Chapter 2 Operation of Diag. CONTENTS

Chapter 2 Operation of Diag. CONTENTS

1. Overview

1.1 Position of the Diag. in the Whole System

Major functions of this diag. are as follows:

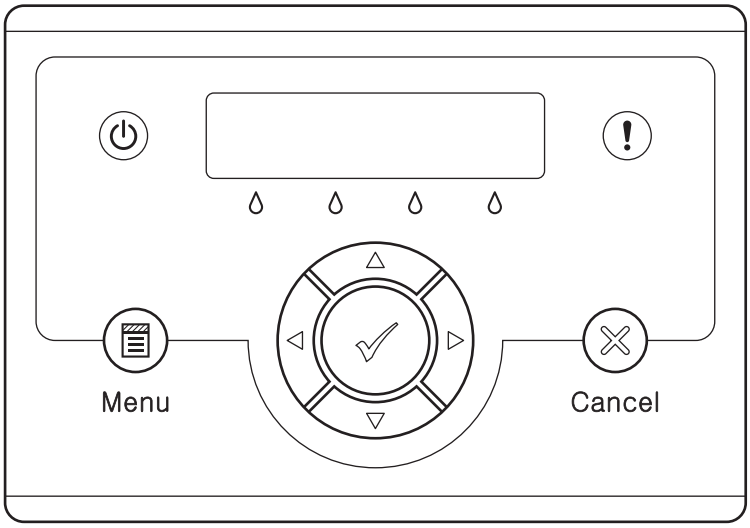
・IOT Diag

・Setting of parameters for registration in paper feeding direction and so on.

1.2 Operating This Software

There are the following two Diag. operations for operating this software:

1) Control Panel Operation



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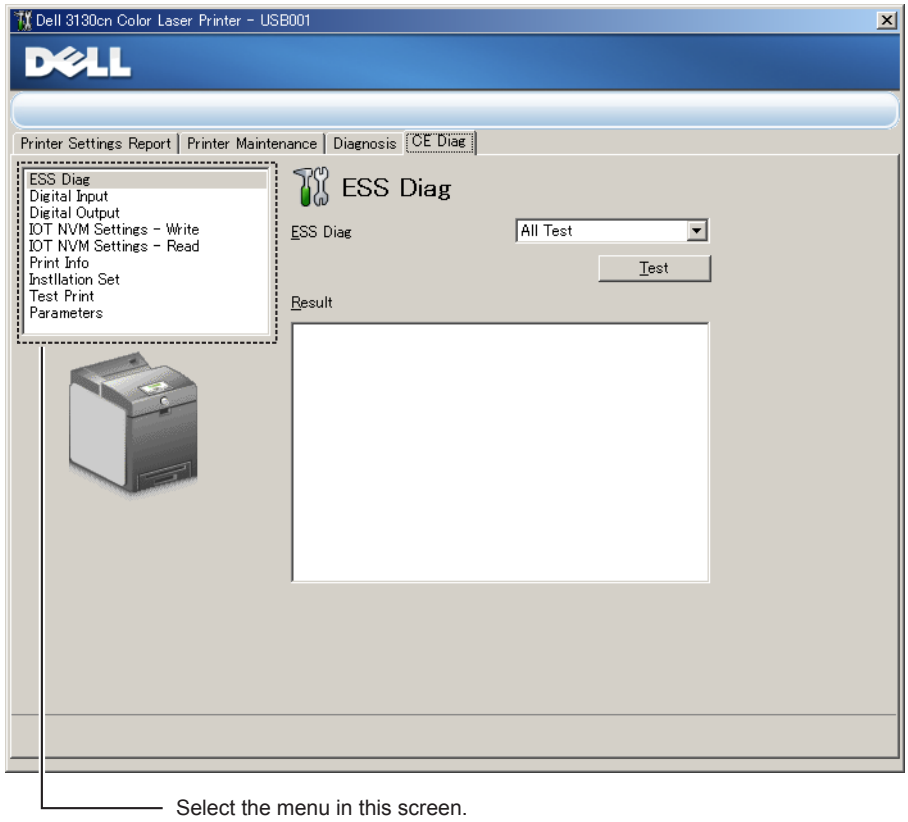
2) CE Diag. Tool Operation



This manual describes the operation of "Control Panel Operation" and "CE Diag. Tool Operation" respectively.
Described below are the contents of them:

- Control Panel Operation
  "3. How to Use Diag. Customer Mode (Control Panel Operation)"
  "4. The Kind of Diag. and Contents of a Test (Control Panel Operation)"

- CE Diag. Tool Operation
  "5. How to Use Customer Engineer Diag. (CE Diag. Tool Operation)"
  "6. The Kind of CE Diag. and Contents of a Test (CE Diag. Tool Operation)"

2. Configuration

2.1 Control Panel Operation

There are the following three modes for the Diag. operation from the control panel, varying according to aims, operators, and functions each.
This manual describes the operation of "Customer Mode".

Shippper Mode:

This mode intends to be used in the production line with the purpose to locate a chip that causes a problem.
Diagnosis time in the mode shall be as short as possible with consideration of production cost.
The mode shifts to the Developer mode (described later) after the ESS Diag.
This mode is protected password.

Customer Mode:

This mode intends to be used by customer who handle problems in field with the purpose to locate a replaceable unit that causes a problem.
Sorting problems on the basis of parts that can be replaced by the customer support center.
This is the base of this mode design, and that is why so many features.
The mode allows the user to execute the test prints, parameter settings and so on through the control panel.

Developer/CE (Customer Engineer) Mode:

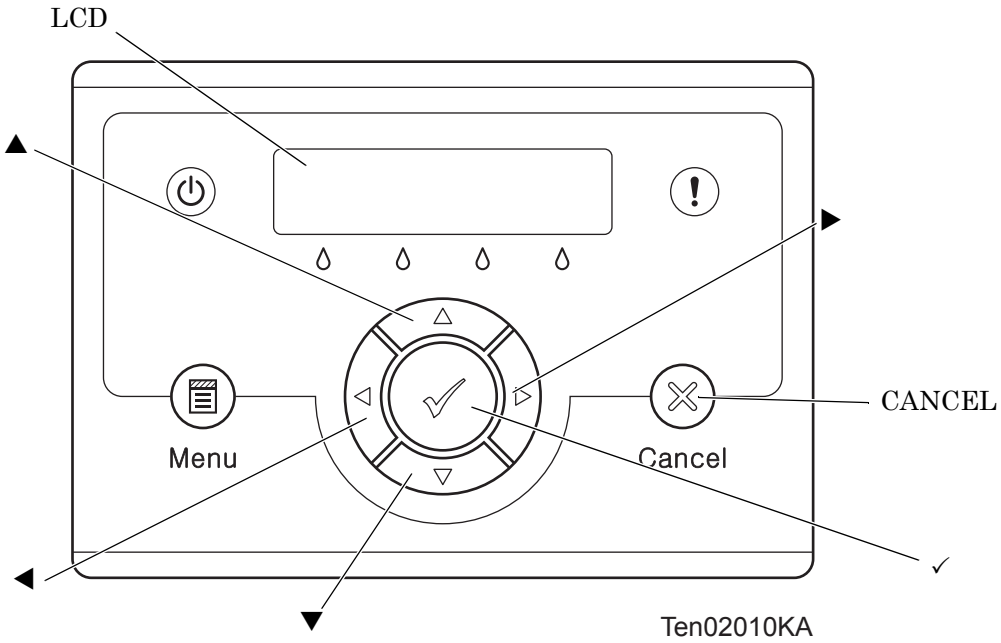
This mode is for debugging by developers or CEs. It intends to be partially used in the production line.
The mode allows the user to execute the ESS diagnosis, test prints, parameter settings and so on through the debug terminal.
The functions are activated by commands sent from the serial terminal.Special tool (FX internal debugging terminal) is required to operate Developer mode.
This mode is protected password.

2.2 CE Diag. Tool Operation

The Diag. operation from the tool box on the PC targets customer engineers (CE) only.
This manual describes the operation of [CE Diag.].

3. How to use Diag. Customer Mode (Control Panel Operation)

3.1 Roles of the control panel in Diag.



[LCD]:Displaying a diagnosis item and its result
[▲], [▼]:Selecting a diagnosis item/Selecting data at parameter setting
[◀], [▶]:Key moves the cursor to the left/right
[✓]: Determining a diagnosis item/Executing a diagnosis/Determining a parameter at parameter setting
[CANCEL]:Reseting a diagnosis item (Returning to the menu one level higher)
Terminating each digital input/output

3.2 Entering diag. Customer mode

1) Turn off the power.
2) Turn on the power while holding down " ▲ " and " ▼ " keys.
3) Release the fingers from these keys when "Diagnosing..." is displayed.
4) The "Customer Mode" and "IOT Diag" are displayed. (Entered the Diag. mode.)

3.3 Selecting Diag. item

The diagnosis setting items are configured as menus, which can be operated with the control panel keys. Arrow keys select menu items and " ✓ " key activates functions.

3.4 Change method parameters value

For parameter setting, pressing " ✓ " key after selecting an item from the menu displays the current setting value of the item. Then a numeric value selected by " ▼ " and " ▲ " keys are written into the NVM by " ✓ " key.

3.5 Executing/Exiting Diag. mode

The diagnosis can be executed by as follows.

1) A test item is displayed. " ✓ " key fixed the test item.
2) The display prompts the user to start the test. Press " ✓ " key and start the test.

The diagnosis can be stopped by as follows.

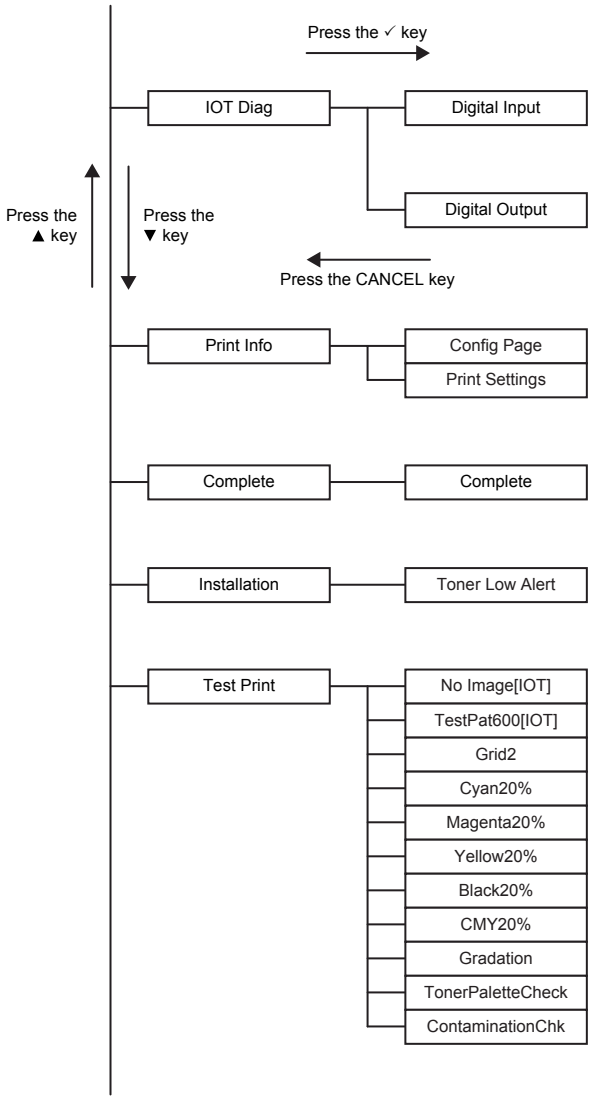
1) During the diagnosis test, press " CANCEL " key.
2) The diagnosis is stopped, and the display indicates the one step higher menu.

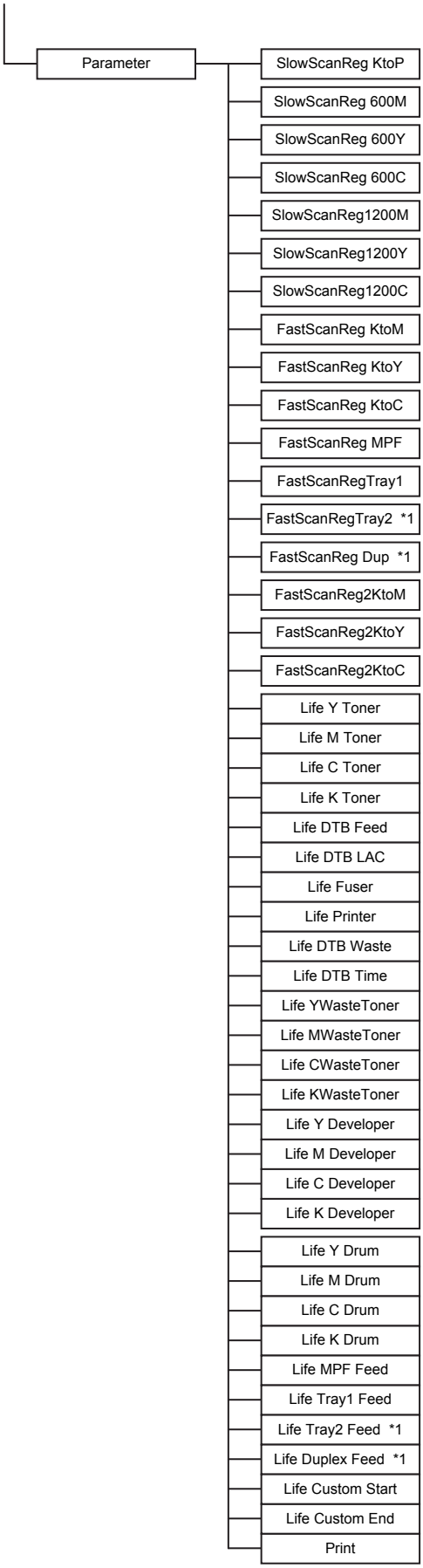
NOTE

When error occurred during Diag. operations, the display returns to the menu selective state after displaying the error for about three seconds.

3.6 Diag. mode menu tree

Menu Tree of the Customer Mode is as follows





*1: Appears only when the optional Tray2 or Duplex is installed

4. The Kind of Diag. and Contents of a Test (Control Panel Operation)

4.1 IOT Diag

4.1.1 Digital Input (DI) Test

This function checks whether the DI components operate normally or not.
The DI test is performed for all the DI components.
Exit operation of the DI test makes the control panel display the Customer diag. function menu.

NOTE

During the DI test, other Customer diag. functions can not be performed simultaneouly. Therefore, the printer does not accept any operation except operations for the DI components and exit operation of the DI test.

At the start of the DI test, number " 0 " is displayed on the control panel. This number is counted up when a DI component is turned on from off, therefore it allows the user to know the component is active.

When a paper jam is occurred, or an error message or code is displayed, execute this test to locate the damaged parts.
The test will execute the DI Test codes of the components that are supposed to be faulty from the error details. (Refer to each FIP on Chapter 1.)
Test result: NG (Go to each FIP or replace the parts.)
OK (Turn off/on the main power.)

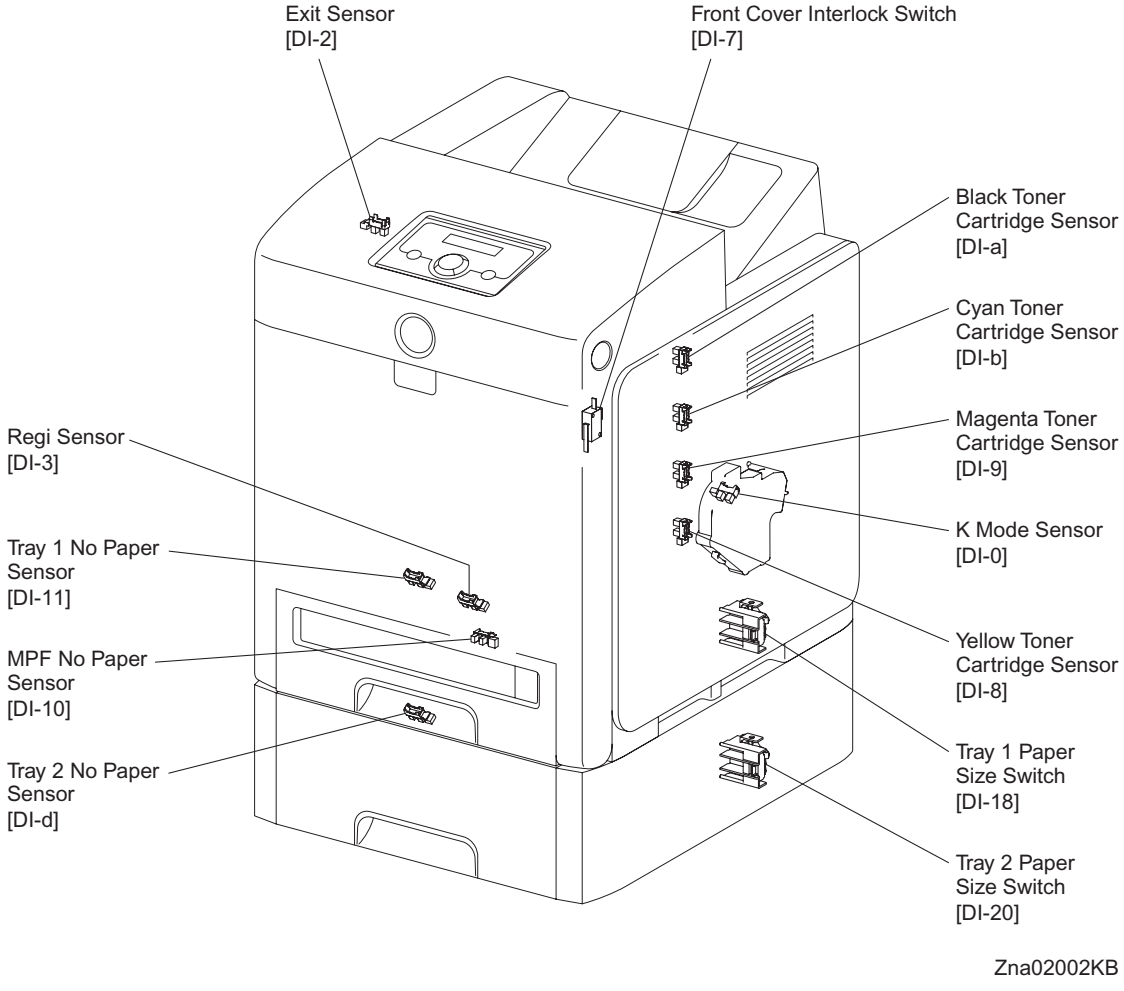
4.1.2 Executing digital input (DI) test

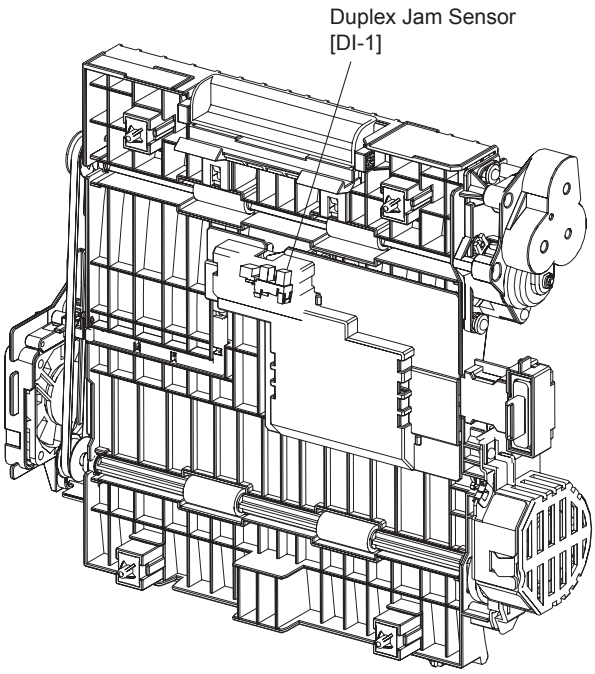
1) Turn off the power.
2) Turn on the power while holding down " ▲ " and " ▼ " keys.
3) Release the fingers from these keys when "Diagnosing..." is displayed.
4) The "Customer Mode" and "IOT Diag" are displayed. (Entered the Diag. mode.)
5) Press " ✓ " key.
6) Press " ▼ " key to select "Digital Input", and then press " ✓ " key.
7) Press " ▲ " or " ▼ " key to select the test item.
8) Press " ✓ " key twice to execute the test.

Parameters for the Digital Input Test are as follows.

Code	Components
DI-0	K Mode Sensor
DI-1	Dup Jam sensor
DI-2	Exit Sensor
DI-3	Regi Sensor
DI-7	Front Cover Interlock Switch
DI-8	Yellow Toner Cartridge Sensor
DI-9	Magenta Toner Cartridge Sensor
DI-a	Black Toner Cartridge Sensor
DI-b	Cyan Toner Cartridge Sensor
DI-c	Tray2 Low Paper (Not Used)
DI-d	Tray 2 No Paper sensor

Code	Components
DI-e	Duplex Fan Alarm (Not Used)
DI-f	Tray 2 Feed Motor Alarm (Not Used)
DI-10	MPF No Paper Sensor
DI-11	Tray 1 No Paper Sensor
DI-12	Main Motor Alarm (Not Used)
DI-13	Sub Motor Alarm (Not Used)
DI-14	OHP Sensor (Not Used)
DI-15	Fan Alarm (Not Used)
DI-16	Feed Drive Alarm (Not Used)
DI-17	Deve Motor Alarm (Not Used)
DI-18	Tray 1 Paper Size Switch
DI-20	Tray 2 Paper Size Switch





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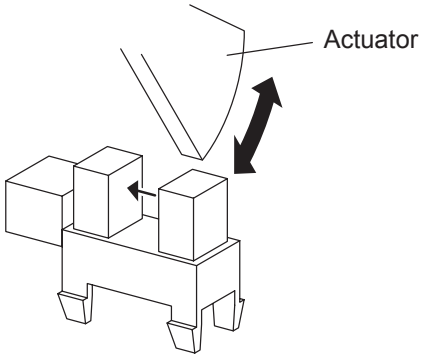
- About Sensor

A transmissive type sensor is composed of the light-emitting side and the light-receiving side that are placed opposite to each other allowing the light to pass from the former to the latter. On the basis of whether or not the light path is blocked due to the actuator, etc., the sensor detects the paper absence/presence or the moving part position such as at the home position or elsewhere.



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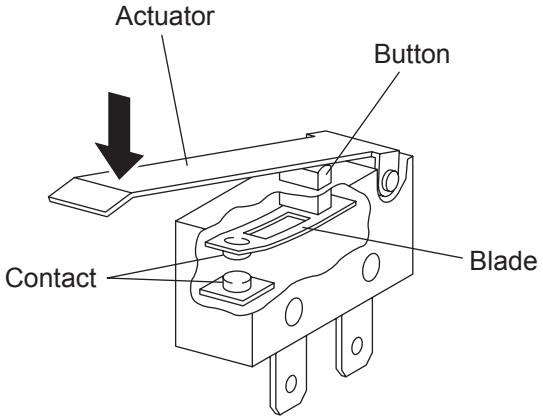
- About Switch

A micro-switch closes the internal contacts via the button which is pushed down under the provided leaf spring which is held down by the actuator of the cover or door that is being closed. When the door or cover has being opened, the leaf spring returns to its original position and the button is pushed up by the spring in the switch, allowing the internal contacts to open.



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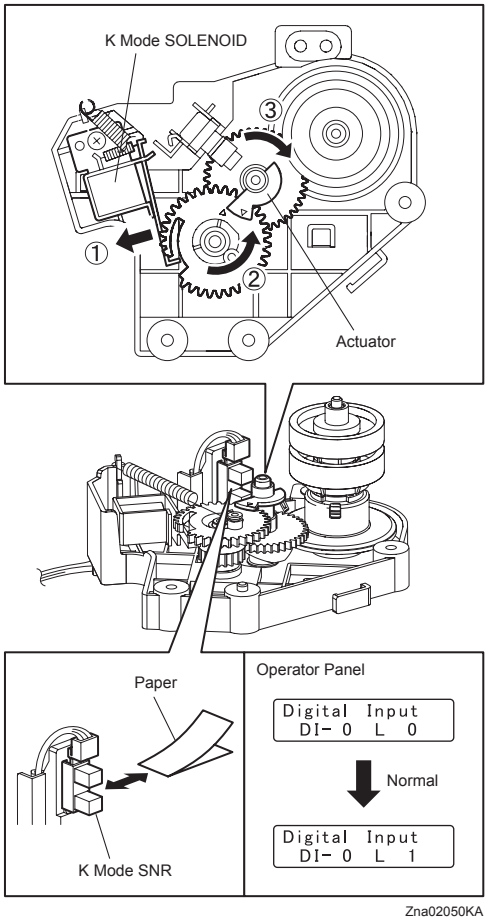
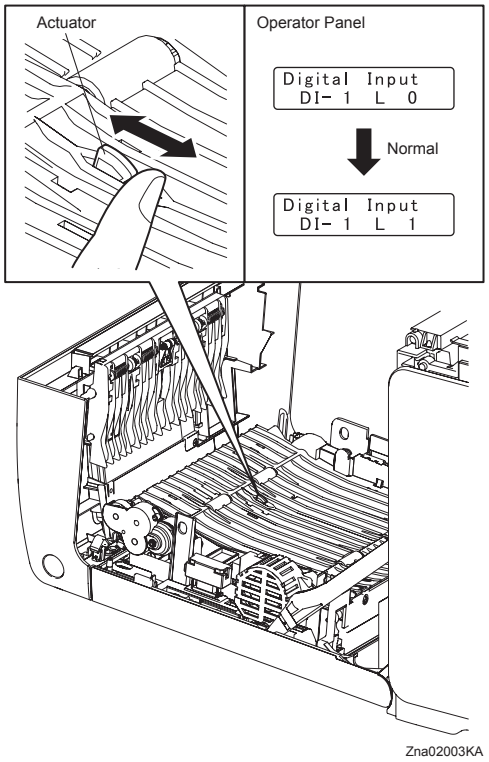
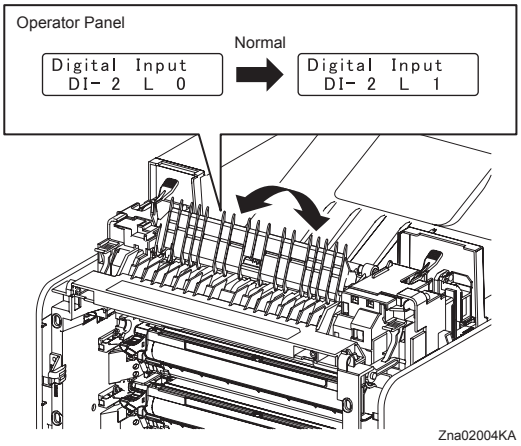
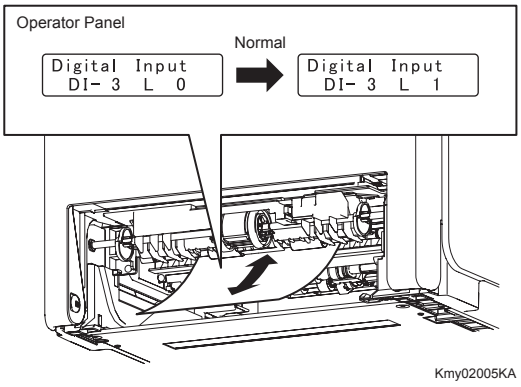
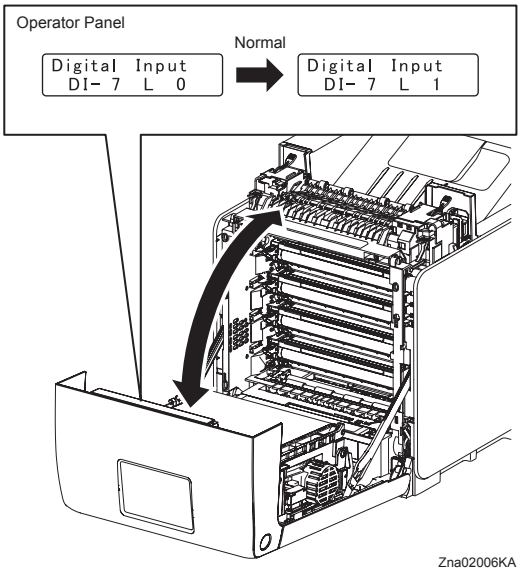
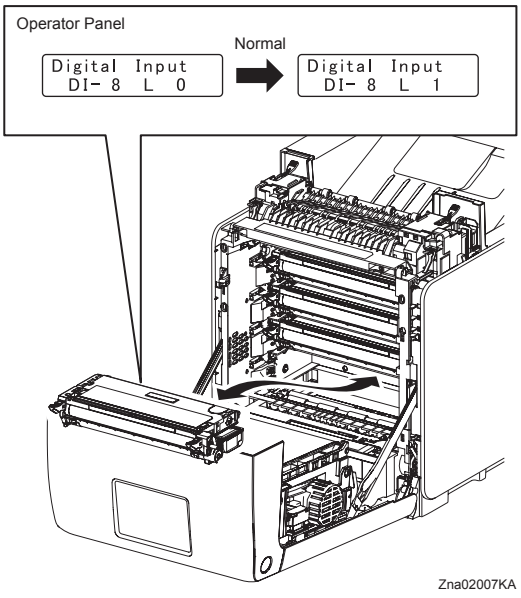
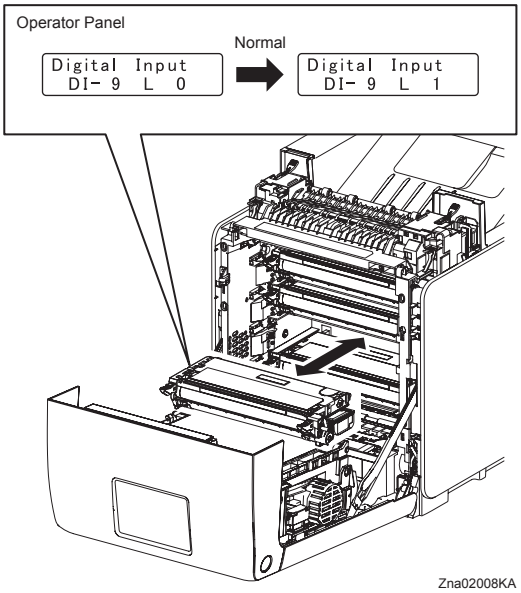
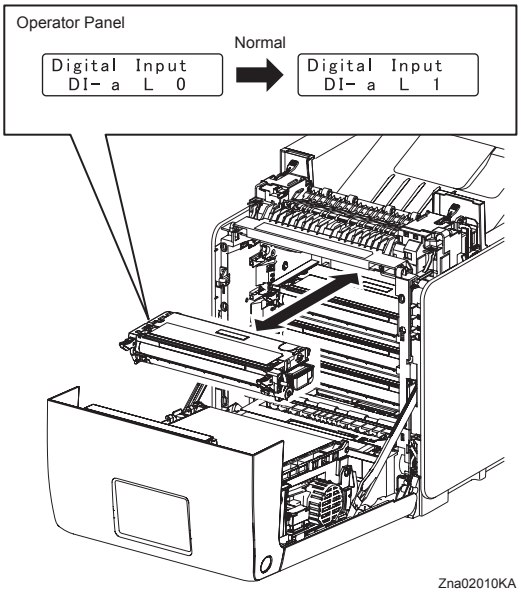
-Checking the Sensor and Switch

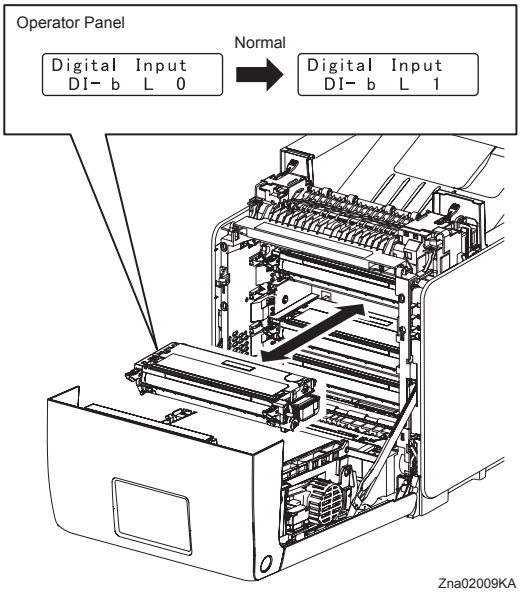
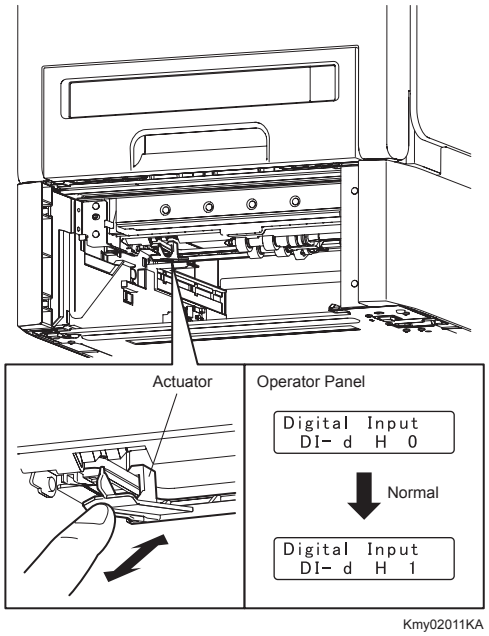
Sensor name (Diag. Code)	Confirmation procedures
K Mode sensor (DI-0) (Color Mode Switching Sensor)	NOTE: This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-0. 3) Open the Front Cover. 4) Remove the Cover Rear. 5) Remove the Cover Side R Assy. 6) Remove the Drive Assy K. 7) Press the lever mounted on the Solenoid to retract the actuator from the sensor. 8) Check the sensor.  9) Press the "Cancel" key to stop the test. 10) Replace the Drive Assy K. 11) Replace the Cover Side R Assy. 12) Replace the Cover Rear. 13) Close the Front Cover.

