened with the service plot.

2. The customer must accept the remote connection.
3. A copy of the service plot is placed on the desktop under folder 'Service information'.
4. **Always** capture the service plot and send to the HP Division Customer Assurance contact.

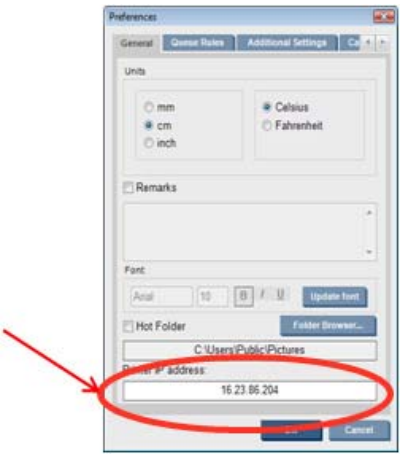
How to view remotely the front panel

This operation is useful when guiding the operator through different tests and calibration. It is works even when the printer is in diagnostic mode.

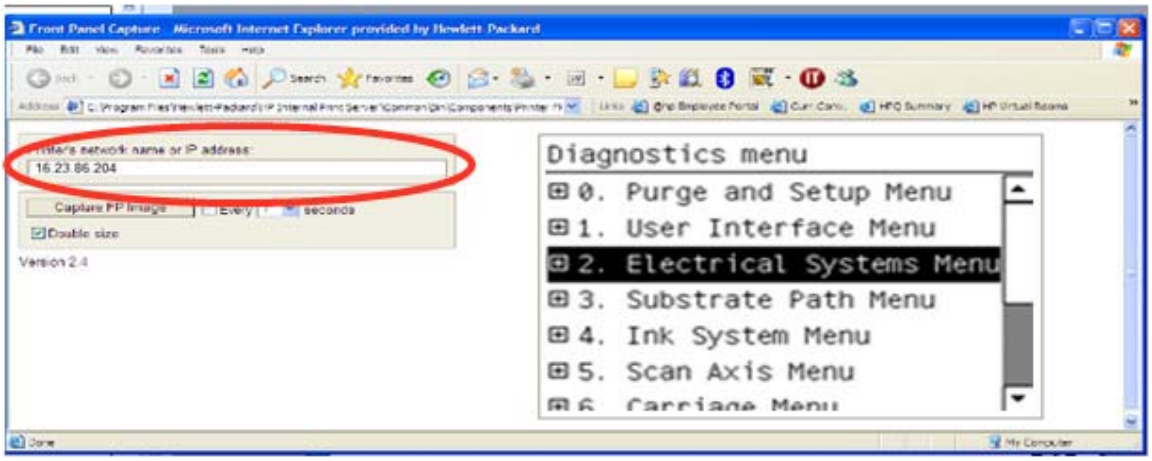
1. Need to have a remote control session ongoing, so that the call agent can see the complete IPS PC.
2. From the IPS PC:"Start", select "All Programs", look for "Hewlett-Packard" folder and then select "Printer FP Capture.htm". Accept the software download option.



3. Need to enter the IP of the printer.Tip: the IP is available within the preference of the IPS, just need to do a copy/paste of this IP:



4. You are now able to view the front panel. You can click on 'capture' each time you want to see the front panel. Or check the box 'every', recommended to set then frequency to every 3s or 5s.

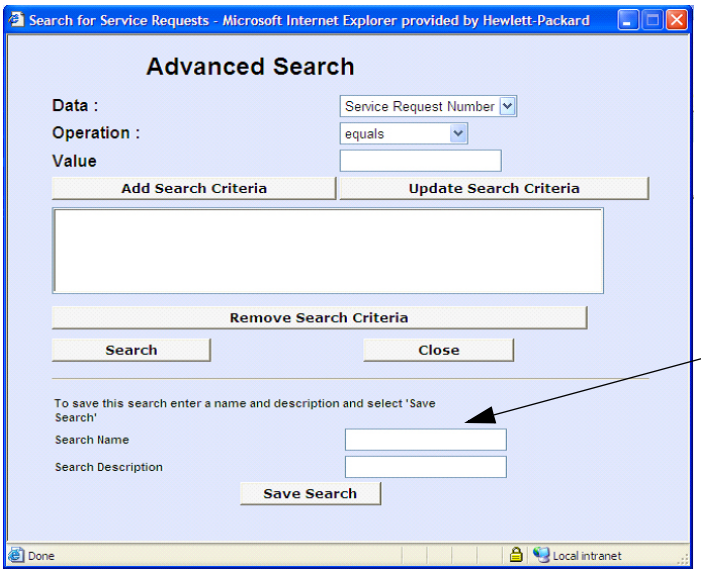


How to terminate a call

The Customer can cut the remote control at any time by right-clicking on the VNC icon, and selecting 'stop session'. The remote support engineer can terminate the session by closing the VNC window.

How to look for an old service request

1. In the HP Support application, go to 'Advance Search'.



2. Select the search criteria, we recommend by:

   - By SR Queue
   - By Queue name
   - By Date

TIP: The most common searches can be saved for later use.

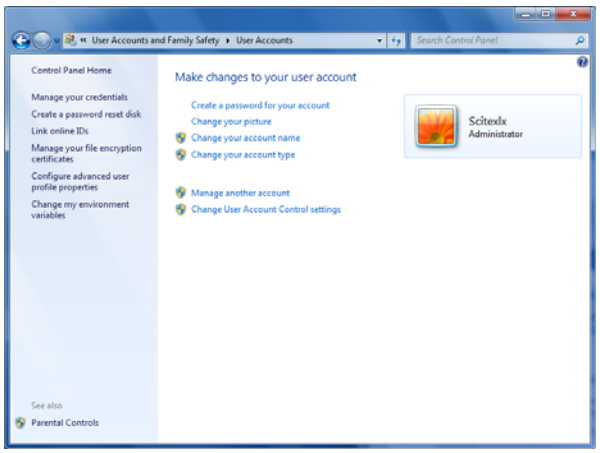
How to troubleshoot a callme@HP failure

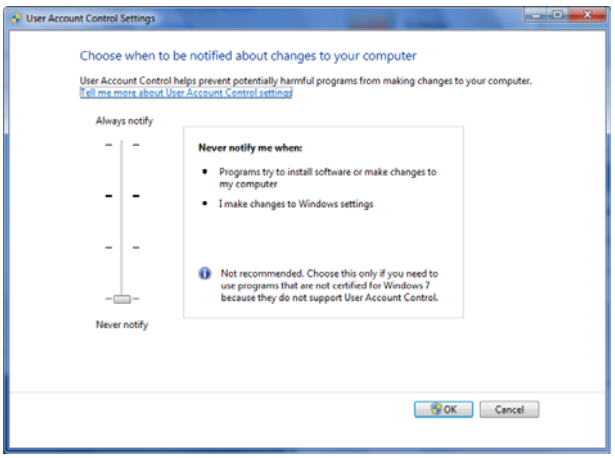
1. Check that the correct ports are open, by testing the access of the following links:

   - https://h50203.www5.hp.com:443
   - http://h50203.www5.hp.com:80

   In each case, a page should be displayed from the www.hp.com site (and not a page such as 'can not access...').

2. Ensure that the 'User Account Control' setting is set to low or disable. Through the control panel -> User account , and set UAC to 'never' or disable.





3. Restart the IPS PC and retest the connection.
4. If it is still failing: check the setup of the call me @ HP

Checking the setup of callme@HP

To use CallMe@HP for remote support, you need one of the following:

- A direct, open Internet connection

- An Internet connection over a network allowing open traffic on ports 80 or 443
- An Internet connection over a network allowing traffic on ports 80 or 443 through a proxy
- HP provides the following LAN and switch related system components

During installation process, specific information must be introduced into the IPS preferences to correctly route the Remote Support Calls to the Support Agent (HP or Authorized Service Provider approved to provide this Remote Support Service).

1. Go to the IPS menu “Tools”, then press “Preferences” and look for the tab “Callme@HP”.
2. Enter in information into all 6 fields

The first four fields are related to customer data. They can be generic and are intended to be automatically loaded as default data into the Remote Support Application.

A. Printer Serial Number: Check that the serial number is correctly entered into the text field.

B. Agent E-mail: This parameter is VERY important as it establishes the call routing to the appropriate support organization. If the configuration of this field is not correct any support calls made will not reach the intended recipient.

- If the reseller partner is going to provide the support for the unit AND has been approved for using this tool and has the account setup and permissions setup, enter in this field the E-mail of the reseller engineer supporting this printer, using the reseller's domain used for creating the account.
- If the reseller is not entitled to use the “Callme@hp” remote troubleshooting tool, then:

1. Leave the default value: printcare@hp.com
2. Launch the “callme@HP” application under the “tools” menu option and verify the information entered loads correctly into the template.

   Important: The application will ask for software to be installed, select yes to all the requirements.
3. If no window is displayed, go to the Site Preparation document under the section where the network requirements are described, and check that all the requirements for network connectivity have been met.
4. Ensure that the 'UAC level' is set to the minimum: From the control panel -> Users click on 'Change User Account Setting' and set it to 'Never notify'.
5. Submit a Testing Call including the following text in the comment box: “Customer Name Installation Call. Remote Support Configuration Check”.

9 Move the printer

Related documents

- *Site Preparation Guide*
- *Installation Guide*

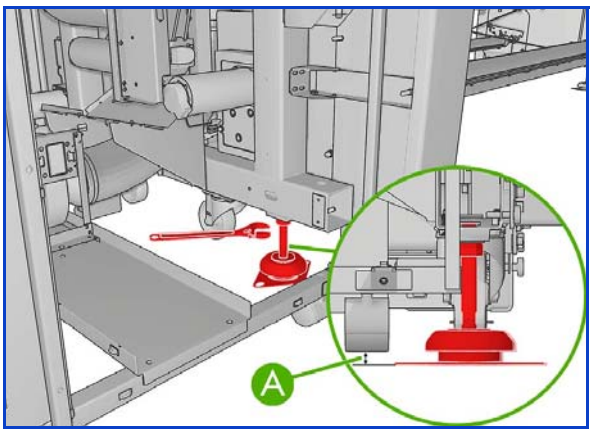
Moving the printer to the same site (no ramps, no steps)

If you wish to move the printer a short distance on the same site, across a horizontal floor with no steps and no slopes, see the following instructions.

- To prepare the new installation site, see the *Site Preparation Guide*.
- Unmount and reinstall the printer, use the *Installation Guide* as a reference.

Procedure

1. Turn off the printer.
2. Disconnect all power and network cables from the printer.
3. Raise the feet so that the wheels (A) touch the ground. To raise a foot:
   a. Use a 30 mm wrench to unlock the nut at the top of the foot.
   b. Rotate the nut manually down the bolt. Leave about 2 cm (0.8 in) clearance at the bottom between nut and foot.
   c. Use a 15 mm wrench to rotate the foot upwards. Use the flat faces at the bottom of the bolt to fit the wrench.
   d. Raise the foot as far as the bolt allows.
   e. Use the 30 mm wrench to relock the nut.



△ **CAUTION:** Take care to raise the feet as high as you can. They may break if they touch the ground while the printer is in motion.

4. Push the printer from the outside corners of the top covers.

After moving the printer, you may in some cases need an electrician to reconnect the power cables. You may also need to reconfigure the network: from the front panel, from the HP Internal Print Server computer, and from the RIP computer. See the Installation Guide for more details.

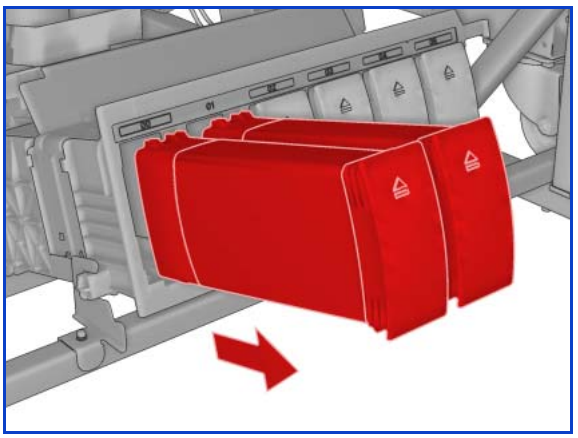
Moving the printer to the same site (with ramps or steps)

If you need to move the printer within the same site but their are ramps or steps on the route, you will need to lift the printer with a forklift or a crane

Some preparations must be made before the printer can be lifted (listed below), and failure to follow these steps could cause irreversible damage to the printer.

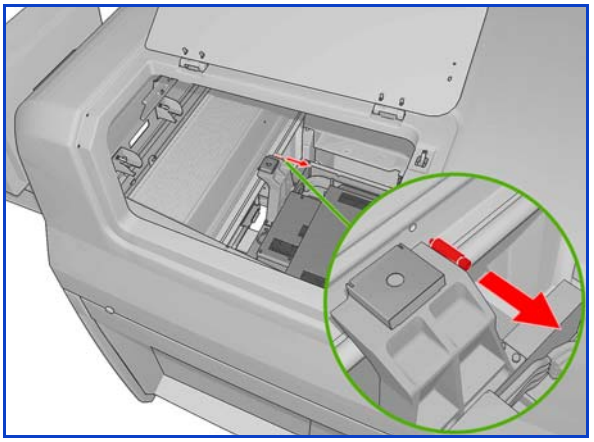
Procedure

1. Check the *Site Preparation Guide* to make sure that the new site is well-prepared. For more details on each procedure refer to the installation guide.
2. Turn off the printer.
3. Reboot the printer in diagnostic boot mode and '4.13: Force fill the intermediate ink tanks' to prevent broken bags, see page 395'.
4. Disconnect the 3 phase and single phase power supply.
5. Remove the printheads and store them in their original caps.
6. Remove the two aerosol filters.
7. Remove the ink cartridges and store them in their initial packaging.
8. Remove the Printhead Cleaner Roll. You can cut the material, removing the used material of the lower core, but important: KEEP THE LOWER COVER (can remove the used material around this core).
9. Remove the HP Internal Print Server and switch.
10. Remove the monitor, keyboard, mouse, and keyboard platform ⇒See page 587.
11. Remove the Left Side Front Cover and Left Side Rear Cover ⇒See page 565.
12. Force fill the intermediate ink tanks to prevent broken bags⇒See page 406.
13. Gently remove the intermediate ink tanks without shaking them.



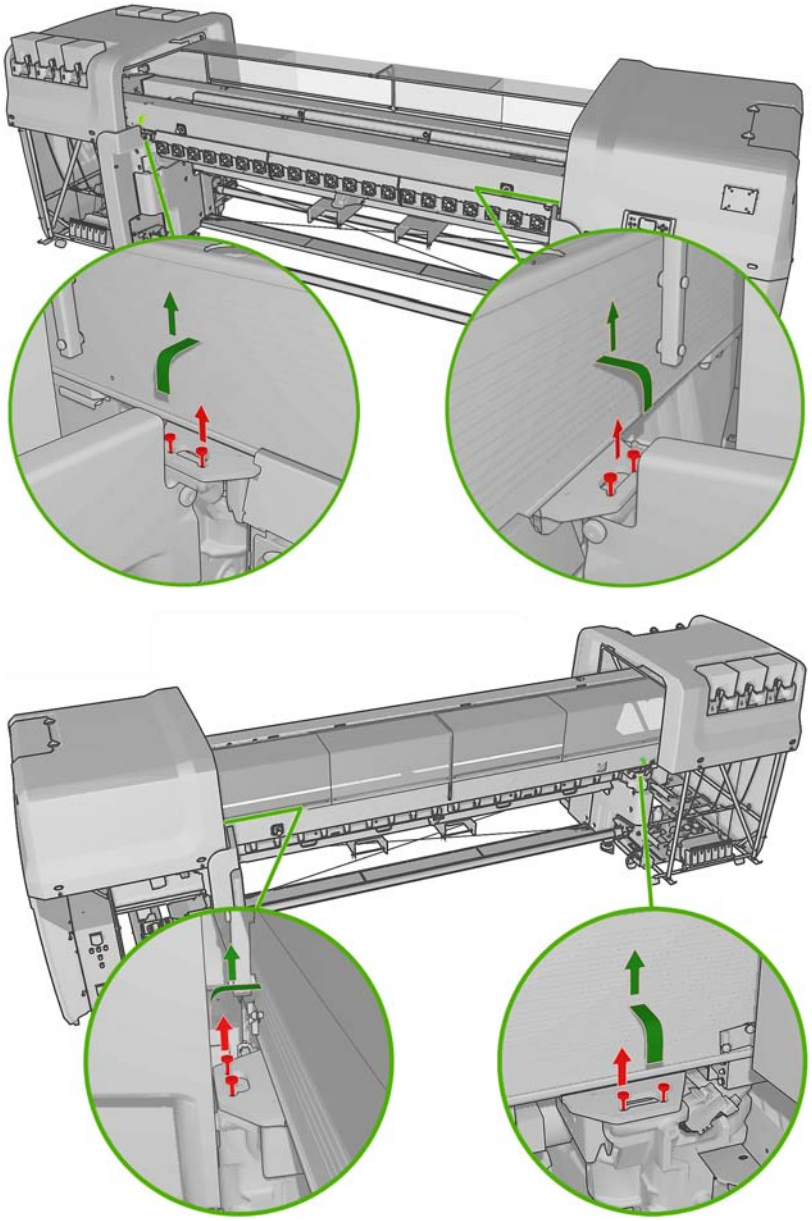
14. Remove the Right Side Rear Cover ⇒See page 567.
15. Open the sliding door.

16. Secure the carriage in the travel position with the T25 screw.



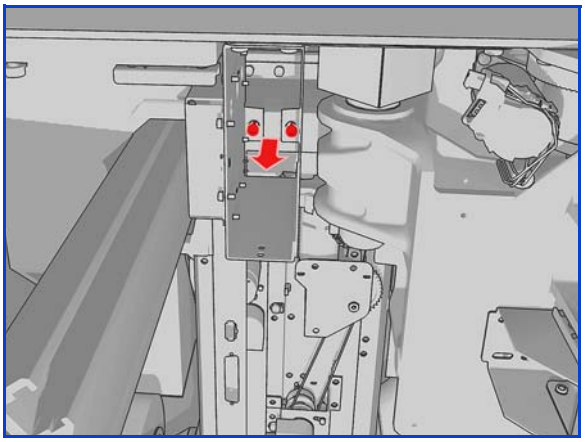
Graphics taken from Installation Guide. For reference only.

17. Secure the scan axis to the printer chassis with the eight T20 screws.



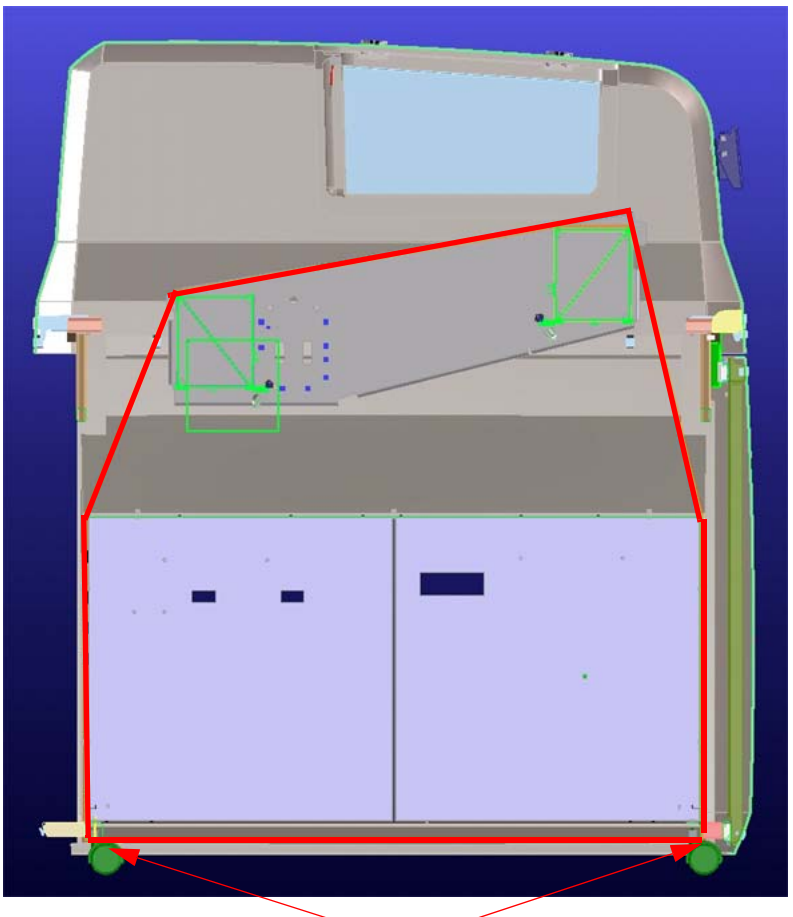
Graphics taken from Installation Guide. For reference only.

18. Secure the Printhead Cleaning Assembly with two T20 screws.



19. Secure the electrical cabinet with the strap.

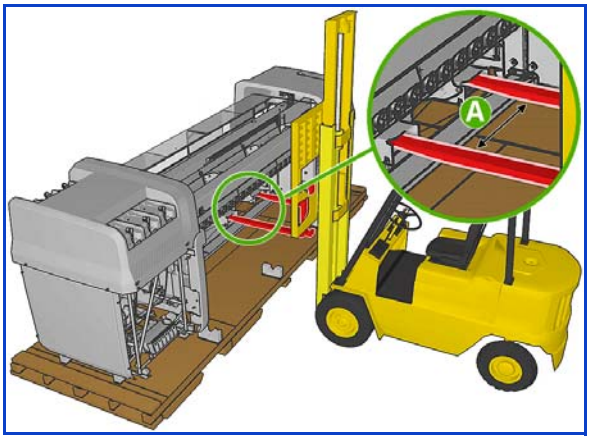
NOTE: Make two loops if possible. The strap should be loose or have very little tension during transportation.



Pass the strap under the printer frame

20. The ISM must be secured with a strap.

21. You can now lift the printer with a forklift, pallet jack, or crane using the forklift guides in the middle of the printer. Use the recommendations in the *Site Preparation Guide* and *Installation Guide*.

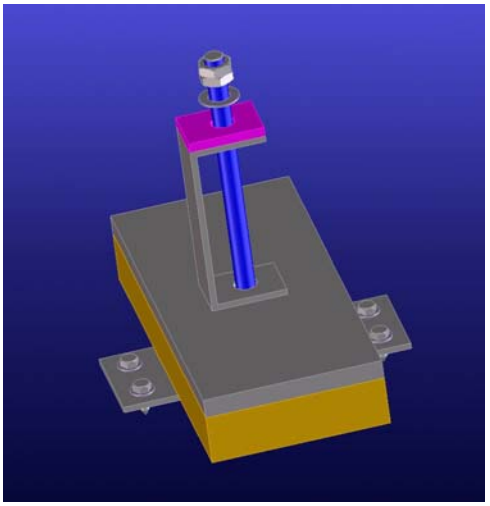


Moving the printer to a new site (transport temperature more than 5C/41F)

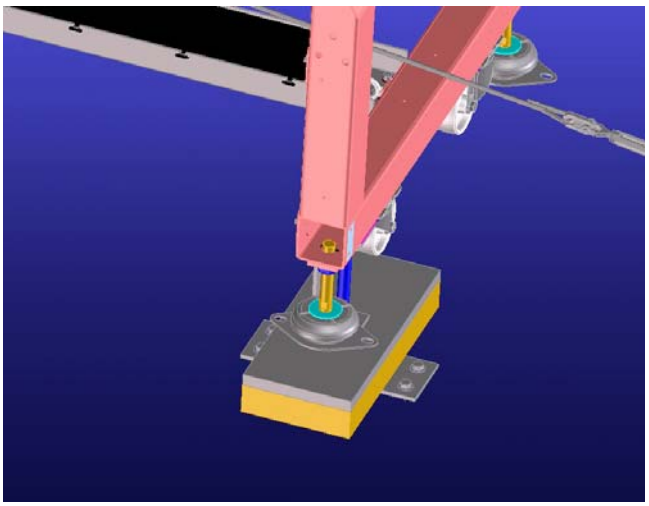
If you need to move the printer to a new site, the printer must be fixed to a pallet. If the temperature will not drop below 5° C/41° F, follow these instructions. Failure to follow these instructions could cause the ink to freeze, which would damage the ink system and require heavy repair.

Procedure

1. The following steps are the main steps, refer to the installation guide (in reverse order) for a more detailed explanation.
2. Lift the printer with a forklift, pallet jack, or crane, following the instructions in the *Site Preparation Guide* and *Installation Guide*.
3. Remove the four bolts that secure the foot blocks to the pallet (16 total) and remove them.

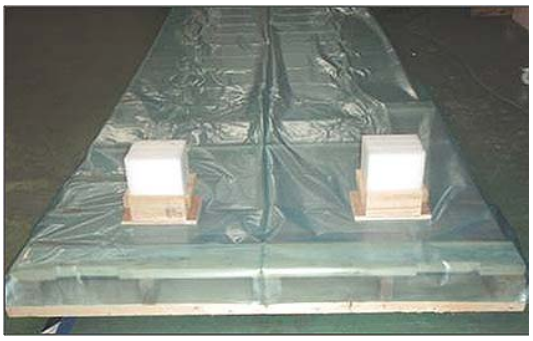


4. To attach the foot block to the printer foot, remove the nut and washer.
5. Position the block and replace the nut and washer so that it is attached to the printer foot.



6. Fix the two E-Cabinet Cushion Holders onto the right side of the shipping pallet.

Cushion holder

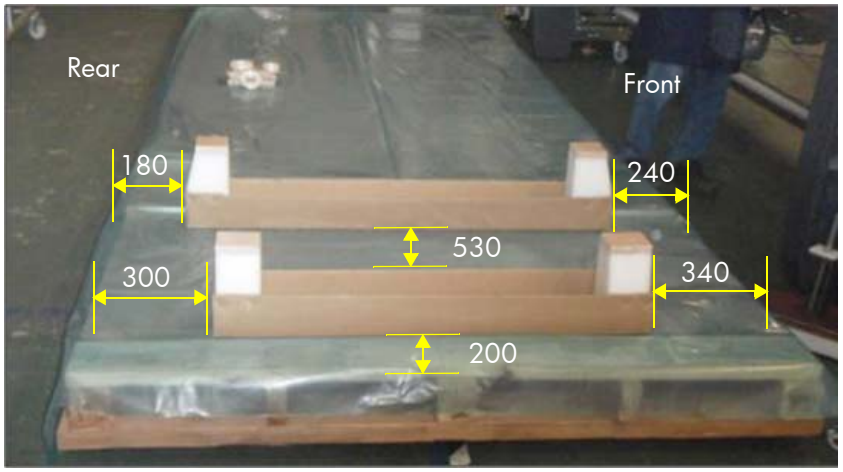


7. Install four ISM Supports into the two ISM Support Trays (long and short).

Long Tray

Short Tray

8. Install ISM Supports and Trays onto the right side of the shipping pallet at the following dimensions:

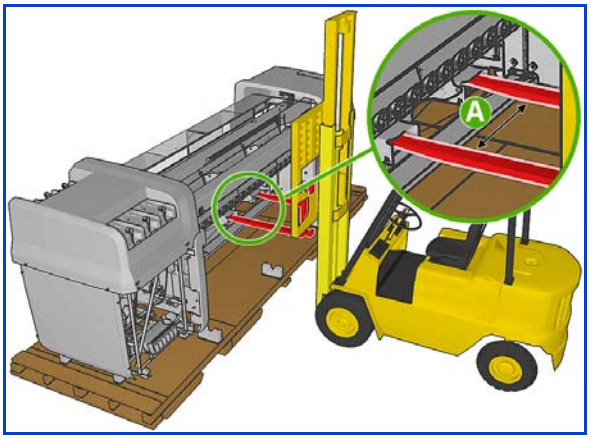


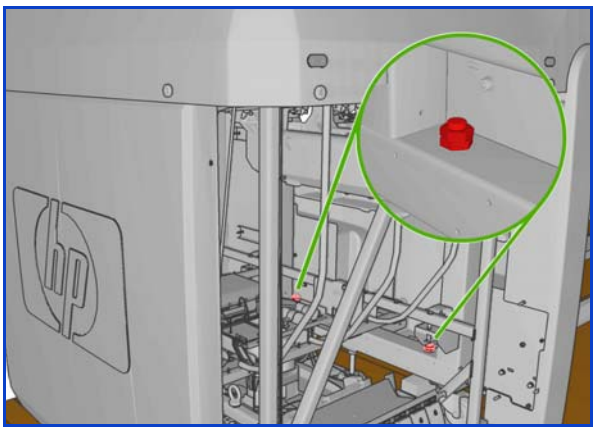
Long Tray

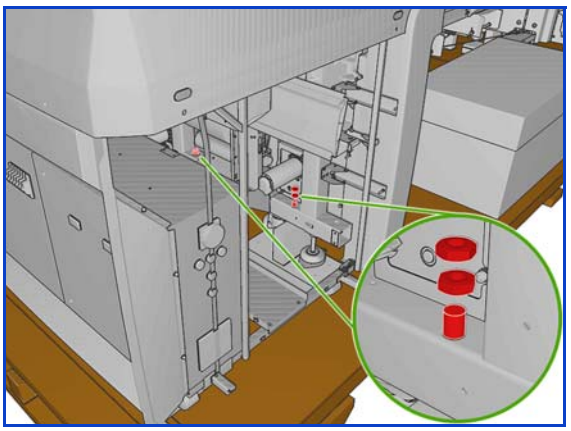
Short Tray

9. Add new info from Excel sheet here (page 6 -7-9-10-11-12-13-15-19 and bottom line drawing page 21, 24, blue shrink wrap picture on 25

10. Place the forklift underneath the printer and make sure that the forks on the forklift are spaced 80 cm apart (A). Place the printer on the pallet, and secure it with the four 24 mm nuts.

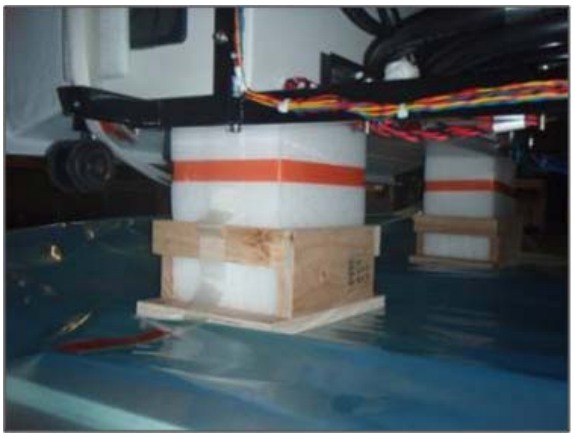






11. Secure each foot block with the four bolts removed with the block earlier.

12. Place tape around the Cusion holders as shown here:



13. Secure the Inbox onto the pallet.

14. Ensure the Inbox is secured between the ISM and the lifting bracket.

15. Ensure that the box with the PC inside in an upright position and secured the with strapping. Place next to the Inbox.

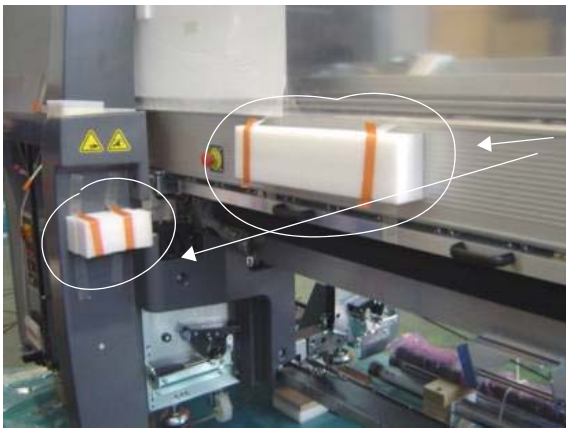
Important: The PC Box must be in an uprigtht position

16. **L65500/LX600 only:** Place the ID Covers on to the pallet on the right side of the E-Cabinet.

Covers in wrapping

Use straapping to secure the covers (but not too tight)

17. **LX800 only:** Place the ID Covers in their box and secure with strapping. Place onto the pallet at the rear (close to the E-Cabinet).

