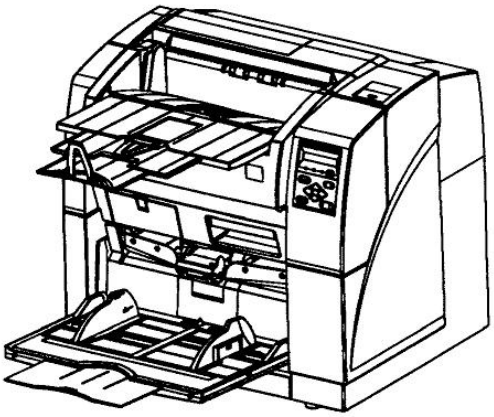
fi-4860C Image scanner
fi-4860C2 Image scanner 07

fi-486PRFR Imprinter (Front)
fi-486PRRE Imprinter (Rear)

Maintenance manual



PFU LIMITED

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Revision Record		
Edition	Date published	Revised contents
01	July 22, 2002	First edition
02	Sept. 4, 2002	- The description "Side cover (left)" changed to "Left cover, and "Side cover (right)" changed to "Right cover". Preface -The P/N for fi-486PRRE Operator's Guide corrected (p3) Section 1.3.1 - The photo of Front side view updated (p11) - Imprinter cover added to the list (p11) - The description "Guide unit" corrected to Guide plate (p11) Section3.3.2, Section 5.1 - A caution about opening/closing Upper transport unit added (p47, 76) Section 4.39 - Description modified about Address xxh EEPROM alarm (p75) Section 5.6.3 - A fixing screw added for Left cover (p82) Section 5.6.5 - A fixing screw added for Rear cover (p83) Section 5.9 - Note added (p88)
03	Nov. 21, 2002	Section C.1 #76 revised and notice added (p232) #E0 - #EE notice added (p236)
04	Dec. 17, 2002	Section 5.3 - New descriptions is added in Table 4-4 (p77) Section 5.13 - Note 3 modified (p94) Section 7.11 - "Note 1" added. (p165) Section 9.14 - "Remarks" in this section added (p176)
05	July 31, 2003	Following pages are revised due to the addition of New type of the scanner. p9, p10, p14, p19, p20, p23, p24, p28, p36, p46, p67, p76, p79, p90, p116, p117, p122, p123, p125, p126, p130, p135, p136, p138, p155, p159, p176, p183, p184, p186, p188, p190, p203, p204, p233 Following pages are added due to the addition of New type of the scanner. P77, p132, p133, p134, p175, p199, p200
06	Aug. 18, 2004	p89,p91,p93,p108,p118,p119,p121,p124,p158,p210, Maintenance procedure corrected, p180, p185,p197, Parts numbers and remarks revised.
07	Feb.16, 2006	P1, 3, 9, 10, 15, 22, 86, 89, 172, 176, 178-197, 199, 200, 268, 278, revised by the addition of fi-4860C2 model and RoHS compliance.
08	January 4, 2007	P127: "Cropping" and "Auto cropping" added to setup mode functions. P139: Abrasion alarm setting revised.
09	January 7, 2008	P179: CGA Board (Part number) changed.
10	March 28, 2008	P134: Value deleted.
11	Feb.20,2009	P191: Sensor PCA (Part number) changed.

The contents of this manual are subject to change without prior notice.

Preface

07

This manual provides the technical information such as maintenance, trouble shooting procedure and parts replacement procedure for field Engineers on fi-4860C/fi-4860C2 image scanner including the optional Front imprinter (fi-486PRFR) and Rear imprinter (fi-486PRRE).
This manual is not responsible if this manual used other than maintenance.
For information that is not contained in this manual, refer to the following manuals:

Item	Manuals	P/N *	
1	fi-4860C Operator's Guide	P3PC-E167-xx	
2	fi-4860C Installation Guide	P3PC-E177-xx	
3	fi-486PRFR Operator's Guide	P3PC-E377-xxXA	
4	fi-486PRRE Operator's Guide	P3PC-E~~377~~ 387-xxXA	02
5	fi-4860C2 Operator's Guide	P3PC-1692-xxENZ0	07
6	fi-4860C2 Installation Guide	P3PC-1682-xxEN	07

* xx represents revision number of the manuals.

Convention

Special information, such as warnings, cautions, are indicated as follows:

⚠WARNING
WARNING indicates that personal injury may result if you do not follow a procedure correctly.

⚠CAUTION
CAUTION indicates that damage to the scanner may result if you do not follow a procedure correctly.

NOTICE
NOTICE provides 'how-to" tips or suggestions to help you perform a procedure correctly.

CONTENTS

Chapter 1 Overview

1.1 Scanner overview

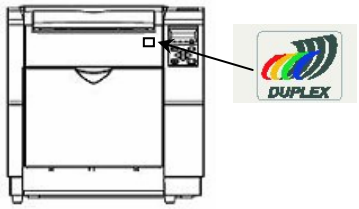
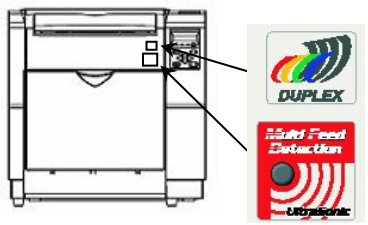
1. Features

The fi-4860C scanner offers high-speed color/monochrome scanning with high optical resolution of 400 dpi, available for wide range of document from A3 size to Double letter.

05 New type of fi-4860C scanner is introduced to support ultrasonic double feed detection and Thinner paper roller kit (0ption). The deference of Old and New type of the scanner is as follows.

07 The scanner, fi-4860C2, is introduced to support CGA Board installation instead of EGSA Board for VRS support. The fi-4860C and fi-4860C2 is as follows.

Table P/N and appearance of Old type scanner and New type scanner

	fi-4860C		fi-4860C2 07
	Old type	New type	
P/N of scanner	PA03296-B001 PA03296-B002 PA03296-B012 PA03296-B017	PA03296-B051 PA03296-B052 PA03296-B062 PA03296-B067	PA03296-B071 PA03296-B072 PA03296-B075 PA03296-B077
Appearance	 Front side	 Front side	
Serial number	Less than #10000	Moer than #10001	Moer than #00001

2. Scanner specifications

05

No.	Item		Specifications		
			fi-4860C		fi-4860C2 07
			Old type	New type	
1	Operating method		Automatic Document Feeder (ADF)		
2	Scanning speed** (Simplex/Duplex)		Monochrome: 60/120 page per minute (A4 portrait, 200dpi) Color: 60/120 page per minute (A4 portrait, 150dpi, with compression) Color: 60/120 page per minute (A4 portrait, 200dpi, with compression)		
3	Optical resolution		400dpi		
4	Output resolution		Monochrome: 100,150,200,240,300,400 dpi Grayscale: 100,150,200,240,300,400 dpi Color: 100,150,200,300,400* dpi		
5	Bit depth		Color 24bit, Gray 8bit, Monochrome 1bit		
6	Document	Size	Max: A3/Double letter (Portrait) Min: 74x74 (Length x Width)		
05		Thickness	52 to 127 g/m^2 (13.9 to 33.9 lbs)	52 to 127 g/m^2 (13.9 to 33.9 lbs) If "Thinner paper Roller Kit (Option)" is installed, 31 to 52 g/m^2 (9.6 to 13.9 lbs) with A4 size or smaller is additionally available. ****	
7	Capacity of hopper***		500 sheets (80g/m^2 or 20lb)		

Continued

No.	Item	Specifications		
		fi-4860C		fi-4860C2 07
		Old type	New type	
8	Optical system	Lens and mirrors in use		
9	Light source	White fluorescent lamp		
10	Interface	1 Ultra Wide SCSI, 1 Third party slot		
11	Attached driver	FJ TWAIN		
12	Operator panel	LCD display, 9 Buttons, 3 LEDs		
05 13	Detection method	By optical transmission of paper	By optical transmission and ultrasonic transmission of paper	
05 14	Option (P/N)	fi-486PRRE (PA03296-D200)	fi-486PRRE (PA03296-D200)	fi-486PRRE 07 (PA03296-D201)
		fi-486PRFR (PA03296-D206 or PA03296-D207)	fi-486PRFR (PA03296-D207) ****	
			fi-486TRK (PA03296-D780) ****	

* For A3 and Double letter, 400dpi cannot be specified.
** This indicates the speed of scanner engine. The actual scanning speed varies depending upon the PC used.
*** For hopper capacity corresponding to document size, see Table A below.

Table A Hopper capacity and document size

(Unit: sheet)

Document Size	Document thickness (g/m^2)						
	31 Note 1	52	64	75	90	104	127
A4/Letter or smaller	200	500	500	500	390	300	250
8.5" x 14"	N/A	300	300	300	240	180	150
B4/A3/11" x 17"	N/A	200	200	200	150	120	110

Note 1: this thickness is supported when Thinner roller kit (option) is installed in New type of scanner.

05 **** Following features are added to New type of scanner.

1) The double feed detection by ultrasonic sensor is added to increase detection accuracy. Refer to the Section 2.2(2) or Section 2.7 (Table 2.7, 13b) for detection algorithm. So the following parts are changed or added,
   - P/N Change of Control PCA (See Section 9.21)
   - P/N Change of Background unit (Front) (See Section 9.11)
   - P/N Change of Sensor PCA (See Section 9.25)
   - Addition of US Sensor (See Section 9.44)
   - Addition of US PCA (See Section 9.42)
   - Addition of USDV PCA (See Section 9.43)
   - P/N Change of fi-486PRFR (US sensor mount added)

2) Thinner paper roller kit (Option, fi-486TRK, see Section 3.3.1) is added for New type of the scanner to scan thin paper such as 31 g/m^2 (with A4 or smaller). However, please note the limitation of following document type.
   - Coated paper is not supported.
   - Tracing paper is supported under the condition of 10 to 30 degree C (50 to 86 degree F) and 20 to 65%RH

   To support this thin paper feeding, following maintenance parts are also modified.
   - P/N Change of Document feed section (See Section 9.16)
   - P/N Change of ADF unit (See Section 9.17)
   - P/N change of Background uit (Back) (See Section 9.13)

3) The setting of lamp control is added to Setup mode (Section 6.3.30). When "AlwaysOn" is set, the time from scanning activation to actual start of scanning becomes short.

1.2 Environmental Specifications

Table 1.2.1 Environmental Specifications

No.	Items	Specifications
1	Input power	AC100V ± 10%, 50/60Hz ± 3%
2	Power consumption	Max. 200W or less (Rated power)
3	Noise (in operation)	7.0 B (A) or less
4	Outer dimensions (mm)	Excluding Chute and Stacker Unit: 520 (W)x431(D)x523 (H) mm (When Hopper is open at maximum, the depth (D) will be 765 mm.) (When Upper transport unit and stacker is open, the height (H) will be 865 mm)
5	Weight (kg)	45kg or less (99lbs or less)
6	Temperature	15 degree ~ 35 degree
7	Humidity	20% ~ 80% (no condensation)

The following shows outer dimensions and required clearance around the scanner.

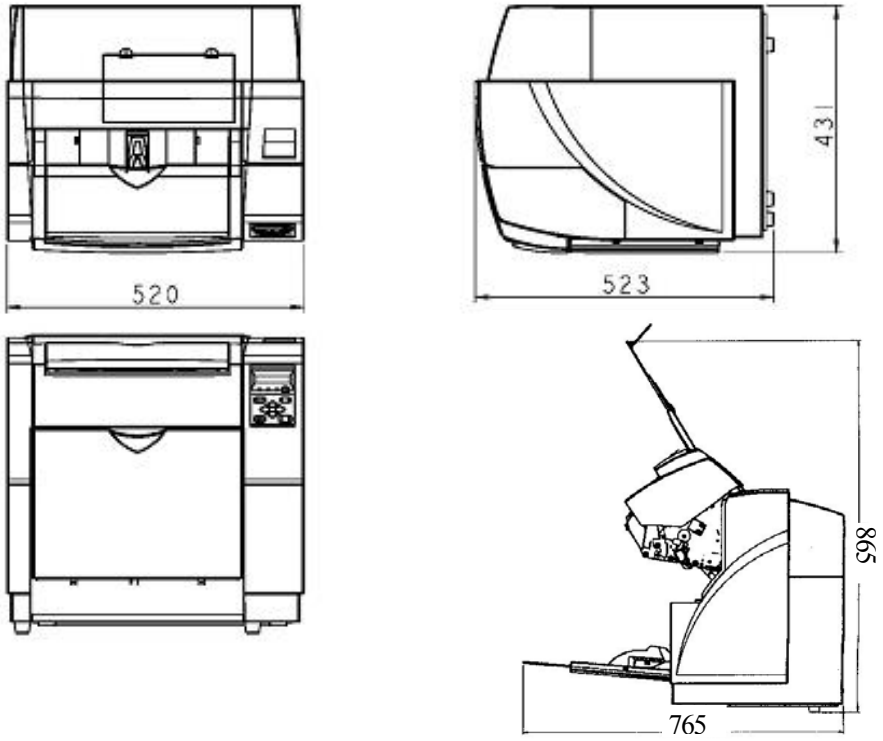
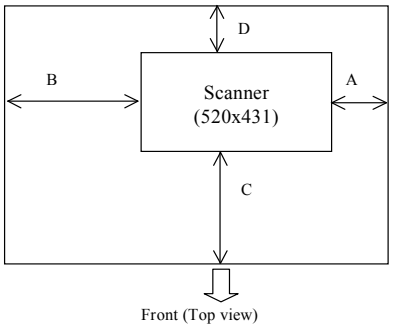


Table 1.2.2 Clearance

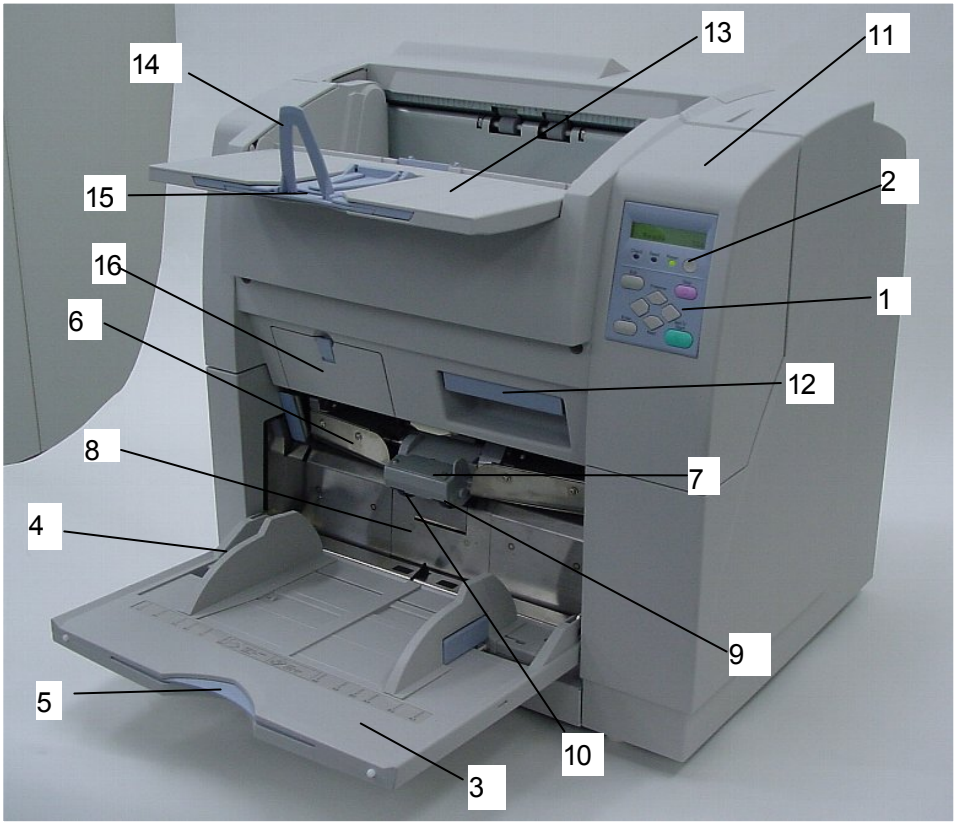
	Clearance
Right (A)	100 mm
Left (B)	500 mm
Front (C)	600 mm
Back (D)	100 mm



1.3 Scanner Appearance

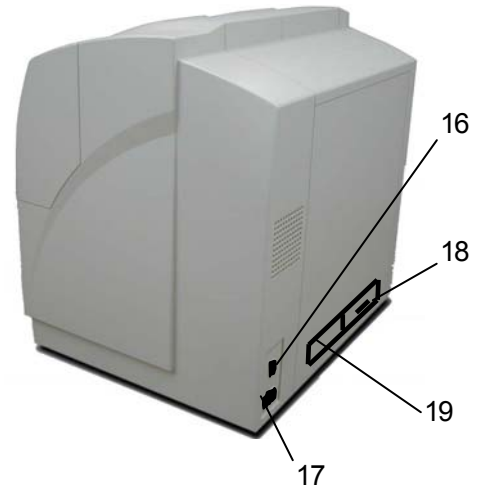
1.3.1 Front side view

02



No.	Name	Function
1	Operator panel	Used to operate the scanner. See section 1.3 for details.
2	Power button	Used to turn on or off the power.
3	Hopper table	Documents to be scanned are placed.
4	Hopper guides	Used to adjust the document width.
5	Hopper extension	Used to support longer documents.
6	Automatic document feeder (ADF)	Feeds the documents one by one.
7	Pick roller unit	Picks up a top document on the hopper.
02 8	Guide ~~unit~~ plate	This is where Pad is installed on.
9	Pad	Separates a top document from the remaining on the hopper.
10	Brake roller	Separates a top document from the remaining on the hopper.
11	Upper transport unit	Upper portion of the feed and scan mechanism. Open this unit for easy maintenance.
12	Lever	Used to open the upper transport unit.
13	Stacker table	This is where scanned documents are ejected.
14	Stopper A	Used to align the ejected document in the direction of feeding.
15	Stacker extension	Used to prevent documents from hanging down.
02 16	Imprinter cover	Used to align cartridge position

1.3.2 Backside view



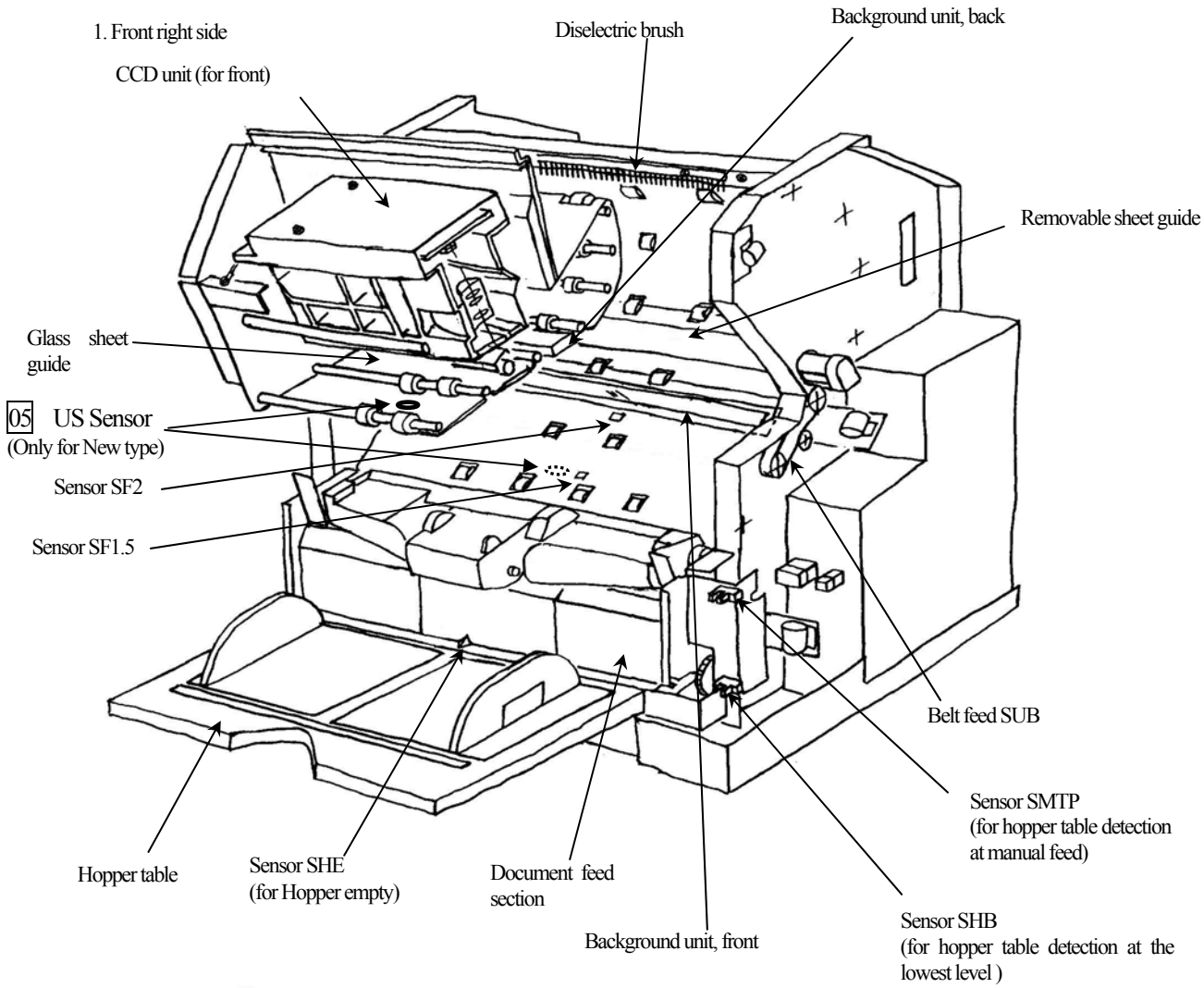
No.	Name	Function
16	Main line switch	Controls supply of line power to the scanner.
17	Power inlet	The power cable from an AC power outlet is connected.
18	SCSI Interface connectors	Ultra Wide SCSI interface (1pcs.).
19	Third Party Slot (TPS)	Allows installation of third party board designated by PFU.

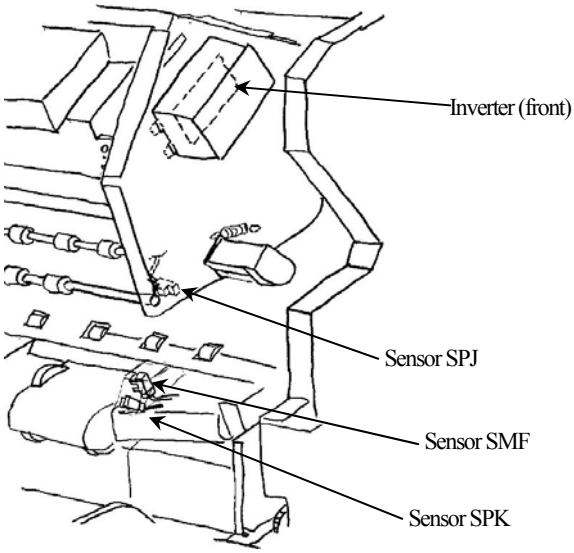
1.3.3 Operator panel

Button name	Function
⏻	Turns on/off the power when the main line switch is set to "|".
Send to/Start	Makes the scanner start scanning.
Stop	Clears error status while the Check lamp lights or blinks.
Enter	Changes menus and confirms setting in setup mode.
Exit	Returns to Ready display. Used in setup mode.
Previous	Goes back to previous menu screen.
Next	Goes to next menu screen.
◇	Used to change operation modes and settings.
◇	Used to change operation modes and settings.

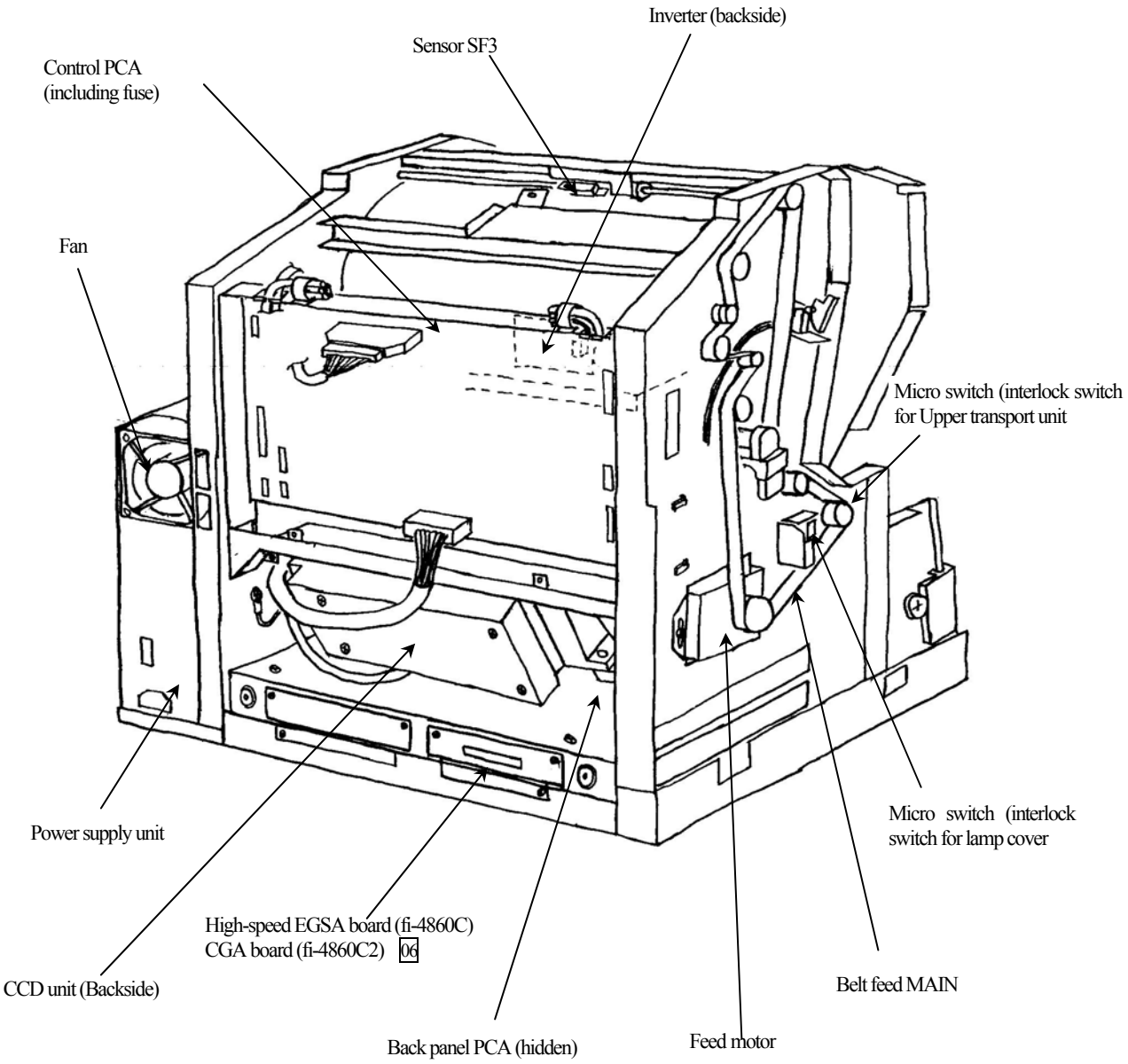
LED	Function
Power	Lights when the power is on.
Read	Lights when image is stored in the image buffer memory. Blinks when image buffer memory is empty.
Check	Lights when an alarm occurs. Blinks when a temporary error occurs.

1.4 Maintenance parts appearance

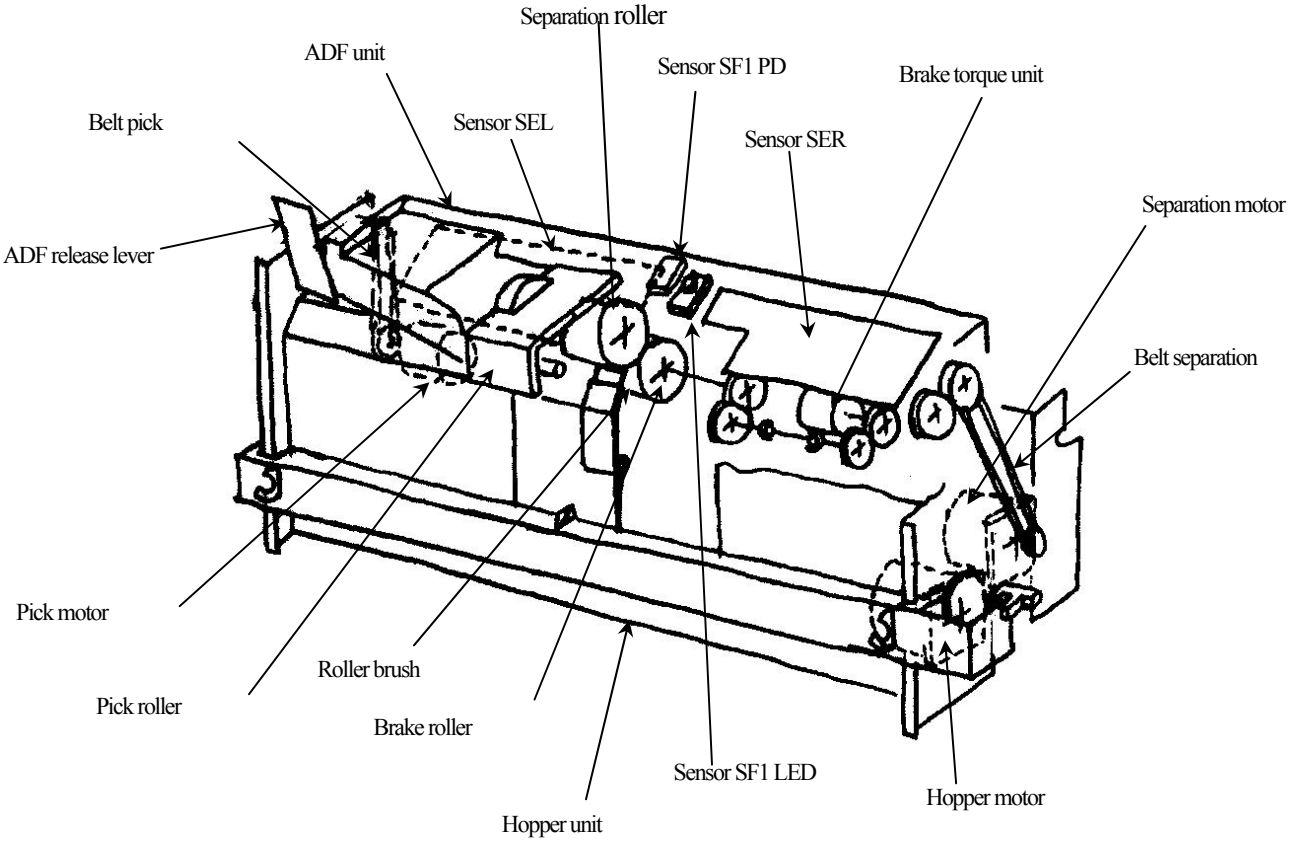




2. Back left side



3. Document feed section

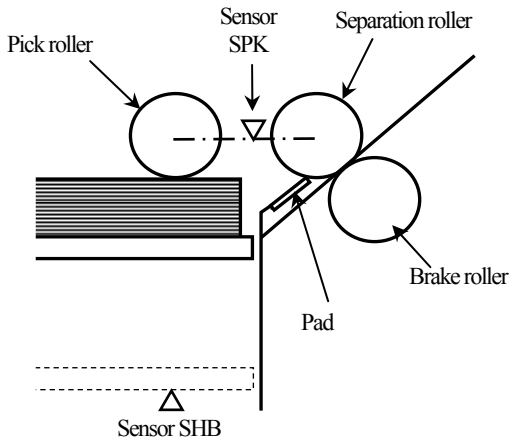


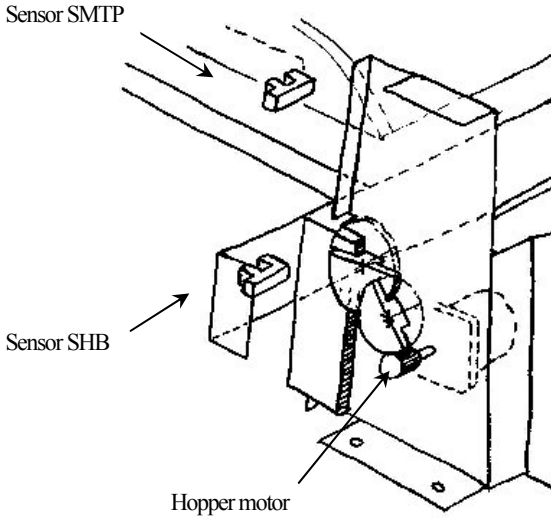
Chapter 2 Scanner operation

2.1 Hopper unit

1. General operation

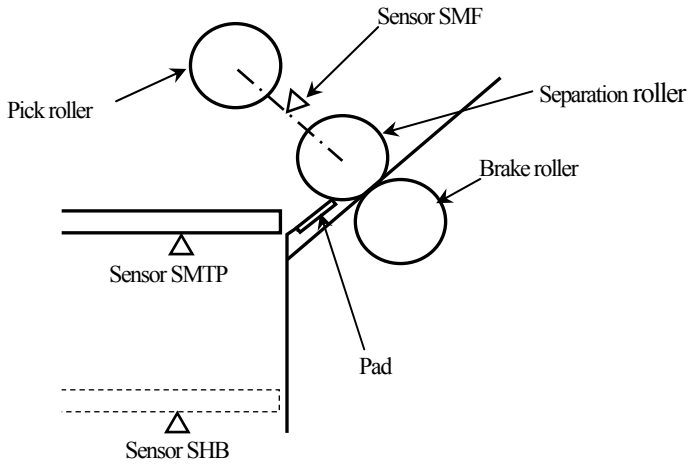
The hopper motor is an engine used to raise and lower the hopper table by using gears and racks. When the scanner is not in reading operation, the hopper table is lowered to the position of the Sensor SHB, which is the lowest level the hopper table can go for loading 500 sheets at maximum. However, if you press [Exit] for more than 2 seconds, the hopper table is raised up to the position at which 250 sheets can be stacked on the hopper.
After documents are loaded on the hopper and a scan command is issued, the hopper table starts moving up and then it stops at the position where the Pick roller can pick the document determined by the Sensor SPK.





2. Manual feed operation

When manual feed mode is activated (See Section 6.3.18), the hopper table moves up to the position where the Sensor SMF can detect and the Pick roller unit can be attached to the magnet of the Upper transport unit. Then the hopper table moves down to the position where the Sensor SMTP can detect and stay there until a document is inserted. The maximum time from when the host computer issues a scan command to when hopper empty error occurs is called as "Time-out". (Refer to Section 6.3.18 for changing the Time-out setting)
When a document is inserted, the Hopper empty sensor detects it and the hopper table moves up to the appropriate level so that the document can be picked by the Pick roller. The maximum time from when a document is inserted manually to when the pick operation starts is called as "Pick start time". (Refer to Section 6.3.18 for changing the Time-out setting)



2.2 ADF unit

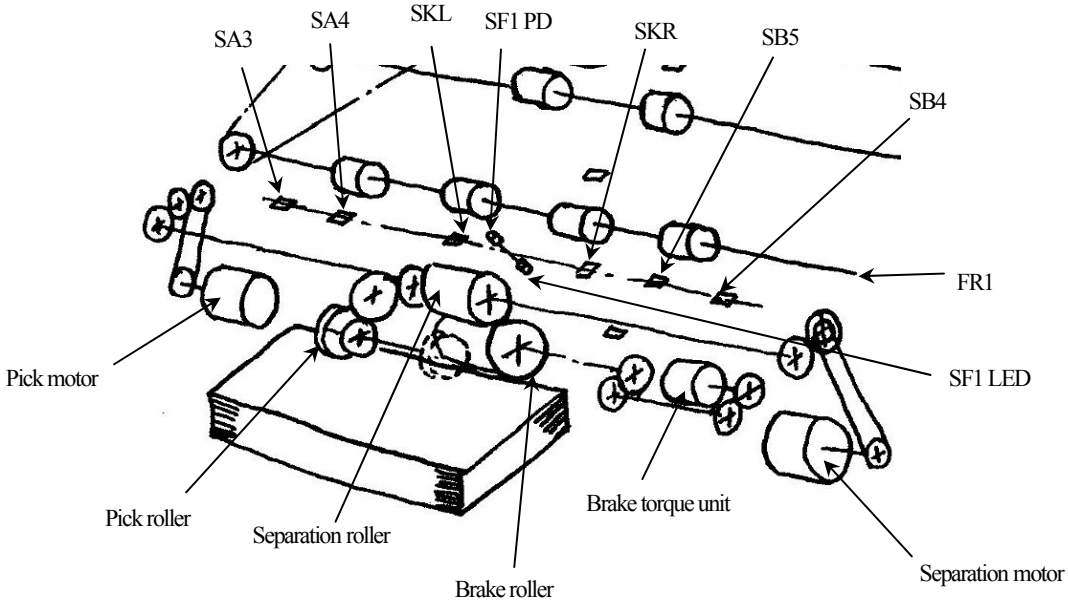
ADF unit includes from the Pick roller to the first feed roller (FR1).

1. Pick operation

The Pick motor is an engine used to activate the Pick roller to send the top document on the hopper to the Separation roller. There is a Pad in front of the Separation roller to control the number of the documents sent to the Separation roller and the Brake roller. Pick operation is monitored by the Sensor SF1 that is located in the rear of the Separation roller. Refer to Section 2.7 for error detection.

When the Pick roller fails to pick the document, the scanner tries the pick operation again. This is called as "Pick retry". You can change the number of pick motor rotation (how far a document is transported by one pick operation), the number of pick retry, and pick roller speed in the Setup mode (See Section 6.3.16 and 6.3.3). To enhance the scanning speed, the Pick roller starts pick operation for the next document as soon as the trailing edge of the previous document has passed through Sensor SF1.5. This is called as "Pre-pick" and you can disable this setting in the Setup mode. (See Section 6.3.2)

If the document length is shorter than 80 mm, the Pick roller keeps rotating even after the document has passed the roller and it results in picking the next document. As a result, the double feed margin may decrease for the following documents. In this case, you need to set Paper length setting to "Short" in the Setup mode (See Section 6.3.10), disable Pre-pick setting, and set Pick speed setting to "Slow".



2. Document Separation

The Separation roller is used to transport a document and driven by the Separation motor. The Brake roller is located under the Separation roller. When a document passes between the Separation roller and Brake roller, the Brake roller rotates to send the document while Brake torque unit puts some brake on the Brake roller avoiding double feed error. The load torque given by the Brake torque unit is specified at Separation setting in the Setup mode. (See Section 6.3.1)
Sensor SF1 and Sensor SF1.5 monitor the separation operation.

When the Brake roller fails to transport a document, the scanner tries it again. This is called as "Feed retry". You can change the number of Separation roller rotation (how far a document is transported by the Separation roller) and the number of feed retry in the Setup mode (See Section 6.3.17). Refer to Section 2.7 for error detection.

3. Double feed detection

Double feed is detected by the combination of following methods. Ultrasonic sensor is added to New type of the scanner.

05

No.	Detection method	Old type (See Section 1.1)	New type (See Section 1.1)
1	By the combination of optical transmission detection with Sensor SF1 and Rotation detection of Brake roller (See Section 6.3.4) *, **	A	A
2	By paper overlapping detection with US Sensor (Ultrasonic sensor) ***		A
3	By the paper length comparison between first paper length and subsequent paper length. (See Section 6.3.5) *	A	A

A: Applicable

* There are restrictions on document specifications to detect double feed error with the above methods (See Appendix B.3).

** You need to specify the standard thickness of a document by referring to Chapter 8.

*** Details of setting method are shown in Section 6.3.4b.

4. Skew detection

Skew error is detected by document size sensor in combination with Sensor SLR or Sensor SKL. (See Section 6.3.6)

For detection method, refer to Section 2.7 and Table 2.7.

5. Document width detection sensor

Document width detection sensors (Sensor A4, Sensor A3, Sensor B5, Sensor B4) are located next to Sensor SF1 to detect the document width.

6. Consumables

Consumables installed in the ADF unit are Pick roller unit, Pad and Brake roller. Refer to Section 3.3.1 for details.

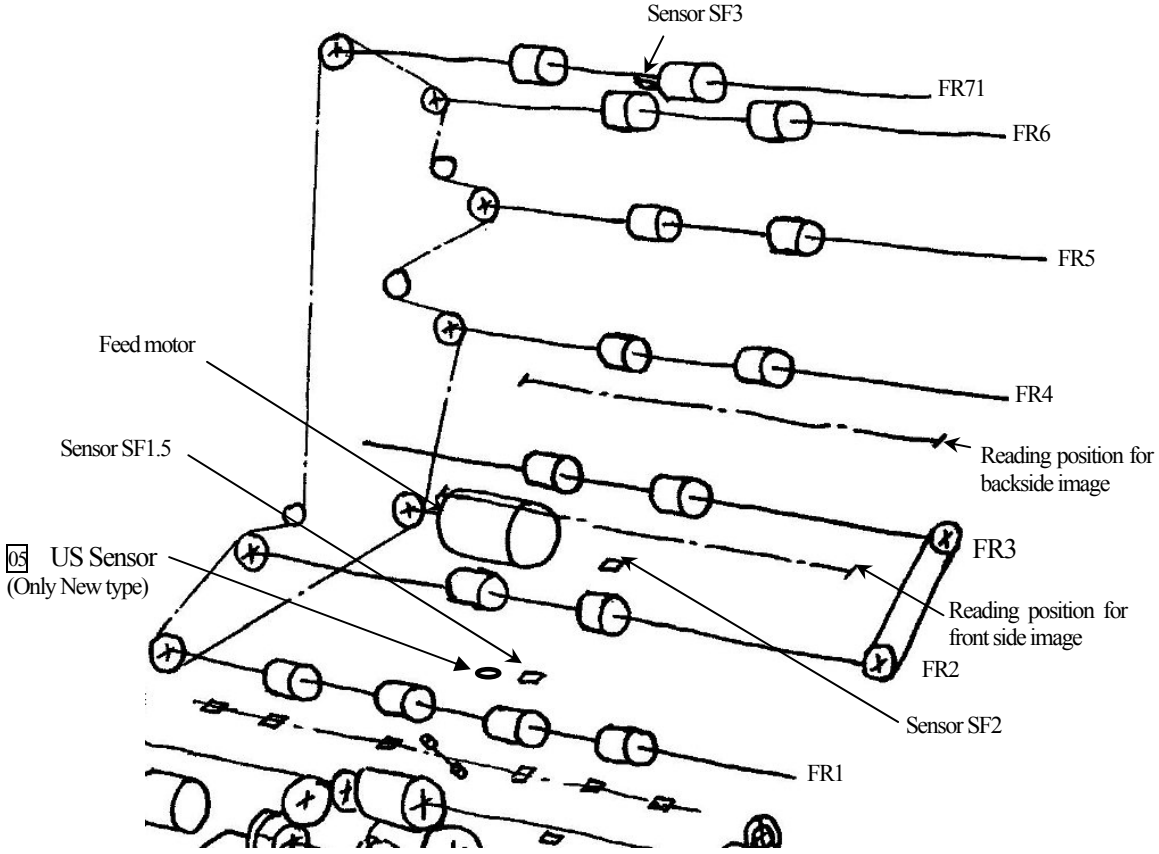
Each consumable has its own counter that shows how many documents have ever been scanned. (See Section 6.3.9)

You can set Abrasion alarm that let us know when a consumable counter has reached the value specified in advance. (See Section 6.3.8)

After replacing any consumables, you need to reset the abrasion counter by referring to Section 6.3.5.

2.3 Transport unit

Transport unit includes from the first feed roller (FR1) to just in front of the Stacker. Feed rollers (FR1 to FR7, 7 rollers in total) installed in the unit are used to transport a document from the ADF unit at the speed corresponding to reading resolution.



a) Reading position for front side image

This is the position where CCD unit for front side reads image between the second feed roller (FR2) and the third feed roller (FR3). In front of the reading position, Sensor SF2 is located to detect the timing when read operation starts, and under the reading position Background unit (front) is located to switch background color to either black or white. (See Section 6.3.12)

b) Reading position for backside image

This is the position where CCD unit for backside reads image between the third feed roller (FR3) and the fourth feed roller (FR4). On the opposite side, Background unit (back) is located to switch background color to either black or white. (See Section 6.3.13)

c) Document detection sensor and imprinter option

Users can install the optional front imprinter fi-486PRFR between the first feed roller (FR1) and the second feed roller (FR2). (See Chapter 10)

When the imprinter is installed, Sensor SF1.5 is used to detect the print start timing.

Between the sixth feed roller (FR6) and the seventh feed roller (FR7), Sensor SF3 is located to detect paper jam occurred in the transport unit, and also the optional rear imprinter (fi-486PRRE) can be installed.

Front imprinter and Rear imprinter can be both installed to the scanner together, but you should select one to be used by the Imprinter setting in the Setup mode. (See section 6.3.24)

To print sequential numbers, refer to Section 6.3.25. The remaining of ink cartridge and messages to replace it are shown on the operator panel. After replacing the ink cartridge (See Section 3.3.1), make sure to reset the ink remaining counter. (See Section 6.3.26)

2.4 Reading station

1. Optical system
An image on a document is projected to a color CCD through lens and mirror system and converted to signals with 10 bit per pixel at 400 dpi resolution.
Both front and backside images can be read simultaneously using two CCD units that are identical.
If there is difference in image density between front and backside image, you can adjust the image brightness by referring to Section 6.3.28.

2. Light source
The scanner has a white fluorescent lamp used to light the scanning area where the CCD unit reads in order to get sufficient CCD output. Refer to Section 3.3.1 for details such as the life of lamp. You should prepare the lamp in advance of the end of lamp life by checking Front/Backside lamp counters.

3. CCD amplifier gain control
Before scanning a document, the scanner reads white background of the reading position and adjusts the gain of CCD amplifier. If the CCD output does not reach a certain level after the gain adjustment, optical alarm appears.

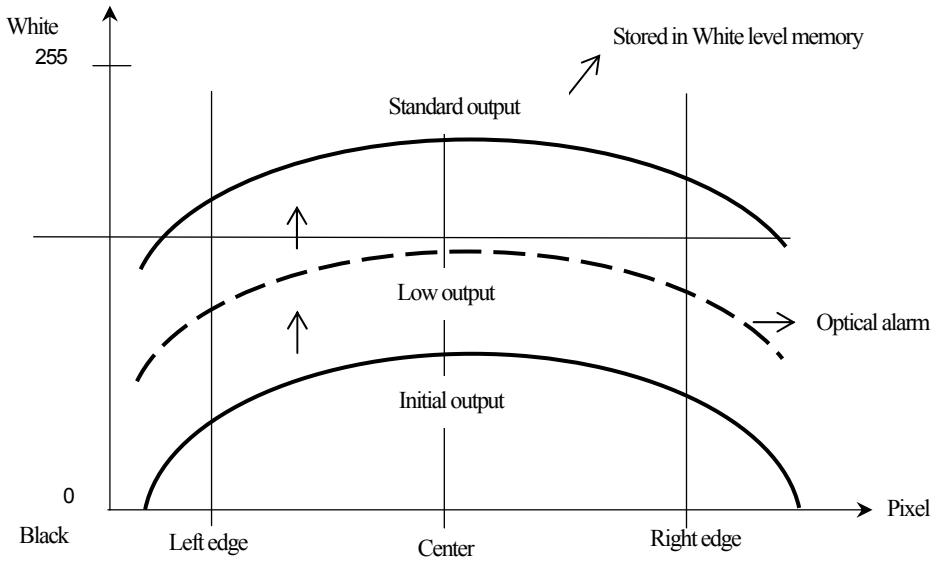


Figure 2.4 AGC (Automatic gain adjustment)

4. Image adjustment
You can adjust image offset by following the procedure described in Section 7.7.
When there is difference in image density between front and backside image, you can adjust the image brightness by referring to Section 6.3.28.
After replacing CCD unit, density adjustment for front and backside image is necessary to correct white level.