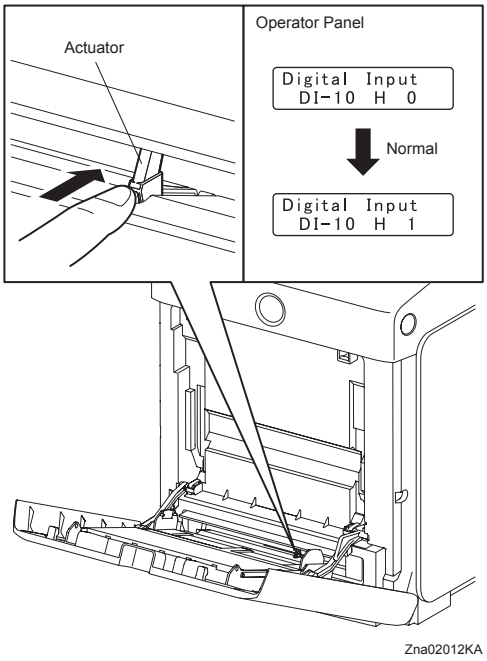
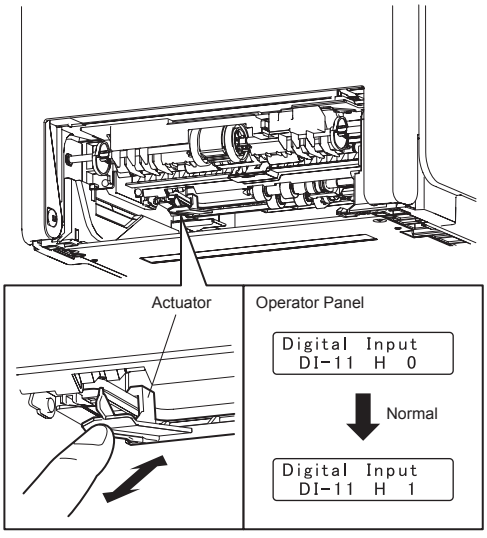
Sensor name (Diag. Code)	Confirmation procedures
Duplex Jam Sensor (DI-1)	NOTE:When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-1. 3) Open the Front Cover. 4) Remove the Transfer Belt. 5) Check the sensor.  6) Press the "Cancel" key to stop the test. 7) Replace the Transfer Belt. 8) Close the Front Cover.

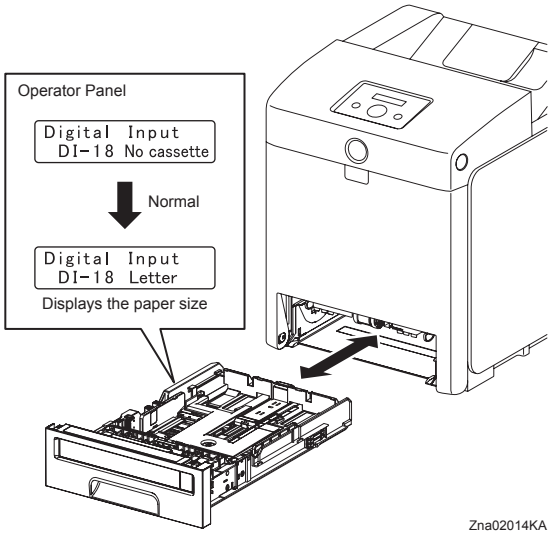
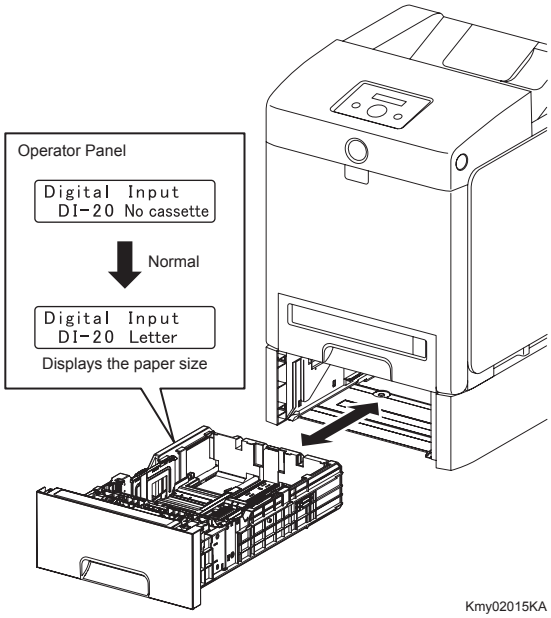
Sensor name (Diag. Code)	Confirmation procedures
Exit Sensor (DI-2)	NOTE: Fuser is very hot, so pay sufficient attention at work to above burns, etc. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-2. 3) Open the Front Cover. 4) Check the sensor.  5) Press the "Cancel" key to stop the test. 6) Close the Front Cover.
Regi Sensor (DI-3)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-3. 3) Remove the 250 paper cassette. 4) Insert the paper into the paper path of the Regi assy.  5) Press the "Cancel" key to stop the test. 6) Replace the 250 paper cassette.

Sensor name (Diag. Code)	Confirmation procedures
Interlock Switch (DI-7)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-7. 3) Check the Switch  4) Press the "Cancel" key to stop the test. 5) Close the Front Cover.
Yellow Toner Cartridge (DI-8)	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-8. 3) Open the Front Cover 4) Check the Sensor.  5) Press the "Cancel" key to stop the test. 6) Close the Front Cover.

Sensor name (Diag. Code)	Confirmation procedures
Magenta Toner Cartridge (DI-9)	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-9. 3) Open the Front Cover 4) Check the Sensor.  5) Press the "Cancel" key to stop the test. 6) Close the Front Cover.
Black Toner Cartridge (DI-a)	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-a. 3) Open the Front Cover 4) Check the Sensor.  5) Press the "Cancel" key to stop the test. 6) Close the Front Cover.

Sensor name (Diag. Code)	Confirmation procedures
Cyan Toner Cartridge (DI-b)	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-b. 3) Open the Front Cover 4) Check the Sensor.  5) Press the "Cancel" key to stop the test. 6) Close the Front Cover.
Tray2 Low Paper (DI-c)	Internal signal.
Tray 2 No paper Sensor (DI-d)	NOTE: The no peper senser is in the option feeder. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-d. 3) Remove the Paper Cassette. 4) Check the Sensor.  5) Press the "Cancel" key to stop the test. 6) Replace the paper cassette.

Sensor name (Diag. Code)	Confirmation procedures
Option Tray Feed Motor Alarm (DI-f)	Internal signal.
MPF No Paper Sensor (DI-10)	NOTE: Remove the paper of the MPF before executing the test. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-10. 3) Open the MPF Cover. 4) Check the sensor.  Zna02012KA 5) Press the "Cancel" key to stop the test. 6) Close the MPF Cover.
Tray 1 No paper Sensor (DI-11)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-11. 3) Remove the paper cassette. 4) Check the sensor.  Kmy02013KA 5) Press the "Cancel key to stop the test. 6) Replace the paper cassette.
Main Motor Alarm (DI-12)	Internal signal.
Sub Motor Alarm (DI-13)	Internal signal.

Sensor name (Diag. Code)	Confirmation procedures
OHP Sensor (DI-14)	Not used
FAN Alarm (DI-15)	Internal signal.
PH Motor Alarm (DI-16)	Internal signal.
DEVE Motor Alarm (DI-17)	Internal signal.
Tray 1 Paper Size Switch (DI-18)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-18. 3) Check the switch.  4) Press the "Cancel key to stop the test. 5) Replace the paper cassette.
Tray 2 Paper Size Switch (DI-20)	NOTE: The size switch is in the option feeder. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DI-20. 3) Check the switch.  4) Press the "Cancel key to stop the test. 5) Replace the paper cassette.

4.1.3 Digital Output (DO) Test

This function checks whether the DO components operate.
When the interlock is opened while the DO test is performed, each component ends to operate.

NOTE

In this Test Mode, each DO component can be turned individually. Therefore it allows the customer to check a component's operation from outside, and judge whether the component is normal or not.
When all the diag. functions are stopped, all the DO components can be turned off.
DO test can make each of the DO components operate simultaneously.

When a paper jam or PQ problem is occurred, or an error message or code is displayed, this test enables to look for the broken or damaged parts.
Test result: NG (Go to each FIP or replace the parts.)
OK (Turn off/on the main power.)

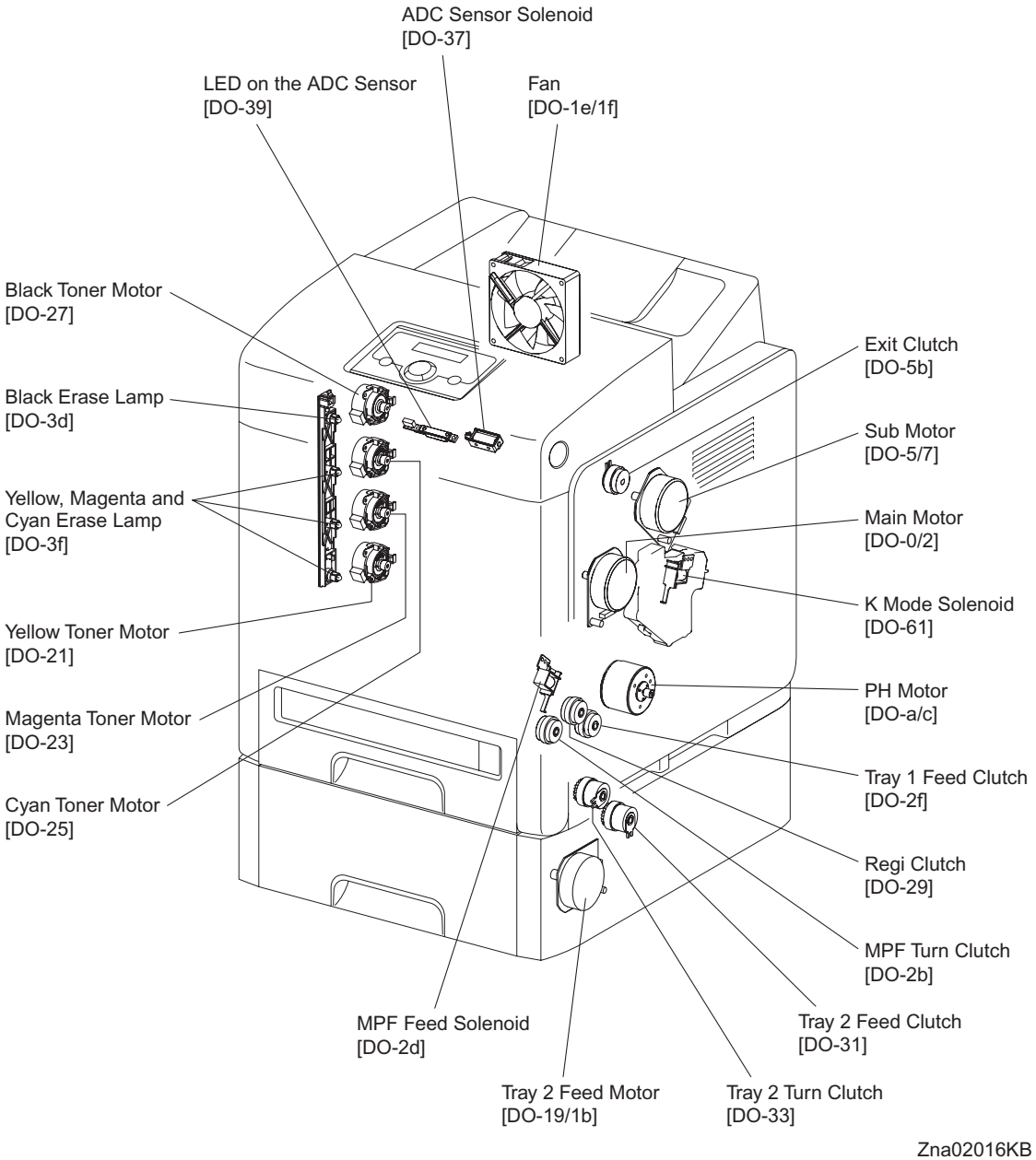
4.1.4 Executing digital output (DO) test

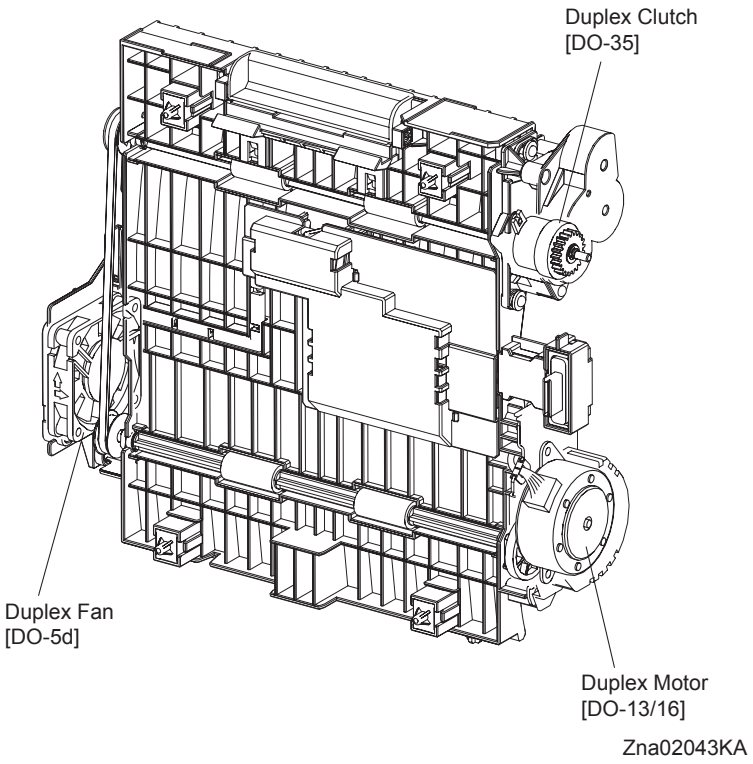
1) Turn off the power.
2) Turn on the power while holding down " ▲ " and " ▼ " keys.
3) Release the fingers from these keys when "Diagnosing..." is displayed.
4) The "Customer Mode" and "IOT Diag" are displayed. (Entered the Diag. mode.)
5) Press " ✓ " key.
6) Press " ▼ " key to select "Digital Output", and then press " ✓ " key.
7) Press " ▲ " or " ▼ " key to select test item.
8) Press " ✓ " key to execute the test.

Parameters for the Digital Output Test are as follows.

Code	Components
DO-0,2	Main Motor
DO-5,7	Sub Motor
DO-a,c	PH Motor
DO-13,16	Duplex Motor
DO-19,1b	Tray 2 Feed Motor
DO-1e,1f	Fan
DO-21	Yellow Toner Motor
DO-23	Magenta Toner Motor
DO-25	Cyan Toner Motor
DO-27	Black Toner Motor
DO-29	Regi Clutch
DO-2b	MPF Turn Clutch
DO-2d	MPF Feed Solenoid
DO-2f	Tray 1 Feed Clutch
DO-31	Tray 2 Feed Clutch
DO-33	Tray 2 Turn Clutch
DO-35	Duplex Clutch
DO-37	ADC (CTD) Sensor Solenoid
DO-39	ADC (CTD) Sensor LED
DO-3b	OHP LED (Not Used)

Code	Components
DO-3d	Black Erase Lamp
DO-3f	Yellow, Magenta, Cyan Erase Lamp
DO-5b	Exit Clutch
DO-5d	Duplex Fan
DO-5F	Buzzer
DO-61	K Mode Solenoid




Duplex Clutch
[DO-35]
Duplex Fan
[DO-5d]
Duplex Motor
[DO-13/16]
Zna02043KA

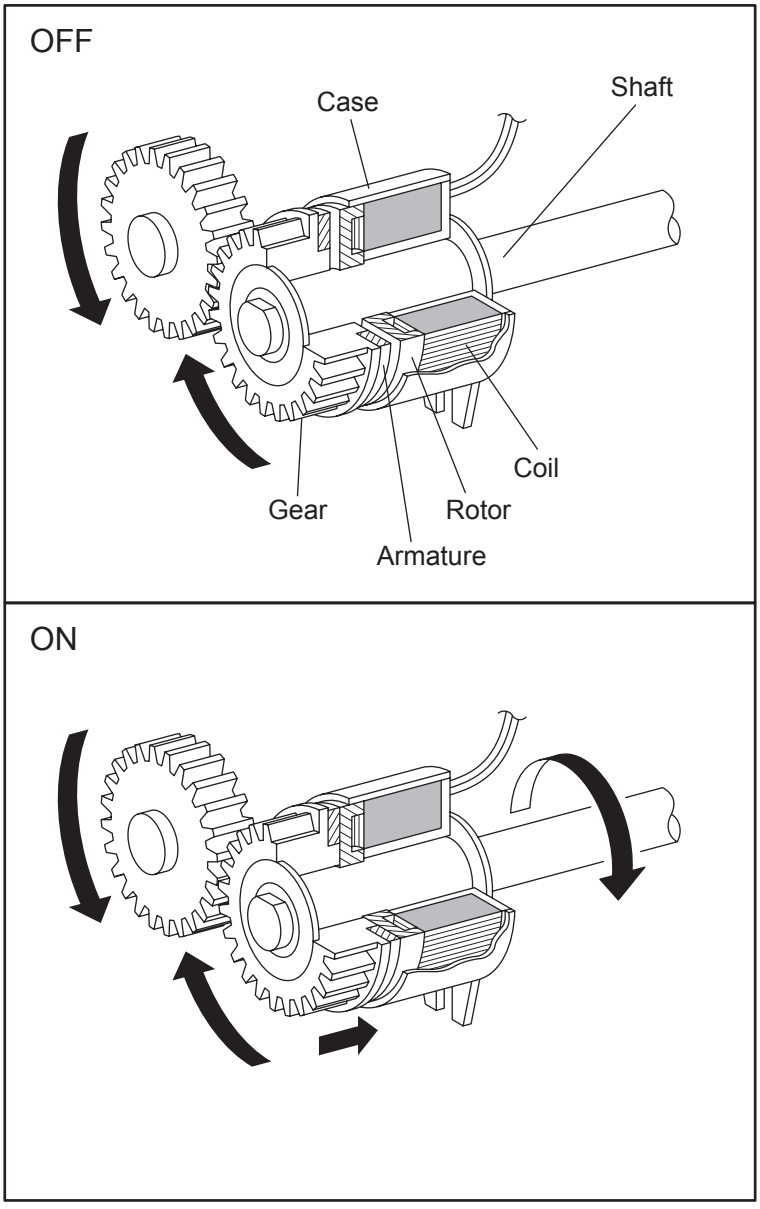
- About Clutch

The electromagnetic clutch in the printer controls the rotation of the roller by transferring or cutting the torque from the motor to the roller.

The electromagnetic clutch becomes an electromagnet by the passage of electric current through the coil inside the case and attracts the armature and gear to the rotating rotor, thereby rotating the gear.

Upon the loss of power to the coil, electromagnetic force is lost and the armature comes off the rotor, and the gear comes to rest.

The clutch makes so soft noises that you must be close the component to audibly confirm the operation of the component.



Leg_Sec02_050FA

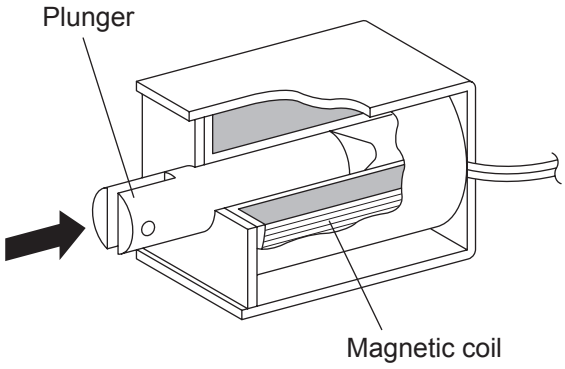
- About Solenoid

The solenoid in the printer opens/closes the shutter or controls the position of the gear for transferring the torque of the motor to the roller.

A solenoid becomes an electromagnet by the passage of electric current through the coil inside the case and attracts the plunger.

Upon the loss of power to the coil, electromagnetic force is lost and the plunger is returned to its original position by spring action, thereby allowing the shutter to operate or the gear to move to the predefined position.

Unlike a clutch, a solenoid generates a loud operation noise.

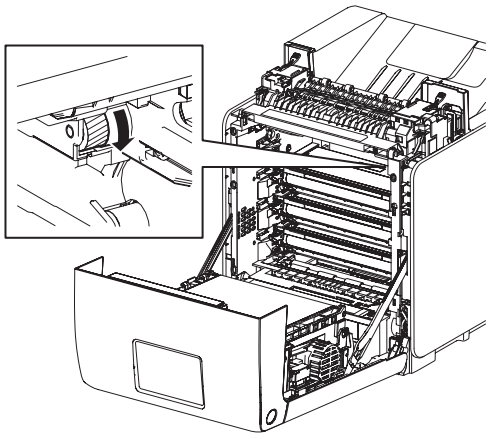


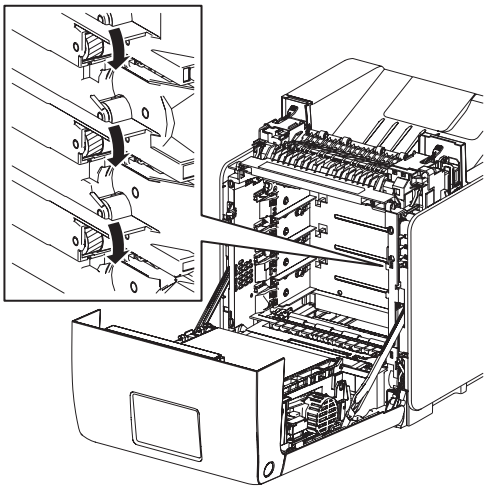
Leg_Sec02_051FA

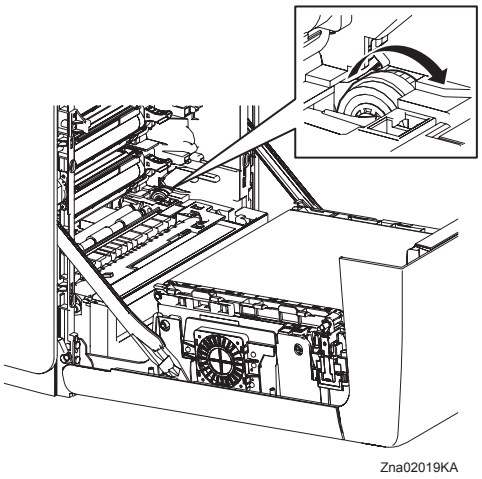
- Checking Motor, Clutch and Solenoid

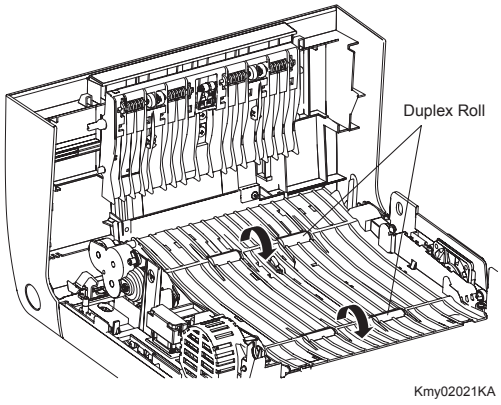
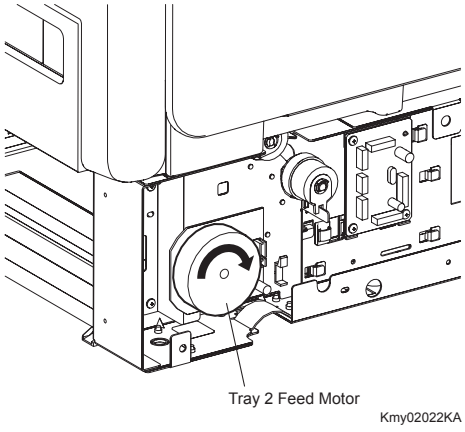
NOTE

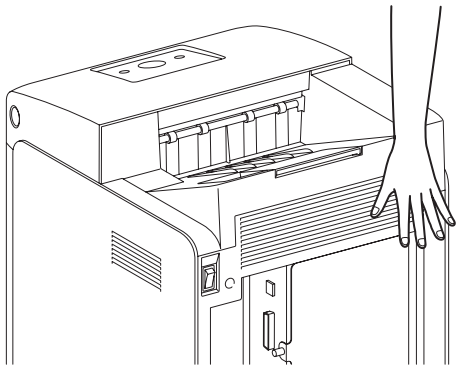
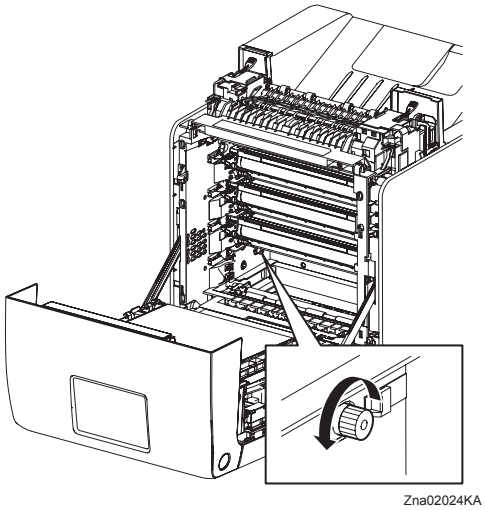
Before executing the DO test, close all covers and doors.

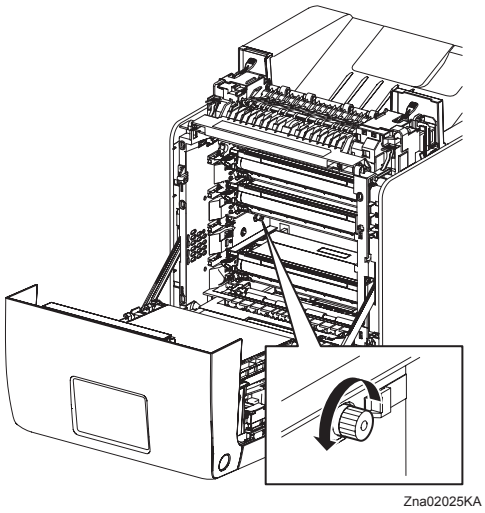
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Main Motor (DO-0/DO-2)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. The main motor is in the PC/DEVE DRIVE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. The rotational speed of the motor is as follows. DO-2 (Half)<DO-0 (Full) 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Remove the black toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the DO-0. (The customer can confirm the motor noise only.)  Zna02017KA 6) Press the "Cancel" key to stop test. 7) Remove the cheater and replace the black toner cartridge. 8) Close the Front Cover.