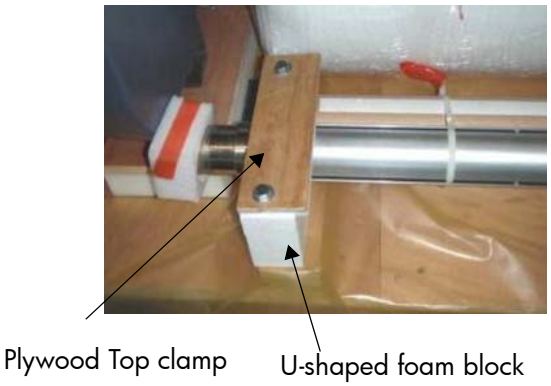


Secure support foams herewith tape

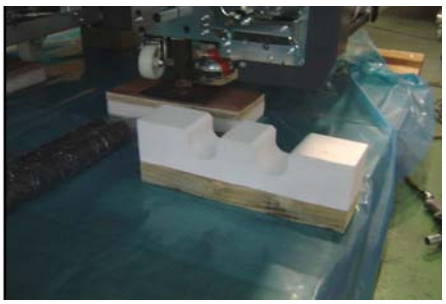
Place the ID cover box here

18. **LX800 only:** Place the Gutter Assembly in the box, and place on the pallet next to the PC box

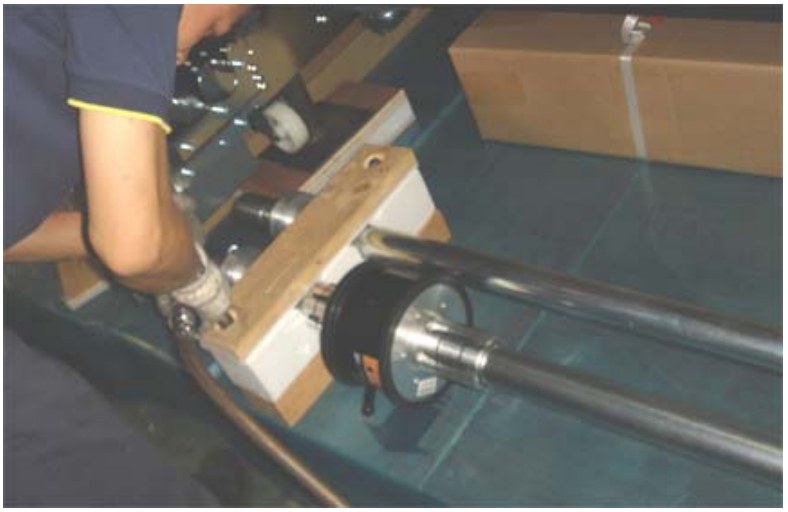
19. Secure the Media Drive Input spindle onto the pallet using two U-shaped foam blocks and Plywood Top Clamps.



20. **LX800 only:** Assembly the clamps and supports on the left and right of the pallet (front).

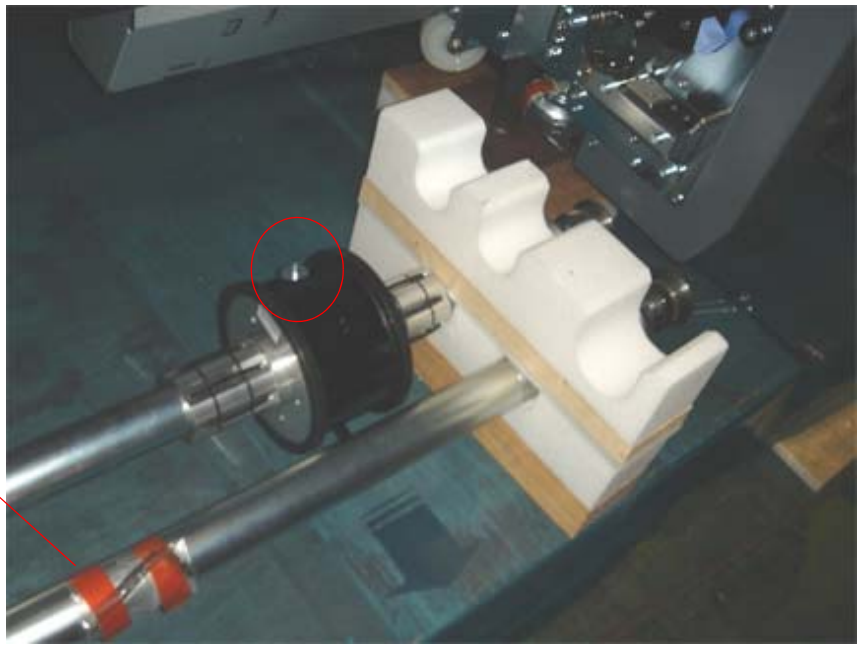


21. **LX800 only:** Install the two Dual Rolls onto the foam supports, and clamp the rolls in place with the Plywood clamps.



Ensure that the differentials of the two dual rolls are placed at either ends of the spindles to give balance

22. **LX800 only:** Tighten the locking screws of the differentials and tape the wrench keys to the spindles.

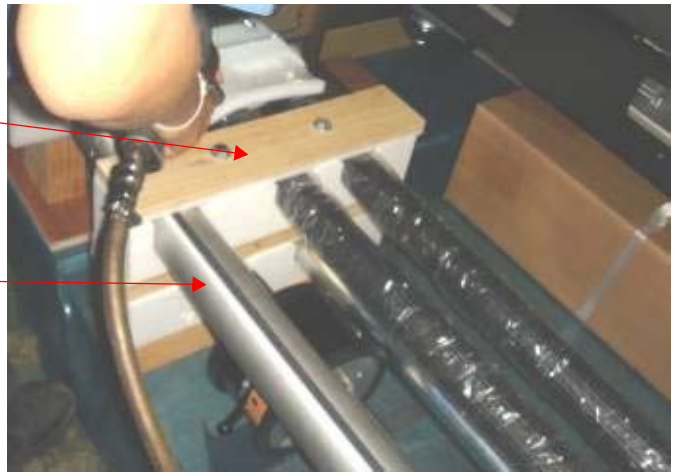


23. **LX800 only:** Remove the End Caps of the Dual Rolls as they can cause damge to the side plates. Place the End Caps in the Inbox

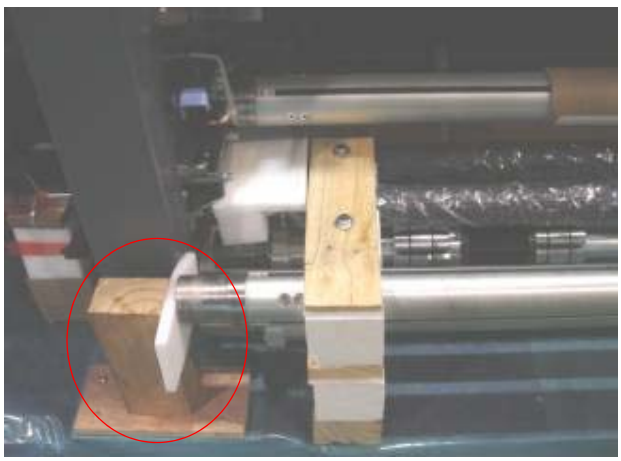
24. **LX800 only:** Add another layer of foam supports on top the the existing foam supports (see above).

25. **LX800 only:** Install the two Wrinkle Deflectors onto the foam supports, and place foam stoppers ot each end.

26. **LX800 only:** Install the Media Drive Input spindle into the foam supports and clamp in place with the Plywood Clamps.



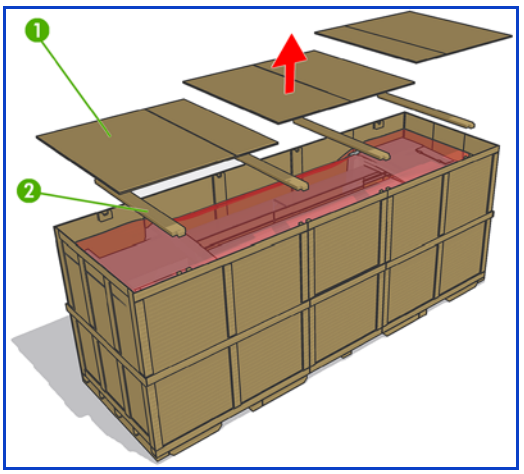
27. **LX800 only:** Install the Spindle Stoppers at both ends of the spindle.

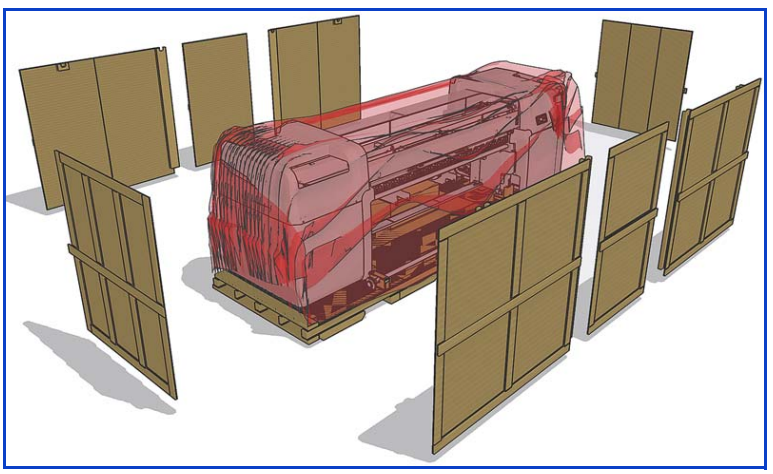


28. **LX800 only:** Install the Media Drive Output Spindle into the printer as per normal operation, and secure it in place with a tie-wrap at both ends.

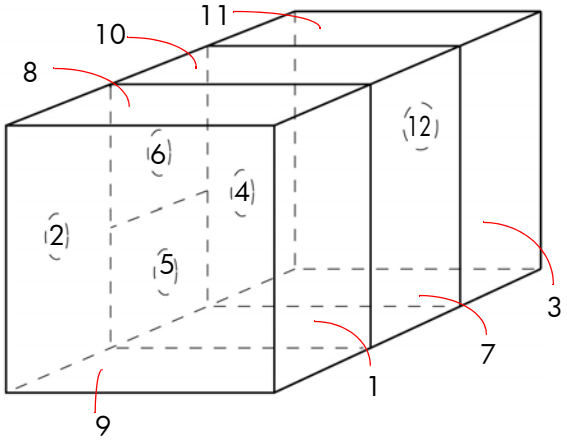
29. Wrap the complete printer with 3D VCI Bag as shown below. Make sure the printer is fully covered and is sealed using packing tape.

30. If necessary, build the crate around the printer. You will need an electric screwdriver with a Philips head.





31. Each panel is numbered, refer to the drawing below to help with assembling the panels.



32. Wrap the compete package with a plastic sheet.

33. Cover the package in heavy-duty wrapping and shrink-wrap.

Moving the printer to a new site (transport temperature below 5C/41F)

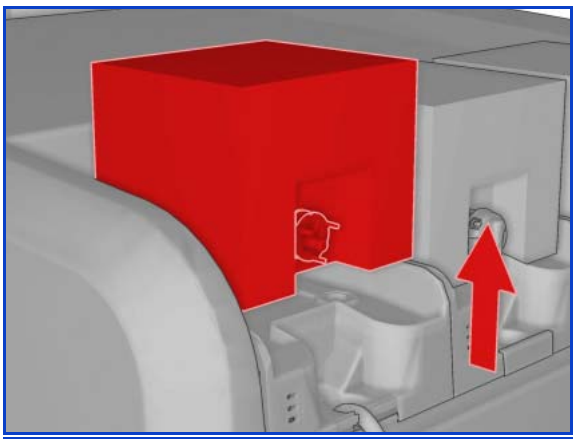
In this case, before switching off the printer, the ink must be removed from the tubes. You need to have the ink system cleaning tubes and 5 liter of distilled water.

The procedure below shows how remove the ink from one line of color. This operation must be repeated 5 times (total of 5 hours).

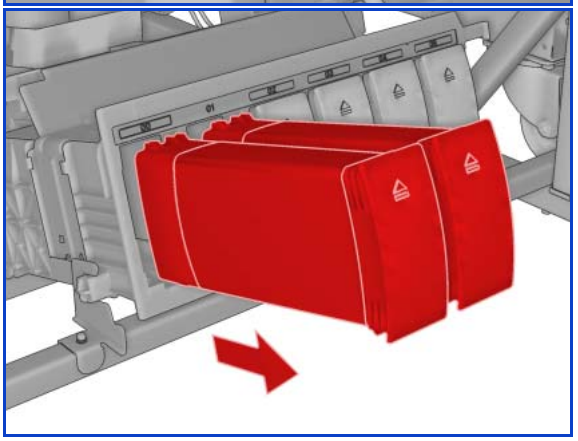
ISM Flush and clean a single ink system line

Flushing the ink lines with distilled water and then with air removes the ink from the tubes, this enables you to remove and replace parts of the ink system. The flushing procedure is done one ink line at a time.

1. Remove the printheads and store them in their caps.
2. Remove the Left Side Front Panel ⇒See page 565.
3. Remove the Left Side Rear Panel ⇒See page 565.
4. Remove the Left Side Lateral Panel ⇒See page 565.

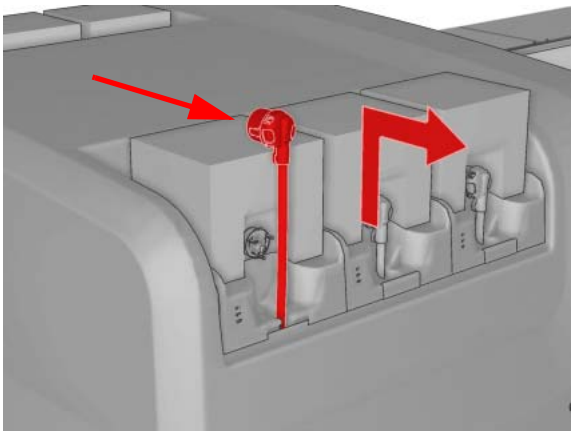


5. Remove the Ink Cartridge.

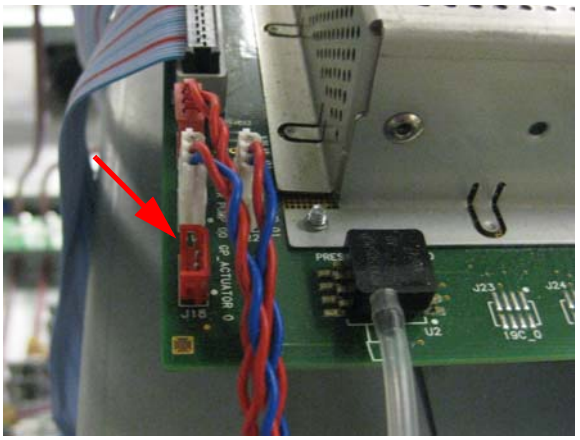


6. Carefully remove the intermediate tanks of the color you are going to flush.

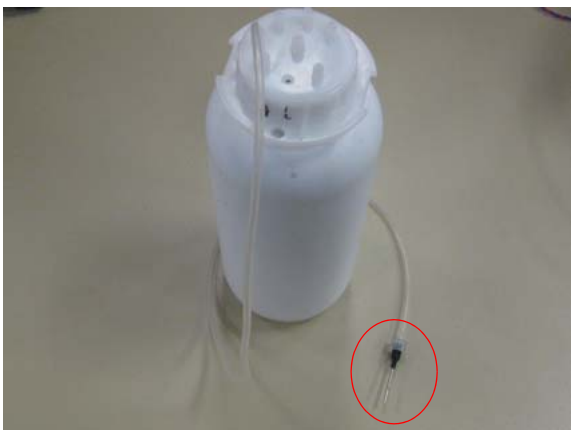
NOTE: Store the intermediate ink tanks vertically. Failure to store them vertically can cause a broken bag.



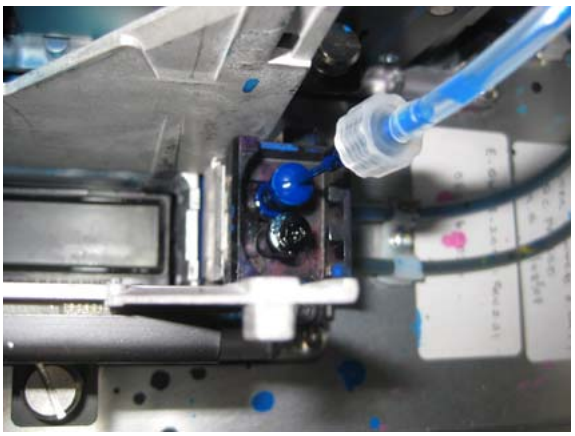
7.Place the Flushing Tool in the space left when the ink cartridge was removed, and connect the ink connector to the connection port of the tool.



8. Connect cable from the Flushing Tool to J18 on the ISM Board.
9. From the Front Panel go to the Diagnostic Menu and select Ink System Menu 4.0>Flushing procedure>Activate Flushing tool Pump.
10. Open the Entry Electrovalve of the color you are flushing Ink System Menu 4.0>Flushing procedure>Operate Entry electrovalve-> “Color to flush”.
11. Unscrew the top of the Cleaning Tool and fill the bottle with 500cc of distilled water.

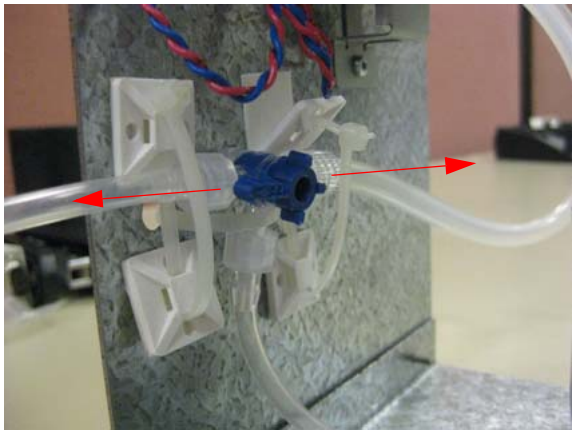


12.Insert a needle into the tube coming from a waste bottle

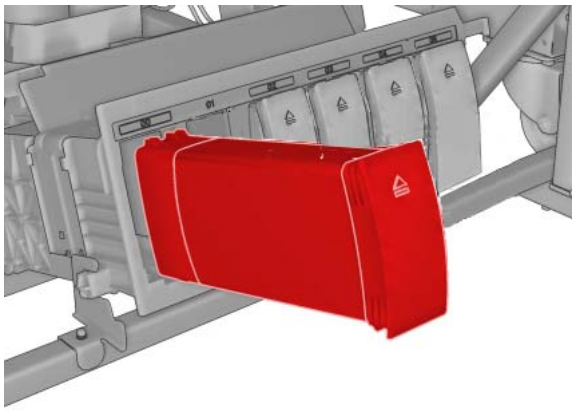


13.Insert the needle into the Printhead Ink Connector of the Carriage assembly. Ensure you insert it into the correct color.

14. Ensure the path switch is in the horizontal position.



15. Turn On the Flushing Tool with the switch located on top.
The Cleaning Tool slowly pumps the distilled water into the tubes and ink system of the color you are cleaning. The pumping action cleans ink out of the tubes and into the draining bottle.



16. When the level of distilled water is half finished:

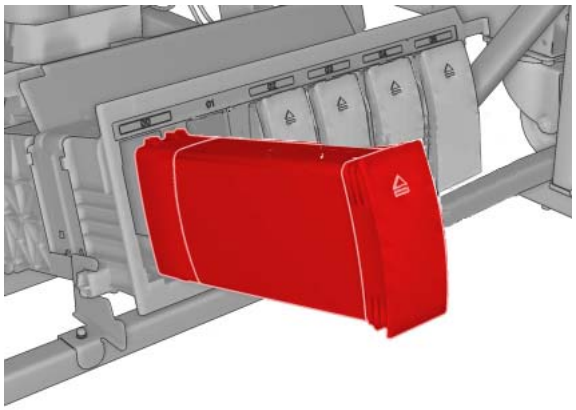
a. Install the New Empty Intermediate Flushing Tank (that came with the flushing kit) into the Left Intermediate slot, wait 10 seconds for the ink to be cleaned from this area and then remove the tank.

b. Install the Intermediate Flushing Tank into the Right Intermediate slot, wait 10 seconds for the ink to be cleaned from this area and then remove the tank.

NOTE: If the distilled water in the Cleaning Tool bottle becomes low before the ink system has been cleaned of ink, you must refill the bottle with more water. You must stop the Flushing tool to add more water.

17. When the Ink system has been cleaned of ink and the Flushing tool becomes empty of water, the pump of the Cleaning Tool will then push air into the ink system tubes, which will push the water out into the draining bottle of the Quick Connector Flushing Tool, this process will last for approximately 5 minutes.

18. When five minutes has past:



a. Install the Intermediate Flushing Tank (that came with the flushing kit) into the Left Intermediate slot, wait 10 seconds for the water to be removed from this area and then remove the tank.

b. Install the Intermediate Flushing Tank into the Right Intermediate slot, wait 10 seconds for the water to be removed from this area and then remove the tank.

19. When the Ink system has been cleaned of ink and the Flushing tool becomes empty of water, the pump of the Cleaning Tool will then push air into the ink system tubes, which will push the water out into the draining bottle of the Quick Connector Flushing Tool, this process will last for approximately 5 minutes.

10 Printer Installation notes

Printer installations

This section describes hints and tips when installing the following models:

HP Scitex LX600/LX800 Printer with LX610 Inks

HP Scitex LX820/LX850 Printer with HP 3M LX600 Specialty Inks

Related documents

- *Conversion Document*
- *Installation Guide*

HP Designjet LX600/LX800 to be installed with LX610 inks

If the conversation to the new inks (LX610 Inks) is performed at the printer installation the LX610 Upgrade Kit is not required.

When the HP Designjet LX600/LX800 is delivered, the shipping box will contain LX600 ink components. In this case they must be removed from the box and can be used for resale for printers with the LX600 Ink system.

To complete this installation the following parts are required:

- Three new LX610 Printheads, in addition we also recommend three spare LX610 Printheads.
- At least one complete set of LX610 Ink Cartridges, we also recommend a spare set of LX610 Ink Cartridges.
- If the printer's serial number is less than SG13A1F002, new Media Edge Holder will be required to support Double Sided Printing (out of warranty), refer to page 540 for the part number.
  - For the LX600 Printer, 1 set of Media Edge Holders
  - For the LX800 Printer, 2 sets of Media Edge Holders
- The Media Loading Tool is also an optional accessory to enable easier loading of the media, refer to page 556 for the part number.

Follow the standard installation procedure as described in the Installation Guide of the LX820/LX850, with the following new steps:

- In the Installation Guide, after the section 6 'Configure the Voltage' upgrade the firmware to GF-BOO-xxx. There are two methods to doing this:
  - Through the Embedded Webserver on the IPS, or any computer, connect to the IP address of the printer, and click on FW Upgrade. The IP address can be obtained from procedure '2.2.3 I/O Information'.
  - If there is no IP address available, perform the procedure '0.6 Force Normal Boot' and reboot the printer, this will trigger a warning 23:03 system error, and then you can upgrade the firmware.
  - Perform the procedure '1.0 Force Diagnostic Mode'.
- Perform the procedure from diagnostics '0.10 Set ink as LX610' (password NPI).
- Restart the printer in diagnostics.
- Follow the standard installation procedure '7 Purge the Ink System'.
- When installing the IPS, ensure it is the version compatible with firmware GF-BOO-xxx and LX610 Ink type.

HP Designjet LX850/LX820 to be installed with HP 3M LX600 Specialty inks

NOTE: This procedure is only supported if it is performed when the printer is first installed. If the printer has been purged with LX610 ink, this procedure is no longer supported by HP.

When the HP Designjet LX850/LX820 is delivered, the shipping box will contain LX610 ink components. In this case they must be removed from the box and can be used for resale for printers with the LX610 Ink system. There is no 'exchange' program with HP, but they can be collected through 'HP recyclable program' (without compensation).

To complete this installation the following parts are required:

- Three new LX600 Printheads, in additon we also recommend three spare LX600 Printheads.
- At least one complete set of HP 3M LX600 Specialty Ink Cartridges, we also recommend a spare set of Ink Cartridges.

Follow the standard installation procedure as described in the Installation Guide of the LX600/LX800, with the following new steps:

- In the Installation Guide, after the section 6 'Configure the Voltage' upgrade the firmware to GF-BOB-xxx. There are two methods to doing this:
  - Through the Embedded Webserver on the IPS, or any computer, connect to the IP address of the printer, and click on FW Upgrade. The IP address can be obtained from procedure '2.2.3 I/O Information'.
  - If there is no IP address available, perform the procedure '0.6 Force Normal Boot' and reboot the printer, this will trigger a warning 23:03 system error, and then you can upgrade the firmware.
  - Perform the procedure '1.0 Force Diagnostic Mode'.
- Perform the procedure from diagnostics '0.11 Set ink as LX600'.
- Restart the printer in diagnostics.
- Follow the standard installation procedure '7 Purge the Ink System'.
- When installing the IPS, ensure it is the version compatible with firmware GF-BOB-xxx and LX600 Ink type.

NOTE: The new features 'Double-sided printing' and changing the preset settings on the fly, are not available for HP 3M LX600 Specialty inks.

Ink Upgrade Kit

This section describes hints and tips, and the main points to be aware of when upgrading the LX600/ LX800 printer to use LX610 Inks. For detailed steps to upgrading the inks system to LX610 Inks go to the following website: www.hp.com/go/lx610inkupgrade, this also includes access to support web pages.

To complete this upgrade the following additional parts are required (purchased by the customer):

- 3 liters of distilled water
- Three new LX610 Printheads, in addition we also recommend three spare LX610 Printheads.

A specific datasheet is available for the ink upgrade kit, here are the main points:

- The upgrade kit does not contain, by default, any Media profiles/presets.
- The existing LX600 ink supplies cannot by reused, they must be recycled by the customer (no replacement by HP).
- All remaining items after the Upgrade Kit has been performed must be recycled by the customer ((12 intermediate tanks, 3 liters of water mixed with ink).
- The ink upgrade procedure can only be performed by a appropriately qualified trained customer engineer.
- Once the ink system has been upgraded to LX610 inks, it cannot then be downgraded to LX600 inks.

The following lists the main points when upgrading the ink system to LX610 Inks, for more detailed step-by-step instructions, refer to the Ink Upgrade Kit documentation.

- The kit include a roll of SAV and ripped files so that the customer can compare the Image quality before and after the upgrade.
- Main risk of errors when performing the upgrade are the following:
  - After having changed the ink setting, the printer must be turned Off and On in order for the setting to take affect
  - Need to reset the intermediate tank level of 0 (press CANCEL and not OK at the corresponding step).
  - When refilling the ISM with the syringes,
    - Do not insert any bubble of air at the of the syringe.
    - while removing the empty bag, KEEP the syringe with pressure of the finger on the piston of the syringe (else there will be bubble of air within the air tube).

There is a another document available with the upgrade kit called ‘Additional notes’ which is provided in different languages. The information contained here refers to the following:

- Where to get the latest documentation and ICC profiles from www.hp.com
- “Adapt your existing substrate presets and media profiles”.
- Warranty statement, mainly to cover ‘3 months from the date of purchase by the customer, covering failures in the ink delivery system from cartridge connectors to the printhead connectors in the carriage.

How to reuse the existing media profile (from RIP)

The following describes the main points when the customer wants to achieve the same colors from the LX610 Inks as from the LX600 inks. For more details on this, refer to the document “Adapt your existing substrate presets and media profiles”, which came with the Ink Upgrade Kit

In many cases, customers will be able to re-use their existing profiles created for the former LX600 Latex Inks and achieve very similar color results. Another option is to use the new generic media profiles created by HP, Onyx, and Caldera for the new LX610 Latex Inks. For closest possible color matching, some customers may prefer to create new custom color profiles.

There are two main settings that must be applied to the substrate:

- The settings applied from the IPS when loading a substrate:
  - Tension setting
  - Temperature
  - Ink Restrictions
- The setting applied from the RIP: the Media Profile (including the ICC profiles).
- If the customer is using a default substrate preset, select the same settings as before, and perform a color calibration as described in the User’s Guide.
- If the customer is using a custom preset, select the same settings as before and test the results:
  1. If the customer is not satisfied with the result, create a new preset substrate, from the same ‘parent substrate’, with the same settings as the previously (including ink registration). Perform a color calibration.
  2. If not satisfied with the results, create a new media/icc profile

The Media finder and RIP/Media ICC Profiles

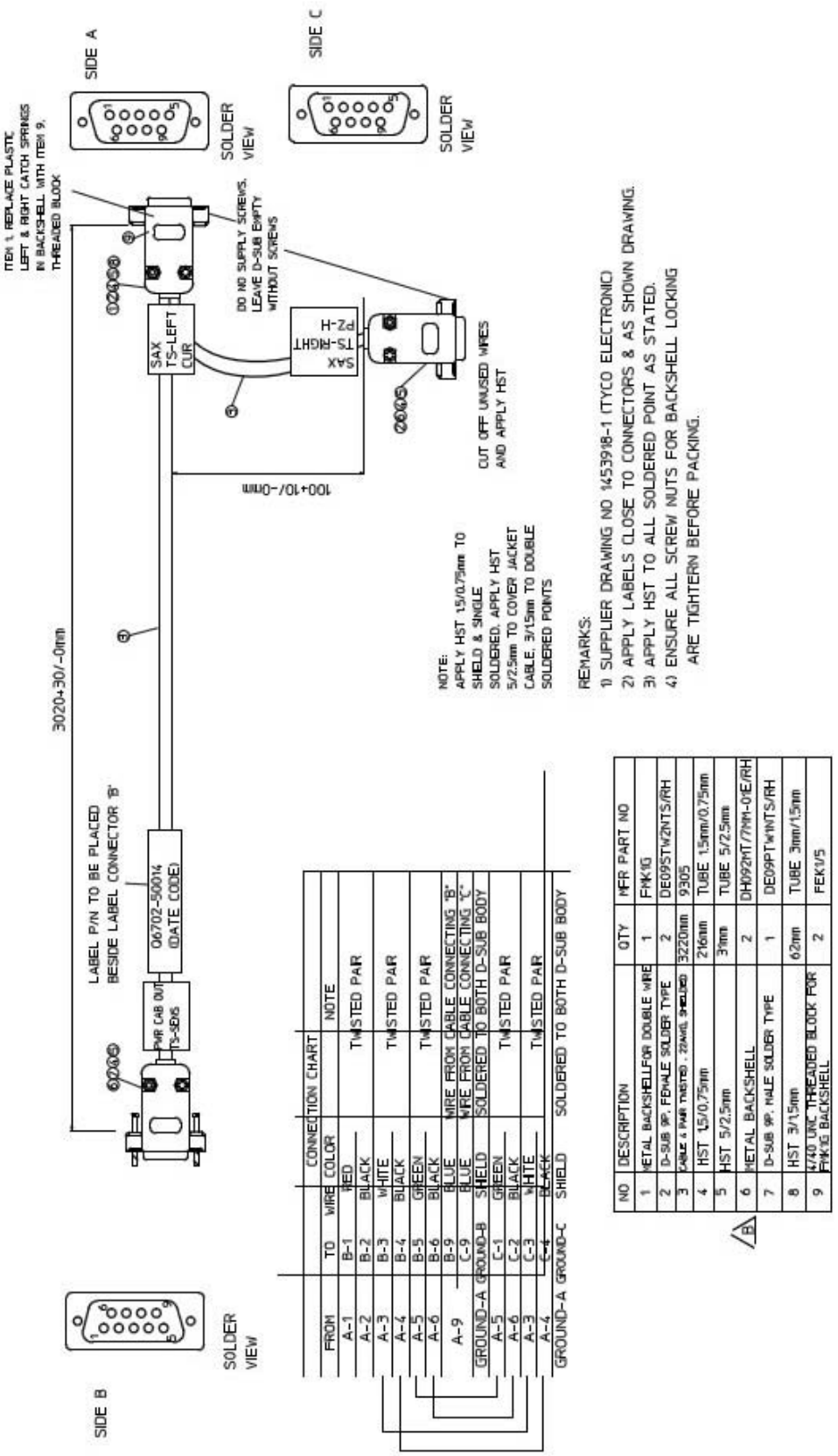
- To find compatible media for the printer, go to www.hp.com/go/<platform>/solutions.
- There are at least thirty ICC profiles provided on the CD-ROM that came with the upgrade kit, and at www.hp.com.
- RIP Media profiles: There are 30 defaults media profiles available on the ONYX and Caldera RIP website, available through each RIP website (RIP media profile upgrade).

11 Drawings of cables

Introduction

The information in this chapter is to help in case of any doubt on any cable. A minimum knowledge of reading cable drawings is required. This information should NOT be used to manufacture cables locally, it is important to use parts from the support parts (coming from fully approved vendors).