5. Consumables
Lamp is one of the consumables (See Section 3.3.1). A consumable counter is provided for each front and backside lamp and users can see cumulative lamp on hours by the method described in Section 6.3.9. After replacing a lamp, you need to reset the consumable counter. (See Section 6.3.5)

2.5 Scanner Controller

Figure 2.5.1 shows block diagram for this image scanner (See next page).
Major features in the control unit are described below.

1. Control PCA

The Control PCA controls each unit of the scanner using firmware. It also shows temporary error that is recoverable by users (See Section 2.7) and alarms that require maintenance by a service person (See Section 2.8) on the operator panel.
The Control PCA includes the following firmware.

Symbol	Purpose
SDC (Scanner Device Control)	Interface and image processing
MDC (Mechanical Device Control)	Mechanical control
SUC (Sensor Unit Control)	Sensor control

Firmware can be updated using update tool through SCSI interface.
Sensor sensitivity is adjusted automatically (See Section 7.8) and tested manually. (See Section 7.9)
You can set Power save mode setting in the Setup mode that has the scanner automatically enter into power save mode when the scanner is not in use. (See Section 6.3.27)
When the scanner is in power save mode, the operator panel displays nothing. To exit the power save mode, press any buttons or activate any application.
The control panel has EEPROM in which scanner's setting information is stored. (See Appendix C)
EEPROM data can be changed using the setting described in Section 7.12.

2. EGSA board / CGA board

07 The EGSA board (for fi-4860C) or CGA board (for fi-4860C2) is connected to the Back panel PCA as standard for image processing and Ultra wide SCSI output.
You can make image processing easier by setting IPC pre-set in the Setup mode. (See Section 6.3.7)
Also SCSI ID (Section 6.3.19), Product ID (Section 6.3.20), SCSI bus width (Section 6.3.21) can be set in the Setup mode.
For fi-4860C there are two 128 MB size memory boards installed in the EGSA board, and you do not need to extend the memory size any more for scanner operation. Next to output connector, there are LEDs (one is yellow and one is green) that lights and blinks when this board has failure such as malfunctioning, bad connection, or no memory.
For fi-4860C2 there is a 256 MB memory board installed in the CGA board, and you do not need to extend the memory size any more for scanner operation.

3. Interface

Third party slot (TPS) is used to add a third party board. When both SCSI connector and TPS connector are connected to the scanner at the same time, you can select an interface to be used by Interface setting in the Setup mode. (See Section 6.3.22)
You can also specify Baud rate by Baud rate setting in the Setup mode. (See Section 6.3.23)

See Figure 2.5.1 for block diagram that shows connection of the components inside the scanner.
See Figure 2.5.2 for cable configuration.

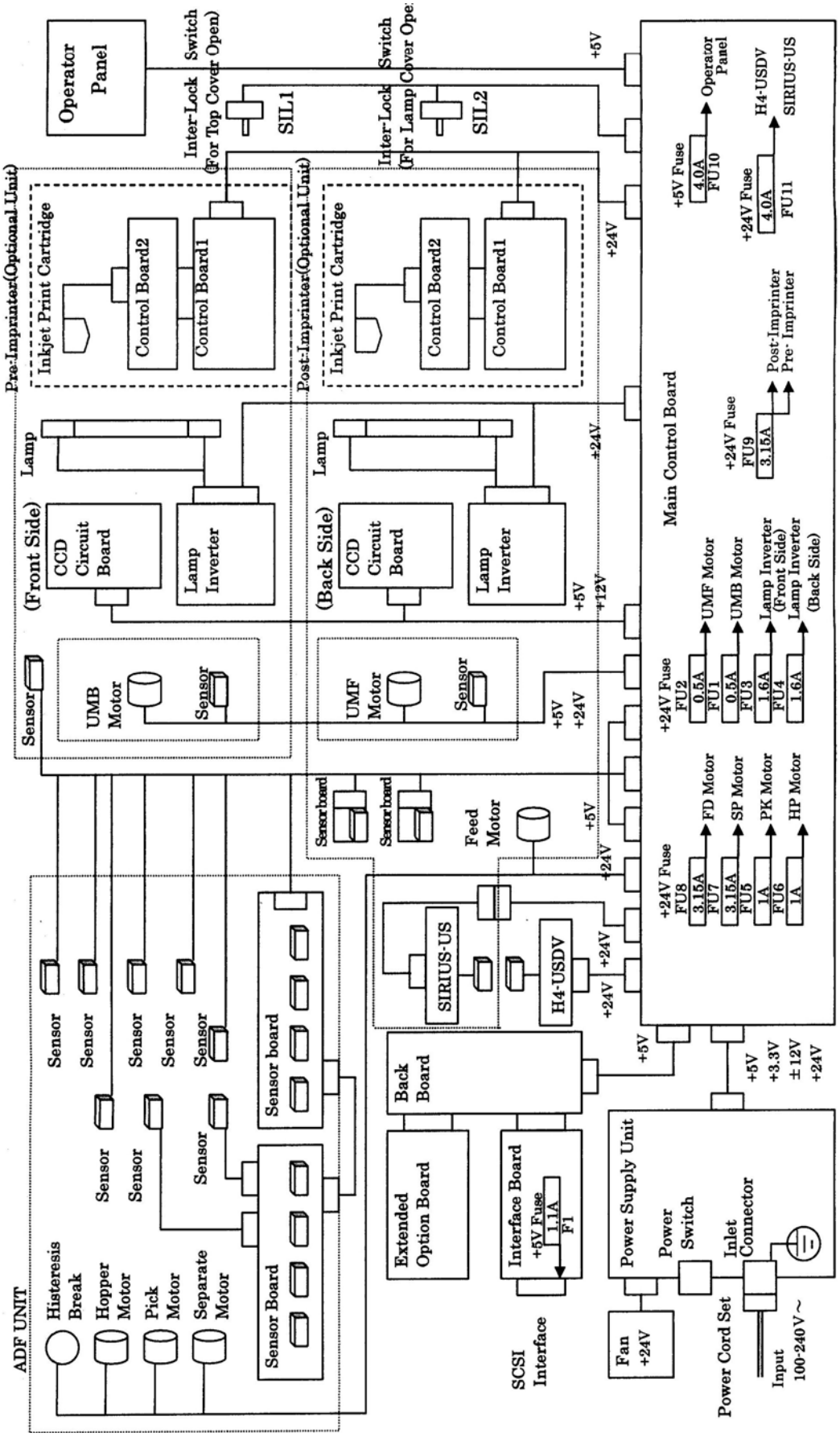


Fig. 2.5.1 Block Diagram

09	2008.1.7	K.Okada	T.Anzai	I.Fujioka	Refer to Revision Record pn page 2.	TITLE	fi-4860C/fi-4860C2 MAINTENANCE MANUAL
11	2009.2.20	T.Yoshimoto	A.Miyoshi	I.Fujioka	Refer to Revision Record on page 2	DRAW No	P8PA03296 - B001/6
10	2008.3.28	K.Okada	T.Anzai	I.Fujioka	Refer to Revision Record on page 2		
Rev.	D A T E	DESIG.	CHECK	APPR.	DESCRIPTION	PFU LIMITED	Page 23/280
DESIG.	2002.07.22	T.Anzai	CHEC	T.A	APPR. H. Hasegawa		

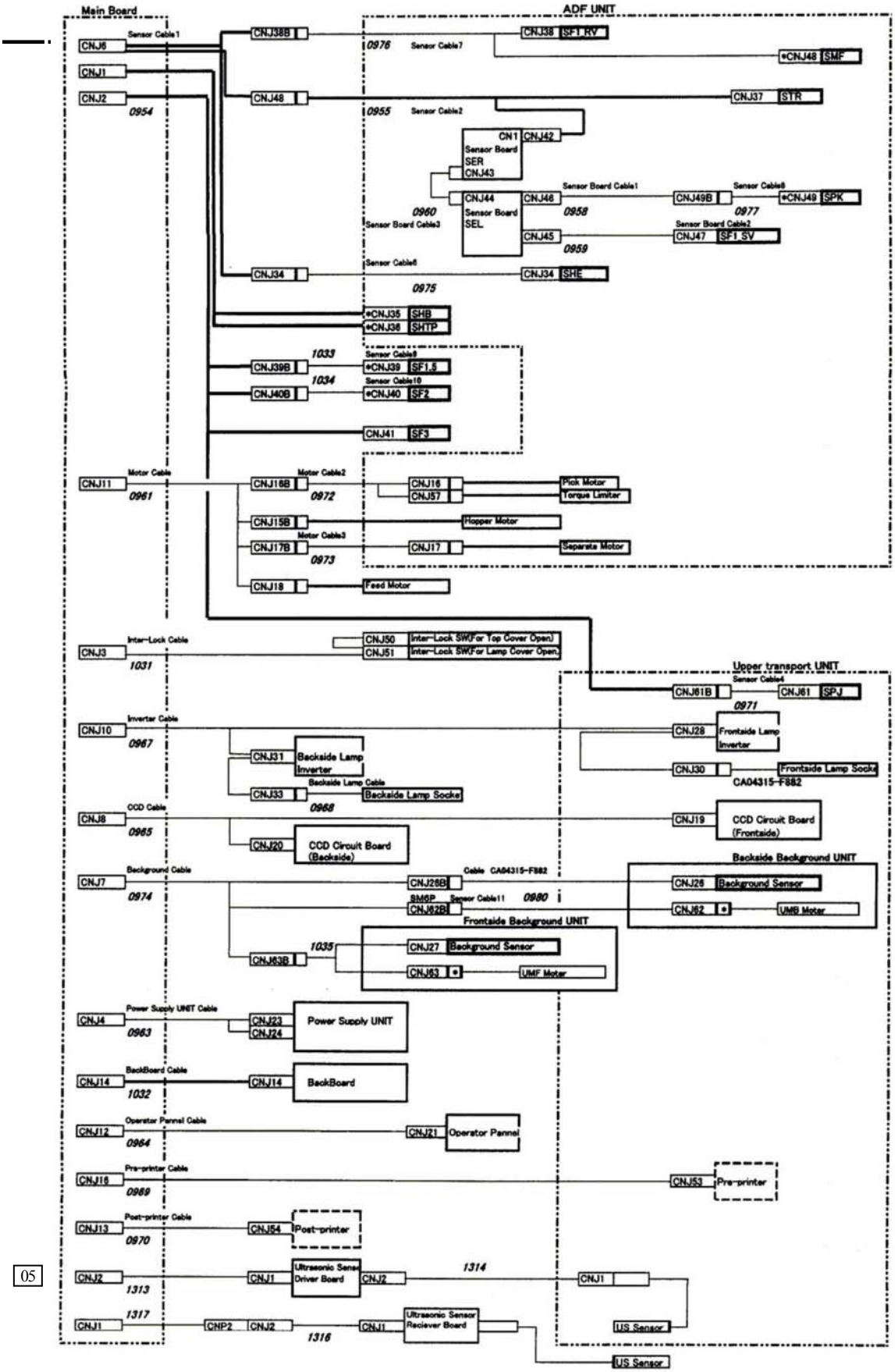


Figure 2.5.2 Cable connection

09	2008.1.7	K.Okada	T.Anzai	I.Fujioka	Refer to Revision Record pn page 2.	TITLE	**fi-4860C/fi-4860C2 MAINTENANCE MANUAL**
11	2009.2.20	T.Yoshimoto	A.Miyoshi	I.Fujioka	Refer to Revision Record on page 2	DRAW No	**P8PA03296 - B001/6**
10	2008.3.28	K.Okada	T.Anzai	I.Fujioka	Refer to Revision Record on page 2		
Rev.	D A T E	DESIG.	CHECK	APPR.	DESCRIPTION	PFU LIMITED	Page 24/280
DESIG.	2002.07.22	T.Anzai	CHEC	T.A	APPR. H. Hasegawa		

2.6 Self diagnostic functions

2.6.1 Self diagnostic at power-on

The scanner checks the following items at power-on and displays error if any.

No.	Check items	Error display	Remarks
1	RAM, LSI check	VDCC2 R/W Error	See Section 4.40
2	MDC timeout	MDC Timeout	See Section 4.40
3	MDC download	MDC download error	See Section 4.40
4	Dither γ RAM R/W	Dither/Gamma/ RAM R/W Error	See Section 4.40
5	Temporary memory R/W	TempMem R/W Error	See Section 4.40
6	EEPROM check	EEPROM Alarm	See Section 4.39
7	Sensor check	Sensor Control Alarm xxx Sensor dirty xxx Sensor error	See Section 4.33 See Section 4.35 See Section 4.36
8	Pick roller unit check	Pick roller unit not set	See Section 4.20
9	Brake roller check	Brake roller not set	See Section 4.22
10	Separation roller check	Separation roller worn	See Section 4.23
11	Mechanical initial check - Document ejection - Background unit - Hopper table position	 - Paper jam - Background unit error - Hopper over run	 See Section 4.13 See Section 4.31 See Section 4.32
12	24V Power supply check	Power supply error	

2.6.2 Self diagnostic during reading operation

The scanner checks the following items during reading operation and displays error if any

No.	Check items	Error display	Remarks
1	CCD output check (CCD amplifier gain adjustment)	Front Side Optical Alarm Back Side Optical Alarm	See Section 4.27
2	Hopper empty	Paper Empty	See Section 4.12
3	Paper jam	Paper jam n (n = 1-8)	See Section 4.13
4	Pick overrun	Pick over run	See Section 4.16
5	Mispick	Mis-pick	See Section 4.15
6	Motor fuse check for Background unit	Fuse alarm Background: xxxx	Checks at changeover operation. See Section 4.30
7	Motor fuse check	Fuse alarm xxxx motor	Checks when motor is rotating. See Section 4.28
8	Lamp fuse check	Fuse alarm xxxx Side lamp	Checks when lamp is lighting. See Section 4.29
9	Double feed check Paper length detection	Double Feed Length error	Checks only when the setting is enabled. See Section 4.17, 4.18
10	Skew check	Irregular paper	See Section 4.19

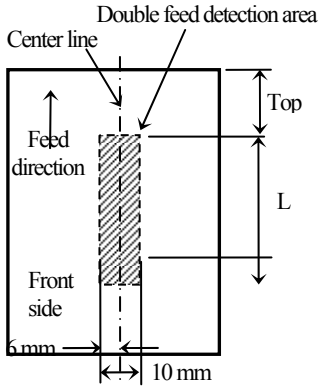
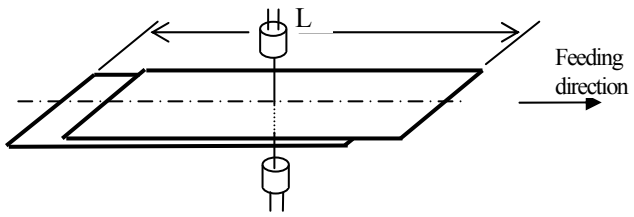
2.7 Temporary error

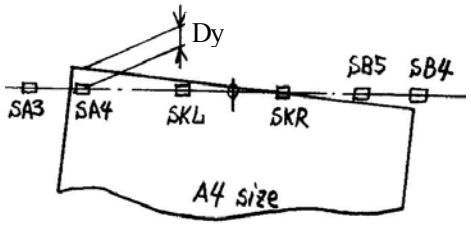
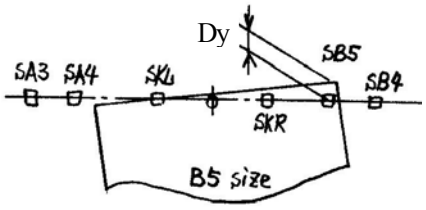
Temporary errors occur during scanning operation and can be remedied by an operator. The temporary errors are displayed on the operator panel of the scanner.
The display and detection algorithm of the temporary errors are described below.

Table 2.7 Temporary errors and detection algorithm

No.	Operator panel display	Detection algorithm and action to recover
1	"Paper Empty"	**No paper on the hopper** This error occurs when the Hopper empty (Sensor SHE) sensor detects no paper loaded on the hopper at the receipt of a Feed command. **How to recover:** Load a document on the Hopper table. When the error is detected wrongly, refer to Section 4.12.
2	"Paper jammed 1"	**Paper is jammed in the vicinity of SF1.** This error occurs when one of the followings occurs. 1) A document does not reach Sensor SF2. (The scanner retries the feed operation) 2) The top edge of a document does not reach Sensor SF1 after the scanner has transported the document by a certain distance. (The document may have slipped on the rollers) **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.
3	"Paper jammed 2"	**A document does not reach Sensor SF3 sensor.** This error is detected when a document does not reach Sensor SF3 sensor. (The scanner retries the feed operation) **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.
4	"Paper jammed 3"	**A document stuck around Sensor SF3.** This error is detected when Sensor SF3 does not detect the trailing edge of a document after detecting the top edge. **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.
5	"Paper jammed 4"	**A document stuck around Sensor SF2.** This error is detected when Sensor SF2 does not detect the trailing edge of a document after detecting the top edge. **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.

No.	Operator panel display	Detection algorithm and action to recover
6	"Paper jammed 5"	**The number of documents detected differs between Sensor SF 1.5 and SF 3.** **The document fed may be torn, or the multiple documents fed together may be separated.** This error occurs when Sensor SF2 detects more documents than Sensor SF1.5 did, or Sensor SF3 detects more documents than Sensor SF2 did **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.
7	"Paper jammed 6"	**A document is not ejected from paper path by Feed roller.** This error occurs when a sensor located in paper path detects a document. **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.
8	"Paper jammed 7"	**A document does not leave Sensor SF 1.5.** This error is detected when the top edge of a document does not reach Sensor SF1.5 after the top edge of the document was detected by Sensor 1 and transported a certain distance **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.
9	"Paper jammed 8"	**A document stuck around Sensor SF1.5.** This error occurs when the trailing edge of a document is not detected after the top edge was detected by Sensor 1.5 and transported a certain distance. **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.
10	"ADF-Cover Open"	**Upper transport unit is open** This error occurs when the interlock switch for the Upper transport unit detects that the ADF cover is open. **How to recover:** Close the ADF. If the error is detected wrongly, refer to Section 4.14.
11	"Mis-pick"	**A document jammed in front of Sensor SF1** This error occurs when a document does not reach Sensor SF1 even though the scanner is trying to pick the document. (The scanner retries the pick operation) **How to recover:** Press [Stop]. If the error occurs frequently, refer to Section 4.15.
12	"Pick over run"	**A picked document has reached Sensor SF2 before reading operation starts and the top edge cannot be detected.** This error occurs when Sensor SF2 detects a document while Feed roller rotation is being accelerated for reading operation. **How to recover:** Remove the jammed document and press [Stop] button. If this error frequently occurs, refer to Section 4.13.

No.	Operator panel display	Detection algorithm and action to recover
13a	"Double Feed"	**Double feed detection by paper thickness and Brake roller rotation** To detect double feed error by paper thickness, you need to decide the standard thickness by reading a document in advance. (See Chapter 8) The scanner detects double feed by comparing the standard thickness to that of documents being scanned. When "Thickness" is selected at Double feed setting in the Setup mode (See section 6.3.4), the scanner detects double feed error using Sensor SF1 that checks transmitted light intensity through a document. When "Thickness&Roller" is selected in the same setting, the scanner uses not only Sensor SF1 but also Sensor STR that detects the Brake roller rotation. When "Pick" is selected at DF timing setting in the Setup mode, the scanner detects double feed error while a document is fed up to 8 mm from the top edge of the document. When "Pick&Feed" is selected in the same setting, the scanner checks if a document has more than 10 mm black area (where documents are overlapped) from the top edge to the trailing edge and detects double feed error. **How to recover:** Open the Upper transport unit and remove the jammed document, and then press [Stop] button. If this error frequently occurs, refer to Section 4.17.
05 13b	"SUS Double feed" (Only New type of the scanner)	**Double feed detection by ultrasonic sensor** A pair of US sensors near SF1.5 detects the document overlapping by ultrasonic technology. The detection by this method two options. - Around center line from top to bottom Top=0, L= Document length - Some specified area in the sheet (See left) If other paper is glued on the document, set the detection area to exclude glued paper **How to recover:** Open the Upper transport unit and remove the jammed document, and then press [Stop] button. If this error frequently occurs, refer to Section 4.17. 
14	"Length error"	**Double feed detection by paper length** Using Sensor SF1, the scanner measures the length of the document transported for the first time after the hopper empty error. The measured length is used as a standard length to be compared with the length of subsequent documents to be scanned. If the second document is shorter than the first one, it means the double feed occurred at the first document. Double feed is detected when the difference between the standard length and the length of a document being scanned exceeds the value specified by the operator panel (See Section 6.3.5) or command (±10, ±15, ±20 mm).  L – paper length > ±10, ±15, ±20 (selectable) **How to recover:** Open the Upper transport unit and remove the jammed document, and then press [Stop] button. If this error frequently occurs, refer to Section 4.18.

No.	Operator panel display	Detection algorithm and action to recover
15	"Irregular paper"	**Skew error is detected.** Sensors used for skew detection vary depending upon the document width being scanned. Skew error is detected by the value "Dy" that is measured between the top edge of the document and Sensor SKR (for A3 and A4 size) or Sensor SKL (for B4 and B5 size).  For A4 size document  For B5 size document **How to recover:** Remove the document causing skew error and press [Stop] button. If this error frequently occurs, refer to Section 4.16.
16	"Hopper overload" "Pick roller unit not set"	**Too many documents on the hopper, or no Pick roller unit installed.** Sensor SPK has been turned OFF before raising the Hopper table for reading operation. (The Pick roller unit has been raised too high.) **How to recover:** Press [Stop] button and decrease the number of documents loaded on the Hopper table, or install the Pick roller unit if necessary. If this error is detected wrongly, refer to Section 4.20.
17	"Pick roller unit"	**Pick roller unit stays attached to the magnet of the Upper transport unit in normal scanning.** Sensor SMF is ON when ADF scanning is activated. **How to recover:** Press [Stop] button and lower the Pick roller unit down. If this error is detected wrongly, refer to Section 4.21.
18	"Brake roller not set"	**Brake roller is not installed.** Brake roller rotation is not detected by Sensor STR even when setting the load torque of the Brake roller to OFF and rotating the Separation roller. **How to recover:** Press [Stop] button and install the Brake roller. If this error is detected wrongly, refer to Section 4.22.

No.	Operator panel display	Detection algorithm and action to recover
19	"Separation roller worn"	**Insufficient friction of Separation roller or improper installation of Pick roller unit** Brake roller rotation is not detected by Sensor STR even when setting the load torque of the Brake roller to ON and rotating the Separation roller. **How to recover:** Press [Stop] button and check the surface of the Brake roller and if the Pick roller unit is properly installed. If this error is detected wrongly, refer to Section 4.23.
20	"Abrasion alarm"	**Consumable replacement necessary** Abrasion counter exceeds the specified value set at the Abrasion alarm setting in the Setup mode. (See section 6.3.8) To check and reset the abrasion counter, refer to Section 6.3.9. **How to recover:** Press [Stop] button, replace the consumable, and reset the abrasion counter. If this error is detected wrongly, refer to Section 4.24.
21	"xxx No Ink Cartridge"	**No ink cartridge installed.** This error is detected by pin connection to the ink cartridge. "xxx" on the display shows either Pre (Front imprinter, fi-486PRFR) or Post (Rear imprinter, fi-486PRRE). **How to recover:** Press [Stop] button and install an ink cartridge. If this error is detected wrongly, refer to Section 4.25.

2.8 Alarms

Alarms require the maintenance conducted by an authorized service person. The following table shows the display and occurrence algorithm for alarms. Refer to Chapter 4 for how to remove alarms.

Table 2.8 Alarms and their occurrence algorithm

No.	Operator panel display	Occurrence algorithm	Related section
1	"Front Side Optical Alarm"	**Front side CCD unit alarm** The followings occurred related to Front side CCD unit and Front lamp: - No CCD output - CCD output dropped locally - Unable to adjust CCD amplifier gain due to too large or small CCD output - Amplifier gain not adjusted when using TPS board and black background. Press [Stop] to reset the alarm. Probable causes: - Lamp, optical system background (white) are dirty. - Defective Lamp or CCD - Connector disconnected.	4.27
2	"Back Side Optical Alarm"	**Backside CCD unit alarm** The followings occurred related to Backside CCD unit and Front lamp: - No CCD output - CCD output dropped locally - Unable to adjust CCD amplifier gain due to too large or small CCD output - Amplifier gain not adjusted when using TPS board and black background. Press [Stop] to reset the alarm. Probable causes: - Lamp, optical system background (white) are dirty. - Defective Lamp or CCD - Connector disconnected.	
3	"Fuse alarm Feed motor"	**Feed motor driving power supply fuse blown** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of motor cable damaged - Insulation corrupted inside the motor	4.28
4	"Fuse alarm Separation motor"	**Separation motor driving power supply fuse blown** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of motor cable damaged - Insulation corrupted inside the motor	4.28

No.	Operator panel display	Occurrence algorithm	Related section
5	"Fuse alarm Pick motor"	**Pick motor driving power supply fuse blown** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of motor cable damaged - Insulation corrupted inside the motor	4.28
6	"Fuse alarm Hopper motor"	**Hopper motor driving power supply fuse blown** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of cable damaged - Insulation corrupted inside the inverter	4.28
7	"Fuse alarm Front Side lamp"	**Front side inverter driving power supply fuse blown** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of motor cable damaged - Insulation corrupted inside the motor	4.29
8	"Fuse alarm Back Side lamp"	**Back side inverter driving power supply fuse blown** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of motor cable damaged - Insulation corrupted inside the motor	4.29
9	"Fuse alarm Background: Front"	**Background motor driving power supply fuse blown (front)** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of motor cable damaged - Insulation corrupted inside the motor	4.30
10	"Fuse alarm Background: Back"	**Background motor driving power supply fuse blown (back)** This alarm occurs when fuse blown signal is detected. Press [Stop] to reset the alarm. Probable causes: - A bit of metal material dropped on the Control PCA - Insulating material of motor cable damaged - Insulation corrupted inside the motor	4.30
11	"Front side Background Alarm"	**Background unit (front) unable to switch background** Background changeover does not complete within a certain time. Sensor FBP does not detect the changeover. (SDC time-out) Press [Stop] to rest the alarm. Probable causes: - Background unit or Sensor FBP failure - Foreign material got inside the Background unit.	4.31

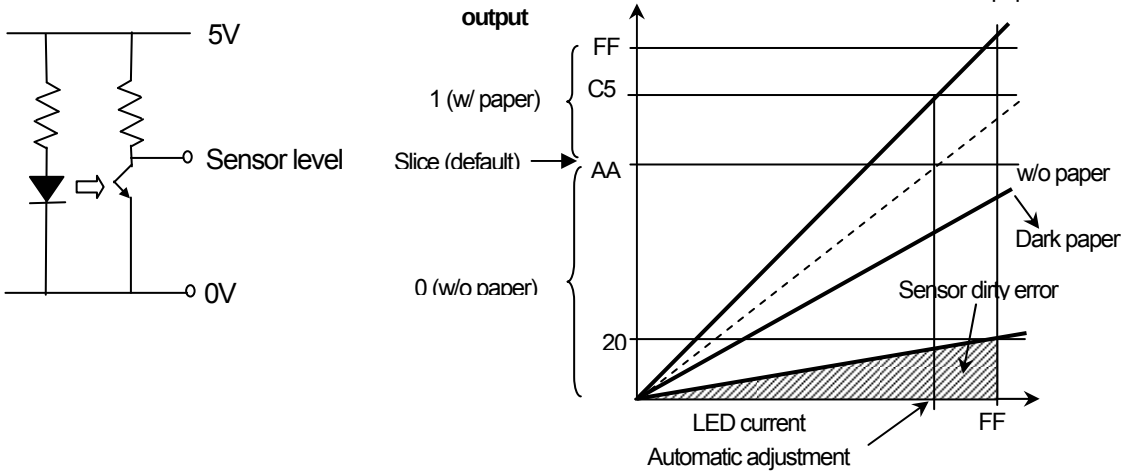
No.	Operator panel display	Occurrence algorithm	Related section
12	"Back side Background Alarm"	**Background unit (back) unable to switch background** Background changeover does not complete within a certain time. Sensor FBP does not detect the changeover. (SDC time-out) Press [Stop] to rest the alarm. Probable causes: - Background unit or Sensor FBP failure - Foreign material got inside the Background unit	4.31
13	"Hopper over run"	**Cannot detect hopper table position** Sensor SHB or SMTP does not detect the hopper table after a certain time has elapsed since the hopper table was moved. Press [Stop] to rest the alarm. Probable causes: - Hopper motor or Sensor STMP, SHB failure - Foreign material got inside the Hopper table driving unit	4.32
14	"Sensor Control Alarm"	**Sensor control firmware (SUC) is not functioning** SUC does not reply to the commands issued for setting the sensor current or slice level, or motor current change. (SUC time-out) Press [Stop] to rest the alarm. Probable cause: - SUC failure	4.33
15	"xxx Imprinter Alarm"	**Imprinter initial check failure** RAM check and initial processing for Imprinter do not complete. "xxx" on the display shows either Pre (Front imprinter, fi-486PRFR) or Post (Rear imprinter, fi-486PRRE). Probable cause: - Imprinter operation failure	4.34

<table>
<tr><th>No.</th><th>Operator panel display</th><th>Occurrence algorithm</th><th>Related section</th></tr>
<tr><td>16</td><td>“xxx Sensor dirty”</td><td>Low sensor output
This alarm occurs when sensor output changes to 0 from 1 with LED current at maximum (FFh) and slice value set to less than 20h at sensor adjustment.
This error arises at power-on, sensor automatic adjustment test and cover open/close.
Press [Stop] to rest the alarm.
“xxx” shows one of the following sensor symbols.

<table>
<tr><th>No.</th><th>Sensor symbol</th><th>Sensor</th></tr>
<tr><td>1</td><td>SF0</td><td>Sensor SF0</td></tr>
<tr><td>2</td><td>SF1</td><td>Sensor SF1</td></tr>
<tr><td>3</td><td>SF1.5</td><td>Sensor SF1.5</td></tr>
<tr><td>4</td><td>SF2</td><td>Sensor SF2</td></tr>
<tr><td>5</td><td>SF3</td><td>Sensor SF3</td></tr>
<tr><td>6</td><td>SB5</td><td>Sensor SB5</td></tr>
<tr><td>7</td><td>SA4</td><td>Sensor SA4</td></tr>
<tr><td>8</td><td>SB4</td><td>Sensor SB4</td></tr>
<tr><td>9</td><td>SA3</td><td>Sensor SA3</td></tr>
<tr><td>10</td><td>SKR</td><td>Sensor SKR</td></tr>
<tr><td>11</td><td>SKL</td><td>Sensor SKL</td></tr>
<tr><td>12</td><td>SPJ</td><td>Sensor SPJ</td></tr>
</table>

Probable cause:
- Sensor dirty or failure</td><td>4.35</td></tr>
</table>

Note:
Sensor has the LED used for light emitting and the photodiode used for light receiving. The emitted light intensity is controlled by LED current. The output from photodiode corresponds to the light intensity and is binarized by slice level. The slice level and current value are determined depending upon the photodiode output that is affected by reflection rate of a document (transmitted light intensity rate), sensor dirt, and power voltage fluctuation.



At Sensor automatic adjustment, the slice level is set at C5h and the LED current is increased from 00. The LED current value is determined when the sensor output changes to 0 from 1.

Sensor dirty error is detected if the slice level is less than 20h when the sensor output changes to 1 from 0 with the LED current value at maximum (FFh).

Even when the LED current is set at maximum (FFh), Sensor error is detected if there is no sensor output.

<table>
<tr><th>No.</th><th>Operator panel display</th><th>Occurrence algorithm</th><th>Related section</th></tr>
<tr><td>17</td><td>“xxx Sensor error”</td><td>Low sensor output
This alarm occurs when there is no sensor output with LED current increased at maximum (FFh).
This error arises at power-on, sensor automatic adjustment test and cover open/close.

Press [Stop] to rest the alarm.
“xxx” shows one of the following sensor symbols.

<table>
<tr><th>No.</th><th>Sensor symbol</th><th>Sensor</th></tr>
<tr><td>1</td><td>SF0</td><td>Sensor SF0</td></tr>
<tr><td>2</td><td>SF1</td><td>Sensor SF1</td></tr>
<tr><td>3</td><td>SF1.5</td><td>Sensor SF1.5</td></tr>
<tr><td>4</td><td>SF2</td><td>Sensor SF2</td></tr>
<tr><td>5</td><td>SF3</td><td>Sensor SF3</td></tr>
<tr><td>6</td><td>SB5</td><td>Sensor SB5</td></tr>
<tr><td>7</td><td>SA4</td><td>Sensor SA4</td></tr>
<tr><td>8</td><td>SB4</td><td>Sensor SB4</td></tr>
<tr><td>9</td><td>SA3</td><td>Sensor SA3</td></tr>
<tr><td>10</td><td>SKR</td><td>Sensor SKR</td></tr>
<tr><td>11</td><td>SKL</td><td>Sensor SKL</td></tr>
<tr><td>12</td><td>SPJ</td><td>Sensor SPJ</td></tr>
</table>

Probable cause:
- Sensor, sensor cable or sensor connector failure</td><td>4.36</td></tr>
<tr><td>18</td><td>“Temperature alarm”</td><td>Ambient temperature of Control PCA exceeds 70 degree
This alarm is detected by thermistor of the Control PCA.
Press [Stop] to rest the alarm.

Probable cause:
- Fan stop, improper installation environment</td><td>4.37</td></tr>
<tr><td>19</td><td>“Power supply error”</td><td>24 V power voltage is not activated.
This alarm occurs when 24 V signal is not turned ON.
Power off to reset the alarm.

Probable cause:
- Power supply failure</td><td>4.38</td></tr>
<tr><td>20</td><td>“ADDRESS 00H EEPROM Alarm”</td><td>Unable to write/read EEPROM
The error address is recorded in address #2. The default is “00h”.
Press [Stop] to rest the alarm.

Probable cause:
- EEPROM failure</td><td>4.39</td></tr>
<tr><td>21</td><td>“Command Error1”</td><td>Time-out error at test relating command
MDC command time-out.
Restart the scanner to recover.

Probable cause:
- Control PCA failure</td><td>4.40</td></tr>
<tr><td>22</td><td>“Command Error2”</td><td>Time-out error at on-line relating command
MDC command time-out.
Restart the scanner to recover.

Probable cause:
- Control PCA failure</td><td>4.40</td></tr>
</table>

No.	Operator panel display	Occurrence algorithm	Related section
23	"Command Error3"	**Commands are not issued for SCDL in correct order.** SDCL command sequence error. Press [Stop] to recover. Probable cause: - Control PCA failure	4.40
24	"Command Error4"	**MDC returned abnormal response** MDC abnormal response error. Press [Stop] to recover. Probable cause: - Control PCA failure	4.40
25	"Command Error5"	**SCSI response time-out** No response has been made to SCSI host command by the host after 1 minute elapsed. Press [Stop] to recover. Probable cause: - Control PCA failure	4.40
26	"MDC Timeout"	**MDC Timeout** MDC does not respond. Restart the scanner to recover. Probable cause: - Control PCA failure	4.40
27	"VDCC2 R/W Error"	**VDCC2 (LSI) read/write error** Restart the scanner to recover. Probable cause: - Control PCA failure	4.40
28	"MDC download Error"	**MDC firmware download failed** Restart the scanner to recover. Probable cause: - Control PCA failure	4.40
29	"Dither/Gamma R/W Error"	**Dither, γ, RAM read/write error** Restart the scanner to recover. Probable cause: - Control PCA failure	4.40
30	"TempMem R/Werror"	**Memory read/write error** Temporary RAM read/write error. Restart the scanner to recover. Probable cause: - Control PCA failure	4.40
05 31	"SUS Sensor error"	**US Sensor output error** This error occurs in the following case. When power of the scanner is turned On, or when Upper transfer unit is closed, - Output of US Sensor can not be amplified to the required range. - Connectors of the cables between Control PCA and US PCA or USDV PCA are not connected. - Temporal US sensor setting by scanner, which takes place when adjustment by Section 7.14 is not done, failed, During the Ultrasonic Sensor adjustment (Section 7.14) - US Sensor output is smaller than the back noise of it. - US Sensor output is out of the required range. Probable cause: -Some failure in US Sensor, US PCA, USDV PCA, or Control PCA	4.41

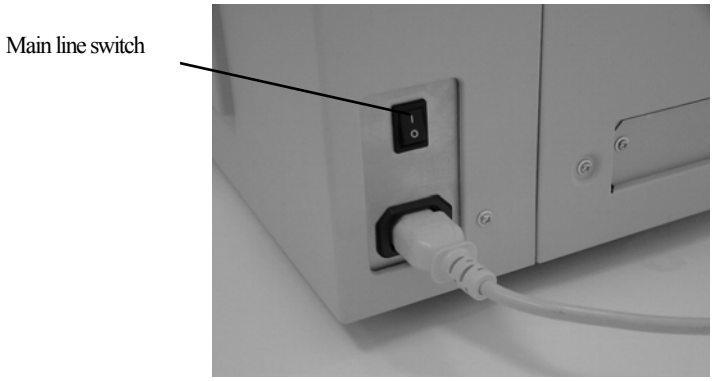
Chapter 3 Basic Operation/Cleaning

3.1 Basic Operation

3.1.1 Turning the Scanner ON/OFF

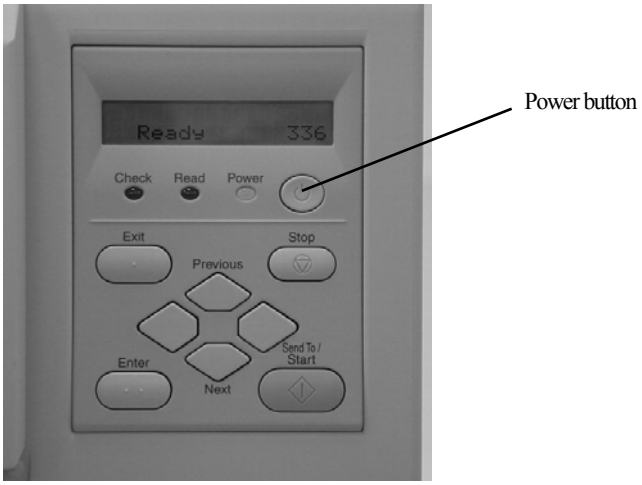
<How to turn the scanner ON>

1. Press "I" side of the main line switch located on the back of the scanner.



Backside view

2. Press the power button of Operator panel.
   The power turns on and the green Power LED at the operator panel lights. Operator panel LCD shows "Ready" to indicate the scanner is in the READY state.



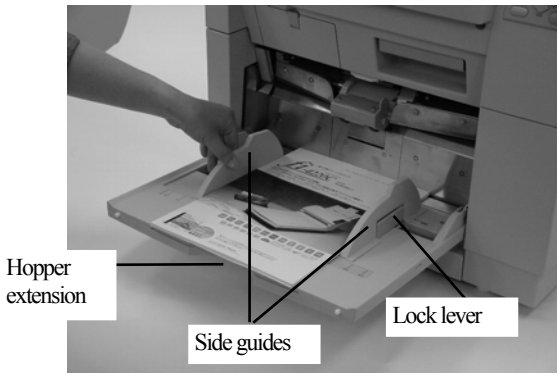
<How to turn the scanner OFF>

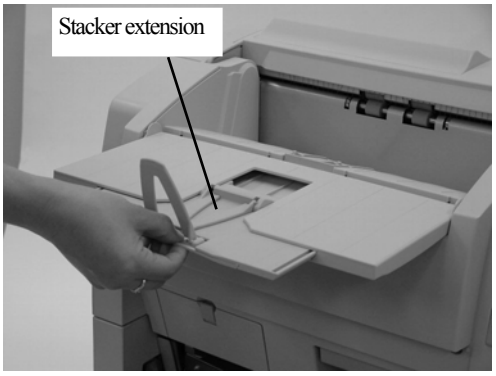
1. Press and hold the Power button of the Operator panel for two seconds or longer.
2. Press "O" side of the main line switch located on the back of the scanner.

3.1.2 Loading Documents on the Hopper

Set documents on the hopper by following the procedure below.

Straighten the edges of the documents and fan the document well. Place the documents face-up on the hopper table and adjust the Side guides to the document width while pressing the lock lever.
For loading long documents, extend the hopper extension.





To load documents for manual feed, lift the Pick roller until it is held by the magnet catch. The hopper table automatically moves up to feed position. Load and insert a document so that the top edge of the documents contacts to the Separation roller in the ADF.

3.1.3 Removing Jammed Documents

If a document jam occurs during feeding, follow the procedure below to remove the jammed documents.

< Removing jams from the hopper or the ADF >

1. Remove the documents on the stacker.
2. Pull up the lever on the right front of the scanner to open the upper transport unit.
3. Pull the ADF release lever toward you and lift up the ADF upper sheet guide.
4. Remove the jammed documents

< Removing jams from the paper path >

1. Remove the documents on the stacker.
2. Pull up the lever on the right front of the scanner to open the upper transport unit.
3. Remove the jammed documents

3.2 Cleaning

This section describes how to clean the scanner.

3.2.1 Cleaning area

The ADF shall be cleaned with the following cleaning cycle. Without periodical cleaning, feed and transport reliability may be affected.

Cleaning part	Cleaning frequency
Pad	Every 100,000 scan
Pick roller	Every 100,000 scan
Brake roller	
Separation roller	
Feed roller	
Pinch roller	
Paper path	Every 200,000 scan
Diselectric brush	Every 100,000 scan
Removable sheet guide	Every 200,000 scan
Glass sheet guide	
Document width detection sensor	Every 200,000 scan
Sensor SF1	
Sensor SF1.5	
Sensor SF1	
Front lamp	Every 100,000 scan
Back lamp	

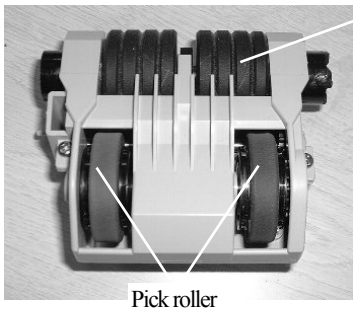
Conduct cleaning with a cleaning sheet every 50,000 sheets scanning.

More frequent cleaning is required when scanning NCR, carbon paper, or paper filled with pencil.

<How to clean each part>

- Pick roller and Separation roller

  Take out the Pick roller unit from the scanner by referring to Section 3.3.2. Wipe the roller parts of Pick roller and Separation roller using a cloth moistened with cleaner F1.

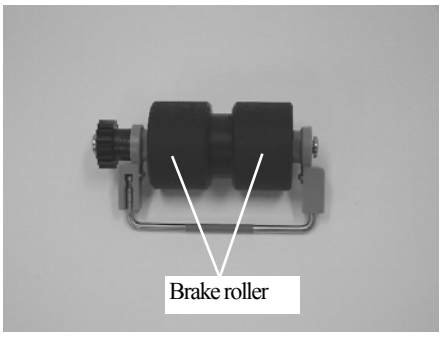


- Pad

  Take out Pad ASSY from the scanner by referring to Section 3.3.4. Wipe the translucent rubber part of the Pad ASSY using a cloth moistened with cleaner F1.

- Brake roller

  Take out the Brake roller from the scanner by referring to Section 3.3.3. Wipe the brake roller using a cloth moistened with cleaner F1.



- Feed roller

  Put a cloth moistened with ethyl or isopropyl alcohol on the feed roller and rotate the rollers so as to clean the entire surface. Use Cleaner F2 in case that the roller surface has stain such as toner.

- Sheet guide, Sensor, Glass part

  Note: Wait 3 minutes after turning off the power before cleaning.

  [Removable sheet]

  Open the Upper transport unit. Use your index fingers to catch the both ends of the removable sheet guide and lift the right side a little first. Shift the sheet guide leftward while lifting it up to remove. Wipe the both sides of the glass surface using a cloth moistened with cleaner F1.

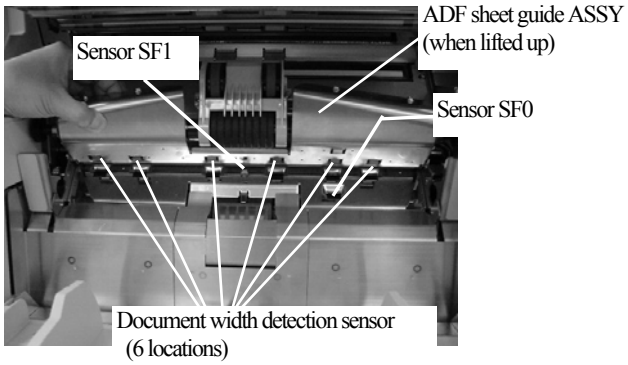
  [Glass sheet guide, Background unit]

  Open the Glass sheet guide by referring to Section 3.3.5. Wipe the Glass sheet guide and Background unit using a cloth moistened with cleaner F1.

[Sensor]

- Document width detection sensor (in 6 locations), SF0 sensor, SF1 sensor

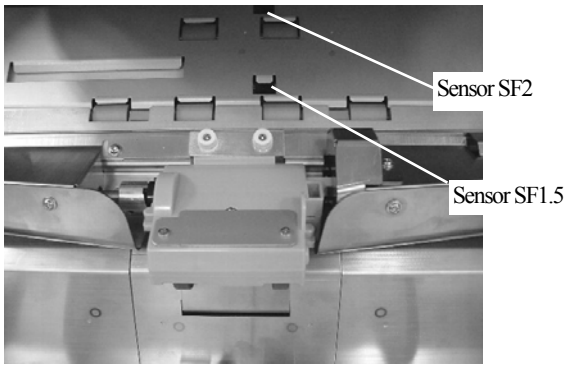
Pull the ADF release lever toward you and lift up the ADF sheet guide. Hold the ADF sheet guide with your hand to keep it open and wipe sensor surfaces with a cloth moistened with cleaner F1.



- SF1.5 sensor, SF2 sensor

Pull the ADF release lever toward you and lift up the ADF sheet guide.

Wipe SF1.5 and SF2 sensor surfaces with a cloth moistened with cleaner F1.