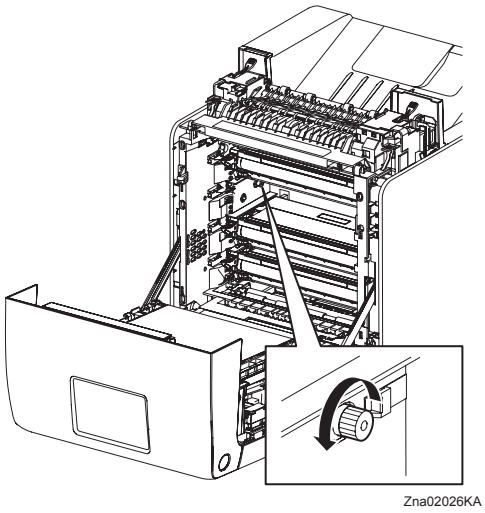
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Sub Motor (DO-5/DO-7)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. The sub motor is in the PC/DEVE DRIVE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. The rotational speed of the motor is as follows. DO-7 (Half)<DO-5 (Full) 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Remove the all toner cartridges. 4) Cheat the safety Interlock System. 5) Execute the DO-5. (The customer can confirm the motor noise only.)  Zna02018KA 6) Press the "Cancel" key to stop test. 7) Remove the cheater and replace the all toner cartridges. 8) Close the Front Cover.

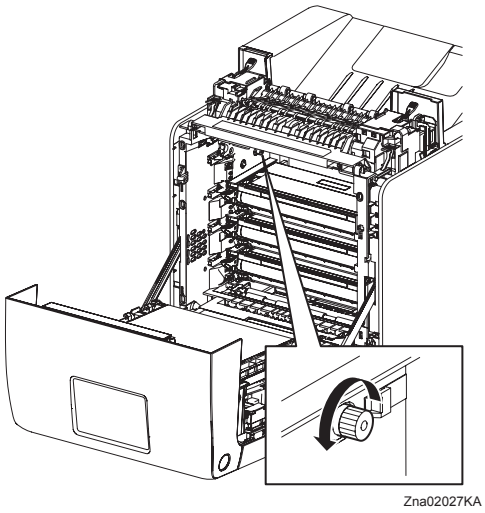
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
PH Motor (DO-a/DO-c)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. The PH motor is in the FEED DRIVE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. The rotational speed of the motor is as follows. DO-c (Half)<DO-a (Full) 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-a. (The customer can confirm the motor noise only.)  Zna02019KA 5) Press the "Cancel" key to stop test. 6) Remove the cheater. 7) Close the Front Cover.

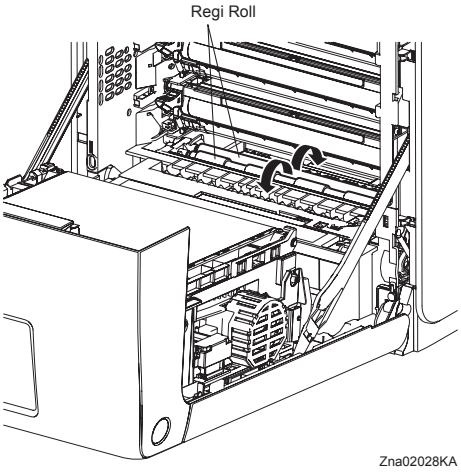
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
DUP Motor (DO-13/DO-16)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. The DEVE motor is in the DUPLEX MODULE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. The rotational speed of the motor is as follows. DO-16 (Half)<DO-13 (Full) 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Remove the transfer belt. 5) Execute the DO-13. (The customer can confirm the motor noise only.)  6) Press the "Cancel" key to stop test. 7) Remove the cheater and replace the transfer belt. 8) Close the Front Cover.
Tray 2 Feed Motor (DO-19/ DO-1b)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. The rotational speed of the motor is as follows. DO-1b (Half)<DO-19 (Half) 1) turn on the power and enter the Diagnostic Mode. 2) Remove the Tray 2 paper cassette. 3) Remove the left side cover of the Tray 2. 4) Execute the DO-19. (The customer can confirm the motor noise only.)  5) Press the "Cancel" key to stop the test. 6) Replace the left side cover of the Tray 2. 7) Replace the Tray 2 paper cassette.

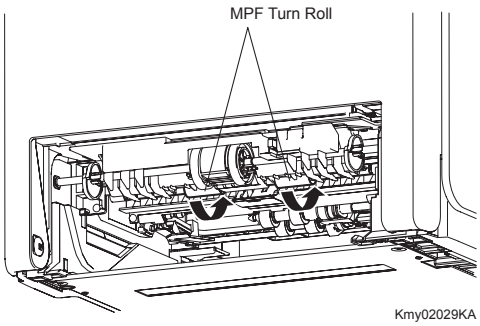
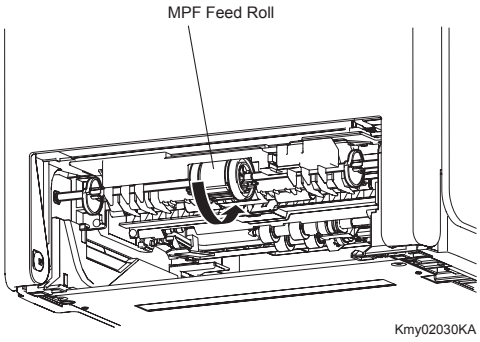
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Fan (DO-1e/1f)	NOTE: The rotational speed of the fan is as follows. DO-1f (Low)<DO-1e (High) 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-1e.  Zna02023KA 3) Press the "Cancel" key to stop test.
Yellow Toner Motor (DO-21)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Remove the yellow toner cartridge. 5) Execute the DO-21. (The customer can confirm the motor noise only.)  Zna02024KA 6) Press the "Cancel" key to stop test. 7) Replace the yellow toner cartridge. 8) Remove the cheater. 9) Close the Front Cover.

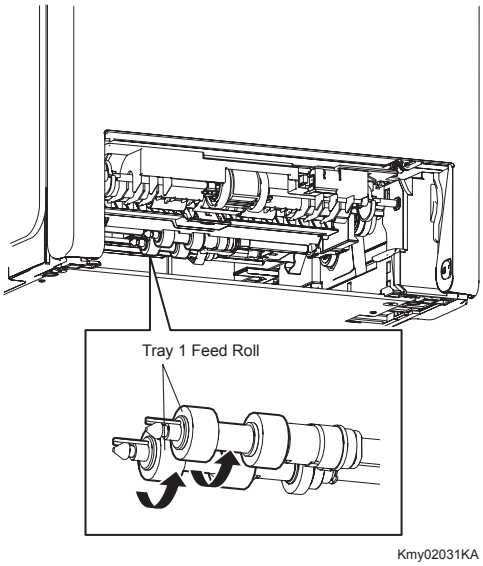
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Magenta Toner Motor (DO-23)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Remove the magenta toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the DO-23. (The customer can confirm the motor noise only.)  Zna02025KA 6) Press the "Cancel" key to stop test. 7) Remove the cheater. 8) Replace the magenta toner cartridge. 9) Close the Front Cover.

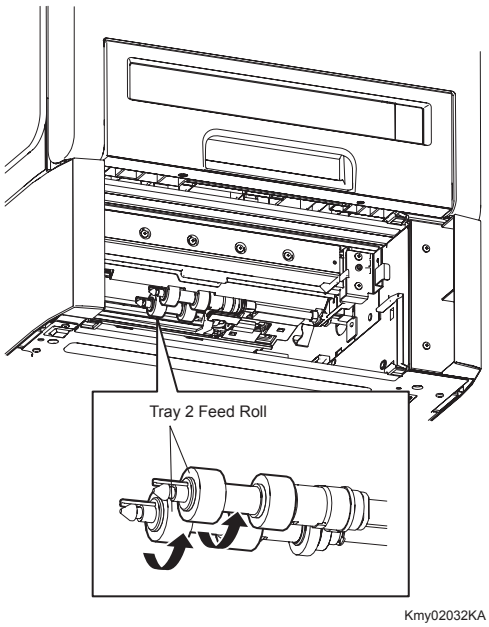
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Cyan Toner Motor (DO-25)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Remove the cyan toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the DO-25. (The customer can confirm the motor noise only.)  Zna02026KA 6) Press the "Cancel" key to stop test. 7) Remove the cheater. 8) Replace the cyan toner cartridge. 9) Close the Front Cover.

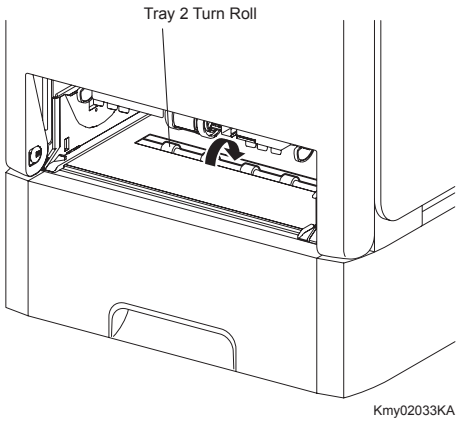
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Black Toner Motor (DO-27)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Remove the black toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the DO-27. (The customer can confirm the motor noise only.)  Zna02027KA 6) Press the "Cancel" key to stop test. 7) Remove the cheater. 8) Replace the black toner cartridge. 9) Close the Front Cover.

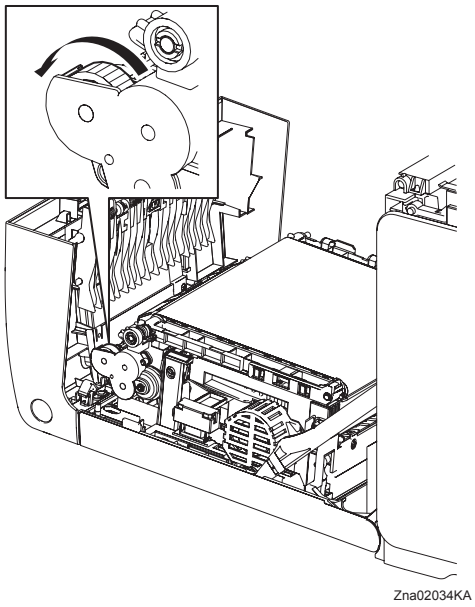
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Regi Clutch (DO-29)	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-29. Upon hitting the "return" key, the operating noise of the clutch will be heard. 3) Press the "Cancel" key to stop the clutch. Combination test is as follows. NOTE: The regi roll rotates when the DO-a and the DO-29 are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-a and the DO-29.  5) Confirm the Regi Roll rotation. 6) Press the "Cancel" key to stop the clutch. 7) Press the "▼" key to display the DO-a. 8) Press the "Cancel" key to stop the motor. 9) Remove the cheater and close the Front Cover.

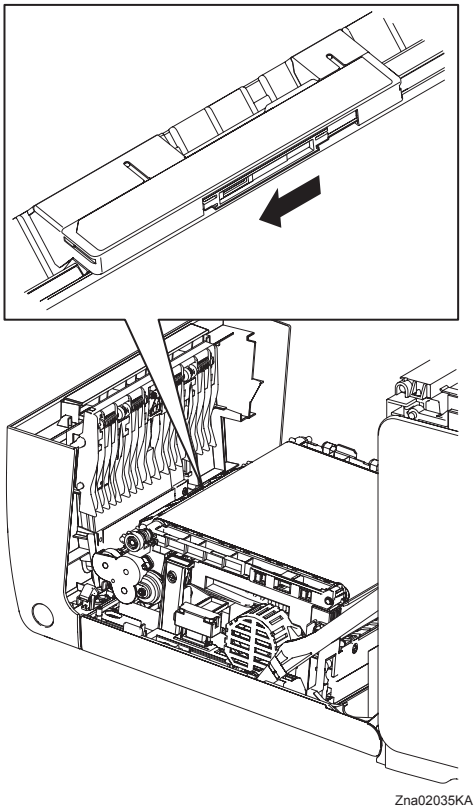
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
MPF Turn Clutch (DO-2b)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-2b. Upon hitting the "return" key, the operating noise of the clutch will be heard. 3) Press the "Cancel" key to stop the clutch. Combination test is as follows. NOTE: The MPF turn roll rotates when the DO-a and the DO-2b are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Remove the Tray 1 paper cassette. 3) Execute the DO-a and the DO-2b.  4) Confirm the Turn Roll rotation. 5) Press the "Cancel" key to stop the clutch. 6) Press the "▼" key to display the DO-a. 7) Press the "Cancel" key to stop the motor. 8) Replace the Tray 1 paper cassette.
MPF Feed Solenoid (DO-2d)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-2d. Upon hitting the "return" key, the operating noise of the solenoid will be heard. 3) Press the "Cancel" key to stop the solenoid. Combination test is as follows. NOTE: The MPF feed roll rotates when the DO-a and the DO-2d are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Remove the Tray 1 paper cassette. 3) Execute the DO-a and the DO-2d.  4) Confirm the Feed Roll rotation. 5) Press the "Cancel" key to stop the clutch. 6) Press the "▼" key to display the DO-a. 7) Press the "Cancel" key to stop the motor. 8) Replace the Tray 1 paper cassette.

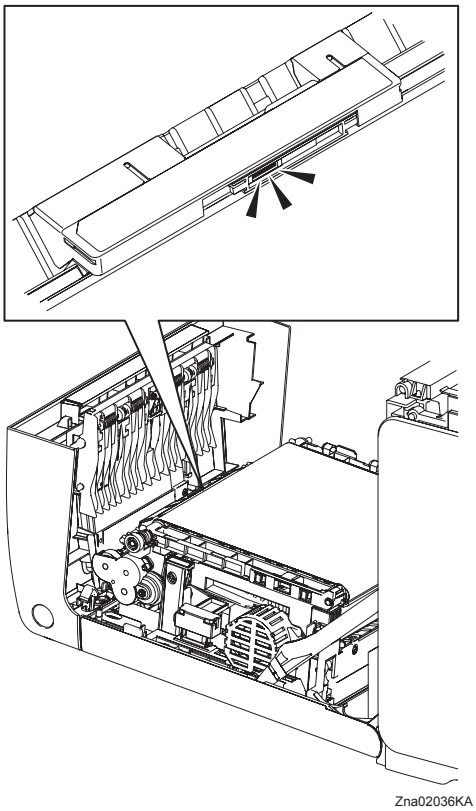
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Tray 1 Feed Clutch (DO-2f)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-2f. Upon hitting the "return" key, the operating noise of the clutch will be heard. 3) Press the "Cancel" key to stop the clutch. Combination test is as follows. NOTE: The Tray 1 feed roll rotates when the DO-a and the DO-2f are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Remove the Tray 1 paper cassette. 3) Execute the DO-a and the DO-2f.  Kmy02031KA 4) Confirm the feed Roll rotation. 5) Press the "Cancel" key to stop the clutch. 6) Press the "▼" key to display the DO-a. 7) Press the "Cancel" key to stop the motor. 8) Replace the Tray 1 paper cassette.

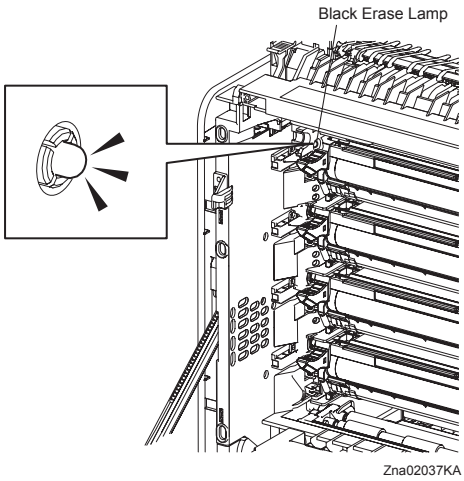
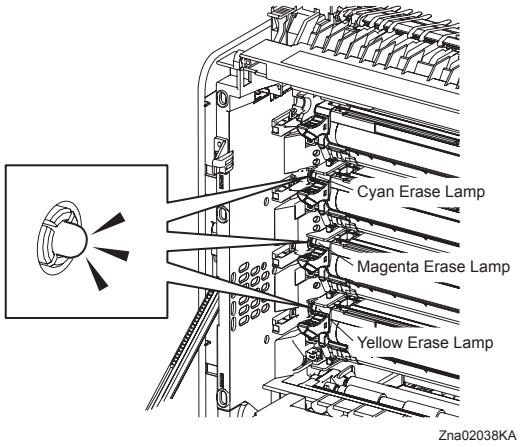
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Tray 2 Feed Clutch (DO-31)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-31. Upon hitting the "return" key, the operating noise of the clutch will be heard. 3) Press the "Cancel" key to stop the clutch. Combination test is as follows. NOTE: The Tray 2 feed roll rotates when the DO-19 and the DO-31 are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Remove the Tray 2 paper cassette. 3) Execute the DO-19 and the DO-31.  Kmy02032KA 4) Confirm the feed Roll rotation. 5) Press the "Cancel" key to stop the clutch. 6) Press the "▼" key to display the DO-19. 7) Press the "Cancel" key to stop the motor. 8) Replace the Tray 2 paper cassette.

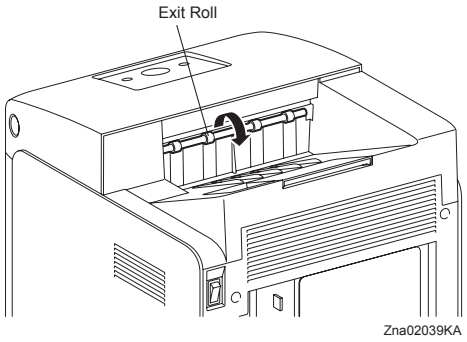
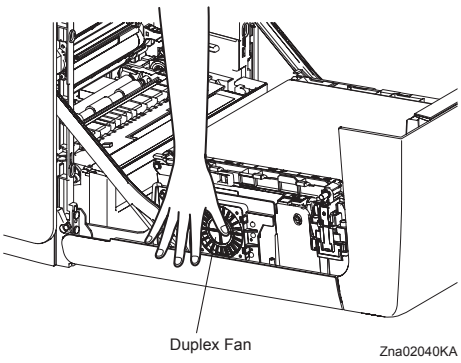
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Tray 2 Turn Clutch (DO-33)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-33. Upon hitting the "return" key, the operating noise of the clutch will be heard. 3) Press the "Cancel" key to stop the clutch. Combination test is as follows. NOTE: The Tray 2 turn roll rotates when the DO-19 and the DO-33 are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Remove the Tray 1 paper cassette. 3) Execute the DO-19 and the DO-33.  4) Confirm the Turn Roll rotation. 5) Press the "Cancel" key to stop the clutch. 6) Press the "▼" key to display the DO-19. 7) Press the "Cancel" key to stop the motor. 8) Replace the Tray 1 paper cassette.

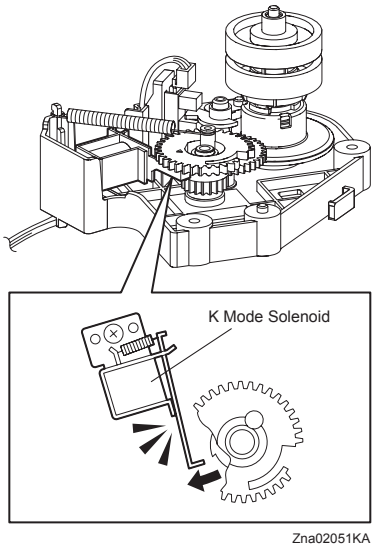
Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Dup Clutch (DO-35)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-35. Upon hitting the "return" key, the operating noise of the clutch will be heard. 3) Press the "Cancel" key to stop the clutch. Combination test is as follows. NOTE: The duplex gear rotates when the DO-13 and the DO-35 are executed. This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-13 and the DO-35.  Zna02034KA 5) Confirm the gear rotation. 6) Press the "Cancel" key to stop the clutch. 7) Press the "▼" key to display the DO-13. 8) Press the "Cancel" key to stop the motor. 9) Remove the cheater and close the Front Cover.

Clutch and Solenoid name (Diag. Code)	Confirmation procedure
ADC Sensor Solenoid (DO-37)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-37. (The customer can confirm the motor noise only.)  Zna02035KA 5) Press the "Cancel" key to stop the solenoid. 6) Remove the cheater and close the Front Cover.

Clutch and Solenoid name (Diag. Code)	Confirmation procedure
ADC Senor LED (DO-39)	NOTE: This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-39.  Zna02036KA 5) Press the "Cancel" key to stop the LED lighting. 6) Remove the cheater and close the Front Cover.
OHP Sensor LED (DO-3b)	Not used

Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Black Drum Erase Lamp (DO-3d)	NOTE: This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-3d.  5) Press the "Cancel" key to stop the LED lighting. 6) Remove the cheater and close the Front Cover.
Yellow, Magenta and Cyan Drum Erase Lamp (DO-3f)	NOTE: This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-3f.  5) Press the "Cancel" key to stop the LED lighting. 6) Remove the cheater and close the Front Cover.

Clutch and Solenoid name (Diag. Code)	Confirmation procedure
Exit Clutch (DO-5b)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-5b. Upon hitting the "return" key, the operating noise of the clutch will be heard. 3) Press the "Cancel" key to stop the clutch. Combination test is as follows. NOTE: The exit roll rotates when the DO-0 and the DO-5b are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-0 and the DO-5b.  3) Confirm the Exit Roll rotation. 4) Press the "Cancel" key to stop the clutch. 5) Press the "▼" key to display the DO-0. 6) Press the "Cancel" key to stop the motor.
Duplex Fan (DO-5d)	NOTE:This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DO-5d. (The customer can confirm the fan noise only.)  5) Press the "Cancel" key to stop the test. 6) Remove the cheater and close the Front Cover.
Buzzer (DO-5F)	1) Turn on the power and enter the Diagnostic Mode. 2) Execute the DO-5F. 3) Check the Buzzer. 4) Press the "Cancel" key to stop the test.

Clutch and Solenoid name (Diag. Code)	Confirmation procedure
K Mode Solenoid (DO-61) (Color Mode Switching Solenoid)	NOTE:This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Open the Front Cover. 2) Remove the Cover Rear. 3) Remove the Cover Side R Assy. 4) Remove the Drive Assy K. 5) Cheat the Safety Interlock System. 6) Turn on the power and enter the Diagnostic Mode. 7) Execute the DO-61.  Zna02051KA 8) Check the K Mode SOLENOID movement. 9) Press the "Cancel" key to stop the test. 10) Replace the Safety Interlock System. 11) Replace the Drive Assy K. 12) Replace the Cover Side R Assy. 13) Replace the Cover Rear. 14) Close the Front Cover.

4.2 Print Info

Prints out the detailed printer settings and configuration information.

4.2.1 Executing Print Info

1) Turn off the power.
2) Turn on the power while holding down " ▲ " and " ▼ " keys.
3) Release the fingers from these keys when "Diagnosing..." is displayed.
4) The "Customer Mode" and "IOT Diag" are displayed. (Entered the Diag. mode.)
5) Press " ▼ " to select "Print Info", and then press " ✓ " key.
6) Press " ▲ " and " ▼ " key to select the item.
7) Press " ✓ " key twice to execute the setting.

NOTE

To exit the print or to returning to one step higher menu, press "CANCEL" key.

4.2.2 Config Page

The version of software of IOT and the printer configuration can be confirmed by executing this test.

4.2.3 Print Settings

The service tag, printing count value and error count value can be confirmed by executing this test.

4.3 Complete

Completes the diagnosis operation and reboot the data.

4.3.1 Executing Print Info

1) Turn off the power.
2) Turn on the power while holding down " ▲ " and " ▼ " keys.
3) Release the fingers from these keys when "Diagnosing..." is displayed.
4) The "Customer Mode" and "IOT Diag" are displayed. (Entered the Diag. mode.)
5) Press " ▼ " to select "Complete", and then press " ✓ " key.
6) Press " ✓ " key twice to execute the setting.

NOTE

To exit the operation or to returning to one step higher menu, press "CANCEL" key.

4.4 Installation Set

Specifies whether or not Alarm display of Toner residual quantity is performed.

4.4.1 Executing Installation Set

1) Turn off the power.
2) Turn on the power while holding down " ▲ " and " ▼ " keys.
3) Release the fingers from these keys when "Diagnosing..." is displayed.
4) The "Customer Mode" and "IOT Diag" are displayed. (Entered the Diag. mode.)
5) Press " ▼ " to select "Installation Set", and then press " ✓ " key twice.
6) Press " ▼ " key to select the ON or OFF.
7) Press " ✓ " key to execute the setting.

NOTE

To exit the test or to returning to one step higher menu, press "CANCEL" key.

4.5 Test Print

Print an internal test pattern of the printer. If paper jam or paper empty occurs during the print, the test waits until they are resolved.

4.5.1 Executing test print

1) Turn off the power.
2) Turn on the power while holding down " ▲ " and " ▼ " keys.
3) Release the fingers from these keys when "Diagnosing..." is displayed.
4) The "Customer Mode" and "IOT Diag" are displayed. (Entered the Diag. mode.)
5) Press " ▼ " key to select "Test Print", and then press " ✓ " key.
6) Press " ▲ " or " ▼ " key to select the test item.
7) Press " ✓ " key twice to execute the test.

NOTE

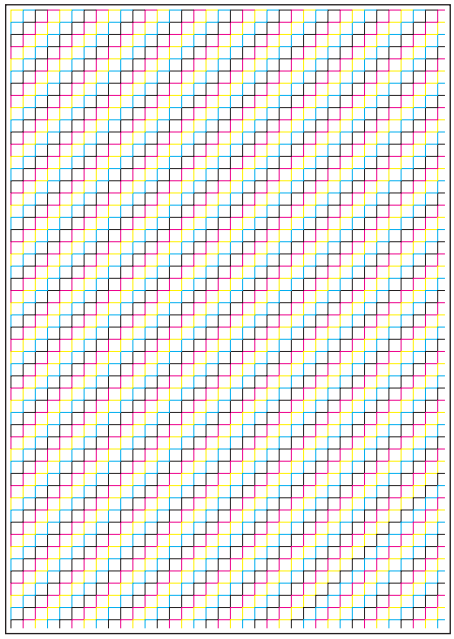
To exit the test or to returning to one step higher menu, press "CANCEL" key.

4.5.2 No Image [IOT]

Prints the blanked paper.

4.5.3 Test Pattern 600[IOT]

Prints the IOT built-in 600dpi pattern.
When the PQ problem occurred, this test enables to identify the problem as the printing process or the PWBA ESS related.
Compare the sample chart with the print.
Check result: NG (Check the printing process.)　OK (Check the PWBA ESS related.)



Kmy02001KA

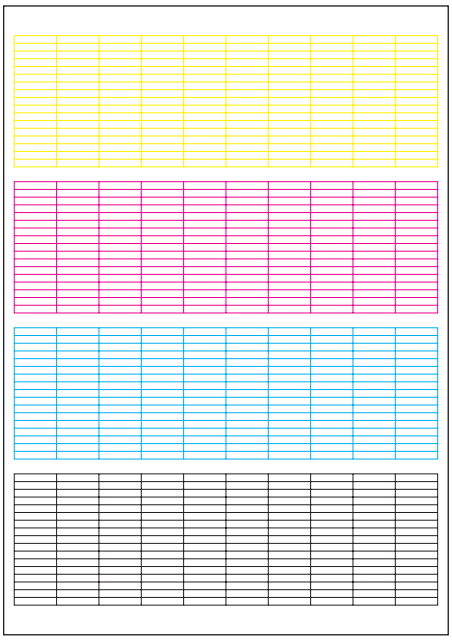
4.5.4 Grid2

Prints the ESS built-in grid pattern.

When the PQ problem occurred, this test enables to identify the problem as printer-related or otherwise.

Compare the sample chart with the print.

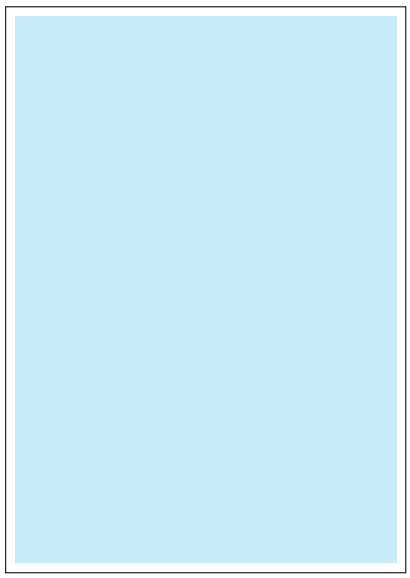
Check result: NG (Check the printing process and PWBA ESS-related.) OK (Check the network, cable, PC and so on.)



Leg_Sec02_004FA

4.5.5 Cyan 20%

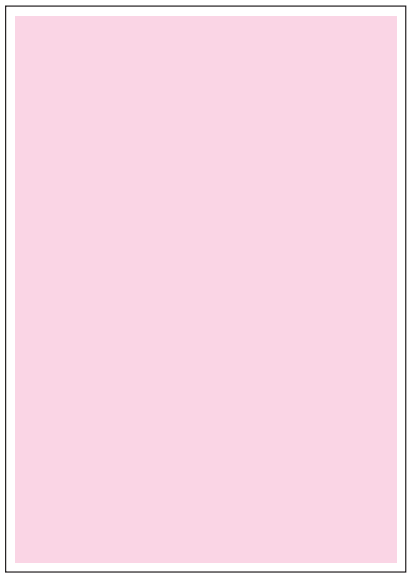
Outputs cyan 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the cyan toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the cyan toner-related.)　OK (Check another toner.)



Leg_Sec02_005FA

4.5.6 Magenta 20%

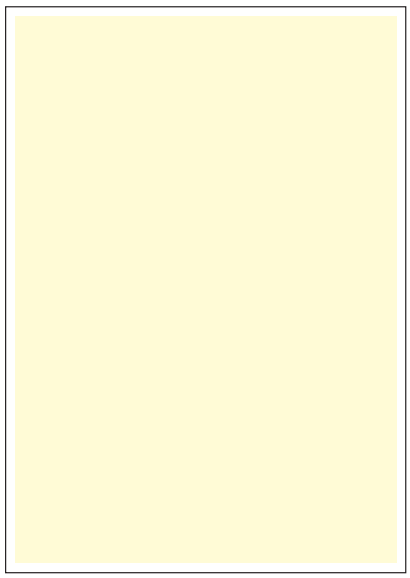
Outputs magenta 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the magenta toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the magenta toner-related.)　OK (Check another toner.)