D-Q6702-50014-1



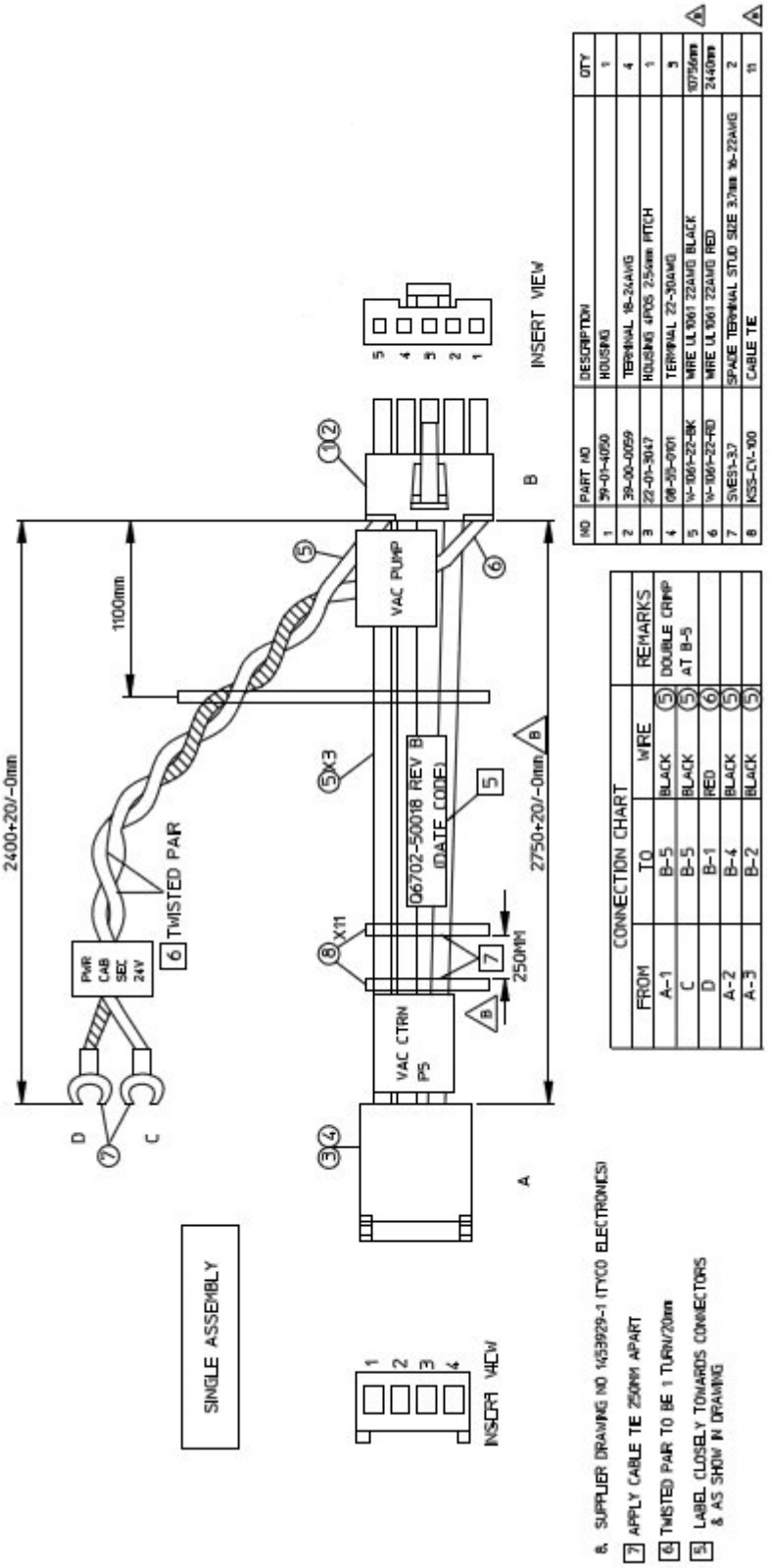
CONNECTION CHART

FROM	TO	WIRE COLOR	NOTE
A-1	B-1	RED	TWISTED PAIR
A-2	B-2	BLACK	
A-3	B-3	WHITE	TWISTED PAIR
A-4	B-4	BLACK	
A-5	B-5	GREEN	TWISTED PAIR
A-6	B-6	BLACK	
A-9	B-9	BLUE	WIRE FROM CABLE CONNECTING "B"
	C-9	BLUE	WIRE FROM CABLE CONNECTING "C"
GROUND-A	GROUND-B	SHIELD	SOLDERED TO BOTH D-SUB BODY
A-5	C-1	GREEN	TWISTED PAIR
A-6	C-2	BLACK	
A-3	C-3	WHITE	TWISTED PAIR
A-4	C-4	BLACK	
GROUND-A	GROUND-C	SHIELD	SOLDERED TO BOTH D-SUB BODY

NO	DESCRIPTION	QTY	MFR PART NO
1	METAL BACKSHELL FOR DOUBLE WIRE	1	FMK1G
2	D-SUB 9P. FEMALE SOLDER TYPE	2	DE09STW2NTS/RH
3	CABLE 6 PAIR TWISTED . 22AWG SHIELDED	3220mm	9305
4	HST 1.5/0.75mm	216mm	TUBE 1.5mm/0.75mm
5	HST 5/2.5mm	3mm	TUBE 5/2.5mm
6	METAL BACKSHELL	2	DH092MT/7NM-0/E/RH
7	D-SUB 9P. MALE SOLDER TYPE	1	DE09PTW1NTS/RH
8	HST 3/1.5mm	62mm	TUBE 3mm/1.5mm
9	4/40 UNC THREADED BLOCK FOR FMK1G BACKSHELL	2	FEK1/5

Drawings of cables

D-Q6702-50018-1

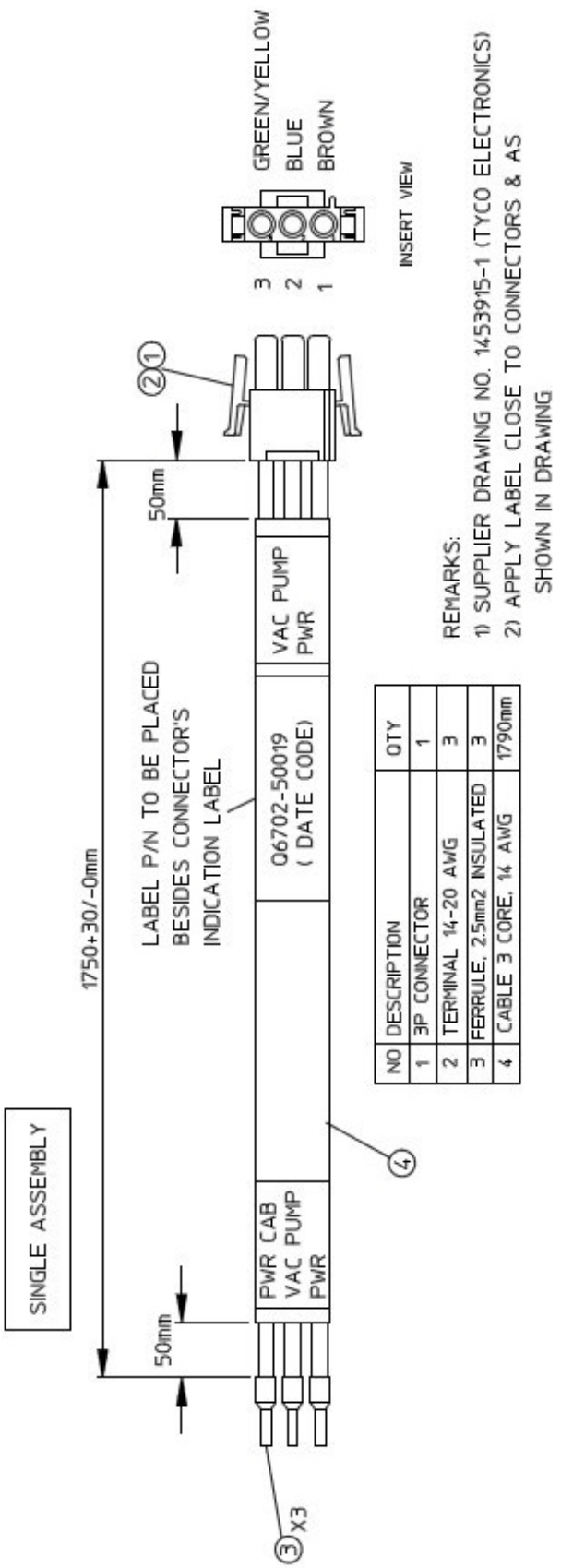


CONNECTION CHART				
FROM	TO	WIRE		REMARKS
A-1	B-5	BLACK	5	DOUBLE CRMP AT B-5
C	B-5	BLACK	5	
D	B-1	RED	6	
A-2	B-4	BLACK	5	
A-3	B-2	BLACK	5	

NO	PART NO	DESCRIPTION	QTY
1	39-01-4050	HOUSING	1
2	39-00-0059	TERMINAL 18-24AWG	4
3	22-01-3047	HOUSING 4POS 2.54mm PITCH	1
4	08-50-0101	TERMINAL 22-30AWG	5
5	14-1061-22-BK	WIRE UL1061 22AWG BLACK	107.54mm
6	14-1061-22-RD	WIRE UL1061 22AWG RED	2440mm
7	SVES1-37	SPADE TERMINAL STUD SIZE 3.7mm 16-22AWG	2
8	KSS-CY-100	CABLE TIE	11

8. SUPPLIER DRAWING NO 1439929-1 (TYCO ELECTRONICS)
7. APPLY CABLE TIE 250MM APART
6. TWISTED PAIR TO BE 1 TURN/20mm
5. LABEL CLOSELY TOWARDS CONNECTORS & AS SHOW IN DRAWING

D-Q6702-50019-1



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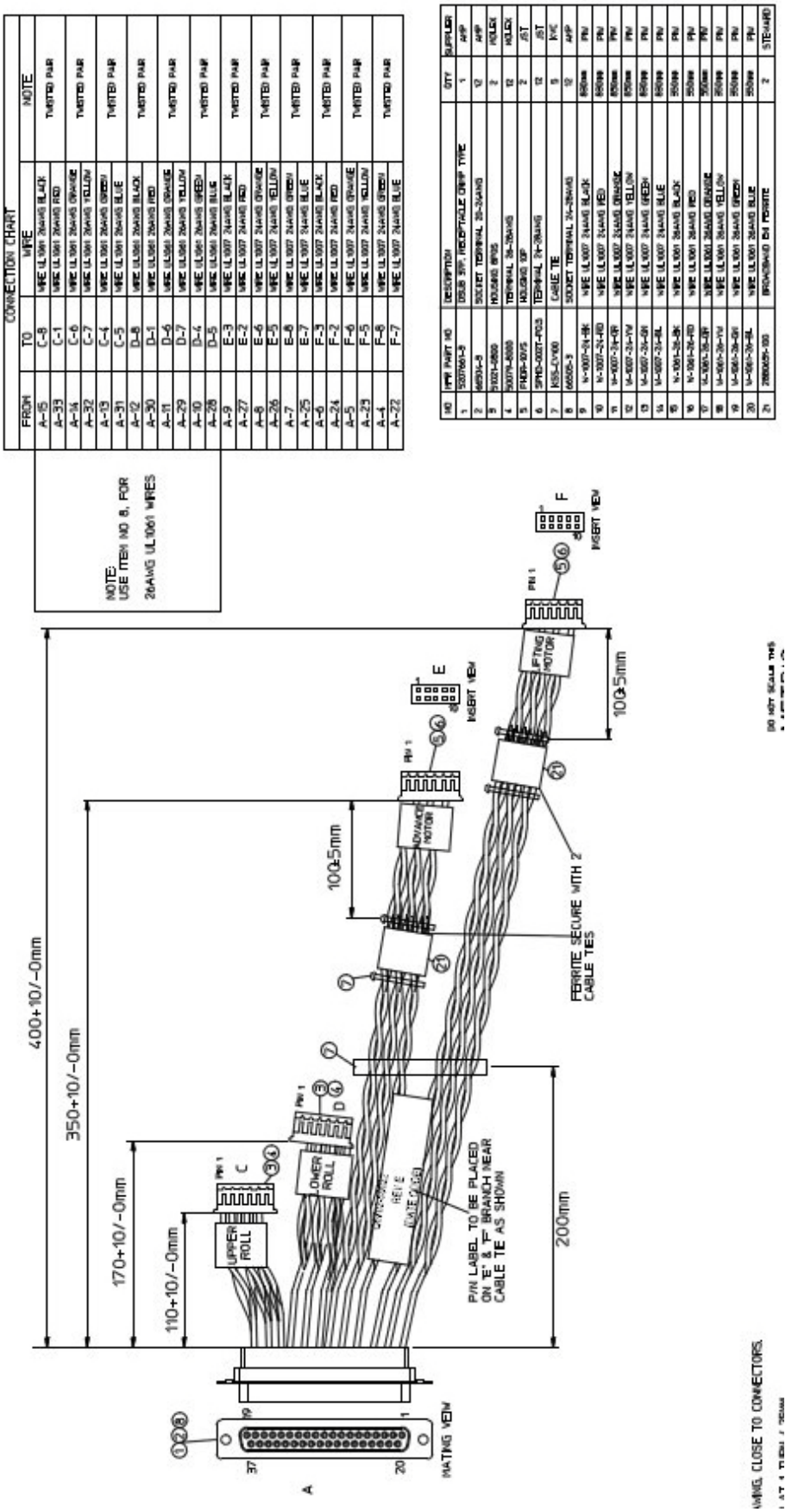

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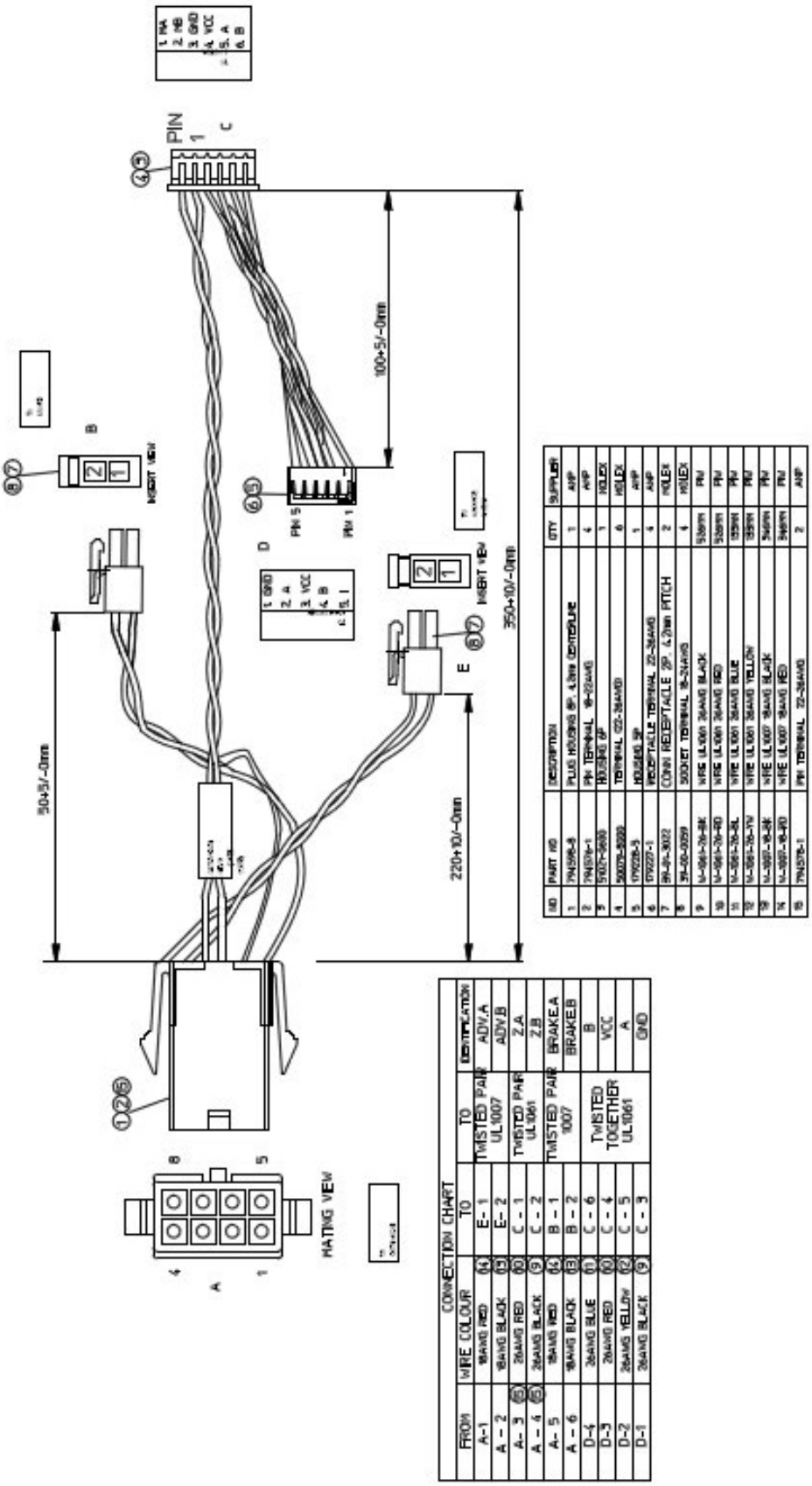
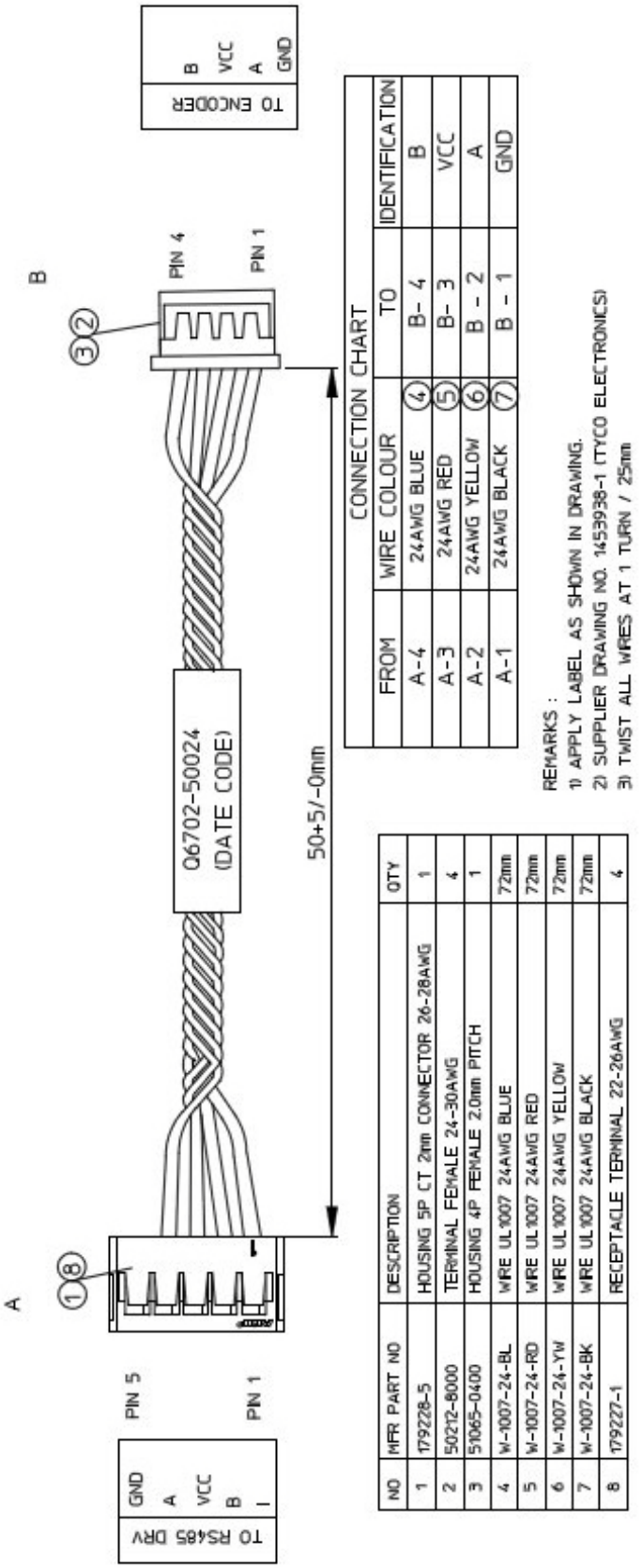


NO	PART NO	DESCRIPTION	QTY	SUPPLIER
1	794698-8	PLUG HOUSING 6P, 4.2mm CENTERLINE	1	AMP
2	794576-1	PIN TERMINAL 18-22AWG	4	AMP
3	51021-0600	HOUSING 6P	1	MOLEX
4	50079-8000	TERMINAL 22-26AWG	6	MOLEX
5	179228-3	HOUSING 3P	1	AMP
6	179227-1	RECEPTACLE TERMINAL 22-26AWG	4	AMP
7	09-49-3032	CONN RECEPTACLE 2P, 4.2mm PITCH	2	MOLEX
8	39-00-0039	SOCKET TERMINAL 18-24AWG	4	MOLEX
9	M-081-20-BK	WIRE UL1007 26AWG BLACK	50mm	PM
10	M-081-20-RD	WIRE UL1007 26AWG RED	50mm	PM
11	M-081-20-BL	WIRE UL1007 26AWG BLUE	150mm	PM
12	M-081-20-YW	WIRE UL1007 26AWG YELLOW	150mm	PM
13	M-081-18-BK	WIRE UL1007 18AWG BLACK	340mm	PM
14	M-081-18-RD	WIRE UL1007 18AWG RED	340mm	PM
15	794578-1	PIN TERMINAL 22-26AWG	2	AMP

D-Q6702-50024-1

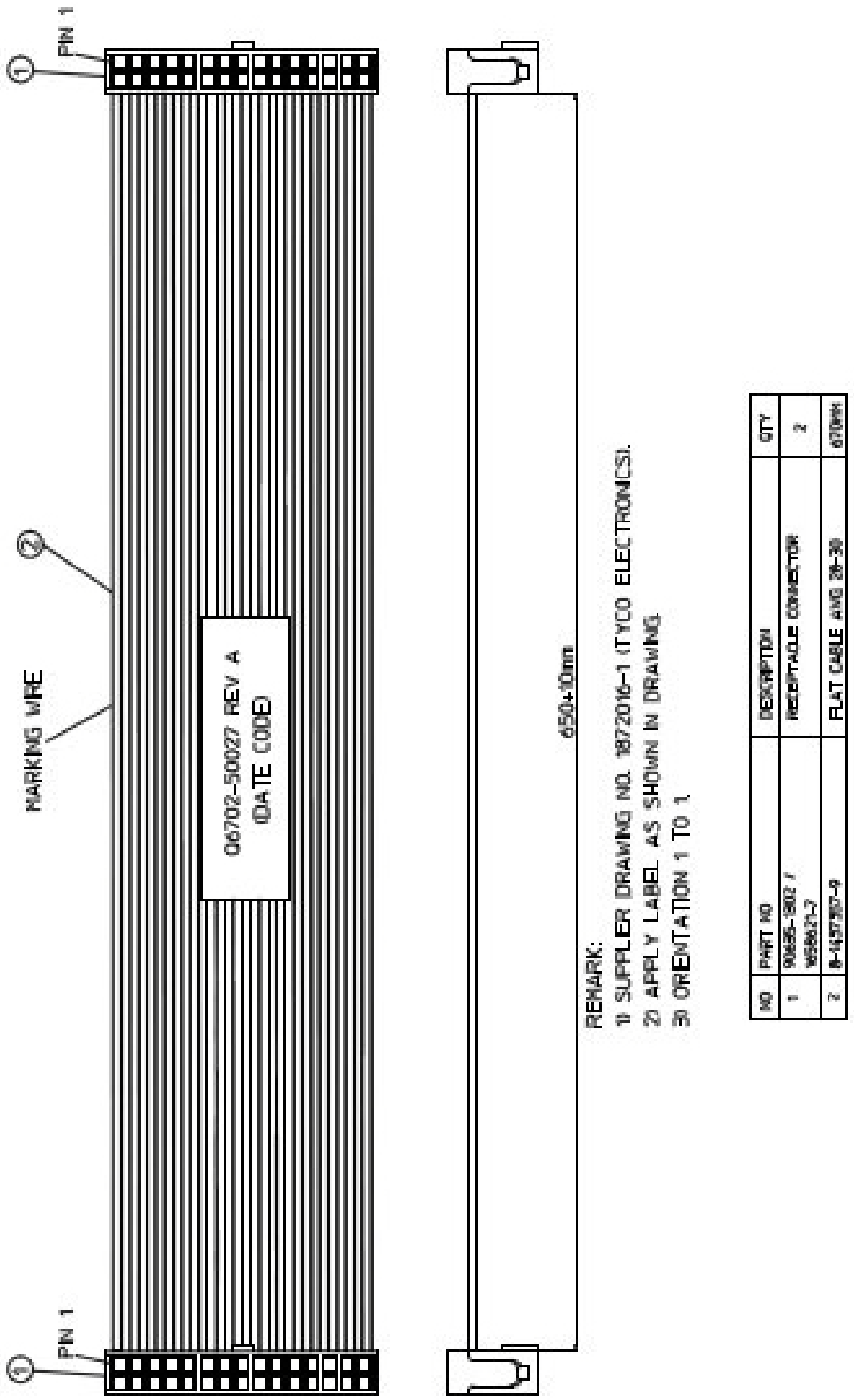


CONNECTION CHART			
FROM	WIRE COLOUR	TO	IDENTIFICATION
A-4	24AWG BLUE (4)	B- 4	B
A-3	24AWG RED (5)	B- 3	VCC
A-2	24AWG YELLOW (6)	B - 2	A
A-1	24AWG BLACK (7)	B - 1	GND

REMARKS :
1) APPLY LABEL AS SHOWN IN DRAWING.
2) SUPPLIER DRAWING NO. 1453938-1 (TYCO ELECTRONICS)
3) TWIST ALL WIRES AT 1 TURN / 25mm

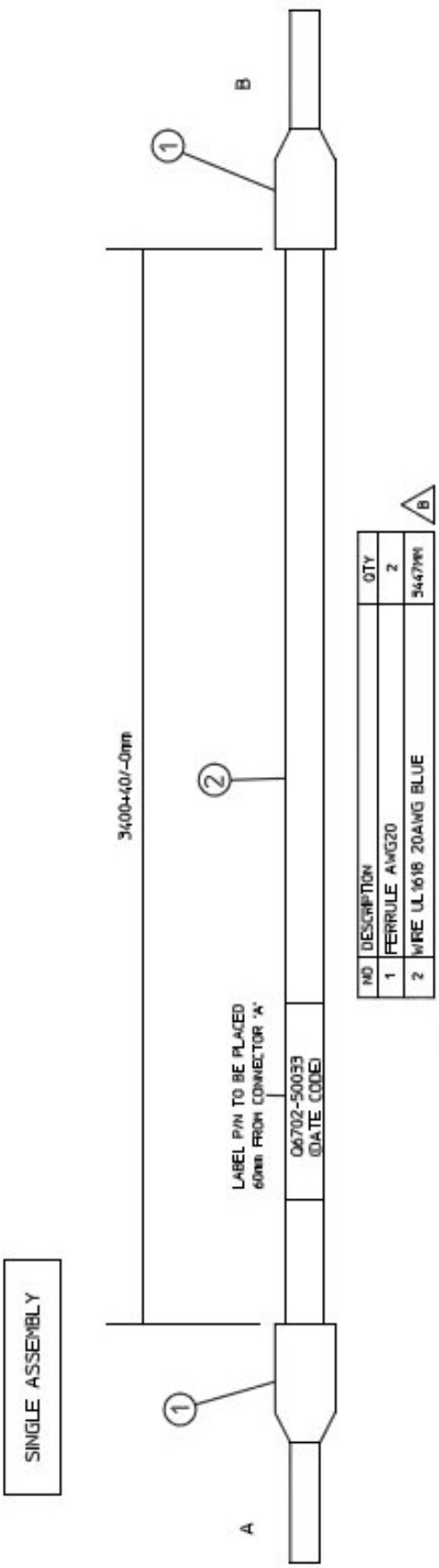
NO	MFR PART NO	DESCRIPTION	QTY
1	179228-5	HOUSING 5P CT 2mm CONNECTOR 26-28AWG	1
2	50212-8000	TERMINAL FEMALE 24-30AWG	4
3	51065-0400	HOUSING 4P FEMALE 2.0mm PITCH	1
4	W-1007-24-BL	WIRE UL1007 24AWG BLUE	72mm
5	W-1007-24-RD	WIRE UL1007 24AWG RED	72mm
6	W-1007-24-YW	WIRE UL1007 24AWG YELLOW	72mm
7	W-1007-24-BK	WIRE UL1007 24AWG BLACK	72mm
8	179227-1	RECEPTACLE TERMINAL 22-26AWG	4

D-Q6702-50027-1

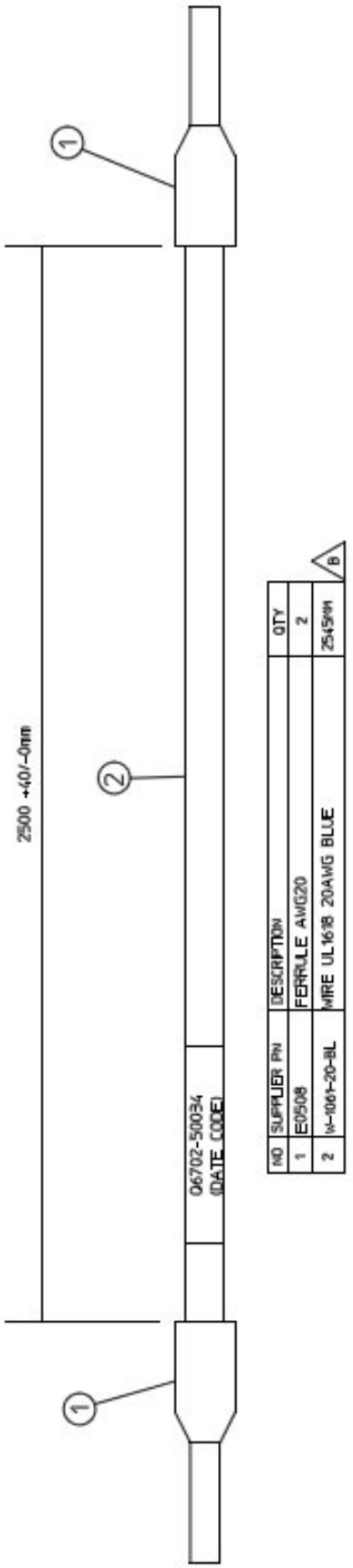


NO	PART NO	DESCRIPTION	QTY
1	90635-1302 / 1658621-2	RECEPTACLE CONNECTION	2
2	8-1437357-9	FLAT CABLE AWG 28-30	670MM

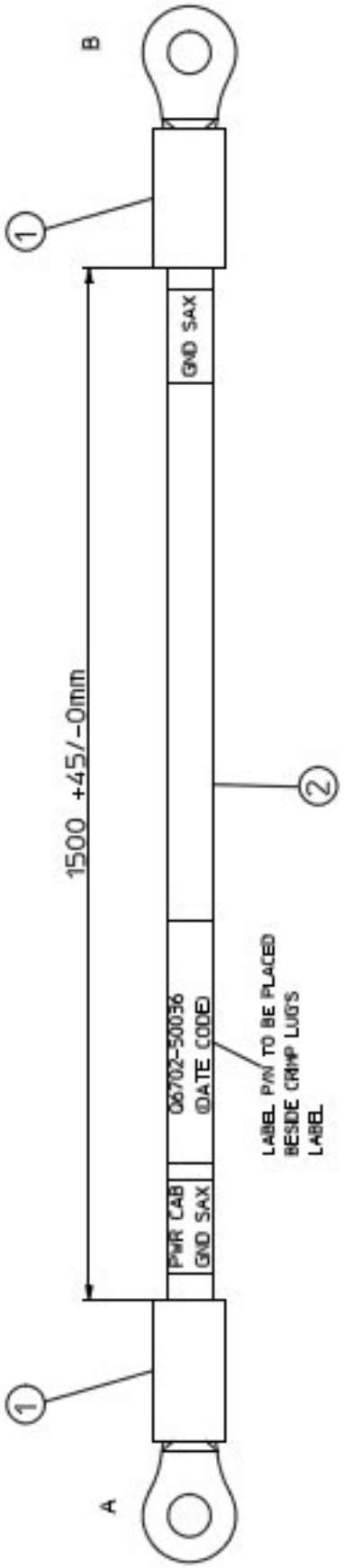
D-Q6702-50033-1



D-Q6702-50034-1



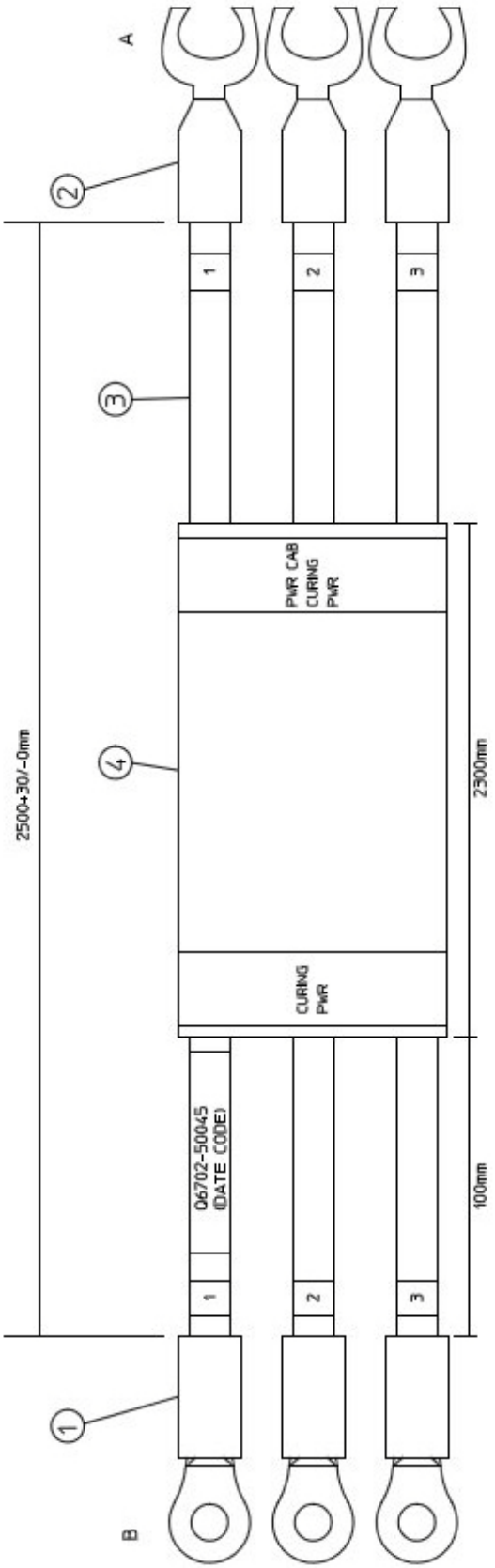
D-Q6702-50036-1



REMARK
1) APPLY LABEL AS SHOWN IN DRAWING.
2) SUPPLIER DRAWING NO. 1672030-1 (TYCO ELECTRONICS)