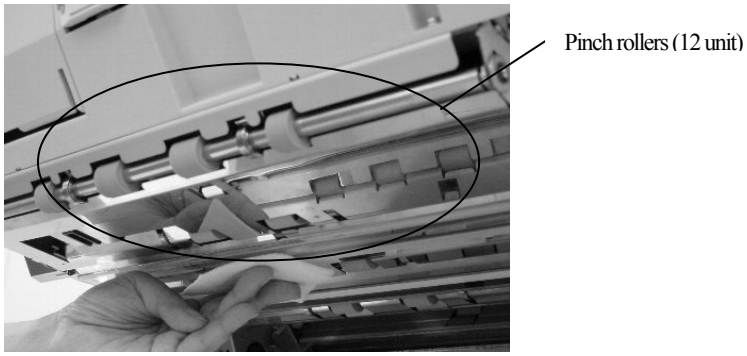


- Lamp

Take out front/back lamp from the scanner by referring to Section 3.3.5. Wipe the clear part of lamp using a dry cloth.

- Pinch roller

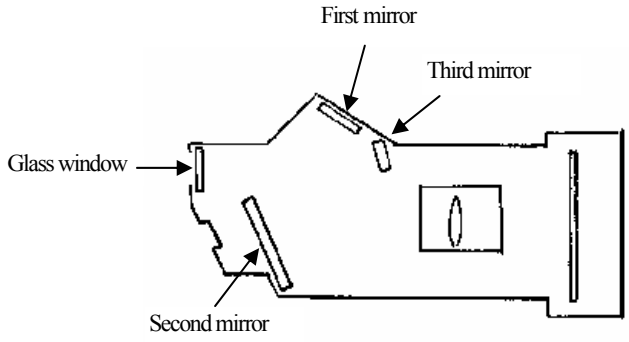
Open the Upper transport unit. Wipe the Pinch rollers with a cloth moistened with cleaner F1.



3.2.2 Cleaning CCD unit (for front and backside)

Clean the CCD unit by following the procedure below.

1. Take out the CCD unit by referring to Section 5.12 or 5.13.
2. Clean the glass window and internal mirror (especially the first mirror) using a lint- free dry cloth or blower brush.
3. After cleaning, assemble the CCD unit by referring to Section 5.12 or 5.13.



Note:

- Do not apply solvent such as alcohol on the surface of mirror as it may result in stain on the glass.
- The reflecting side of the mirror (aluminum deposition side) is inside the CCD unit.
- Conduct cleaning under dust-free environment.
- When wiping, be careful not to put too much force on mirrors as it may damage or displace them.

3.2.3 Cleaning Imprinter unit (fi-486PRFR or fi-486PRRE)

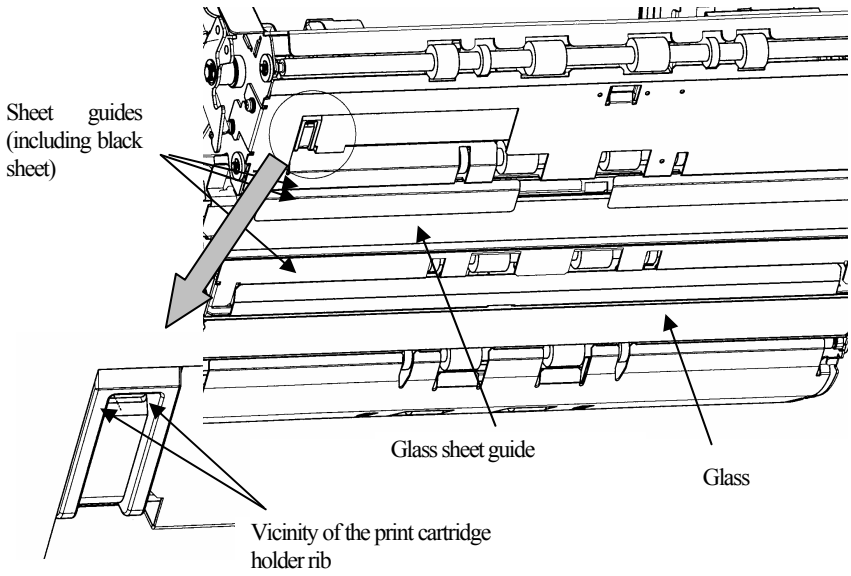
<fi-486PRFR imprinter >

When using imprinter, ink may spatter over sheet guides and glass parts in the reading section. As the spattering may smear scanned image or document, clean the glasses sheet guides after 5,000 sheets scan. The required cleaning interval may vary depending upon the type of document to be scanned. For example, when scanning a document with coated surface such as a form, more frequent cleaning may be required as it will take longer for ink to get dry.

Note: If the fi-486PRFR is not installed, follow the cleaning cycle for glass described in Section 3.2.1.

Clean the Imprinter by following the procedure below.

1. Open the Upper transport unit.
2. Wipe the parts shown below with a lint-free cloth moistened with Cleaner F1 or isopropyl alcohol.

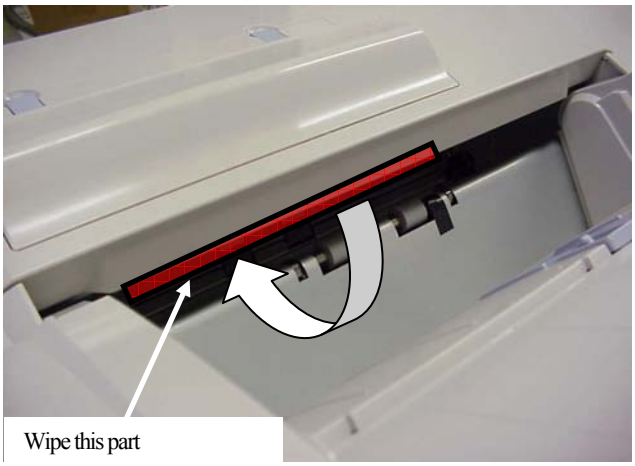


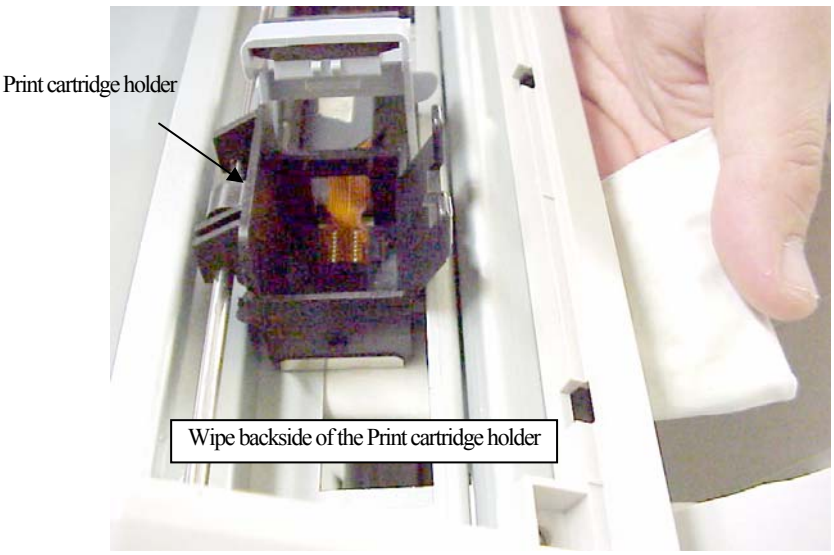
<fi-486PRRE imprinter>

When using imprinter, ink may spatter over sheet guides in the reading section. As the spattering may smear scanned image or document, clean the glasses sheet guides after 5,000 sheets scan. The required cleaning interval may vary depending upon the type of document to be scanned. For example, when scanning a document with coated surface such as a form, more frequent cleaning may be required as it will take longer for ink to get dry.

Clean the Imprinter by following the procedure below.

1. Open the Upper transport unit.
2. Open the Stacker.
3. Wipe the parts shown below with a lint-free cloth moistened with Cleaner F1 or alcohol.





05

3.3 Replacing consumables and Thinner Paper Roller Kit (Option)

3.3.1 Consumables list

The following table lists the consumables and the standard replacement cycle. Consumables should be prepared and replaced under user's responsibility. You can check the number of scanned sheets by referring to the consumables counter (Refer to Section 6.3.9 and 6.3.26).

Table 3.3.1A

No.	Consumable	Specification	Replacement cycle	How to check the number of scanned sheets	How to replace
1	Pick roller unit	PA03289-F711	Every 300,000 sheets or 1 year	See Section 6.3.9	See Section 3.3.2
2	Brake roller	CA04315-F705	Every 300,000 sheets or 1 year		See Section 3.3.3
3	Pad	CA04315-G730	Every 300,000 sheets or 1 year		See Section 3.3.4
4	Lamp	PA83950-0290	1000 hours		See Section 3.3.5
5	Print cartridge	CA00050-0262	05 4,000,000 characters ~~Every 40,000 sheets (10 letters per 1 sheet)~~	See Section 6.3.26	See Section 3.3.6

05 Thinner roller kit is provided for New type of the scanner (See Section 1.1). This option is installed by user and will be replaced with the following cycle.

Table 3.3.1B Thinner paper roller kit (Option) for the New type of scanner

No	Description	Model name	P/N	Recommended Replacement cycle	How to check number of scanned sheets	How to replace
1	Thinner paper roller kit	fi-486TRK	PA03296-D780	300,000 sheets or one year	See Section 6.3.9	See Section 3.3.2 to 3.3.4

This option includes following components.

- Pick roller unit with foamed rubber 1 piece
- Brake roller with foamed rubber 1 piece
- Pad (Same pad as described in upper table) 1 piece

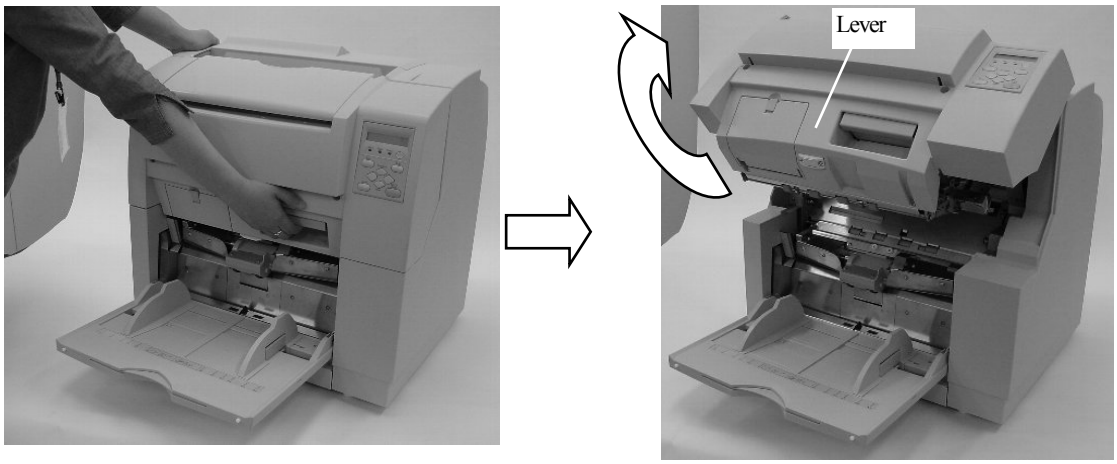
This option is interchangeable with current Consumable. Be careful that the performance of thin paper feeding with Old type scanner is not assured since some part of sheet guide is different from New type scanner. Also the parts of this option can not be used with current consumable (Table 3.3.1A).

3.3.2 Replacing Pick roller unit

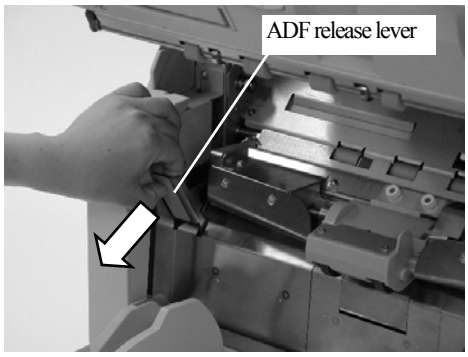
Follow the procedure below to replace the Pick roller unit.

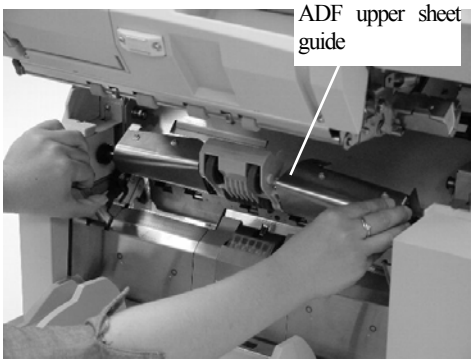
<Removing Pick roller unit>

1. Pull up the lever on the right front of the scanner to open the upper transport unit.

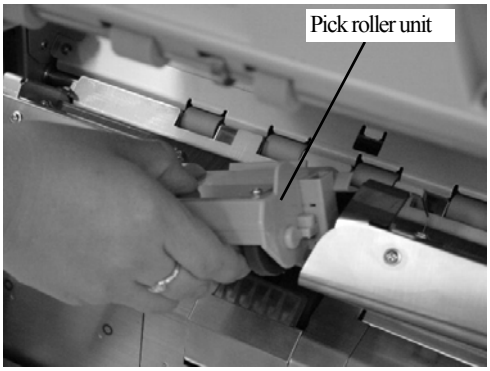


2. While pulling the ADF release lever toward you, lift up the ADF upper sheet guide. Pull the ADF release lever and put the ADF upper sheet guide down on the ADF release lever.



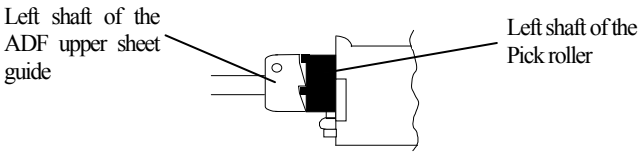


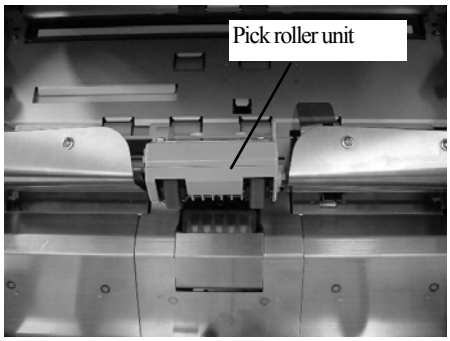
3. Lift up the Pick roller unit a little. Slide the Pick roller unit left and remove the right bearing from its shaft.



<Installing Pick roller unit>

1. Hold a new Pick roller unit so that the roller part faces down.
2. Engage the left side of the Pick roller with the left shaft of the ADF upper sheet guide and push leftward so that the right shaft of the ADF upper sheet guide can be fit into the Pick roller.
3. Follow the removing procedure 1, 2 in reverse.

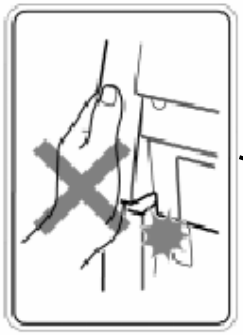




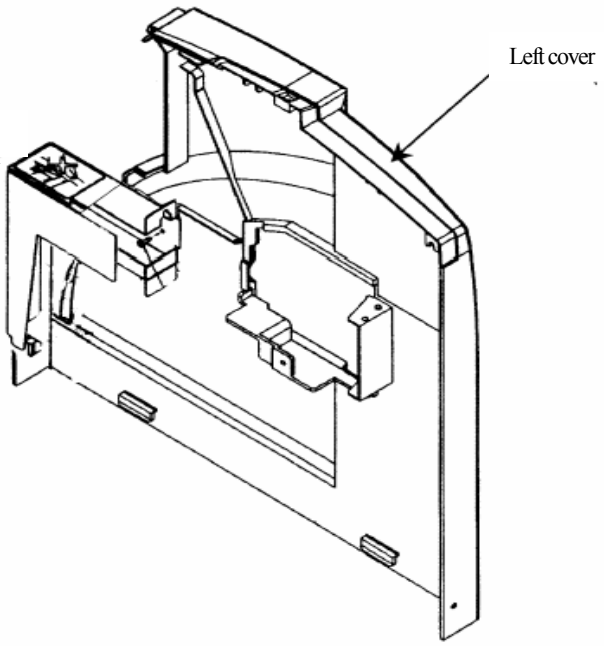
02

⚠ Caution

Be careful not to pinch your hand when opening and closing Upper transport unit. There is a caution label attached on the Left cover as shown below.



Caution label

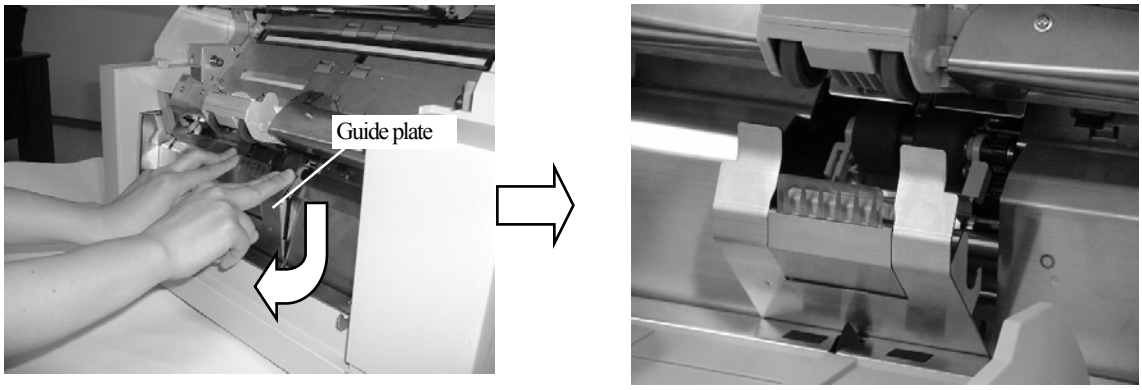


3.3.3 Replacing Brake roller

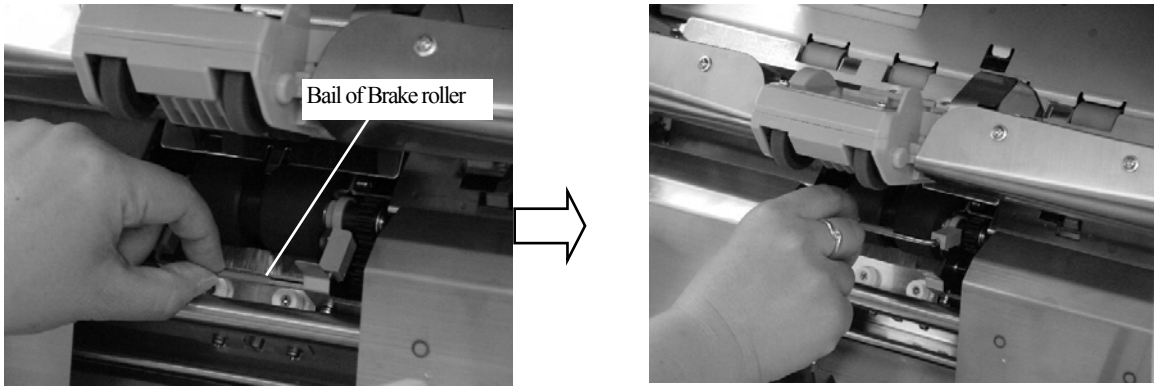
Follow the procedure below to replace the Brake roller.

<Removing Brake roller>

1. Put the ADF upper sheet guide on the ADF release lever by follow the removing procedure 1, 2 in Section 3.3.2.
2. Pressing down the upper part of the Guide plate with your fingers at two positions and pull the plate toward you to remove it.



3. Turn the bail of the Brake roller upward and lift it up to remove.



<Installing Brake roller unit>

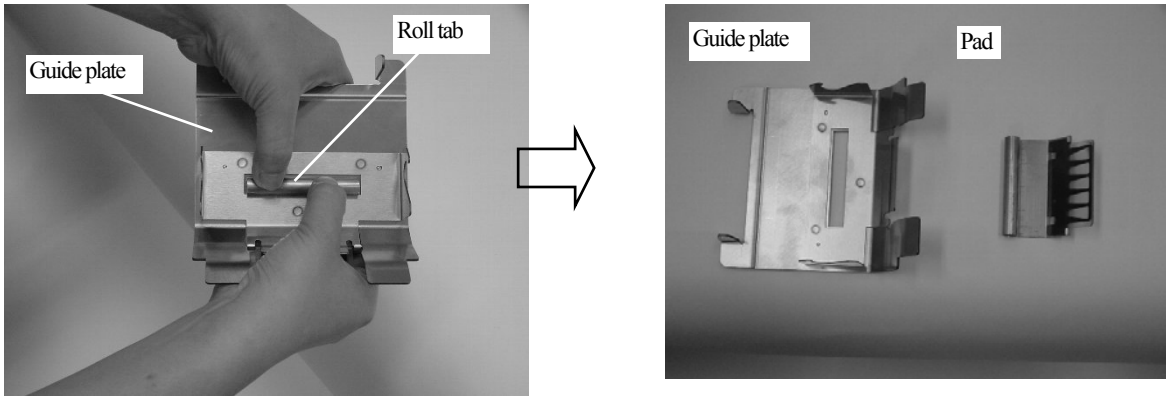
Follow the removing procedure in reverse. Make sure to lower the bail of the Brake roller unit it locks in.

3.3.4 Replacing Pad

Follow the procedure below to replace the Pad.

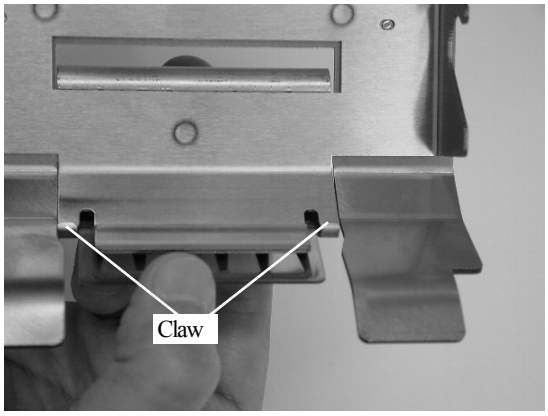
<Removing Pad>

1. Remove the Guide plate by following the procedure 1, 2 in Section 3.3.3.
2. Push the roll tab in the center of the Guide plate to separate the Pad from the Guide plate.



<Installing Brake roller unit>

Follow the removing procedure in reverse. When engaging the Pad into the Guide plate, make sure to hook the two claws of the Pad on the Guide plate as shown below.



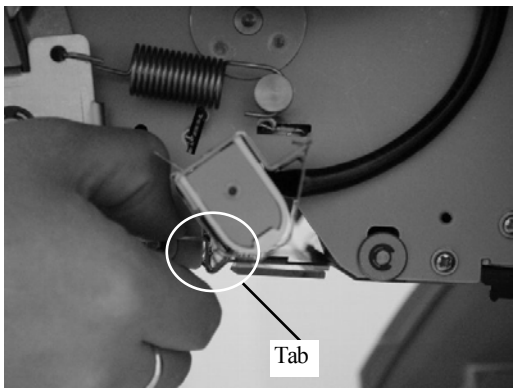
3.3.5 Replacing lamp

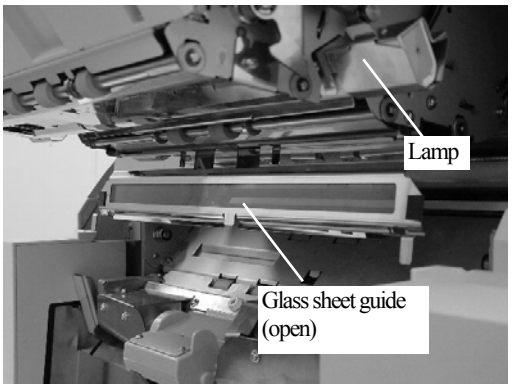
Follow the procedure below to replace the lamp.

<Removing Front lamp>

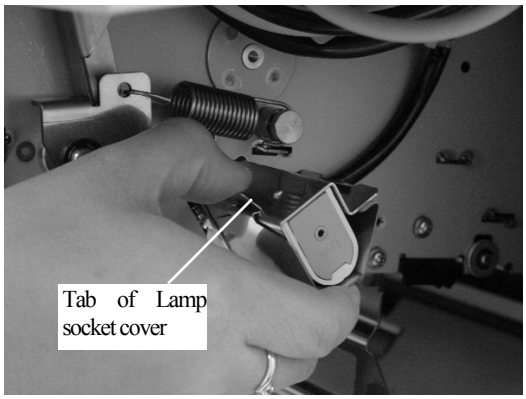
Note: Never replace the Lamp without turning off the power.
Wait 3 minutes after turning off the power before touching the Lamp.

1. Open the Upper transport unit by following the procedure 1 in Section 3.3.2.
2. Lower the right tab of the Glass sheet guide at both ends to open.

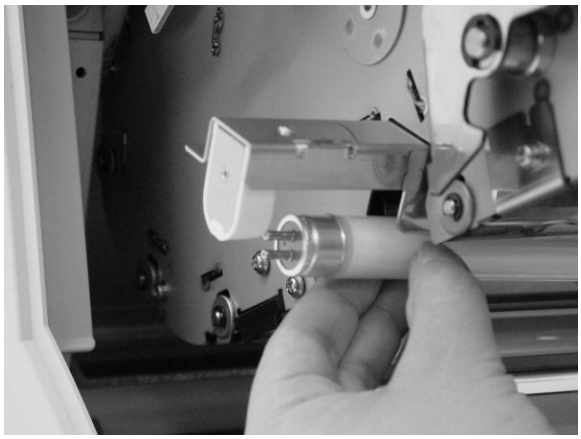




3. Remove the Lamp socket covers attached to the both end of the Lamp sockets by lowering the tabs.

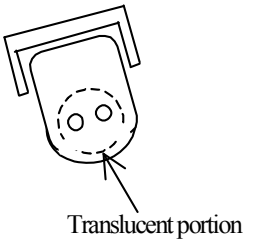


4. Rotate the Lamp a half turn so that the terminals on each end align with the slot on the Lamp socket and remove the Lamp from the socket.



<Installing Front lamp>

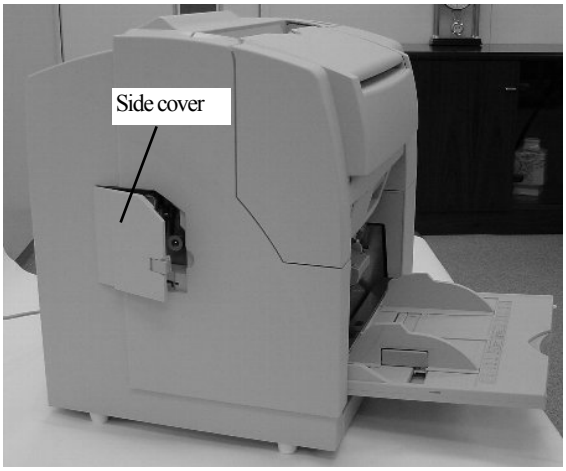
Follow the removing procedure in reverse.
Make sure to install the Front lamp so that the translucent portion of the lamp faces down.



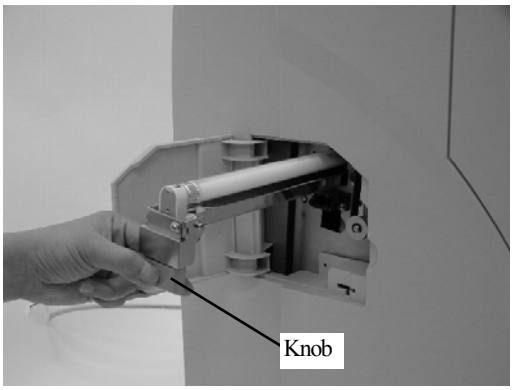
<Removing Back lamp>

Note: Never replace the Lamp without turning off the power.
Wait 5 minutes after turning off the power before touching the Lamp

1. Open the Side cover of the scanner.



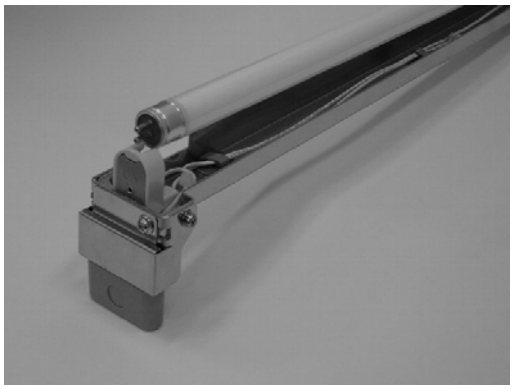
2. Hold the knob of the lamp socket and pull out the Back lamp from the scanner.

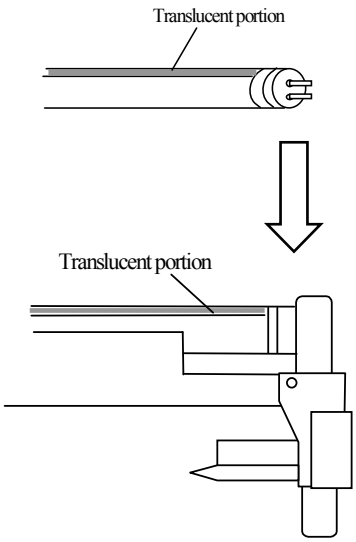


3. Rotate the Lamp a half turn so that the terminals on each end align with the slot on the Lamp socket and remove the Lamp from the unit.

<Installing Back lamp>

Follow the removing procedure in reverse.
Make sure to install the Back lamp so that the translucent portion of the lamp faces up.



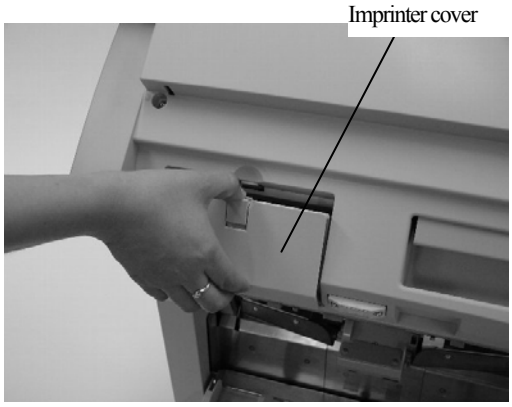


3.3.6 Replacing Print cartridge

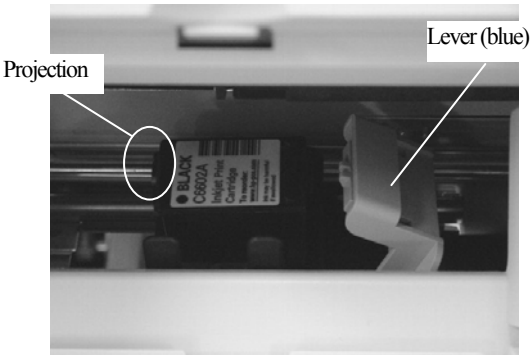
Follow the replacing procedure described below. After replacing the Print cartridge, reset Ink remain counter (See Section 6.3.26).

<Replacing fi-486PRFR>

1. Turn off the scanner.
2. Open the Upper transport unit. (Refer to Step 1 in Section 3.3.2)
   Close the hopper if it is open.
3. Open the Imprinter cover.



4. Slide the print cartridge holder to the left end.
5. Raise the blue lever of the print cartridge holder in the right direction.
6. Take out the old print cartridge and install the new one with its projection facing left.



7. Return the blue lever to its original position to fix the new print cartridge.
8. Close the Upper transport unit.

<Replacing fi-486PRRE>

1. Turn off the scanner.
2. Remove the Imprinter cover.

3. Pull the blue lever of the print cartridge holder in the right direction.
4. Take out the old print cartridge and install the new one with its projection facing left.
5. Return the blue lever to its original position to fix the new print cartridge.
6. Install the Imprinter cover to its original position.

3.4 Installation

3.4.1 Notes concerning installation location

To ensure the longevity and proper functioning of the scanner, do not install the scanner in the places and environments described below.
For information regarding scanner specifications such as dimensions or input power, refer to Section 1.2.

- Ensure that the scanner is installed away from strong magnetic fields, sources of electrical noise and airflow. Keep the scanner away from TV, air conditioner and copy machine.
- Do not leave the scanner in direct sunlight or near the heater.
- Ensure that the scanner is installed in a location that is level and subject to minimal vibration so that 4 rubber feet attached to the bottom of the scanner can ground the floor evenly.
- Do not use the scanner in areas with high levels of humidity or dust.
- Do not block the ventilation openings.
- Avoid static electricity. Static electricity may be a cause of miss-operation of the scanner.
- Use only at the specified voltage.

3.4.2 Unpackaging

1. Remove the joints to open the packaging box.
2. Take out the Accessory box.
3. Remove cushion (T) and take out the scanner from the box.
   Note: When lifting the scanner, hold the bottom of the scanner. Do not hold A part indicated in Fig. 3.4.2. (See next page).
4. Remove the polythene bag from the scanner.
5. Remove the protection tape from the scanner.

Table 3.4.2 Components

Item	Description	Quantity
1	Upper box	1
2	Accessory box	1
3	Cushion (T)	2
4	Cushion (B)	2
5	Scanner (wrapped with a polythene bag)	1
6	Bottom box	1
7	Joint	4

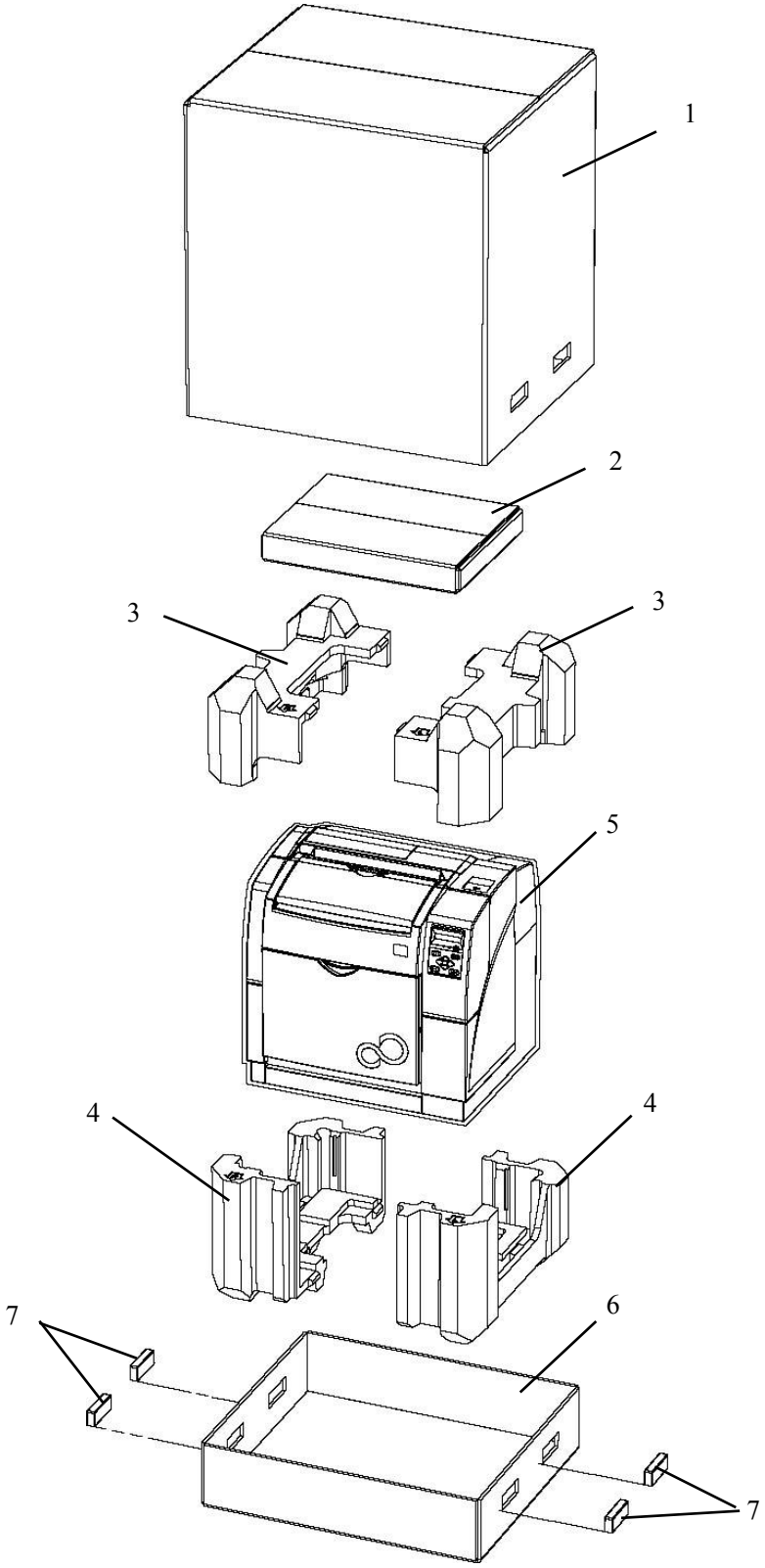


Fig. 3.4.2 Unpacking

3.4.3 Installation

Refer to Appendix A "Installation Guide" to install the scanner driver.
When you install TWAIN or ISIS driver from the CD included in scanner package, the program for setting image magnification or offset is automatically installed at the same time. For details on how to install the program, see Appendix A.

Chapter 4 Troubleshooting

In case of frequent temporary error or an alarm occurrence, find the troubleshooting procedure from the list in this section and go to the related section for maintenance. Before starting the troubleshooting, get the following information from your customer to understand whether the error is scanner-related or system-related.

- Is the scanner operated correctly?
- Are the fault symptoms reproducible or persistent?

(Check if the target scanner causes the same error under other systems.)

Following lists the case of troubleshooting described later in this section.

Error category	Error description	Related section	Remarks
Device	Scanner does not turn ON. (Display of the operator panel goes out)	4.1	
	Scanning does not start.	4.2	
	(Reserved)	4.3	
Image	Scanned image is distorted.	4.4	
	Resolution or gradation of scanned image is unsatisfactory.	4.5	
	Too much jitter on scanned image with ADF scanning	4.6	
	Scanned image is misaligned with ADF scanning	4.7	
	Scan magnification factor abnormal with ADF scanning	4.8	
	(Reserved)	4.9	
	Scanned image is inconsistent	4.10	
	(Reserved)	4.11	
Temporary error	"Paper Empty" is detected wrongly	4.12	
	"Paper Jam n" is detected wrongly	4.13	
	"ADF-Cover Open" frequently occurs	4.14	
	"Miss-pick" frequently occurs	4.15	
	"Pick over run" frequently occurs	4.16	
	"Double Feed" frequently occurs	4.17	
	"Length error" frequently occurs	4.18	
	"Irregular paper" frequently occurs	4.19	
	"Hopper overload" or "Pick roller unit not set " is detected wrongly	4.20	
	"Pick roller unit" is detected wrongly	4.21	
	"Brake roller not set" is detected wrongly	4.22	
	"Separation roller worn" is detected wrongly	4.23	
	"Abrasion alarm" is detected wrongly	4.24	
	"xxx No ink Cartridge" is detected wrongly	4.25	
	(Reserved)	4.26	
Alarm	"xxxx Side Optical Alarm" occurs	4.27	
	"Fuse alarm xxxx motor" occurs	4.28	
	"Fuse alarm xxxx Side lamp" occurs	4.29	
	"Fuse alarm Background: xxxx" occurs	4.30	
	"xxxx side Background Alarm" occurs	4.31	
	"Hopper over run" occurs	4.32	
	"Sensor Control Alarm" occurs	4.33	
	"xxx Imprinter Alarm" occurs	4.34	
	"xxx Sensor dirty" occurs	4.35	
	"xxx Sensor error" occurs	4.36	
	"Temperature alarm" occurs	437	
	"Power supply error" occurs	4.38	
	"ADDRESS xxH EEPROM Alarm" occurs	4.39	
	"Command Error n" occurs	4.40	
	"MDC Timeout" occurs	4.40	

Error category	Error description	Related section	Remarks
Device	"VDCC2 R/W Error" occurs	4.40	
	"MDC download Error" occurs	4.40	
	"Dither/Gamma R/W Error" occurs	4.40	
	"TempMem R/W error" occurs	4.40	

4.1 Scanner does not turn ON. (Display of the operator panel goes out)

Table 4.1

Item No.	Check items	How/where to check
1	Is power supplied to the scanner?	Distribution panel, outlet
2	Does the same symptom occur after turning OFF and ON the scanner?	1) Confirm that the main line switch on the scanner is ON. 2) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 3) Press Power button again to turn the scanner ON.
3	Are the following cables correctly connected? - Power cable - Cable connecting Power supply and Control PCA - Cable connecting Control PCA and Operator panel	See Section 5.10, 5.11, 5.9
4	Replace Power supply unit and see if the error is fixed.	See Section 5.10
5	Replace Console unit and see if the error is fixed.	See Section 5.11
6	Replace Control PCA and see if the error is fixed.	See Section 5.9

4.2 Scanning does not start.

Table 4.2

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Check the items listed in the right column	Connection between Power cable and AC adapter - Is a document properly loaded on the Hopper table? - Is Upper transport unit completely closed? - Is interface cable correctly connected? - SCSI ID setting. Follow the corresponding troubleshooting if temporary error or alarm is displayed. (See Section 2.7 for temporary error.)
3	Is yellow LED that is located next to output connector in EGSA board lighting or blinking?	Visual check. In the case that the yellow LED is lighting, check if the connector of EGSA is loosed and if memory is installed. If they are OK, replace High speed EGSA board.

Note: The yellow and green LEDs located next to output connector of EGSA board indicate the following status.

Status	Yellow LED	Green LED
Normal	OFF	OFF
When EGSA firmware is defective	Blink	Blink
Initialization error - No memory or memory not recognized -SPC access	ON	OFF

4.3 (Reserved)

4.4 Scanned image is distorted

Due to loose connection of connectors, cut wire in cables or defective parts, scanned image may have regular or random pattern distortion on it.

Table 4.4

Item No.	Check items	How/where to check
1	Check the items listed in the right column	- Is interface cable correctly connected? - Is scan mode set correctly depending on the document scanned? (Line mode or Photo mode) If any temporary error or alarm is indicated, follow the corresponding troubleshooting. (See Section 2.7 for temporary error.)
2	Are CCD unit (the one that read the distorted image), Glass sheet guide and Background unit dirty?	See Section 3.2.1 for cleaning Glass sheet guide and Background unit. See Section 3.2.2 for cleaning CCD unit.
3	Are the cables from Control PCA to the CCD unit damaged? Or any connectors disengaged?	ADF front scanning: See section 5.12 ADF back scanning: See section 5.13
4	Replace the CCD unit and see if the error is fixed.	ADF front scanning: See section 5.12 ADF back scanning: See section 5.13
5	Replace Control PCA and see if the error is fixed.	See Section 5.9

4.5 Resolution or gradation of scanned image is unsatisfactory.

Due to loose connection of connectors, cut wire in cables or defective parts, scanned image may have regular or random pattern distortion on it.

Table 4.5

Item No.	Check items	How/where to check
1	Check the items listed in the right column	- Does the document satisfy the document specifications? (See Appendix B) - Is scan mode set correctly depending on the document scanned? (Line mode or Photo mode) - Are the scan settings correctly specified for the application software used? - Is interface cable correctly connected? If any temporary error or alarm is indicated, follow the corresponding troubleshooting.
2	When there is density variance between front and back side image, conduct the adjustment described in the right column.	For a general user, adjust "Brightness" setting. (See Section 6.3.28) When replacing CCD unit, adjust "Density". (See Section 5.11)
3	Are Lamps installed properly?	See Section 3.3.5
4	Are CCD unit (the one that read the distorted image), Glass sheet guide, Background unit and Lamps dirty?	See Section 3.2.1 for cleaning Glass sheet guide, Background unit and Lamp. See Section 3.2.2 for cleaning CCD unit.
5	Are the cables from Control PCA to the CCD unit damaged? Or any connectors disengaged?	ADF front scanning: See section 5.12 ADF back scanning: See section 5.13
6	Replace the CCD unit and see if the error is fixed.	ADF front scanning: See section 5.12 ADF back scanning: See section 5.13

4.6 Too much jitter on scanned image with ADF scanning

The following shows the sample of scanned image when "Jitter" error occurs. This error occurs when the ADF feed roller does not transport the document smoothly.

Scanned image with jitter 

Normal scanned image 

Table 4.6

Item No.	Check items	How/where to check
1	Does the document satisfy the paper specification?	See Appendix B
2	Clean Feed rollers and Pinch roller and see if the error is removed.	See Section3.2.1.
3	Check if the tension of Belt Feed MAIN or Belt Feed SUB is appropriate and if Background unit is installed correctly.	See Section 5.15 for Belt Feed MAIN See Section 5.16 for Belt Feed SUB See Section 5.17 for Background unit (front) See Section 5.18 for Background unit (back)
4	Is CCD unit installed correctly? (Are screws loosened?)	See Section 5.12 for CCD unit (front) See Section 5.13 for CCD unit (back)
5	Are the cables from Control PCA to Feed motor damaged? Or any connectors disengaged?	See Section 5.9.

4.7 Scanned image is misaligned with ADF scanning

Table 4.7

Item No.	Check items	How/where to check
1	Check the items listed in the right column	- Are the documents loaded on the hopper neatly? - Does the document satisfy the document specifications? (See Appendix B) - Are the scan settings correctly specified for the application software used?
2	Check if Pick roller unit, Brake roller and Pad are installed correctly.	See Section 3.3.2 for Pick roller unit installation. See Section 3.3.3 for Brake roller installation See Section 3.3.4 for Pad installation
3	Conduct offset adjustment in Test mode	See Section 7.7
4	Check the followings in case of misalignment in Sub scanning direction: 1) Is Sensor SF2 dirty? 2) Clean Feed rollers (especially SF1, SF2, SF3) and see if the error is removed. 3) Is Sensor SF2 output normal? 4) Is belt tension of Belt Feed MAIN and Belt Feed SUB loosened?	 See Section3.2.1 See Section 3.2.1 See Section 7.10 See Section 5.15 for Belt Feed MAIN See Section 5.16 for Belt Feed SUB
5	Is the CCD unit (that read misaligned image) installed correctly	See Section 5.12 for CCD unit (front) See Section 5.13 for CCD unit (back)
6	Replace the CCD unit and see if the error is removed.	ADF front scanning: See section 5.12 ADF back scanning: See section 5.13

4.8 Scan magnification factor abnormal with ADF scanning

Table 4.8

Item No.	Check items	How/where to check
1	Are the scan settings correctly specified for the application software used?	
2	In case of abnormal magnification for main scanning direction, go to Item 3 in this table In case of abnormal magnification for sub scanning direction, go to Item 7 in this table.	
3	Clean Feed rollers (especially FR1, FR2, FR3) and Pinch roller, and then see if the error is removed.	See Section 3.2.1
4	Does any foreign materials get inside the roller driving unit and prevent feed roller rotation?	Remove Left cover (See Section 5.65) and Right cover (See Section 5.6.6) and check the roller driving timing belt.
5	Is belt tension of Belt Feed MAIN and Belt Feed SUB loosened?	See Section 5.15 for Belt Feed MAIN See Section 5.16 for Belt Feed SUB
6	Replace Feed motor and see if the error is fixed.	See Section 5.15
7	Is the CCD unit (that read misaligned image) installed correctly	See Section 5.12 for CCD unit (front) See Section 5.13 for CCD unit (back)
8	Replace the CCD unit and see if the error is fixed.	