Leg_Sec02_006FA

4.5.7 Yellow 20%

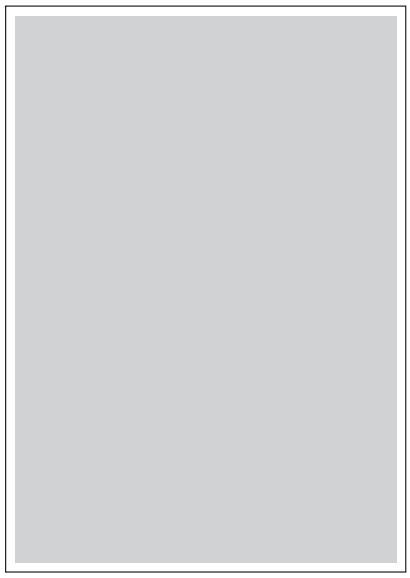
Outputs yellow 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the yellow toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the yellow toner-related.)　OK (Check another toner.)



Leg_Sec02_007FA

4.5.8 Black 20%

Outputs black 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the black toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the black toner-related.)　OK (Check another toner.)



Leg_Sec02_008FA

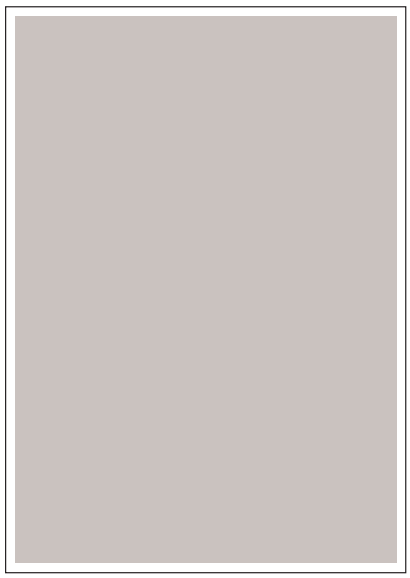
4.5.9 CMY 20%

Outputs C/M/Y 20% paint on the whole area of a A4 paper.

When the PQ problem occurred, this test enables to identify the problem as the balance of three color toners or otherwise.

Compare the sample chart with the print.

Check result: NG (Check the yellow, magenta or cyan toner-related.)　OK (Check black toner.)



Leg_Sec02_009FA

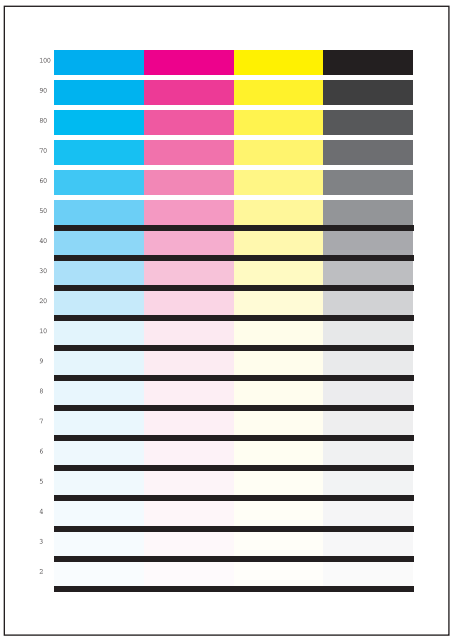
4.5.10 Gradation

Outputs the tone pattern from 2% to 100% on a A4 paper for each of 4 colors.

When the PQ problem occurred, this test enables to identify the problem as the printing process or PWBA ESS-related.

Compare the sample chart with the print.

Check result: NG (Check the printing process.)　OK (Check the PWBA ESS-related.)



Leg_Sec02_010FA

4.5.11 Toner Pallet Check

Outputs each 100% density color pattern of Y/M/C/K.

When the PQ problem occurred in the picture or photo printing, this test enables to identify the problem as the toner or another.

Compare the sample chart with the print.

Check result: NG (Check the problem toner-related.)　OK (Check the print job or print data.)

Leg_Sec02_011FA

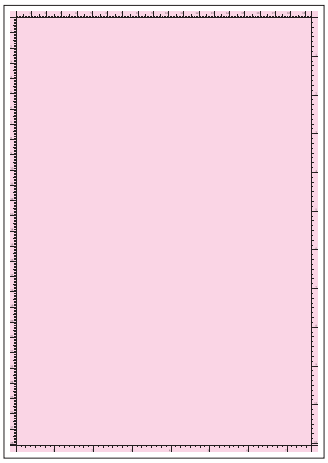
4.5.12 Contamination Check

Allows you to check the print for any regular lines or toner spots when encountering PQ problems. From the difference in the interval of regular lines or spots, you can determine the parts that have caused the trouble.

Page 1 to 4: Prints the scale patterns in vertical and horizontal directions for evaluating regularity and intervals.

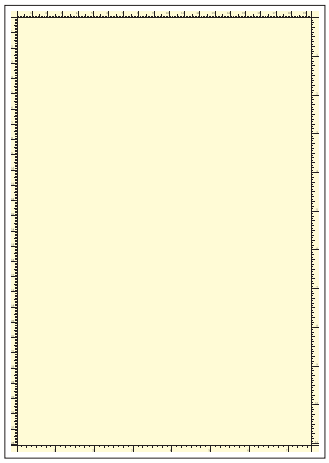
Page 5: Prints the list of intervals by component fault.

Page 1



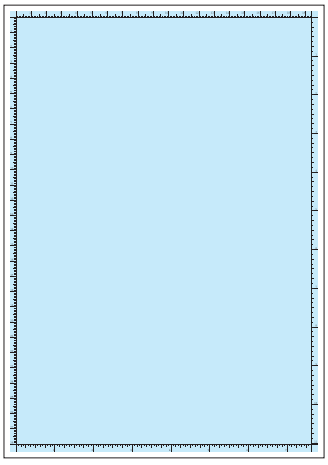
Wsb02028KA

Page 2



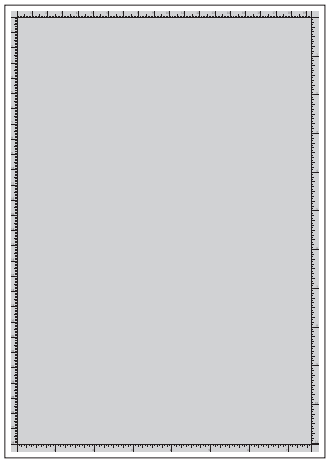
Wsb02027KA

Page 3



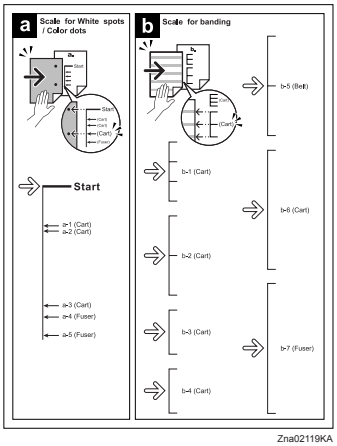
Wsb02029KA

Page 4



Wsb02030KA

Page 5



Zna02119KA

4.5.13 Parameter Setting

This function reads/writes the following parameters stored in the printer.

Item	Range	Description
Slow Scan Reg K to P	-128 to 127	Sets the registration in the paper feeding direction.
Slow Scan Reg 600 M,Y,C	-30 ~ 30	
Slow Scan Reg1200 M,Y,C	-60 ~ 60	
Fast Scan Reg K to M, Y or C	-30 ~ 30	Sets the registration in the scanning direction.
Fast Scan Reg MPF, Tray1, Tray2 or Duplex	-30 ~ 30	
Fast Scan Reg2 KtoM , Y or C	-1 ~ 2	
Life Counter	-	Reads the life counter and the printer.

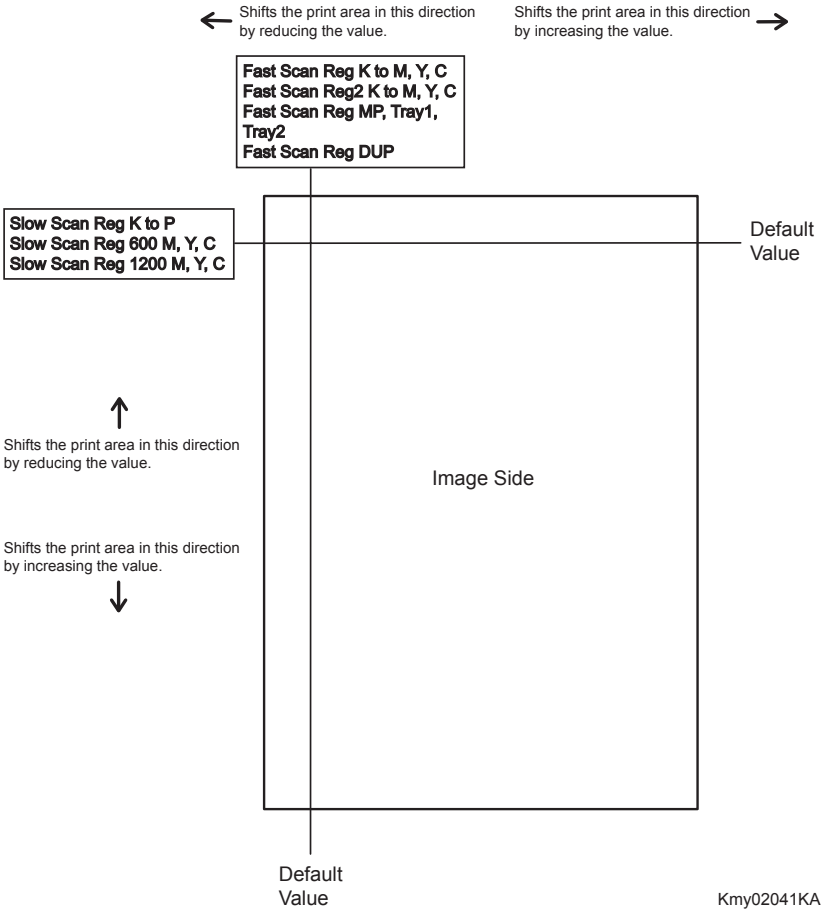
NOTE

Print the parameter list using the Print function of Parameter Menu in diagnosis before changing the value of the registration.

Parameter	Function	Default	Adjustable range
Slow Scan Reg K to P (Shifts 0.17mm/1count)	Black registration adjustment	--	-128 to 127
Slow Scan Reg 600 M,Y,C (Shifts 0.042mm/1count)	Color registration adjustment (600 and 1200 dpi)	--	-30 to 30
Slow Scan Reg1200 M,Y,C (Shifts 0.021mm/1count)			-60 to 60
Fast Scan Reg K to M, Y or C (Shifts 0.042mm/1count)	Color registration adjustment Calculation of adjustment is shown below. (exp. Yellow) (Value of Fast Scan Reg K to Y + Value of Fast Scan Reg2 K to Y)/4	--	-30 to 30
Fast Scan Reg2 K to M, C or Y (Shifts 0.01mm/1count)		--	-1 to 2
Fast Scan Reg MPF, Tray1 or Tray2 (Shifts 0.17mm/1count)	Black registration adjustment at side 1 print	--	-30 to 30
Fast Scan Reg Dup (Shifts 0.17mm/1count)	Black registration adjustment at side 2 print	--	-30 to 30

NOTE

The default values are different in each printer.



Reference Counter Values

NOTE

These counter values are reference only. Do not use as the official value.

Counter Name	Value of life warning
Life Y Toner (Dispense time)	-
Life M Toner (Dispense time)	-
Life C Toner (Dispense time)	-
Life K Toner (Dispense time)	-
Life DTB (Transfer Belt) 1 (Paper feeding count)	100000
Life Fuser (Paper feeding count)	100000
Life Printer (Paper feeding count)	-
Life DTB (Transfer Belt) 2 (Waste Toner cleaning count)	120000
Life DTB (Transfer Belt) 3 (Cycle count)	14000000
Life Y Waste Toner (Waste Toner cleaning count)	18000
Life M Waste Toner (Waste Toner cleaning count)	18000
Life C Waste Toner (Waste Toner cleaning count)	18000
Life K Waste Toner (Waste Toner cleaning count)	18000
Life Y Developer (Cycle count)	2500000
Life M Developer (Cycle count)	2500000
Life C Developer (Cycle count)	2500000
Life K Developer (Cycle count)	2500000
Life Y Drum (Cycle count)	3500000
Life M Drum (Cycle count)	3500000
Life C Drum (Cycle count)	3500000
Life K Drum (Cycle count)	3000000
Life MPF Feed	-
Life Tray 1 Feed	-
Life Duplex Feed	-
Print	-

4.5.14 Printing the parameter list

This function prints the parameter values and life counter values stored in the IOT.

5. How to use Customer Engineer Diag. (CE Diag. Tool Operation)

5.1 Operating environment

CE Diag. runs under the OS (Operating System) environment described below:
Windows 2000/XP/Server 2003/Vista/Server 2008

NOTE

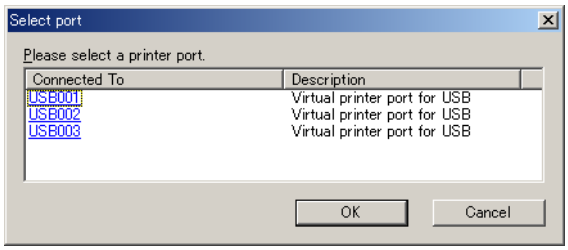
Confirm the specification of PC before using the CE Diag. because each CE Diag. tool for 64 bit PC and for 32 bit PC exists.

5.2 Connection method

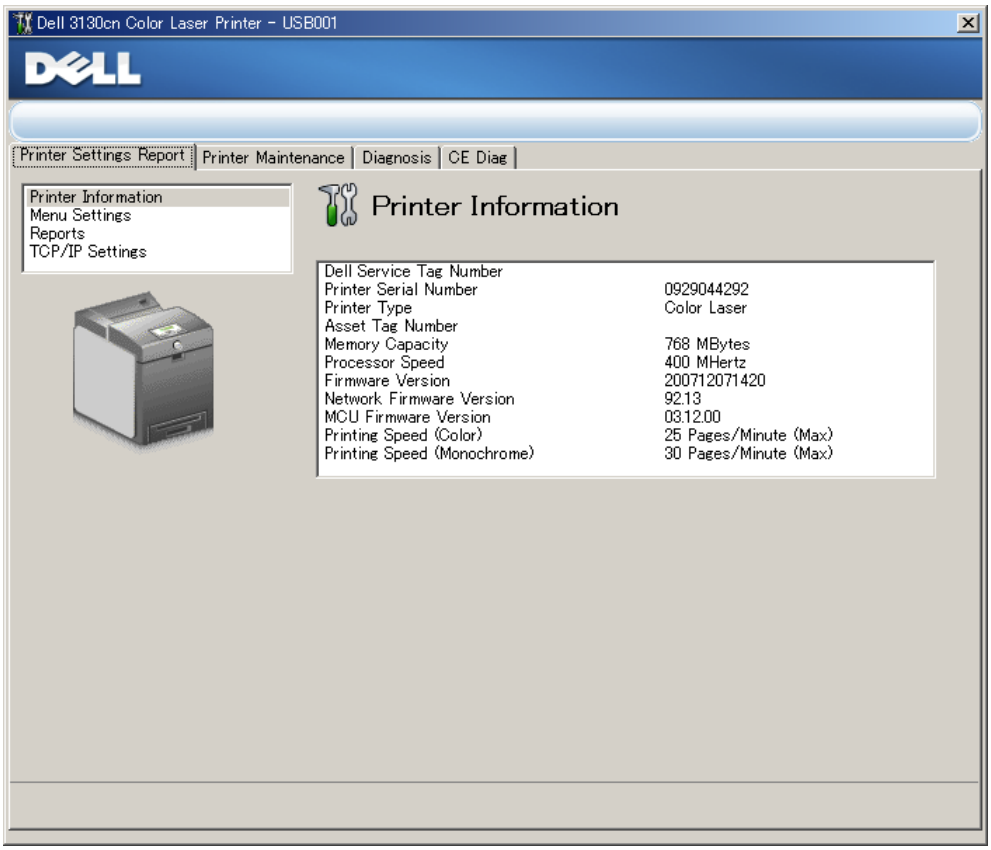
Standalone connection: Connection with a standard USB connector cable

5.3 Activation and termination of the CE Diag.

1) The Select port screen appears on the display when the icon () is double-clicked.



2) CE Diag. screen appears on the display when the [OK] is clicked.



NOTE

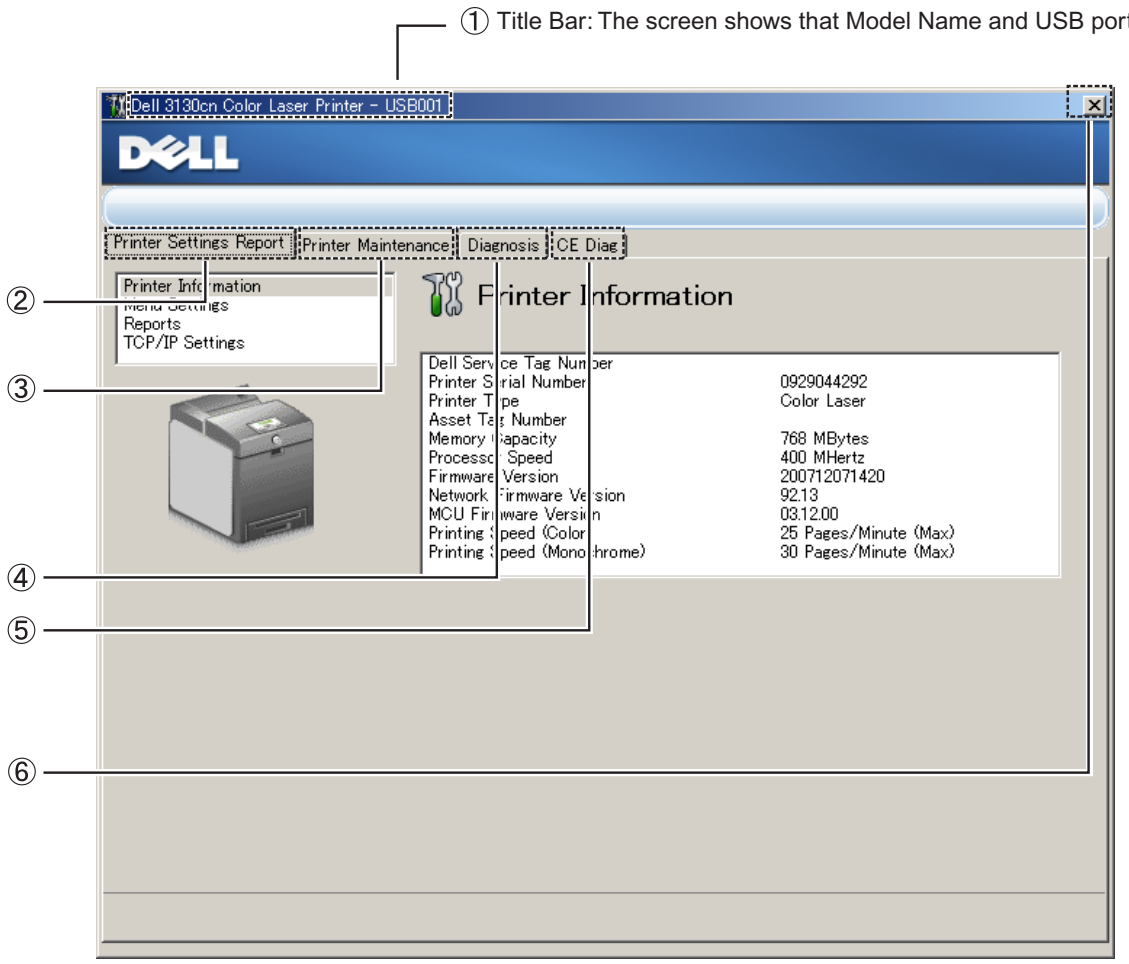
In the case where the power to the printer stays OFF when activating the CE Diag. or where the power to the printer is turned OFF while the CE Diag. is running, the tool cannot be used giving the error message shown below:

NOTE

To execute the CE Diag. menu, the CE Diag. requires entry of user password once. Under the default setting, no password is set. However, when the menu cannot be executed, the user-specified password needs to be entered.

3) To terminate the CE Diag., the message screen appears on the display when the CLOSE button at the upper right of the screen is clicked. CE Diag. is terminated when the [OK] is clicked on the message screen.

5.4 Explanation of the CE Diag. screen



② Printer Setting Report: Indicates the settings for the printer set items, and prints put the settings' description.

③ Printer Maintenance: Changes the settings for the printer set items.

④ Diagnosis: Outputs the test charts incorporated in the printer, and checks the functions.

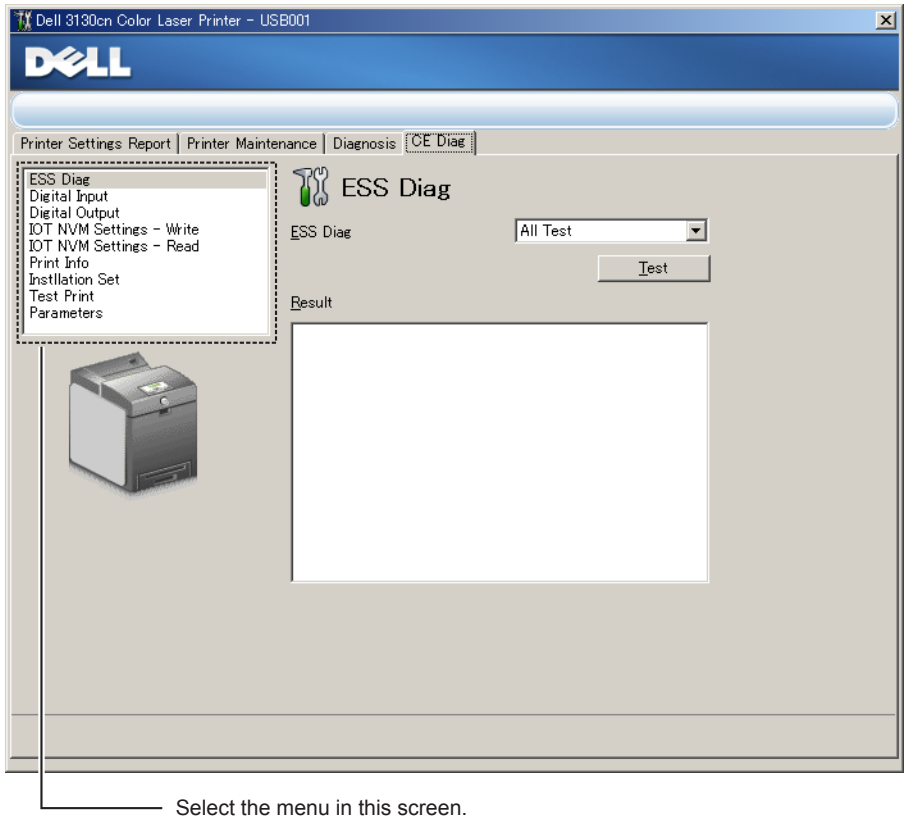
NOTE: The aforementioned three tools refer to the operation explanation about the [Tool Box] given in the User Guide.

⑤ CE Diag.: Checks the operation of internal parts of the printer, prints out the printer information, changes the adjusted values, and implements other functions.

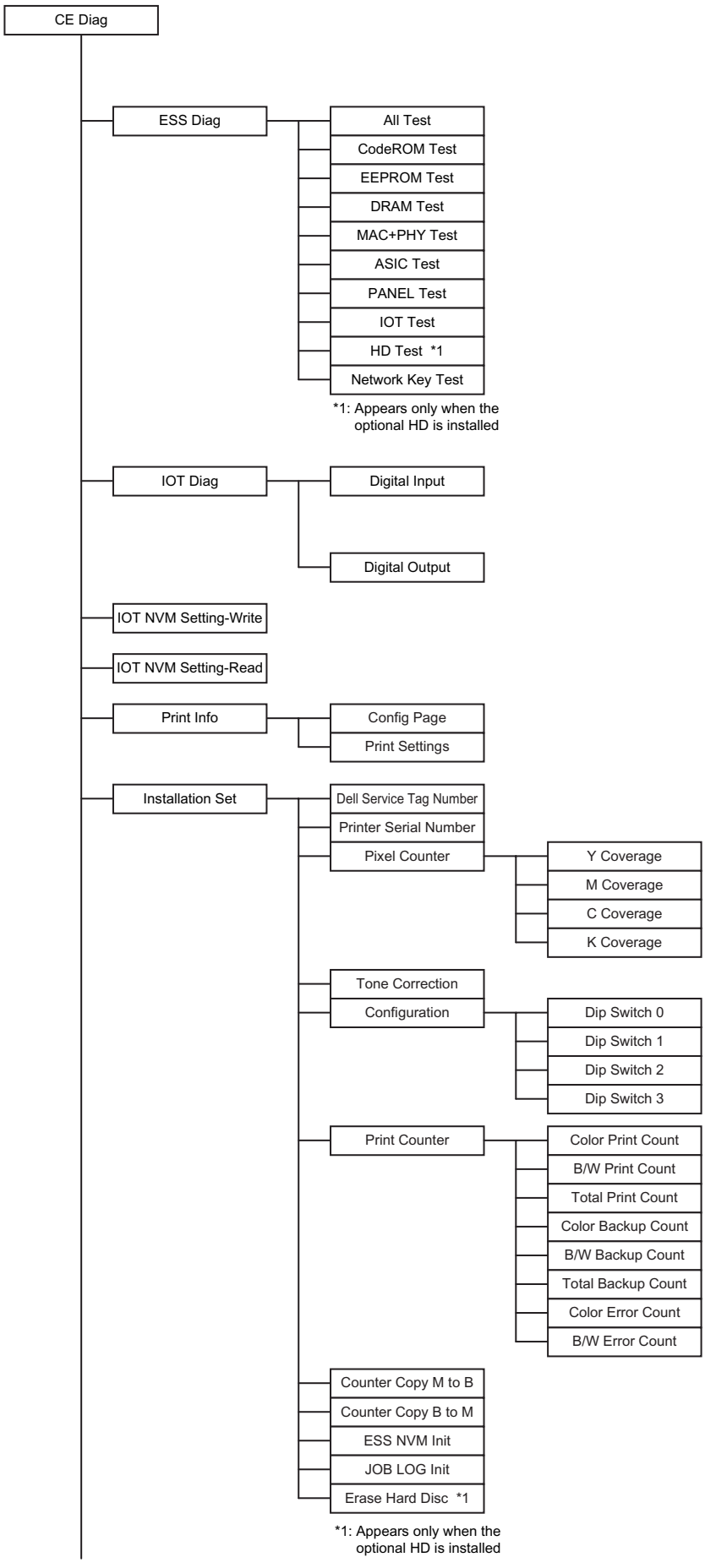
⑥ The CE Diag screen is closed by clicking this box.

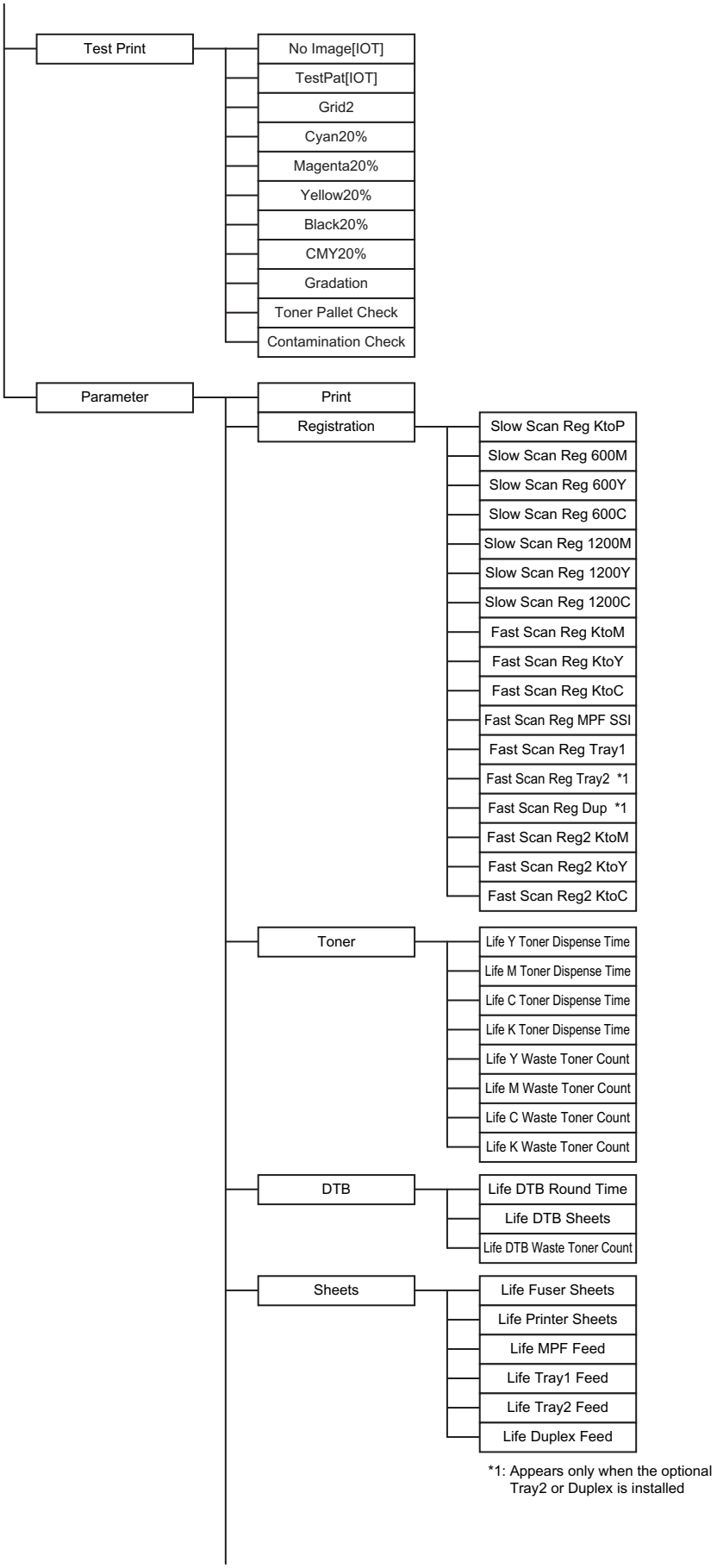
5.5 Selecting CE Diag. item

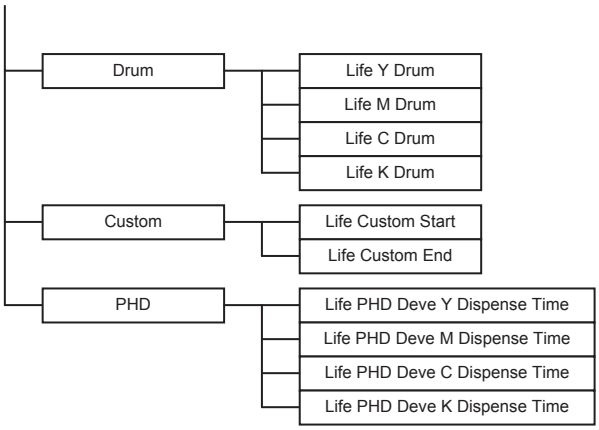
CE Diag. screen appears on the display when the [CE Diag.] tab is clicked.