NO	DESCRIPTION	QTY
1	RING TERMINAL AWG8 M6 RED	2
2	WIRE UL1015 AWG8 GREEN/YELLOW	1558mm

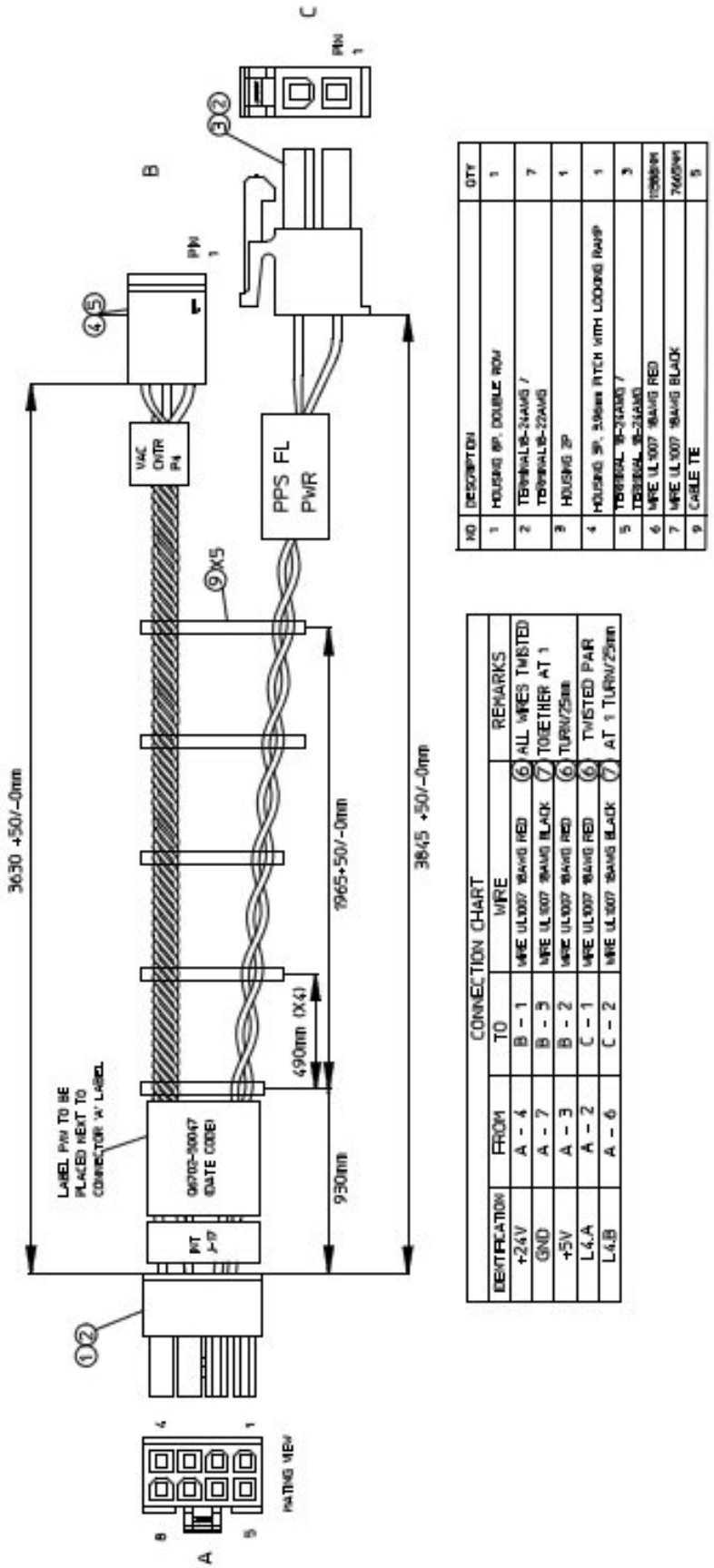
D-Q6702-50045-1



NO	DESCRIPTION	QTY
1	RING TERMINAL M4	3
2	SPADE TERMINAL 10-12AWG, STUD SIZE 5.3mm	3
3	WIRE UL1015 12AWG BLACK	7656MM
4	PVC TUBE 14.3MM INTERNAL DIAMETER	2305mm

REMARK
1) APPLY LABEL AS SHOWN IN DRAWING
2) SUPPLIER DRAWING NO 2-1872189-1 (TYCO ELECTRONICS).

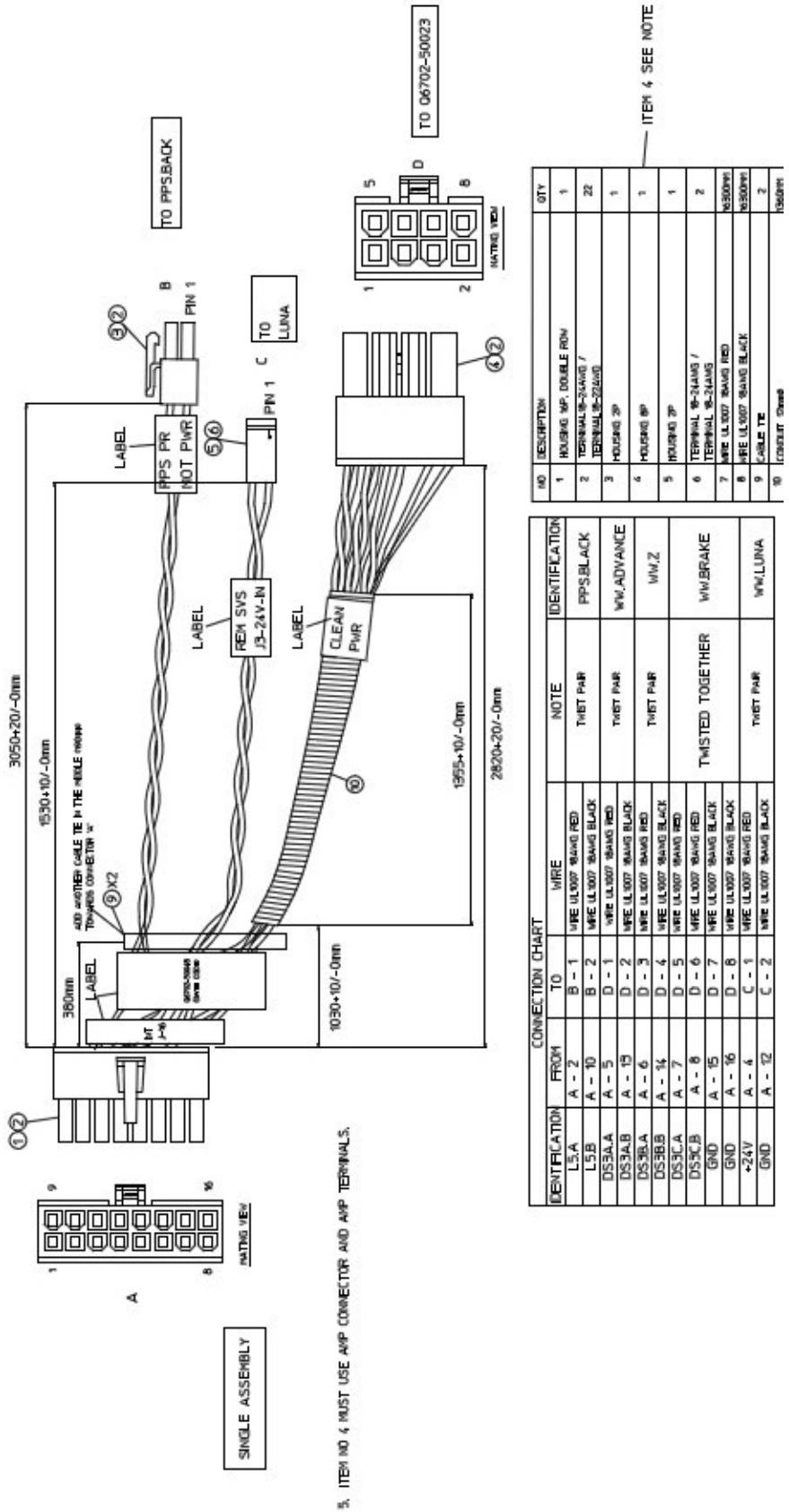
D-Q6702-50047-1



NO	DESCRIPTION	QTY
1	HOUSING 8P, DOUBLE ROW	1
2	TERMINALS-24AWG / TERMINALS-22AWG	7
3	HOUSING 2P	1
4	HOUSING 3P, 3.96mm PITCH WITH LOCKING RAMP	1
5	TERMINAL 18-24AWG / TERMINAL 18-24AWG	3
6	WIRE UL1007 18AWG RED	
7	WIRE UL1007 18AWG BLACK	
9	CABLE TIE	5

CONNECTION CHART				
IDENTIFICATION	FROM	TO	WIRE	REMARKS
+24V	A - 4	B - 1	WIRE UL1007 18AWG RED	(6) ALL WIRES TWISTED
GND	A - 7	B - 3	WIRE UL1007 18AWG BLACK	(7) TOGETHER AT 1
+5V	A - 3	B - 2	WIRE UL1007 18AWG RED	(6) TURN/25mm
L4.A	A - 2	C - 1	WIRE UL1007 18AWG RED	(6) TWISTED PAIR
L4.B	A - 6	C - 2	WIRE UL1007 18AWG BLACK	(7) AT 1 TURN/25mm

D-Q6702-50048-1

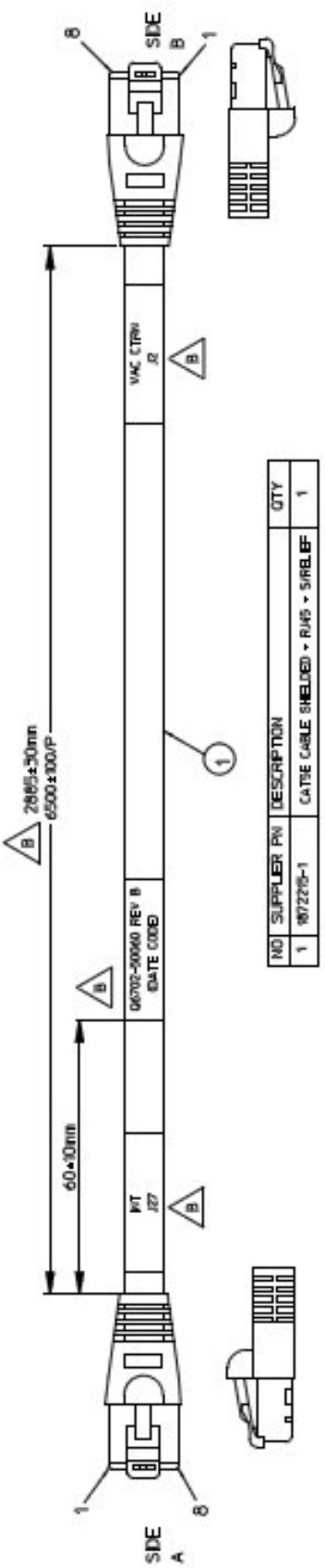


CONNECTION CHART

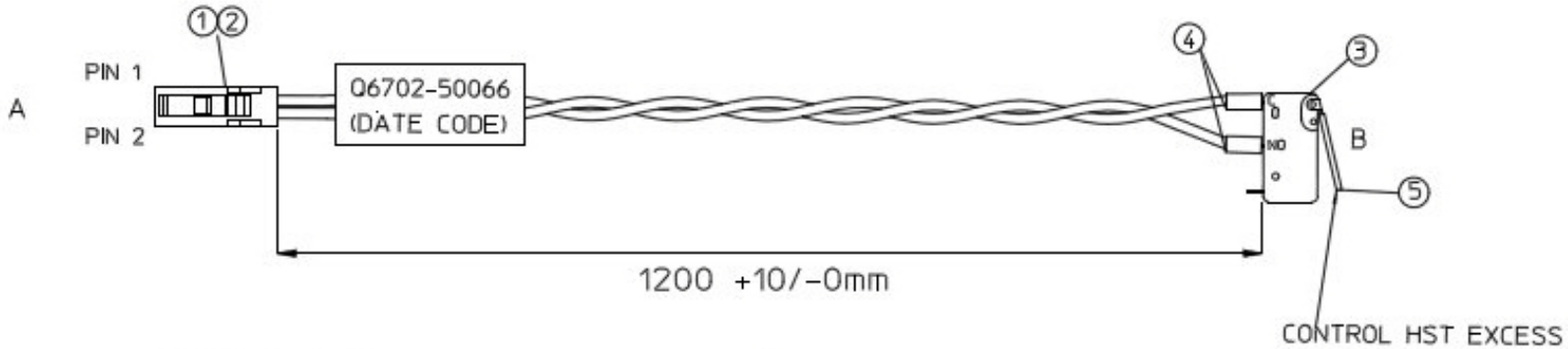
IDENTIFICATION	FROM	TO	WIRE	NOTE	IDENTIFICATION
L5A	A - 2	B - 1	WIRE UL1007 18AWG RED	TWIST PAIR	PPS,BLACK
L5B	A - 10	B - 2	WIRE UL1007 18AWG BLACK		
DS3A,A	A - 5	D - 1	WIRE UL1007 18AWG RED	TWIST PAIR	WW,ADVANCE
DS3A,B	A - 19	D - 2	WIRE UL1007 18AWG BLACK		
DS3B,A	A - 6	D - 3	WIRE UL1007 18AWG RED	TWIST PAIR	WW,Z
DS3B,B	A - 14	D - 4	WIRE UL1007 18AWG BLACK		
DS3C,A	A - 7	D - 5	WIRE UL1007 18AWG RED	TWISTED TOGETHER	WW,BRAKE
DS3C,B	A - 8	D - 6	WIRE UL1007 18AWG BLACK		
GND	A - 15	D - 7	WIRE UL1007 18AWG RED		
GND	A - 16	D - 8	WIRE UL1007 18AWG BLACK		
+24V	A - 4	C - 1	WIRE UL1007 18AWG RED	TWIST PAIR	WW,LUNA
GND	A - 12	C - 2	WIRE UL1007 18AWG BLACK		

NO	DESCRIPTION	QTY
1	HOUSING 4P, DOUBLE ROW	1
2	TERMINAL 18-24AWG / TERMINAL 18-22AWG	22
3	HOUSING 2P	1
4	HOUSING 8P	1
5	HOUSING 3P	1
6	TERMINAL 18-24AWG / TERMINAL 18-24AWG	2
7	WIRE UL1007 18AWG RED	to300mm
8	WIRE UL1007 18AWG BLACK	to300mm
9	CABLE TIE	2
10	CONDUIT Closed	1540mm

D-Q6702-50060-1



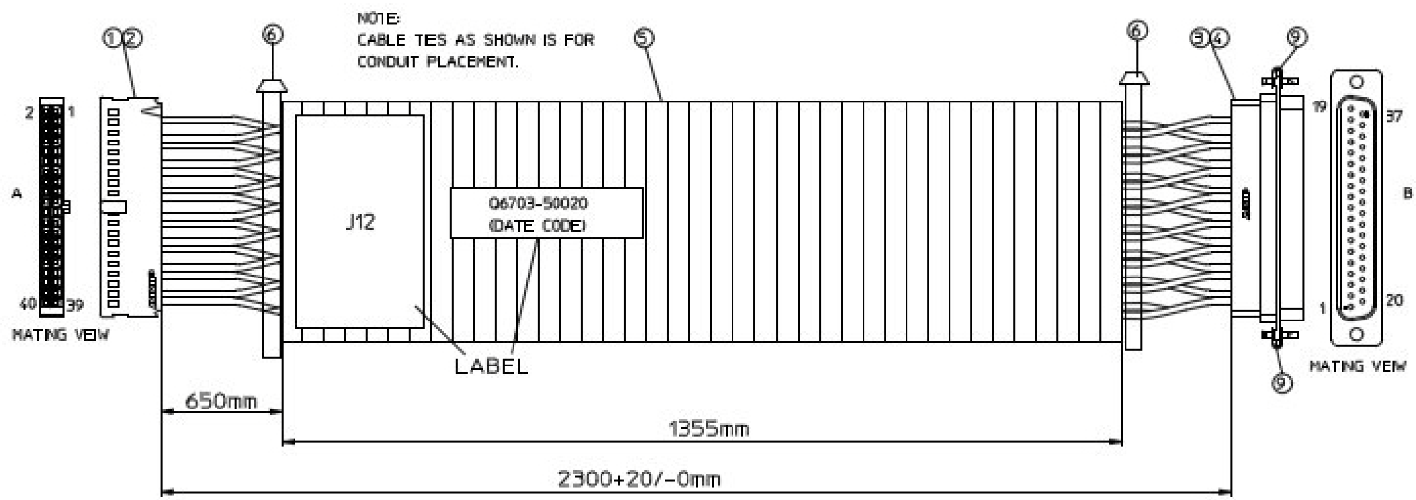
D-Q6702-50066-1



CONNECTION CHART			
FROM	TO	WIRE	REMARKS
A-1	B-C	WIRE UL1061 24AWG RED (6)	TWISTED TOGETHER AT 1 TURN/25MM
A-2	B-NO	WIRE UL1061 24AWG BLACK (7)	

NO	SUPPLIER PN	DESCRIPTION	QTY
1	104257-1	HOUSING 2P	3
2	1-104480-3	TERMINAL 26-22AWG	6
3	SM1-06S-16A0Z	SWITCH	2
4	TUBE 2/1MM	HST 2/1MM	27MM
5	TUBE 3/1.5MM	HST 3/1.5MM	27MM
6	W-1061-24-RD	WIRE UL1061 24AWG RED	1224MM
7	W-1061-24-BK	WIRE UL1061 24AWG BLACK	1224MM

D-Q6703-50020-1



NO	SUPPLIER P/N	DESCRIPTION	QTY
1	102387-9	CONNECTOR 40P	1
2	87666-1	TERMINAL 22-26AWG	34
3	205210-3	DSUB PLUG 37P	1
4	66506-4	PIN TERMINAL 20-24AWG	34
5	1926617	CONDUIT 17mm#	1357MM
6	KSS-CV-200	CABLE TIE	2
7	W-1007-24-BK	WIRE UL1007 24AWG BLACK	40229MM
8	W-1007-24-RD	WIRE UL1007 24AWG RED	40229MM
9	5205980-1	MALE SCREW RETAINER 4-40UNC	2

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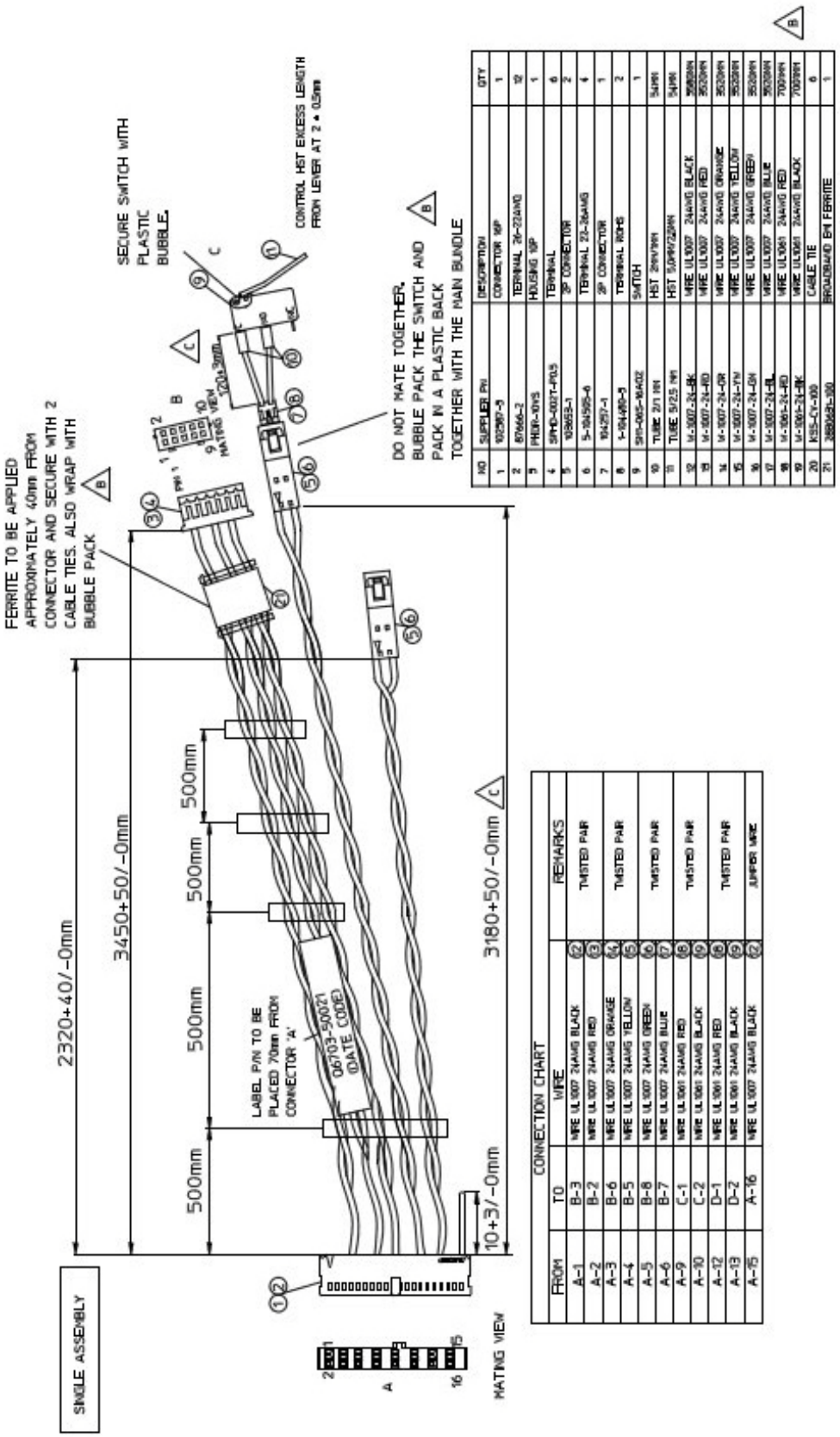
CONNECTION CHART

FROM	TO	WIRE	NOTE
A-7	B-19	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-8	B-37	WIRE UL1007 24AWG RED	
A-9	B-18	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-10	B-36	WIRE UL1007 24AWG RED	
A-11	B-17	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-12	B-35	WIRE UL1007 24AWG RED	
A-13	B-16	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-14	B-34	WIRE UL1007 24AWG RED	
A-15	B-15	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-16	B-33	WIRE UL1007 24AWG RED	
A-17	B-14	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-18	B-32	WIRE UL1007 24AWG RED	
A-19	B-13	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-20	B-31	WIRE UL1007 24AWG RED	
A-21	B-12	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-22	B-30	WIRE UL1007 24AWG RED	
A-23	B-11	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-24	B-29	WIRE UL1007 24AWG RED	
A-25	B-10	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-26	B-28	WIRE UL1007 24AWG RED	
A-27	B-9	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-28	B-27	WIRE UL1007 24AWG RED	
A-29	B-8	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-30	B-26	WIRE UL1007 24AWG RED	
A-31	B-7	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-32	B-25	WIRE UL1007 24AWG RED	
A-33	B-6	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-34	B-24	WIRE UL1007 24AWG RED	
A-35	B-5	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-36	B-23	WIRE UL1007 24AWG RED	
A-37	B-4	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-38	B-22	WIRE UL1007 24AWG RED	
A-39	B-3	WIRE UL1007 24AWG BLACK	TWISTED PAIR
A-40	B-21	WIRE UL1007 24AWG RED	

D-Q6703-50021-1

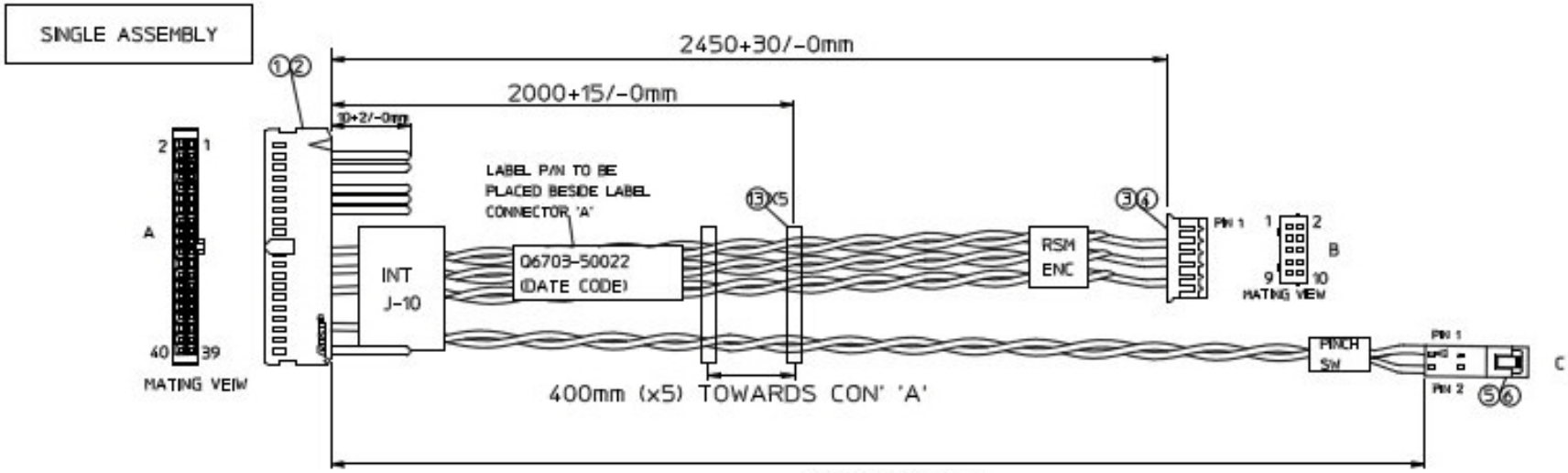


NO	SUPPLIER P/N	DESCRIPTION	QTY
1	102369-5	CONNECTOR 16P	1
2	87666-2	TERMINAL 26-22AWG	12
3	PHDR-10VS	HOUSING 10P	1
4	SPHD-002T-P0.5	TERMINAL	6
5	103653-1	2P CONNECTOR	2
6	5-104566-6	TERMINAL 22-26AWG	4
7	104257-1	2P CONNECTOR	1
8	1-104980-5	TERMINAL ROHS	2
9	SM-04S-NASK	SWITCH	1
10	TUBE 2/1 HH	HST 2mm/mm	54MM
11	TUBE 5/25 HH	HST 5.0mm/25MM	54MM
12	W-1007-24-BK	WIRE UL1007 24AWG BLACK	3500MM
13	W-1007-24-RD	WIRE UL1007 24AWG RED	3520MM
14	W-1007-24-OR	WIRE UL1007 24AWG ORANGE	3520MM
15	W-1007-24-YW	WIRE UL1007 24AWG YELLOW	3520MM
16	W-1007-24-GN	WIRE UL1007 24AWG GREEN	3520MM
17	W-1007-24-BL	WIRE UL1007 24AWG BLUE	3500MM
18	W-1061-24-RD	WIRE UL1061 24AWG RED	700MM
19	W-1061-24-BK	WIRE UL1061 24AWG BLACK	700MM
20	KSS-CV-100	CABLE TIE	6
21	2880683-100	BROADBAND EM FERRITE	1

CONNECTION CHART

FROM	TO	WIRE		REMARKS
A-1	B-3	WIRE UL1007 24AWG BLACK	(12)	TWISTED PAIR
A-2	B-2	WIRE UL1007 24AWG RED	(13)	
A-3	B-6	WIRE UL1007 24AWG ORANGE	(14)	TWISTED PAIR
A-4	B-5	WIRE UL1007 24AWG YELLOW	(15)	
A-5	B-8	WIRE UL1007 24AWG GREEN	(16)	TWISTED PAIR
A-6	B-7	WIRE UL1007 24AWG BLUE	(17)	
A-9	C-1	WIRE UL1061 24AWG RED	(18)	TWISTED PAIR
A-10	C-2	WIRE UL1061 24AWG BLACK	(19)	
A-12	D-1	WIRE UL1061 24AWG RED	(18)	TWISTED PAIR
A-13	D-2	WIRE UL1061 24AWG BLACK	(19)	
A-15	A-16	WIRE UL1007 24AWG BLACK	(12)	JUMPER WIRE

D-Q6703-50022-1



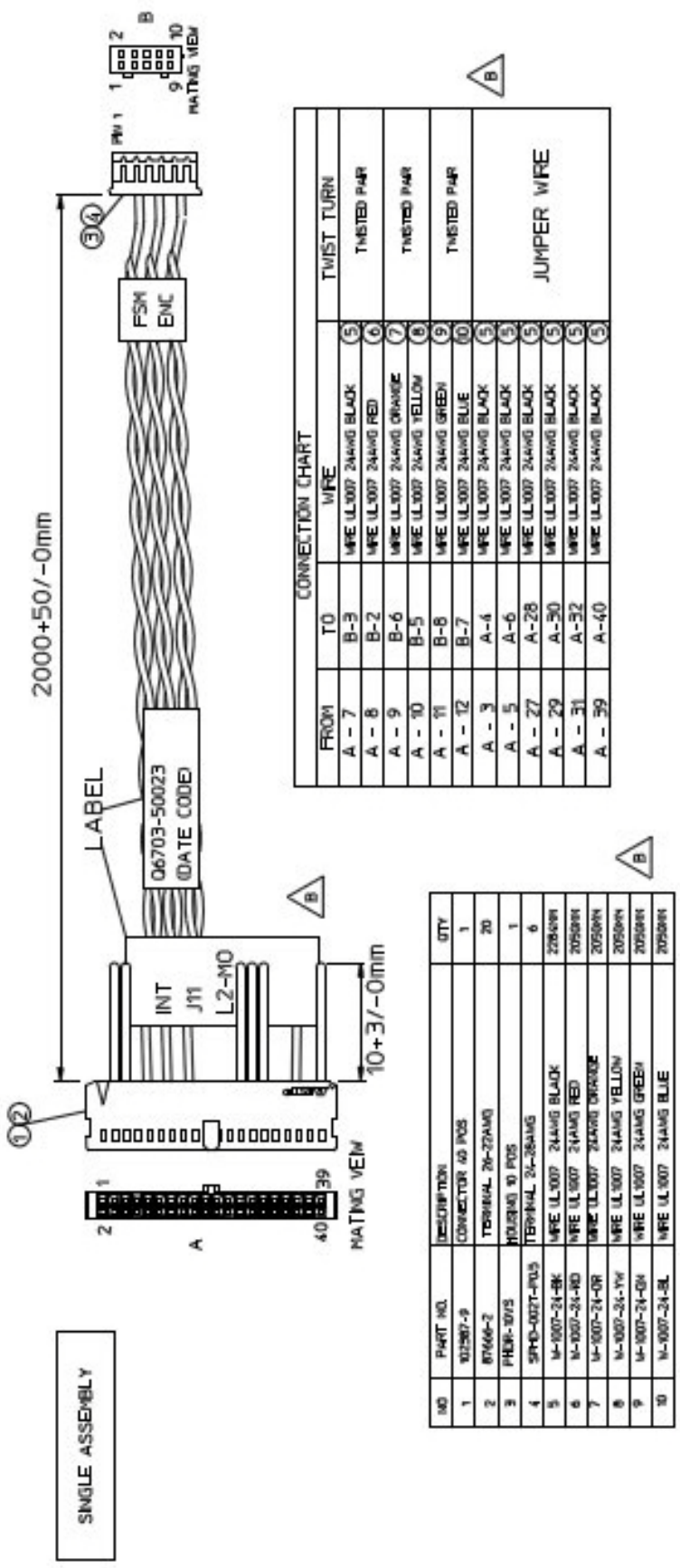
NO	PART NO	DESCRIPTION	QTY
1	102387-9	CONNECTOR 40 POS. 2.54mm PITCH	1
2	87666-2	SOCKET TERMINAL 26-22AWG	20
3	PHDR-10VS	HOUSING 10 POS	1
4	SPHD-002T-P0.5	TERMINAL 24-28AWG	6
5	103653-1	2P CONNECTOR	1
6	5-104505-6	TERMINAL ROHS	2
7	W-1007-24-BK	WIRE UL1007 24AWG BLACK	270MM
8	W-1007-24-RD	WIRE UL1007 24AWG RED	2580MM
9	W-1007-24-OR	WIRE UL1007 24AWG ORANGE	2550MM
10	W-1007-24-YW	WIRE UL1007 24AWG YELLOW	2550MM
11	W-1007-24-GN	WIRE UL1007 24AWG GREEN	2550MM
12	W-1007-24-BL	WIRE UL1007 24AWG BLUE	2580MM
13	KSS-CV-100	CABLE TIE	5
14	W-1061-24-BK	WIRE UL1061 24AWG BLACK	2685MM
15	W-1061-24-RD	WIRE UL1061 24AWG RED	2685MM