4.9 (Reserved)

4.10 Scanned image is inconsistent

Table 4.10

Item No.	Check items	How/where to check
1	Does black part appear at the top edge of the document?	
2	Are there punch holes in print forbidden area?	Instruct the user to scan a document with punch holes using a flatbed scanner.
3	Are Lamps installed correctly?	See Section 3.3.5. Particularly make sure that the clear part of Lamps face to the document.
4	Clean Removable sheet guide (for backside image), Glass sheet guide (for front side image), Lamps and Background units, and then see if the error is removed.	See Section 3.2.1
5	Clean CCD unit and see if the error is removed.	Remove dirt from the glass and mirror lens. See Section 3.2.2
6	Is CCD unit installed correctly?	

4.11 (Reserved)

4.12 "Paper Empty" is detected wrongly

Table 4.12

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Is Hopper empty sensor functioning?	Conduct "Sensor monitor" in Test mode. (See Section 7.10) If the sensor is malfunctioning, check the Sensor cable connection and replace Sensor SHE if necessary. (See Section 5.14.10)

4.13 "Paper Jam n" frequently occurs

Note: "n" indicates an error number in the range of 1 to 8.

Table 4.13

Item No.	Check items	How/where to check
1	Does the document satisfy the paper specification?	See Appendix B
2	Are the document aligned?	For stable paper feed, align the edge of the documents, otherwise skew error occurs resulting in paper jam. Remove documents with crease or dog-ear.
3	Clean Pick roller, Pad, Separation roller, Brake roller, Feed rollers and Pinch rollers, and then see if the error is removed.	See Section 3.2.1
4	Replace Pick roller unit, Brake roller unit and Pad, and then see if the error is removed.	Check Abrasion counters for each part in Setup mode (See Section 6.3.9). When the counter exceeds the value described in Section 3.3.1, replace the part of necessary.
5	Check the following sensors corresponding to the error number "n": When n=1: Sensor SF1, SF2 When n=2: Sensor SF2, SF3 When n=3: Sensor SF3 When n=4: Sensor SF2 When n=5: Sensor SF1.5, SF2, SF3 When n=6: Sensor SF1, SF1.5, SF2, SF3 When n=7: Sensor SF1.5 When n=8: Sensor SF1.5	See Section 7.10. Conduct Sensor Manual test if necessary. (See Section 7.9) If the sensor is malfunctioning, check if the sensor is clean and connected properly, and then replace it if necessary. For Sensor SF0, replace Sensor SER. (See Section 5.14.7) For Sensor SF1, see Section 5.14.5 and 5.14.7 For Sensor SF1.5 and SF2, see Section 5.18. For Sensor SF3, see Section 5.21.
6	Check abrasion or loose for each belt, motor and motor cable corresponding to the error number "n".	See Section 5.14.6 for Belt Pick and Pick motor See Section 5.14.2 for Belt Separation and Separation motor See Section 5.15 for Belt Feed MAIN and 5.16 for Belt Feed SUB
7	When n=1, 7 or 8, adjust Separation setting in the Setup mode.	Change Paper thickness setting from Normal (default) to slightly thin, and then to thin in order to decrease load torque of Brake roller and reduce paper jam. As this setting may increase double feed error instead, adjust carefully.

n	Belt Pick Pick motor	Belt Separation Separation motor	Belt Feed MAIN Belt Feed SUB Feed motor
1		√	√
2			√
3			√
4			√
5		√	√
6		√	√
7		√	√
8		√	√

4.14 "ADF-Cover Open" is detected wrongly

Table 4.14

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Remove the Left cover (See Section 5.6.5) and check Interlock switch for the Upper transport unit.	If the Interlock switch is malfunctioning, check the Sensor cable connection and replace Interlock switch for the Upper transport unit. (See Section 5.24)

4.15 "Miss-Pick" frequently occurs

Table 4.15

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Change Pick speed setting from Fast to Middle, and to Slow if necessary.	See Section 6.3.3
3	Check if Pick roller unit, Brake roller and Guide plate are installed correctly.	See Section 3.3.2 or 3.3.3
4	Is ADF release lever closed correctly?	Visual check
5	Clean Pick roller unit and Brake roller.	See Section 3.2.1.
6	Are Pick roller unit and Brake roller worn out?	See Section 6.3.9 and check if the abrasion counters exceed the value described in Section 3.3.1.
7	Is Sensor SF1 clean and functioning?	See Section 3.2.1 for cleaning, and 7.10 for checking performance. Conduct Sensor manual test if necessary. (See Section 7.9) In case of sensor failure, check the connector of Sensor cable, and then replace Sensor SF1 if necessary.
8	Are Pick roller and Separation roller rotating properly?	Visual check In case of abnormal rotation, check the following motors and belts. For Pick roller: Check Belt Pick and Pick motor. (See Section 5.14.6) For Separation roller: Check Belt Separation and Separation motor. (See Section 5.14.2) If motors and belts are functioning normally, replace Control PCA. (See Section 5.9)
9	Is the hopper table leaned too much?	Check if the hopper table bracket is installed properly. (See Section 5.14.3)
10	Adjust Separation setting in the Setup mode.	Change Paper thickness setting from Normal (default) to slightly thin, and then to thin in order to decrease load torque for Brake roller and reduce paper jam. As this setting may increase double feed error instead, adjust carefully.

4.16 "Pick over run" frequently occurs

Table 4.16

Item No.	Check items	How/where to check
1	Is the document inserted into the scanner by hand?	
2	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
3	Change the setting described in the right column and see if the error is removed.	Set Paper length to "Short" (See Section 6.3.10), or set Pick speed to "Slow" (Section 6.3.3), or set Pre- pick to OFF (Section 6.3.2) in the Setup mode.

4.17 "Double Feed " frequently occurs

Table 4.17

Item No.	Check items	How/where to check
1	Check if the user follows the instructions on loading documents described in the right column.	Loosen the documents before setting them on the hopper. If the document has punch holes or stapler holes, make those holes flat before loading the document.
2	Does the document being scanned have standard thickness specified in Chapter 8?	See Chapter 8.
3	Does the document satisfy the document specification?	There are restrictions on a document for doubled feed detection. See Appendix B.3.
4	Is Double feed check setting (See Section 6.3.4) specified properly?	In general, set Double feed setting to "Thickness&Roller" in the Setup mode. - When Brake roller rotation is unstable (due to friction deterioration, large load torque and low separation pressure), double feed may be detected wrongly by rotation detection error. In such a case, set the setting to "Thickness" - When "Pick" is specified, double feed can be only detected up to 8 mm from the top edge. - With "Pick&Feed" specified, double feed is detected when overlapped area is found more than 10 mm from the top edge to the bottom edge. However, double feed is detected wrongly when there is more than 10 mm black area on a document. In such a case, set "Pick"
5	Clean the ADF unit.	See Section 3.2.1. In particular, clean thoroughly in vicinity of Pick roller, Pad and Sensor SF1.
6	Are Pick roller unit, Pad and Brake roller installed properly?	See Section 3.3.2, 3.3.3, 3.3.4
7	Replace Pick roller unit, Pad and Brake roller and see if the error is removed.	Check Abrasion counters for each part in Setup mode (See Section 6.3.9). When the counter exceeds the value described in Section 3.3.1, replace the part of necessary.
8	Is Sensor SF1 functioning?	See Section 7.10 for checking the sensor. Conduct Sensor manual test if necessary. (See Section 7.9) In case of sensor failure, check the connector of Sensor cable, and then replace Sensor SF1 if necessary. (See Section 5.14.5, 5.14.7) If the error still occurs after replacing Sensor SF1, replace Control PCA (See Section 5.9).
9	Adjust Separation setting in the Setup mode.	Change Paper thickness setting from Normal (default) to slightly thick, and then to thick in order to increase load torque for Brake roller and reduce paper jam. As this setting may cause frequent Miss-pick or Paper jam 1 instead, adjust carefully.
05 10	If the scanner is "New type" (See Section 1.1), remove the paper dust from US sensors.	Refer to the photo of Section 5.18 for the location of US sensor.

4.18 "Length error " frequently occurs

Table 4.18

Item No.	Check items	How/where to check
1	Check if the user follows the instructions on loading documents described in the right column.	Loosen the documents before setting them on the hopper. If a document has punch holes or stapler holes, make those holes flat before loading the document.
2	Does the document satisfy the document specification?	There are restrictions on a document for doubled feed detection. See Appendix B.3.
3	Is paper length setting appropriate?	Select an appropriate paper length in the Setup mode. (See Section 6.3.5)
4	Clean the ADF unit.	See Section 3.2.1. In particular, clean thoroughly in vicinity of Pick roller, Pad and Sensor SF1.
5	Are Pick roller unit, Pad and Brake roller installed properly?	See Section 3.3.2, 3.3.3, 3.3.4
6	Replace Pick roller unit, Pad and Brake roller and see if the error is removed.	Check Abrasion counters for each part in Setup mode (See Section 6.3.9). When the counter exceeds the value described in Section 3.3.1, replace the part of necessary.
7	Is Sensor SF1 functioning?	See Section 7.10 for checking performance. Conduct Sensor manual test if necessary. (See Section 7.9) In case of sensor failure, check the connector of Sensor cable, and then replace Sensor SF1 if necessary. (See Section 5.14.5, 5.14.7) If the error still occurs after replacing Sensor SF1, replace Control PCA (See Section 5.9).

4.19 "Irregular paper" frequently occurs

Table 4.19

Item No.	Check items	How/where to check
1	Check if the user follows the instructions on loading documents described in the right column.	- Are documents aligned by the Side guides on the hopper? - Remove curl of a document if any.
2	Does the document satisfy the document specification?	See Appendix B.
3	Clean the ADF unit.	See Section 3.2.1. In particular, clean thoroughly in vicinity of Pick roller, Pad, Brake roller and Document width sensor.
4	Is the hopper table leaned too much?	Check if the hopper table bracket is installed properly. (See Section 5.14.3)
5	Check if the following sensors are functioning. Sensor SA3, SA4, SB4, SB5, SKR, SKL	See Section 7.10 for checking the sensors. Conduct Sensor manual test if necessary. (See Section 7.9) In case of sensor failure, check the connector of Sensor cable, and then replace Sensor SER (SB4, SB5, SKR) or Sensor SEL (SA3, SA4, SKL). (See Section 5.14.5, 5.14.7) If the error still occurs after replacing Sensor SF1, replace Control PCA (See Section 5.9).
6	Set Skew check to OFF in the Setup mode.	See Section 6.3.6.

4.20 "Hopper overload" or "Pick roller unit not set" is detected wrongly

Table 4.20

Item No.	Check items	How/where to check
1	Is Sensor SPK functioning?	See Section 7.10. In case of sensor failure, clean the sensor and check the connector of Sensor cable, and then replace Sensor SPK (See Section 5.14.5)
2	Replace Control PCA and see if the error is removed.	See Section 5.9.

4.21 "Pick roller unit" is detected wrongly

Table 4.21

Item No.	Check items	How/where to check
1	Is Sensor SMF is functioning?	See Section 7.10. In case of sensor failure, clean the sensor and check the connector of Sensor cable, and then replace Sensor SPK (See Section 5.14.5)
2	Replace Control PCA and see if the error is removed.	See Section 5.9.

4.22 "Brake roller not set" is detected wrongly

Table 4.22

Item No.	Check items	How/where to check
1	Is Sensor STR functioning?	See Section 7.10. In case of sensor failure, clean the sensor and check the connector of Sensor cable, and then replace Sensor SPK (See Section 5.14.5)
2	Is Brake roller rotating smoothly? Is Universal joint installed correctly?	See Section 5.14.8.
3	Does Separation motor rotate? Is the belt Separation disengaged?	See Section 5.14.2.

4.23 "Separation roller worn" is detected wrongly

Table 4.23

Item No.	Check items	How/where to check
1	Is Separation roller worn out?	
2	Is Sensor STR functioning?	See Section 7.10. In case of sensor failure, clean the sensor and check the connector of Sensor cable, and then replace Sensor SPK (See Section 5.14.5)
2	Is Brake roller rotating smoothly? Is Universal joint installed correctly?	See Section 5.14.8.

4.24 "Abrasion alarm" is detected wrongly

Table 4.24

Item No.	Check items	How/where to check
1	Replace Control PCA and see if the error is removed.	See Section 5.9.

4.25 "xxx No ink Cartridge" is detected wrongly

Note: xxx indicates an Imprinter causing the alarm (Pre or Post).

Table 4.25

Item No.	Check items	How/where to check
1	Clean the contact side of Print cartridge.	Use isopropyl alcohol for cleaning.
2	Replace Print cartridge.	See Section 3.3.6.

4.26 (Reserved)

4.27 "xxxx Side Optical Alarm" occurs

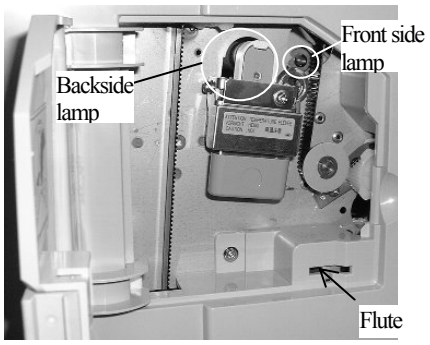
Note: xxx indicates an optical system causing the alarm (Front or Back).

Table 4.27

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Is White background in reading section dirty?	Open the ADF and clean the white background and glass.
3	Is Lamp installed properly?	Does the clear portion of Lamp face to the document? Is Backside lamp inserted in to the scanner completely?

(Section 4.27 continues to next page)

(Continued)

4	Check if the lamp of the optical system causing the alarm is lighting. And also check if the cable is damaged and the connector is disconnected.	Open the lamp cover and put something into the flute so that the interlock switch is turned OFF. Then conduct Multi feed test in duplex and see if the Lamp lights. (See Section 7.4) (*1): Be careful not to put your hand into the lamp cover while operation. If the lamp does not light, replace the lamp. (See Section 3.3.5)  In case that the error is not removed after replacing the lamp, check the cable and connector connections from the Inverter and Control PCA, and if they are OK, replace the Inverter. (See Section 5.12 and 5.13)
5	Check if the CCD unit of the optical system causing the alarm is clean. And also check if the cable is damaged and the connector is disconnected.	See Section 3.2.2.
6	In the case of Front Side Optical Alarm, check if Glass sheet guide is clean.	Clean Glass sheet guide. (See Section 3.2.1)
7	In the case of Back Side Optical Alarm, check if Removable sheet guide is clean.	Clean Glass sheet guide. (See Section 3.2.1)
8	Replace the CCD unit and see if the alarm is removed.	For front CCD unit, see Section 5.12 For back CCD unit, see Section 5.13
9	Replace Control PCA and see if the alarm is removed.	See Section 5.9.

4.28 "Fuse alarm xxxx motor" occurs

Note: xxx indicates a sensor motor causing the alarm. (Feed motor, Separation motor, Pick motor, Hopper motor).

Table 428

Item No.	Check items	How/where to check
1	Does any foreign materials get inside Control PCA?	Check Control PCA (See Section 5.9)
2	Are the cables from Control PCA to motor damaged? Are the connectors properly connected?	For Feed motor, see Section 5.15 For Separation motor, see Section 5.14.2 For Pick motor, see Section 5.14.6 For Hopper motor, see Section5.14.3
3	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
4	Replace the motor indicated by the alarm and see if the alarm is removed.	For Feed motor, see Section 5.15 For Separation motor, see Section 5.14.2 For Pick motor, see Section 5.14.6
5	Replace the fuse.	See Section 5.9
6	If the alarm recurs, replace Control PCA	See Section 5.9.

4.29 "Fuse alarm xxxx Side lamp" occurs

Note: xxxx indicates a lamp causing the alarm (Front or Back).

Table 429

Item No.	Check items	How/where to check
1	Check the cables.	Check the cable and connector connections from Lamp to Control PCA through Inverter (See Section 5.12 or 5.13)
2	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
3	Replace the fuse.	See Section 5.9
4	If the alarm recurs, replace Control PCA	See Section 5.9.

4.30 "Fuse alarm Background: xxxx" occurs

Note: xxxx indicates a Background unit causing the alarm (Front or Back).

Table 4.30

Item No.	Check items	How/where to check
1	Does any foreign materials get inside Control PCA?	Check Control PCA (See Section 5.9)
2	Are the cables from Control PCA to Background motor damaged? Are the connectors properly connected?	See Section 5.19. For Separation motor, see Section 5.14.2 For Pick motor, see Section 5.14.6 For Hopper motor, see Section5.14.3
3	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
4	Replace the Background unit indicated by the alarm and see if the alarm is removed.	See Section 5.19.
5	Replace the fuse.	See Section 5.9
6	If the alarm recurs, replace Control PCA	See Section 5.9.

4.31 "xxxx Side Background Alarm" occurs

Note: xxxx indicates a Background unit causing the alarm (Front or Back).

Table 4.31

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Are the cables from Control PCA to Background motor damaged? Are the connectors properly connected?	See Section 5.19. For Separation motor, see Section 5.14.2 For Pick motor, see Section 5.14.6 For Hopper motor, see Section5.14.3
3	Replace the Background unit indicated by the alarm and see if the alarm is removed.	For Background unit (Front), see Section 5.18. For Background unit (Back), see Section 5.17.
4	If the alarm recurs, replace Control PCA	See Section 5.9.

4.32 "Hopper over run" occurs

Table 4.32

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Are too much documents on the hopper?	See Section 1.1 for capacity of hopper.
3	Does any foreign material get inside hopper table driving gear?	Remove Right cover and check inside.
4	Are Sensor SFB and Sensor SMTP functioning?	Conduct "Sensor monitor" in Test mode. (See Section 7.10) If the sensor is malfunctioning, check the Sensor cable and cable connection and replace the sensor if necessary. (See Section 5.14.9)
5	Is motor rotating?	Conduct "Multi feed test" in Test mode to check hopper table movement. (See Section 7.4) When hopper table does not move, check the cable and connectors from Control PCA to Hopper motor. If they are OK, replace Pad. (See Section 5.14.3)
6	Replace Control PCA if Step 1 to 5 could not remove the alarm.	See Section 5.9

4.33 "Sensor Control Alarm" occurs

Table 4.33

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Replace Control PCA if Item 1 could not remove the alarm.	See Section 5.9

4.34 "xxx Imprinter Alarm" occurs

Note: xxxx indicates an Imprinter causing the alarm (Post or Pre).

Table 4.34

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Check the cable connection or installation of the Imprinter causing the alarm.	See Chapter 10
3	Replace Pt board of the Imprinter.	See Chapter 10
4	Replace the Imprinter.	See Chapter 10
5	Replace Control PCA if Item 1 could not remove the alarm.	See Section 5.9

4.35 "xxx Sensor dirty" occurs

Note: xxx indicates a sensor causing the alarm. (SF0, SF1, SF1.5, SF2, SF3, SB5, SA4, SB4, SA3, SKR, SKL, SPJ.)

Table 4.35

Item No.	Check items	How/where to check
1	Clean the sensor indicated by the alarm and see if it is functioning.	See Section 3.2.1 for cleaning. See Section 7.10 for Sensor monitor. Conduct Manual feed adjustment if necessary. (See Section 7.9)
2	If Item 1 could not remove the alarm, check the cable and connector connections. If they are OK, replace the sensor.	When Sensor SF0 is causing the alarm, replace Sensor SER (See Section 5.14.7). For replacing Sensor SF1, see Section 5.14.5 and 5.14.7. For replacing Sensor SF1.5, see Section 5.18. For replacing Sensor SF2, see Section 5.18. For replacing Sensor SF3, see Section 5.21. When Sensor SB5 is causing the alarm, replace Sensor SER (See Section 5.14.7). When Sensor SA4 is causing the alarm, replace Sensor SEL (See Section 5.14.7). When Sensor SB4 is causing the alarm, replace Sensor SER (See Section 5.14.7). When Sensor SA3 is causing the alarm, replace Sensor SEL (See Section 5.14.7). When Sensor SKR is causing the alarm, replace Sensor SER (See Section 5.14.7). When Sensor SKL is causing the alarm, replace Sensor SEL (See Section 5.14.7). For replacing Sensor SPJ, see Section 5.25.
3	Replace Control PCA if Item 1 and 2 could not remove the alarm.	See Section 5.9

4.36 "xxx Sensor error" occurs

Note: xxx indicates a sensor causing the alarm. (SF0, SF1, SF1.5, SF2, SF3, SB5, SA4, SB4, SA3, SKR, SKL, SPJ.)

Table 4.36

Item No.	Check items	How/where to check
1	Is the sensor indicated by the alarm functioning?	See Section 7.10 for Sensor monitor. Conduct Manual feed adjustment if necessary. (See Section 7.9)
2	Check the cable and connector connection. If they are OK, replace the sensor.	When Sensor SF0 is causing the alarm, replace Sensor SER (See Section 5.14.7). For replacing Sensor SF1, see Section 5.14.5 and 5.14.7. For replacing Sensor SF1.5, see Section 5.18. For replacing Sensor SF2, see Section 5.18. For replacing Sensor SF3, see Section 5.21. When Sensor SB5 is causing the alarm, replace Sensor SER (See Section 5.14.7). When Sensor SA4 is causing the alarm, replace Sensor SEL (See Section 5.14.7). When Sensor SB4 is causing the alarm, replace Sensor SER (See Section 5.14.7). When Sensor SA3 is causing the alarm, replace Sensor SEL (See Section 5.14.7). When Sensor SKR is causing the alarm, replace Sensor SER (See Section 5.14.7). When Sensor SKL is causing the alarm, replace Sensor SEL (See Section 5.14.7). For replacing Sensor SPJ, see Section 5.25.
3	Replace Control PCA if Item 1 and 2 could not remove the alarm.	See Section 5.9

4.37 "Temperature alarm" occurs

Table 4.37

Item No.	Check items	How/where to check
1	Is the scanner installed in a location that satisfies environmental specifications?	See Section 1.2.
2	Is fan moving?	Visual check. If the fan is not moving, replace it. (See Section 5.10)
3	Replace Control PCA if Item 1 and 2 could not remove the alarm.	See Section 5.9

4.38 "Power supply error" occurs

Table 4.38

Item No.	Check items	How/where to check
1	Is the interlock switch functioning?	See Section 5.23 and 5.24.
2	Replace Power supply unit.	See Section 5.10.
3	Replace Control PCA if Item 1 and 2 could not remove the alarm.	See Section 5.9

4.39 "ADDRESS xxh EEPROM Alarm" occurs

Note: xx indicates an EEPROM address causing the alarm.

Table 4.39

Item No.	Check items	How/where to check
1	Replace Control PCA by following the procedure described in the right column.	Note 1: If the scanner is New type (Section 1.1), prepare the Adjustment sheet as described in Section 5.3. 05 1. Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2. Press [⏻] while pressing down [Start] and [Stop] to turn on the scanner. Scanner enters offline test mode. 3. Writer down the values of the following EEPROM address. Refer to Section 7.12 a) Abrasion counter: #6, #6E, #6F b) Offset adjustment value: #1E, #1F, #20, #21 c) Density adjustment value: #8A, #8B, #A8, #A9, #AA, #AB, #AC, #AD 4. Replace Control PCA by referring to Section 5.9. Make sure to use a new EEPROM installed on a new Control PCA. 5. Turn on the scanner by following Step 2 to activate Off-line test mode. 6. Write the value you noted in Step 3 into the corresponding address by referring Section 7.12. 7. If the scanner is New type (Section 1.1), run US sensor adjustment by referring Section 7.14. Note 2: No need to conduct Offset adjustment or density adjustment after replacement.

02

05

4.40 Errors related to Control PCA

"Command Error n" ("n" indicates the number in the range of 1 –5.)
"MDC Timeout"
"VDC2 R/W Error"
"MDC download Error"
"Dither/Gamma R/W Error"
"TempMem R/W error"

Table 4.40

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	1) Press Power button on the Operator panel for more than 2 seconds to cut off the power. 2) Press Power button again to turn the scanner ON.
2	Check the cable connections from Control PCA to Back panel PCA.	See Section 5.9 If the cable connections are OK, replace Control PCA and see if the error is removed.

05 4.41 SUS Sensor error occurs

Table 4.40

Item No.	Check items	How/where to check
1	Does the same symptom occur after turning OFF and ON the scanner?	- Press Power button on the Operator panel for more than 2 seconds to cut off the power. - Press Power button again to turn the scanner ON.
2	Remove the paper dust from US Sensor, and confirm if the error is removed.	Refer to a photo in Section 5.18 for the location of US Sensors.
3	Run Ultrasonic sensor adjustment, and confirm if the error is removed.	See Section 7.14 for adjustment method. Scanner automatically sets a suitable slice level by this adjustment. This is necessary when US Sensor is repkace, or when Control PCA is replaced and original EEPROM is not used.
4	Check the cable connections from US PCA or USDV PCA to Control PCA.	See a lower photo in Section 5.9 for the location of the cable.
5	Check if the connectors to US PCA or USDV PCA are connected correctly.	For US PCA refer to Section 5.18. For USDV PCA refer to Section 5.26.
6	Check if US Sensors are assembled correctly.	Refer to Section 5.18 and 5.25.
7	Replace US Sensor, and check if the error is removed.	Refer to Section 5.18 and 5.25.
8	Replace US PCA or USDV PCA, and check if the error is removed.	For US PCA refer to Section 5.18. For USDV PCA refer to Section 5.26.
9	Replace Control PCA, and check if the error is removed.	Refer to Section 5.9.

Chapter 5 Parts Replacement

This chapter describes how to replace maintenance parts, clean and adjust the scanner to ensure the normal operations.
When assembling the maintenance parts, conduct necessary cleaning when instructed in this manual.

5.1 Replacement notes

Read the following notes carefully before disassembling/assembling maintenance parts to avoid injury to users and damage to the scanner.

Warning

Electric shock
When the power supply code being connected to AC outlet, the each electric diagram is in active because it supplies AC power source.
Before disassembling and assembling, turn the power switch off, and unplug the AC power source from the outlet.
If you do not this, the electric shock may results on you.

Caution

Injury
Be careful not to catch your fingers, hair, clothes or accessories in the moving component of the scanner.
It may be a cause of injury.

Machine damage

Static Electricity charged with human body due to rubbed clothes may cause the damage of electric element. When repairing the substrate such as a System Board or a Main Control Board, put a wrist strap or use a conductive mat to avoid ESD.

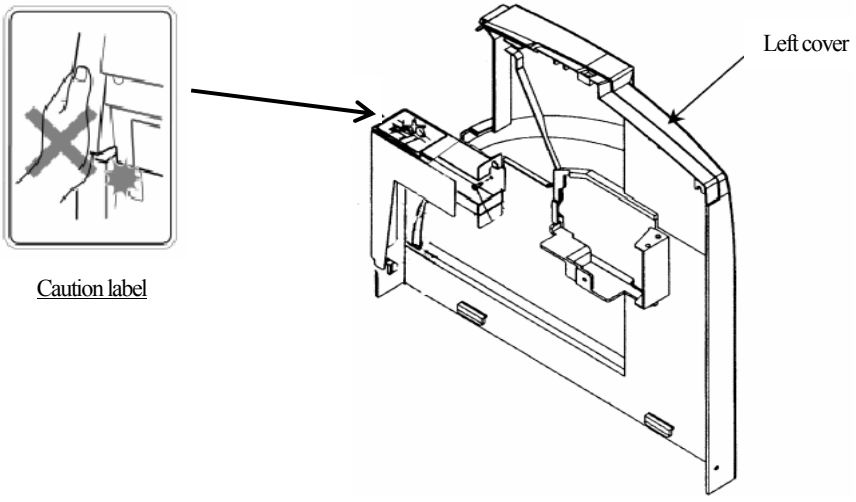
NOTICE

When you clean
When cleaning inside the scanner, be careful not to fall off the foreign matters, which adhered on such like rollers.
If foreign matters fell into the upper unit or the base unit while cleaning, open the cover and clean inside the device.

When assembling, follow the removing procedure in reverse unless specified.

Caution

02 Be careful not to pinch your hand when opening and closing Upper transport unit. There is a caution label attached on the Left cover as shown below.



Caution label

5.2 Outline

This section describes basic maintenance service provided by a service person.

5.2.1 Regular Inspection

We recommend you to check the scanner in the following interval.

Item	Inspection cycle
Regular Inspection	Every 12 months

At regular inspection, check the following pars and clean them if necessary.
- ADF unit, the glass part of the Glass sheet guide (See Section 3.2.1)
- CCD unit (See Section 3.2.2)

5.3 Maintenance Tool

Table 4-4 shows the tools required for the maintenance.

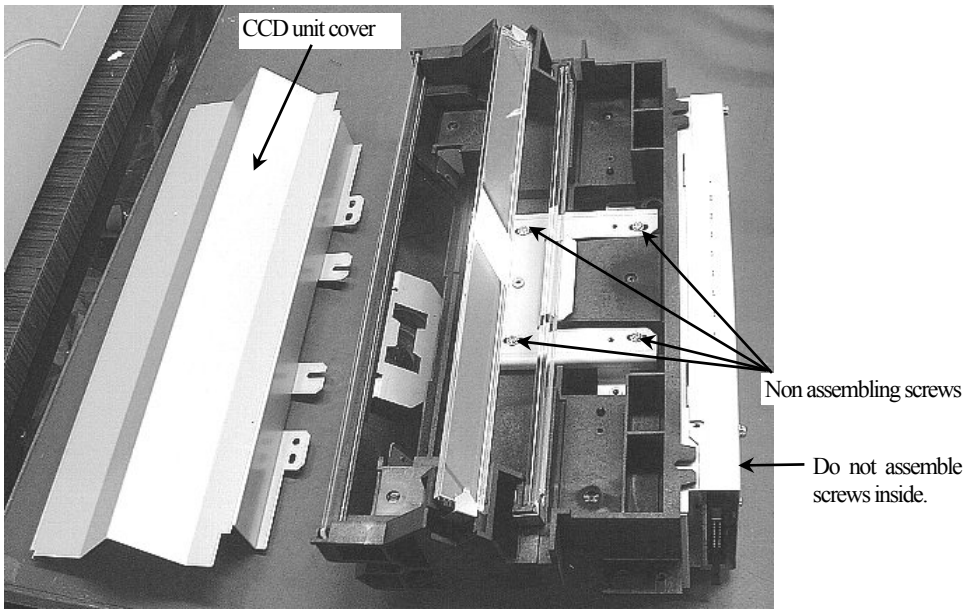
Table 4-4

Item	Tools	Remarks	When to use
1	Screwdriver	Used for M3, M4	
2	Screwdriver (long)	Used for M3, M4	Back panel PCA removal
3	Screwdriver (short)	Used for M2	Microswitch removal
4	Flat head screwdriver (short)		Sensor, EEPROM removal
5	Stubby driver		Sensor cover removal
6	Needle-nosed pliers		Inverter removal
7	Spring balance	1 Kg	Belt tension adjustment
8	Alcohol	Ethyl alcohol or isopropyl alcohol	Cleaning
9	Blower brush		Mirror cleaning
10	Offset adjustment sheet	Used when replacing CCD unit. Refer to Fig.7.7 and prepare one in advance.	Offset adjustment (Section 7.7)
04 11	Test Sheet (w) P/N: PA03277-Y123	Used when replacing CCD unit. This sheet is attached to the CCD unit.	Density Adjustment (Section 7.11)
05 12	Adjustment sheet P/N: PA03296-Y990	Used when replacing US Sensor, or when replacing Control PCA without installing original EEPROM.	Ultrasonic sensor adjustment (Section 7.14)

5.4 Non disassembling parts

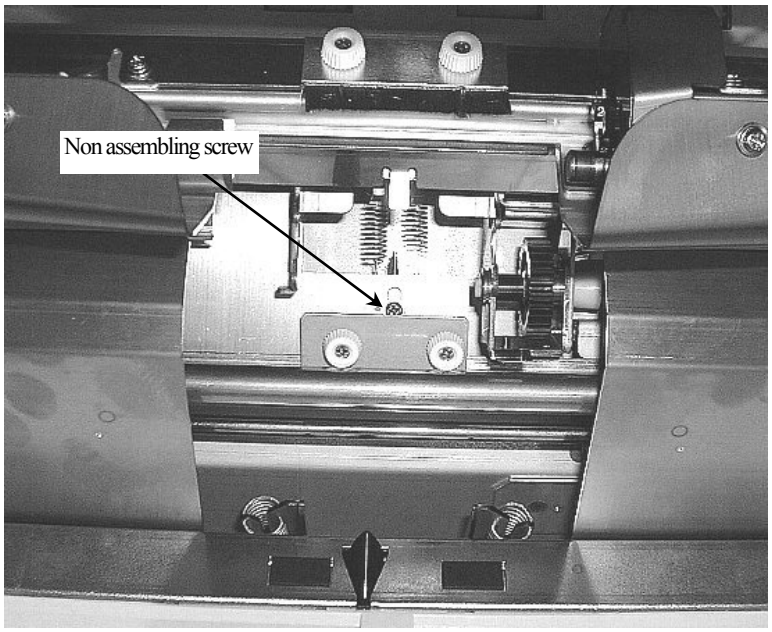
The following screws are adjusted and secured at shipment from factory. Do not attempt to disassemble nor loose them.

1) CCD unit



Note: The above figure shows CCD unit removing CCD unit cover for cleaning.

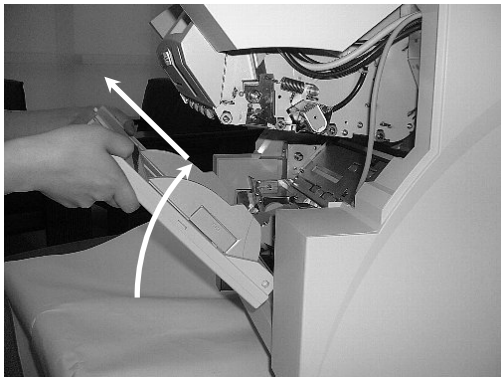
2) ADF unit



5.5 Replacing Hopper table, Stacker table, Stopper A

<Removing Hopper table>

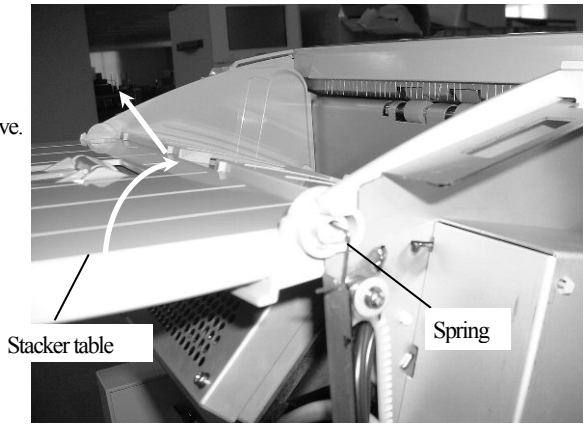
Raise the Hopper table by 60 degrees and pull it upwards to remove.



Note: For details on maintenance parts, refer to Section 9.28.

<Removing Stacker table>

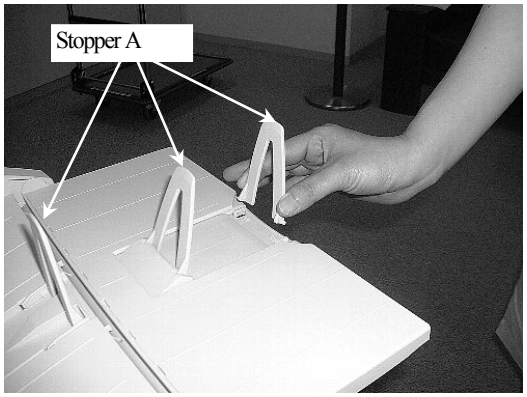
1. Take out the Upper transport cover. (See Section 5.6.1)
2. Remove the spring used for rotating section.
3. Raise the Stacker table by 60 degrees and pull it upwards to remove.



Note: For details on maintenance parts, refer to Section 9.27.

<Replacing Stopper A>

Stopper A is a part attached to the Stacker and used to prevent the documents on the Stacker from falling off.
To remove the Stopper A from the Stacker, hold the Stopper A in the way shown in the right figure and push inward so that its turning fulcrums are unhooked from the Stacker table.

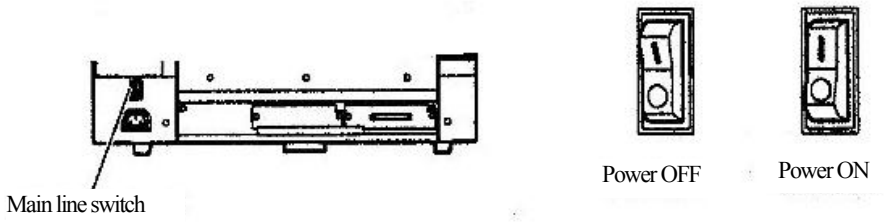


Note: For details on maintenance parts, refer to Section 9.31

5.6 Replacing Cover

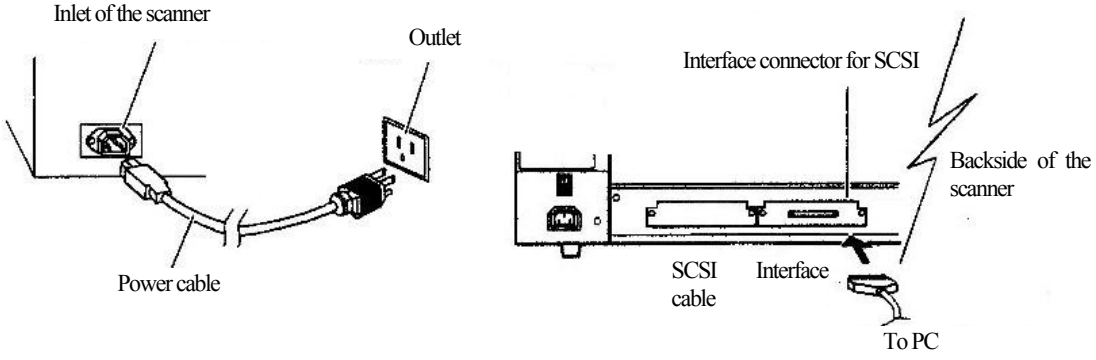
Before removing any cover of the scanner, cut off power supply from the scanner.
Go to Section 5.6.1 ~ 5.6.6 for removing/mounting each cover.

1. Press " O" side of the main line switch located on the back of the scanner.



Backside of the scanner

2. Disconnect one end of the power cable from the inlet on the scanner side and unplug the other end from the outlet. Disconnect the interface cable from the scanner.



5.6.1 Upper transport cover

Replace the Upper transport cover as follows.

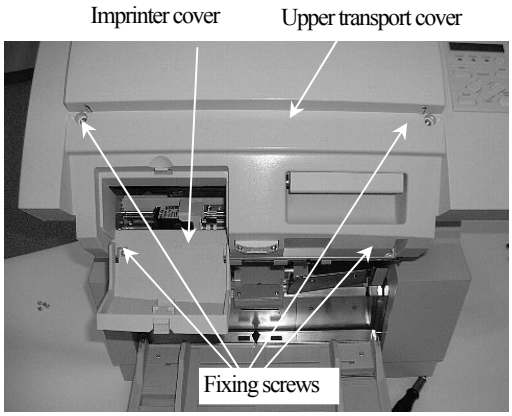
1. Open the ADF upper transport unit and imprinter cover.

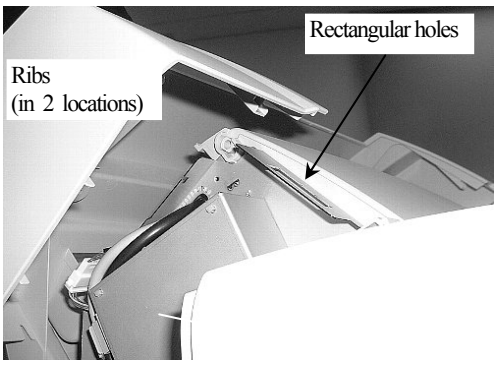
2. Remove fixing screws in 4 locations as shown in the figure and pull the ADF upper transport cover towards you to remove.

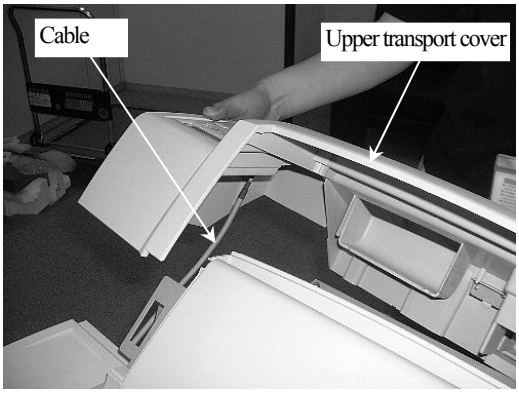
   Note: Be careful not to pull the ADF upper transport cover too much as a cable connecting the cover and the Console unit may be damaged

3. Disconnect the connector form the Console unit.

   Note: When assembling, insert the ribs (inside the cover) into the rectangular holes of the upper transport frame.







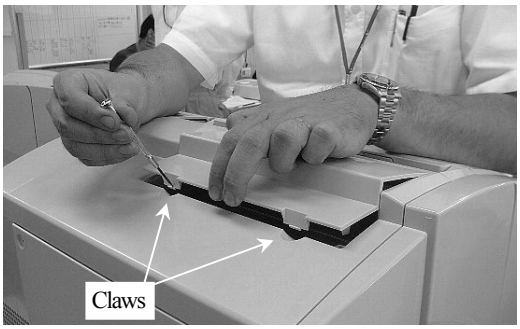
5.6.2 Imprinter cover

Removing procedure of the imprinter cover differs depending on whether imprinter options are installed or not.

Replace the Imprinter cover as follows.

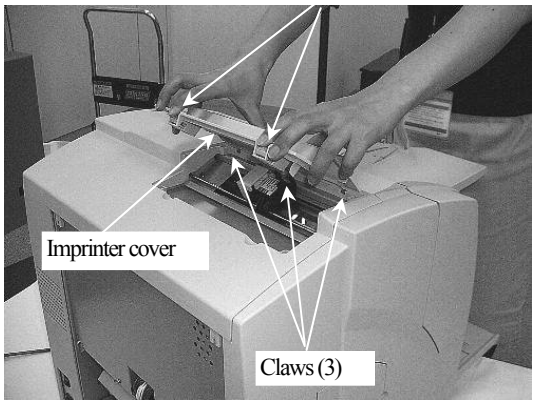
- When an imprinter option is not installed:

Disengage the claws of the imprinter cover in 2 locations using a small flat head screwdriver to remove.



- When an imprinter option is installed:

Disengage the latch of the imprinter cover in 2 locations and raise the cover up to remove.
When assembling, hook the 3 claws of the imprinter on the Top transport cover and close the imprinter cover.

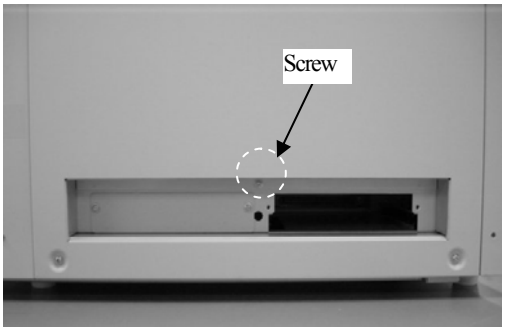


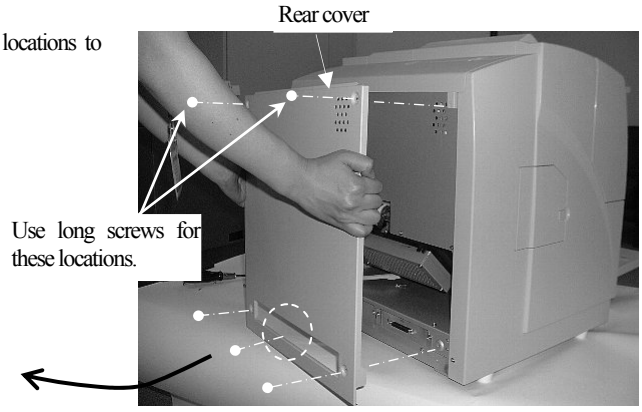
5.6.3 Rear cover

Replace the Rear cover as follows.

02

Remove screws on the backside of the scanner in 4 5 locations to remove Rear cover.

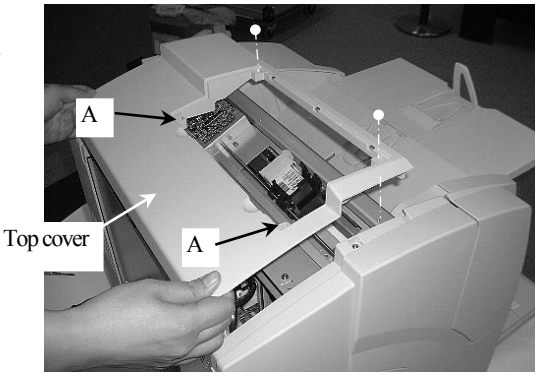




5.6.4 Top cover

Replace the Top cover as follows.

1. Remove the Imprinter cover (See Section 5.6.2) and the Rear cover (See Section 5.6.3).
2. Remove screws on the top of the scanner in 2 locations and lift the Top cover to remove.
   Note: A part (2 locations) does not need fixing with screws.



5.6.5 Left cover

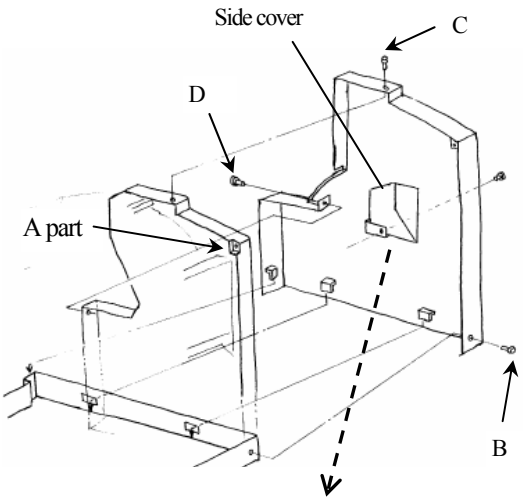
Replace the Left cover as follows.

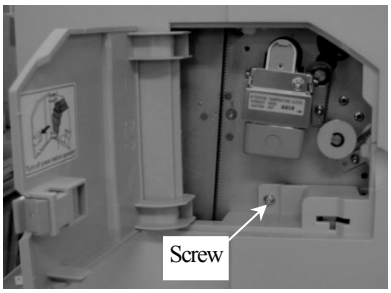
1. Remove the Rear cover (Section 5.6.3), the Top cover (Section 5.6.4) and the Upper transport cover (Section 5.6.1).
2. Remove screw B and C.
   Open the side cover and remove the screw located below the lamp unit. Loosen screw D and raise the Left cover up to remove.

02

Note:

- When assembling, hook 3 claws (located inside the Left cover at the bottom) on the bottom frame of the scanner.
- No need to fix A part with a screw.
- Use a long screw for B part.