5.6 CE Diag. mode menu tree



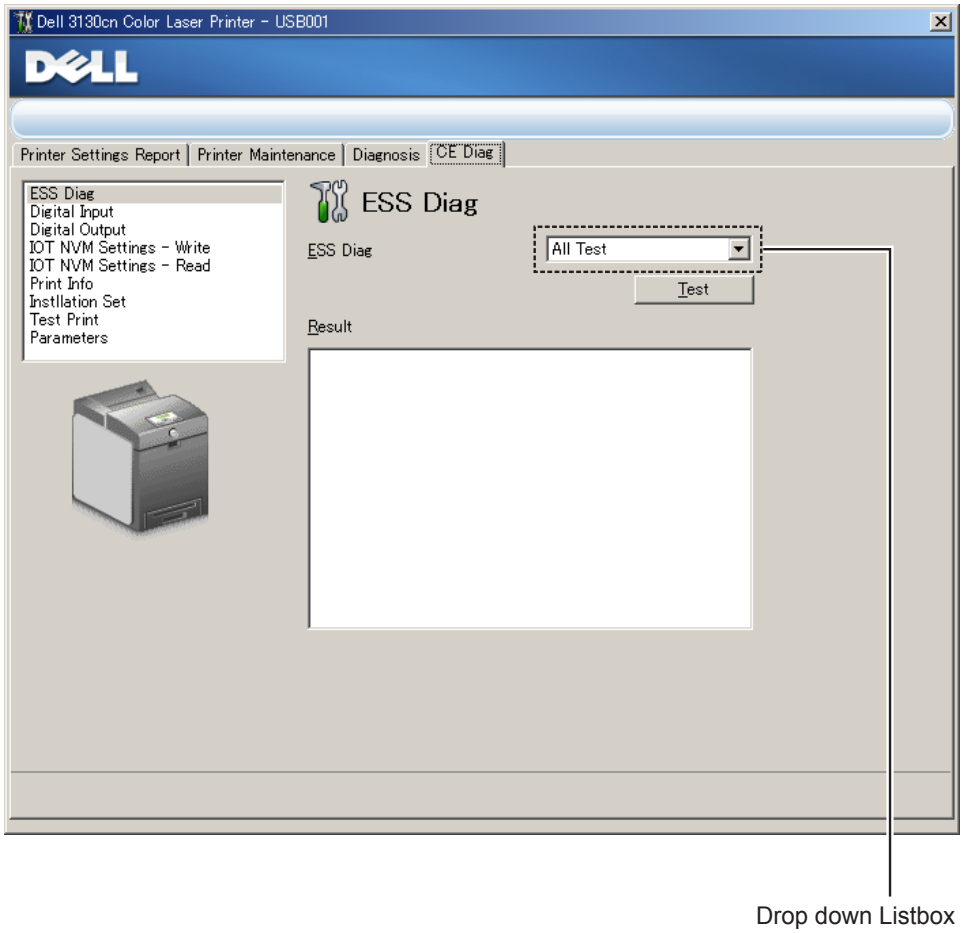

Test Print
No Image[IOT]
TestPat[IOT]
Grid2
Cyan20%
Magenta20%
Yellow20%
Black20%
CMY20%
Gradation
Toner Pallet Check
Contamination Check
Parameter
Print
Registration
Slow Scan Reg KtoP
Slow Scan Reg 600M
Slow Scan Reg 600Y
Slow Scan Reg 600C
Slow Scan Reg 1200M
Slow Scan Reg 1200Y
Slow Scan Reg 1200C
Fast Scan Reg KtoM
Fast Scan Reg KtoY
Fast Scan Reg KtoC
Fast Scan Reg MPF SSI
Fast Scan Reg Tray1
Fast Scan Reg Tray2 *1
Fast Scan Reg Dup *1
Fast Scan Reg2 KtoM
Fast Scan Reg2 KtoY
Fast Scan Reg2 KtoC
Toner
Life Y Toner Dispense Time
Life M Toner Dispense Time
Life C Toner Dispense Time
Life K Toner Dispense Time
Life Y Waste Toner Count
Life M Waste Toner Count
Life C Waste Toner Count
Life K Waste Toner Count
DTB
Life DTB Round Time
Life DTB Sheets
Life DTB Waste Toner Count
Sheets
Life Fuser Sheets
Life Printer Sheets
Life MPF Feed
Life Tray1 Feed
Life Tray2 Feed
Life Duplex Feed
*1: Appears only when the optional Tray2 or Duplex is installed


Drum
Life Y Drum
Life M Drum
Life C Drum
Life K Drum
Custom
Life Custom Start
Life Custom End
PHD
Life PHD Deve Y Dispense Time
Life PHD Deve M Dispense Time
Life PHD Deve C Dispense Time
Life PHD Deve K Dispense Time

6. The Kind of CE Diag. and Contents of a Test (CE Diag. Tool Operation)

6.1 ESS Diag

The following screen appears on the display when the ESS Diag. is selected. Menus can be selected from the drop down listbox. To execute a test, the [Test] button on the screen should be clicked. Test results are displayed on the [Result] excluding the [MAC+PHY Test] and [Panel Test] results.



NOTE

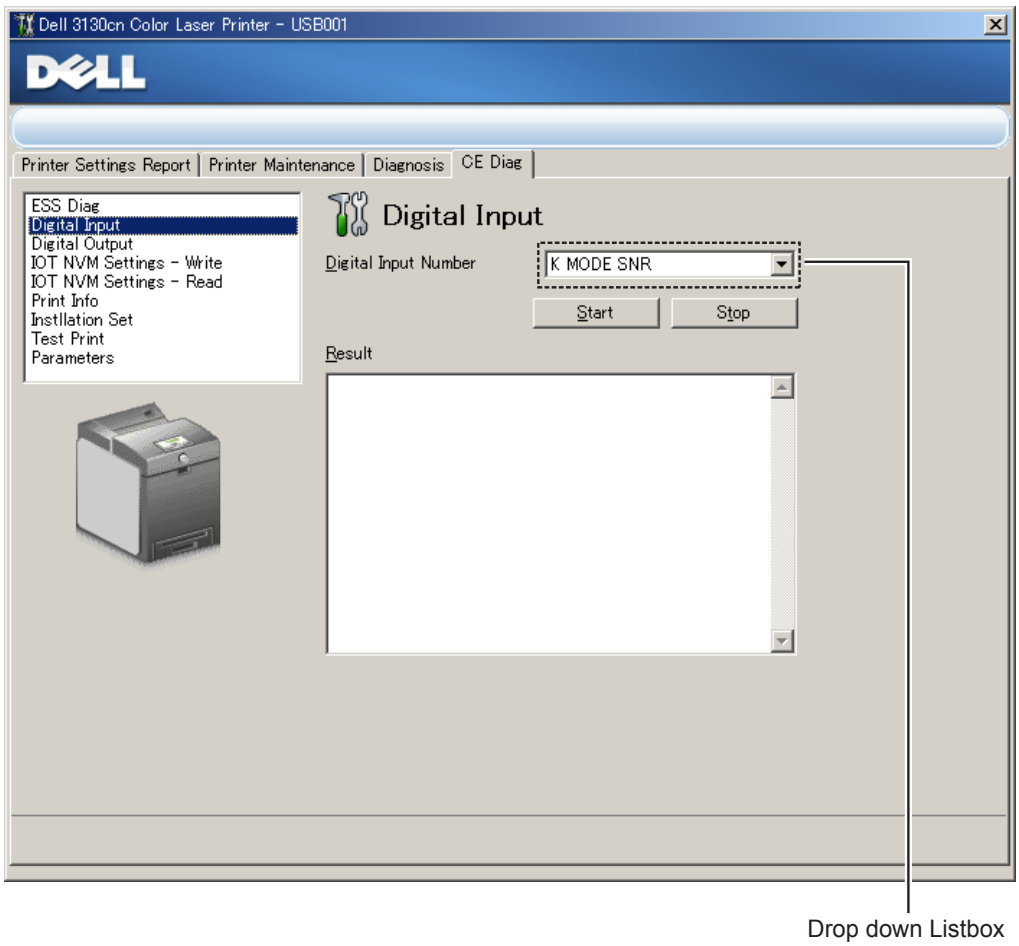
Do not open and shut the front cover, execute the print, and click the button on the Diag screen while executing ESS Diag.

Item	Function
All Test	This test executes the all tests of the ESS diagnostic except the MAC+PHY test and PANEL test.
Code ROM Test	Calculates the ROM checksum and compares it with the value stored in the ROM. Executes this test when the 016-317 error occurred. Test result: NG (Go to FIP.) OK (Turn off/on the main power.)
EEP ROM Test	Performs write/read/verify on the diag. area of the EEPROM. Executes this test when the 016-327 and 016-323 errors occurred. Test result: NG (Go to each FIP.) OK (Turn off/on the main power.)
DRAM Test	Tests OPEN/SHORT with the address line of the DRAM. Performs write/read/verify on the entire DRAM. Executes this test when the 016-315 and 016-700 errors occurred. Test result: NG (Go to each FIP.) OK (Turn off/on the main power.)

<table>
<tr><th>Item</th><th>Function</th></tr>
<tr><td>MAC+PHY Test</td><td>PHY Internal loopback test.
Executes this test when the 016-340, 016-344, 016-345, 016-346 and 016-347 errors occurred.
Test result: NG (Go to each FIP.) OK (Turn off/on the main power.)
MAC: Media Access Control
PHY: Physical Layer</td></tr>
<tr><td>ASIC Test</td><td>ASIC Register check.
Executes this test when the 016-313 error occurred.
Test result: NG (Go to FIP.) OK (Turn off/on the main power.)</td></tr>
<tr><td>PANEL Test</td><td>Tests the LEDs and buttons of the control panel.
This test checks input and output of the control panel. When buttons are pressed in the manner shown in the following table, the test displays the corresponding contents on the LED and LCD.
<table>
<tr><th>Button</th><th>LED</th><th>LCD</th></tr>
<tr><td>▲</td><td>■■</td><td>Displays “ UP ” on the LCD.</td></tr>
<tr><td>▼</td><td>■■</td><td>Displays “ DOWN ” on the LCD.</td></tr>
<tr><td>◀</td><td>■□</td><td>Displays “ LEFT ” on the LCD.</td></tr>
<tr><td>▶</td><td>■□</td><td>Displays “ RIGHT ” on the LCD.</td></tr>
<tr><td>✓</td><td>□■</td><td>Displays “ SET ” on the LCD.</td></tr>
<tr><td>MENU</td><td>□■</td><td>Displays “ MENU ” on the LCD.</td></tr>
<tr><td>CANCEL</td><td>□□</td><td>Displays “ CANCEL ” on the LCD.</td></tr>
<tr><td>▲ ▼ pressed at the same time</td><td>- (The test is completed)</td><td>Displays “ Start ” on the LCD.</td></tr>
</table>
□□ Indicates left side square is the Ready LED (Green) and right side square is the Alarm LED (Amber). □Not lighting ■Lighting</td></tr>
<tr><td>IOT Test</td><td>Communication test with the IOT.
Executes this test when the 016-370 error occurred.
Test result: NG (Go to FIP.) OK (Turn off/on the main power.)</td></tr>
<tr><td>HD Test</td><td>Checks whether the optional HD is inserted or not, and then executes the Device Diagnostic Command.
Executes this test when the 016-312 error occurred.
Test result: NG (Go to FIP.) OK (Turn off/on the main power.)</td></tr>
<tr><td>Network Key Test</td><td>Diagnosis whether there is failures or not in the interface with the H/W key (Network Protocol Adapter).
NOTE: Check to be sure that the printer is installed with the optional Network key before starting testing.
Executes this test when the 016-365 error occurred.
Test result: NG (Go to FIP.) OK (Turn off/on the main power.)</td></tr>
</table>

6.2 Digital Input

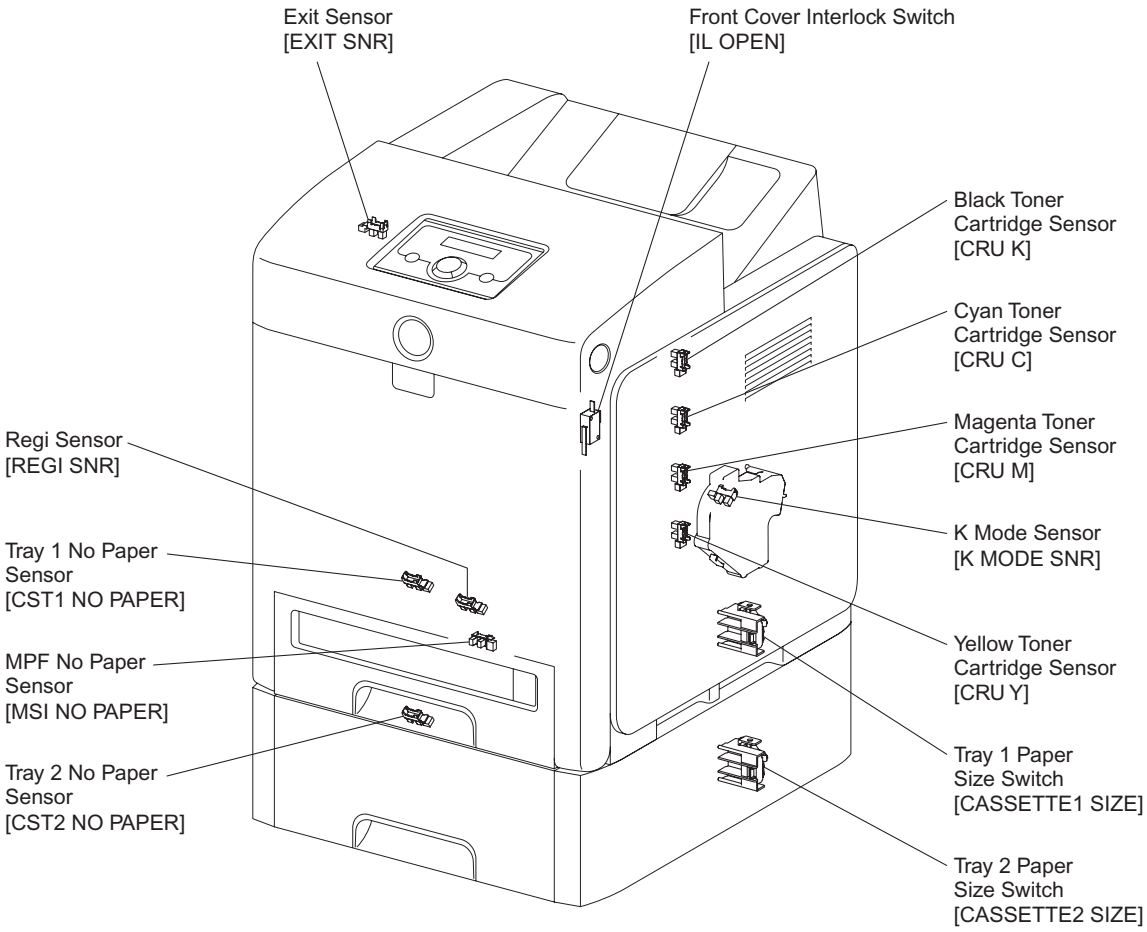
This function checks whether the DI components operate normally or not. The DI test is performed for all the DI components. A component should be selected from the drop down listbox. [Start] button shown on the screen should be clicked. [LOW] or [HIGH] is displayed on the [Result] screen. The component operation is checked in such a way that the component status is changed from [LOW] to [HIGH] and vice versa by operating the actuator or opening/closing the door. To stop the operation, the [Stop] button on the screen should be clicked.



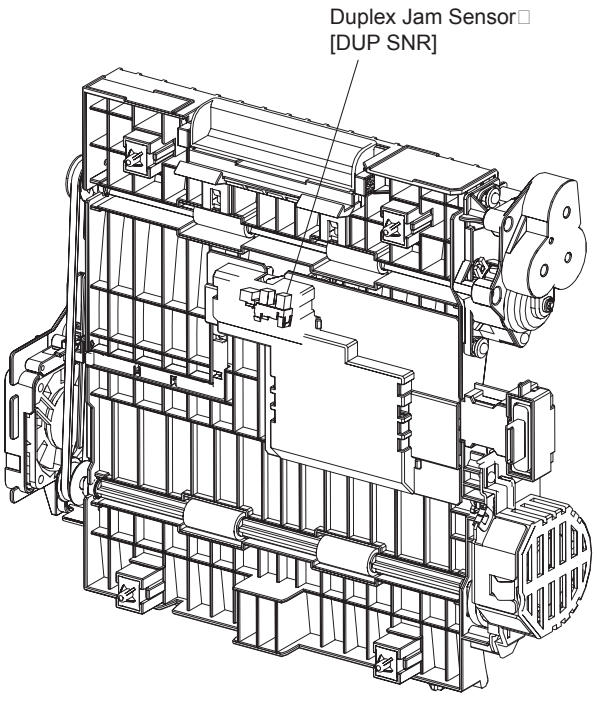
Items for the Digital Input Test are as follows.

Item
K MODE SNR
DUP SNR
EXIT SNR
REGI SNR
IL OPEN
CRU Y
CRU M
CRU K
CRU C
CST2 LOW PAPER(Not Used)
CST2 NO PAPER
DUP FAN ALARM(Not Used)

Item
FDR MOTOR ALM(Not Used)
MSI NO PAPER
CST1 NO PAPER
MAI MOTOR ALM(Not Used)
SUB MOT ALM(Not Used)
OHP SNR (Not Used)
FAN ALM (Not Used)
PH MOTOR ALM (Not Used)
DEVE MOTOR ALM(Not Used)
CASSETTE1 SIZE
CASSETTE2 SIZE



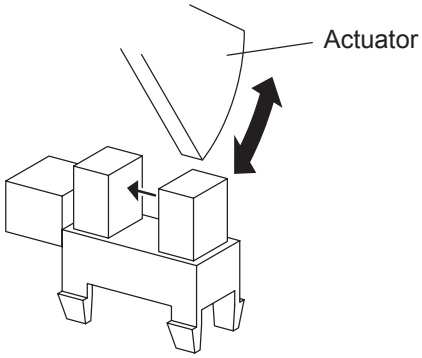
Zna02115KB



Zna02118KB

- About Sensor

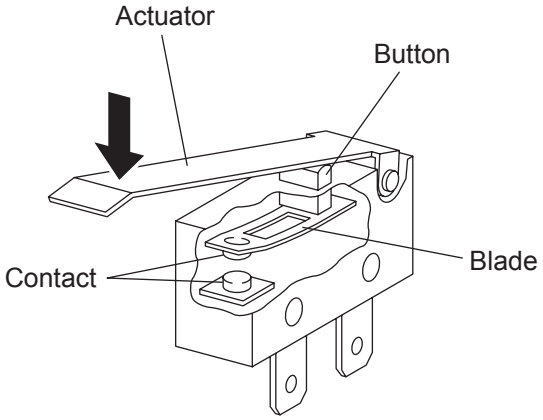
A transmissive type sensor is composed of the light-emitting side and the light-receiving side that are placed opposite to each other allowing the light to pass from the former to the latter. On the basis of whether or not the light path is blocked due to the actuator, etc., the sensor detects the paper absence/presence or the moving part position such as at the home position or elsewhere.



Leg_Sec02_016FA

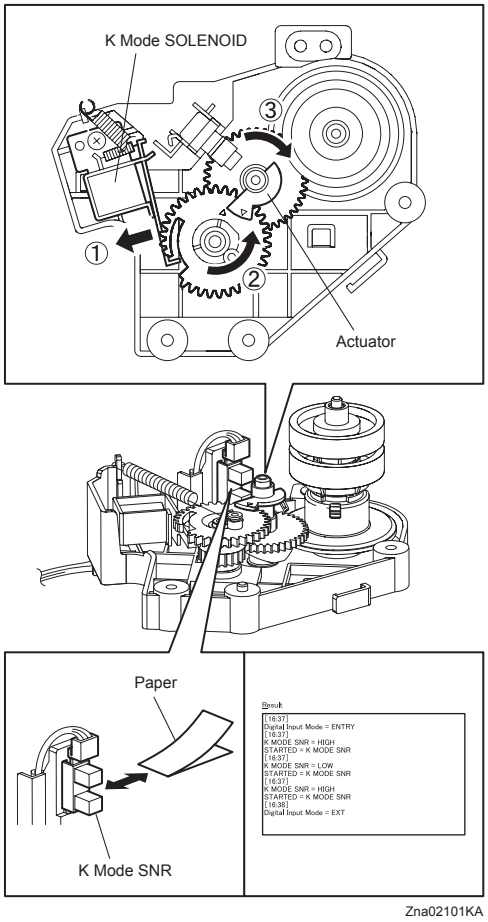
- About Switch

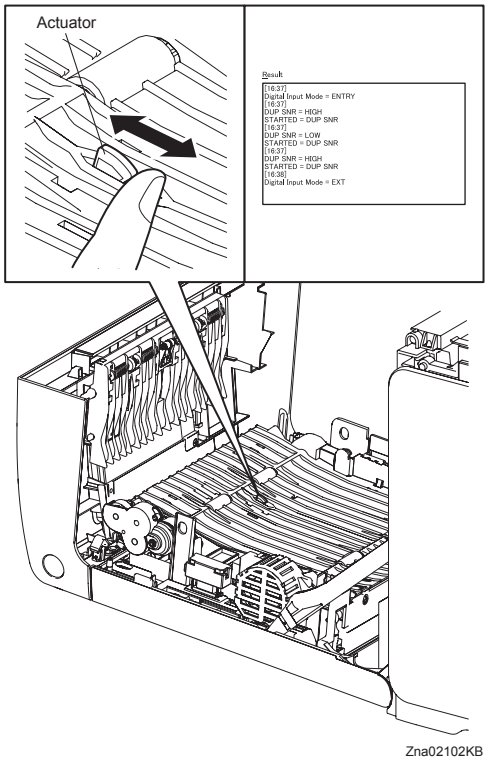
A micro-switch closes the internal contacts via the button which is pushed down under the provided leaf spring which is held down by the actuator of the cover or door that is being closed. When the door or cover has being opened, the leaf spring returns to its original position and the button is pushed up by the spring in the switch, allowing the internal contacts to open.

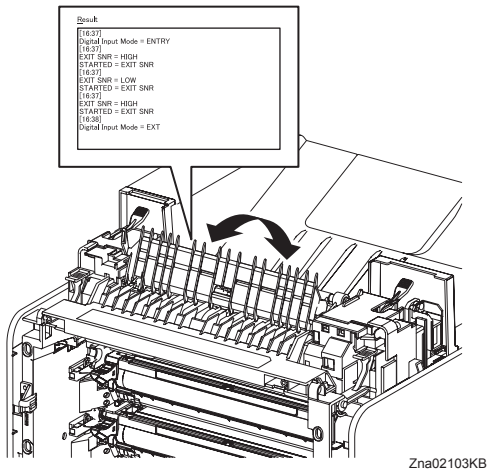
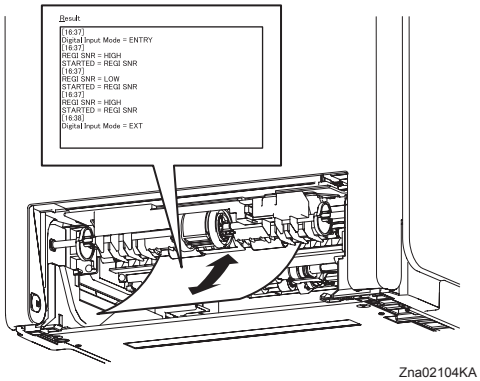


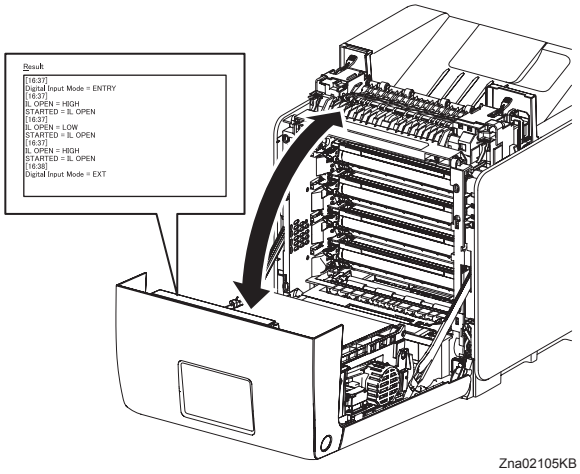
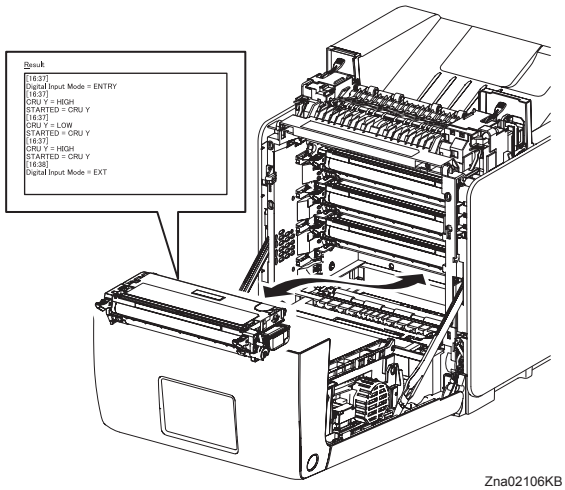
Leg_Sec02_018FA

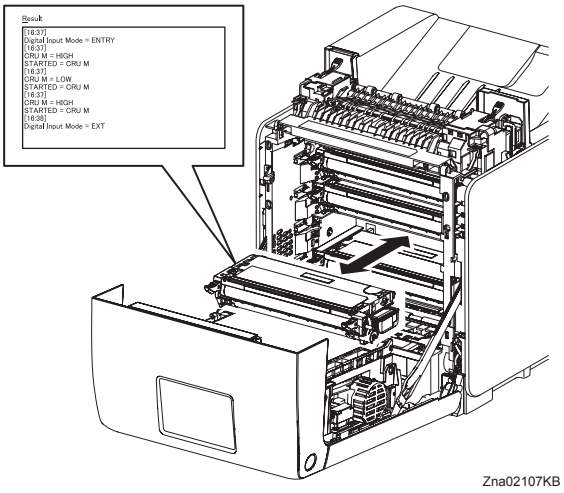
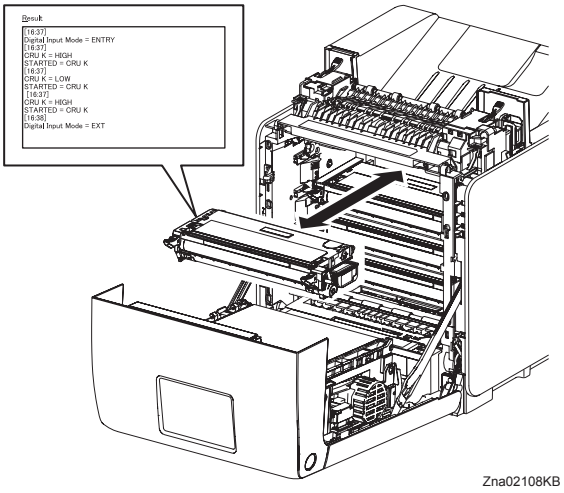
-Checking the Sensor and Switch

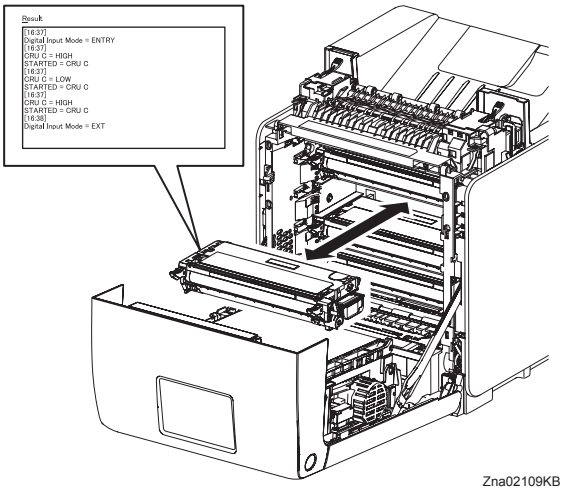
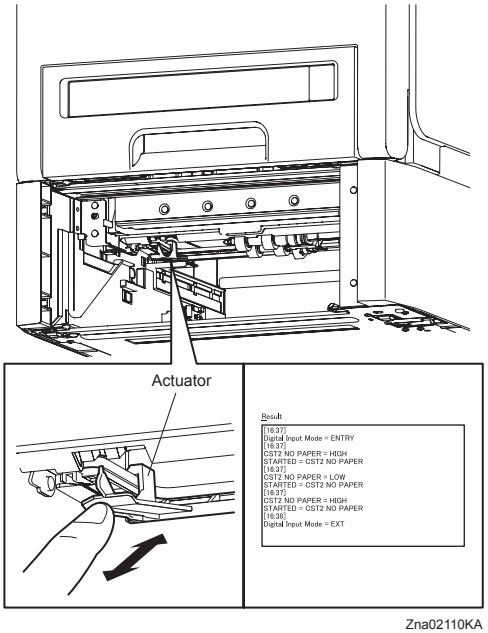
Item	Confirmation procedures
K MODE SNR (Color Mode Switching Sensor)	NOTE:This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Execute the K MODE SNR. 3) Open the Front Cover. 4) Remove the Cover Rear. 5) Remove the Cover Side R Assy. 6) Remove the Drive Assy K. 7) Press the lever mounted on the Solenoid to retract the actuator from the sensor. 8) Check the sensor.  Zna02101KA 9) Click the Stop button to stop the test. 10) Replace the Drive Assy K. 11) Replace the Cover Side R Assy. 12) Replace the Cover Rear. 13) Close the Front Cover.