CONNECTION CHART			
FROM	TO	WIRE	NOTES
A - 15	B-3	WIRE UL1007 24AWG BLACK (7)	TWISTED PAIR
A - 16	B-2	WIRE UL1007 24AWG RED (8)	
A - 17	B-6	WIRE UL1007 24AWG ORANGE (9)	TWISTED PAIR
A - 18	B-5	WIRE UL1007 24AWG YELLOW (10)	
A - 19	B-8	WIRE UL1007 24AWG GREEN (11)	TWISTED PAIR
A - 20	B-7	WIRE UL1007 24AWG BLUE (12)	
A - 33	C-1	WIRE UL1061 24AWG BLACK (14)	TWISTED PAIR
A - 34	C-2	WIRE UL1061 24AWG RED (15)	
A - 3	A - 4	WIRE UL1007 24AWG BLACK (7)	JUMPER WIRE
A - 5	A - 6	WIRE UL1007 24AWG BLACK (7)	
A - 9	A - 10	WIRE UL1007 24AWG BLACK (7)	
A - 11	A - 12	WIRE UL1007 24AWG BLACK (7)	
A - 13	A - 14	WIRE UL1007 24AWG BLACK (7)	
A - 39	A - 40	WIRE UL1007 24AWG BLACK (7)	

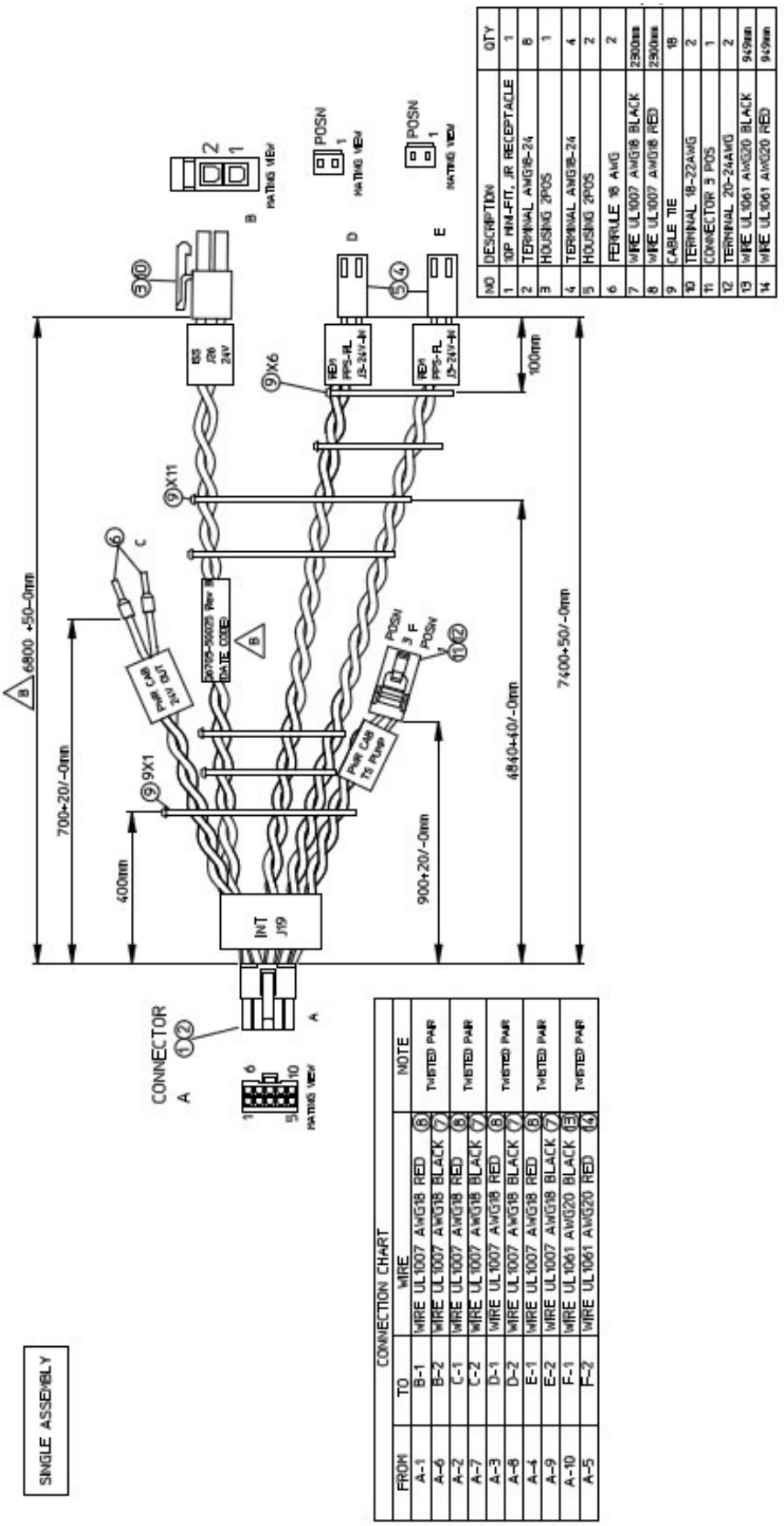
REMARK:
1) LABEL AS SHOWN AND CLOSELY TOWARDS CONNECTORS.
2) SUPPLIER DRAWING NO. 1453898-1 (TYCO ELECTRONICS)
3) TWIST 2 WIRES TOGETHER AT 1 TURN / 25MM

ATEST REVISION OF HEWLETT-PACKARD

D-Q6703-50023-1



D-Q6703-50025-1

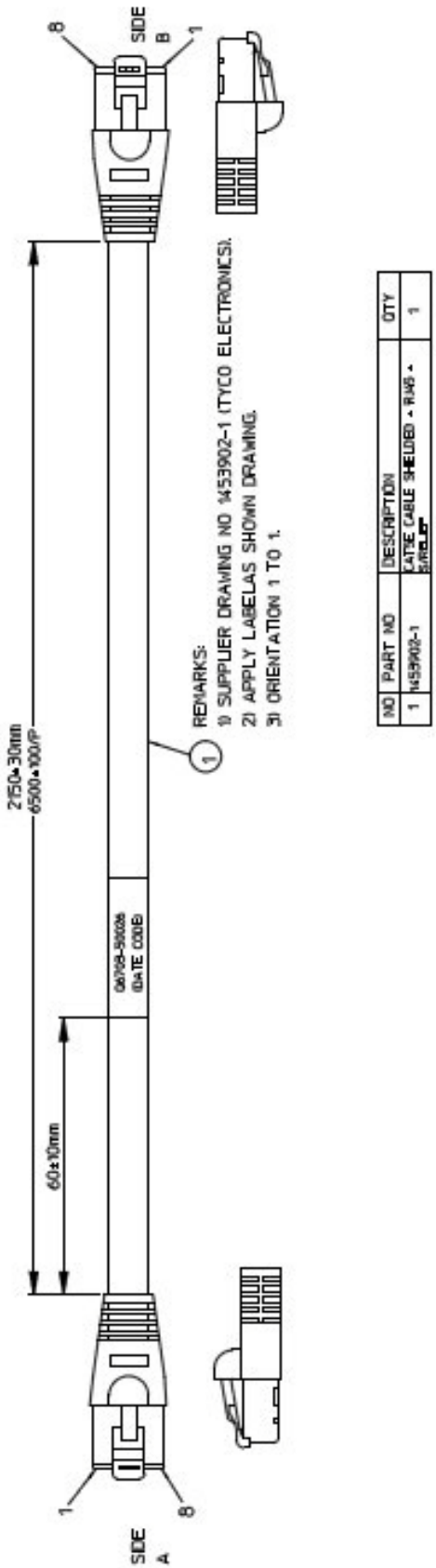


NO	DESCRIPTION	QTY
1	10P MINI-FIT, JR RECEPTACLE	1
2	TERMINAL AWG18-24	8
3	HOUSING 2P05	1
4	TERMINAL AWG18-24	4
5	HOUSING 2P05	2
6	FERRULE 18 AWG	2
7	WIRE UL1007 AWG18 BLACK	2300mm
8	WIRE UL1007 AWG18 RED	2300mm
9	CABLE TIE	18
10	TERMINAL 18-22AWG	2
11	CONNECTOR 3 POS	1
12	TERMINAL 20-24AWG	2
13	WIRE UL1061 AWG20 BLACK	949mm
14	WIRE UL1061 AWG20 RED	949mm

CONNECTION CHART

FROM	TO	WIRE	NOTE
A-1	B-1	WIRE UL1007 AWG18 RED (8)	TWISTED PAIR
A-6	B-2	WIRE UL1007 AWG18 BLACK (7)	
A-2	C-1	WIRE UL1007 AWG18 RED (8)	TWISTED PAIR
A-7	C-2	WIRE UL1007 AWG18 BLACK (7)	
A-3	D-1	WIRE UL1007 AWG18 RED (8)	TWISTED PAIR
A-8	D-2	WIRE UL1007 AWG18 BLACK (7)	
A-4	E-1	WIRE UL1007 AWG18 RED (8)	TWISTED PAIR
A-9	E-2	WIRE UL1007 AWG18 BLACK (7)	
A-10	F-1	WIRE UL1061 AWG20 BLACK (13)	TWISTED PAIR
A-5	F-2	WIRE UL1061 AWG20 RED (14)	

D-Q6703-50026-1



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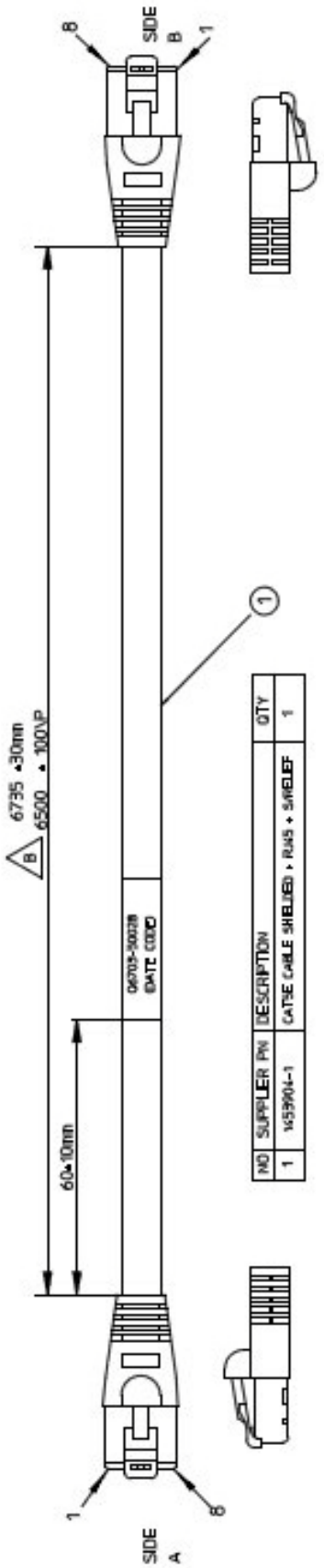

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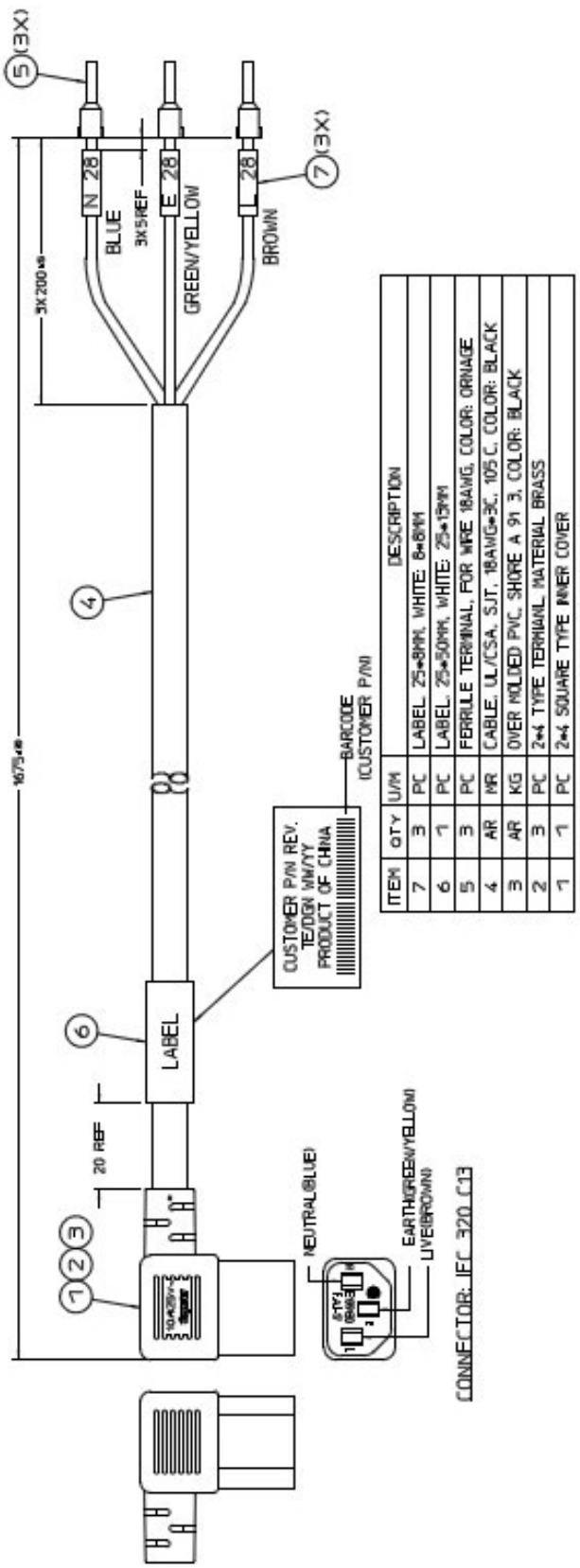
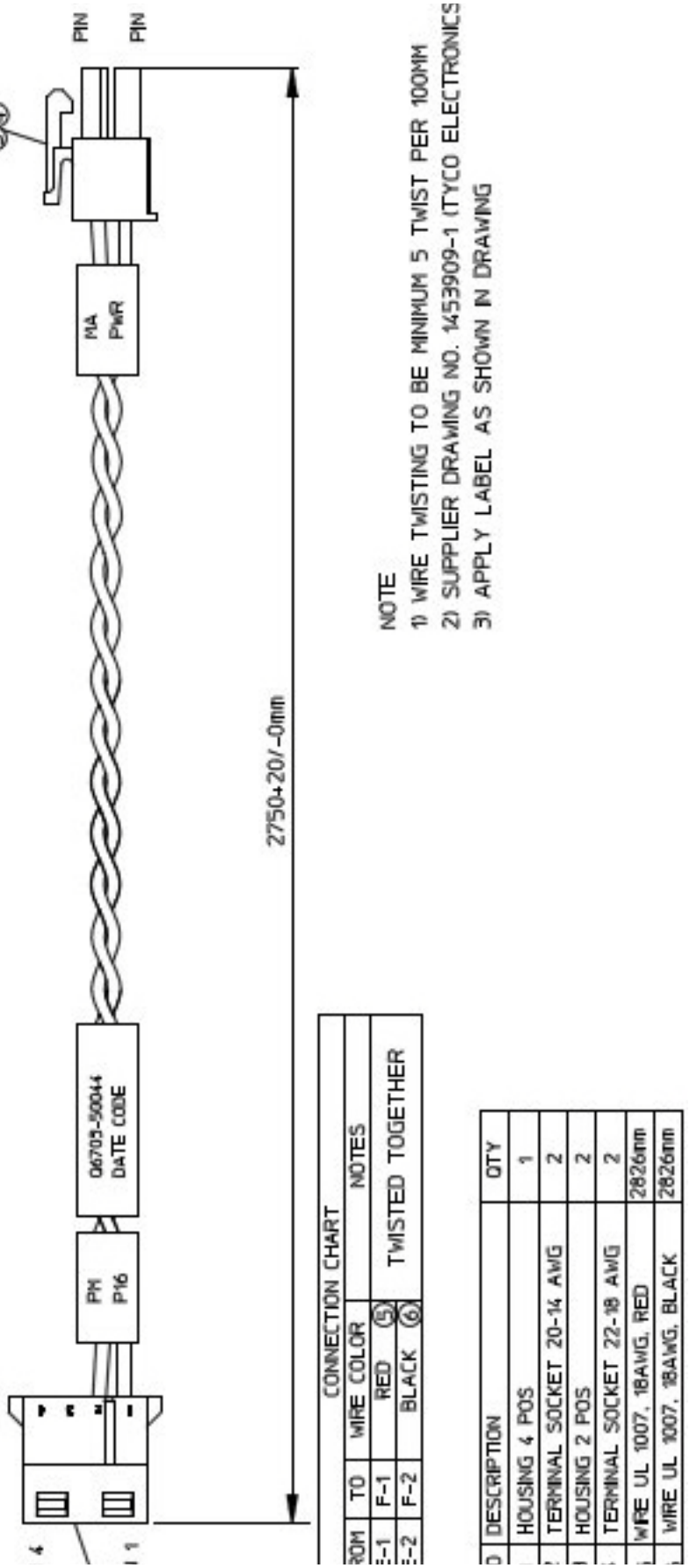


ITEM	QTY	U/M	DESCRIPTION
7	3	PC	LABEL, 25*8MM, WHITE: 8*8MM
6	1	PC	LABEL, 25*50MM, WHITE: 25*15MM
5	3	PC	FERRULE TERMINAL, FOR WIRE 18AWG, COLOR: ORNAGE
4	AR	MR	CABLE, UL/CSA, SJT, 18AWG*3C, 105 C, COLOR: BLACK
3	AR	KG	OVER MOLDED PVC, SHORE A 91 3, COLOR: BLACK
2	3	PC	2*4 TYPE TERMINAL, MATERIAL BRASS
1	1	PC	2*4 SQUARE TYPE INNER COVER

D-Q6703-50044-1



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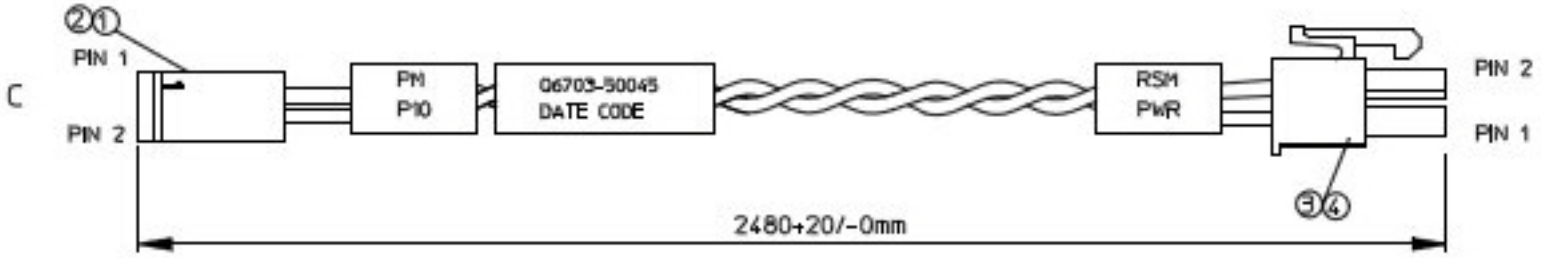


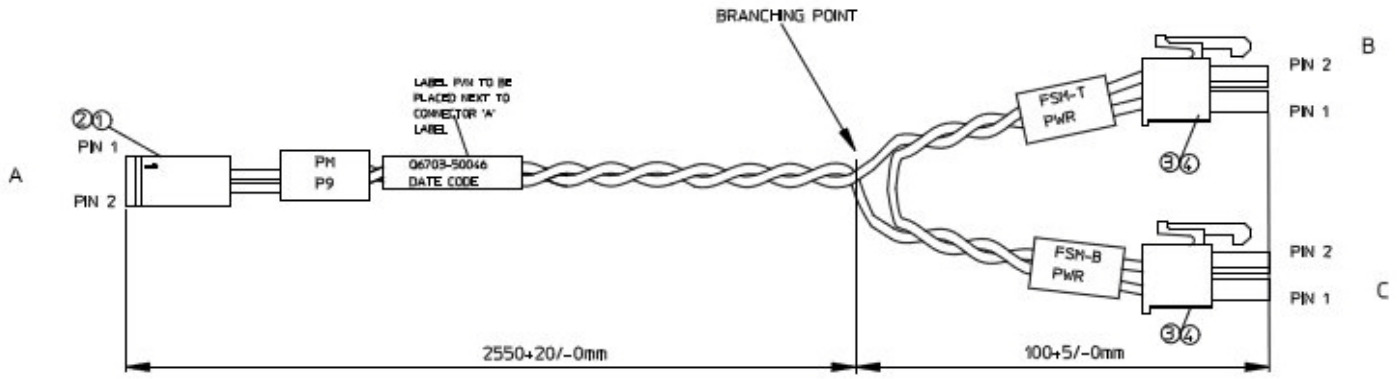
CONNECTION CHART			
FROM	TO	WIRE COLOR	NOTES
C-2	D-1	RED (5)	TWISTED TOGETHER
C-1	D-2	BLACK (6)	

NO	PART NO.	DESCRIPTION	QTY
1	640250-2	HOUSING 2 POS	1
2	350980-2	TERMINAL FEMALE 24-18 AWG	2
3	1586019-2	HOUSING 2 POS	1
4	1586315-3/ 794956-3	TERMINAL SOCKET 22-18 AWG	2
5	W-1007-18-RD	WIRE UL 1007, 18AWG, RED	2557mm
6	W-1007-18-BK	WIRE UL 1007, 18AWG, BLACK	2557mm

REMARKS:-

1) WIRE TWISTING TO BE MINIMUM 5 TWIST PER 100MM
2) SUPPLIER DRAWING NO. 1453910-1 (TYCO ELECTRONICS)
3) APPLY LABEL CLOSE TO CONNECTORS & AS SHOWN IN DRAWING

SINGLE ASSEMBLY



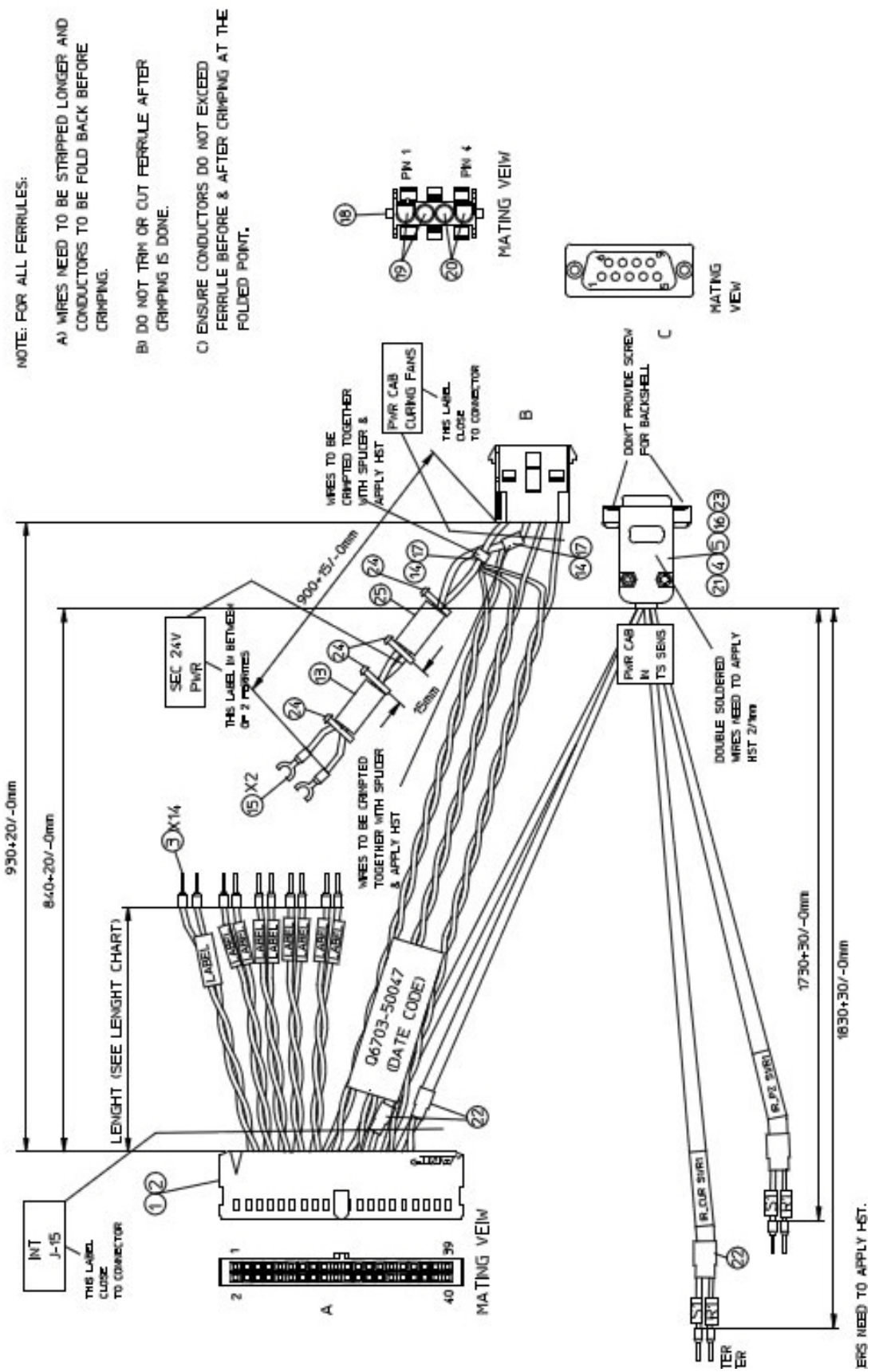
NO	PART NO.	DESCRIPTION	QTY
1	640250-2	HOUSING 2 POS	1
2	350980-2	TERMINAL FEMALE 24-18 AWG	2
3	1586019-2	HOUSING 2 POS	2
4	1586315-3/ 794956-3	TERMINAL SOCKET 22-18 AWG	4
5	W-1007-18-RD	WIRE UL 1007, 18AWG, RED	2727mm
6	W-1007-18-BK	WIRE UL 1007, 18AWG, BLACK	2727mm
7	W-1007-18-BL	WIRE UL 1007, 18AWG, BLUE	207 mm

CONNECTION CHART			
FROM	TO	WIRE COLOR	NOTES
A-1	B-1	RED (5)	SEE TWISTING CHART
A-2	C-2	BLACK (6)	
B-2	C-1	BLUE (7)	

TWISTING CHART		
POSITION	WIRE COLOR	NOTES
A-1	RED	TWISTED PAIR UNTIL BRANCHING POINT
A-2	BLACK	
B-1	RED	TWISTED PAIR UNTIL BRANCHING POINT
B-2	BLUE	
C-1	BLUE	TWISTED PAIR UNTIL BRANCHING POINT
C-2	BLACK	

NOTE
1) WIRE TWISTING TO BE MINIMUM 5 TWIST PER 100MM
2) SUPPLIER DRAWING NO. 1453911-1 (TYCO ELECTRONICS)
3) APPLY LABEL CLOSE TO CONNECTORS & AS SHOWN IN DRAWING

D-Q6703-50047-1



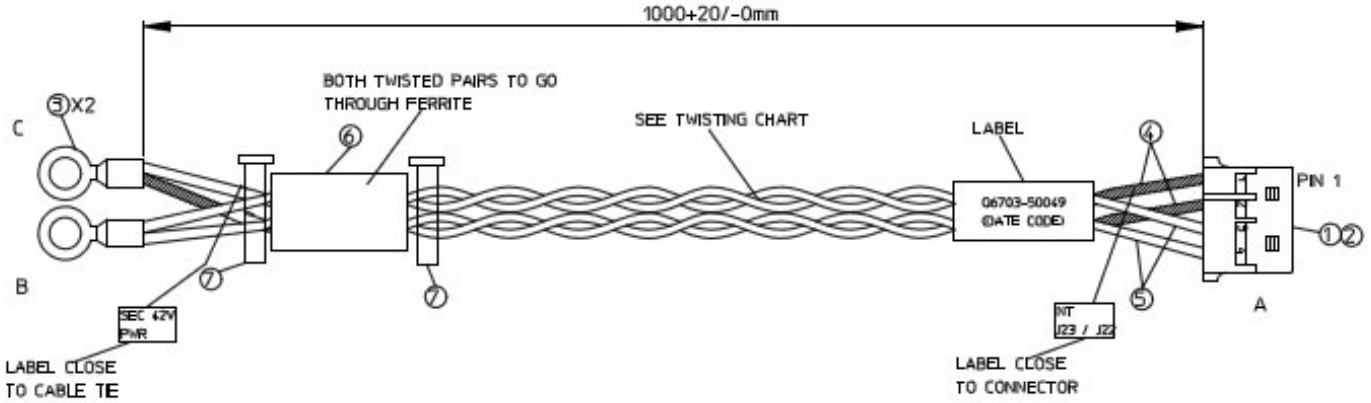
Drawings of cables

D-Q6703-50047-1

NO	SUPPLIER PN	DESCRIPTION	QTY
1	102987-9	CONNECTOR 40P	1
2	87666-2	TERMINAL 26-22AWG	20
3	E1008	INSULATED FERRULE 1.0mm2	14
4	DEBWSTN2MTS/RH	D-SUB 9P. FEMALE SOLDER TYPE	1
5	C88E300000	METALLISED BACKSHELL	1
6	W-1061-22-BK	WIRE UL1061 22AWG BLACK	1165mm
7	W-1061-22-BL	WIRE UL1061 22AWG BLUE	987mm
8	W-1061-22-RD	WIRE UL1061 22AWG RED	5085mm
9	W-1061-22-YW	WIRE UL1061 22AWG YELLOW	987mm
10	W-1015-14-BK	WIRE UL1015 14AWG BLACK	999mm
11	W-1015-14-RD	WIRE UL1015 14AWG RED	999mm
12	9322	2C TWISTED PAIR CABLE, 22AWG SHIELDED	9528mm
13	28B0735-000	FERRITE SOLID CORE	1
14	63561-1	SPLICES OPEN BARREL 10000-16000CMA	2
15	SVES2-4	SPADE TERMINAL 16-14AWG, M4	2
16	TUBE 1.5/0.75mm	HST 1.5/0.75mm	141mm
17	TUBE 8/4mm	HST 8/4mm	54mm
18	350780-1	CONNECTOR 4P. UNIVERSAL MATE & LOCK	1
19	350536-1	TERMINAL SOCKET 20-14AWG	2
20	350570-1 / 350851-1	TERMINAL SOCKET 24-18AWG	2
21	TUBE 2/1mm	HST 2/1mm	22mm
22	TUBE 5/2.5mm	HST 5/2.5mm	126mm
23	TUBE 12/6mm	HST 12/6mm	32mm
24	KSS-CV-100	CABLE TIE	4
25	28A2024-0A2/ 28B1020-100	EMI FERRITE SNAP-ON CORE/ EMI FERRITE SOLID CORE	1