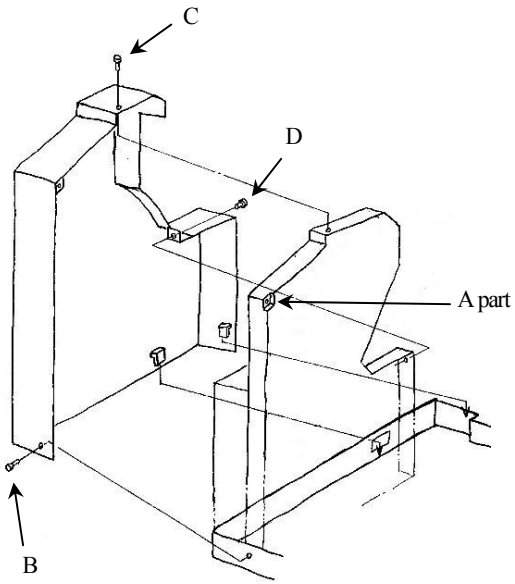
5.6.6 Right cover

Replace the Right cover as follows.

1. Remove the Rear cover (Section 5.6.3), the Top cover (Section 5.6.4) and the Upper transport cover (Section 5.6.1).
2. Remove screw B and C and loosen screw D. Raise the Right cover up to remove.

Note:

- When assembling, hook 2 claws (located inside the Right cover at the bottom) on the bottom frame of the scanner.
- No need to fix A part with a screw.
- Use a long screw for B part.

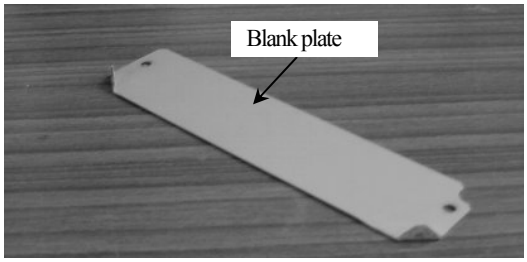


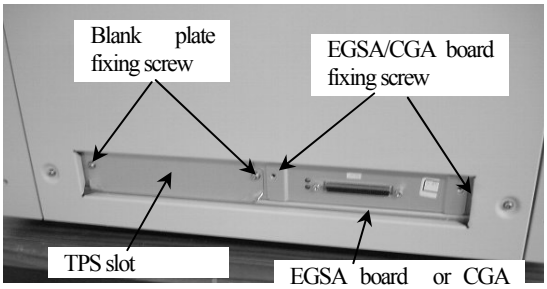
5.7 Replacing High speed EGSA board, CGA board, DIMM 07

Replace High speed EGSA board, hereinafter called EGSA board, CGA board or DIMM as follows.

1. Remove two fixing screws from EGSA board or CGA board.

2. Remove 2 screws from TPS slot on the back of the scanner and remove the blank plate.





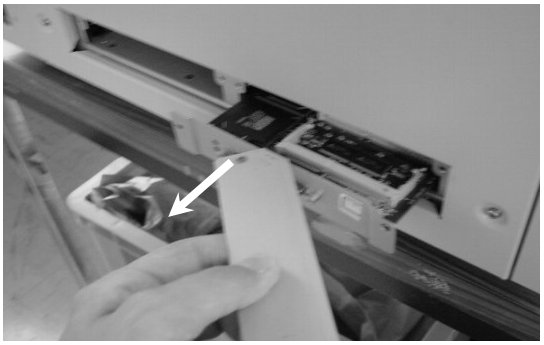
3. Remove the Rear cover.
Insert the bending edges of the blank plate into the gap between EGSA board and scanner frame and move the blank plate to the center of the board.

Note: For easier operation, insert the blank plate from the end of mounting hole of EGSA or CGA board.

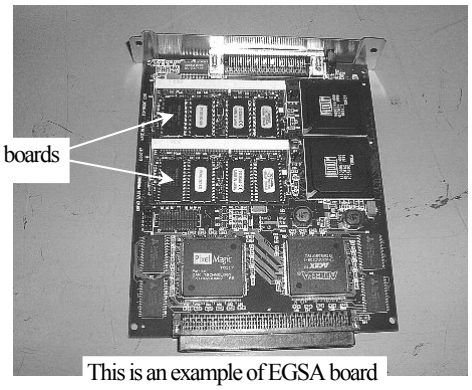
* The above photo shows the Rear cover, but remove the Rear cover at actual replacement.

4. Pull the blank plate backwards and take out EGSA board or CGA board.

5. If the scanner is fi-480C, remove two memory boards from EGSA board and install them on the new EGSA board.
if the scanner is fi-4860C2, remove a memory board from CGA board and install it on the new CGA board.



* The above photo shows the Rear cover, but remove the Rear cover at actual replacement.



This is an example of EGSA board

For assembling, follow the removing procedure in reverse.

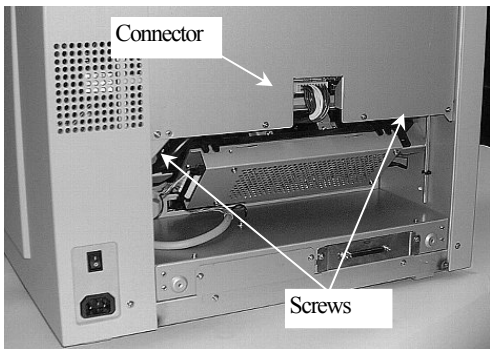
Note 1:
There are 2 LEDs, one is yellow and another is Green, next to SCSI connector. When the yellow LED keeps lighting, it may indicate connector failure or no memory. Check if the High speed EGSA board is installed properly. (See section 4.2

Note 2:
For details on maintenance part, see Section 9.2.

5.8 Replacing Back panel PCA

Replace the Back panel PCA as follows.

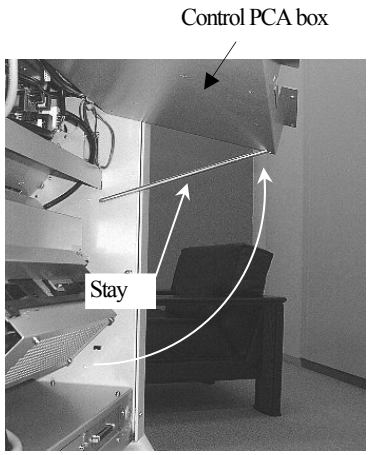
1. Turn the main line switch off located on the backside of the scanner. Disconnect the interface cable. (See section 5.6)



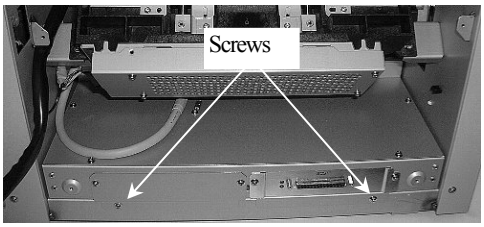
2. Remove the Rear cover (See Section 5.6.3)

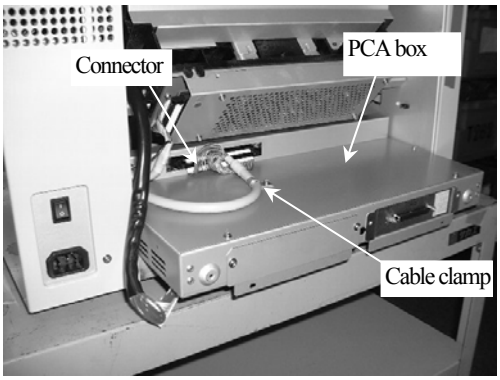
3. Remove a connector of the Control PCA and remove 2 screws fixing the PCA box in 2 locations.

4. Lift the PCA box and raise a stay inside the frame to prop it.



5. Remove 2 screws fixing the Back panel PCA box to pull it out. Disconnect a connector and a cable clamp from the box.



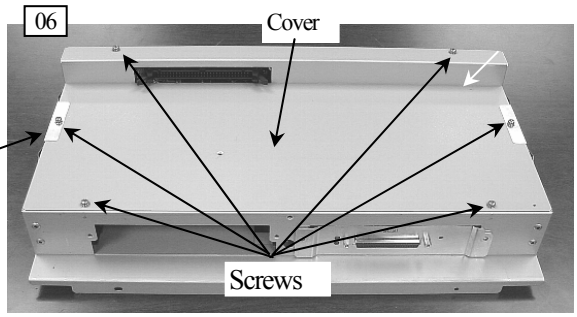


6. Remove 6 ~~5~~ screws from the PCA box to remove the box cover and FG bracket.

06

06

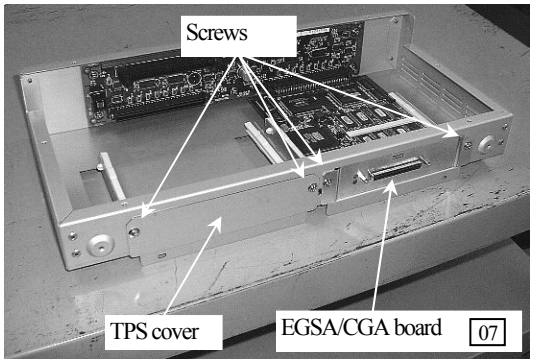
FG Bracket
(Another one is oppsite side)



7. Remove 4 screws from the PCA box to remove the TPS cover (*1) and EGSA/CGA board.

07

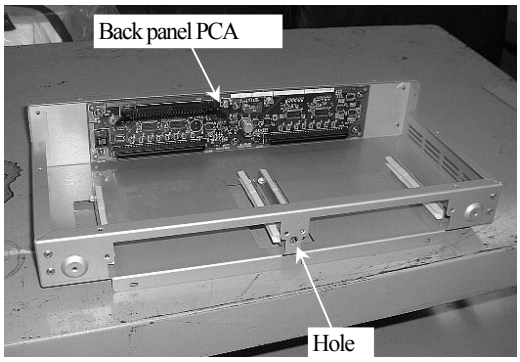
*1 When any TPS board is installed, remove the cover of the board.



Remove 6 screws from the Back panel PCA to remove it.

Note:
When removing the screw that fixes the Back panel PCA in the center, insert a long screwdriver into the hole shown in the figure.

For assembling, follow the removal procedure in reverse.



Note 1:
For details on maintenance parts, refer to Section 9.22.

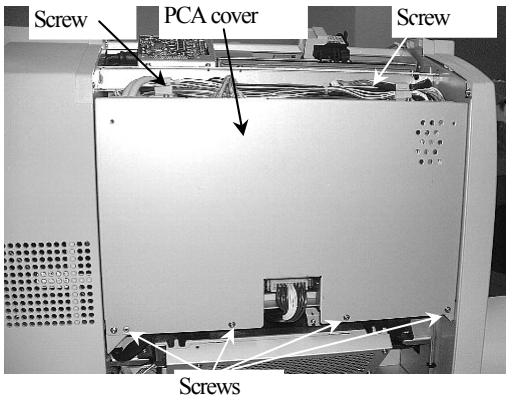
5.9 Replacing Control PCA, Fuse

02 Note: When "Address xxxh EEPROM alarm" occurs, the current EEPROM cannot be used any more. Prepare An Adjustment sheet, which is described in Section 5.3. And replace the Control PCA after writing down the EEPROM data by referring to Section 4.39.

1. Turn the main line switch off located on the backside of the scanner. Disconnect the interface cable. (See section 5.6)

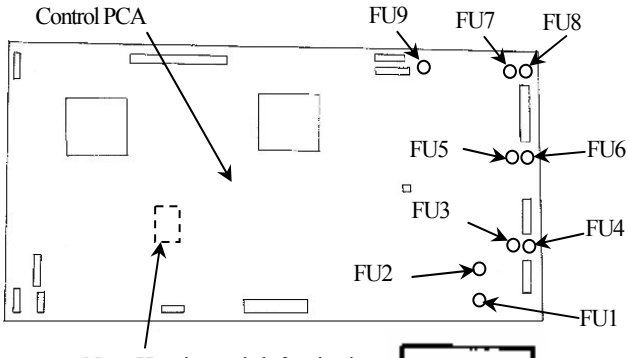
2. Remove the Rear cover (See Section 5.6.3) and the Top cover (See Section 5.6.4).

3. Remove 6 screws fixing the PCA cover to remove it.

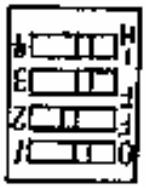


4. When replacing the Fuse, disconnect the following fuses from the Control PCA. When replacing power supply unit, go to step.

Symbol	Current (A)	Related parts
FU1	0.5A	Background motor (back)
FU2	0.5A	Background motor (front)
FU3	1.6A	Inverter (front)
FU4	1.6A	Inverter (back)
FU5	1A	Pick motor
FU6	1A	Hopper motor
FU7	3.15A	Separation motor
FU8	3.15A	Feed motor

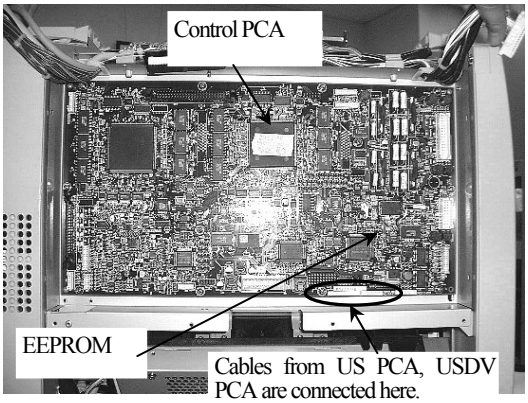


Note: Here is a switch for circuit setting (See the right drawing). This should not be modified..



5. To take out the Control PCA, disconnect all connectors ~~in 10 locations~~ and remove 12 screws that fix the Control PCA.
05 (10 connectors for Old type scanner (See Section 1.1), 12 connectors for New type scanner)

6. Replace the EEPROM on the old Control PCA with the new one. Without replacing the EEPROM, the operator panel will be displayed in English.
When Control PCA is replaced after "Address xxxh EEPROM alarm", rewrite EEPROM data by referring Section 4.39.



05

For assembling, follow the removal procedure in reverse.

Note 1: Confirm the firmware version after replacement. (Refer to Section 7.14.

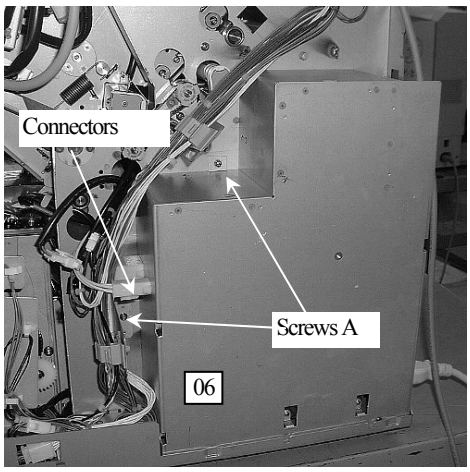
02 ~~Note 2:~~

Note 3: For details on maintenance parts refer to, Section 9.21 and 9.7.

5.10 Replacing Power supply unit

Replace the Power supply unit as follows.

1. Turn the main line switch off and disconnect the interface cable. (See Section 5.6)



06

2. Remove the Upper transport cover (See Section 5.6.1), Rear cover (See Section 5.6.3), Top cover (See Section 5.6.4) and Right cover (See Section 5.6.6).

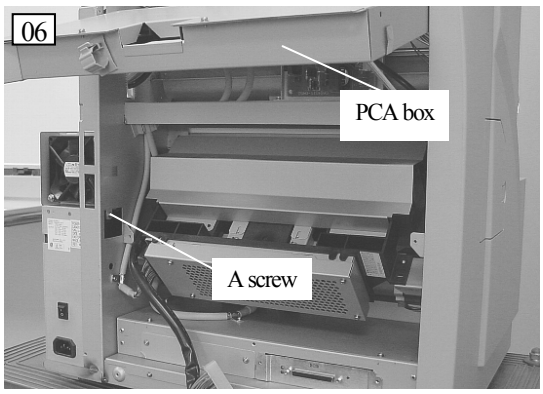
3. Disconnect two connectors for the Power supply.

06

4. Lift up the PCA box (See steps (3) and (4) in Section 5.8).

06

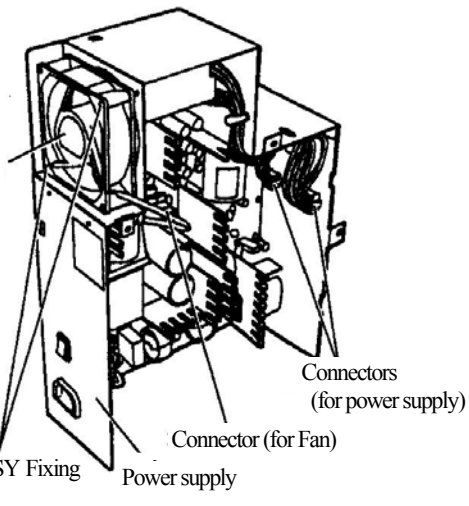
5. Remove an inner screw.



06

6. Remove screws (A) in two locations in the photo right above and take out the Power supply unit.

7. Remove the two Fan ASY fixing screws, disconnect the connector and remove the Fan ASY.



For assembling, follow the removal procedure in reverse.

Note 1:
For details on maintenance parts, refer to Section 9.3 and 9.4.

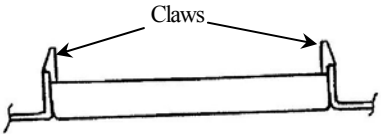
Note 2:
When assembling, be careful not to pinch the cables used for fan.

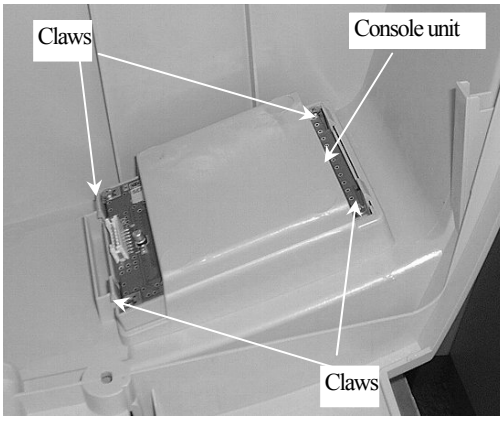
5.11 Replacing Console unit

Remove the Console unit as follows.

1. Remove the Upper transport cover. (See Section 5.6.1)

2. Disengage the claws of the Console unit form the Front cover and push the unit down to remove.





For assembling, follow the removal procedure in reverse.

Note:
For details on maintenance parts, refer to Section 9.26.

5.12 Replacing CCD unit and Inverter (for front side)

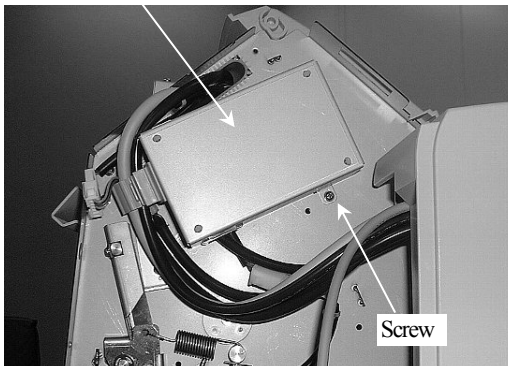
Remove the CCD unit and Inverter used for front side as follows.

06

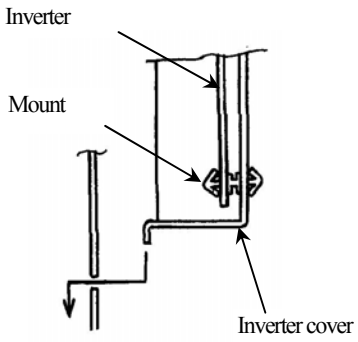
1. Remove ~~the Rear cover (See Section 5.6.3), Top cover (See Section 5.6.4) and~~ Upper transport cover (See Section 5.6.1).

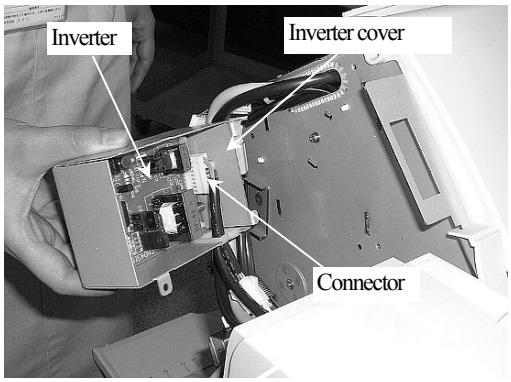
2. Remove the two screws fixed on the right side of the scanner and remove the Inverter cover. Go to step 4 to replace the CCD unit for front side.

Inverter cover



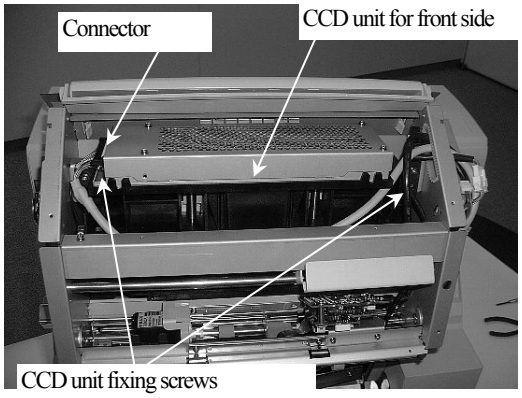
3. To replace the Inverter for front side, remove a connector inside the Inverter cover, disengage the Inverter from the mount and remove.



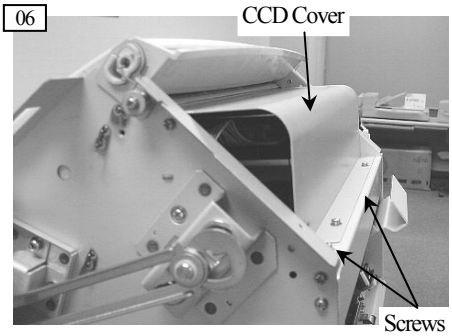


06

4. Romove 2 screws from CCD Cover and remove CCD Cover in the right photo. To replace the CCD unit for front side, remove a connector and CCD unit fixing screws in 2 locations in the photo below.

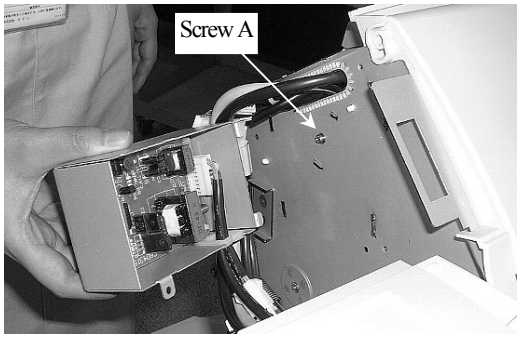


06



06

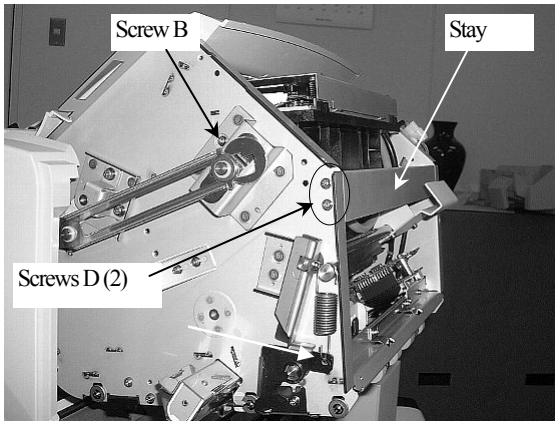
5. Remove screw A from the right side plate and remove the mounting brackets of the CCD unit on the right side.

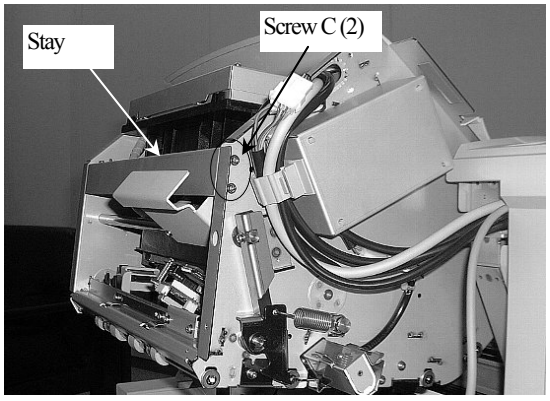


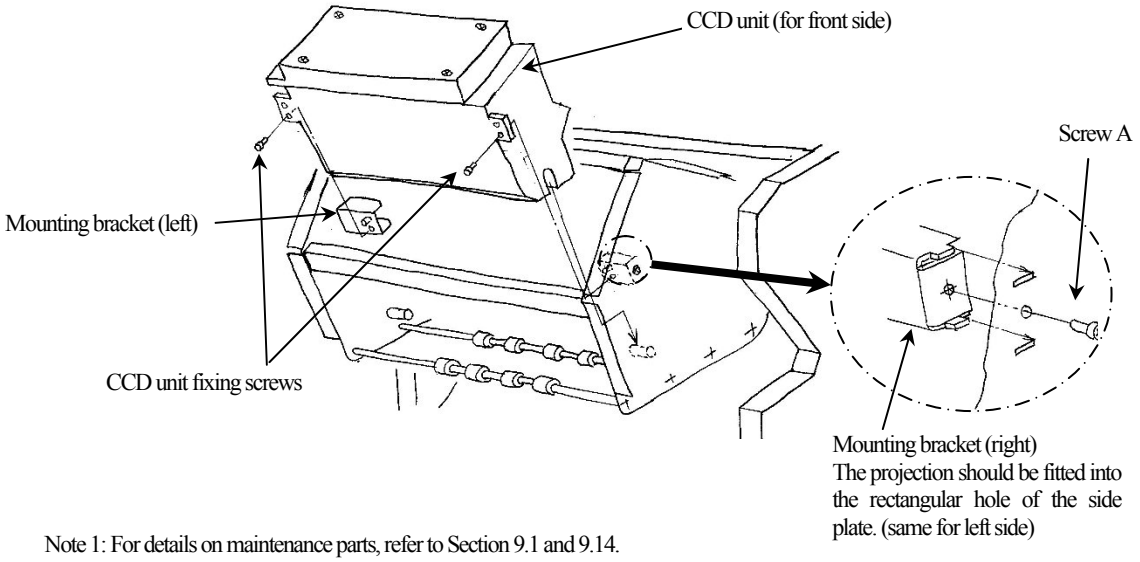
6. Remove screw B from the left side plate and remove the mounting brackets of the CCD unit on the left side.

7. Remove screws in 4 locations (screw C on the right and screw D on the left) and remove the stay.

8. Take the CCD unit for front side from the scanner.







Note 1: For details on maintenance parts, refer to Section 9.1 and 9.14.

Note 2: When installing the CCD unit, make sure that the frame pin is fitted into the U shape flute on the bottom of the CCD unit and that the projection of the mounting bracket is fitted into the rectangular hole of the side plate.

Note 3: After replacement, adjust the density (Section 7.11) and offset (Section 7.7) in the Test mode.

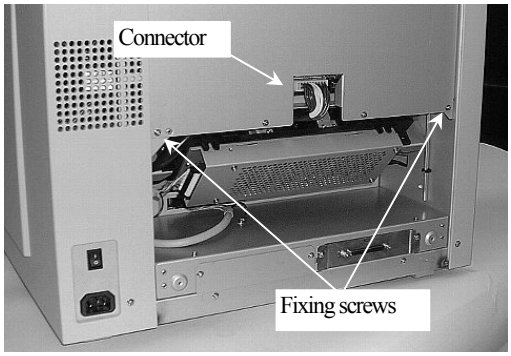
5.13 Replacing CCD unit and Inverter (for back side)

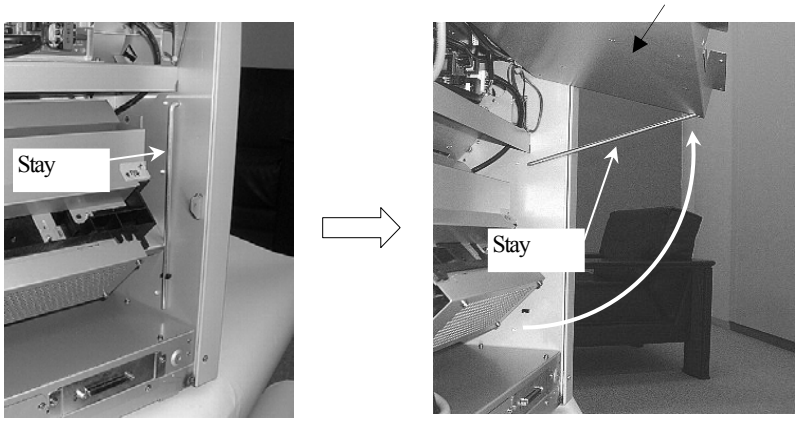
Remove the CCD unit and Inverter used for backside.

1. Remove the Rear cover (See Section 5.6.3), Top cover (See Section 5.6.4).

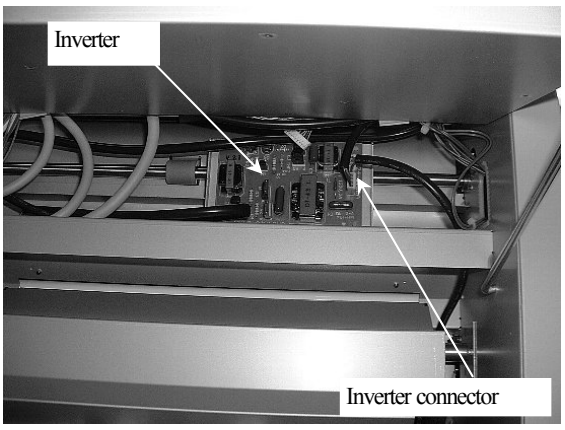
2. Remove a connector of the Control PCA and remove 2 screws fixing the PCA box.

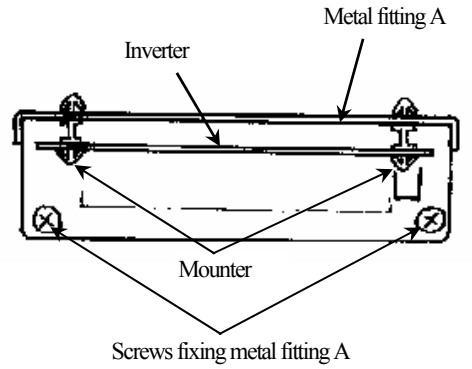
3. Lift the PCA box and raise a stay inside the frame to prop it. When replacing the CCD unit, go to step 5.



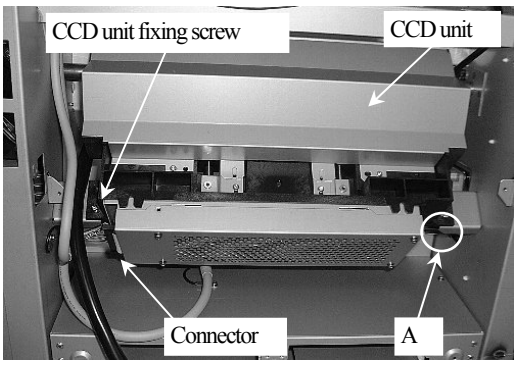


4. To remove the Inverter for backside, remove the 2 fixing screws of metal fitting A and take out the assembly of the Inverter and the metal fitting A. Then take out the Inverter from the mounter.

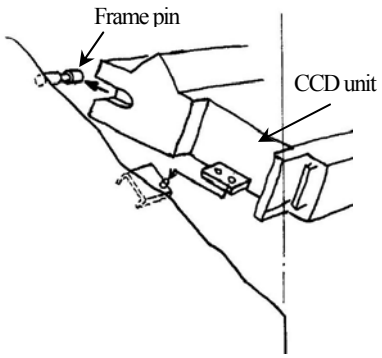




5. To replace the CCD unit for backside, remove a CCD unit fixing screw (located on the left from the backside view), remove a connector, and then pull the CCD unit towards you.



Note: When installing the CCD unit, make sure that the frame pin is fitted into the U shape flute of the CCD unit.



For assembling, follow the removal procedure in reverse.

Note 1:
After replacement, adjust the density (Section 7.11) and the offset (Section 7.7) in the Test mode.

Note 2:
For details on maintenance parts, refer to Section 9.1 and 9.14.

04

Note 3:
At early level of the scanner, there may be a tap in A part although it is not necessary to secure the screw.

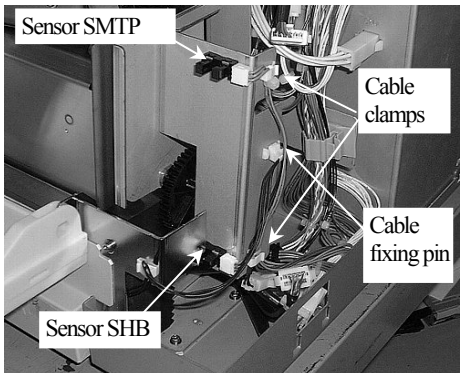
5.14 Replacing Document feed section and subordinate parts

The Document feed section consists of the ADF unit and Hopper unit, and each unit has its subordinate parts. All of them are replaced as one maintenance unit.

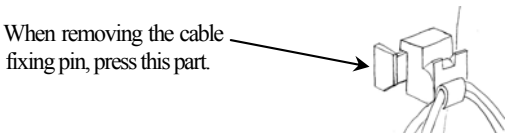
5.14.1 Replacing Document feed section

Remove the Document feed section as follows.

1. Remove the Hopper table (Section 5.5), Rear cover (Section 5.6.3), Top cover (Section 5.6.4) and Right cover (Section 5.6.6) and Left cover (Section 5.6.5).

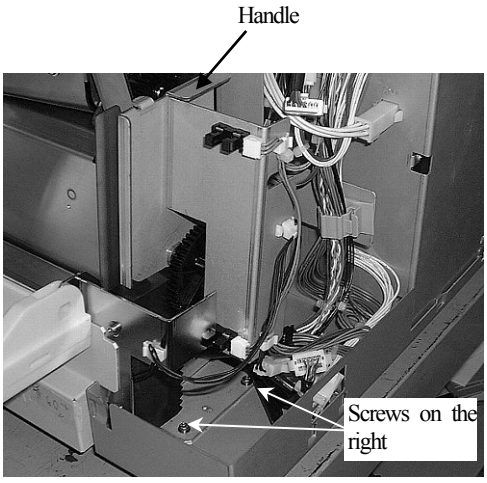


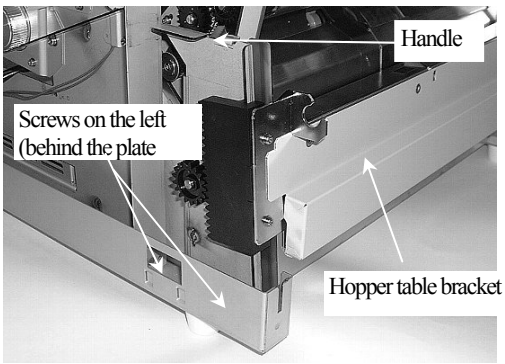
2. Disconnect the connectors from Sensor SHB and Sensor SMTP and disengage the cables from the cable clamps in 2 locations. Remove a cable fixing pin.



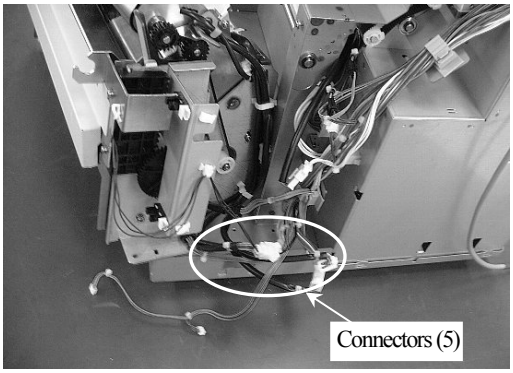
3. Remove screws fixing the Document feed section (2 on the right, 2 on the left) and hold the handle to move the Document feed section towards you. Be careful not to pull the cables.

   Note: To loosen the screw on the left easily, raise the hopper table bracket up to the top level by hand.



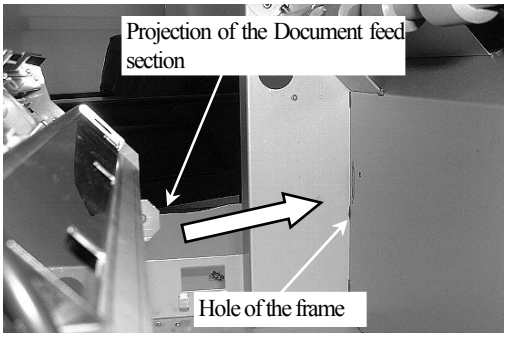


4. Remove all the connectors (5 in total) from the right side of the Document feed section.



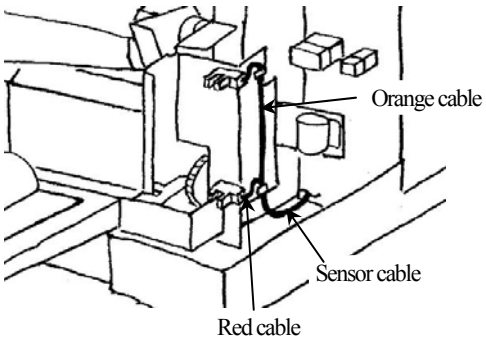
For assembling, follow the removal procedure in reverse.

Note 1:
The Document feed section should be installed so that the projection is fitted into the hole of the scanner frame on both sides.



Note 2:
For details on maintenance parts, refer to Section 9.16.

Note 3:
Connect the cable to the Hopper sensor from the bottom as shown below. Make sure to connect each cable in the way shown below.

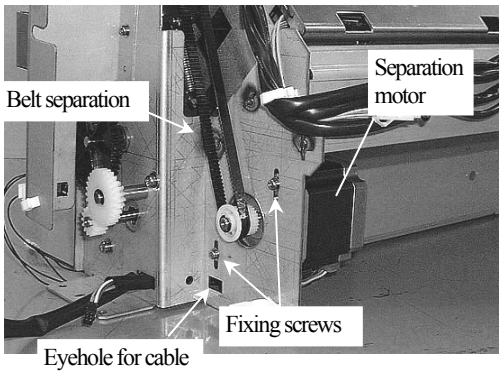


5.14.2 Replacing Separation motor and Belt separation

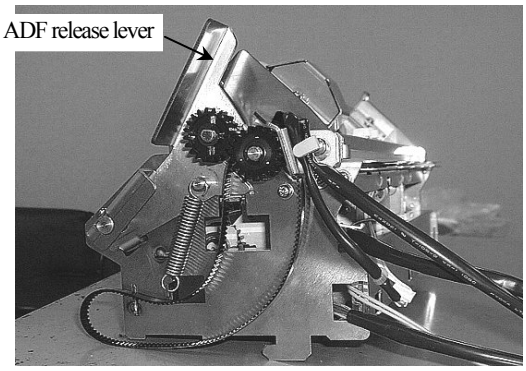
Remove the Separation motor and Belt separation as follows.

1. Remove the Document feed section. (See Section 5.14.1)

2. Remove the Separation motor fixing screws in 2 locations, pull the motor cable from the eyehole, and take out the Separation motor.



3. To remove the Belt separation, remove the ADF unit first by referring to Section 5.14.3. Then pull the ADF release lever, raise the ADF upper sheet guide, and remove the Belt separation.

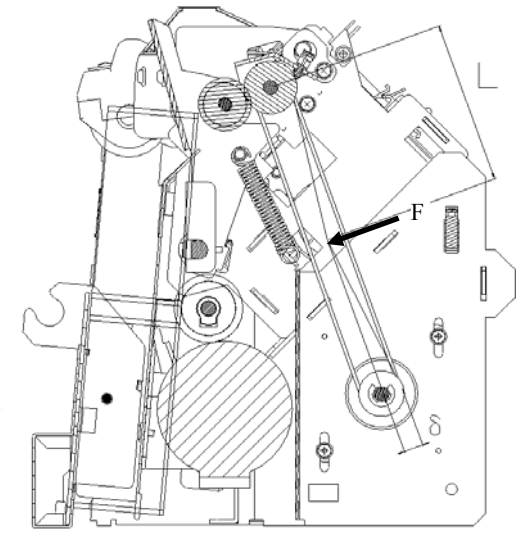


For assembling, follow the removal procedure in reverse.

Note 1:
After mounting, adjust the feed motor mounting screw to satisfy the following deflection with the load of 100 g.

$\delta = 3 \pm 1$ mm

Note2:
For details on maintenance parts, refer to Section 9.18 and 9.35.



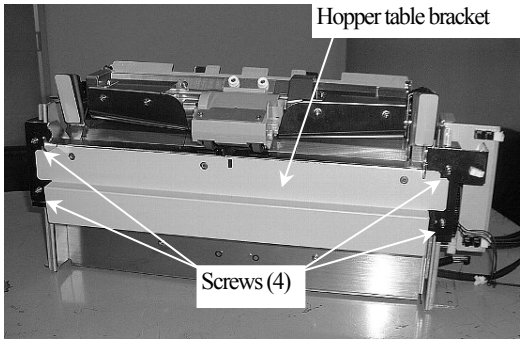
5.14.3 Replacing ADF unit and Hopper unit

Remove the ADF unit and Hopper unit as follows.

1. Remove the Document feed section. (See Section 5.14.2)

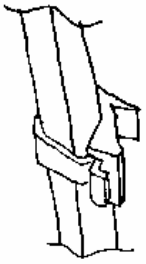
2. Loosen screws fixing the Separation motor and remove the Belt separation.

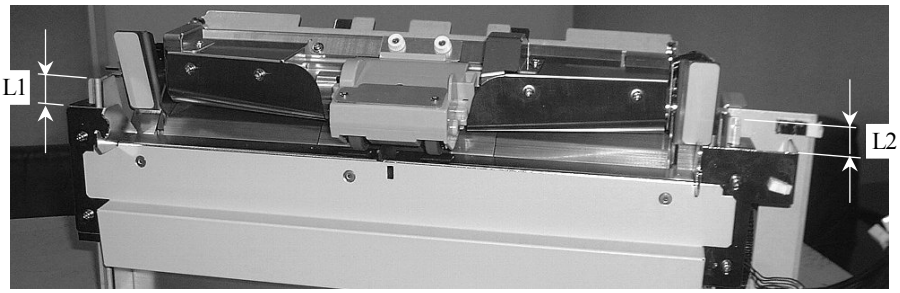
3. Remove 4 screws and remove the hopper table bracket.



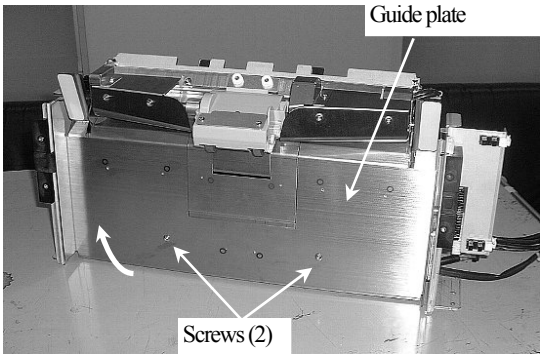
Note 1) When the hopper table bracket is removed, the racks on both sides are also dismounted. Make sure to attach the racks to the gears evenly on the right and left side.

Note 2) A small plastic part is attached to the rack on the left. When the plastic part is disengaged, attach it as shown in the right drawing.

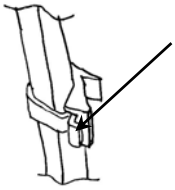




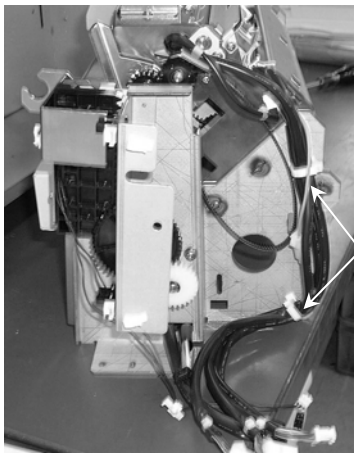
4. Remove 2 screws and hold the bottom of the Guide plate, and then pull it towards you to remove.



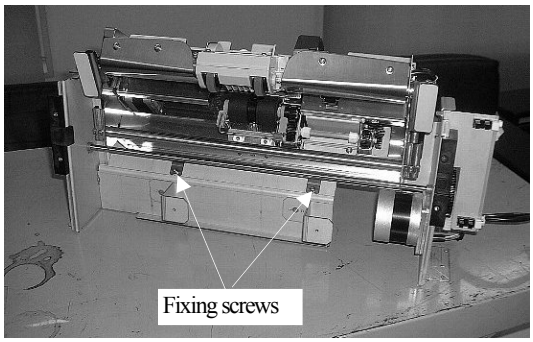
5. Remove the cables form the clamps in 2 locations.



Note) Push here to disengage the cable from the cable clamp.



6. Remove the two ADF unit fixing screws and separate the ADF unit and the Hopper unit.

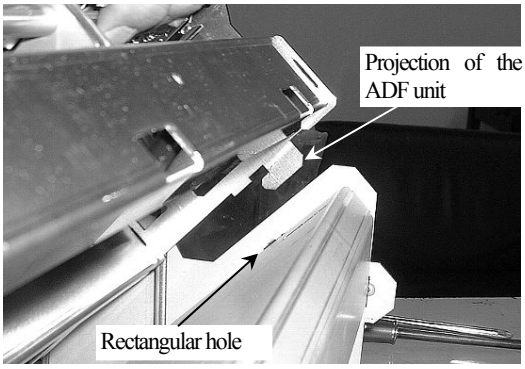


For assembling, follow the removal procedure in reverse.

Note 1:
When loading the ADF unit on the Hopper unit, insert the projection of the ADF unit into the rectangular hole of the Hopper unit, and push to secure it.

Note 2:
For details on maintenance parts, refer to Section 9.17 and 9.15.

Note 3:
After replacement, adjust the offset in the Test mode. (See Section 7.7)

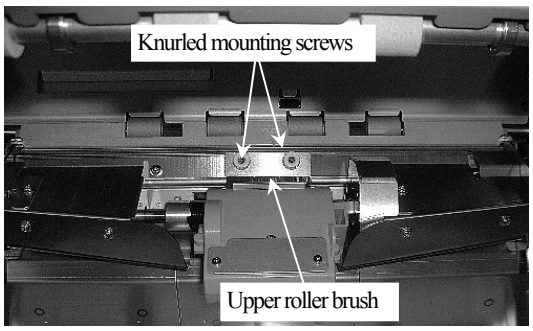


5.14.4 Replacing Roller brush

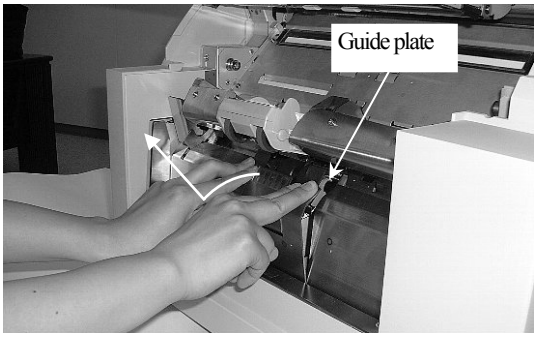
Remove the Roller brush as follows.

1. Open the ADF upper transport unit. (No need to remove any covers)

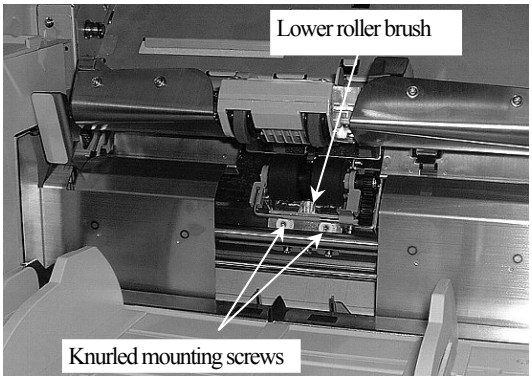
2. Remove the two knurled mounting screws and remove the upper Roller brush.