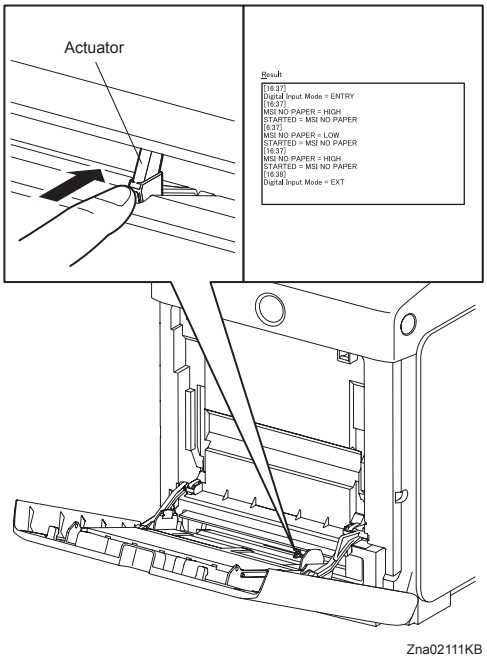
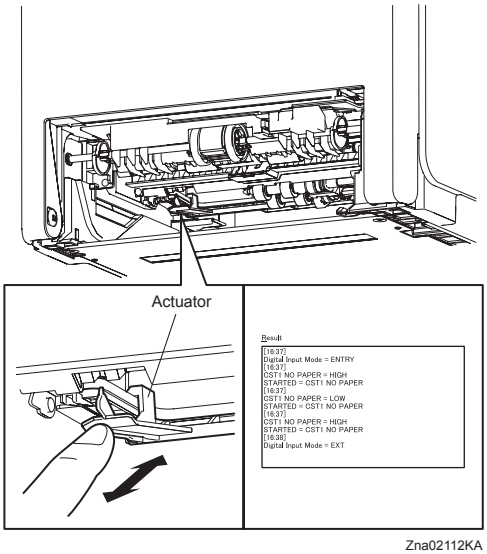
Item	Confirmation procedures
DUP SNR	NOTE:When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Execute the DUP SNR. 3) Open the Front Cover. 4) Remove the Transfer Belt. 5) Check the sensor.  6) Click the stop button to stop the test. 7) Replace the Transfer Belt. 8) Close the Front Cover.

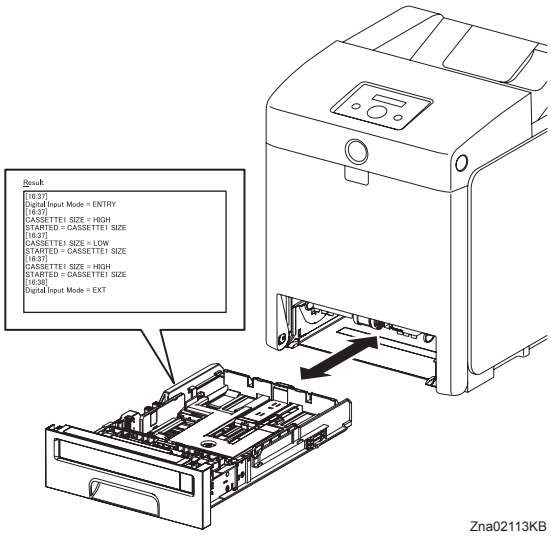
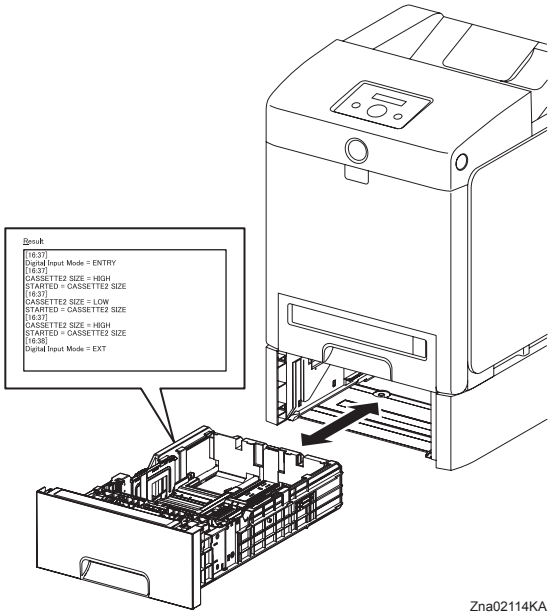
Item	Confirmation procedures
EXIT SNR	NOTE: Fuser is very hot, so pay sufficient attention at work to above burns, etc. 1) Turn on the power and enter the CE Diag. 2) Execute the EXIT SNR. 3) Open the Front Cover. 4) Check the sensor.  Zna02103KB 5) Click the stop button to stop the test. 6) Close the Front Cover.
REGI SNR	1) Turn on the power and enter the CE Diag. 2) Execute the REGI SNR. 3) Remove the 250 paper cassette. 4) Insert the paper into the paper path of the Regi assy.  Zna02104KA 5) Click the stop button to stop the test. 6) Replace the 250 paper cassette.

Item	Confirmation procedures
IL OPEN	1) Turn on the power and enter the CE Diag. 2) Execute the IL OPEN. 3) Check the Switch  Zna02105KB 4) Click the stop button to stop the test. 5) Close the Front Cover.
CRU Y	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Execute the CRU Y. 3) Open the Front Cover 4) Check the Sensor.  Zna02106KB 5) Click the stop button to stop the test. 6) Close the Front Cover.

Item	Confirmation procedures
CRU M	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Execute the CRU M. 3) Open the Front Cover 4) Check the Sensor.  Zna02107KB 5) Click the stop button to stop the test. 6) Close the Front Cover.
CRU K	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Execute the CRU K. 3) Open the Front Cover 4) Check the Sensor.  Zna02108KB 5) Click the stop button to stop the test. 6) Close the Front Cover.

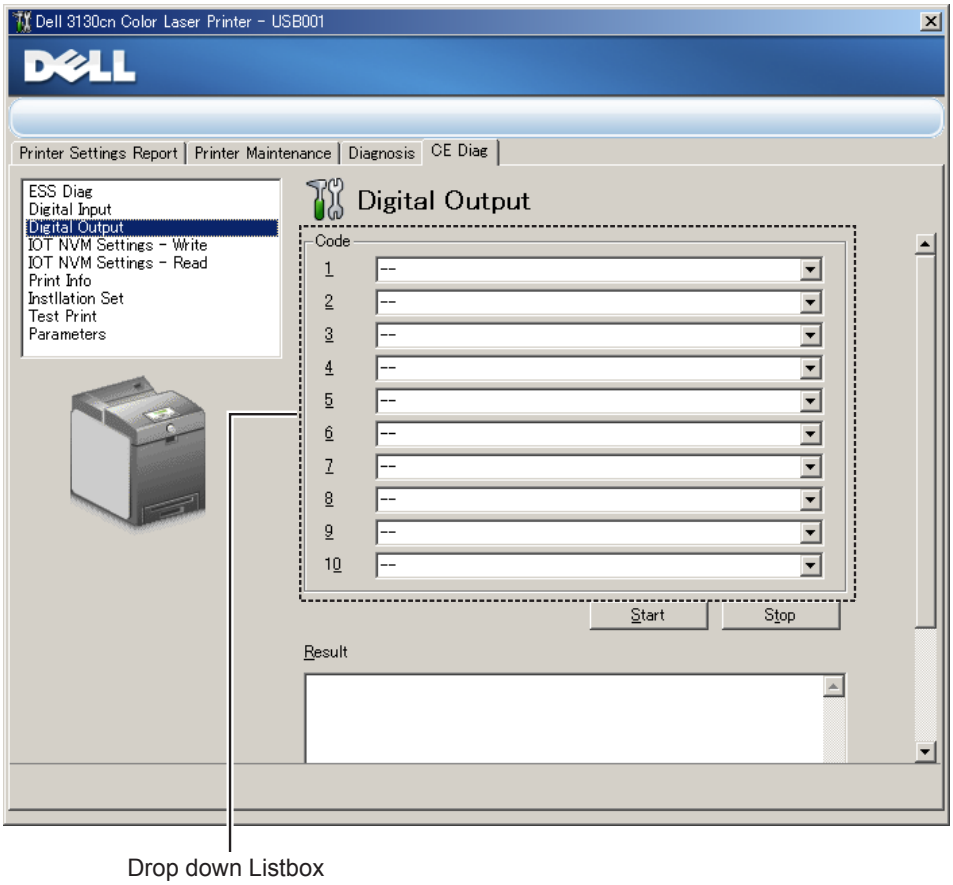
Item	Confirmation procedures
CRU C	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Execute the CRU C. 3) Open the Front Cover 4) Check the Sensor.  Zna02109KB 5) Click the stop button to stop the test. 6) Close the Front Cover.
CST2 NO PAPER	NOTE: The no peper senser is in the option feeder. 1) Turn on the power and enter the CE Diag. 2) Execute the CST2 NO PAPER. 3) Remove the Paper Cassette. 4) Check the Sensor.  Zna02110KA 5) Click the stop button to stop the test. 6) Replace the paper cassette.

Item	Confirmation procedures
MSI NO PAPER	NOTE: Remove the paper of the MPF before executing the test. 1) Turn on the power and enter the CE Diag. 2) Execute the MSI NO PAPER. 3) Open the MPF Cover. 4) Check the sensor.  Zna02111KB 5) Click the stop button to stop the test. 6) Close the MPF Cover.
CST1 NO PAPER	1) Turn on the power and enter the CE Diag. 2) Execute the CST1 NO PAPER. 3) Remove the paper cassette. 4) Check the sensor.  Zna02112KA 5) Click the stop button to stop the test. 6) Replace the paper cassette.

Item	Confirmation procedures
CASSETTE 1 SIZE	1) Turn on the power and enter the CE Diag. 2) Execute the CASSETTE 1 SIZE. 3) Check the switch.  4) Click the stop button to stop the test. 5) Replace the paper cassette.
CASSETTE 2 SIZE	NOTE: The size switch is in the option feeder. 1) Turn on the power and enter the CE Diag. 2) Execute the CASSETTE 2 SIZE. 3) Check the switch.  4) Click the stop button to stop the test. 5) Replace the paper cassette.

6.3 Digital Output

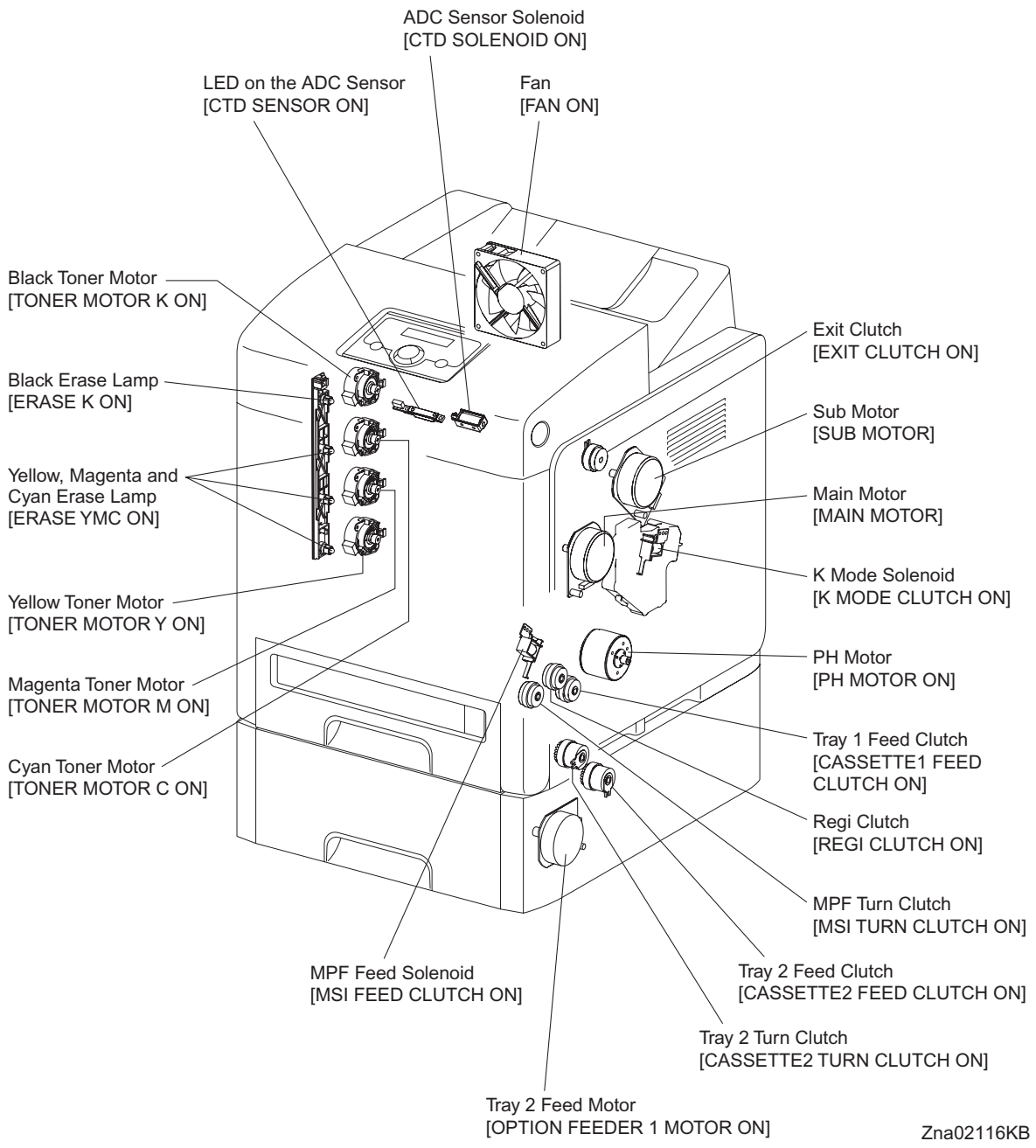
This function checks whether the DO components operate. A component should be selected from the drop down listbox, and the [Start] button on the screen should be clicked. As many as ten different components can be simultaneously operated. However, it is recommended to operate one or two components at a time since simultaneous operation of many different components can break them. To stop the operation, the [Stop] button on the screen should be clicked.

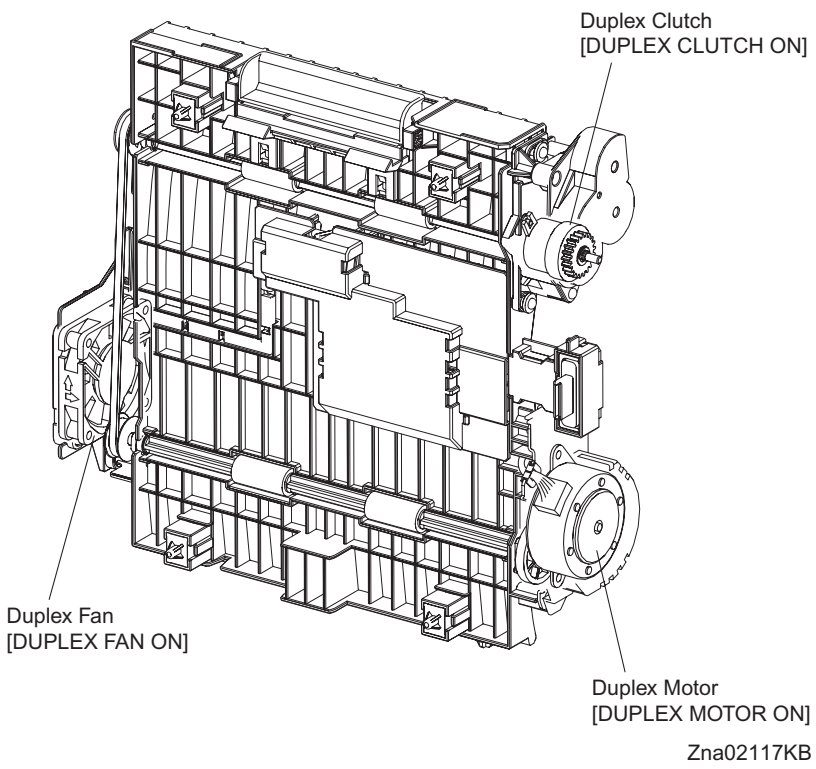


Items for the Digital Output Test are as follows.

Item
MAIN MOTOR(FULL/ HALF)
SUB MOTOR(FULL/ HALF)
PH MOTOR ON(FULL/ HALF)
DUPLEX MOTOR ON(FULL/ HALF)
OPTION FEEDER 1 MOTOR ON(FULL/ HALF)
FAN ON(HIGH/ LOW)
TONER MOTOR Y ON
TONER MOTOR M ON
TONER MOTOR C ON
TONER MOTOR K ON
REGI CLUTCH ON
MSI TURN CLUTCH ON
MSI FEED CLUTCH ON

Item
CASSETTE1 FEED CLUTCH ON
CASSETTE2 FEED CLUTCH ON
CASSETTE2 TURN CLUTCH ON
DUPLEX CLUTCH ON
CTD SOLENOID ON
CTD SENSOR ON
OHP LED ON(Not Used)
ERASE K ON
ERASE YMC ON
EXIT CLUTCH ON
DUPLEX FAN ON
BUZZER ON
K MODE CLUTCH ON


ADC Sensor Solenoid
[CTD SOLENOID ON]
LED on the ADC Sensor
[CTD SENSOR ON]
Fan
[FAN ON]
Black Toner Motor
[TONER MOTOR K ON]
Black Erase Lamp
[ERASE K ON]
Yellow, Magenta and
Cyan Erase Lamp
[ERASE YMC ON]
Yellow Toner Motor
[TONER MOTOR Y ON]
Magenta Toner Motor
[TONER MOTOR M ON]
Cyan Toner Motor
[TONER MOTOR C ON]
Exit Clutch
[EXIT CLUTCH ON]
Sub Motor
[SUB MOTOR]
Main Motor
[MAIN MOTOR]
K Mode Solenoid
[K MODE CLUTCH ON]
PH Motor
[PH MOTOR ON]
Tray 1 Feed Clutch
[CASSETTE1 FEED
CLUTCH ON]
Regi Clutch
[REGI CLUTCH ON]
MPF Turn Clutch
[MSI TURN CLUTCH ON]
MPF Feed Solenoid
[MSI FEED CLUTCH ON]
Tray 2 Feed Clutch
[CASSETTE2 FEED CLUTCH ON]
Tray 2 Turn Clutch
[CASSETTE2 TURN CLUTCH ON]
Tray 2 Feed Motor
[OPTION FEEDER 1 MOTOR ON]
Zna02116KB



NOTE

The use of [CF K ON]/[CF YMC ON]/[DBAC ON/DBDC Y ON]/[DBDC M ON]/[DBDC C ON/DBDC K ON]/[TR Y ON]/[TR M ON]/[TR C ON/TR K ON]/[AD PLUS ON]/[HV ON] is prohibited to avoid shock hazards since they are high-voltage outputs for forming toner images.

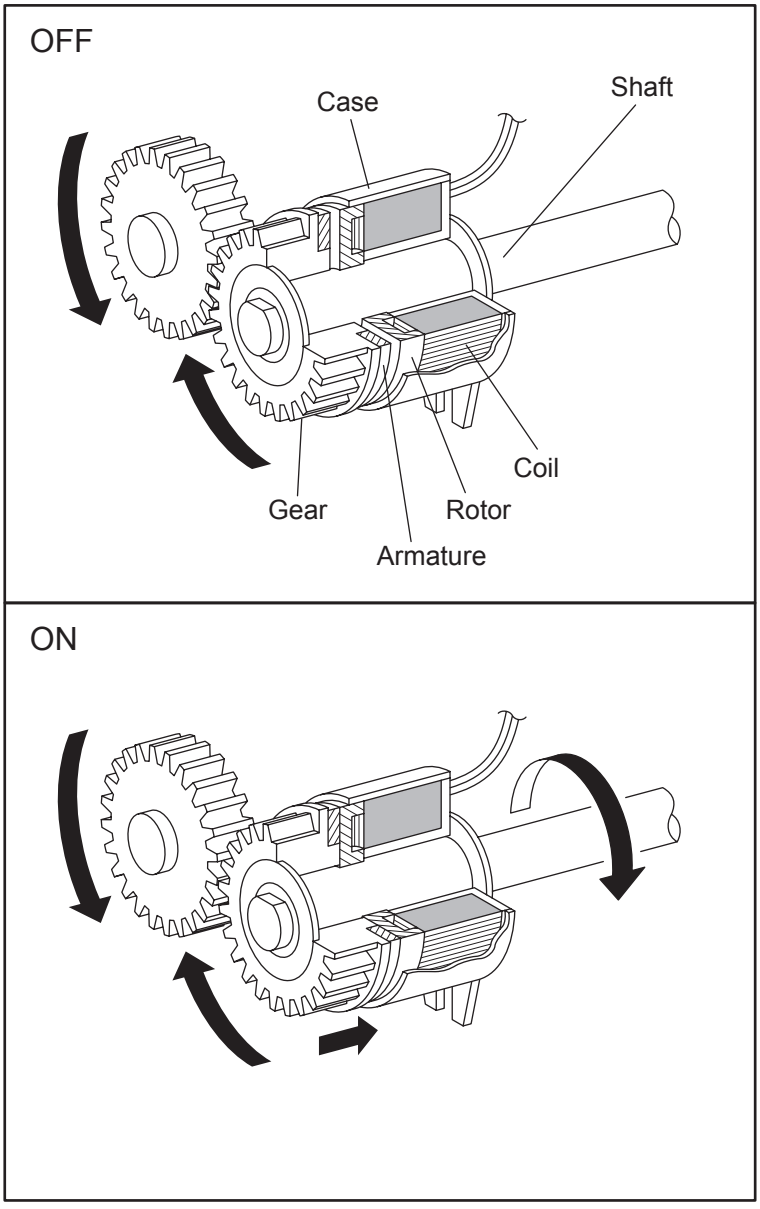
- About Clutch

The electromagnetic clutch in the printer controls the rotation of the roller by transferring or cutting the torque from the motor to the roller.

The electromagnetic clutch becomes an electromagnet by the passage of electric current through the coil inside the case and attracts the armature and gear to the rotating rotor, thereby rotating the gear.

Upon the loss of power to the coil, electromagnetic force is lost and the armature comes off the rotor, and the gear comes to rest.

The clutch makes so soft noises that you must be close the component to audibly confirm the operation of the component.



Leg_Sec02_050FA

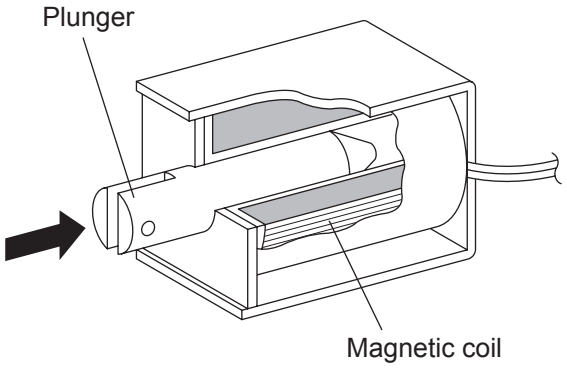
- About Solenoid

The solenoid in the printer opens/closes the shutter or controls the position of the gear for transferring the torque of the motor to the roller.

A solenoid becomes an electromagnet by the passage of electric current through the coil inside the case and attracts the plunger.

Upon the loss of power to the coil, electromagnetic force is lost and the plunger is returned to its original position by spring action, thereby allowing the shutter to operate or the gear to move to the predefined position.

Unlike a clutch, a solenoid generates a loud operation noise.

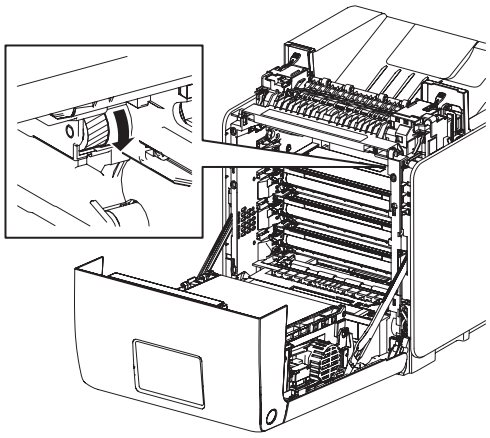


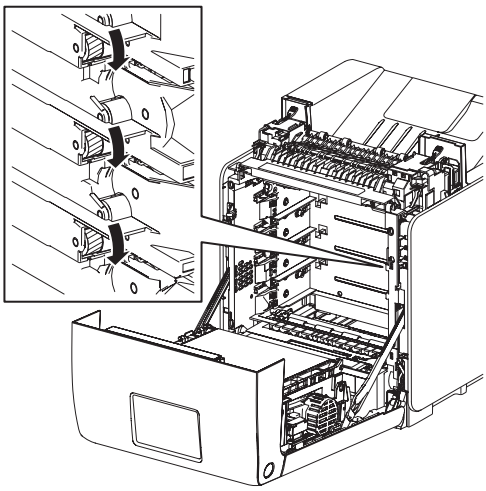
Leg_Sec02_051FA

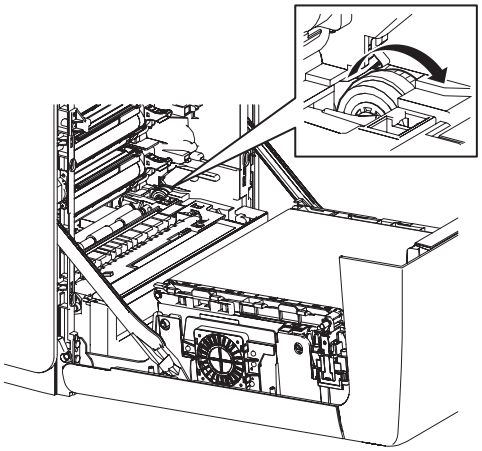
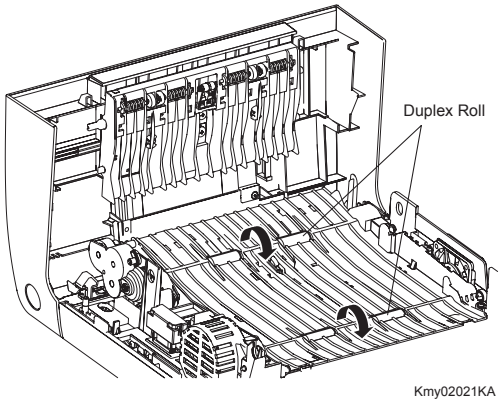
- Checking Motor, Clutch and Solenoid

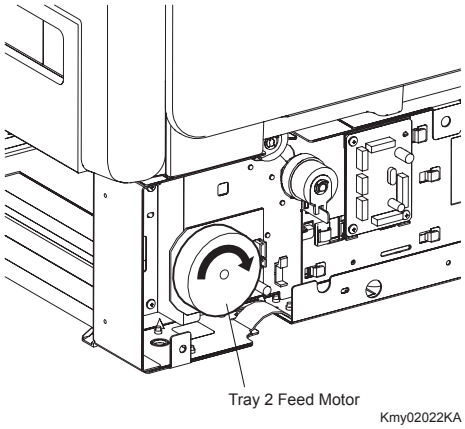
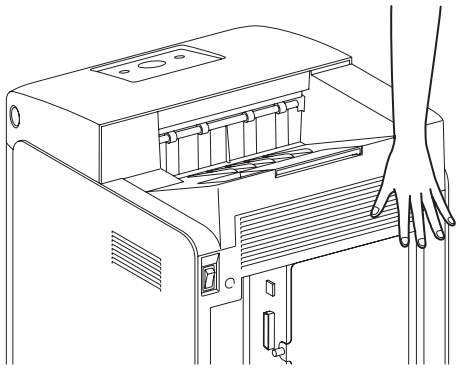
NOTE

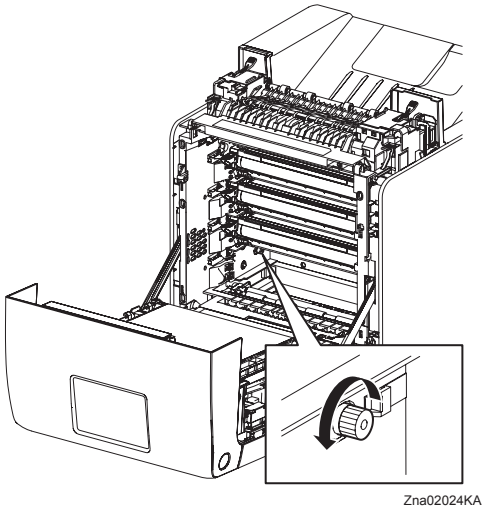
Before executing the DO test, close all covers and doors.

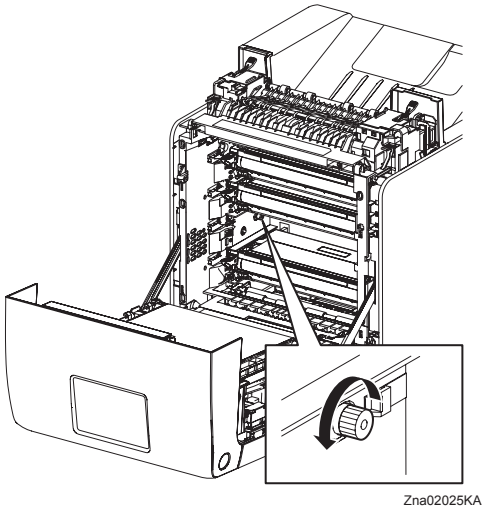
Item	Confirmation procedure
MAIN MOTOR (FULL/ HALF)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. The main motor is in the PC/DEVE DRIVE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Remove the black toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the MAIN MOTOR (FULL). (The customer can confirm the motor noise only.)  Zna02017KA 6) Click the stop button to stop test. 7) Remove the cheater and replace the black toner cartridge. 8) Close the Front Cover.