	CONNECTION CHART				
LABEL	FROM	TO	COLOUR	NOTE	LENGHT
KM+/-	A-5	FERRULE	BLACK 22AWG (6)	TWISTED PAIR	1150+20/-0mm
	A-6	FERRULE	BLACK 22AWG (6)		
X1-41	A-7	FERRULE	BLACK 22AWG (6)	TWISTED PAIR	1050+20/-0mm
X2-42	A-8	FERRULE	BLACK 22AWG (6)		
GND	A-9	FERRULE	BLACK 22AWG (6)	TWISTED PAIR	1300+20/-0mm
eSTOP SE+	A-10	FERRULE	RED 22AWG (8)		
GND	A-11	FERRULE	BLACK 22AWG (6)	TWISTED PAIR	1300+20/-0mm
24V-FUSE	A-12	FERRULE	RED 22AWG (8)		
GND	A-13	FERRULE	BLACK 22AWG (6)	TWISTED PAIR	1300+20/-0mm
FAN	A-14	FERRULE	RED 22AWG (8)		
	A-15	B-1	BLACK 22AWG (6)	TWISTED PAIR	SEE DRAWING
	A-16	B-2	RED 22AWG (8)		
	A-17	B-1	BLACK 22AWG (6)	TWISTED PAIR	SEE DRAWING
	A-18	B-3	BLUE 22AWG (7)		
	A-21	B-1	BLACK 22AWG (6)	TWISTED PAIR	SEE DRAWING
	A-22	B-4	YELLOW 22AWG (9)		
	B-1	SPADE TERMINAL	BLACK 14AWG (10)	TWISTED PAIR	SEE DRAWING
	B-2	SPADE TERMINAL	RED 14AWG (11)		
	A-31	C-4	BLACK	CABLE TWISTED PAIR + SHIELD (12)	SEE DRAWING
	A-32	C-3	RED		
	-	C-BODY	SHIELD		
	A-23	C-8	BLACK	CABLE TWISTED PAIR + SHIELD (12)	SEE DRAWING
	A-24	C-9	RED		
	-	C-BODY	SHIELD		
	C-8	C-4	BLACK 22AWG (6)	JUMPER WIRE	SEE DRAWING
	C-7	C-3	RED 22AWG (8)	JUMPER WIRE	SEE DRAWING
R1	C-1	FERRULE IR_CUR SVR9	RED	CABLE TWISTED PAIR + SHIELD (12)	SEE DRAWING
S1	C-2		BLACK		
	-	C-BODY	SHIELD		
R1	C-5	FERRULE IR_P2 SVR9	RED	CABLE TWISTED PAIR + SHIELD (12)	SEE DRAWING
S1	C-6		BLACK		
	-	C-BODY	SHIELD		

D-Q6703-50049-1



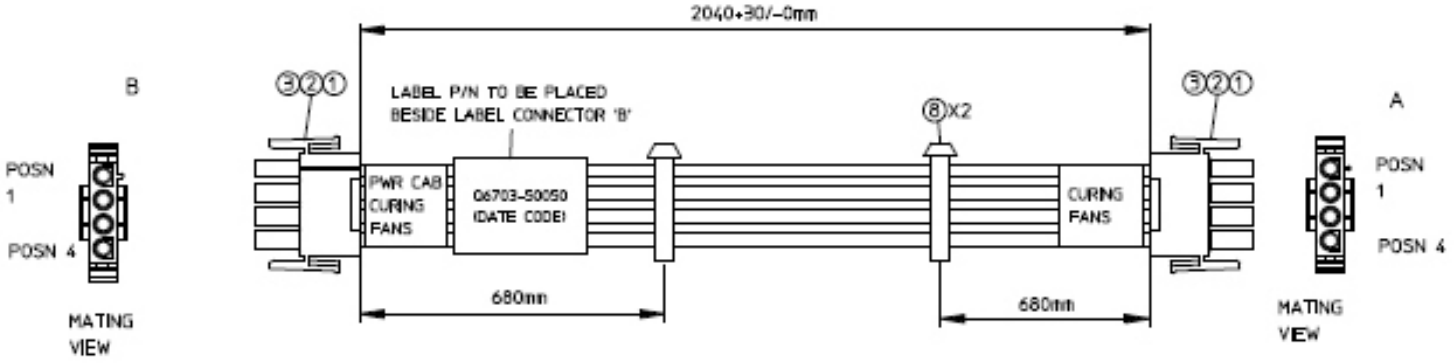
TWISTING CHART		
POSITION	WIRE COLOR	NOTES
A-1	RED	TO BE TWISTED TOGETHER (TWISTED PAIR) AT 1 TURN /30mm
A-3	BLACK	
A-2	RED	TO BE TWISTED TOGETHER (TWISTED PAIR) AT 1 TURN /30mm
A-4	BLACK	

CONNECTION CHART			
FROM	TO	WIRE COLOR	NOTES
A-1	C	RED	CRIMP BOTH WIRES TO RING TERMINAL TOGETHER
A-2		RED	
A-3	B	BLACK	CRIMP BOTH WIRES TO RING TERMINAL TOGETHER
A-4		BLACK	

NO	SUPPLIER PN	DESCRIPTION	QTY
1	15-24-4048	HOUSING 4 POS	1
2	02-08-1201	CRIMP TERMINAL 14-20 AWG	4
3	35110	CRIMP LUG M6, 10-12AWG	2
4	W-1569-14-RD	WIRE UL 1569, 14AWG, RED	2144mm
5	W-1569-14-BK	WIRE UL 1569, 14AWG, BLACK	2144mm
6	28B0735-000	FERRITE	1
7	KSS-CV-100	CABLE TIE	2

Drawings of cables

D-Q6703-50050-1

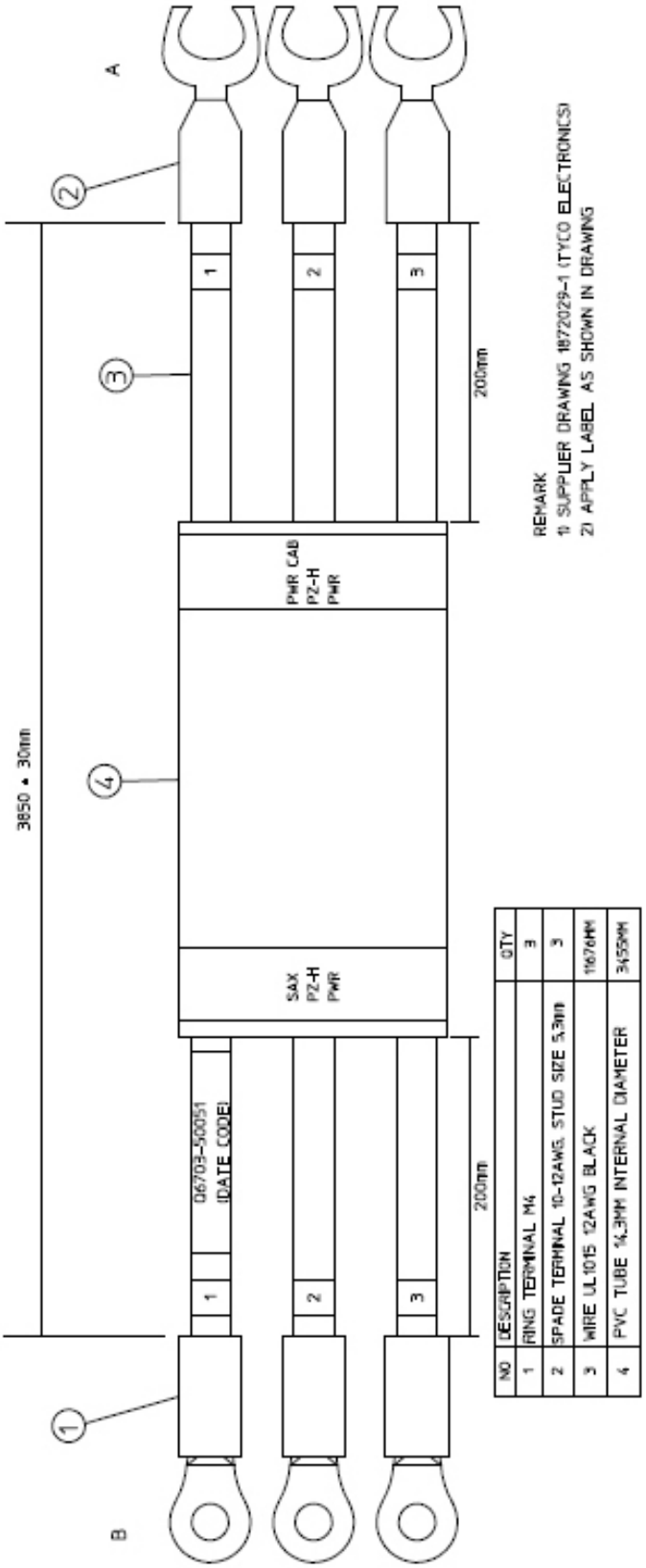


CONNECTION CHART		
FROM	TO	WIRE COLOR
A-1 ②	B-1 ②	BLACK, AWG10 ④
A-2 ③	B-2 ③	RED, AWG16 ⑤
A-3 ④	B-3 ④	BLUE, AWG16 ⑥
A-4 ⑤	B-4 ⑤	YELLOW, AWG16 ⑦

NO	DESCRIPTION	QTY	PART NO
1	4P CONNECTOR	2	350779-1
2	TERMINAL 12-10AWG	2	350922-3/640309-3
3	TERMINAL 18-14AWG	6	350873-3/350918-3
4	WIRE UL1015 AWG10 BLACK	3000mm	W-1015-10-BK
5	WIRE UL1015 AWG16 RED	3000mm	W-1015-16-RD
6	WIRE UL1015 AWG16 BLUE	3000mm	W-1015-16-BL
7	WIRE UL1015 AWG16 YELLOW	3000mm	W-1015-16-YW
8	CABLE TIE	2	KSS-CV-100

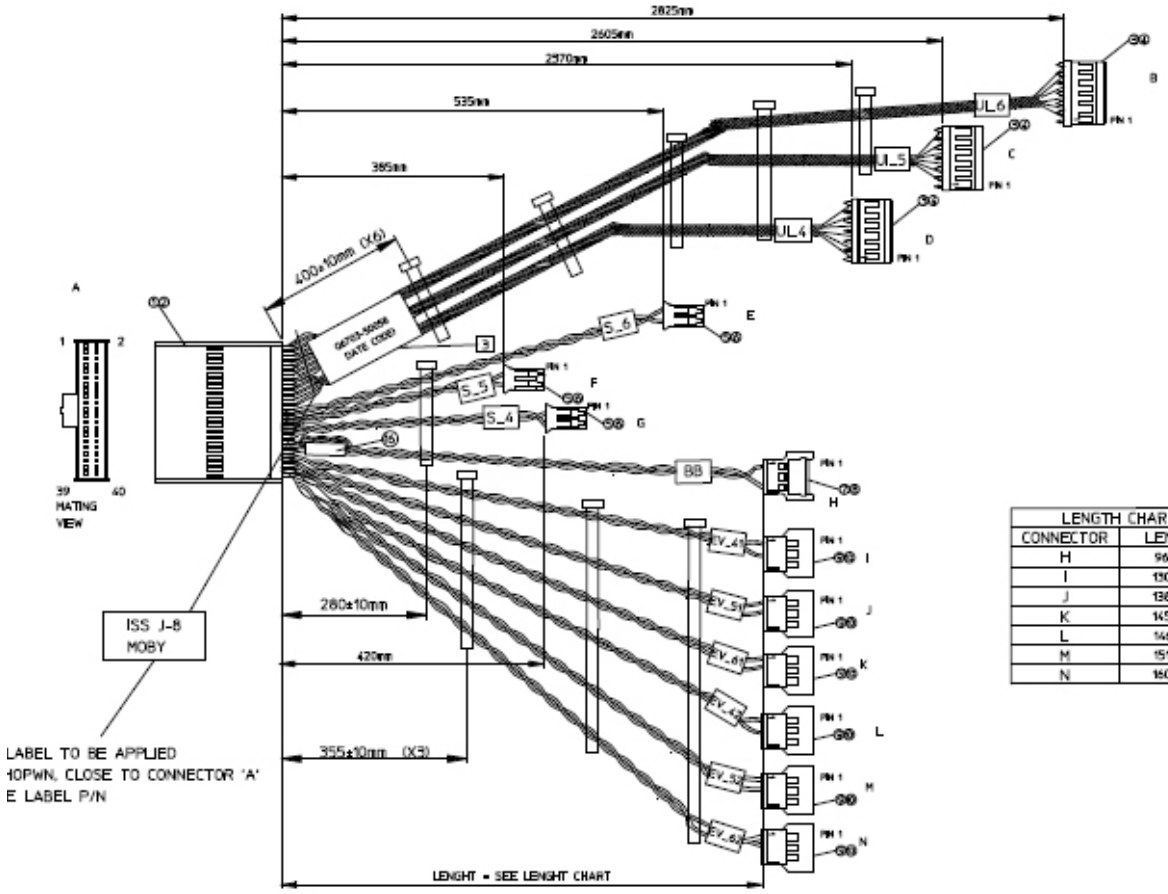
REMARKS:
1) SUPPLIER DRAWING NO. 1453914-1 (TYCO ELECTRONICS)
2) APPLY LABELS CLOSE TO CONNECTORS & AS SHOWN DRAWING.
3) ORIENTATION 1 TO 1.

D-Q6703-50051-1



NO	DESCRIPTION	QTY
1	RING TERMINAL M4	3
2	SPADE TERMINAL 10-12AWG STUD SIZE 5.3mm	3
3	WIRE UL1015 12AWG BLACK	1676MM
4	PVC TUBE 14.3MM INTERNAL DIAMETER	345MM

D-Q6703-50058-1



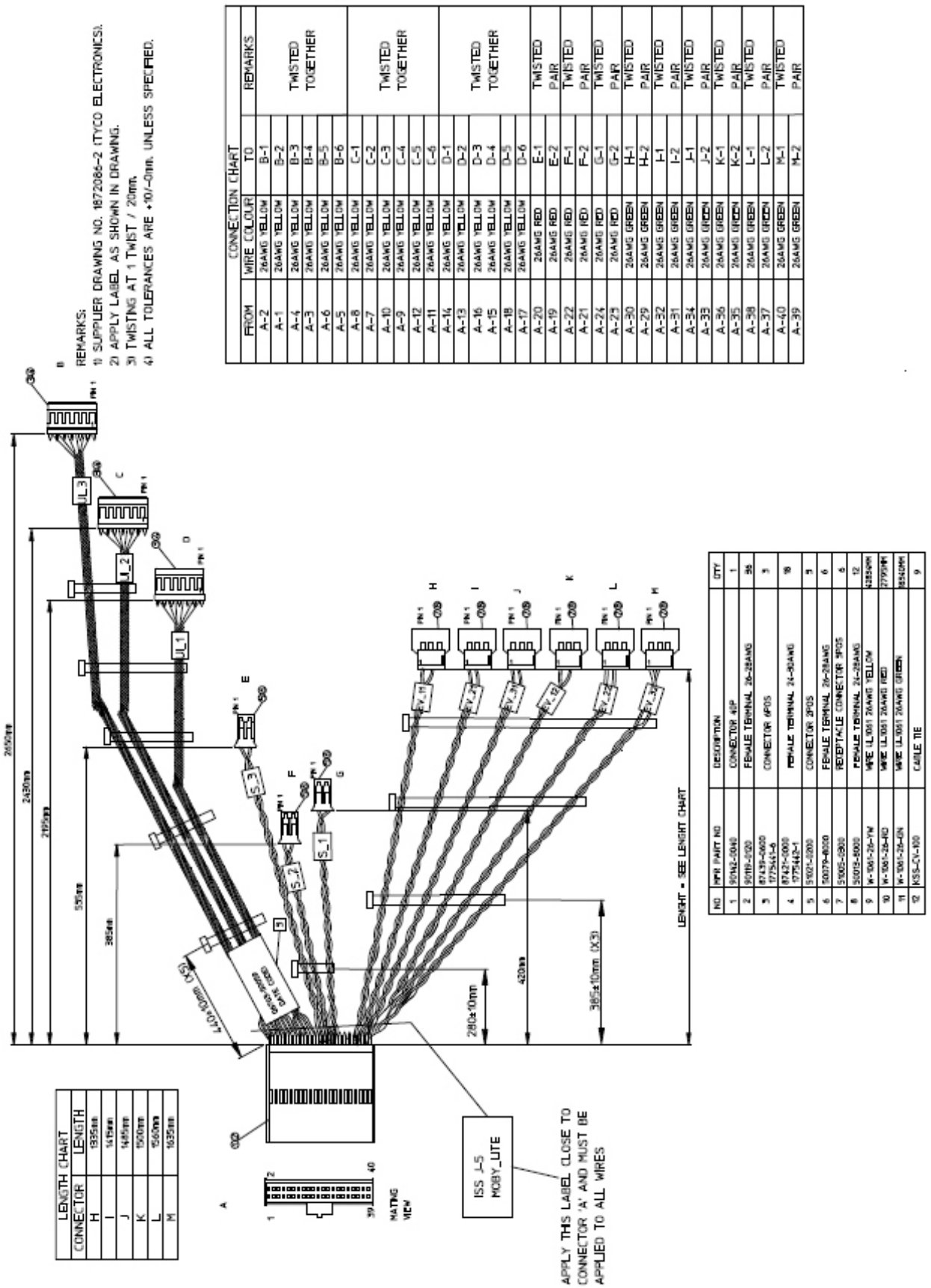
REMARK:
1) SUPPLIER DRAWING NO. 1872086-1 (TYCO ELECTRONICS).
2) APPLY LABEL AS SHOWN IN DRAWING.
3) TWISTING AT 1 TWIST / 20mm.
4) TWISTED PAIR MUST BE 1 LOOP THROUGH FERRITE AS SHOW
5) ALL TOLERANCES ARE +10/-0mm UNLESS SPECIFIED.

CONNECTION CHART			
FROM	WIRE COLOUR	TO	REMARKS
A-2	26AWG YELLOW	B-1	
A-1	26AWG YELLOW	B-2	
A-4	26AWG YELLOW	B-3	TWISTED
A-3	26AWG YELLOW	B-4	TOGETHER
A-6	26AWG YELLOW	B-5	
A-5	26AWG YELLOW	B-6	
A-8	26AWG YELLOW	C-1	
A-7	26AWG YELLOW	C-2	
A-10	26AWG YELLOW	C-3	TWISTED
A-9	26AWG YELLOW	C-4	TOGETHER
A-12	26AWG YELLOW	C-5	
A-11	26AWG YELLOW	C-6	
A-14	26AWG YELLOW	D-1	
A-13	26AWG YELLOW	D-2	
A-16	26AWG YELLOW	D-3	TWISTED
A-15	26AWG YELLOW	D-4	TOGETHER
A-18	26AWG YELLOW	D-5	
A-17	26AWG YELLOW	D-6	
A-20	26AWG RED	E-1	TWISTED
A-19	26AWG RED	E-2	PAIR
A-22	26AWG RED	F-1	TWISTED
A-21	26AWG RED	F-2	PAIR
A-24	26AWG RED	G-1	TWISTED
A-23	26AWG RED	G-2	PAIR
A-26	26AWG BLUE	H-1	TWISTED PAIR & 1 LOOP THROUGH FERRITE
A-25	26AWG BLUE	H-3	
A-30	26AWG GREEN	I-1	TWISTED
A-29	26AWG GREEN	I-2	PAIR
A-32	26AWG GREEN	J-1	TWISTED
A-31	26AWG GREEN	J-2	PAIR
A-34	26AWG GREEN	K-1	TWISTED
A-33	26AWG GREEN	K-2	PAIR
A-36	26AWG GREEN	L-1	TWISTED
A-35	26AWG GREEN	L-2	PAIR
A-38	26AWG GREEN	M-1	TWISTED
A-37	26AWG GREEN	M-2	PAIR
A-40	26AWG GREEN	N-1	TWISTED
A-39	26AWG GREEN	N-2	PAIR

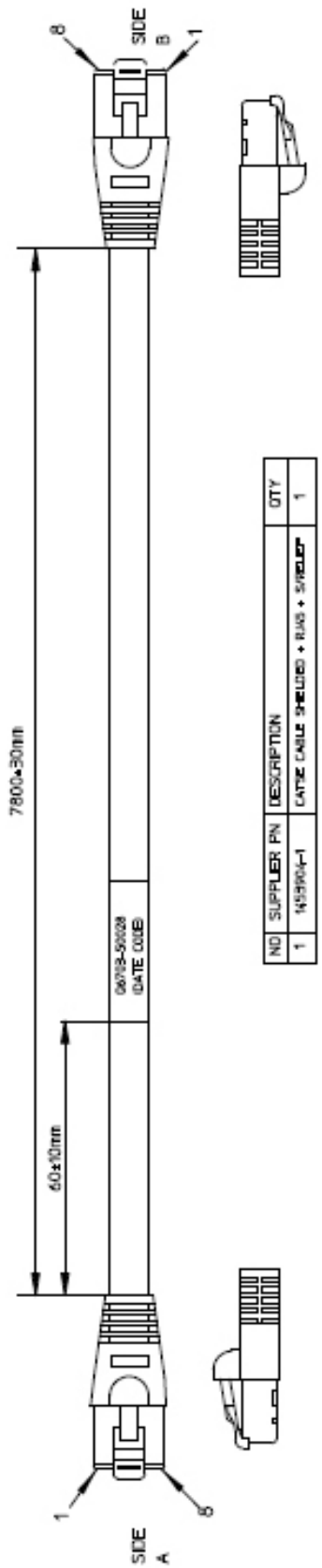
LENGTH CHART	
CONNECTOR	LENGTH
H	960mm
I	1300mm
J	1380mm
K	1450mm
L	1465mm
M	1515mm
N	1600mm

NO	MFR PART NO	DESCRIPTION	QTY
1	90142-0040	CONNECTOR 40P	1
2	90119-0120	FEMALE TERMINAL 26-28AWG	38
3	87439-0600 1775441-6	CONNECTOR 6POS	3
4	87421-0000 1775442-1	FEMALE TERMINAL 24-30AWG	18
5	51021-0200	CONNECTOR 2POS	3
6	50079-8000	FEMALE TERMINAL 26-28AWG	6
7	51006-0300	MALE CONNECTOR 3POS	1
8	50012-8000	MALE TERMINAL 24-28AWG	2
9	51005-0300	RECEPTACLE CONNECTOR 3POS	6
10	50019-8000	FEMALE TERMINAL 24-28AWG	12
11	W-1061-26-YW	WIRE UL1061 26AWG YELLOW	47972MM
12	W-1061-26-RD	WIRE UL1061 26AWG RED	24388MM
13	W-1061-26-BL	WIRE UL1061 26AWG BLUE	1408MM
14	W-1061-26-GN	WIRE UL1061 26AWG GREEN	17603MM
15	KSS-CV-100	CABLE TIE	10
16	KSB T 15X5.5X7	FERRITE CORE	1

D-Q6703-50059-1

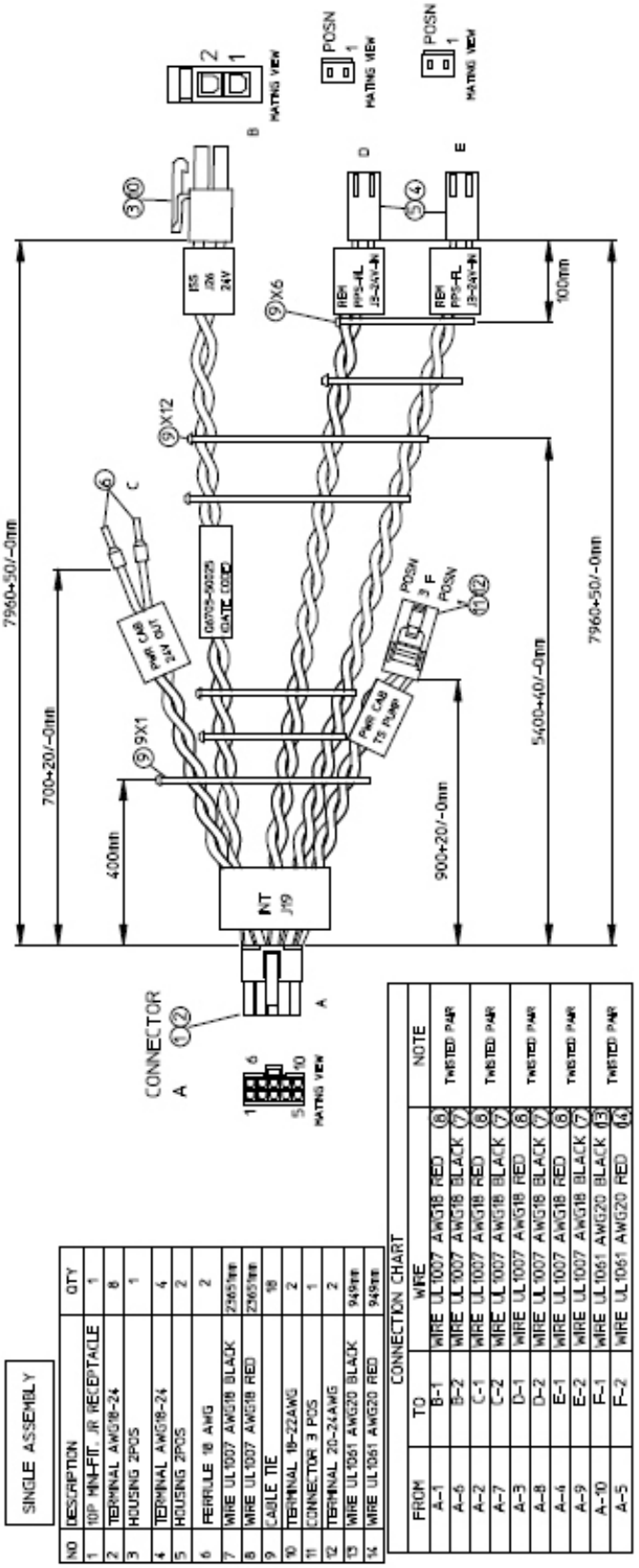


D-Q6703-50081-1



NO	SUPPLIER PN	DESCRIPTION	QTY
1	1459904-1	CAT6E CABLE SHIELDED + RJ45 + SHIELD	1

D-Q6703-50082-1



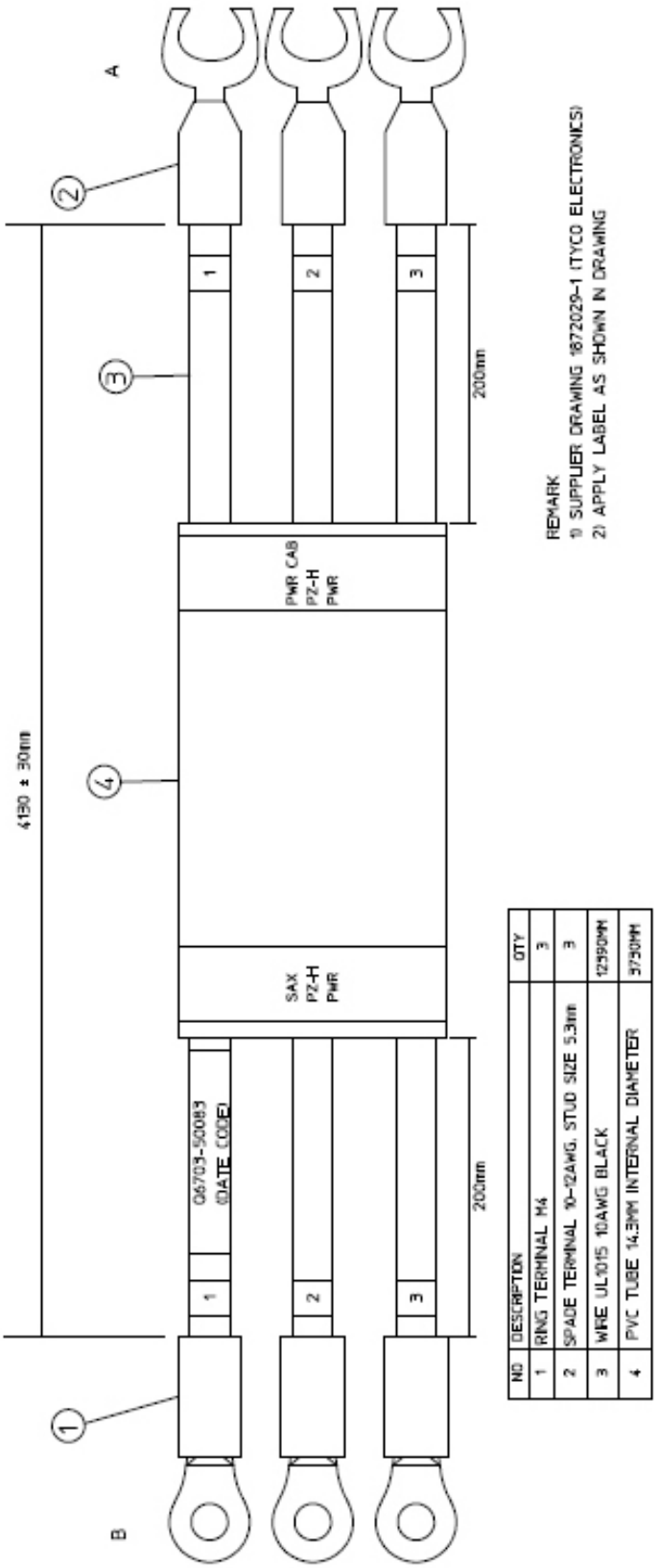
SINGLE ASSEMBLY

NO	DESCRIPTION	QTY
1	10P MINI-FIT JR RECEPTACLE	1
2	TERMINAL AWG18-24	8
3	HOUSING 2POS	1
4	TERMINAL AWG18-24	4
5	HOUSING 2POS	2
6	FERRULE 18 AWG	2
7	WIRE UL1007 AWG18 BLACK	2965mm
8	WIRE UL1007 AWG18 RED	2965mm
9	CABLE TIE	18
10	TERMINAL 18-22AWG	2
11	CONNECTOR 3 POS	1
12	TERMINAL 20-24AWG	2
13	WIRE UL1061 AWG20 BLACK	949mm
14	WIRE UL1061 AWG20 RED	949mm

CONNECTION CHART

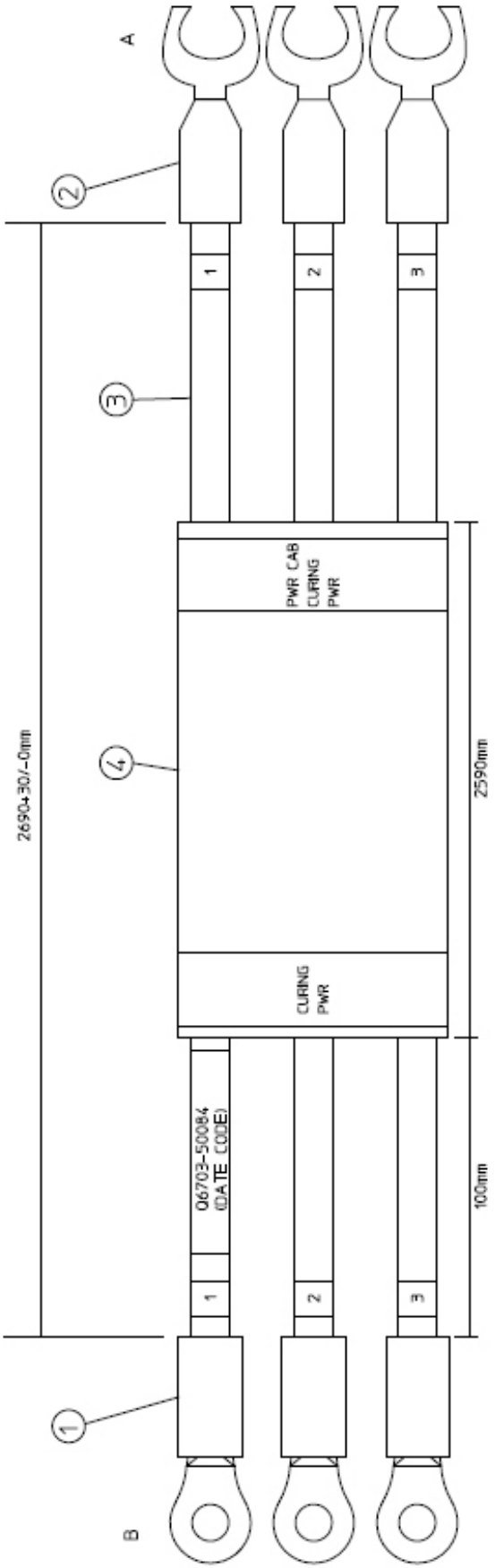
FROM	TO	WIRE	NOTE
A-1	B-1	WIRE UL1007 AWG18 RED (6)	TWISTED PAIR
A-6	B-2	WIRE UL1007 AWG18 BLACK (7)	
A-2	C-1	WIRE UL1007 AWG18 RED (6)	TWISTED PAIR
A-7	C-2	WIRE UL1007 AWG18 BLACK (7)	
A-3	D-1	WIRE UL1007 AWG18 RED (6)	TWISTED PAIR
A-8	D-2	WIRE UL1007 AWG18 BLACK (7)	
A-4	E-1	WIRE UL1007 AWG18 RED (6)	TWISTED PAIR
A-9	E-2	WIRE UL1007 AWG18 BLACK (7)	
A-10	F-1	WIRE UL1061 AWG20 BLACK (13)	TWISTED PAIR
A-5	F-2	WIRE UL1061 AWG20 RED (14)	