3. Pressing down the upper part of the Guide plate with your fingers at two positions and pull the plate toward you to remove it.



4. Remove the two knurled mounting screws and remove the lower roller brush.



For assembling, follow the removal procedure in reverse.

Note:1
When assembling, make sure that the knurled mounting screws fit to the U shape flutes of the roller brush.

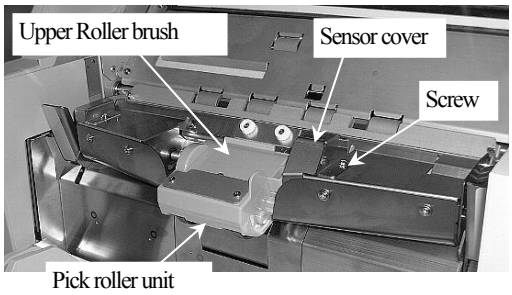
Note 2:
For details on maintenance parts, refer to Section 9.30.

5.14.5 Replacing Sensor SPK, Sensor SMF and Sensor SF1 PD

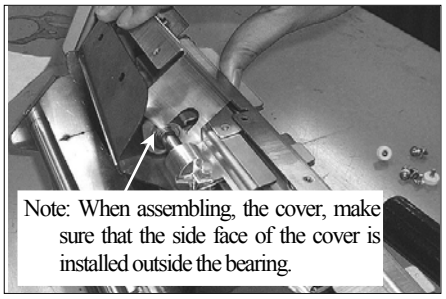
Remove the Sensor SPK, SMF and SF1 PD as follows

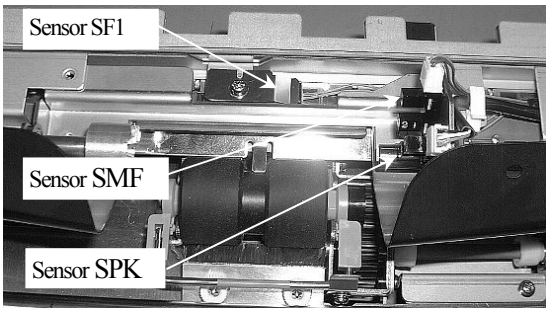
1. Remove the Pick roller unit by referring to Section 3.3.2.
2. Remove the upper roller brush (See Section 5.14.4), remove screw A, and remove the Sensor cover.

   Note: Use a stubby driver to remove screw A.



3. Remove 6 screws and remove the cover

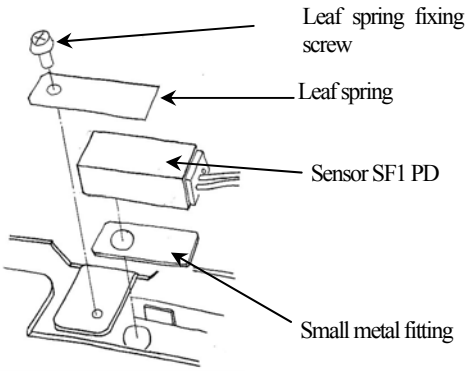




4. When replacing the Sensor SPK and Sensor SMF, disengage the hook and disconnect the connector to remove the sensors.

5. When replacing Sensor SF1 PD, remove the fixing screw and take out the leaf spring, and then the Sensor SF1 installed below. Remove a connector.

   Note: Be careful not to lose a small metal fitting under the Sensor SF1 when disassembling.



For assembling, follow the removal procedure in reverse.

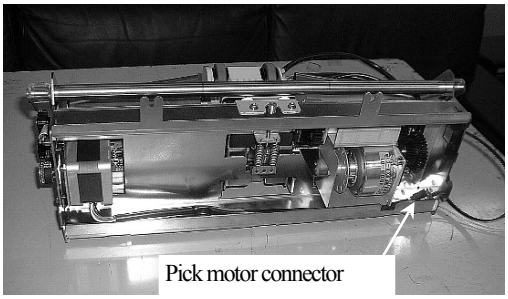
Note:
For details on maintenance parts, refer to Section 9.8 (Sensor SPK, Sensor SMF) and 9.33.

5.14.6 Replacing Pick motor and Belt pick

Remove the Pick motor and Belt pick as follows.

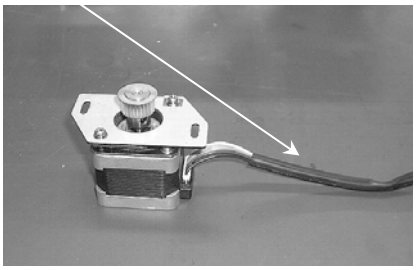
1. Remove the ADF unit by referring to Section 5.13.3.

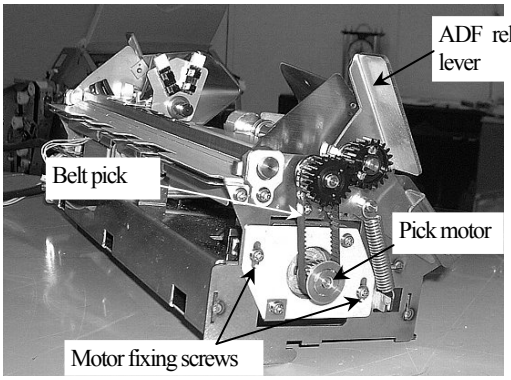
2. Remove the Pick motor connector from the bottom of the ADF unit.



3. Remove the pick motor fixing screws in 2 locations and disengage the Belt pick from the pulley to remove the Pick motor.

   Note:
   The Pick motor and its cable are regarded as one replacement unit.

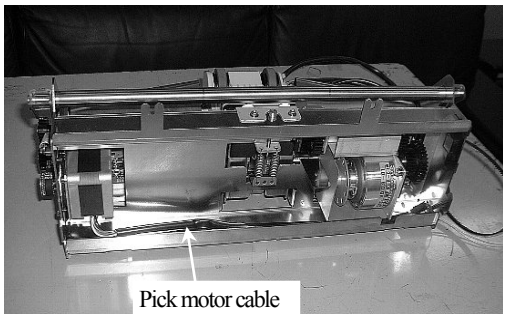




4. When removing the Belt pick, pull the ADF release lever, raise the ADF upper sheet guide, and remove the Belt pick.

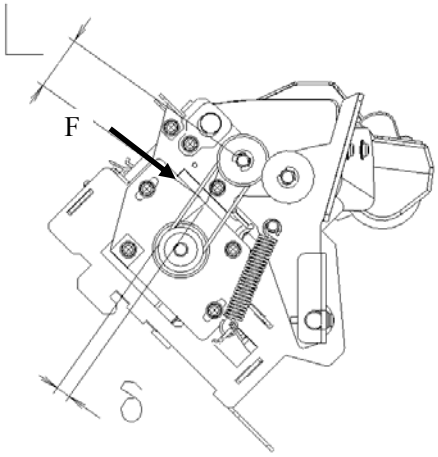
For assembling, follow the removal procedure in reverse.

Note 1:
When assembling, arrange the Pick motor cable so that it passes beside the Brake torque unit.



Note 2:
After assembling, adjust the feed motor mounting screw to satisfy the following deflection with the load of F=100 g.

$\delta = 2 \pm 1$ mm



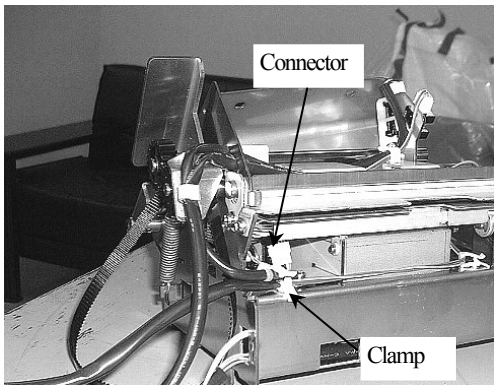
Note 3:
For details on maintenance parts, refer to Section 9.19 and 9.36.

5.14.7 Replacing Sensor SER, Sensor SEL and Sensor SF1 LED

Remove the Sensor SER, SEL and SF1 LED as follows.

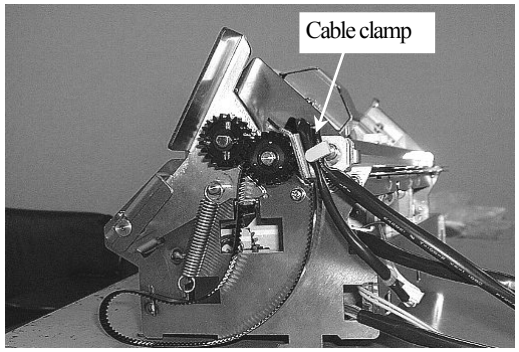
1. Remove the ADF unit by referring to Section 5.14.3.

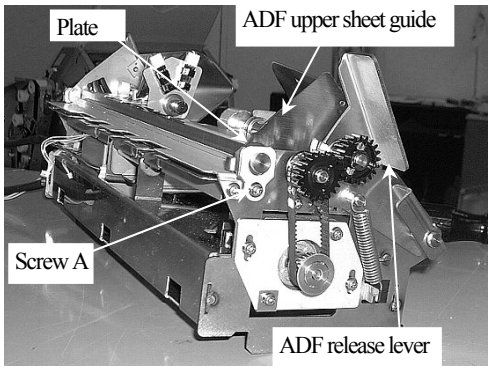
2. Remove a connector and disengage the cable from the clamp.

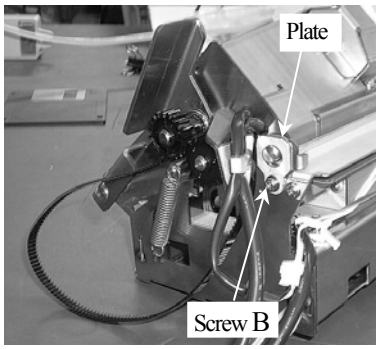


3. Disengage the cables shown in the right photo from the cable clamp. Remove the fixing screws (A and B) on the right and left and remove two plates. Pull the ADF release lever towards you and remove the ADF upper sheet guide.

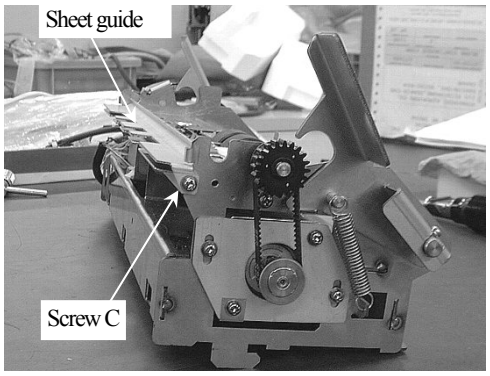
Plate

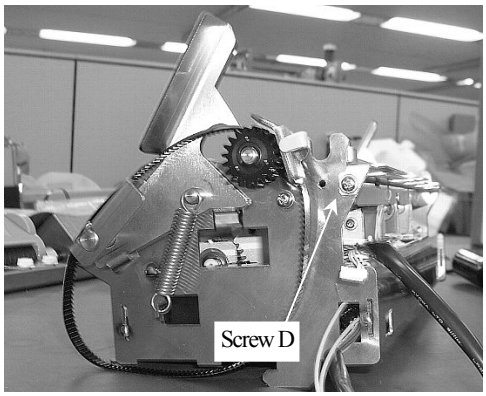


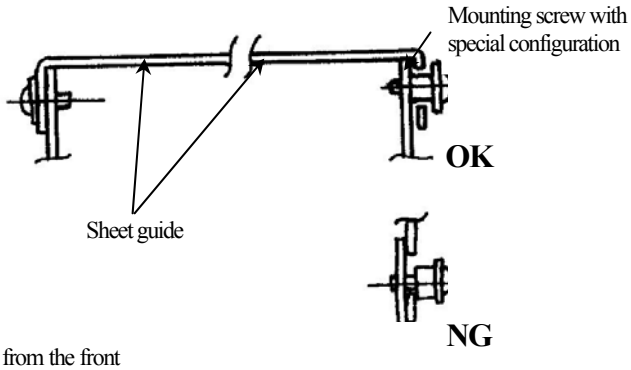




4. Remove Screw C and D and remove the sheet guide.

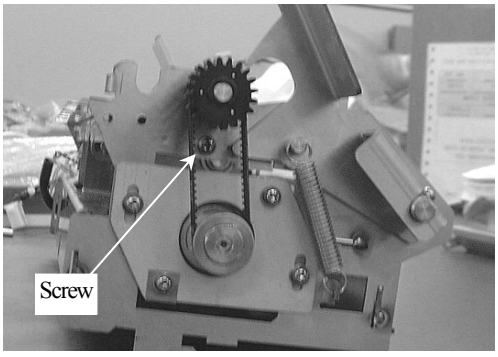


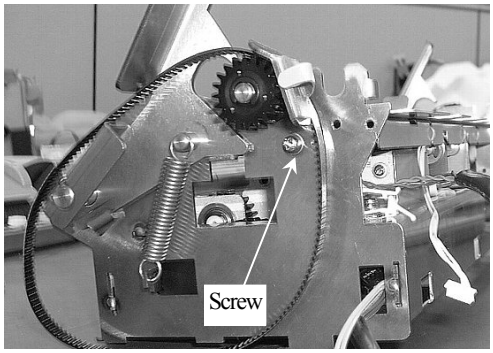




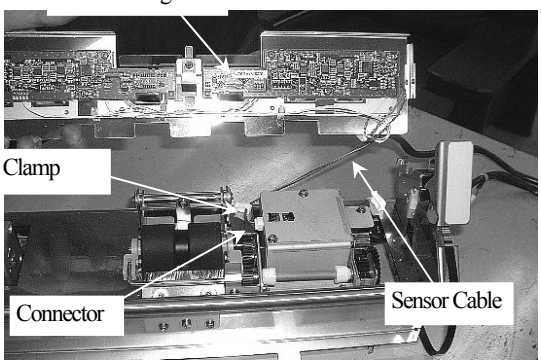
Note: The mounting screw, which is located on the right from the front side view, has special configuration. Insert the mounting screw deep until it is fitted into the hole of the sheet guide.

5. Remove two screws and remove the lower sheet guide. Be careful not to damage the Sensor cable that is connected to the lower sheet guide.



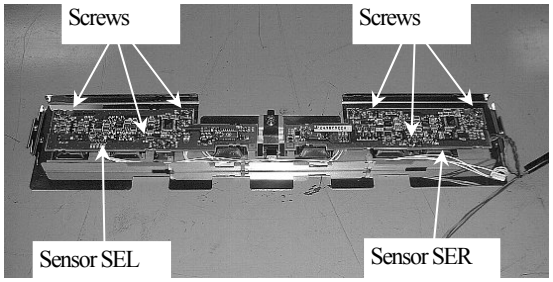


6. Disengage the Sensor cable from the clamp, and remove the connector from the Sensor.
06 Note that the Sensor cable is very thin, so do not pull the cable by force.

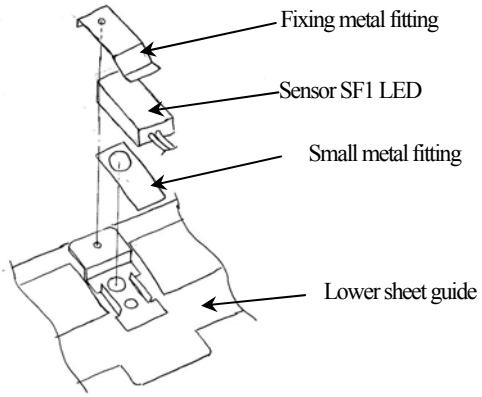


7. Turn the lower sheet guide upside down and remove 3 screws and 2 connectors to remove the Sensor SER.

8. Remove 3 screws and 3 connectors to remove the Sensor SEL.



9. Remove 1 screw, the Sensor SF1 LED, and fixing metal fitting. Remove the connector from the Sensor SF1 LED.



For assembling, follow the removal procedure in reverse.

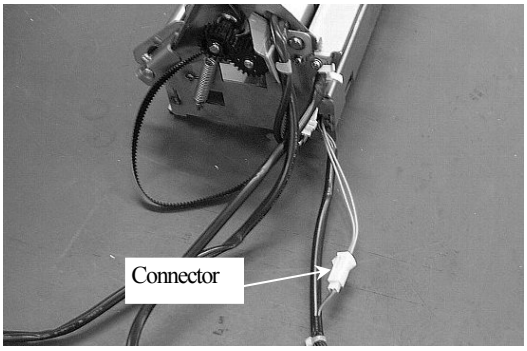
Note 1:
Check if the Sensor works properly after replacement by referring to Section 7.10.

Note 2:
For details on maintenance parts, refer to Section 9.23, 9.24 and 9.32.

5.14.8 Replacing Brake torque unit and Sensor STR

Remove the Brake torque unit and Sensor STR as follows.

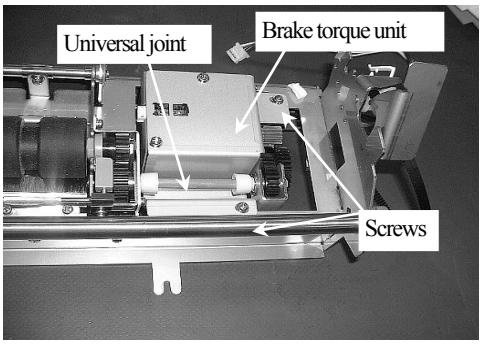
1. Remove the ADF unit by referring to Section 5.13.3 and remove the connector shown in the right photo.



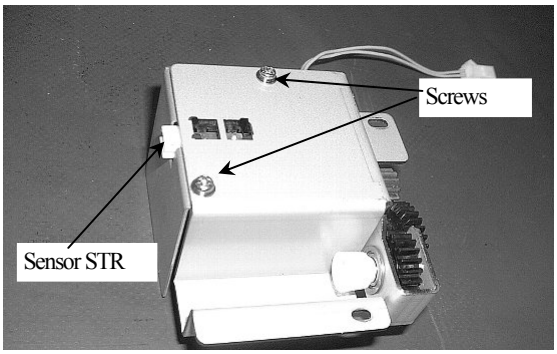
2. Remove the lower sheet guide by referring to the Section 5.13.7 from the ADF unit.

3. Remove two screws and the cable from the hole of the ADF frame to remove the Brake torque unit.

   Note: The Universal joint is used as a middle shaft. This is not included in the Brake torque unit.



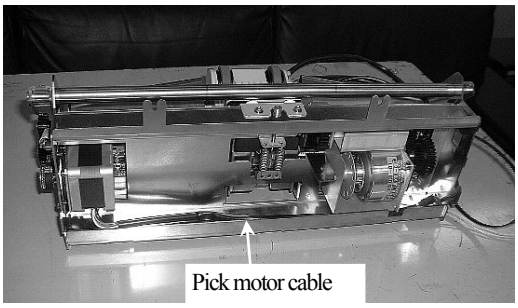
4. To remove the Sensor STR, remove two screws and the metal fitting of the Brake torque unit. Disengage the claw of the Sensor STR and remove the connector, and take out the Sensor STR.

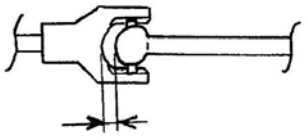


For assembling, follow the removal procedure in reverse.

Note 1:
When assembling, arrange the Pick motor cable so that it passes beside the Brake torque unit.

Note 2:
When installing the Universal joint, make sure that the projection on the both ends is fitted into each bearing, and fix the Brake torque unit with leaving 1 mm margin in the direction of thrust.





1 mm margin in the direction of thrust.

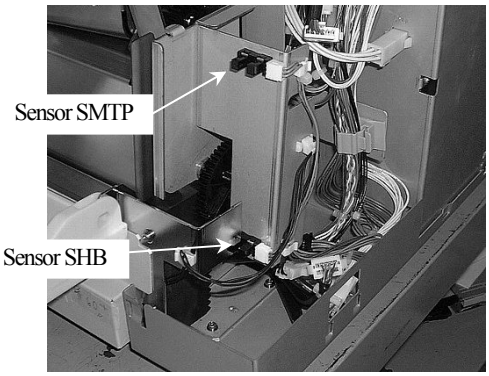
Note 3:

For details on maintenance parts, refer to Section 9.20 and 9.8.

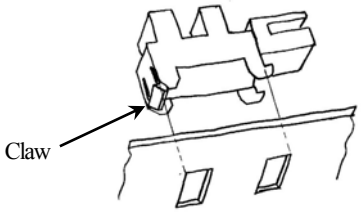
5.14.9 Replacing Sensor SMTP and Sensor SHB

Remove the Sensor SMTP and Sensor SHB.

1. Remove the Rear cover (Section 5.6.3), Top cover (Section 5.6.4) and Right cover (Section 5.6.6).



2. Disengage the claw and remove the Sensor SMTP or Sensor SHB. Remove the connector from the Sensor.



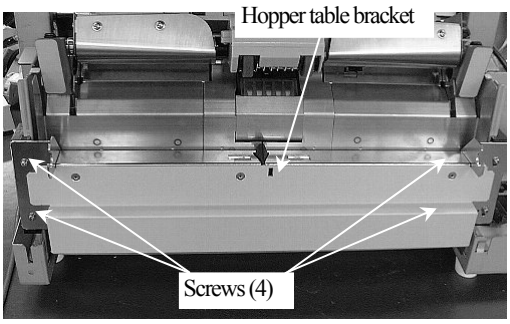
For assembling, follow the removal procedure in reverse.

Note:
For details on maintenance parts, refer to Section 9.8.

5.14.10 Replacing Sensor SHE

Remove the Sensor SMTP and Sensor SHB.

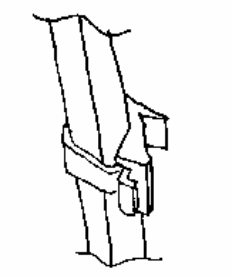
1. Remove the Hopper table (Section 5.5), Rear cover (Section 5.6.3), Top cover (Section 5.6.4) and Right cover (Section 5.6.6) and Left cover (Section 5.6.5).

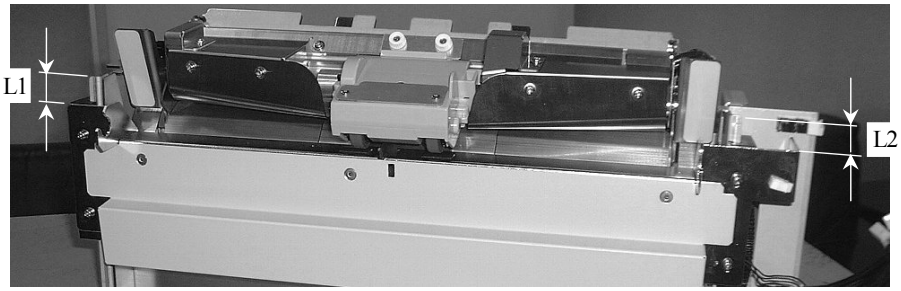


2. Remove 4 screws and remove the Hopper table bracket.

Note 1:
When the hopper table bracket is removed, the racks on both sides are also dismounted. Make sure to attach the racks to the gears evenly on the right and left side.

Note 2:
A small plastic part is attached to the rack on the left. When the plastic part is disengaged, attach it as shown in the right drawing.

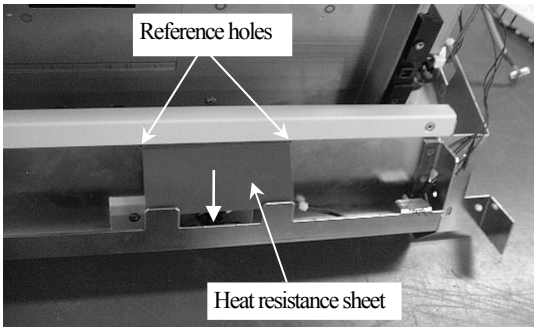




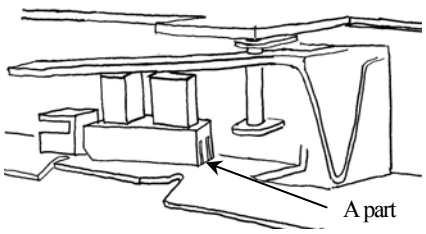
3. Turn the Hopper table bracket upside down and pull out the heat resistance sheet in the direction of arrow between two plates.

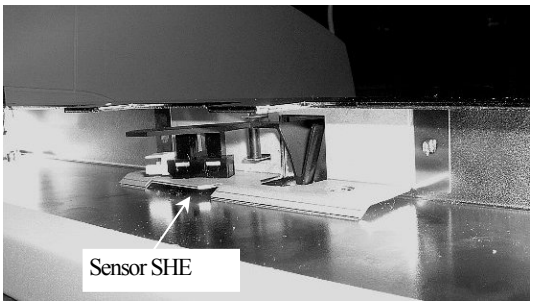
Note1:
The heat resistance sheet is simply put between two plates and is not fixed. When assembling, locate the heat resistance sheet between two reference holes.

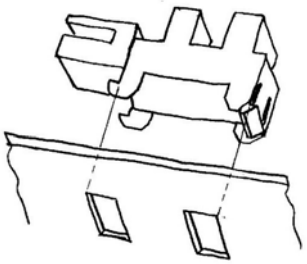
Note 2:
Make sure to install the heat resistance sheet inside the bracket as shown in the right photo. Otherwise abnormal noise will arise.



4. Remove the sensor connector and push A part in the figure below to disengage the claw. Remove the Sensor SHE.







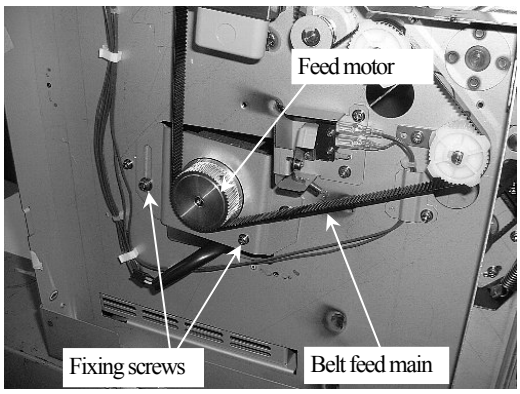
For assembling, follow the removal procedure in reverse.

Note:
For details on maintenance parts, refer to Section 9.8.

5.15 Replacing Feed motor and Belt feed main

Replace the Feed motor and Belt feed main as follows.

1. Remove the Rear cover (Section 5.6.3), Top cover (Section 5.6.4) and Left cover (Section 5.6.5).

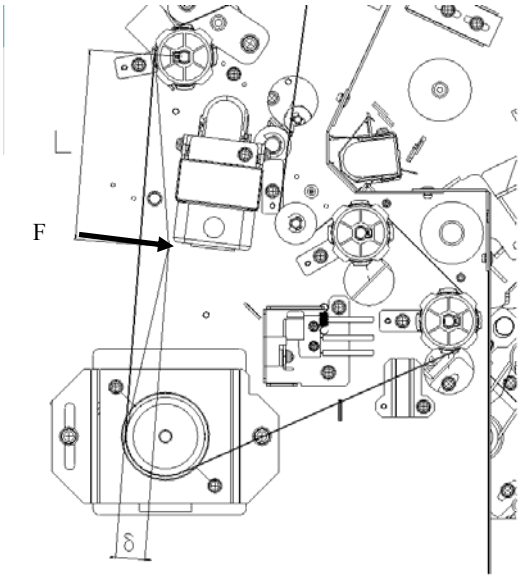


2. Remove the feed motor fixing screws and take out the Belt feed main and Feed motor.

For assembling, follow the removal procedure in reverse.

Note 1:
Adjust the feed motor mounting screw to satisfy the following deflection with the load of F=100 g.

$\delta = 3 \pm 1$ mm



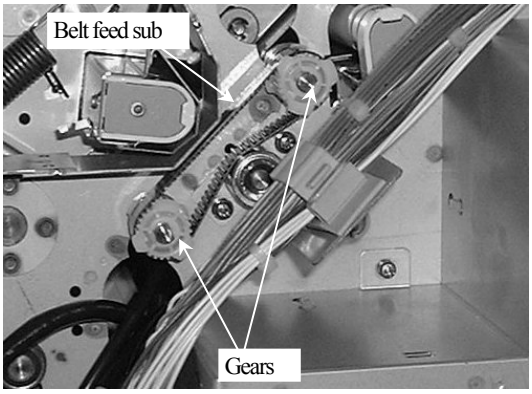
Note 2:
For details on maintenance parts, refer to Section 9.10 and 9.37.

5.16 Replacing Belt feed sub

Remove the Belt feed sub as follows.

1. Remove the Rear cover (Section 5.6.3), Top cover (Section 5.6.4) and Right cover (Section 5.6.6).

2. Disengage the claws of two gears used for Belt feed SUB and remove Belt feed MAIN and Belt feed SUB at the same time.



For assembling, follow the removal procedure in reverse.

Note 1:
For details on maintenance parts, refer to Section 9.34.

Note 2:
As the pulley (that gives belt tension) is not disengaged, no need to adjust belt tension.

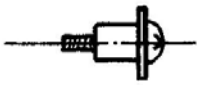
5.17 Replacing Background unit back

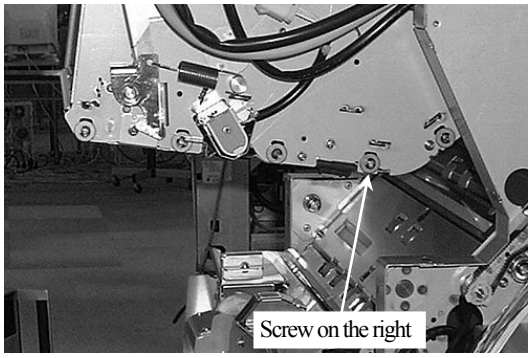
Remove the Background unit back as follows.

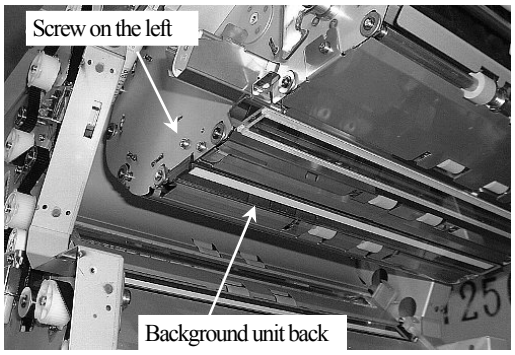
Note: We recommend you to cover the lower sheet guide and ADF unit with a piece of sheet or a cloth before replacing to avoid dropping screws inside the scanner.

1. Open the Upper transport unit, remove two screws on the right and left, and take the Background unit back out.
   Be careful not to drop the Background unit when removing the screws.

   Note that the screws fixing the Background unit back on the right and left has special configuration shown below.







For assembling, follow the removal procedure in reverse.

Note:
For details on maintenance parts, refer to Section 9.13.

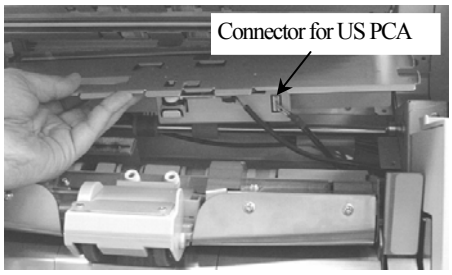
05

5.18 Replacing Background unit front, Sensor SF1.5, Sensor SF2, US Sensor and US PCA

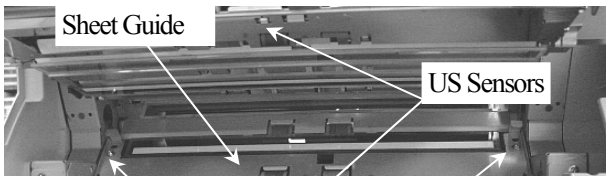
Remove the Background unit front, Sensor SF15, Sensor SF2, US Sensor and US PCA as follows.
When replacing US Sensor, prepare Adjustment sheet described in Section 5.3 as it is necessary after assembly.

1. Open Upper transport unit and remove 4 screws from Sheet Guide.

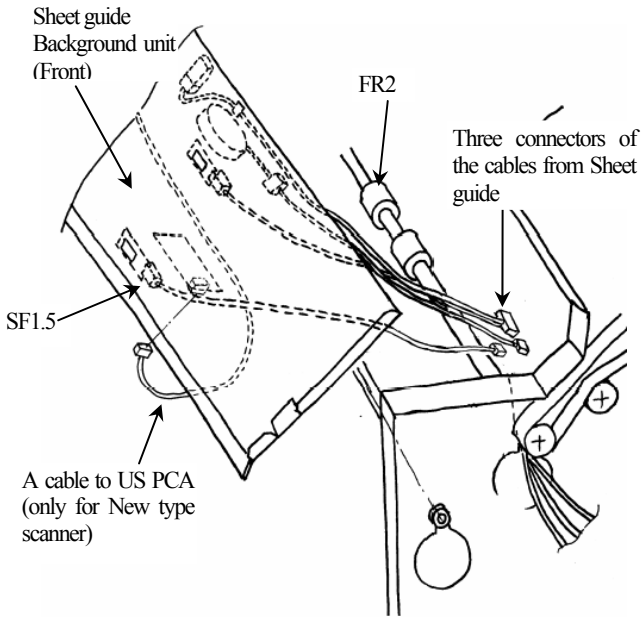
05 2. When the scanner is New type (See Section 1.1), lift a lower edge of the Sheet guide up, and disconnect a connector for US PCA under the Sheet guide.



3. Disconnect three connectors of the cables from Sheet Guide, and remove the Sheet Guide from scanner.

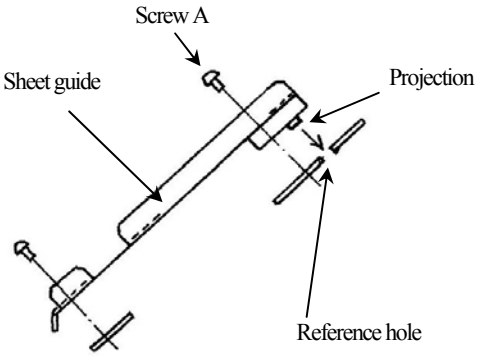


Note 1:
When assembling, route sensor and motor cables as the figure right.



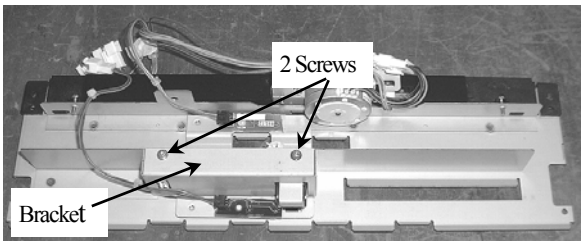
Note 2:
When installing the Sheet guide, fit the projection of the Background unit into the reference hole shown in the right figure.

Note3:
Use a longer screw for Screw A.



05 4. If the scanner is New type, remove 2 screws from bracket and remove a bracket.

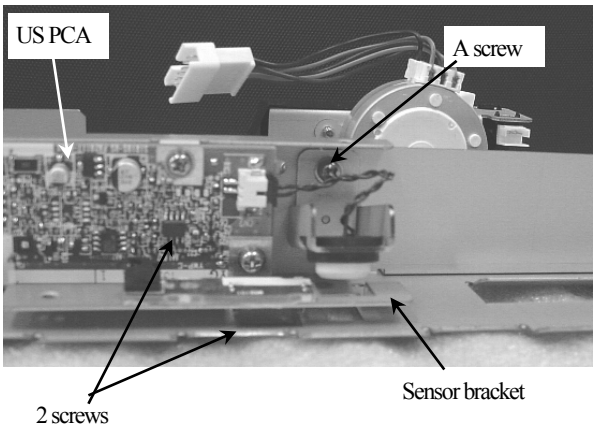
When replacing Background unit (Front), remove US Sensor and US PCA by the following procedure, and attach them on the new unit.



Replacing methods of US sensor and US PCA are as follows.

Replacing US Sensor: Remove a screw from Sensor bracket, disconnect a connector from US PCA to remove Sensor bracket. Then remove US Sensor from Sensor bracket.

After replacing the US sensor, run Ultrasonic sensor adjustment described in Section 7.14.

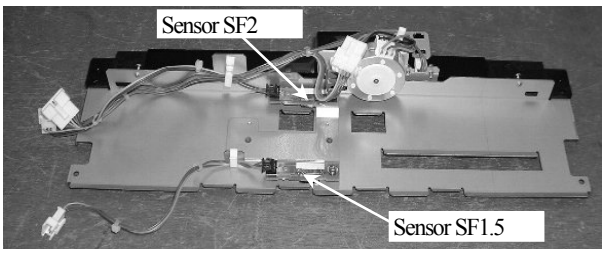


Replacing US PCA: Remove 2 screws from US PCA, disconnect a connector from US PCA, then remove US PCA from the unit.

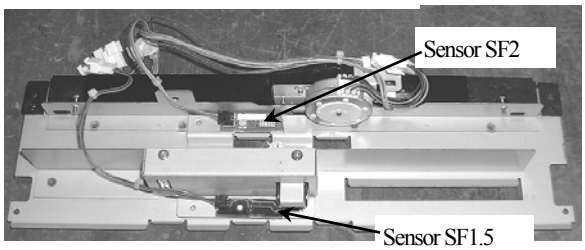
For assembling, follow the removal procedure in reverse.

5. When replacing the Sensor SF1.5 and Sensor SF2, remove a fixing screw and connector for each sensor and take them out.

Background unit for Old type scanner



03 Background unit for New type scanner



For assembling, follow the removal procedure in reverse.

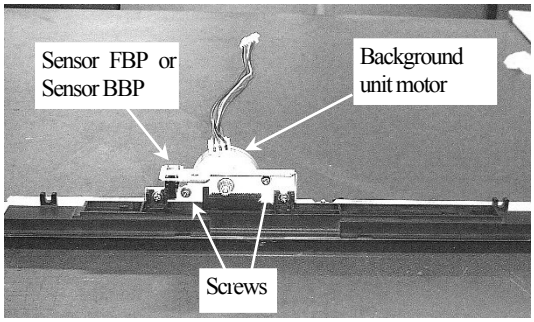
Note 4: For details on maintenance parts,
Refer to Section 9.11 for
Refer to Section 9.25 for Sensor SF1.5 and SF2
Refer to Section 9.44 for US Sensor
Refer to Section 9.42 for US PCA

5.19 Replacing Background motor, Sensor FBP and Sensor BBP

Replace the Background motor, Sensor FBP and Sensor BBP as follows.

Sensor FBP is mounted on Background unit front.
Sensor BBP is mounted on Background unit back.

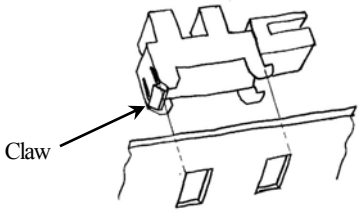
1. Remove the Background unit by referring to Section 5.17 (for front side) and 5.18 (for back side).



2. Remove two screws and remove the Background motor.

06 Note: There is a black Mylar sheet on the left Screws. Please pull the Mylar sheet up to remove two screws.

3. To replace the Sensor FBP and Sensor BBP, disengage the claw and remove the sensor.



For assembling, follow the removal procedure in reverse.

Note:
For details on maintenance parts, refer to Section 9.12 and 9.8.

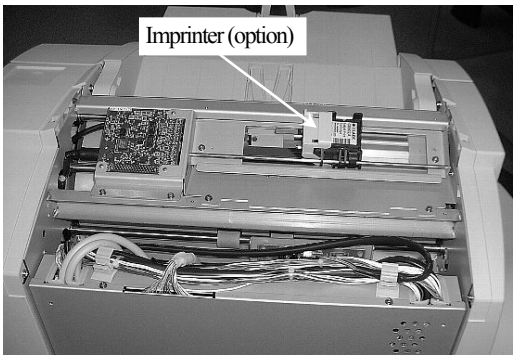
5.20 (Reserved)

5.21 Replacing Sensor SF3

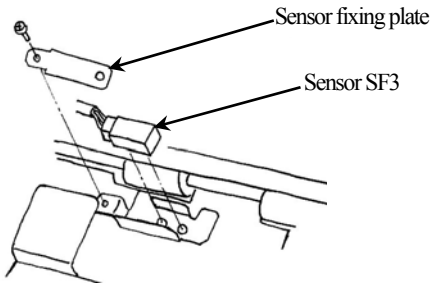
Remove the Sensor SF3 as follows.

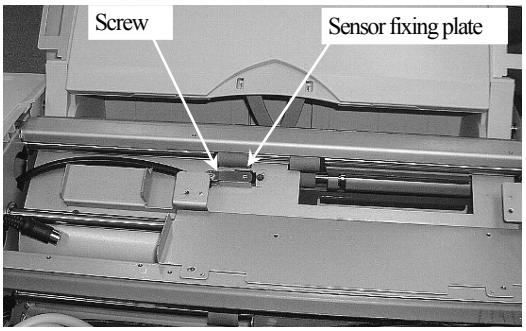
1. Remove the Imprinter cover (See Section 5.6.2) and Top cover (See Section 5.6.4).

   When an optional Rear imprinter (fi-486PRRE) is installed, remove it as well. (Refer to Section 10.4.1 ~~Chapter 9~~ for details.)
   06



2. Remove a screw and remove a sensor fixing plate. Disconnect the sensor connector and remove the Sensor SF3.





For assembling, follow the removal procedure in reverse.

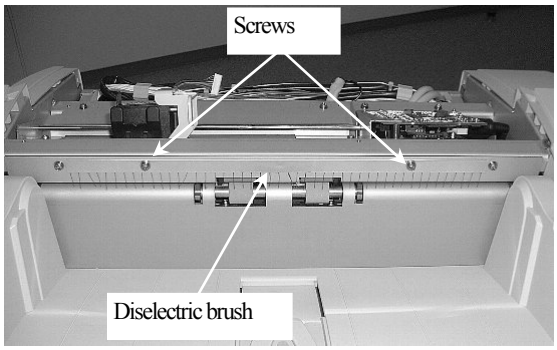
Note:
For details on maintenance parts, refer to Section 9.5.

5.22 Replacing Sensor SF3

Remove the Diselectric brush as follows.

1. Remove the Top cover by referring to Section 5.6.4.

2. Remove 2 screws from the document ejecting part and remove the Diselectric brush.



For assembling, follow the removal procedure in reverse.

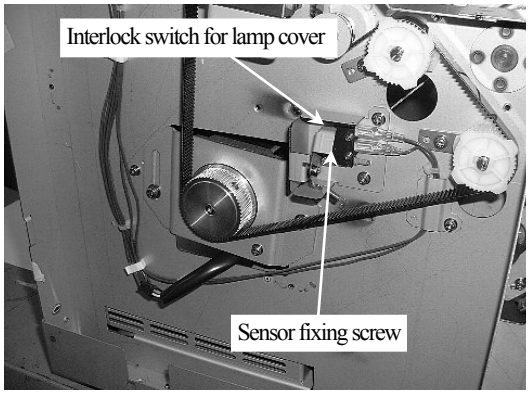
For details on maintenance parts, refer to Section 9.29.

5.23 Replacing Interlock switch for the lamp cover (Microswitch)

Remove the Interlock switch for lamp cover as follows.

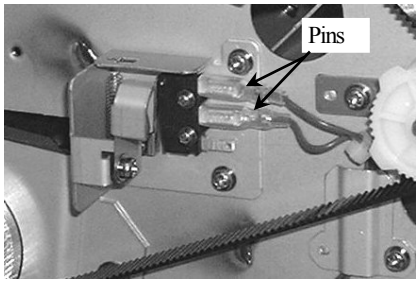
1. Remove the Rear cover (Section 5.6.3), Top cover (Section 5.6.4) and Left cover (Section 5.6.5).

2. Remove two sensor fixing screws, disconnect two cables, and take out the Microswitch.



For assembling, follow the removal procedure in reverse.

Note 1:
The two cables should be connected to the two pins shown below. (Does not matter which pin to which pin)



Note 2:
For details on maintenance parts, refer to Section 9.9.

5.24 Replacing Interlock switch for the Upper transport unit (Microswitch)

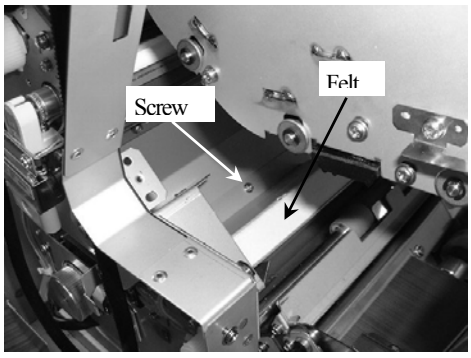
Remove the Interlock switch for the Upper transport unit as follows.

1. Remove the Rear cover (Section 5.6.3), Top cover (Section 5.6.4) and Left cover (Section 5.6.5).

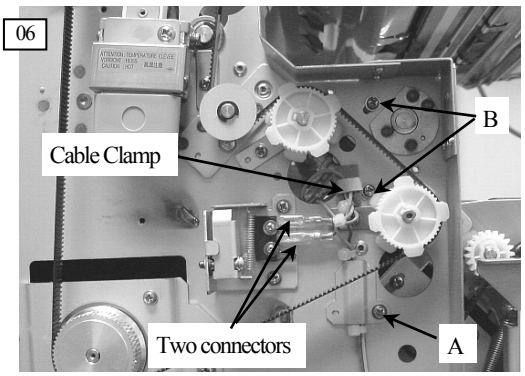
06 2. ~~Remove Belt feed MAIN. (See Section 5.15)~~

3. Take out the sheet guide with Background unit. (See the procedure 1 to 3 in Section 5.18)

06 4. Lift the upper transfer unit to the upper end and remove a screw, and take out the metal fitting with felt on it (Right photo).

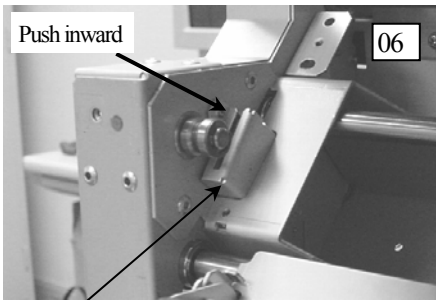


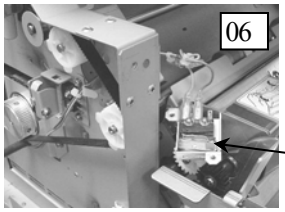
06 5. Romove the cable from the cable clamp, remove a screw at A to remove the bracket, remove two connectors from the Microswitch., and then remove two screw s at B in the photo below.



06 6. Take out the assembly of Microswitch and metal fitting by pushing them inward .

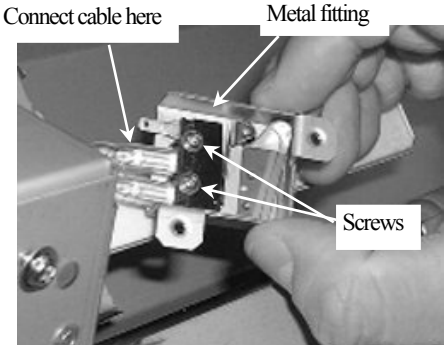
Note: When assembling, close the Upper transport unit and fix these screws at B, so that the Microswitch can touch the claw used for lock.