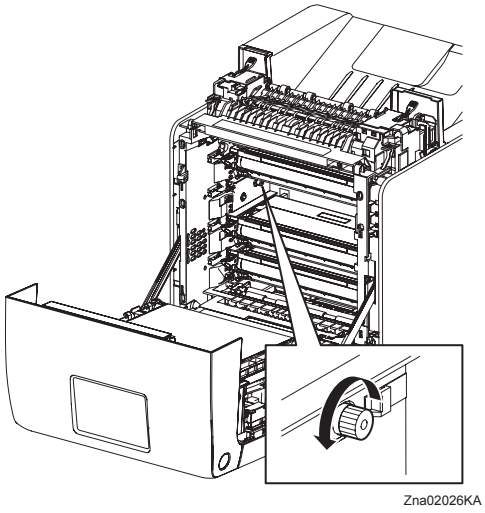
Item	Confirmation procedure
SUB MOTOR (FULL/HALF)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. The sub motor is in the PC/DEVE DRIVE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Remove the all toner cartridges. 4) Cheat the safety Interlock System. 5) Execute the SUB MOTOR (FULL). (The customer can confirm the motor noise only.)  Zna02018KA 6) Click the stop button to stop test. 7) Remove the cheater and replace the all toner cartridges. 8) Close the Front Cover.

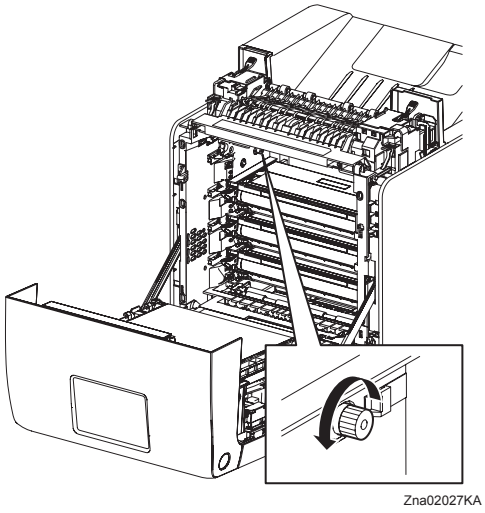
Item	Confirmation procedure
PH MOTOR ON (FULL/ HALF)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. The PH motor is in the FEED DRIVE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the PH MOTOR ON (FULL). (The customer can confirm the motor noise only.)  Zna02019KA 5) Click the stop button to stop test. 6) Remove the cheater. 7) Close the Front Cover.
DUPLEX MOTOR ON (FULL/HALF)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. The DEVE motor is in the DUPLEX MODULE. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Remove the transfer belt. 5) Execute the DUPLEX MOTOR ON (FULL). (The customer can confirm the motor noise only.)  Kmy02021KA 6) Click the stop button to stop test. 7) Remove the cheater and replace the transfer belt. 8) Close the Front Cover.

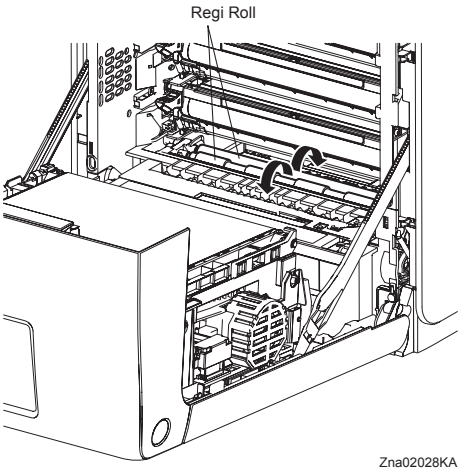
Item	Confirmation procedure
OPTION FEEDER 1 MOTOR ON (FULL/HALF)	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. 1) turn on the power and enter the CE Diag. 2) Remove the Tray 2 paper cassette. 3) Remove the left side cover of the Tray 2. 4) Execute the OPTION FEEDER 1 MOTOR ON (FULL). (The customer can confirm the motor noise only.)  Kmy02022KA 5) Click the stop button to stop test. 6) Replace the left side cover of the Tray 2. 7) Replace the Tray 2 paper cassette.
FAN ON (HIGH/LOW)	NOTE: The rotational speed of the fan is as follows. 1) Turn on the power and enter the CE Diag. 2) Execute the FAN ON (HIGH).  Zna02023KA 3) Click the stop button to stop test.

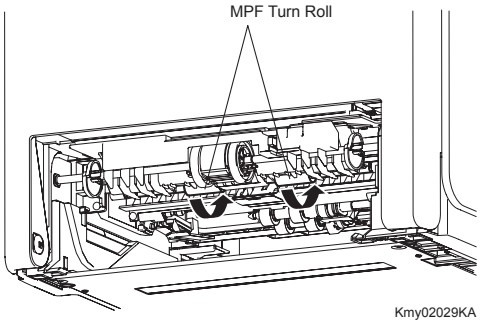
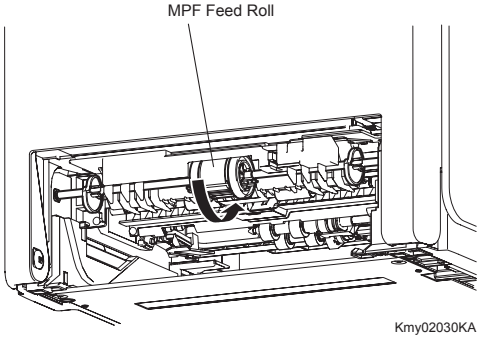
Item	Confirmation procedure
TONER MOTOR Y ON	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Remove the yellow toner cartridge. 5) Execute the TONER MOTOR Y ON. (The customer can confirm the motor noise only.)  Zna02024KA 6) Click the stop button to stop test. 7) Replace the yellow toner cartridge. 8) Remove the cheater. 9) Close the Front Cover.

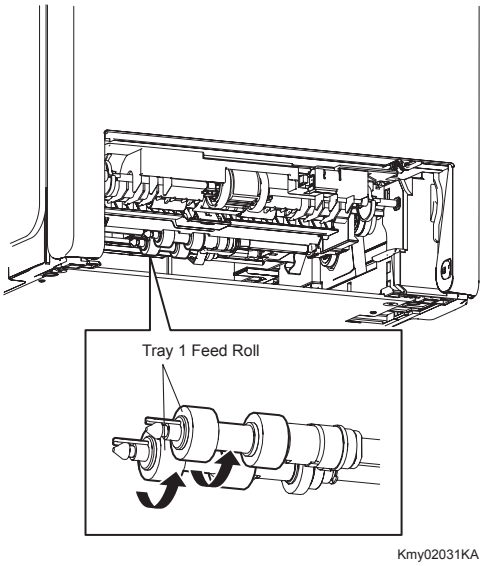
Item	Confirmation procedure
TONER MOTOR M ON	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Remove the magenta toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the TONER MOTOR M ON. (The customer can confirm the motor noise only.)  Zna02025KA 6) Click the stop button to stop test. 7) Remove the cheater. 8) Replace the magenta toner cartridge. 9) Close the Front Cover.

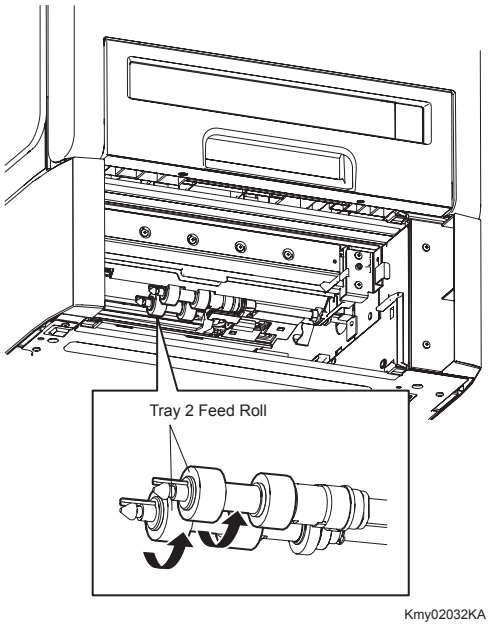
Item	Confirmation procedure
TONER MOTOR C ON	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Remove the cyan toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the TONER MOTOR C ON. (The customer can confirm the motor noise only.)  Zna02026KA 6) Click the stop button to stop test. 7) Remove the cheater. 8) Replace the cyan toner cartridge. 9) Close the Front Cover.

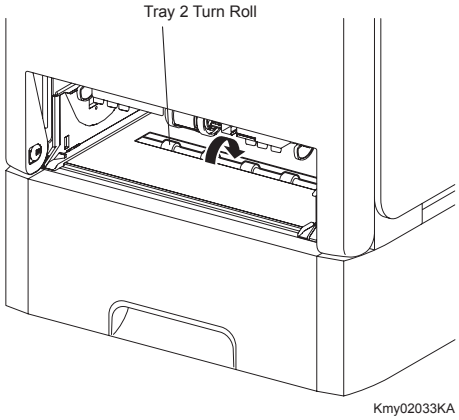
Item	Confirmation procedure
TONER MOTOR K ON	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 5 and 6. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Remove the black toner cartridge. 4) Cheat the safety Interlock System. 5) Execute the TONER MOTOR K ON. (The customer can confirm the motor noise only.)  Zna02027KA 6) Click the stop button to stop test. 7) Remove the cheater. 8) Replace the black toner cartridge. 9) Close the Front Cover.

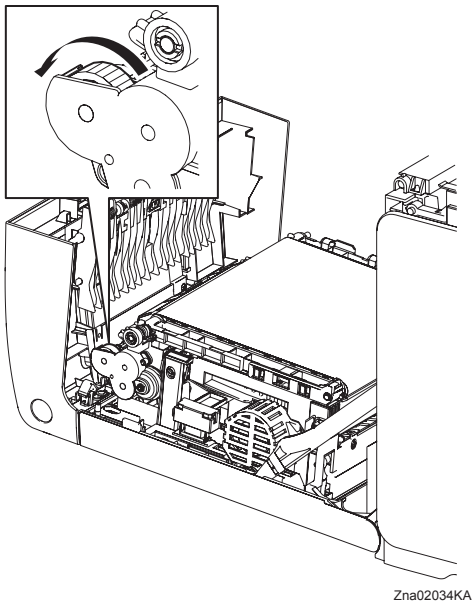
Item	Confirmation procedure
REGI CLUTCH ON	NOTE: When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Execute the REGI CLUTCH ON. Upon hitting the Start button, the operating noise of the clutch will be heard. 3) Click the stop button to stop the clutch. Combination test is as follows. NOTE: The regi roll rotates when the PH MOTOR ON (FULL) and the REGI CLUTCH ON are executed. This procedure is for the technical staff. 1) Turn on the power and enter the Diagnostic Mode. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the PH MOTOR ON (FULL) and the REGI CLUTCH ON.  5) Confirm the Regi Roll rotation. 6) Click the stop button to stop the clutch. 7) Remove the cheater and close the Front Cover.

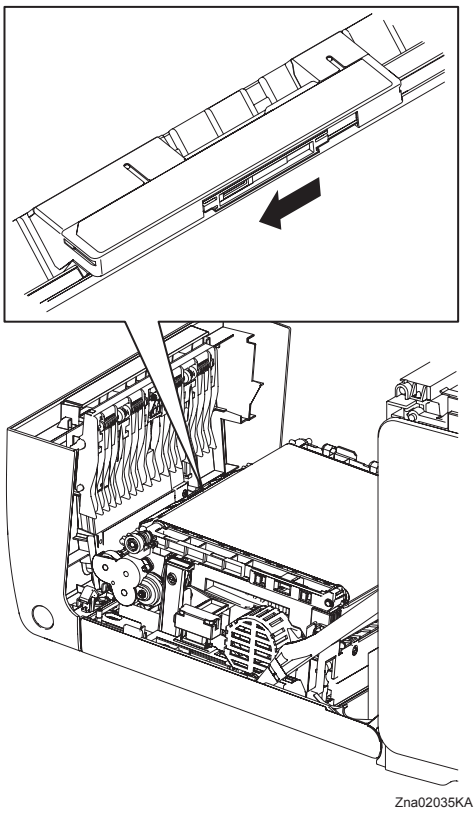
Item	Confirmation procedure
MSI TURN CLUTCH ON	1) Turn on the power and enter the CE Diag. 2) Execute the MSI TURN CLUTCH ON. Upon hitting the Start button, the operating noise of the clutch will be heard. 3) Click the stop button to stop the clutch. Combination test is as follows. NOTE: The MPF turn roll rotates when the PH MOTOR ON (FULL) and the MSI TURN CLUTCH ON are executed. This procedure is for the technical staff. 1) Turn on the power and enter the CE Diag. 2) Remove the Tray 1 paper cassette. 3) Execute the PH MOTOR ON (FULL) and the MSI TURN CLUTCH ON.  4) Confirm the Turn Roll rotation. 5) Click the stop button to stop the clutch. 6) Replace the Tray 1 paper cassette.
MSI FEED CLUTCH ON	1) Turn on the power and enter the CE Diag. 2) Execute the MSI FEED CLUTCH ON. Upon hitting the Start button, the operating noise of the solenoid will be heard. 3) Click the stop button to stop the solenoid. Combination test is as follows. NOTE: The MPF feed roll rotates when the PH MOTOR ON (FULL) and the MSI FEED CLUTCH ON are executed. This procedure is for the technical staff. 1) Turn on the power and enter the CE Diag. 2) Remove the Tray 1 paper cassette. 3) Execute the PH MOTOR ON (FULL) and the MSI FEED CLUTCH ON.  4) Confirm the Feed Roll rotation. 5) Click the stop button to stop the clutch. 6) Replace the Tray 1 paper cassette.

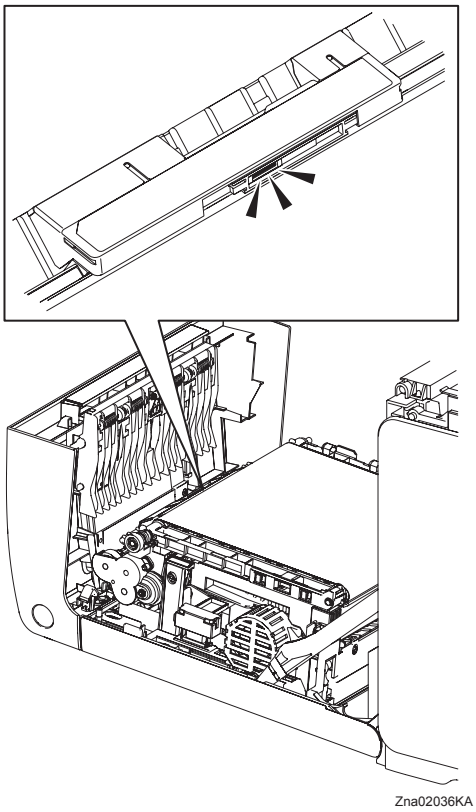
Item	Confirmation procedure
CASSETTE 1 FEED CLUTCH ON	1) Turn on the power and enter the CE Diag. 2) Execute the CASSETTE 1 FEED CLUTCH ON. Upon hitting the Start button, the operating noise of the clutch will be heard. 3) Click the stop button to stop the clutch. Combination test is as follows. NOTE: The Tray 1 feed roll rotates when the PH MOTOR ON (FULL) and the CASSETTE 1 FEED CLUTCH ON are executed. This procedure is for the technical staff. 1) Turn on the power and enter the CE Diag. 2) Remove the Tray 1 paper cassette. 3) Execute the PH MOTOR ON (FULL) and the CASSETTE 1 FEED CLUTCH ON.  Kmy02031KA 4) Confirm the feed Roll rotation. 5) Click the stop button to stop the clutch. 6) Replace the Tray 1 paper cassette.

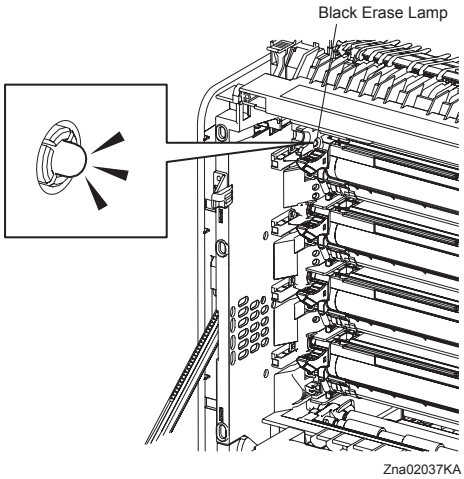
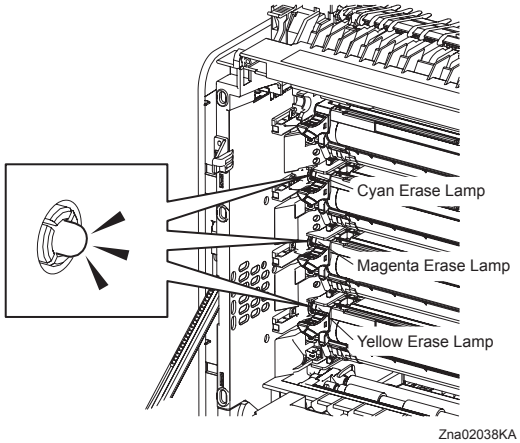
Item	Confirmation procedure
CASSETTE 2 FEED CLUTCH ON	1) Turn on the power and enter the CE Diag. 2) Execute the CASSETTE 2 FEED CLUTCH ON. Upon hitting the Start button, the operating noise of the clutch will be heard. 3) Click the stop button to stop the clutch. Combination test is as follows. NOTE: The Tray 2 feed roll rotates when the OPTION FEEDER 1 MOTOR ON (FULL) and the CASSETTE 2 FEED CLUTCH ON are executed. This procedure is for the technical staff. 1) Turn on the power and enter the CE Diag. 2) Remove the Tray 2 paper cassette. 3) Execute the OPTION FEEDER 1 MOTOR ON (FULL) and the CASSETTE 2 FEED CLUTCH ON.  Kmy02032KA 4) Confirm the feed Roll rotation. 5) Click the stop button to stop the clutch. 6) Replace the Tray 2 paper cassette.

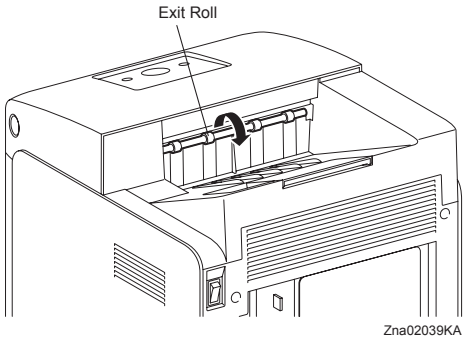
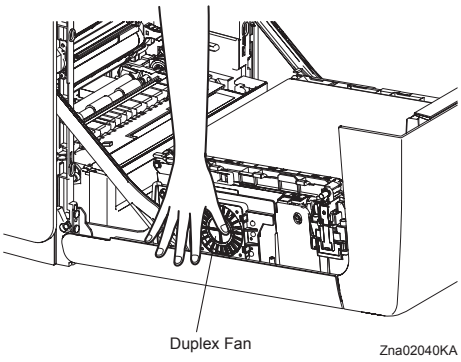
Item	Confirmation procedure
CASSETTE 2 TURN CLUTCH ON	1) Turn on the power and enter the CE Diag. 2) Execute the CASSETTE 2 TURN CLUTCH ON. Upon hitting the Start button, the operating noise of the clutch will be heard. 3) Click the stop button to stop the clutch. Combination test is as follows. NOTE: The Tray 2 turn roll rotates when the OPTION FEEDER ! MOTOR ON (FULL) and the CASSETTE 2 TURN CLUTCH ON are executed. This procedure is for the technical staff. 1) Turn on the power and enter the CE Diag. 2) Remove the Tray 1 paper cassette. 3) Execute the OPTION FEEDER ! MOTOR ON (FULL) and the CASSETTE 2 TURN CLUTCH ON.  4) Confirm the Turn Roll rotation. 5) Click the stop button to stop the clutch. 6) Replace the Tray 1 paper cassette.

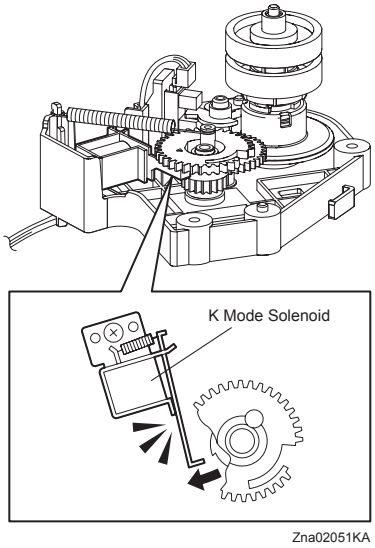
Item	Confirmation procedure
DUPLEX CLUTCH ON	1) Turn on the power and enter the CE Diag. 2) Execute the DUPLEX CLUTCH ON. Upon hitting the Start button, the operating noise of the clutch will be heard. 3) Click the stop button to stop the clutch. Combination test is as follows. NOTE: The duplex gear rotates when the DUPLEX MOTOR ON (FULL) and the DUPLEX CLUTCH ON are executed. This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DUPLEX MOTOR ON (FULL) and the DUPLEX CLUTCH ON.  Zna02034KA 5) Confirm the gear rotation. 6) Click the stop button to stop the clutch. 7) Remove the cheater and close the Front Cover.

Item	Confirmation procedure
CTD SOLENOID ON	NOTE: This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the CTD SOLENOID ON. (The customer can confirm the motor noise only.)  Zna02035KA 5) Click the stop button to stop the solenoid. 6) Remove the cheater and close the Front Cover.

Item	Confirmation procedure
CTD SENSOR ON	NOTE: This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the CTD SENSOR ON.  Zna02036KA 5) Click the stop button to stop the LED lighting. 6) Remove the cheater and close the Front Cover.

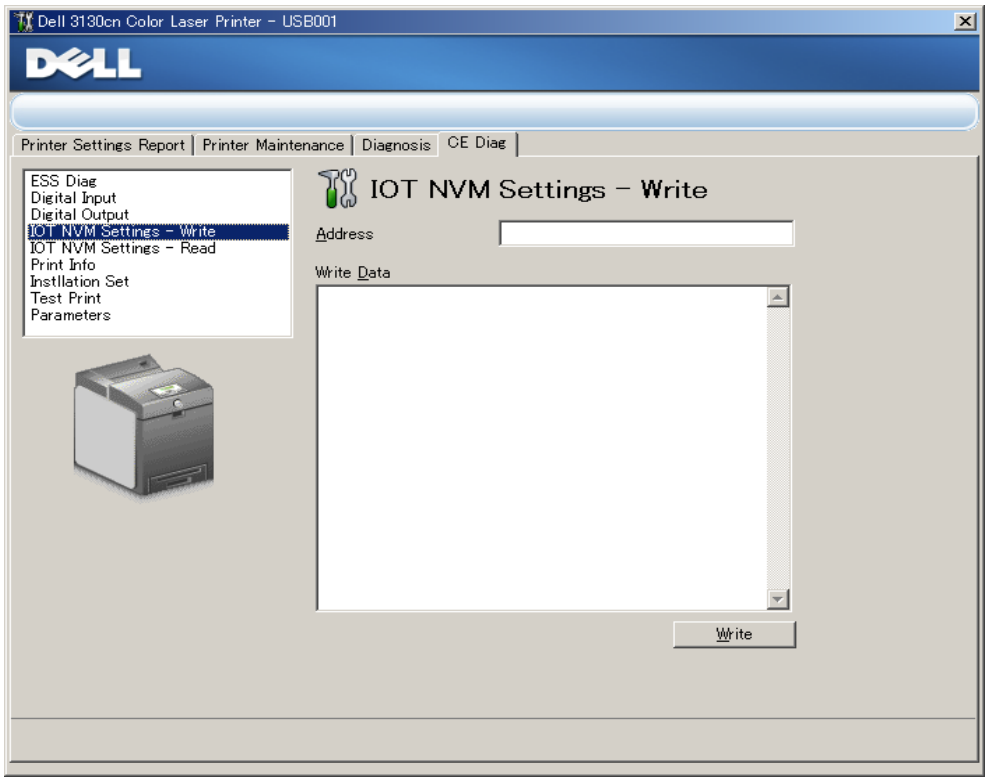
Item	Confirmation procedure
ERACE K ON	NOTE: This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the ERACE K ON.  Zna02037KA 5) Click the stop button to stop the LED lighting. 6) Remove the cheater and close the Front Cover.
ERACE YMC ON	NOTE: This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the ERACE YMC ON.  Zna02038KA 5) Click the stop button to stop the LED lighting. 6) Remove the cheater and close the Front Cover.

Item	Confirmation procedure
EXIT CLUTCH ON	1) Turn on the power and enter the CE Diag. 2) Execute the EXIT CLUTCH ON. Upon hitting the Start button, the operating noise of the clutch will be heard. 3) Click the stop button to stop the clutch. Combination test is as follows. NOTE: The exit roll rotates when the MAIN MOTOR (FULL) and the EXIT CLUTCH ON are executed. This procedure is for the technical staff. 1) Turn on the power and enter the CE Diag. 2) Execute the MAIN MOTOR (FULL) and the EXIT CLUTCH ON.  3) Confirm the Exit Roll rotation. 4) Click the stop button to stop the clutch.
DUPLEX FAN ON	NOTE:This procedure is for the technical staff. The customer check are the procedure 1, 4 and 5. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Turn on the power and enter the CE Diag. 2) Open the Front Cover. 3) Cheat the safety Interlock System. 4) Execute the DUPLEX FAN ON. (The customer can confirm the fan noise only.)  5) Click the stop button to stop the test. 6) Remove the cheater and close the Front Cover.
BUZZER ON	1) Turn on the power and enter the CE Diag. 2) Execute the BUZZER ON. 3) Check the Buzzer Tone. 4) Click the stop button to stop the test.

Item	Confirmation procedure
K MODE CLUTCH ON (Color Mode Switching Solenoid)	NOTE:This procedure is for the technical staff. When performing operation for five minutes or longer with the front cover open, remove all toner cartridges, and cover the drum to avoid exposure to light. 1) Open the Front Cover. 2) Remove the Cover Rear. 3) Remove the Cover Side R Assy. 4) Remove the Drive Assy K. 5) Cheat the Safety Interlock System. 6) Turn on the power and enter the CE Diag. 7) Execute the K MODE CLUTCH ON.  Zna02051KA 8) Check the K MODE SOLENOID movement. 9) Click the stop button to stop the test. 10) Replace the Safety Interlock System. 11) Replace the Drive Assy K. 12) Replace the Cover Side R Assy. 13) Replace the Cover Rear. 14) Close the Front Cover.

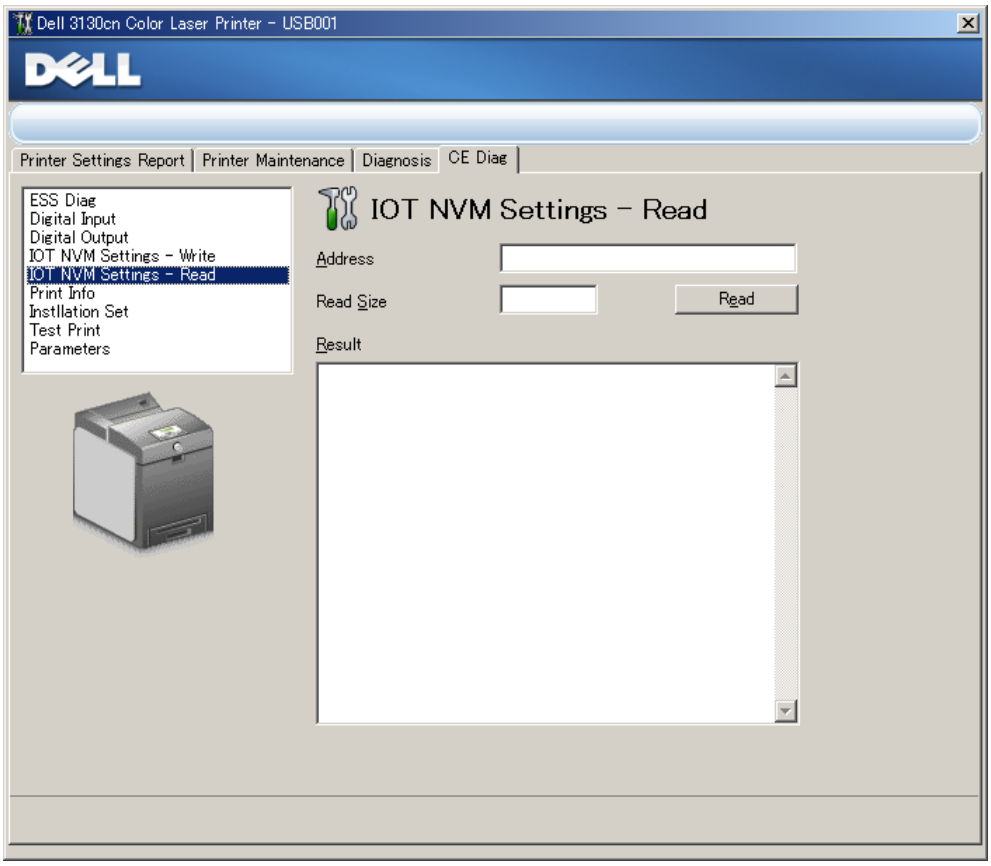
6.4 IOT NVM Settings - Write

Menu used for changing the settings for internal data of the printer.
This operation is prohibited since it can damage the internal data.



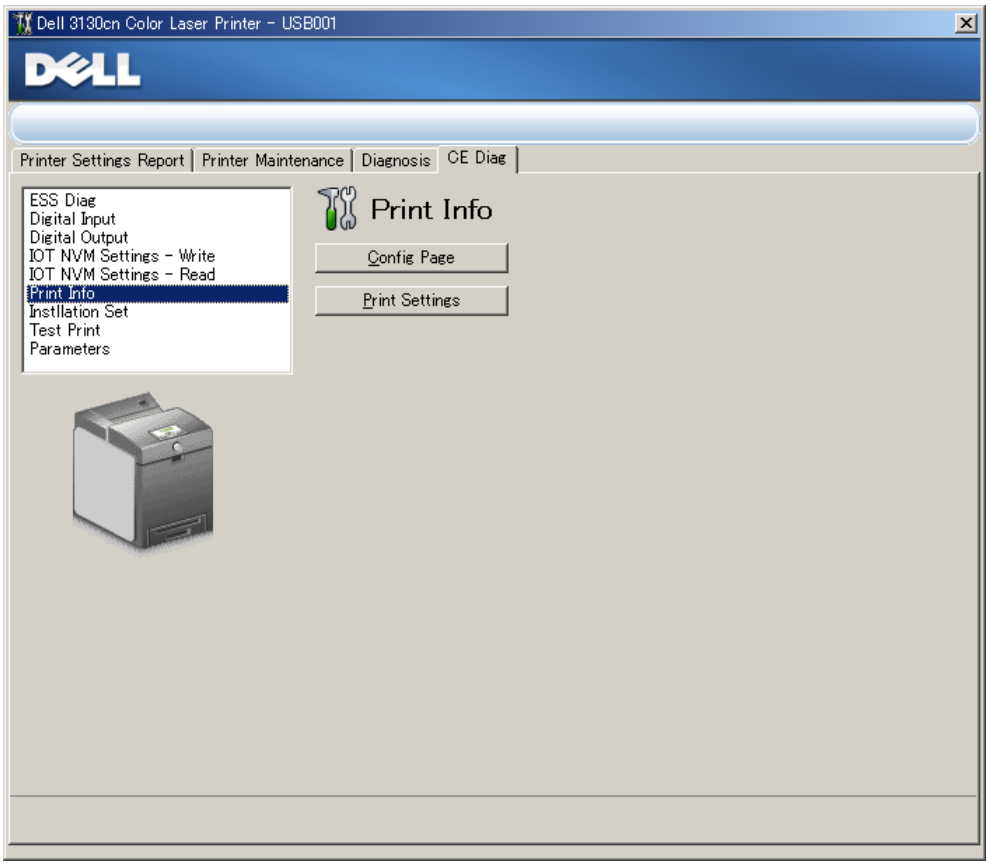
6.5 IOT NVM Settings - Read

Menu used for confirming the internal data of the printer.