D-Q6703-50083-1



NO	DESCRIPTION	QTY
1	RING TERMINAL M4	3
2	SPADE TERMINAL 10-12AWG, STUD SIZE 5.3mm	3
3	WIRE UL1015 10AWG BLACK	1239MM
4	PVC TUBE 14.3MM INTERNAL DIAMETER	375MM

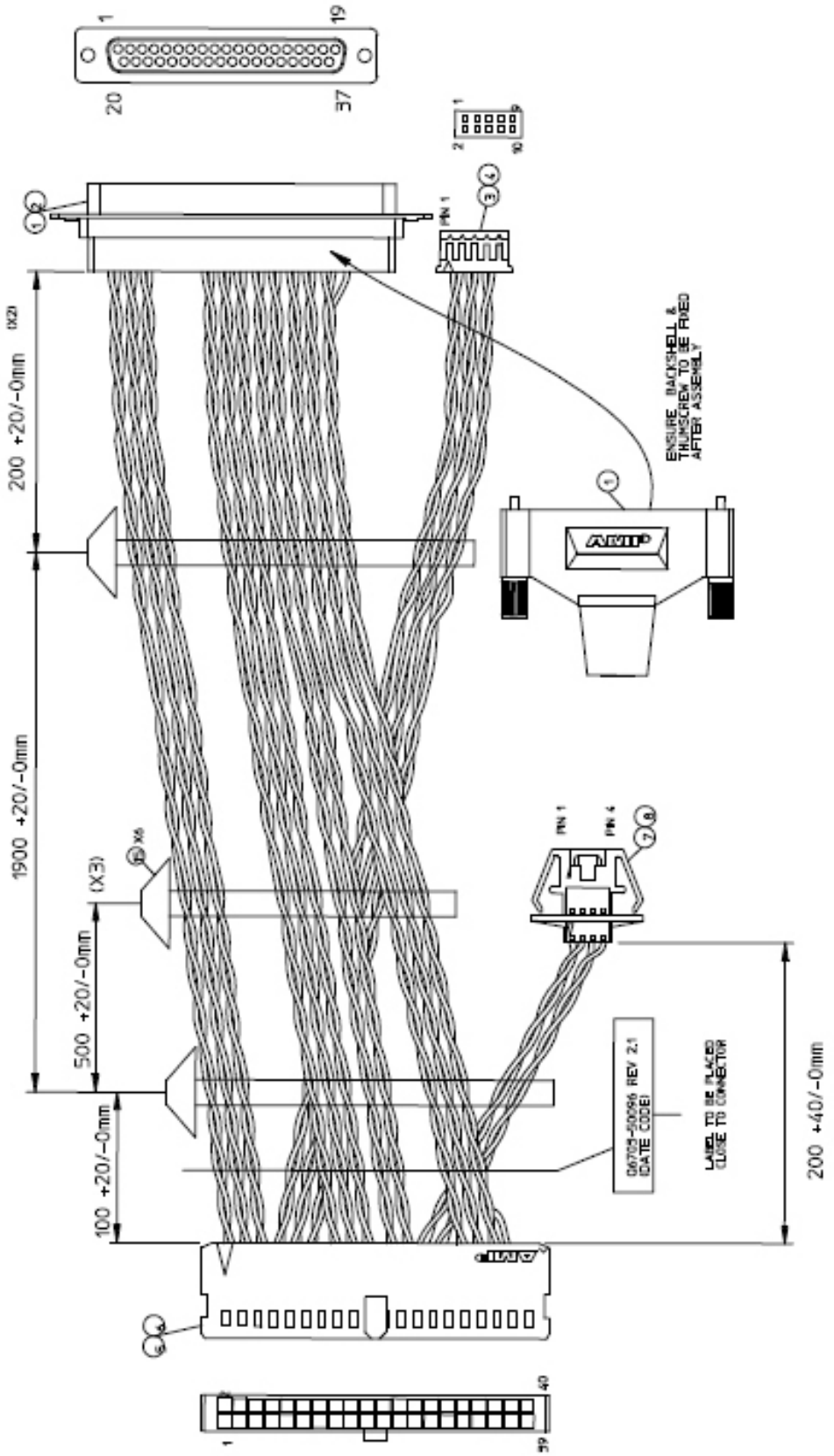
D-Q6702-50045-1



NO	DESCRIPTION	QTY
1	RING TERMINAL M4	3
2	SPADE TERMINAL 10-12AWG, STUD SIZE 5.3mm	3
3	WIRE UL1015 10AWG BLACK	8060MM
4	PVC TUBE 14.3MM INTERNAL DIAMETER	2490mm

REMARK
1) APPLY LABEL AS SHOWN IN DRAWING
2) SUPPLER DRAWING NO 2-1872189-1 (TYCO ELECTRONICS).

D-Q6703-50096-1



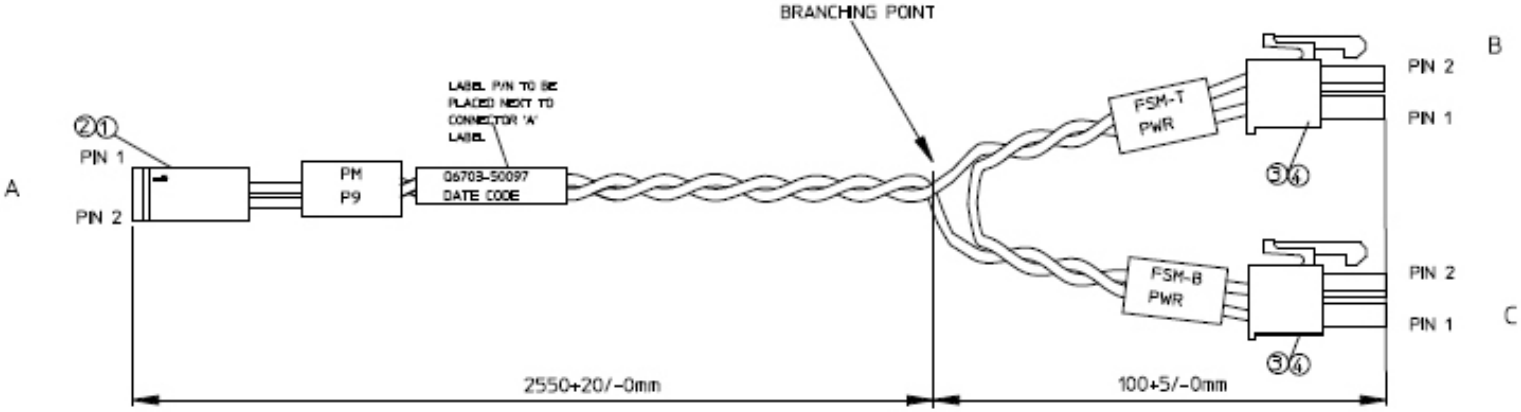
D-Q6703-50096-1

CONNECTION CHART			
FROM	TO	WIRE	NOTE
A-1	B-2	BLACK ⑨	TWISTED PAIR
A-2	B-20	RED ⑩	
A-3	B-3	ORANGE ⑪	TWISTED PAIR
A-4	B-21	YELLOW ⑫	
A-5	B-4	GREEN ⑬	TWISTED PAIR
A-6	B-22	BLUE ⑭	
A-7	C-3	BLACK ⑨	TWISTED PAIR
A-8	C-2	RED ⑩	
A-9	C-6	ORANGE ⑪	TWISTED PAIR
A-10	C-5	YELLOW ⑫	
A-11	C-8	GREEN ⑬	TWISTED PAIR
A-12	C-7	BLUE ⑭	
A-15	B-8	BLACK ⑨	TWISTED PAIR
A-16	B-26	RED ⑩	
A-17	B-9	ORANGE ⑪	TWISTED PAIR
A-18	B-27	YELLOW ⑫	
A-19	B-10	GREEN ⑬	TWISTED PAIR
A-20	B-28	BLUE ⑭	
A-23	B-11	BLACK ⑨	TWISTED PAIR
A-24	B-29	RED ⑩	
A-25	B-12	BLACK ⑨	TWISTED PAIR
A-26	B-30	RED ⑩	
A-27	D-1	BLACK ⑨	TWISTED PAIR
A-28	D-2	RED ⑩	
A-29	B-16	BLACK ⑨	TWISTED PAIR
A-30	B-34	RED ⑩	
A-31	B-15	BLACK ⑨	TWISTED PAIR
A-32	B-33	RED ⑩	
A-33	D-3	BLACK ⑨	TWISTED PAIR
A-34	D-4	RED ⑩	
A-35	B-35	RED ⑫	
A-36	B-18	ORANGE ⑪	TWISTED TOGETHER
A-37	B-36	BLACK ⑨	

NO	PART NO	DESCRIPTION	QTY
1	1658660-1	DSUB 37P, RECEPTACLE CRIMP TYPE + HOOD & THUMB SCREW	1
12	66504-3	SOCKET TERMINAL 20-24AWG	23
3	PHDR-10VS	HOUSING 10P	1
4	SPHD-002T-P0.5	TERMINAL 24-28AWG	6
5	102387.9	CONNECTOR 40P	1
6	87666-2	TERMINAL 26-22AWG	33
7	70107-0038	CONNECTOR 4P, WITH MOUNTING	1
8	16-02-0107	PIN TERMINAL 24-22AWG	4
9	W-1007-24-BK	WIRE UL1007 24AWG BLACK	24200mm
10	W-1007-24-RD	WIRE UL1007 24AWG RED	24200mm
11	W-1007-24-OR	WIRE UL1007 24AWG ORANGE	1000mm
12	W-1007-24-YW	WIRE UL1007 24AWG YELOOW	8150mm
13	W-1007-24-GN	WIRE UL1007 24AWG GREEN	8150mm
14	W-1007-24-BL	WIRE UL1007 24AWG BLUE	8150mm
15	KSS-CV100	CABLE TIE	6

Drawings of cables

D-Q6703-50097-1



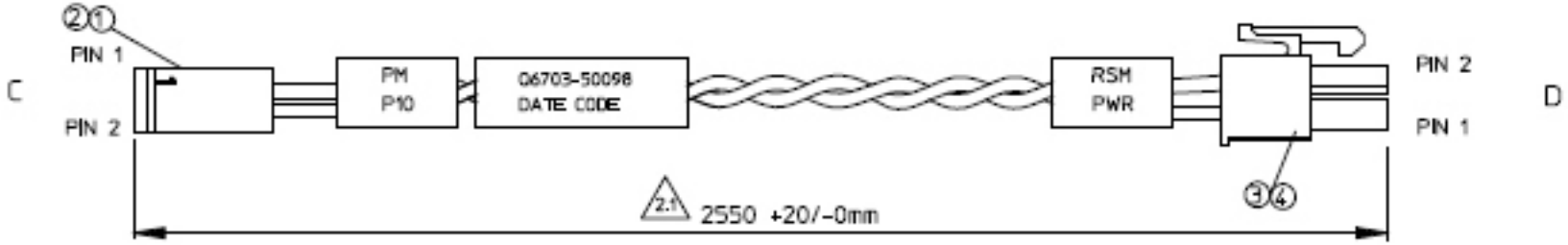
CONNECTION CHART			
FROM	TO	WIRE COLOR	NOTES
A-1	B-1	RED ⑤	SEE TWISTING CHART
A-2	C-2	BLACK ⑥	
B-2	C-1	BLUE ⑦	

TWISTING CHART		
POSITION	WIRE COLOR	NOTES
A-1	RED	TWISTED PAIR UNTIL BRANCHING POINT
A-2	BLACK	
B-1	RED	TWISTED PAIR UNTIL BRANCHING POINT
B-2	BLUE	
C-1	BLUE	TWISTED PAIR UNTIL BRANCHING POINT
C-2	BLACK	

NO	PART NO.	DESCRIPTION	QTY
1	1586017-2	HOUSING 2 POS	1
2	794955-3	TERMINAL FEMALE 22-18 AWG	2
3	1586019-2	HOUSING 2 POS	2
4	1586315-3/ 794956-3	TERMINAL SOCKET 22-18 AWG	4
5	W-1007-18-RD	WIRE UL 1007, 18AWG, RED	2727mm
6	W-1007-18-BK	WIRE UL 1007, 18AWG, BLACK	2727mm
7	W-1007-18-BL	WIRE UL 1007, 18AWG, BLUE	207 mm

NOTE
1) WIRE TWISTING TO BE MINIMUM 5 TWIST PER 100MM
2) SUPPLIER DRAWING NO. 1453911-1 (TYCO ELECTRONICS)
3) APPLY LABEL CLOSE TO CONNECTORS & AS SHOWN IN DRAWING

D-Q6703-50098-1

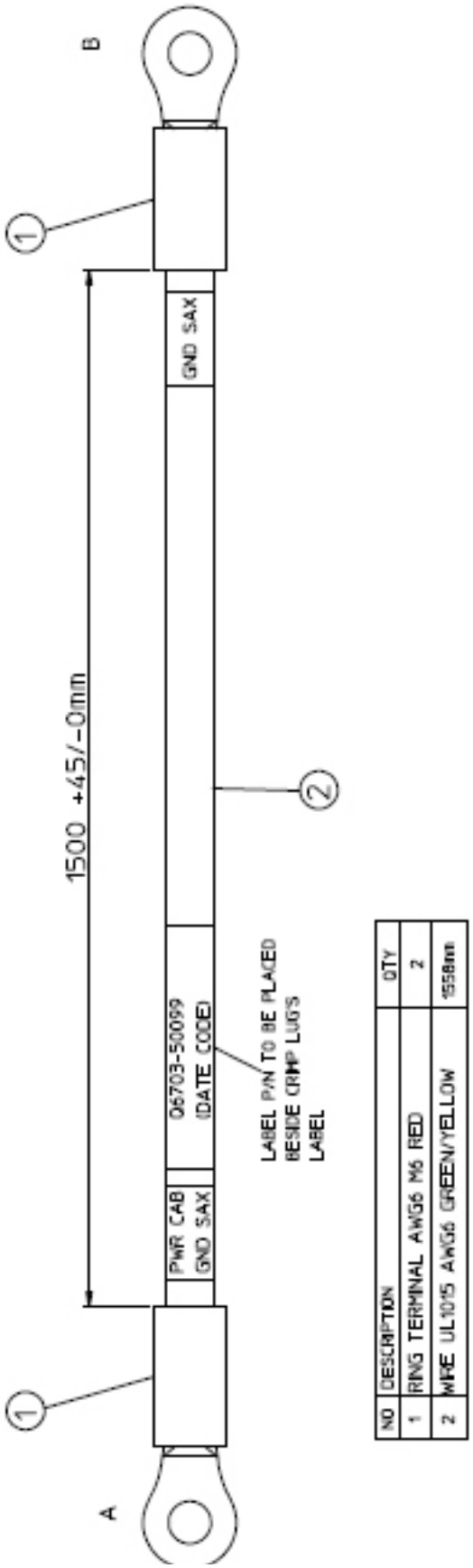


CONNECTION CHART			
FROM	TO	WIRE COLOR	NOTES
C-2	D-1	RED ⑤	TWISTED TOGETHER
C-1	D-2	BLACK ⑥	

NO	PART NO.	DESCRIPTION	QTY
1	1586017-2	HOUSING 2 POS	1
2	794955-3	TERMINAL FEMALE AWG 22-18	2
3	1586019-2	HOUSING 2 POS	1
4	1586315-3/ 794956-3	TERMINAL SOCKET 22-18 AWG	2
5	W-1007-18-RD	WIRE UL 1007, 18AWG, RED	2557mm
6	W-1007-18-BK	WIRE UL 1007, 18AWG, BLACK	2557mm

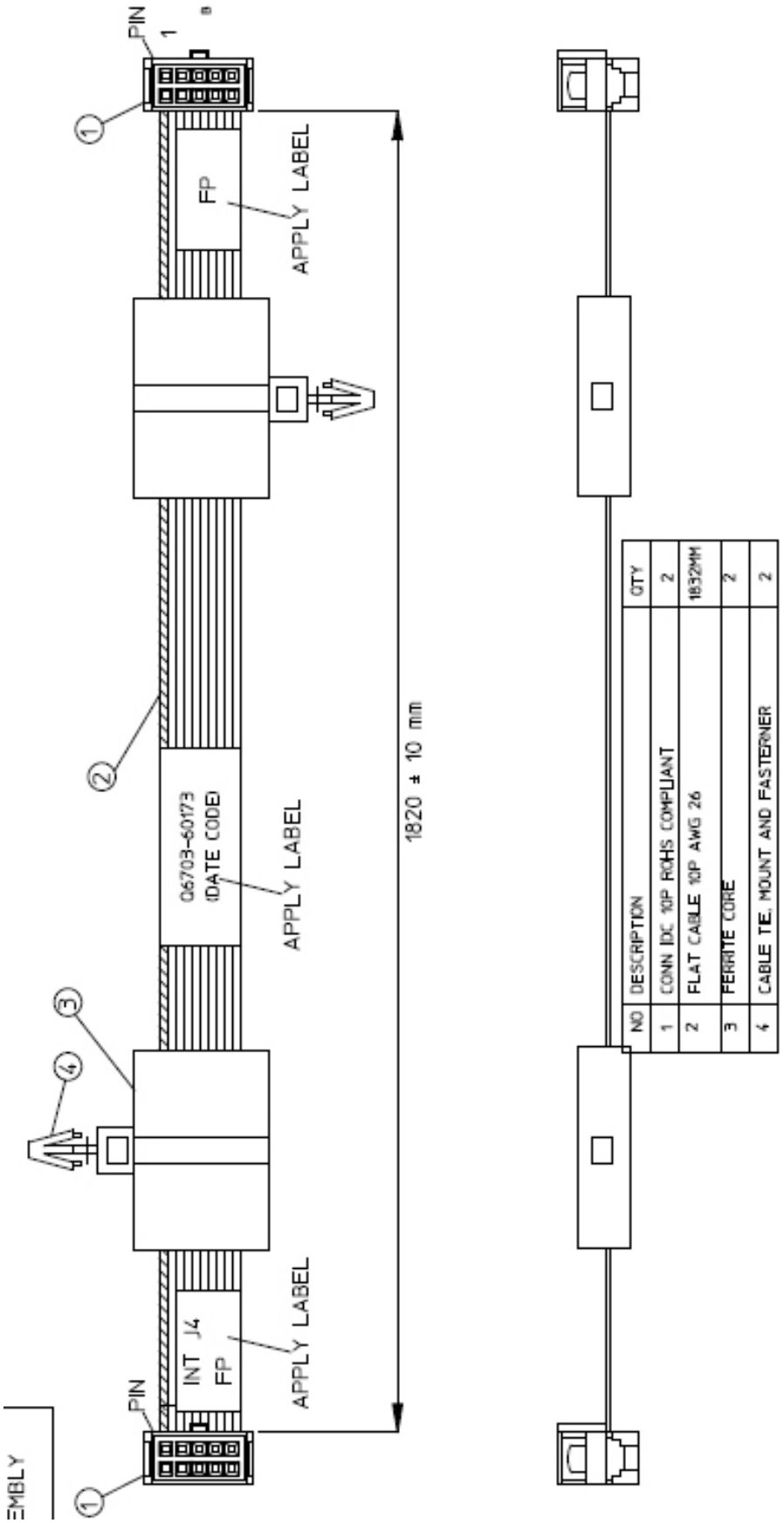
REMARKS:-
1) WIRE TWISTING TO BE MINIMUM 5 TWIST PER 100MM
2) SUPPLIER DRAWING NO. 1453910-1 (TYCO ELECTRONICS)
3) APPLY LABEL CLOSE TO CONNECTORS & AS SHOWN IN DRAWING

D-Q6703-50099-1



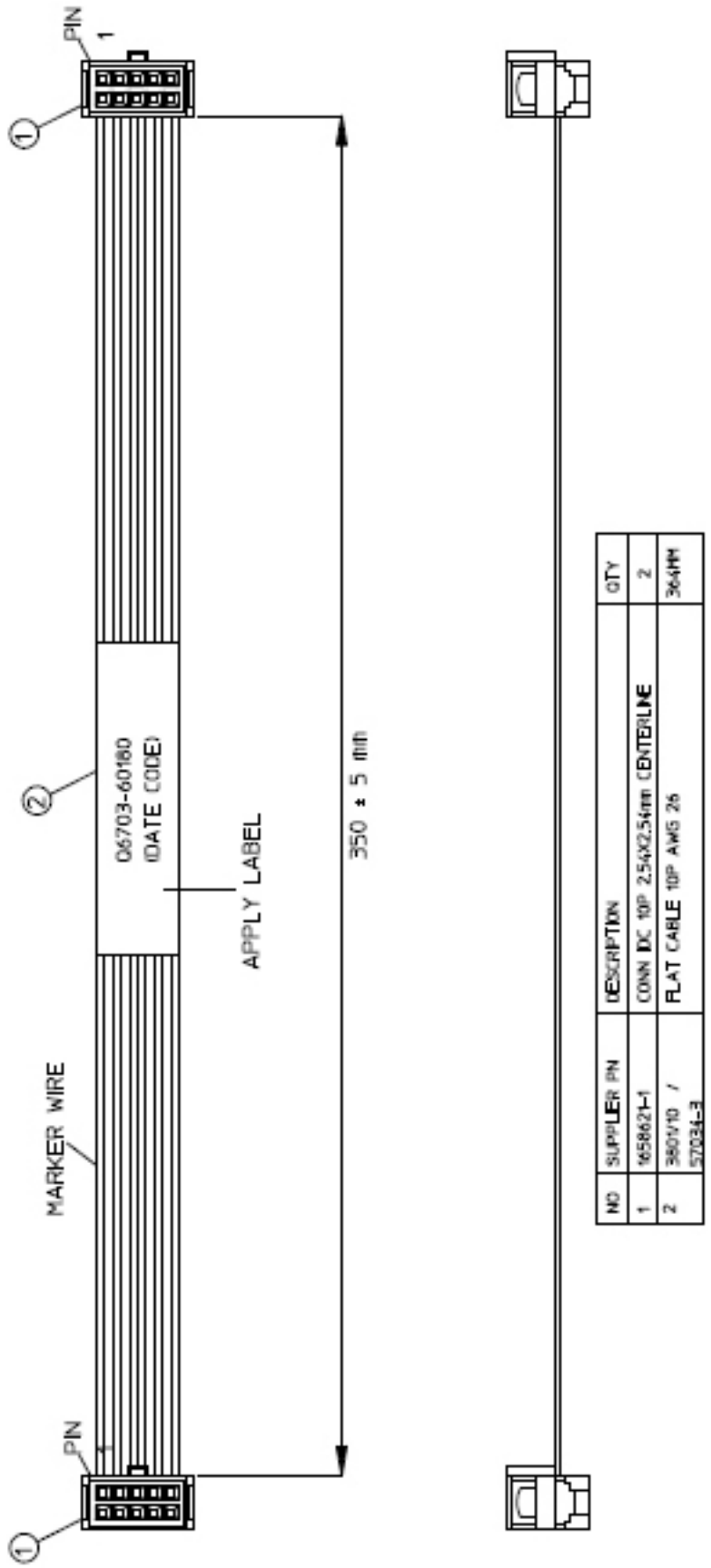
NO	DESCRIPTION	QTY
1	RING TERMINAL AWG6 M6 RED	2
2	WIRE UL1015 AWG6 GREEN/YELLOW	1558mm

D-Q6703-60173-1



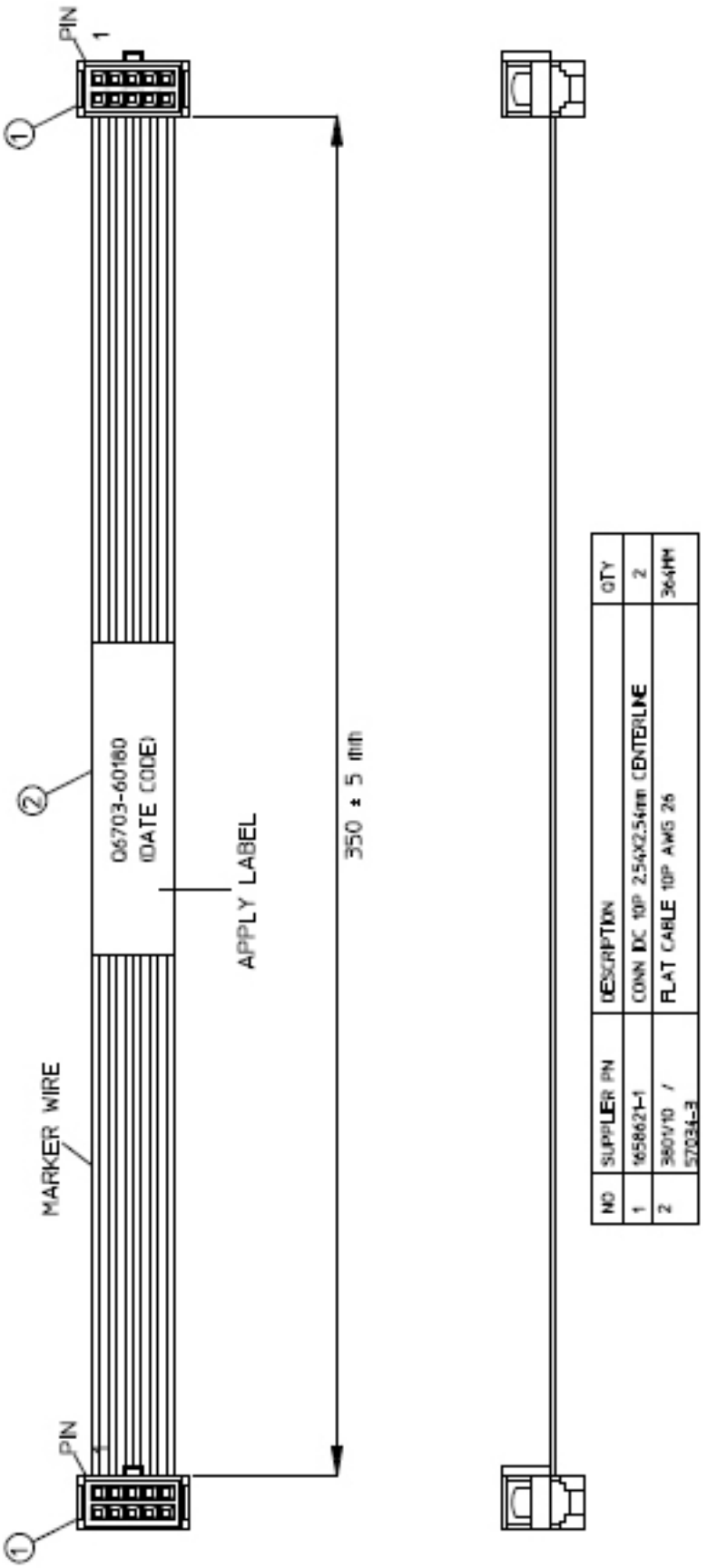
NO	DESCRIPTION	QTY
1	CONN IDC 10P ROHS COMPLIANT	2
2	FLAT CABLE 10P AWG 26	1832MM
3	FERRITE CORE	2
4	CABLE TIE, MOUNT AND FASTENNER	2

D-Q6703-60180-1



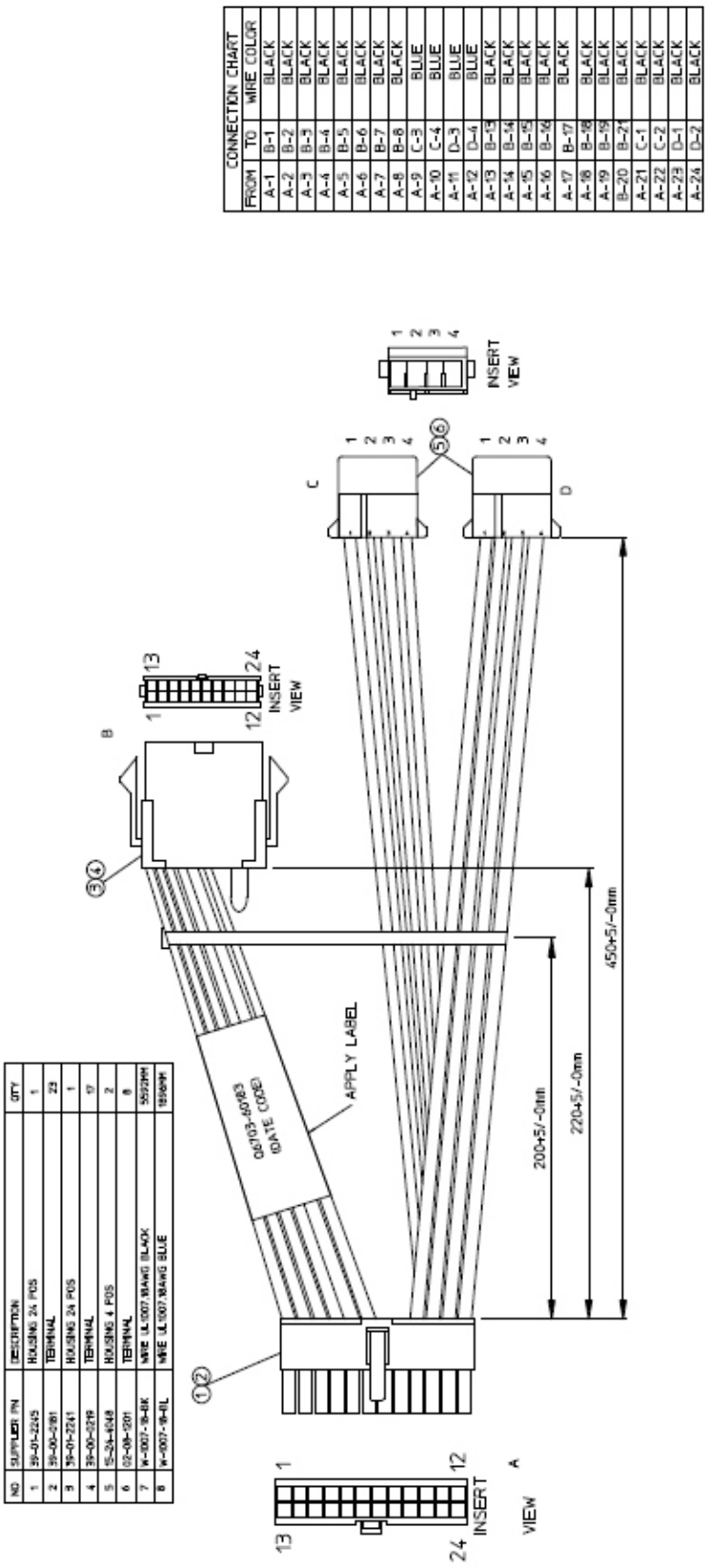
NO	SUPPLIER PN	DESCRIPTION	QTY
1	1658621-1	CONN IDC 10P 2.54X2.54mm CENTERLINE	2
2	3801/10 / 57034-3	FLAT CABLE 10P AWG 26	364MM

D-Q6703-60181-1

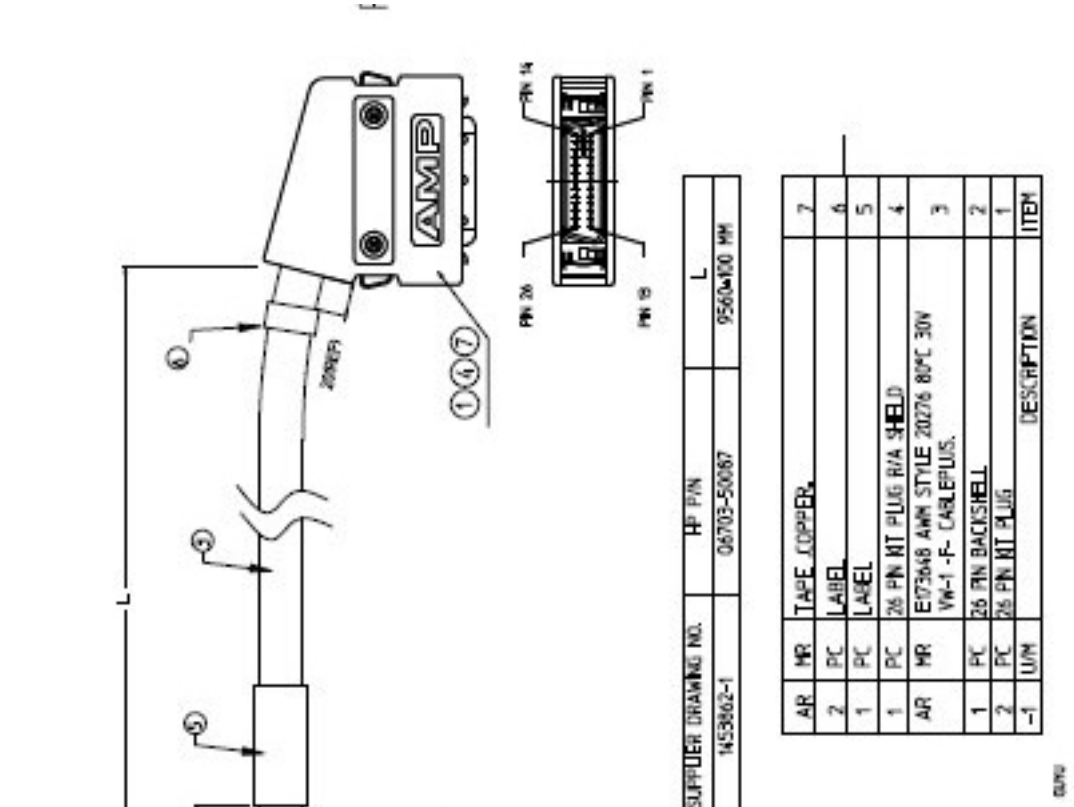


NO	SUPPLIER PN	DESCRIPTION	QTY
1	1658621-1	CONN IDC 10P 2.54X2.54mm CENTERLINE	2
2	3801/10 / 57034-3	FLAT CABLE 10P AWG 26	364MM

D-Q6703-60183-1



D-Q6703-50087-1



SUPPLIER DRAWING NO.	HP P/N	L
1453862-1	06703-50087	9560±100 MM

AR	MR	TAPE COPPER.	7
2	PC	LABEL	6
1	PC	LABEL	5
1	PC	26 PIN MT PLUG R/A SHELD	4
AR	MR	E73648 AWM STYLE 20276 80°C 30V VW-1 -F- CABLEPLUS.	3
1	PC	26 PIN BACKSHELL	2
2	PC	26 PIN MT PLUG	1
-1	U/M	DESCRIPTION	ITEM

NOTES:
1. APPLICATION SPEC 114-40029.
2. TEST CONDITIONS DC 300V, 50M OHM, 10 MA.
3. LABEL SHOULD BE MARKED AS BELOW:

CUSTOMER P/N Rev.##	- CUST. P/N & REV.
TE DSN YYWW	- DESIGN & DATE CODE
PRODUCT OF #####	- COUNTRY OF ORIGIN

LABEL WILL BE PRINTED AS :
P1
5. PRODUCT AND PROCESSING MUST MEET REQUIREMENTS OF TYCO ELECTRONICS STANDARD 230-702.