Assembly of Microswitch and metal fitting

06 7. Remove the two screws and remove the Microswitch from the metal fitting.



For assembling, follow the removal procedure in reverse.

Note1:
For details on maintenance parts, refer to Section 9.9.

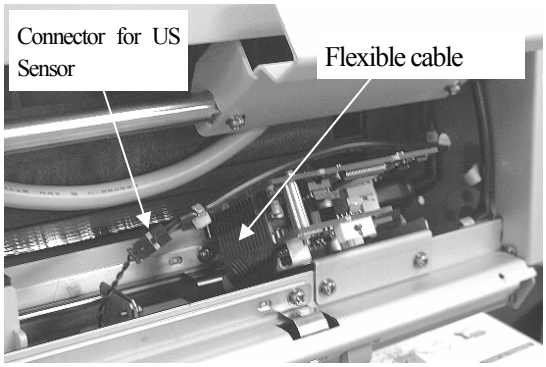
Note 2:
Two cables should be connected to either of the two pins of Mircroswitch as shown in the right photo. (Does not matter which cable to which pin)

05

5.25 Replacing Roller FR1 rotation detection sensor (Sensor SPJ), US Sensor

Prepare an Adjustment sheet described in Section 5.3, when replacing US Sensor.

05 If Imprinter, fi-486PRFR (Option), is not installed on the scanner, start the procedure from step 4.

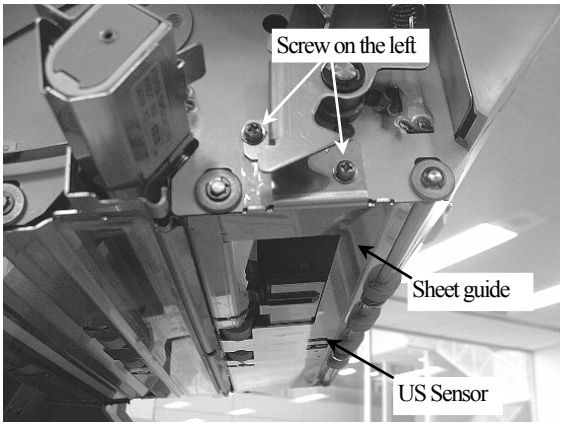


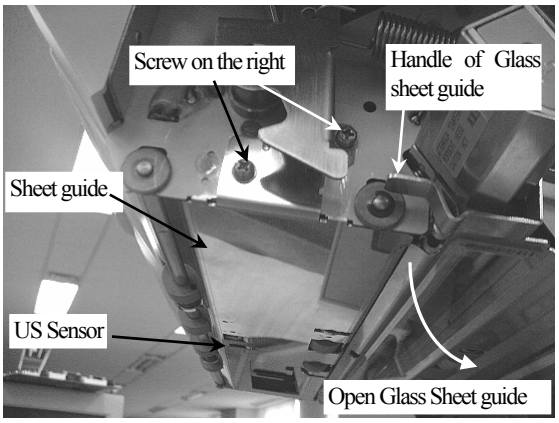
When Imprinter, fi-486PRFR (Option) installed:

1. Remove Upper transport cover (See Section 5.6.1).

2. Disconnect a flexible cable from the PCA of Imprinter. (See the figure right.)

3. Remove 4 screws from both sides of Upper transport unit (2 for each side). Open Glass sheet guide. Lower the Sheet guide a little and disconnect a connector inside, and then remove the Sheet guide. Removed unit is Imprinter fi-486PRFR. Go to step 5.



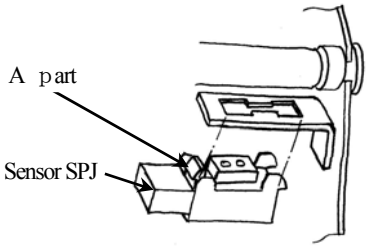


When Imprinter, fi-486PRFR (Option) not installed:

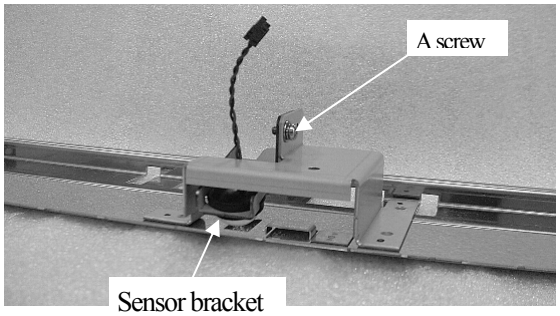
4. Open Upper transport unit, remove 4 screws from the Upper transport unit (2 from each sides). Open Glass sheet guide, and remove the Sheet guide.

5. When replacing Sensor SPJ, remove a connector near Roller SF1 and press A part to remove the Sensor SPJ from the metal fitting.

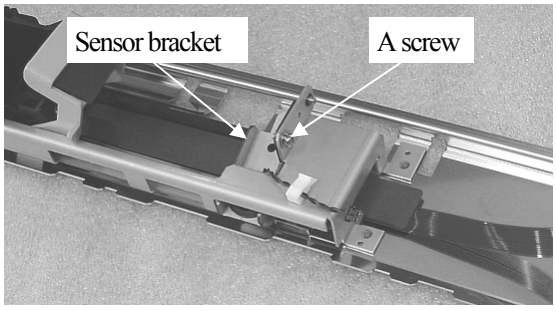
6. When replacing US Sensor (only New type scanner (See Section 1.1)), remove a screw from the Imprinter unit or the Sheet guide, which you removed in step 3 or 4. Then remove Sensor bracket, and remove US sensor from the Sensor bracket.



When Imprinter fi-486PRFR not installed:



When Imprinter fi-486PRFR installed:



For assembling, follow the removal procedure in reverse.
After replacing US Sensor, run Ultrasonic sensor adjustment (Section 7.14)

Note: For details on maintenance parts, refer to Section 9.6 for Sensor SPJ, Section 9.44 for US Sensor.

05

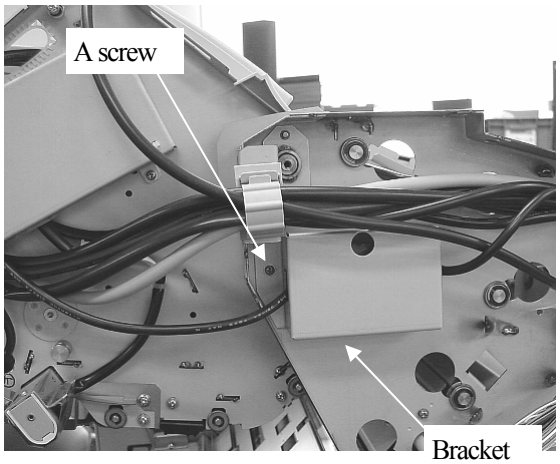
5.26 Replacing USDV PCA

This part is installed only on New type scanner (See Section 1.1).

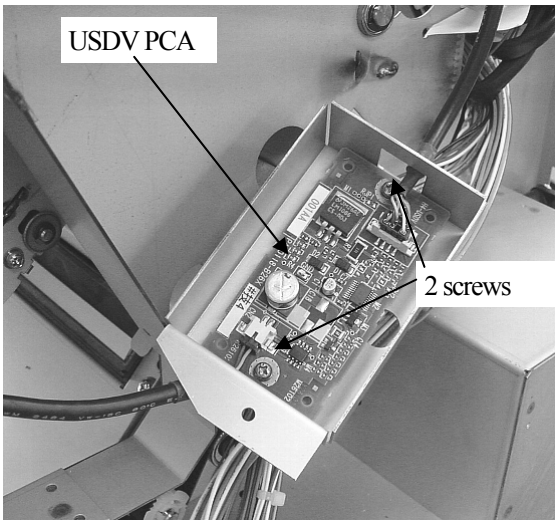
1. Remove Upper transport cover (See Section 5.6.1) and then remove Side cover (Right) (See Section 5.6.6) from the scanner.

2. Remove a screw (*1) from the bracket on the frame of scanner. Do not pull the bracket by force since the cables are connected to the bracket.

   *1 Number of the screw becomes two (2) for later production , but the replacing procedure is not changed.



3. Remove 2 screws from USDV PCA, inside of the bracket. Then remove two connectors from USDV PCA to take out USDV PCA.



For assembling, follow the removal procedure in reverse.

Note:
For details on maintenance parts, refer to Section 9.43.

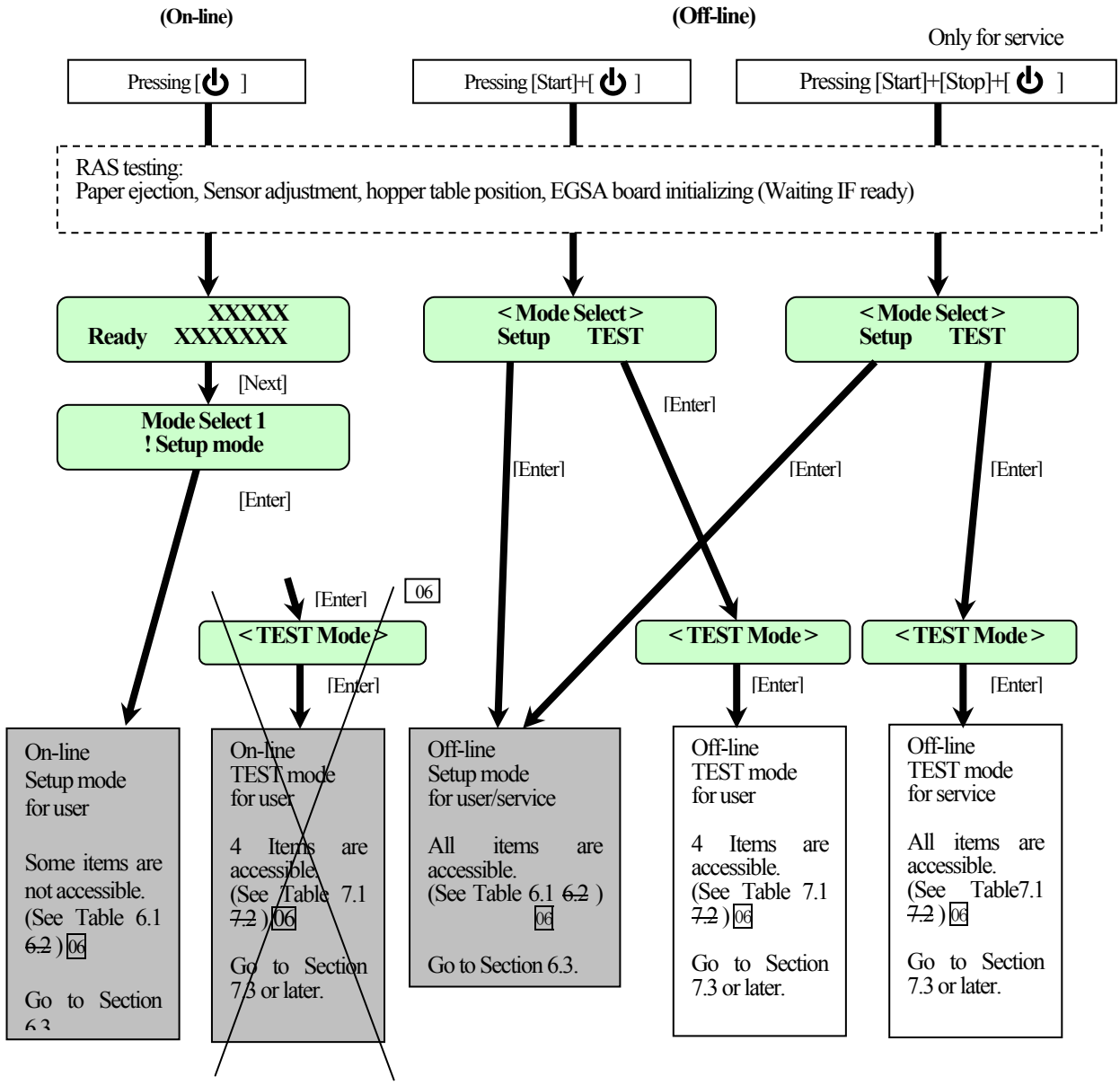
Chapter 6 Setup mode

This scanner has a Setup mode that enables user to customize the scanner. The setting procedure is described in this chapter.
All the settings made in the Setup mode are written to EEPROM when the scanner is powered off.

6.1 Contents of the Setup mode

The Setup mode can be activated whichever the scanner is on-line or off-line. It is recommended to activate the Setup mode during off line for maintenance. See below and Table 6.1 for details on off-line setup mode and on-line setup mode.

Table 6.1 Difference between Off-line Setup mode and On-line Setup mode



05 08

The Setup mode includes following ~~29~~ ~~30~~ 32 items:

Table 6.1 Setup item list

(Setup items A: Available setup items in on-line, B: Available setup items in off-line)

No.	Setup Item	Description	Setup items A	Setup items B
01	Separation	Sets the braking power for paper separation. (Refer to Section 6.3.1.)	√	√
02	Pre-pick	Enables/disables pre-picking. (Refer to Section 6.3.2.)	√	√
03	Pick Speed	Selects the speed of the pick roller from "Fast", "Middle", "Slow" (Refer to Section 6.3. 3.)	√	√
05 04a 04b	Double Feed 05	Specifies the following settings regarding double feed detection by paper thickness or by brake roller rotation: - Enables or disables double feed detection - Enables or disables double feed detection by ultrasonic sensor (Only New type of the scanner, Section 1.1) - Enables or disables double feed detection by brake roller rotation (DF mode setting) - Whether to detect double feed error up to 8 mm from the top edge of the document or up to the bottom edge of the document. (DF timing setting) (Refer to Section 6.3.4.)	√	√
05	Length check	Specifies the following settings regarding double feed detection by paper length: • Enables or disables double feed detection by paper length • Sets the paper length that determines double feed error. (Refer to Section 6.3.5.)	√	√
06	Skew Check	Enables or disables the function which detects a skew error. (Refer to Section 6.3.6.)	√	√
07	IPC pre-set	Specifies image processing functions to the most appropriate settings all at once: • Enables or disables IPC pre-set • Select the following setting patterns. (Refer to Section 6.3.7.)	√	√
08	Abrasion Alarm	Specifies how the scanner reacts to the abrasion alarm when the abrasion counter has reached the alarm count value set in this mode: • Displays or not display abrasion alarm • Sets whether reading operation stops when abrasion alarm is displayed (alarm mode) • Set the alarm count value at which abrasion alarm occurs (alarm count) (Refer to Section 6.3.8.)	√	√
09	Abrasion CNT	Reset the following abrasion counters. • Pick roller counter • Brake roller counter • Pad counter • Front side lamp counter • Back side lamp counter (Refer to Section 6.3.9.)	-	√
10	Paper Length	Sets "Short" when scanning small size document of less than 80 mm length, otherwise sets "normal". (Refer to Section 6.3.10.)	√	√
11	Language	Selects language displayed on the Operator panel. (English or Japanese) (Refer to Section 6.3.11.)	√	√
12	F. Background	Sets background color to white or black for front side image (Refer to Section 6.3.12.)	√	√

Pattern No.	Appropriate document density	
	Character density	Background density
1	Normal	Normal
2	Light	Normal
3	Normal	Dark
4	Light	Reddish
5	Light	Greenish

(Continued)

No.	Setup Item	Description	Setup mode A	Setup mode B
13	B. Background	Sets background color to white or black for back side image (Refer to Section 6.3.13.)	√	√
14	F. Drop-out	Selects a drop-out color from R, G, B for front side image. (Refer to Section 6.3.14.)	√	√
15	B. Drop-out	Selects a drop-out color from R, G, B for back side image. (Refer to Section 6.3.15.)	√	√
16	Pick retry	Sets the pick motor steps per one retry in the range of 1-7. Sets the pick retry count in the range of 1-7. (Refer to Section 6.3.16.)	√	√
17	Feed retry	Sets the feed motor steps for one retry in the range of 1-7. Sets the feed retry count in the range of 1-7. (Refer to Section 6.3.17.)	√	√
18	Manual Feed	Specifies the following settings regarding manual feeding: - Sets the period from when paper is loaded manually to when the pick operation starts. - Sets the maximum waiting period (time out) from when the host computer issues a scan command to when paper is loaded manually. (Refer to Section 6.3.18.)	√	√
19	SCSI ID	Selects SCSI ID of this scanner from 0 to 7. (Refer to Section 6.3.19.)	-	√
20	Product ID	Selects Product ID of this scanner from fi-4860C, M4099D, fi-4990C, M3099G. (Refer to Section 6.3.20.)	-	√
21	SCSI Bus	Sets SCSI bus width to 8 bit or 16 bit. When connecting Narrow SCSI card, select 8 bit. (Refer to Section 6.3.21.)	-	√
22	Interface	Selects interface from "Auto", "SCSI", "TPS". When TPS board is installed, select "TPS" or "SCSI". (Refer to Section 6.3.22.)	-	√ *2
23	Baud Rate	Selects control data transfer rate (bps) for TPS board from "19200", "9800", "4800", "2400" (Refer to Section 6.3.23.)	-	√ *2
24	Imprinter	Selects either "Pre-imprinter (fi-486PRFR)" or "Post-imprinter (fi-486PRRE)" when both imprinters are installed. (Refer to Section 6.3.24.)	√	√
25	Numbering	Specifies the following settings regarding Imprinter: - Enables or disables number printing. (ON/OFF) - Sets the number of digits to be printed (5 or 8). When 5 is selected, 00000 to 99999 can be printed. When 8 is selected, 00000000 to 16777215 can be printed. - Sets initial value of imprinting number. - Sets whether to reset the imprinting number every time when hopper empty is detected. (ON/OFF) - Sets whether to reset the current imprinting counter. (Yes/No) (Refer to Section 6.3.25.)	√ *1	√ *1
26	Ink	Shows the remaining of ink cartridge used for imprinter and resets the ink remaining counter after replacing imprinter cartridge. (Refer to Section 6.3.26.)	√	√ *1
27	Power Save	When the EEPROM.setting enables power save mode, this mode sets the transition period until entering power save mode. (Can be set in increments of 5 min. up to 60 min) (Refer to Section 6.3.27.)	√	√
28	Brightness	Sets brightness for front side and backside image respectively in the range of –6 to +6. (Refer to Section 6.3.28.)	√	√
29	Imprinter Status	Shows the imprinter installed in the scanner: "Post", "Pre", "Post/Pre" (Post: Rear imprinter, Pre: Front imprinter) (Refer to Section 6.3.29.)	√	√ *1
05 30	Lamp control	Specifies the following settings on lamp control. - Normal: Scanner turns Off the lamp one minute (Default) after the scanning. - AlwaysOn: Scanner always turns On the lamp except Sleep mode. The time from scanning activation to actual scanning start becomes short.	√	√

*1: Displayed only when imprinter option is installed.
*2: Displayed only when TPS board is installed.

(Continued)

	No.	Setup Item	Description	Setup mode A	Setup mode B
08	31	Auto crop W.	Specifies whether to round up or down the image's width when scanning in black & white mode and the width of the detected paper size is not an integer number.	√	√
08	32	Cropping (B)	Adjusts the offset (starting position) for the automatic size detection of the back side image. Horizontal: -4 to +4 (Default is 0.) Vertical: -4 to +4 (Default is 0.)	√	√

6.2 Activating the Setup mode

This section describes how to activate On-line and Off-line Setup mode.

6.2.1 On-line setup mode

Follow the procedure below to activate On-line Setup mode.
Note: "XXXXX" at screens indicates counter value.

1. At Ready screen (*1), press [Next].

(*1): Screen M0-1 appears when manual feed mode is disabled.
Screen M0-2 appears when manual feed mode is enabled.

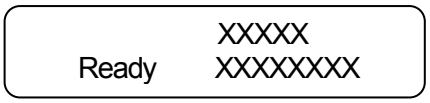
2. Screen M2 appears (*2). Press [Enter] to enter Setup mode. The setup mode initial screen (S01) appears.

   Select the setting you desire by using [Next] and [Previous].
   Refer to section 6.3 for details.

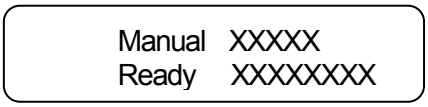
   To terminate On-line setup mode, press [Exit].
   Ready screen (M0-1/M0-2) appears.

(*2): If Screen M1 does not appear, press [Next] or [Previous] to show Screen M1.

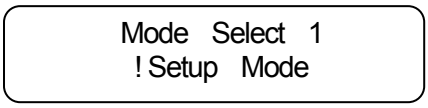
Screen M0-1



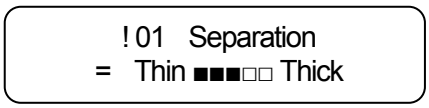
Screen M0-2



Screen M1



Screen S01



6.2.2 Off-line setup mode

Follow the procedure below to activate Off-line Setup mode.

1. Press and hold [Start] and [⏻], or [Start] and [Stop] and [⏻] until any characters appear on the LCD.

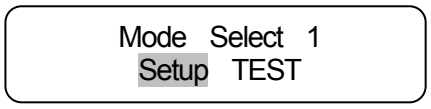
2. Screen M4 appears. Press [→] or [←] to select "Setup". The "Setup" selected here start blinking. (Blink is expressed by overlay in this manual)

3. Press [Enter] to enter the setup mode. The setup mode initial screen (M1) appears.

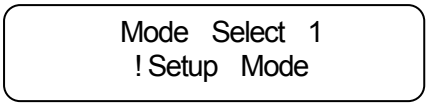
   Select the setting you desire using [Next] and [Previous].
   Refer to section 6.3 for details.

   To terminate off-line setup mode, press [Exit].
   Ready screen (M4) appears.

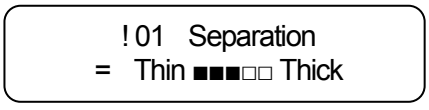
Screen M4



Screen M1



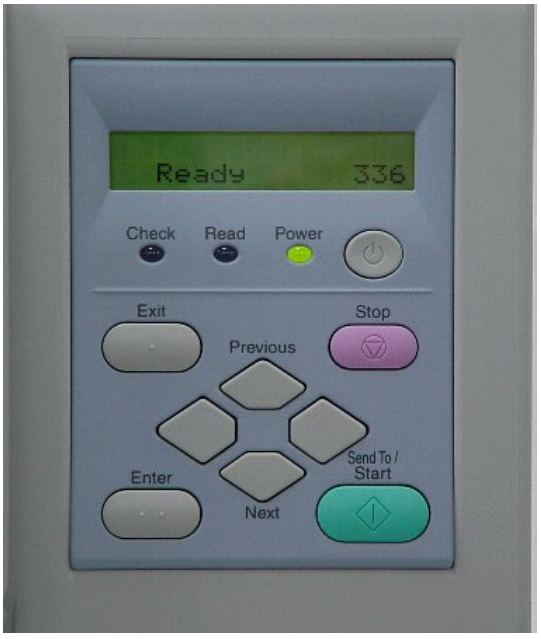
Screen S01



6.2.3 Button functions in Setup mode

The button functions used in Setup mode are shown as follows:

Buttons	Functions	How to appear in this manual
Enter	Go to next screen after saving changes you made.	[ENTER]
Exit	Returns to upper sub menu screen (Screen xx) when pressed at lower sub menu screen (Screen xx-x).	[Exit]
Previous	Go to previous screen without saving changes you made.	[Prev]
Next	Go to next screen without saving changes you made.	[Next]
	- Move selection to the right item. (The selected item blinks.) - Increases value.	[→]
	- Move selection to the left item. (The selected item blinks.) - Decreases value.	[←]
Stop	Not used in this mode.	
Send to / Start	Not used in this mode.	



6.3 Setting Setup mode

6.3.1 Separation

The load torque for the brake rollers is set to the optimal value according to paper thickness. This mode specifies paper thickness to determine the load torque of brake rollers.

Follow the procedure below to set this mode.

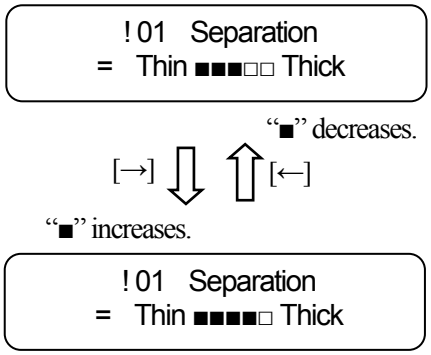
1. Activate Setup mode by referring to Section 6.2. Go to Screen S01 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S01. Select the paper thickness level by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S01 are as follows:

Second line on the screen	Paper thickness level
Thin ■■■■■ Thick	Thick
Thin ■■■■□ Thick	Slightly thick
Thin ■■■□□ Thick	Normal
Thin ■■□□□ Thick	Slightly thin
Thin ■□□□□ Thick	Thin

   Press [Next] to go to Screen S02 or press [Prev] to go to Screen S29.

   After confirming the setting at Screen S01, Screen S02 appears.

Screen S01



6.3. 2 Pre-pick

This setting enables or disables Pre-pick function. Refer to Section 2.2 (1) for details on Pre-Pick.
Note that this setting cannot override the setting from the host, which is not displayed on the screen. When scanning inelastic paper, we recommend you to set this setting to "OFF".

Follow the procedure below to set this mode.

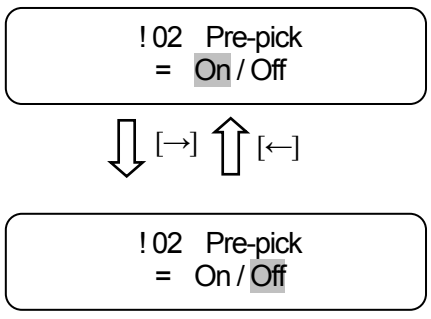
1. Activate Setup mode by referring to Section 6.2. Go to Screen S02 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S02.

   Select whether to enable or disable Pre-pick by using [→] and [←] and press [Enter] to confirm it. The default is "On".

Second line on the screen	Description
On / Off	Enables Pre-pick. This is default.
On / Off	Disables Pre-pick.

   Press [Next] to go to Screen S03 or press [Prev] to go to Screen S01.

Screen S2



6.3.3 Pick Speed

This setting specifies the picking speed of a document at three levels. Select the appropriate speed for the document to be scanned. When scanning inelastic paper, set to "Slow".

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S03 by pressing [Next] or [Prev].

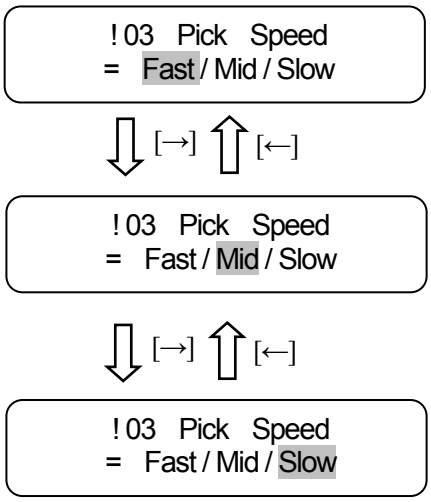
   The current setting appears in the second line of Screen S03.
   Select the pick speed by using [←] and [→], and press [Enter] to confirm it.

   Press [←] to change the setting in order of "Slow→Mid→ Fast".
   Press [→] to change the setting in order of "Fast→Mid→Slow".
   The default is "Fast".

   Press [Next] to go to Screen S04 or press [Prev] to go to Screen S02.

   After confirming the setting at Screen S03, Screen S04 appears.

Screen S03



05

6.3.4a Double feed (For Old type of the scanner)

The scanner can detect double feed error by checking transmitted light intensity through a document being fed on the basis of standard paper thickness specified in "Setting paper thickness" (Refer to Section 8.1). It can also detect the double feed by brake roller rotation.
The setting in this section determines whether to enable or disable this kind of double feed detection and how to detect double feed error.
Refer to Section 6.3.5 for double feed detection by paper length.

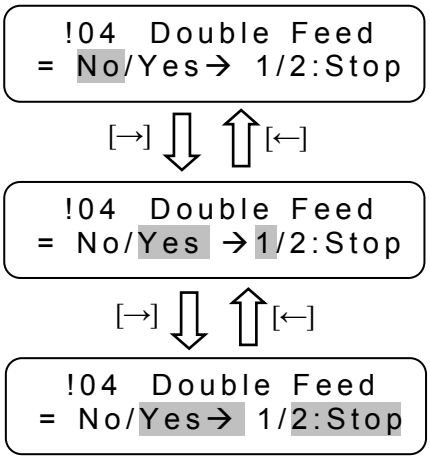
Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S04 by pressing [Next] or [Prev]. At first "No" blinks in the second line of Screen S04. This indicates that double feed detection by paper thickness or brake roller rotation is disabled at present. (This is default.)

2. To change the setting, use [→] and [←] to select the setting you desire, and press [Enter] to confirm it. Selectable settings at Screen S01 are as follows.

Second line on the screen	Description
No/Yes →1/2:Stop	Disables double feed detection. (Default)
No /Yes→1/2:Stop	Enables double feed detection. Also when double feed is detected, it is displayed on the operator panel but the scanner continues reading operation.
No /Yes→1/2:Stop	Enables double feed detection. When double feed is detected, the scanner stops reading operation and notifies the host of the error.

Screen S04

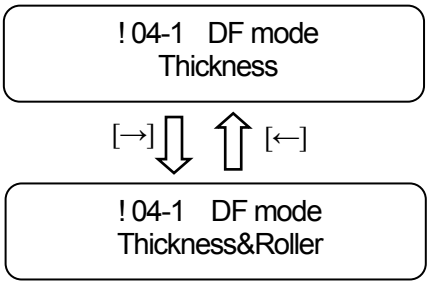


Press [Next] to go to Screen S05 or press [Prev] to go to Screen S03.

3. After double feed detection is enabled at Screen S04, Screen S04-1 appears. Select the double feed detection method by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S04-1 are as follows:

Second line on the screen	Description
Thickness	Enables double feed detection by paper thickness. (*1)
Thickness&Roller	Enables double feed detection by paper thickness and brake roller rotation. (*1)

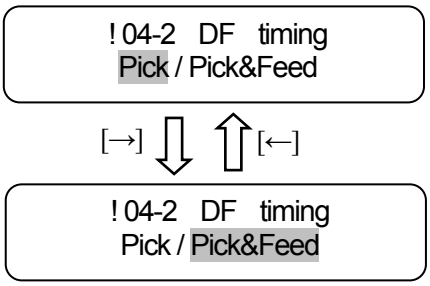
Screen S04-1



4. After confirming the setting at Screen S04-1, Screen S04-2 appears. Select the double feed detection timing by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S04-2 are as follows:

Second line on the screen	Description
Pick / Pick&Feed	The scanner detects double feed error within 8 mm from the top edge of a document. (*2)
Pick / Pick&Feed	The scanner detects double feed error from the top edge to the bottom edge of a document. (*3)

Screen S04-2



After confirming the setting at Screen S04-2, Screen S05 appears.

(*1): In general, "Thickness&Roller" setting enables better double feed detection by both paper thickness and brake roller rotation. However, when brake roller rotation becomes unstable in the following case, select "Thickness".

Select "Thickness" in the following case:
Scanning thin paper with the Separation roller pressure set lower (Refer to Section 5.26).

(*2): Double feed cannot be detected if the overlapped top edges of documents are misaligned more than 8 mm.

(*3): Double feed may be detected wrongly when scanning a document with dark area more than 10 mm on the ground color.

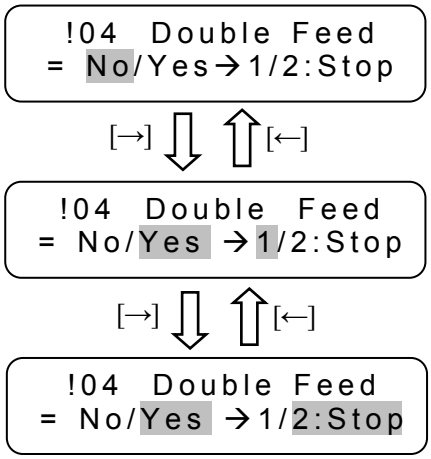
05

6.3.4b Double feed (For New type of the scanner)

New type of the scanner (Section 1.1) detects double feed by ultrasonic sensor (US Sensor) as a default. This type of the scanner can detect double feed by checking transmitted light intensity through a document being fed on the basis of standard paper thickness specified in "Setting paper thickness". (Refer to Section 8.1). It can also detect the double feed by brake roller rotation.
The setting in this section determines whether to enable or disable this kind of double feed detection and how to detect double feed error. Refer to Section 6.3.5 for double feed detection by paper length.

Follow the procedure below to set this mode.

Screen S04



1. Activate Setup mode by referring to Section 6.2. Go to Screen S04 by pressing [Next] or [Prev]. First "Yes" and "2:Stop" may blink. This indicates that double feed detection by paper thickness or brake roller rotation is enabled and scanning stops at Double feed error. (This is default.)

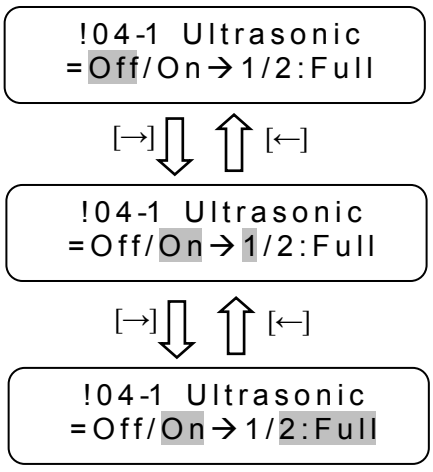
2. To change the setting, use [→] and [←] to select the setting you desire, and press [Enter] to confirm it. Selectable settings are as follows.

Second line on the screen	Description
No/Yes →1/2:Stop	Disables double feed detection. After confirming this setting, Screen S05 appears.
No /Yes→1/2:Stop	Enables double feed detection. Also when double feed is detected, the error is displayed on the operator panel but the scanner continues reading operation. After confirming this setting, Screen S04-1 appears.
No /Yes→1/2:Stop (Default)	Enables double feed detection. When double feed is detected, the error is displayed on the operator panel and scanner stops reading. After confirming this setting, Screen S04-1 appears.

Press [Next] to go to Screen S05 or press [Prev] to go to Screen S03.

3. After double feed detection is enabled at Screen S04, Screen S04-1 appears. Select the detection method by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S04-1 are as follows:

Screen S04-1



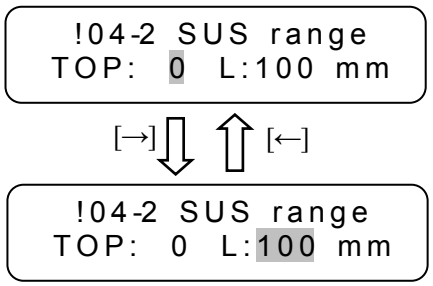
Second line on the screen	Description
= Off / On → 1 / 2 : Full	Disables double feed detection by ultrasonic sensor. After confirming this setting, Screen S04-4 appears.
= Off / On → 1 / 2 : Full	Enables double feed detection by ultrasonic sensor, and the detection area can be specified in the next screen. After confirming this setting, Screen S04-2 appears.
= Off / On → 1 / 2 : Full (Default)	Enables double feed detection by ultrasonic sensor with full range from top to bottom of the center of document. After confirming this setting, Screen S04-3 appears.

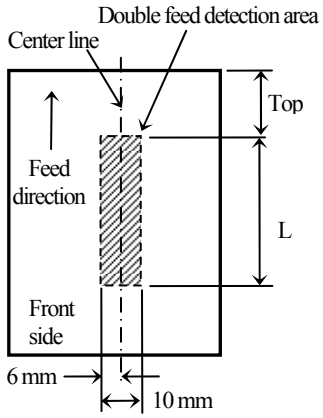
4. To specify the detection range, Screen S04-2 appears. Select the double feed detection area by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S04-2 are as follows:

Second line on the screen	Description
TOP: 0 L:100 mm	Specifies the length from top of the document to the beginning of detection range. By pressing [Next], the value increases as 0, 50, 100, 150, 200. The value does not increase over 200. By pressing [Prev], the value decrease. After confirming this setting, Screen S04-3 appears.
TOP: 0 L:100 mm 10	Specifies the length of the detection area. By pressing [Next], the value increases as ~~0, 50,~~ 100, 150, 200. The value does not increase over 200. By pressing [Prev], the value decrease. After confirming this setting, Screen S04-3 appears.

Note: If other paper is glued on the document, specify the area to detect double feed excluding the glued paper.

Screen S04-2

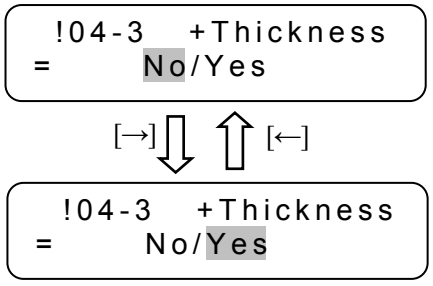




5. Screen S04-3 appears to specify whether the double feed detection by Thickness check (by transmitted light intensity of document) is added or not. Select the choice by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S04-3 are as follows:

Second line on the screen	Description
= No/Yes	Double feed detection by Thickness check (by transmitted light intensity of document) is not added. After confirming this setting, Screen S05 appears.
= No/Yes	Double feed detection by .thickness check (by transmitted light intensity of document) is added. After confirming this setting, Screen S04-4 appears.

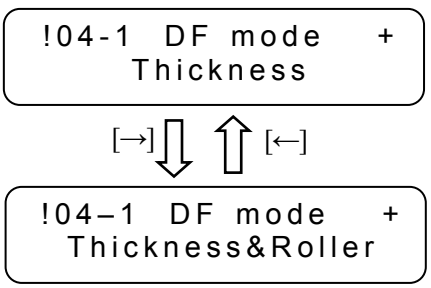
Screen S04-3



6. Screen S04-3 appears to specify the double feed detection by thickness (transmitted light intensity of document) or rotation of Brake roller. Select the method by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S04-4 are as follows:

Second line on the screen	Description
Thickness	Enables double feed detection by paper thickness. (*1)
Thickness&Roller	Enables double feed detection by paper thickness and Brake roller rotation. (*1)

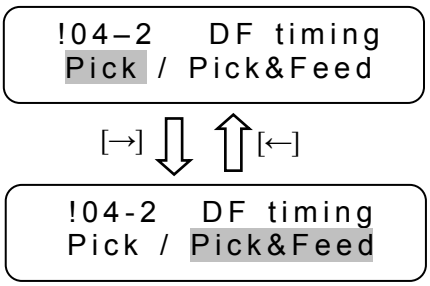
Screen S04-4



7. After confirming the setting at Screen S04-4, Screen S04-5 appears. Select the double feed detection timing by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S04-5 are as follows:

Second line on the screen	Description
Pick / Pick&Feed	The scanner detects double feed error within 8 mm from the top edge of a document. (*2)
Pick / Pick&Feed	The scanner detects double feed error from the top edge to the bottom edge of a document. (*3)

Screen S04-5



After confirming the setting at Screen S04-5, Screen S05 appears.

(*1): In general, "Thickness&Roller" setting enables better double feed detection by both paper thickness and brake roller rotation. However, when brake roller rotation becomes unstable in the following case, select "Thickness".

Select "Thickness" in the following case:
Scanning thin paper with the Separation roller pressure set lower (Refer to Section 5.26).

(*2): Double feed cannot be detected if the overlapped top edges of documents are misaligned more than 8 mm.

(*3): Double feed may be detected wrongly when scanning a document with dark area more than 10 mm on the ground color.

6.3.5 Length Check

The scanner can detect the double feed by comparing paper length of the first document scanned after hopper empty error with that of subsequent document. This mode determines whether to enable or disable this kind of double feed detection. Refer to Section 6.3.4 for double feed detection by paper thickness and brake roller rotation. Use this setting when scanning documents with the same length.

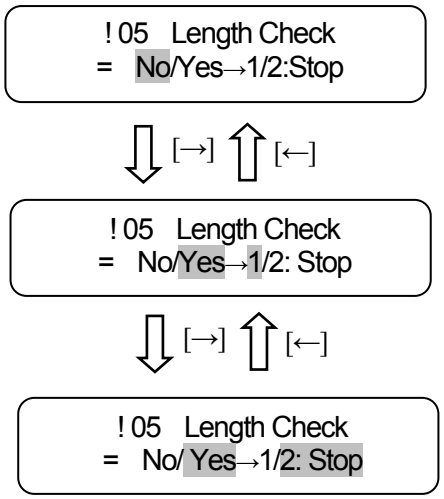
Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S05 by pressing [Next] or [Prev]. The current setting appears in the second line of Screen S05.

2. To change the setting, use [→] and [←] to select the setting you desire, and press [Enter] to confirm it. Selectable settings at Screen S05 are as follows. After confirming the setting, Screen S06 appears.

Second line on the screen	Description
No/Yes → 1/2:Stop	Disables double feed detection. If [Enter] is pressed while "No" is blinking, (This is default.)
No /Yes→1/2:Stop	Enables double feed detection. Also when the double feed is detected, it is displayed on the operator panel but the reading operation continues.
No /Yes→1/2:Stop	Enables double feed detection. Also when the double feed is detected, the scanner stops reading operation and notifies the host of the error.

Screen S05



Press [Next] to go to Screen S06 or press [Prev] to go to Screen S04.

When the double feed detection is enabled, either Screen S05-1 or Screen S02-2 appears depending upon EEPROM #03 setting.

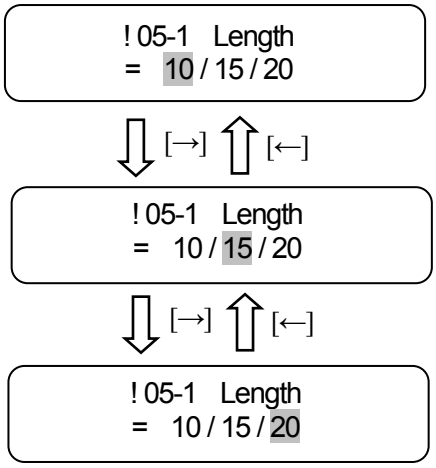
EEPROM#03 value	Description
00h	Displays Screen S05-1. Paper length can be selected from 10,15,20mm.
Other than 00h	Screen S05-2 is displayed. Paper length can be specified by 1 mm in the range of 1 to ~~15~~ 20 mm.

05

3. At Screen S05-1, select paper length by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S05-1 are as follows:

Second line on the screen	Description
10/15/20mm (Default)	Double feed is detected when difference in paper length between first document and subsequent document is more than 10 mm. (Default)
10/15/20mm	Double feed is detected when difference in paper length between first document and subsequent document is more than 15 mm.
10/15/20mm	Double feed is detected when difference in paper length between first document and subsequent document is more than 20 mm.

Screen S05-1



After confirming the setting at Screen S05-1, Screen S06 appears.

4. At Screen S05-2, specify paper length by using [→] and [←], and press [Enter] to confirm it. ~~The default setting is 10 mm.~~

   05

   Press [→] to increment the value by 1 mm.
   Press [←] to decrement the value by 1 mm.

   After confirming the setting at Screen S05-2, Screen S06 appears.

Screen S05-2

```
! 05-2  Length
=  10  mm
```

6.3.6 Skew Check

This setting enables/disables the function that detects a skew error. Refer to Section 2.7 and table 2.7 for theory of skew detection.

Note: The scanner's reaction against skew error varies depending on the setting of double feed detection (Refer to Section 6.3.4).

1) In the case that Screen S04 is set to "No /Yes→1/2:Stop" (The scanner stops at double feed error.):
   <When skew error detection "enabled" in this setting>
   The skew error is reported to the scanner and displayed on the screen. The skew angle can be retrieved from the operator panel.

   <When skew error detection "disabled" in this setting >
   The skew error is not reported to the scanner, but the skew angle can be retrieved for each document from the operator panel.

2) In the case that Screen S04 is set to "No /Yes→1/2:Stop" (The scanner continues reading at double feed error.):
   The skew error is not reported to the scanner regardless of whether or not skew error detection is enabled. But the skew angle can be retrieved for each document from the operator panel.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S06 by pressing [Next] or [Prev].

   The current setting appears in the second line of Screen S06. Select whether to enable or disable slew check by using [→] and [←], and press [Enter] to confirm it.

   The default is "Off". Selectable settings at Screen S06 are as follows:

Second line on the screen	Description
On / Off	Does not detect skew error.
On / Off	Detect skew error.

   Press [Next] to go to Screen S07 or press [Prev] to go to Screen S05.

   After confirming the setting at Screen S06, Screen S07 appears.

Screen S06

```
! 06  Skew  Check
=  On / Off
```

[→] ⇩ ⇧ [←]

```
! 06  Skew  Check
=  On / Off
```

6.3.7 IPC Pre-set

This setting specifies IPC pre-set pattern No. 1 to 5 that are used for easier setting of IPC4 image processing functions. When "No" is specified in this setting, IPC 4 image processing functions are set by the host.

Follow the procedure below to set this mode.

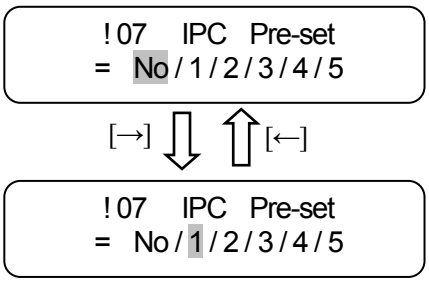
1. Activate Setup mode by referring to Section 6.2. Go to Screen S07 by pressing [Next] or [Prev]. The current setting appears in the second line of Screen S07.

   Select the setting by using [→] and [←], and press [Enter] to confirm it. When "No" is selected, it indicates that the IPC Pre-set is disabled.

   Press [Next] to go to Screen S08 or press [Prev] to go to Screen S05.

   After confirming the setting at Screen S07, Screen S08 appears.

Screen S07



IPC pre-set setting is only available for binary scanning and is disabled at grayscale and color scanning.
The following shows the availability of reading parameters when IPC pre-set is enabled during on-line.

	Operation method	Resolution	Line art/ Photo	Halftone	Dynamic threshold	Document Size	Portrait/ Landscape	Cropping
Disabled	√	√	-	-	-	√	√	√
Enabled	-	-	√	√	√	-	-	-

	Document selection	γ pattern	Contrast	Automatic Separation	Black and White reverse	Image Emphasis	Outline	Simplified Dynamic threshold
Disabled	√	-	-	-	√	-	-	-
Enabled	-	√	√	√	-	√	√	√

6.3.8 Abrasion alarm

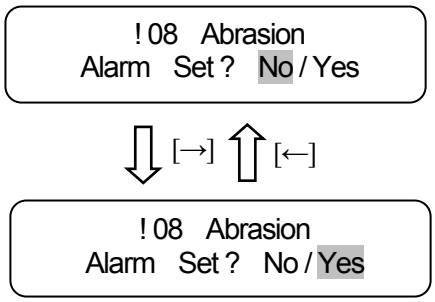
This setting specifies whether abrasion alarm is displayed on the screen and how the scanner reacts to it when the abrasion counter has reached the value set in this mode. We recommend you to change this setting only if necessary.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S08 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S08. Select whether to enable or disable the abrasion alarm by using [→] and [←] and press [Enter] to confirm it. Selectable settings at Screen S08 are as follows. The default is "~~Yes~~ No". 08

Second line on the screen	Description
Alarm Set? No/Yes	~~Abrasion alarm is not displayed.~~ Do not change alarm setting. 08
Alarm Set? No/Yes	~~Abrasion alarm is displayed.~~ Change alarm setting. 08

Screen S08

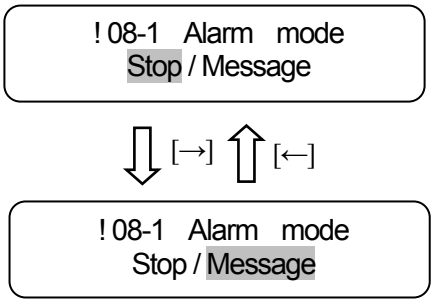


2. When [Enter] is pressed while "No" is blinking, Screen S09 appears. (See section 6.3.9)
   Press [Next] to go to Screen S09 or press [Prev] to go to Screen S07.