6.6 Print Info

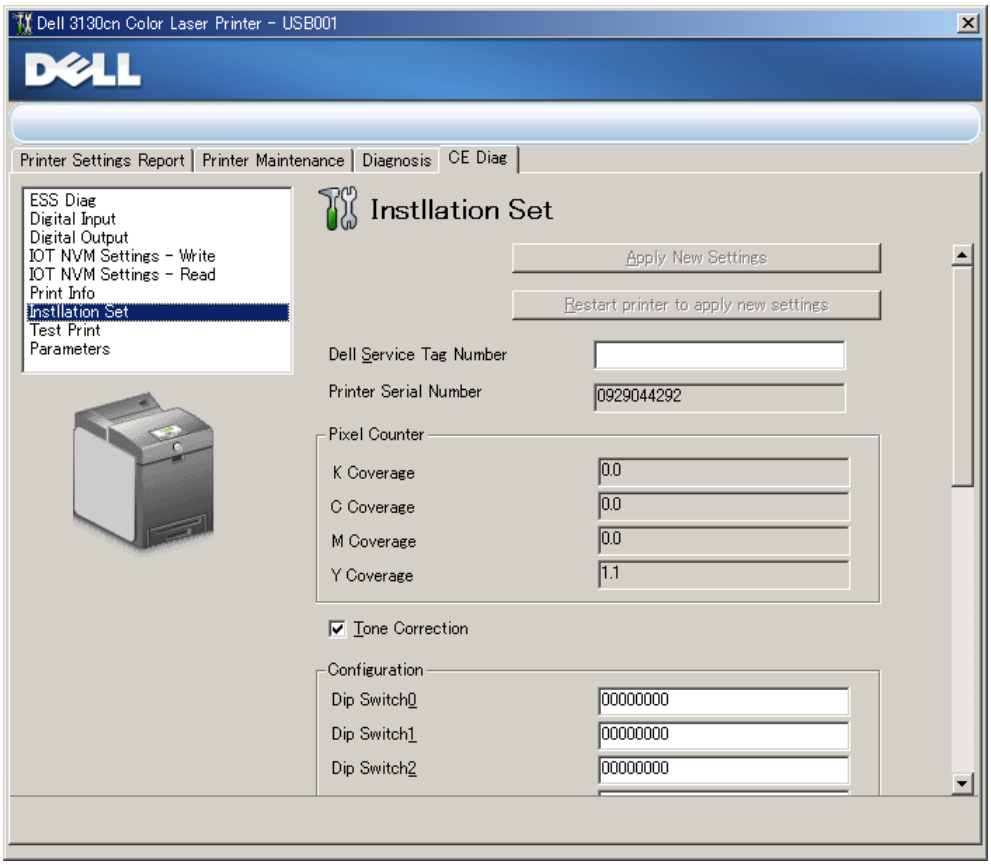
Prints out the detailed printer settings and configuration information.



Item	Function
Config Page	The version of software of printer and the configuration can be confirmed by executing this test. Push the [Config Page] button to print the "config. Page".
Print Setting	The service tag, printing count value and error count value can be confirmed by executing this test. Push the [Print Setting] button to print the "Print Settings".

6.7 Installation Set

Displays values on the counters of the printer and sets service tags.
Clicking [Apply new settings] or [Restart printer to apply new settings] button after the setting is completed determines the contents of setting changes.

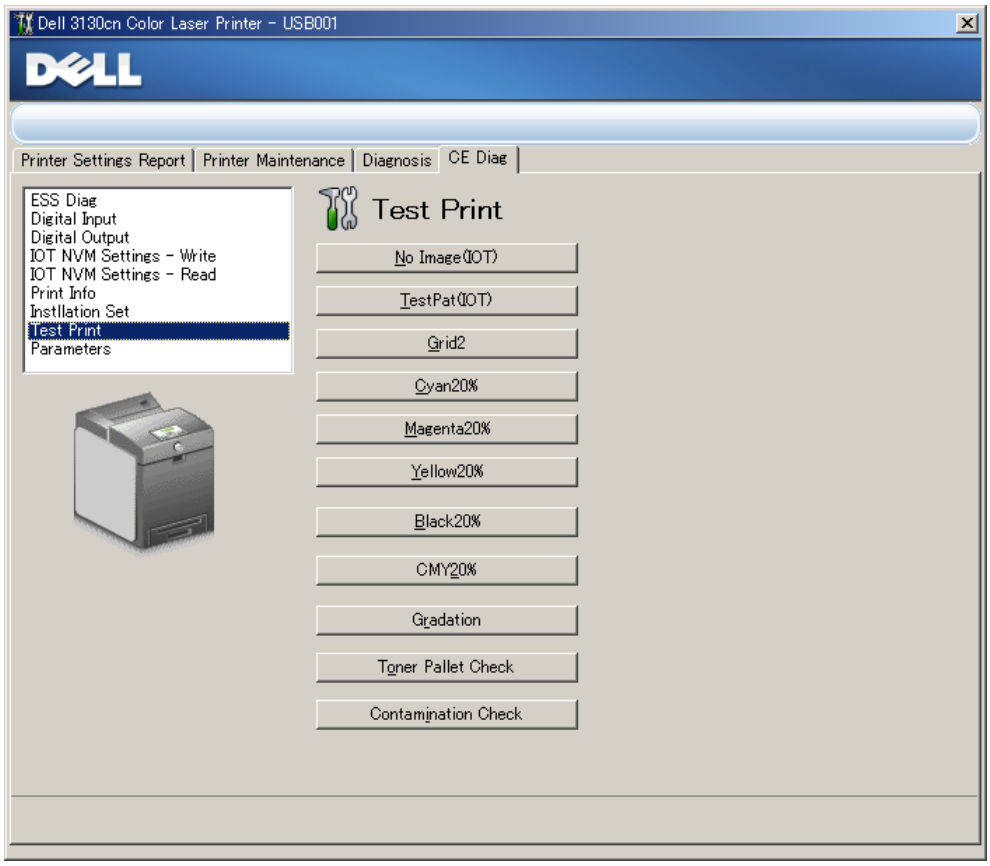


Item	Function
Dell Service Tag Number	Enters the printer service tag number.
Printer Serial Number	Serial number of the printer. (read only)
Pixel Counter	Pixel count values of colors Y/M/C/K. (read only)
Tone Correction	Specifies whether or not tone correction is performed. When the checkmark is placed in the checkbox, tone correction is performed.
Configuration	The use of "Configuration" is prohibited since it is a tool for design development.
Print Counter	Displays the respective counter values in the master NVM and backup NVM. (read only)
Counter Copy M to B	Copies the counter value in the master NVM of the ESS PWBA to the backup NVM of the ESS PWBA.
Counter Copy B to M	Copies the counter value in the backup NVM of the ESS PWBA to the master NVM of the ESS PWBA.
ESS NVM Init	Initializes the NVM of ESS.
JOB LOG Init	Initializes the print job history. This operation is to be carried out where necessary.
Erase Hard Disk	Initializes the Hard Disk.

Item	Function
[Apply New Settings] button	This button should be clicked to move to any other setting menu from the current menu in operation. NOTE: After completion of all operations, "Restart printer to apply new settings" button should be clicked without exceptions.
[Restart printer to apply new settings] button	This button should be clicked after completion of setting change. The restart of a printer is required in order to confirm this setup.

6.8 Test Print

Print an internal test pattern of the printer. If paper jam or paper empty occurs during the print, the test waits until they are resolved.



6.8.1 No Image (IOT)

Prints the blanked paper.

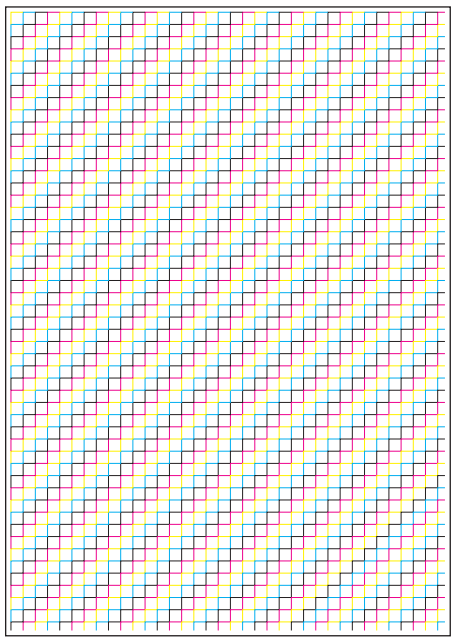
6.8.2 Test Pat (IOT)

Prints the IOT built-in 600dpi pattern.

When the PQ problem occurred, this test enables to identify the problem as the printing process or the PWBA ESS related.

Compare the sample chart with the print.

Check result: NG (Check the printing process.)　OK (Check the PWBA ESS related.)



Kmy02001KA

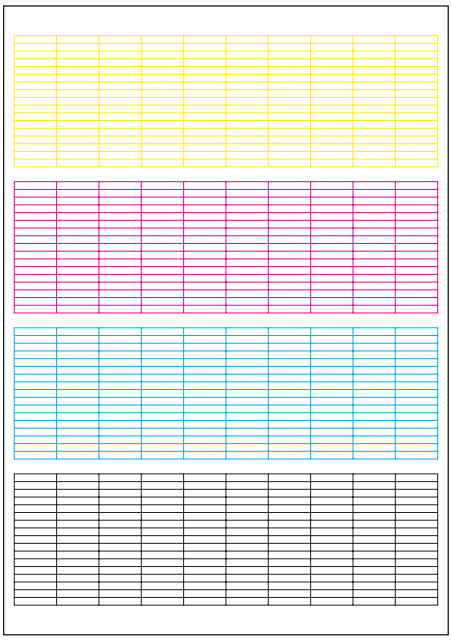
6.8.3 Grid2

Prints the ESS built-in grid pattern.

When the PQ problem occurred, this test enables to identify the problem as printer-related or otherwise.

Compare the sample chart with the print.

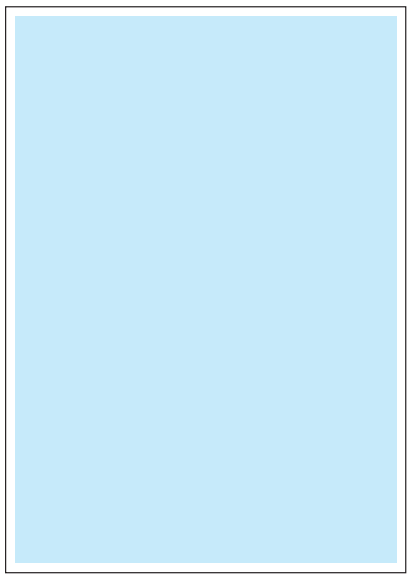
Check result: NG (Check the printing process and PWBA ESS-related.) OK (Check the network, cable, PC and so on.)



Leg_Sec02_004FA

6.8.4 Cyan 20%

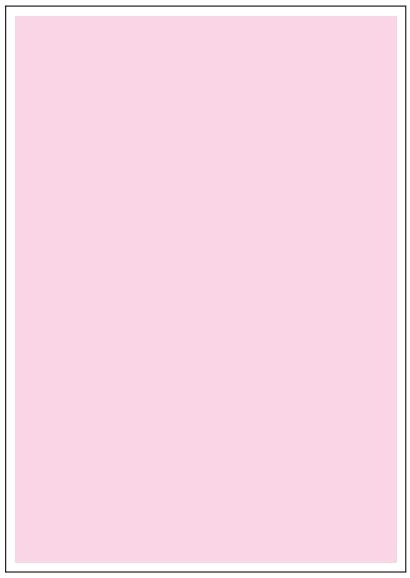
Outputs cyan 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the cyan toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the cyan toner-related.)　OK (Check another toner.)



Leg_Sec02_005FA

6.8.5 Magenta 20%

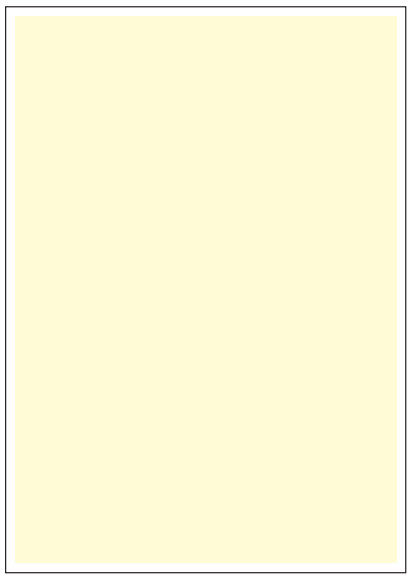
Outputs magenta 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the magenta toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the magenta toner-related.)　OK (Check another toner.)



Leg_Sec02_006FA

6.8.6 Yellow 20%

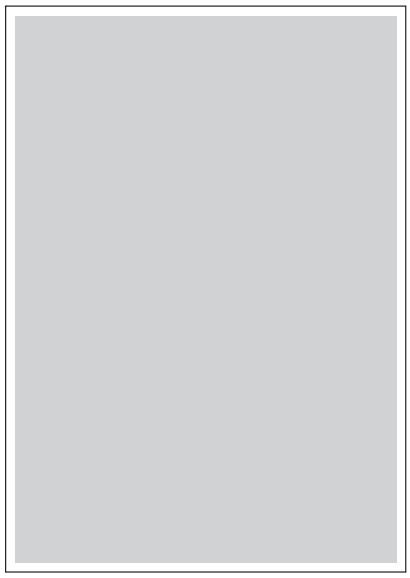
Outputs yellow 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the yellow toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the yellow toner-related.)　OK (Check another toner.)



Leg_Sec02_007FA

6.8.7 Black 20%

Outputs black 20% paint on the whole area of a A4 paper.
When the PQ problem occurred, this test enables to identify the problem as the black toner or another color.
Compare the sample chart with the print.
Check result: NG (Check the black toner-related.)　OK (Check another toner.)



Leg_Sec02_008FA

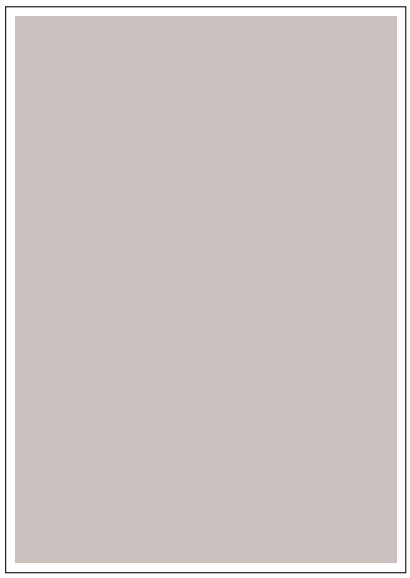
6.8.8 CMY 20%

Outputs C/M/Y 20% paint on the whole area of a A4 paper.

When the PQ problem occurred, this test enables to identify the problem as the balance of three color toners or otherwise.

Compare the sample chart with the print.

Check result: NG (Check the yellow, magenta or cyan toner-related.)　OK (Check black toner.)



Leg_Sec02_009FA

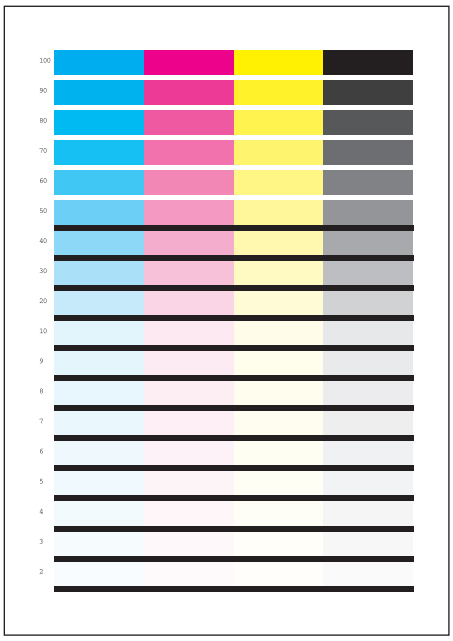
6.8.9 Gradation

Outputs the tone pattern from 2% to 100% on a A4 paper for each of 4 colors.

When the PQ problem occurred, this test enables to identify the problem as the printing process or PWBA ESS-related.

Compare the sample chart with the print.

Check result: NG (Check the printing process.)　OK (Check the PWBA ESS-related.)



Leg_Sec02_010FA

6.8.10 Toner Pallet Check

Outputs each 100% density color pattern of Y/M/C/K.

When the PQ problem occurred in the picture or photo printing, this test enables to identify the problem as the toner or another.

Compare the sample chart with the print.

Check result: NG (Check the problem toner-related.)　OK (Check the print job or print data.)

Leg_Sec02_011FA

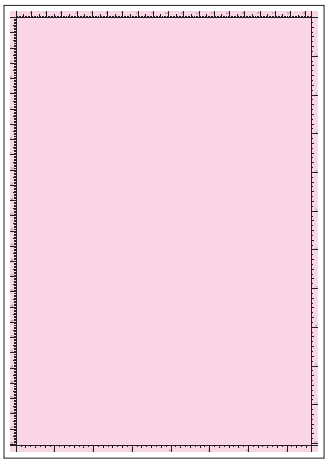
6.8.11 Contamination Check

Allows you to check the print for any regular lines or toner spots when encountering PQ problems. From the difference in the interval of regular lines or spots, you can determine the parts that have caused the trouble.

Page 1 to 4: Prints the scale patterns in vertical and horizontal directions for evaluating regularity and intervals.

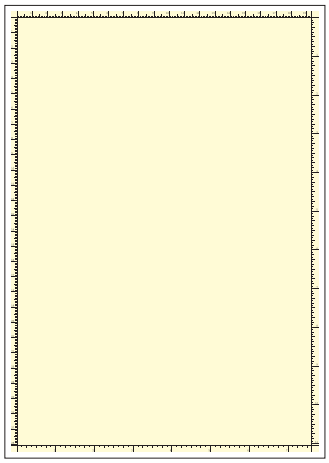
Page 5: Prints the list of intervals by component fault.

Page 1



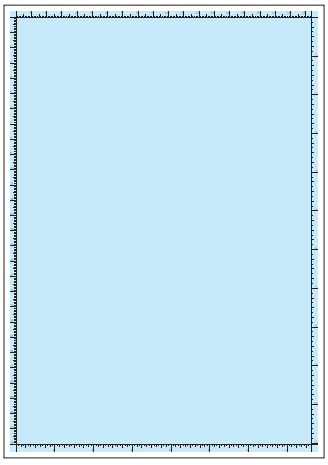
Wsb02028KA

Page 2



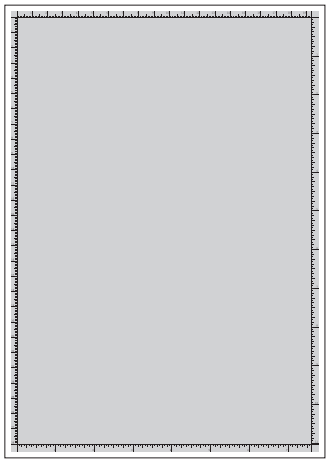
Wsb02027KA

Page 3



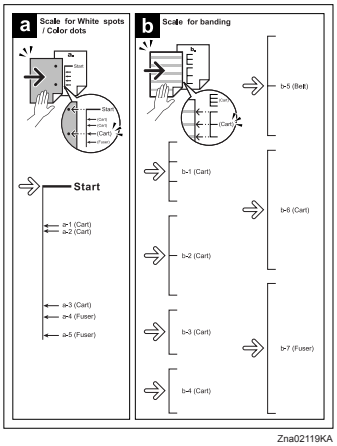
Wsb02029KA

Page 4



Wsb02030KA

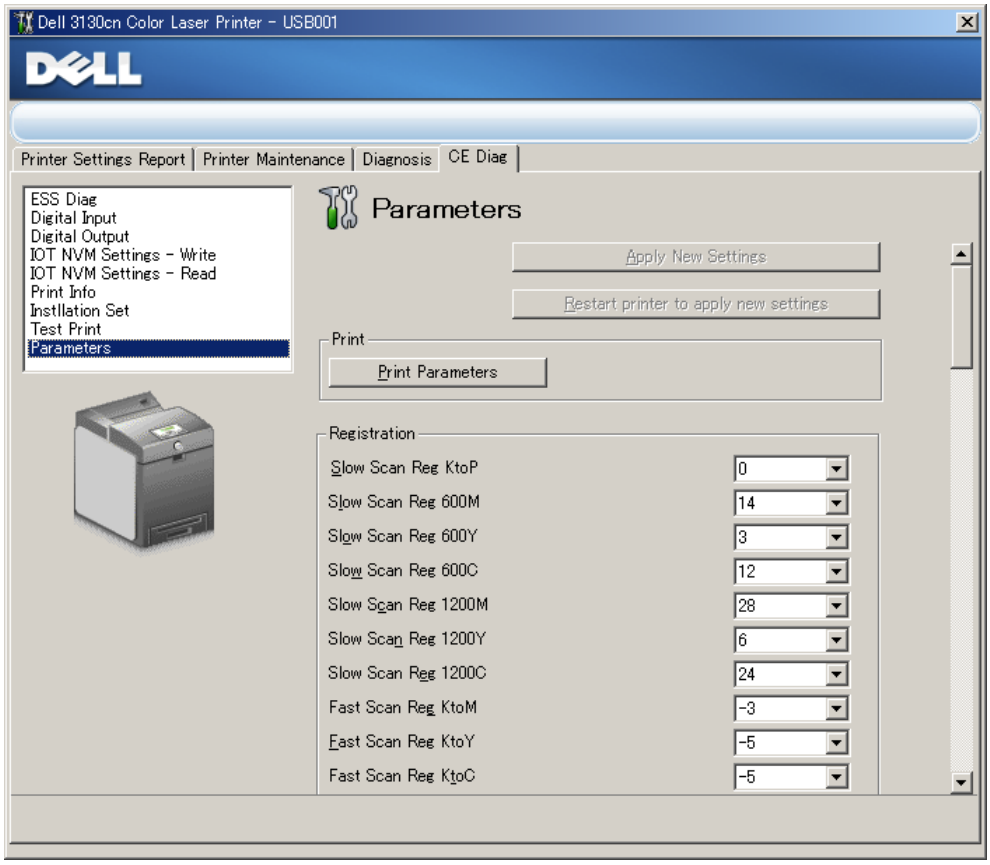
Page 5



Zna02119KA

6.9 Parameter

This function reads/writes the following parameters stored in the printer.
Clicking [Apply new settings] or [Restart printer to apply new settings] button after the setting is completed determines the contents of setting change.



6.9.1 Print

Prints out the current parameter settings.

6.9.2 Registration

This function reads/writes the following parameters stored in the printer.

Item	Range	Description
Slow Scan Reg K to P	-128 to 127	Sets the registration in the paper feeding direction.
Slow Scan Reg 600 M,Y,C	-30 ~ 30	
Slow Scan Reg1200 M,Y,C	-60 ~ 60	
Fast Scan Reg K to M, Y or C	-30 ~ 30	Sets the registration in the scanning direction.
Fast Scan Reg MPF, Tray1, Tray2 or Duplex	-30 ~ 30	
Fast Scan Reg2 KtoM , Y or C	-1 ~ 2	
Life Counter	-	Reads the life counter and the printer.

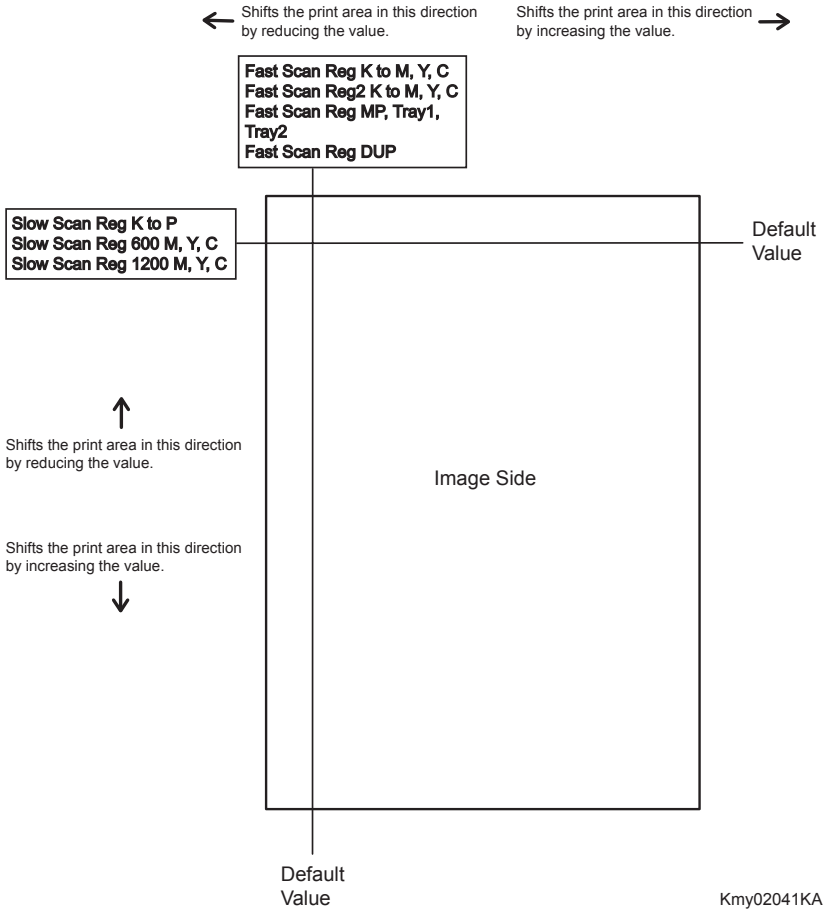
NOTE

Print the parameter list using the Print function of Parameter Menu in diagnosis before changing the value of the registration.

Parameter	Function	Default	Adjustable range
Slow Scan Reg K to P (Shifts 0.17mm/1count)	Black registration adjustment	--	-128 to 127
Slow Scan Reg 600 M,Y,C (Shifts 0.042mm/1count)	Color registration adjustment (600 and 1200 dpi)	--	-30 to 30
Slow Scan Reg1200 M,Y,C (Shifts 0.021mm/1count)			-60 to 60
Fast Scan Reg K to M, Y or C (Shifts 0.042mm/1count)	Color registration adjustment Calculation of adjustment is shown below. (exp. Yellow) (Value of Fast Scan Reg K to Y + Value of Fast Scan Reg2 K to Y)/4	--	-30 to 30
Fast Scan Reg2 K to M, C or Y (Shifts 0.01mm/1count)		--	-1 to 2
Fast Scan Reg MPF, Tray1 or Tray2 (Shifts 0.17mm/1count)	Black registration adjustment at side 1 print	--	-30 to 30
Fast Scan Reg Dup (Shifts 0.17mm/1count)	Black registration adjustment at side 2 print	--	-30 to 30

NOTE

The default values are different in each printer.



6.9.3 Toner

Displays the Toner Dispense time and Toner Clearing count. (read only)

6.9.4 DTB

Displays the operating time of the Transfer Belt, the number of sheets fed and Toner Cleaning count. (read only)

The Initialize buttons are to be used only when replacing the Transfer Belt.

6.9.5 Sheets

Displays the counter value of sheets fed from Fuser, Printer, SSF (SSI), Tray 1, Tray 2 and Duplex. (read only)

Initialize buttons excluding [Life Fuser Sheets] are not to be used. [Life Fuser Sheets] is to be initialized when replacing the Fuser.

6.9.6 Drum

The rotating time of the Drum appears. (read only)

6.9.7 Custom

Information of the Custom appears. (read only)

6.9.8 PHD

The dispensing time of each developer in the PHD unit and the number of the B&W printing appear. (read only)

6.9.9 Buttons

- [Apply New Settings] button

This button should be clicked to move to any other setting menu from the current menu in operation.

NOTE

After completion of all operations, "Restart printer to apply new settings" button should be clicked without exceptions.

- [Restart printer to apply new] button

This button should be clicked after completion of setting change.
The restart of a printer is required in order to confirm this setup.

Reference Counter Values

NOTE

These counter values are reference only. Do not use as the official value.

Counter Name	Value of life warning
Life Y Toner (Dispense time)	-
Life M Toner (Dispense time)	-
Life C Toner (Dispense time)	-
Life K Toner (Dispense time)	-
Life DTB (Transfer Belt) 1 (Paper feeding count)	100000
Life Fuser (Paper feeding count)	100000
Life Printer (Paper feeding count)	-
Life DTB (Transfer Belt) 2 (Waste Toner cleaning count)	120000
Life DTB (Transfer Belt) 3 (Cycle count)	14000000
Life Y Waste Toner (Waste Toner cleaning count)	18000
Life M Waste Toner (Waste Toner cleaning count)	18000
Life C Waste Toner (Waste Toner cleaning count)	18000
Life K Waste Toner (Waste Toner cleaning count)	18000
Life Y Developer (Cycle count)	2500000
Life M Developer (Cycle count)	2500000
Life C Developer (Cycle count)	2500000
Life K Developer (Cycle count)	2500000
Life Y Drum (Cycle count)	3500000
Life M Drum (Cycle count)	3500000
Life C Drum (Cycle count)	3500000
Life K Drum (Cycle count)	3000000
Life MPF Feed	-
Life Tray 1 Feed	-
Life Duplex Feed	-
Print	-