WIRE RUN LIST

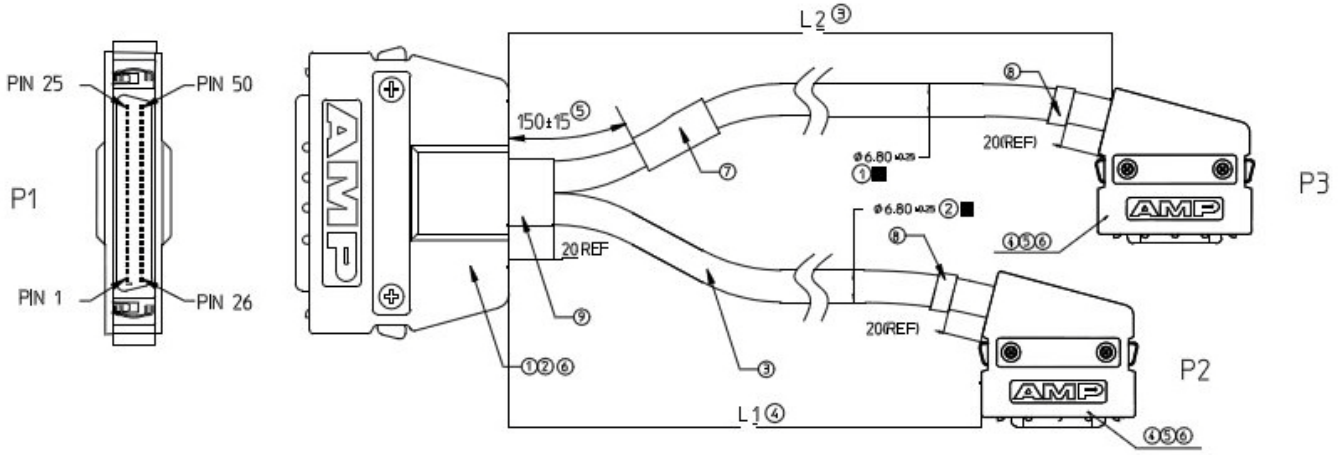
SIDE A	SIDE B	COLOR
P1	P1	
1	1	WHITE/YELLOW
14	14	WHITE/BROWN
2	2	WHITE/GREEN
15	15	WHITE/GRAY
3	3	WHITE/BLUE
16	16	WHITE/RED
4	4	BROWN
17	17	BROWN/WHITE
5	5	PINK
18	18	PINK/BLACK
6	6	RED
19	19	RED/BLACK
7	7	ORANGE
20	20	ORANGE/BLACK
8	8	YELLOW
21	21	YELLOW/BLACK
9	9	GREEN
22	22	GREEN/BLACK
10	10	BLUE
23	23	BLUE/WHITE
11	11	PURPLE
24	24	PURPLE/WHITE
12	12	GRAY
25	25	GRAY/BLACK
13	13	WHITE
26	26	WHITE/BLACK
SHELL	SHELL	

Drawings of cables

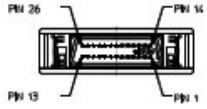
D-Q6703-50088-1

REV	REVISION
A.1	AS ISSUED

FROM	TO		COLOR
P1	P2	P3	
1			NC
26			
2			NC
27			
3			NC
28			
4			NC
29			
5			NC
30			
6	1		BROWN
31	14		BROWN/WHITE
7	2		PINK
32	15		PINK/BLACK
8	3		RED
33	16		RED/BLACK
9	4		ORANGE
34	17		ORANGE/BLACK
10	5		YELLOW
35	18		YELLOW/BLACK
11	6		GREEN
36	19		GREEN/BLACK
12	9		BLUE
37	22		BLUE/WHITE
13	10		PURPLE
38	23		PURPLE/WHITE
14	12		GREY
39	25		GREY/BLACK
15	13		WHITE
40	26		WHITE/BLACK
16		1	BROWN
41		14	BROWN/WHITE
17		2	PINK
42		15	PINK/BLACK
18		3	RED
43		16	RED/BLACK
19		4	ORANGE
44		17	ORANGE/BLACK
20		5	YELLOW
45		18	YELLOW/BLACK
21		6	GREEN
46		19	GREEN/BLACK
22		9	BLUE
47		22	BLUE/WHITE
23		10	PURPLE
48		23	PURPLE/WHITE
24		12	GRAY
49		25	GRAY/BLACK
25		13	WHITE
50		26	WHITE/BLACK
SHELL	SHELL	SHELL	

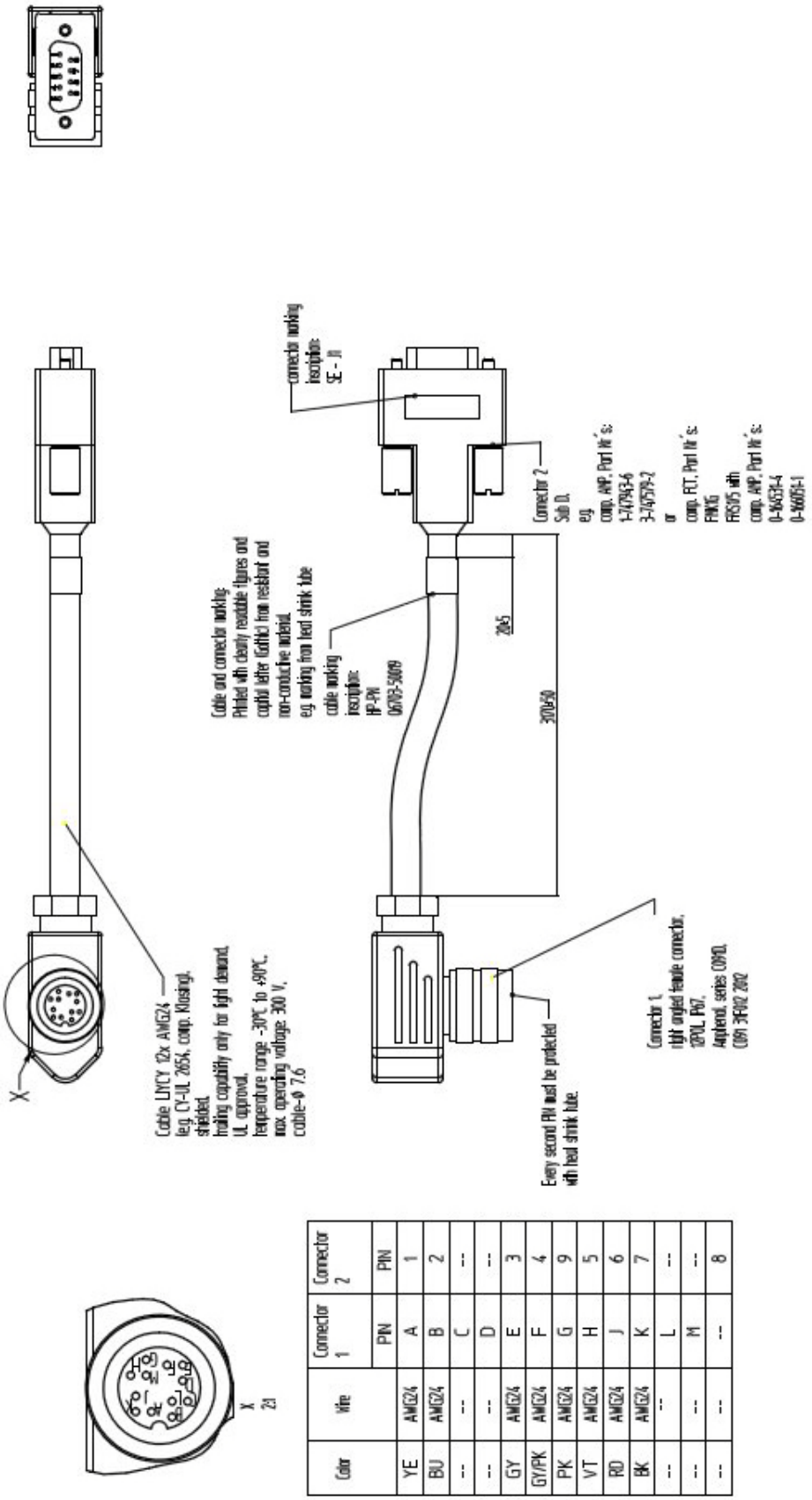


TE P/N	HP P/N&REV.	L1	L2
SUPPLIER DRAWING NO. 1453864-1 (TYCO ELETRONICS)	Q6703-50088	9650±100 MM ③	9720±100 MM ④



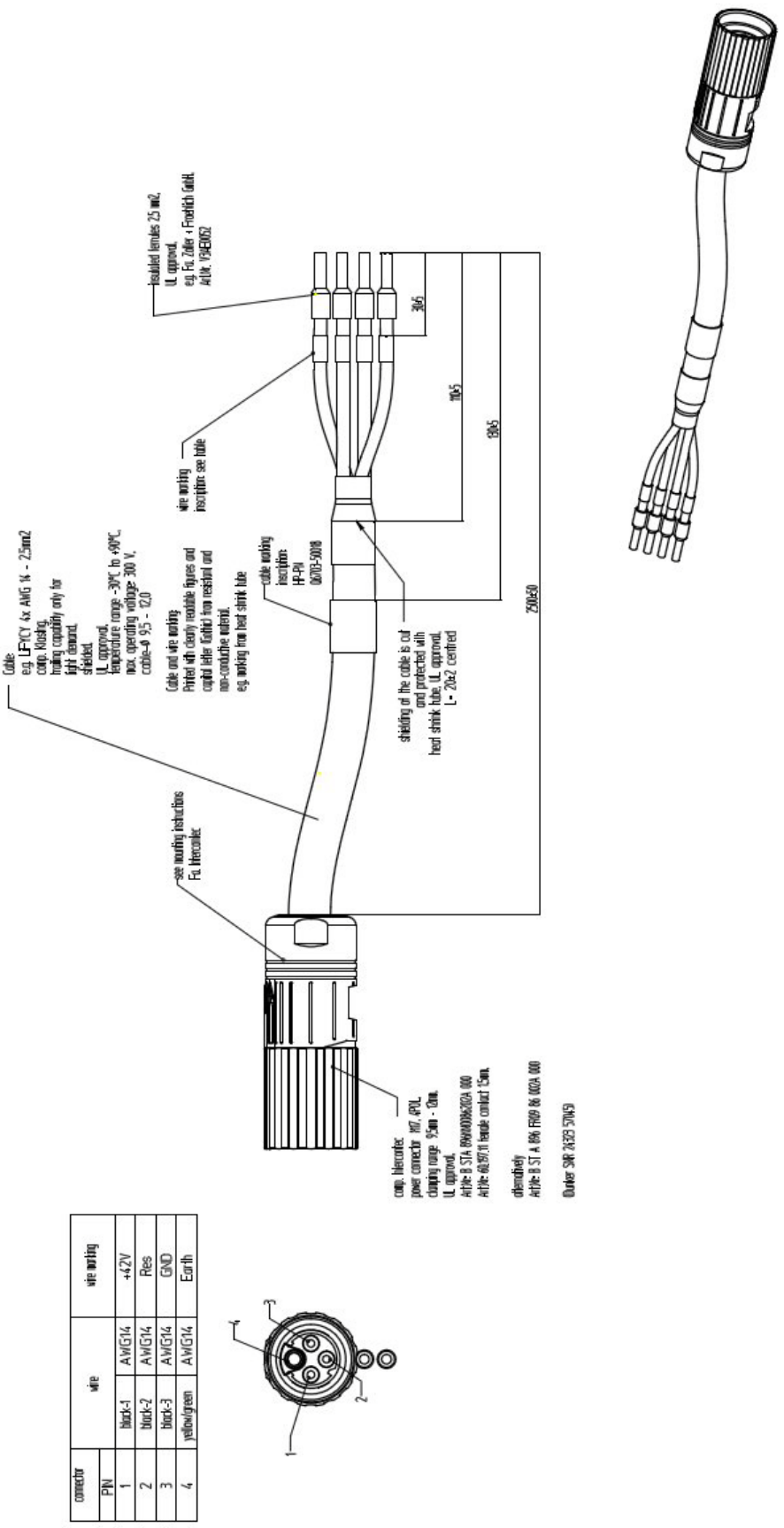
AR	MR	Heat Shrink Tube, ID6.5mm, Color: Black	9
2	PC	LABEL	8
1	PC	LABEL	7
AR	MR	TAPE ,COPPER.	6
2	PC	26 PIN BACKSHELL R/A.	5
2	PC	26 PIN KIT PLUG	4
AR	MR	E173648 AWM STYLE 20276 80°C 30V VW-1 -F- CABLEPLUS.	3
1	PC	BACKSHELL KIT, 50 POS	2
1	PC	KIT, PLUG ASSEMBLY, .050 SERIES, AMPLIMITE	1
-1	UNIT	DESCRIPTION	ITEM

D-Q6703-50019-1



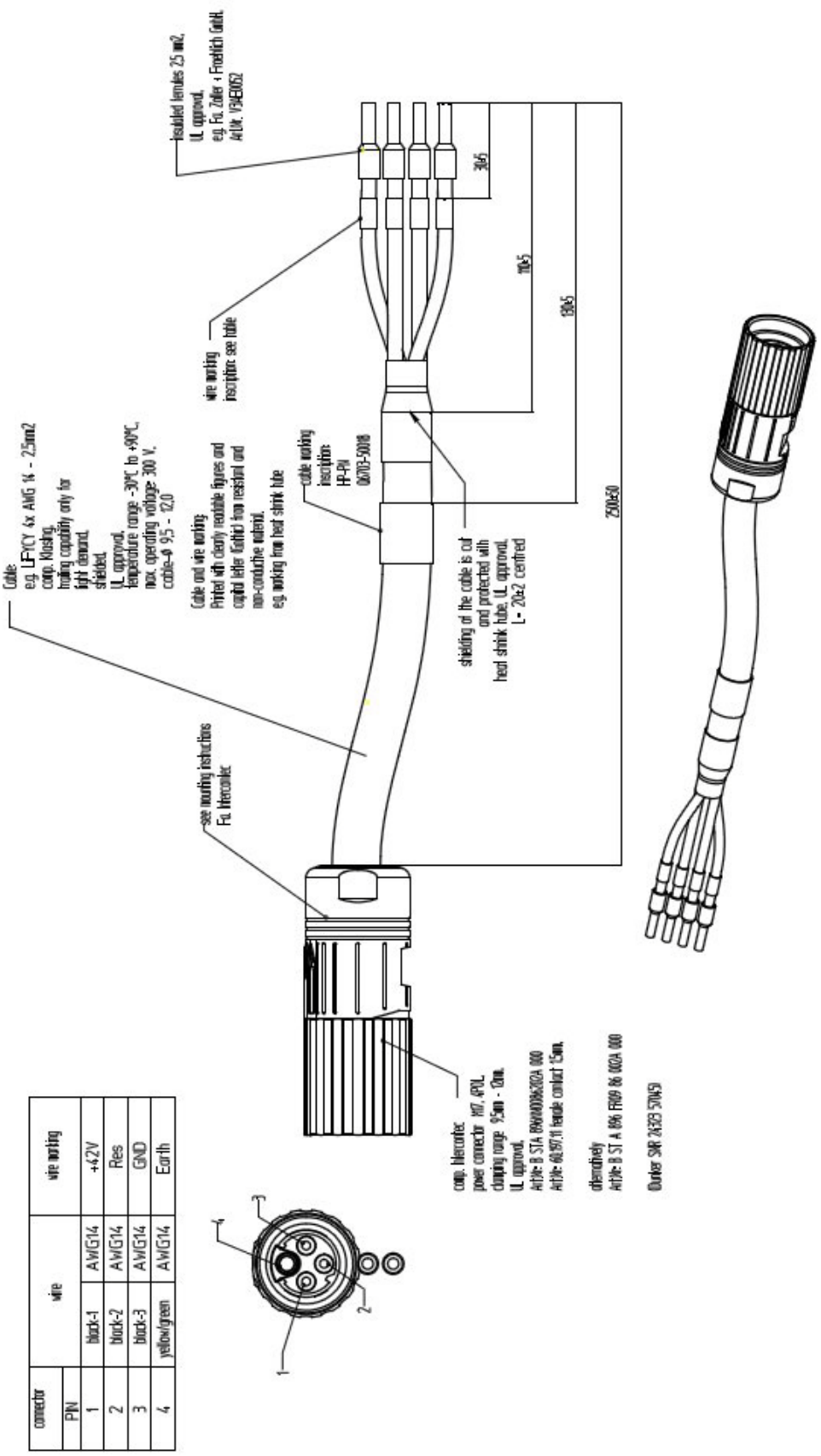
Color	Wire	Connector 1	Connector 2
		PIN	PIN
YE	AWG24	A	1
BU	AWG24	B	2
--	--	C	--
--	--	D	--
GY	AWG24	E	3
GY/PK	AWG24	F	4
PK	AWG24	G	9
VT	AWG24	H	5
RD	AWG24	J	6
BK	AWG24	K	7
--	--	L	--
--	--	M	--
--	--	--	8

D-Q6703-50018-1



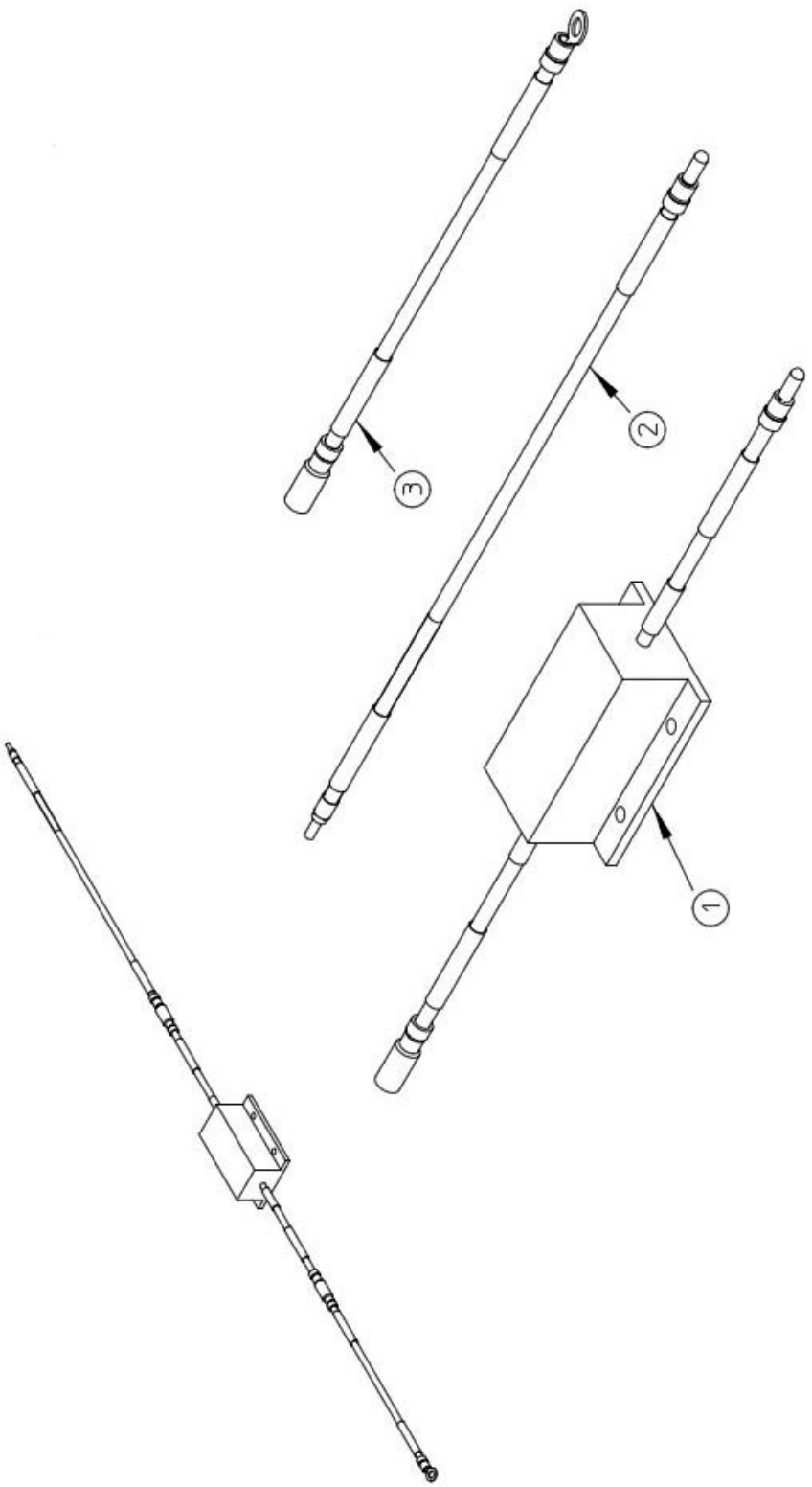
connector PIN	wire	wire marking
1	black-1 AWG14	+42V
2	black-2 AWG14	Res
3	black-3 AWG14	GND
4	yellow/green AWG14	Earth

D-Q6703-60183-1

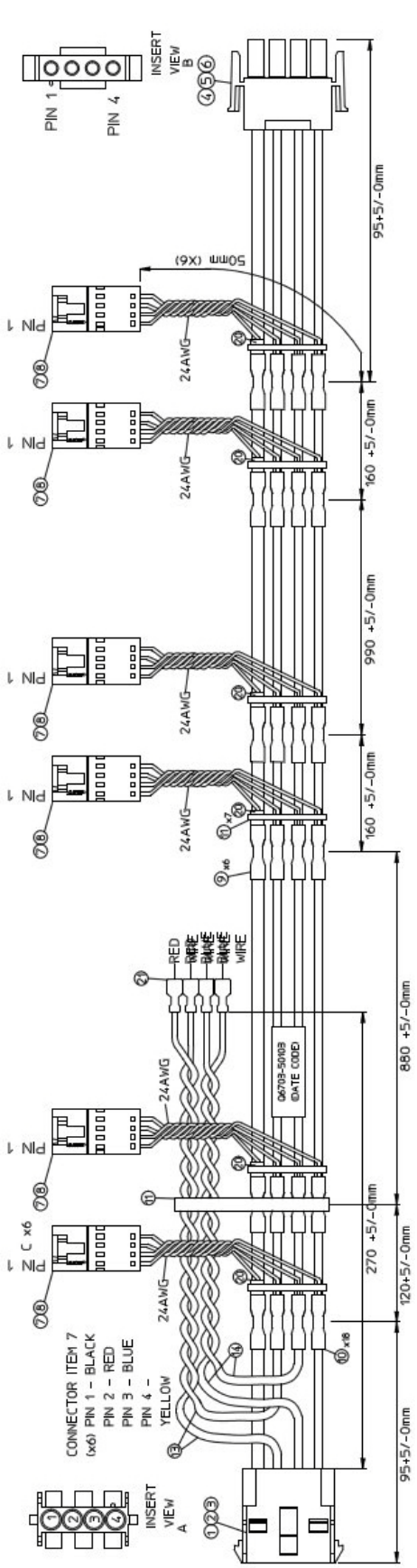


connector	wire		wire working
PIN			
1	black-1	AWG14	+42V
2	black-2	AWG14	Res
3	black-3	AWG14	GND
4	yellow/green	AWG14	Earth

D-Q6702-60604-1



D-Q6703-50103-1



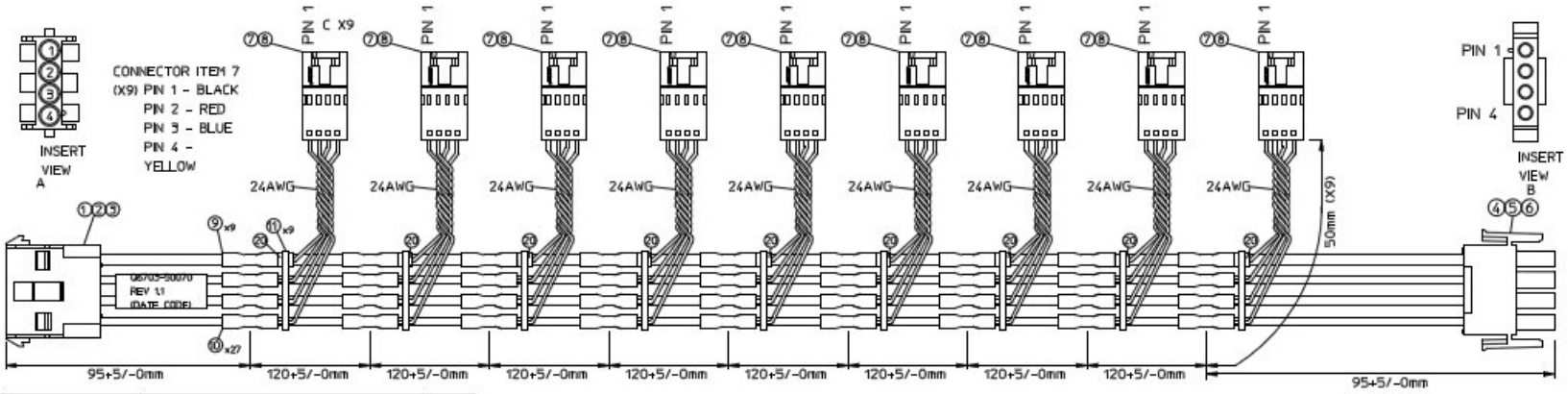
NO	PART NO	DESCRIPTION	QTY
1	350780-1	CONNECTOR 4P	1
2	350923-3/640310-3	TERMINAL12-10AWG	1
3	350536-1/350550-1	SOCKET TERMINAL 20-14AWG	3
4	350779-1	4P CONNECTOR	1
5	350922-3/640309-3	TERMINAL 12-10AWG	1
6	350218-1/350547-1	PIN TERMINAL 20-14AWG	3
7	103653-3	4P CONNECTOR	6
8	5-104505-2	TERMINAL 26-22AWG	24
9	34069	BUTT SPLICE 12-10	6
10	34243	BUTT SPLICE 16-22	18
11	KSS-CV-100	CABLE TIE	7
12	W-1015-10-BK	WIRE UL1015 10AWG BLACK	2505MM
13	W-1015-16-RD	WIRE UL1015 16AWG RED	3085MM
14	W-1015-16-BL	WIRE UL1015 16AWG BLUE	3085MM
15	W-1015-16-YW	WIRE UL1015 16AWG YELLOW	2505MM
16	W-1007-24-BK	WIRE UL1007 24AWG BLACK	384MM
17	W-1007-24-RD	WIRE UL1007 24AWG RED	384MM
18	W-1007-24-BL	WIRE UL1007 24AWG BLUE	384MM
19	W-1007-24-YW	WIRE UL1007 24AWG YELLOW	384MM
20	TUBE 5/25mm	HST 5/25mm	84MM
21	3-520408-2	INSULATED FASTON 16-14AWG 6.35MM	4

NOTE:-
WIRES 10AWG TOGETHER WITH WIRES 24AWG CRIMPTED WITH BUTT SPLICE MUST BE APPLIED
HST 5/2.5mm BEFORE CRIMPING.

REMARK:
1) VENDOR DRAWING NO. 1872508-1
2) APPLY LABEL AS SHOWN IN DRAWING
3) TWIST 4 WIRES TOGETHER AT 1 TURN / 25MM AS SHOWN IN DRAWING.

CONNECTION CHART			
FROM	WIRE COLOUR	TO	NOTE
A - 1	10AWG BLACK	B - 1	TWISTED
A - 2	16AWG RED	B - 2	
A - 3	16AWG BLUE	B - 3	
A - 4	16AWG YELLOW	B - 4	
A - 1	24AWG BLACK	C - 1	
A - 2	24AWG RED	C - 2	
A - 3	24AWG BLUE	C - 3	
A - 4	24AWG YELLOW	C - 4	

D-Q6703-50070-1



NO	PART NO	DESCRIPTION	QTY
1	350780-1	CONNECTOR 4P	1
2	350923-3/640310-3	TERMINAL12-10AWG	1
3	350536-1/350550-1	SOCKET TERMINAL 20-14AWG	3
4	350779-1	4P CONNECTOR	1
5	350922-3/640309-3	TERMINAL 12-10AWG	1
6	350218-1/350547-1	PIN TERMINAL 20-14AWG	3
7	103653-3	4P CONNECTOR	9
8	5-104505-2	TERMINAL 26-22AWG	36
9	34069	BUTT SPLICE 12-10	9
10	34243	BUTT SPLICE 16-22	27
11	KSS-CV-100	CABLE TIE	9
12	W-1015-10-BK	WIRE UL1015 10AWG BLACK	1132MM
13	W-1015-16-RD	WIRE UL1015 16AWG RED	1132MM
14	W-1015-16-BL	WIRE UL1015 16AWG BLUE	1132MM
15	W-1015-16-YW	WIRE UL1015 16AWG YELLOW	1132MM
16	W-1007-24-BK	WIRE UL1007 24AWG BLACK	576MM
17	W-1007-24-RD	WIRE UL1007 24AWG RED	576MM
18	W-1007-24-BL	WIRE UL1007 24AWG BLUE	576MM
19	W-1007-24-YW	WIRE UL1007 24AWG YELLOW	576MM
20	TUBE 5/2.5mm	HST 5/2.5mm	126MM

CONNECTION CHART			
FROM	WIRE COLOUR	TO	NOTE
A - 1	10AWG BLACK	B - 1	
A - 2	16AWG RED	B - 2	
A - 3	16AWG BLUE	B - 3	
A - 4	16AWG YELLOW	B - 4	
A - 1	24AWG BLACK	C - 1	TWISTED
A - 2	24AWG RED	C - 2	
A - 3	24AWG BLUE	C - 3	
A - 4	24AWG YELLOW	C - 4	

NOTE:
WIRES 10AWG TOGETHER WITH WIRES 24AWG CRIMPTED WITH BUT SPLICE MUST BE APPLIED
HST 5/2.5mm BEFORE CRIMPING.

REMARK:
1) CUSTOMER DRAWING NO. 1872478-1
2) APPLY LABEL AS SHOWN IN DRAWING
3) TWIST 4 WIRES TOGETHER AT 1 TURN / 25MM AS SHOWN IN DRAWING.