3. After confirming "Yes" at Screen S08, Screen S08-1 appears. Select the setting of how the scanner react to the abrasion alarm by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S08-1 are as follows. The default is "~~Message~~ Stop". 08

Second line on the screen	Description
Stop / Message	Scanner stops its operation when abrasion alarm occurs.
Stop / Message	Scanner displays abrasion alarm but continues its operation.

Screen S08-1

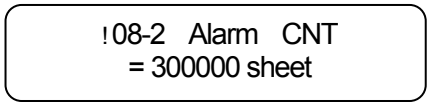


4. After confirming the setting at Screen S08-1, Screen S08-2 appears. Set abrasion counter value by using [→] and [←], and press [Enter] to confirm it.

   Press [→] to increment the value by 10,000 sheets.
   Press [←] to decrement the value by 10,000 sheets.
   The default is 300,000 sheets.

   After confirming the setting at Screen S08-2, Screen S09 appears.

Screen S08-2



6.3.9 Abrasion CNT

This setting resets the following abrasion counters.

- Pick roller counter
- Brake roller counter
- Pad counter
- Front side lamp counter
- Back side lamp counter

After replacing consumables, you need to reset the counter by following the procedure below. For the counter of ink cartridge (option), refer to Section 6.3.26.

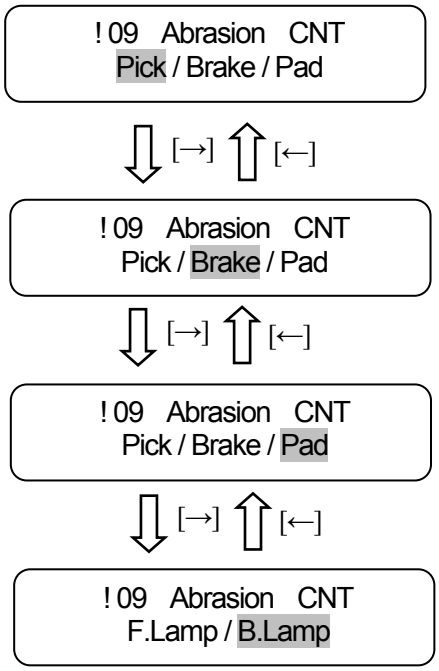
1. Activate Setup mode by referring to Section 6.2. Go to Screen S09 by pressing [Next] or [Prev].

   The current setting appears in the second line of Screen S09. Select the counter to be reset by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S09 are as follows:

Second line on the screen	Description
Pick / Brake / Pad	Goes to Pick roller counter reset screen (S09-1).
Pick / Brake / Pad	Goes to Brake roller counter reset screen (S09-2).
Pick / Brake / Pad	Goes to Pad counter reset screen (S09-3).
Pad / F.Lamp	Goes to Front lamp on counter reset screen (S09-4).
F.Lamp / B.Lamp	Goes to Back lamp on counter reset screen (S09-5).

   According to the counter you select, one of Screen S09-1 ~ Screen S09-5 appears.
   Press [Next] to go to Screen S10 or press [Prev] to go to Screen S08.

Screen S09

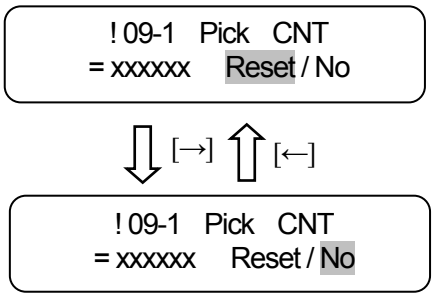


2. When "Pick" is chosen at Screen S09, Screen S09-1 appears.
   Select whether to reset the Pick roller counter by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Reset / No	Resets Pick roller counter.
Reset / No	Does not reset Pick roller counter.

   After confirming "Reset", Screen S09-6 appears, and after confirming "No", Screen S10 appears.

Screen S09-1



3. When "Brake" is chosen at Screen S09, Screen S09-2 appears. Select whether to reset the Brake roller counter by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Reset / No	Resets Brake roller counter.
Reset / No	Does not reset Brake roller counter.

After confirming "Reset", Screen S09-6 appears, and after confirming "No", Screen S10 appears.

4. When "Pad" is chosen at Screen S09, Screen S09-3 appears. Select whether to reset the Pad counter by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Reset / No	Resets Pad counter.
Reset / No	Does not reset Pad counter.

After confirming "Reset", Screen S09-6 appears, and after confirming "No", Screen S10 appears.

5. When "F.Lamp" is chosen at Screen S09, Screen S09-4 appears. Select whether to reset the Front side lamp counter by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Reset / No	Resets Front side lamp counter.
Reset / No	Does not reset Front side lamp counter.

After confirming "Reset", Screen S09-6 appears, and after confirming "No", Screen S10 appears.

6. When "B.Lamp" is chosen at Screen S09, Screen S09-5 appears. Select whether to reset the Backside lamp counter by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Reset / No	Resets Back side lamp counter.
Reset / No	Does not reset Back side lamp counter.

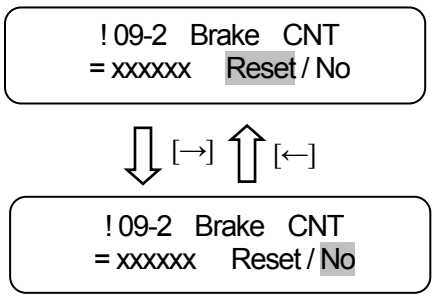
After confirming "Reset", Screen S09-6 appears, and after confirming "No", Screen S10 appears.

7. After confirming "Reset" at Screen S09-1~S09-5, Screen S09-6 appears. Select "No" or "Yes" by using [→] and [←] to determine if the counter is reset right now, and press [Enter] to confirm it.

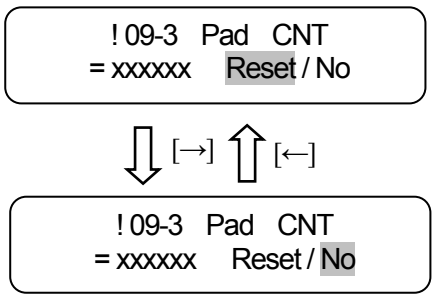
Second line on the screen	Description
Yes / No	Reset the counter. (Unit: minute)
Yes / No	Does not reset the counter. (Unit: minute)

When "Yes" is selected, Screen 10 appears after the counter is reset. When "No" is selected, Screen 10 appears without resetting the counter. (Refer to Section 6.3.10.)

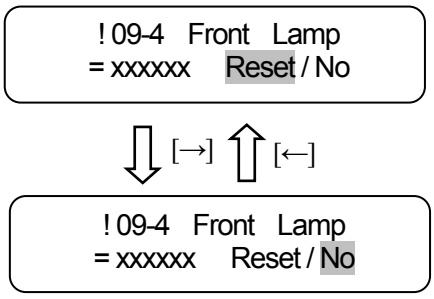
Screen S09-2



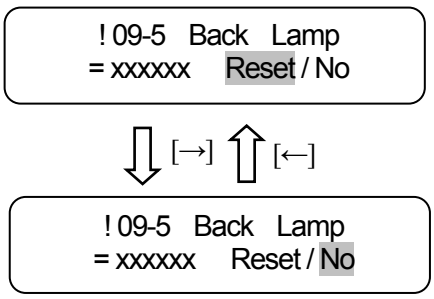
Screen S09-3



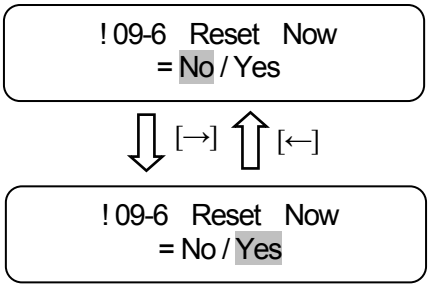
Screen S09-4



Screen S09-5



Screen S09-6



6.3.10 Paper length

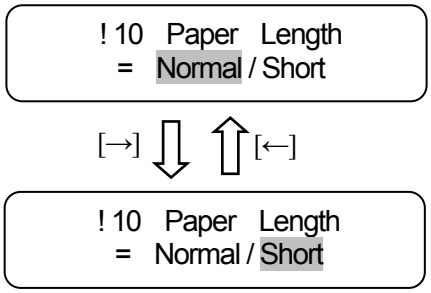
When scanning a short document, the Pick roller does not stop rotating even after that document has completely been fed. Consequently the following document is picked, and that may result in double feed error. To avoid such error, set this mode setting when scanning a document shorter than 80 mm.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S10 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S10. When you scan a document shorter than 80 mm, select "Short" by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S10 are as follows. The default setting is "Normal"

Second line on the screen	Description
Normal / Short	Used when scanning document longer than 80 mm.
Normal / Short	Used when scanning document shorter than 80 mm.

Screen S10



Press [Next] to go to Screen S11 or press [Prev] to go to Screen S09.

After confirming the setting at Screen S10, Screen S11 appears.

6.3.11 Language

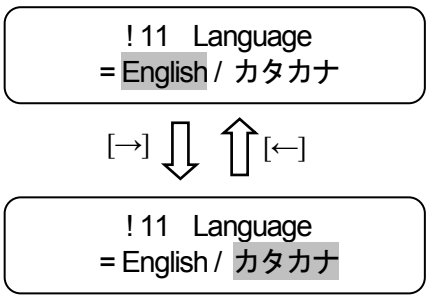
This setting specifies language used for display on the operator panel. English or Japanese can be selected.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S11 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S11. Select the language to be displayed by using [→] and [←], and press [Enter] to confirm it. The default is "English

Second line on the screen	Description
English / カタカナ	Display in English.
English / カタカナ	Display in Japanese.

Screen S11



Press [Next] to go to Screen S12 or press [Prev] to go to the previous screen.

After confirming the setting at Screen S11, Screen S12 appears.

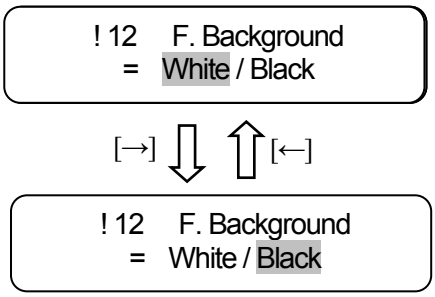
6.3.12 Background (front)

This setting specifies the background color (white or black) of a document for front side image.
Note that this setting cannot override the setting from the host, which is not displayed on the screen.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S12 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S12.
   Select the background color by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S12 are as follows:

Screen S12



Second line on the screen	Description
White / Black	Read white background for front side image. (This is default)
White / Black	Read black background for front side image.

Press [Next] to go to Screen S13 or press [Prev] to go to Screen S11.

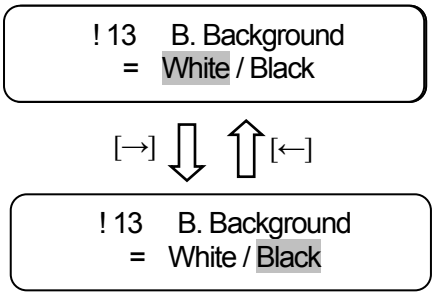
After confirming the setting at Screen S10, Screen S11 appears.

6.3.13 Background (back)

This setting specifies the background color (white or black) of a document for backside image.
Note that this setting cannot override the setting from the host, which is not displayed on the screen.
Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S13 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S13.
   Select the background color by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S13 are as follows:

Screen S13



Second line on the screen	Description
White / Black	Reads white background for backside image. (This is default)
White / Black	Reads black background for backside image.

Press [Next] to go to Screen S14 or press [Prev] to go to Screen S12.

After confirming the setting at Screen S13, Screen S14 appears.

6.3.14 Drop out (front)

This setting specifies drop out color for front side image at single color scanning. R (red), G (green), B (blue) colors are supported. Note that this setting cannot override the setting from the host, which is not displayed on the screen.

Follow the procedure below to set this mode.

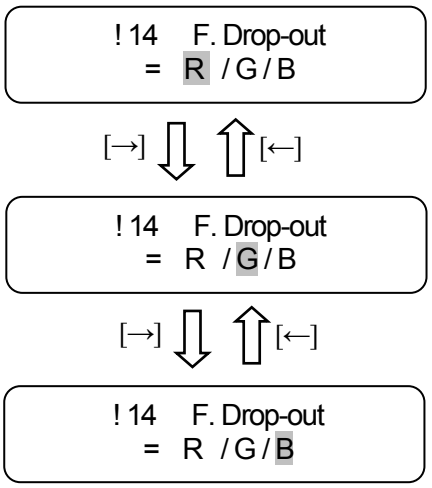
1. Activate Setup mode by referring to Section 6.2. Go to Screen S14 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S16. Select color you want to drop out by using [→] and [←], and press [Enter] to confirm it.

   Press [→] to change the color in order of "R"→"G"→"B".
   Press [←] to change the color in order of "B"→"G"→" R".
   The default is "G (Green)".

   Press [Next] to go to Screen S15 or press [Prev] to go to Screen S13.

   After confirming the setting at Screen S14, Screen S15 appears.

Screen S14



6.3.15 Drop out (back)

This setting specifies drop out color for backside image at single color scanning. R (red), G (green), B (blue) colors are supported. Note that this setting cannot override the setting from the host, which is not displayed on the screen.

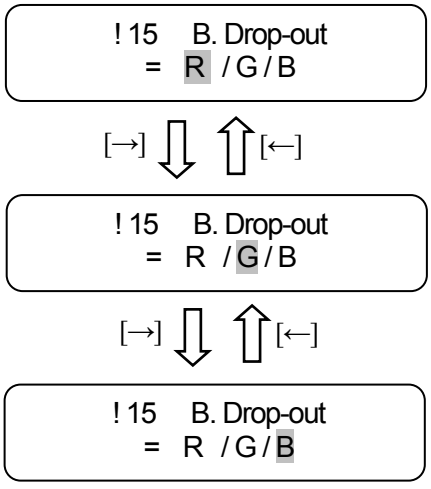
1. Activate Setup mode by referring to Section 6.2. Go to Screen S15 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S15. Select color you want to drop out by using [→] and [←] and press [Enter] to confirm it.

   Press [→] to change the color in order of "R"→"G"→"B".
   Press [←] to change the color in order of "B"→"G"→" R".
   The default is "G (Green)".

   Press [Next] to go to Screen S16 or press [Prev] to go to Screen S14.

   After confirming the setting at Screen S15, Screen S16 appears.

Screen S15



6.3.16 Pick retry

This setting specifies the number of pick retry and ADF motor rotation performed during the period after the first pick operation until a document reaches Sensor SF1. The values specified here indicate the number of pick motor rotations. The bigger the value is set to, the further a document is transported per a pick operation. If the number of pick retry exceeds the specified value, it results in mispick error.
See section 2.2 for details on Paper picking

Follow the procedure below to set this mode.

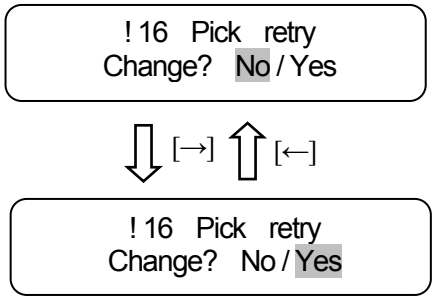
1. Activate Setup mode by referring to Section 6.2. Go to Screen S16 by pressing [Next] or [Prev].

   The current setting appears in the second line of Screen S16.
   Select whether to change the setting of pick retry by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Change? No / Yes	Does not change the setting of Pick retry.
Change? No / Yes	Changes the setting of Pick retry.

   When [Enter] is pressed while "No" is blinking, Screen S17 appears. (See section 6.3.17)
   Press [Next] to go to Screen S17 or press [Prev] to go to Screen S15.

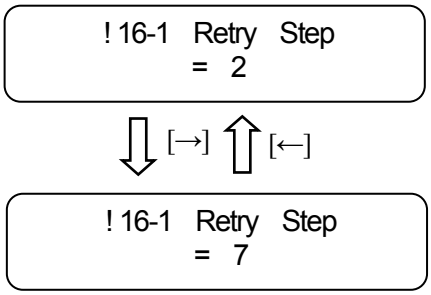
Screen S16



2. After confirming "Yes" at Screen S16, Screen S16-1 appears. Specify the number of motor rotations per a pick operation by using [→] and [←], and press [Enter] to confirm it.

   Press [→] to increase the number of rotations in the range of 1 to 7.
   Press [←] to decrease the number of rotations in the range of 1 to 7.
   The default is "2".

Screen S16-1

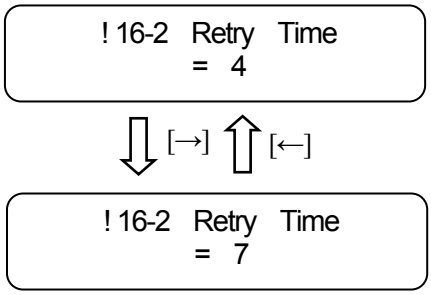


3. After confirming the setting at Screen S16-1, Screen S16-2 appears. Specify the number of retry for pick operation by using [→] and [←], and press [Enter] to confirm it.

   Press [→] to increase the number of retry in the range of 1 to 7.
   Press [←] to decrease the number of retry in the range of 1 to 7.
   The default is "4".

   After confirming the setting at Screen S16-2, Screen S17 appears.

Screen S16-2



6.3.17 Feed retry

This setting specifies the number of feed retry and separation motor rotation performed after the first pick operation until a document is transported to Sensor SF1. The values specified here indicate the number of separation motor rotations. The bigger the value is set to, the further a document is transported per a feed operation. If feed retry exceeds the specified value, it results in paper jam error.
See section 2.2 for details on Paper picking

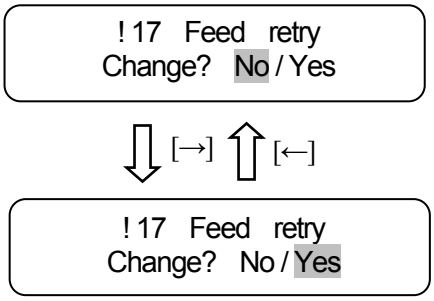
Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S17 by pressing [Next] or [Prev].

   The current setting appears in the second line of Screen S17.
   Select whether to change the setting of feed retry by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Change? No / Yes	Does not change the setting of Feed retry.
Change? No / Yes	Changes the setting of Feed retry.

Screen S17



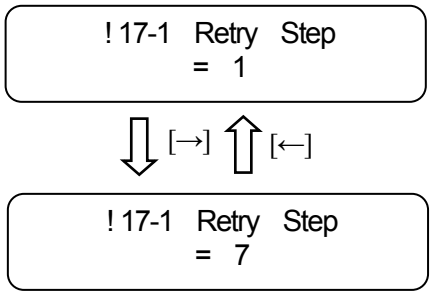
   When [Enter] is pressed while "No" is blinking, Screen S18 appears. (See section 6.3.18)

   Press [Next] to go to Screen S18 or press [Prev] to go to Screen S16.

2. After confirming "Yes" at Screen S17, Screen S17-1 appears. Specify the number of motor rotations per a feed operation by using [→] and [←], and press [Enter] to confirm it.

   Press [→] to increase the number of rotations in the range of 1 to 7.
   Press [←] to decrease the number of rotations in the range of 1 to 7.
   The default is "1".

Screen S17-1

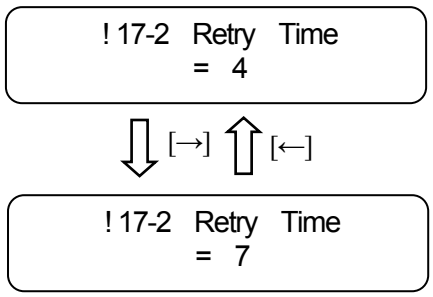


3. After confirming the setting at Screen S17-1, Screen S17-2 appears. Specify the number of retry for feed operations by using [→] and [←], and press [Enter] to confirm it.

   Press [→] to increase the number of retry in the range of 1 to 7.
   Press [←] to decrease the number of retry in the range of 1 to 7.
   The default is "4".

   After confirming the setting at Screen S17-2, Screen S18 appears.

Screen S17-2



6.3.18 Manual Feed

This setting specifies Pick start time and time-out setting for manual feeding. "Pick start time" means the period from when paper is loaded manually to when the pick operation starts. "Time-out" means the period from when the host computer issues a scan command to when hopper empty error arises. Operators are required to load paper within those period specified by this setting after a scan command is issued from the host computer.

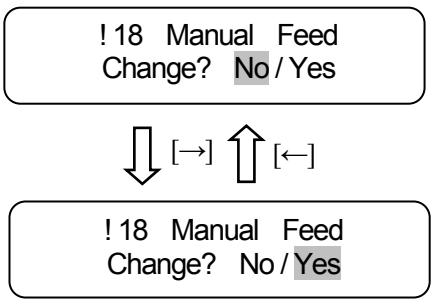
Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S18 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S18. Select whether to change manual feed settings (Pick start or time-out) by using [→] and [←] and press [Enter] to confirm it. Selectable settings at Screen S18 are as follows:

Second line on the screen	Description
Change? No/Yes	Does not change Manual feed setting.
Change? No/Yes	Changes Manual feed setting.

   When [Enter] is pressed while "No" is blinking, Screen S19 appears. (See section 6.3.19)
   Press [Next] to go to Screen S19 or press [Prev] to go to Screen S17.

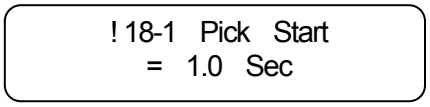
Screen S18



2. After confirming "Yes" at Screen S06, Screen S18-1 appears. Specify Pick start time by using [→] and [←], and press [Enter] to confirm it. The default is 1.0 second.

   Press [→] to increment the value by 0.2 seconds in the range of 0.2 ~29.8.
   Press [←] to decrement the value by 0.2 seconds in the range of 0.2 ~29.8.

Screen S18-1

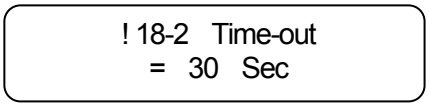


3. After confirming the setting at Screen S18-1, Screen S18-2 appears. Specify Time-out by using [→] and [←] and press [Enter] to confirm it. The default is 30 seconds.

   Press [→] to increase time.
   Press [←] to decrease time.
   Selectable settings are as follows:
   1, 5,10,20,30,40,50,60,70,80,90,100,110,120,180,240,255 seconds

   After confirming the setting at Screen S18-2, Screen S19 appears.

Screen S18-2



6.3.19 SCSI-ID

This setting specifies SCSI-ID for the scanner. Changes made here become valid only after restarting the scanner.

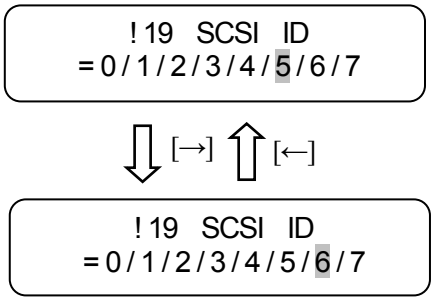
Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S19 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S19.
   Select a SCSI-ID by using [→] and [←], and press [Enter] to confirm it. The default is "5".

   Press [Next] to go to Screen S20 or press [Prev] to go to Screen S18.

   After confirming the setting at Screen S18, Screen S20 appears.

Screen S19



6.3.20 Product ID

This setting specifies Product ID for the scanner. Changes made here become valid only after restarting the scanner.

Follow the procedure below to set this mode.

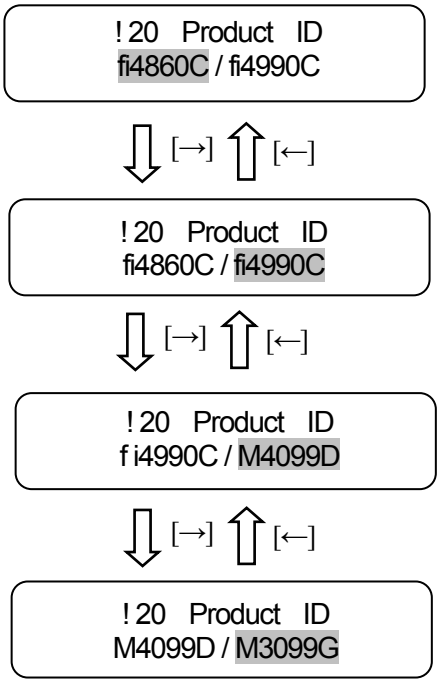
1. Activate Setup mode by referring to Section 6.2. Go to Screen S20 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S20.
   Select a Product-ID by using [→] and [←], and press [Enter] to confirm it.

   Press [→] to change the setting in order of "fi-4860C" → "fi-4990C" → "M4099D" → "M3099G".
   Press [←] to change the setting in order of "M3099G" →"M4099D" → "fi-4990C"→ "fi-4860C".
   The default is "fi-4860C".

   Press [Next] to go to Screen S21 or press [Prev] to go to Screen S19.

   After confirming the setting at Screen S20, Screen S21 appears.

Screen S20



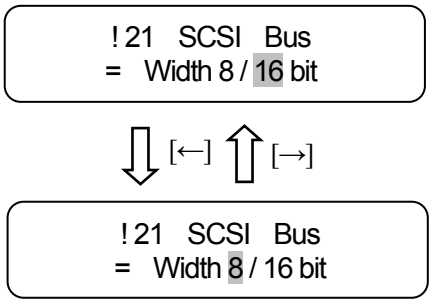
6.3.21 SCSI bus

This setting specifies SCSI bus width to either WIDE (16 bit) or NARROW (8 bit). Select one by following a system engineer's instruction. When a Narrow SCSI card is connected to the scanner, select "8" bit. Changes made here become valid only after restarting the scanner.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S21 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S21.
   Select a bus width by using [→] and [←], and press [Enter] to confirm it. The default is "16".

Screen S21



Second line on the screen	Description
Width 8 / 16 bit	Sets SCSI bus with to 16 bit.
Width 8 / 16 bit	Sets SCSI bus with to 8 bit.

Press [Next] to go to Screen S22 (*1) or press [Prev] to go to Screen S20.

After confirming the setting at Screen S21, Screen S22 (*1) appears.

(*1): When TPS board is not installed, Screen S24 appears instead.

6.3.22 Interface

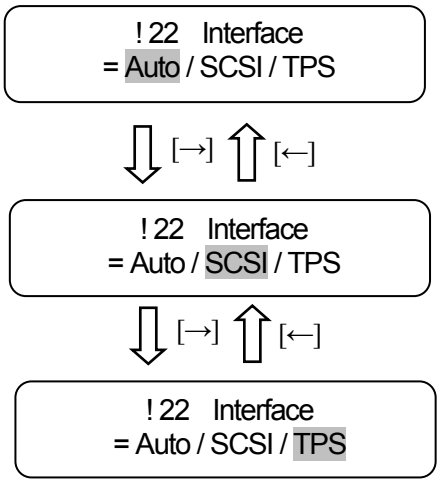
This setting specifies a valid interface when TPS board is installed.

Note that Screen S22 only appears when TPS board is installed.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S22 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S22.
   Select an interface by using [→] and [←], and press [Enter] to confirm it. The default is "Auto".

Screen S22



Second line on the screen	Description
Auto / SCSI / TPS	Scanner works with TPS interface when TPS board is installed, and it works with SCSI interface when TPS board is not installed.
Auto / SCSI / TPS	Scanner works with SCSI interface. TPS interface is disabled.
Auto / SCSI / TPS	Scanner works with TPS interface. SCSI interface is disabled.

Press [Next] to go to Screen S23 (*1) or press [Prev] to go to Screen S21.

After confirming the setting at Screen S22, Screen S23 (*1) appears.

(*1): When TPS board is not installed, Screen S24 appears instead.

6.3.23 Baud rate

This setting specifies control data transfer rate for TPS board if it is installed. Changes made here become valid only after restarting the scanner.
Note that Screen S23 appears only when TPS board is installed.

Follow the procedure below to set this mode.

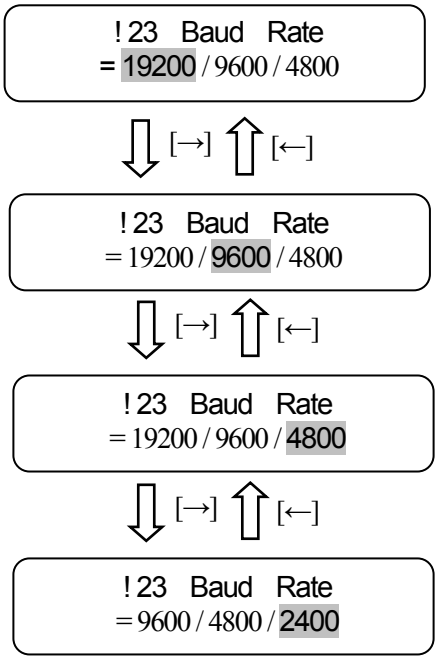
1. Activate Setup mode by referring to Section 6.2. Go to Screen S23 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S22.
   Select baud rate by using [→] and [←], and press [Enter] to confirm it.
   The default is "9600".

Second line on the screen	Description
19200 / 9600 / 4800	Sets baud rate to "19200 bps"
19200 / 9600 / 4800	Sets baud rate to "9600 bps"
19200 / 9600 / 4800	Sets baud rate to "4800 bps"
9600 / 4800 / 2400	Sets baud rate to "2400 bps"

Press [Next] to go to Screen S24 or press [Prev] to go to Screen S22.

After confirming the setting at Screen S23, Screen S24 appears.

Screen S23



6.3.24 Imprinter

When "Pre-imprinter (fi-486PRFR)" and "Post-imprinter (fi-486PRRE)" are both installed, this setting determines which imprinter to be set at Screen S25. Screen S24 appears only when both imprinters are installed.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S24 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S24.
   Select an imprinter by using [→] and [←], and press [Enter] to confirm it.

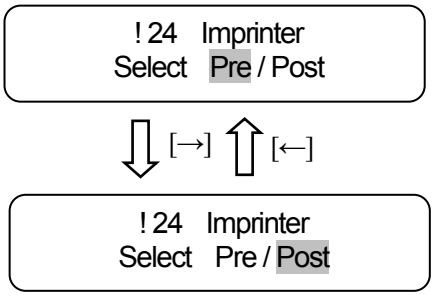
Second line on the screen	Description
Select Pre / Post	Enables Pre-imprinter (fi-486PRFR) to be set at Screen S25.
Select Pre / Post	Enables Post-imprinter (fi-486PRRE) to be set at Screen S25.

Press [Next] to go to Screen S25 or press [Prev] to go to Screen S23 (*1).

(*1): When TPS is not installed, Screen S21 appears instead.

After confirming the setting at Screen S24, Screen S25 appears.

Screen S24



6.3.25 Numbering

This setting specifies number printing functions of imprinter. The followings can be set here.

- The number of digits to be printed
- Initial value
- Counter reset at hopper empty.

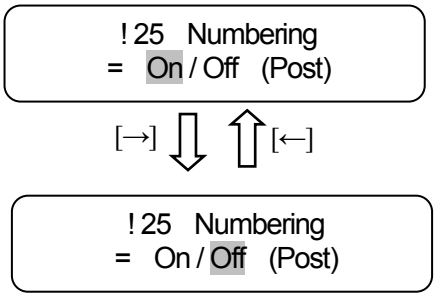
Screen S25 appears only when an imprinter option is installed and in the second line the imprinter chosen at Screen S24 is displayed.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S25 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S25. (The screens on the right are examples when "Post" is selected at Screen S24.)
   Select whether to enable numbering function by using [→] and [←], and press [Enter] to confirm it. The default is "Off".

Second line on the screen	Description
On / Off (Post)	Enables numbering function.
On / Off (Post)	Disables numbering function.

   When [Enter] is pressed while "Off" is blinking, Screen S26 appears. (See section 6.3.26)
   Press [Next] to go to Screen S26 or press [Prev] to go to the previous screen.

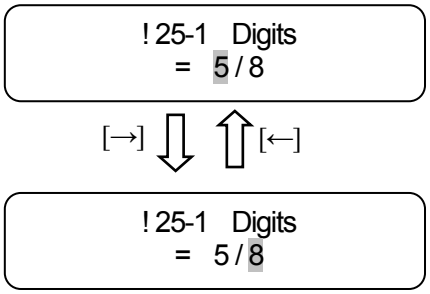
Screen S25



2. After confirming "On" at Screen S25, Screen S25-1 appears. Select the number of digits to be printed by using [→] and [←] and press [Enter] to confirm it.

Second line on the screen	Description
5 / 8	5 digits number is printed
5 / 8	8 digits number is printed

Screen S25-1

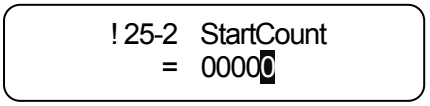


3. After confirming the setting at Screen S25-1, either Screen S25-2a or S25-2b appears according to the previous setting in order to set the initial value. Select a digit to be changed by using [→] and [←], and set the number using [Next] or [Prev].

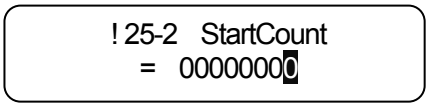
   Press [Next] to increase the number. (After 9, the number returns to 0 and the adjacent upper digit increases 1.)
   The maximum value is 99999 for 5 digits and 16777215 for 8 digits.
   The display no longer changes after those values.

   Press [Prev] to decrease the number. (After 0, the number returns to 9 and the adjacent upper digit decreases 1.)
   The minimum value is 00000 for 5 digits and 00000000 for 8 digits.

Screen S25-2a



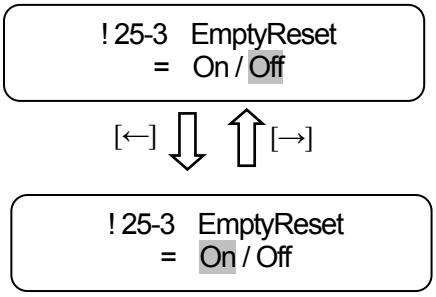
Screen S25-2b



4. After confirming the setting at Screen S25-2, Screen S25-3 appears. The current setting appears in the second line of the screen. Select whether to reset numbering counter at hopper empty by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
On / Off	Does not reset the counter at hopper empty.
On / Off	Reset the counter at hopper empty.

Screen S25-3

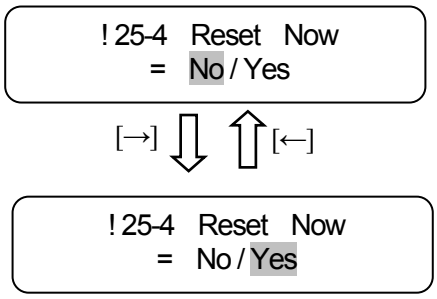


5. After confirming the setting at Screen S25-3, Screen S25-4 appears. Select whether to reset the current numbering counter by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
No / Yes	Does not reset the current counter.
No / Yes	Reset the current counter.

When confirming "Yes", the counter is reset and then Screen S26 appears.

Screen S25-4



6.3.26 Ink

This setting displays ink remaining of the imprinter, and also specifies whether to reset the ink remain counter.
(The ink remain should be reset after replacing ink cartridge)
When Pre (front) and Post (back) imprinters are both installed, ink remain is displayed for the imprinter chosen at Screen S24.

Display	Ink remain	The number of dots remaining
■■■■■■	Ink remain plenty	96 ~80 million
■■■■■□	↕	80 ~ 64 million
■■■■□□		64 ~ 48 million
■■■□□□		48 ~ 32 million
■■□□□□		32 ~ 24 million (*1)
■□□□□□	Ink remain low or empty	Less than 24 million

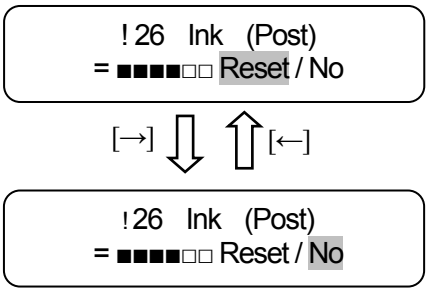
(*1): When ink remains falls to 32 million dots (1/3 of all), the following messages appear to prompt users to replace an ink cartridge: "Please prepare a new Ink " at power on, or "Please prepare a new Ink Now Reading!" during scan operation.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S26 by pressing [Next] or [Prev].
   The current ink remain appears in the second line of Screen S26. (The screens on the right are examples when "Post" is selected at Screen S24.)
   Select whether to reset ink remain by using [→] and [←], and press [Enter] to confirm it.

Second line on the screen	Description
Reset / No	Reset ink remain level.
Reset / No	Does not reset ink remain level.

Screen S26

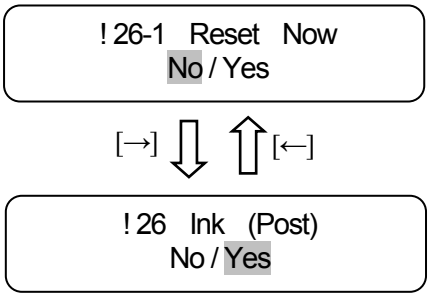


   When [Enter] is pressed while "No" is blinking, Screen S27 appears. (Refer to Section 6.3.27)
   Press [Next] to go to Screen S27 or press [Prev] to go to Screen S25.

2. After confirming "Reset" at Screen S26, Screen S26-1 appears. Select "No" or "Yes" by using [→] and [←] to determine whether to reset the ink remain now, and press [Enter] to confirm it.

   After confirming the setting at Screen S26-1, Screen S27 appears.

Screen S26-1



6.3.27 Power Save

This setting specifies the transition time until the scanner automatically enters power save mode while the scanner is not in use. However, the transition time cannot be set when power save mode is disabled by EEPROM setting.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S27a or S27b by pressing [Next] or [Prev].

   When "00h" is set to EEPROM#5C, Screen S27a appears indicating power save mode is disabled.
   When any other value than "00h" is set to EEPROM#5C, Screen S27b appears indicating power save mode is enabled. In this case, power save setting cannot be changed from the operator panel.

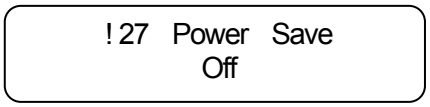
   The current setting appears in the second line of Screen S27b. Set the transition time to power save mode by using [→] and [←], and press [Enter] to confirm it. The default is "15" minutes.

   Press [→] to increment the transition time by 5 in the range of 5 ~ 60.
   Press [←] to decrement the transition time by 5 in the range of 5 ~ 60.

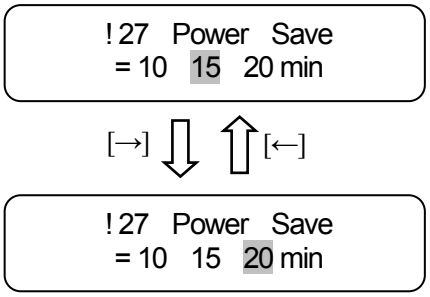
   Press [Next] to go to Screen S28 or press [Prev] to go to the previous screen.

   After confirming the setting at Screen S27, Screen S28 appears.

Screen S27a



Screen S27b



6.3.28 Brightness

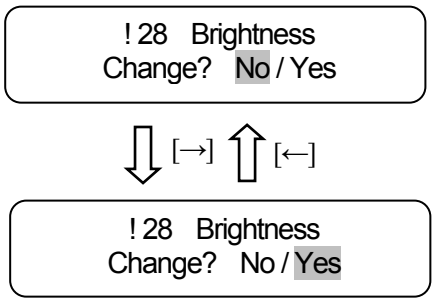
This setting specifies brightness for front and backside image respectively to adjust gradation difference between front and backside image. When the setting value increases/decreases by 1, brightness of image changes by 1.6 %. The bigger the value is set to, the lighter the image becomes. When the backside image is darker than the front side image, adjust the brightness by increasing the value for backside, or decrease the value for front side.

Follow the procedure below to set this mode.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S28 by pressing [Next] or [Prev].
   The current setting appears in the second line of Screen S28. Select whether to change the brightness setting by using [→] and [←], and press [Enter] to confirm it. Selectable settings at Screen S28 are as follows:

Second line on the screen	Description
Change? No / Yes	Does not change the brightness setting.
Change? No / Yes	Changes the brightness setting.

Screen S128

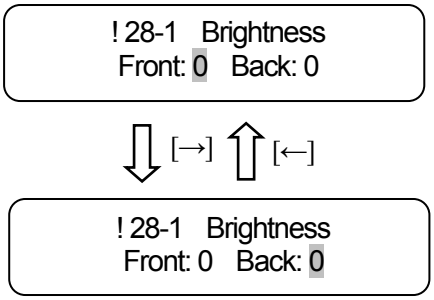


When [Enter] is pressed while "No" is blinking, Screen S29 appears. (See section 6.3.29)

2. After confirming "Yes" at Screen S18, Screen S18-1 appears. Select "Front" or "Back" to be changed by using [→] and [←], and specify the brightness value.

Second line on the screen	Description
Front: 0 Back: 0	Specifies the brightness value for front side image.
Front: 0 Back: 0	Specifies the brightness value for backside image.

Screen S28-1



Press [Next] to increase the value up to 6.
(When [Next] is pressed with 6 displayed, the value remains the same.)
Press [Prev] to decrease the value up to -6.
(When [Prev] is pressed with -6 displayed, the value remains the same.)
The default value is "0" for both front and back side.

Press [Enter] to confirm it.
Press [Next] to go to Screen S29 or press [Prev] to go to Screen S27.

After confirming the setting at Screen S28-1, Screen S29 appears.

6.3.29 Imprinter Status

This setting displays the imprinter installed in the scanner if any. When no imprinter is installed, Screen S29 does not appear.

Follow the procedure below to display the imprinter.

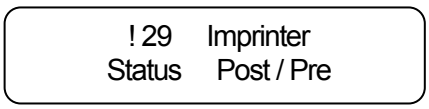
1. Activate Setup mode by referring to Section 6.2. Go to Screen S29 by pressing [Next] or [Prev].

   Screen 29 has three kinds of display that appear depending upon which imprinter is installed in the scanner.

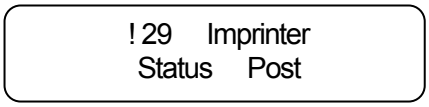
Second line on the screen	Description
Status Post / Pre	Post and Pre imprinters are both installed in the scanner.
Status Post	Post imprinter is installed in the scanner.
Status Pre	Pre imprinter is installed in the scanner.

   Press [Next] to go to Screen S01 or press [Prev] to go to the previous screen.

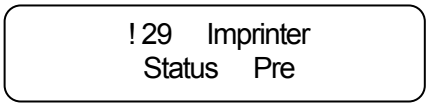
Screen S29a



Screen S29b



Screen S29c



05

6.3.30 Lamp control (Only New type of scanner)

If the scanner is New type, the lamp control is specified by this setting. When "Normal" is set, the scanner turns off the lamp one minute (Default) after the scanning. When "AlwaysOn" is set, Lamp is always turned ON except Sleep mode.

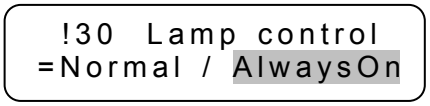
Follow the procedure below to specify the lamp control.

1. Activate Setup mode by referring to Section 6.2. Go to Screen S30 by pressing [Next] or [Prev].
   Select the lamp control option in the lower line of Screen 30.

Second line on the screen	Description
=Normal / AlwaysOn	Lamp turns Off one minute (Default) after the scanning.
=Normal / AlwaysOn	Lamp always turns On except Sleep mode. The time from scanning activation to actual scanning start becomes short.

   Press [Next] or [Enter] to go to Screen S01, or press [Prev] to go to previous screen, S29.

Screen S30



6.4 Hide Setup items

As the scanner has quite a lot of Setup items, some operators might find it confusing. This section gives the operators instructions on how to hide unnecessary Setup items during online setup mode. Note that this function is not available for offline Setup mode.
Note: The settings specified below are saved into EEPROM #B0 ~ #B3.

6.4.1 How to select Setup mode

Follow the procedure below to select the item you want to hide.

1. Press and hold [Start] and [⏻], or [Start] and [Stop] and [⏻] together until any characters appear on the LCD. After initial processing, the screen on the right appears.

<Mode Select>
Setup Test

2. Select "Setup" using [→] and [←] and press [Enter]. Screen M2 appears.

Screen M2

Mode Select 1
! Setup Mode

3. Press [Next]. Screen M3 appears.

Screen M3

Mode Select 2
Thickness setup

4. Press [Next]. Screen M4 appears.
Press [Enter].

Screen M4

Mode Select 3
Setup Item

5. The initial screen for Setup item selection (Screen S51) appears. A Setup item is shown in the first line, and the current setting is blinking in the second line of the screen.

Screen S51

! 01 Separation
Select / Skip

Second line on the screen	Description
Select / Skip	Shows the item during online Setup mode.
Select / Skip	Hides the item during online Setup mode.

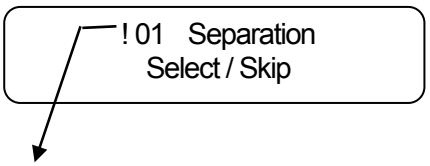
Available buttons at Screen 51 and later are as follows.

Press [←] to choose "Select". ("Select" blinks)
Press [→] to choose "Skip". ("Skip" blinks)

Press [Enter] to confirm the setting currently selected.
The next screen appears.
(Setup items appear in order of the right table.)

Press [Next] to go to next setup item screen.
Press [Prev] to go to previous setup item screen.

Screen S51



Display order	Setup item
01	Separation
02	Pre-pick
03	Pick Speed
04	Double Feed
05	Length check
06	Skew Check
07	IPC pre-set
08	Abrasion Alarm
09	Abrasion CNT
10	Paper Length
11	Language
12	F. Background
13	B. Background
14	F. Drop-out
15	B. Drop-out
16	Pick retry
17	Feed retry
18	Manual Feed
19	SCSI ID
20	Product ID
21	SCSI Bus
22	Interface
23	Baud Rate
24 *1	Imprinter
25 *1	Numbering
26 *1	Ink
27	Power Save
28	Brightness
29 *1	Imprinter

*1: Displayed only when any imprinter is installed.

Chapter 7 Test mode

The scanner has a Test mode that is used for checking scanner performance and also for maintenance. Basically the Test mode is available for service person only, but some test mode items are open to general users.

7.1 Contents of the Test mode

There are two ways to activate the Test mode, one is for general users who is allowed to access limited Test mode items, and one for service person who can access whole items for maintenance. See below and Table 7.1 for details.

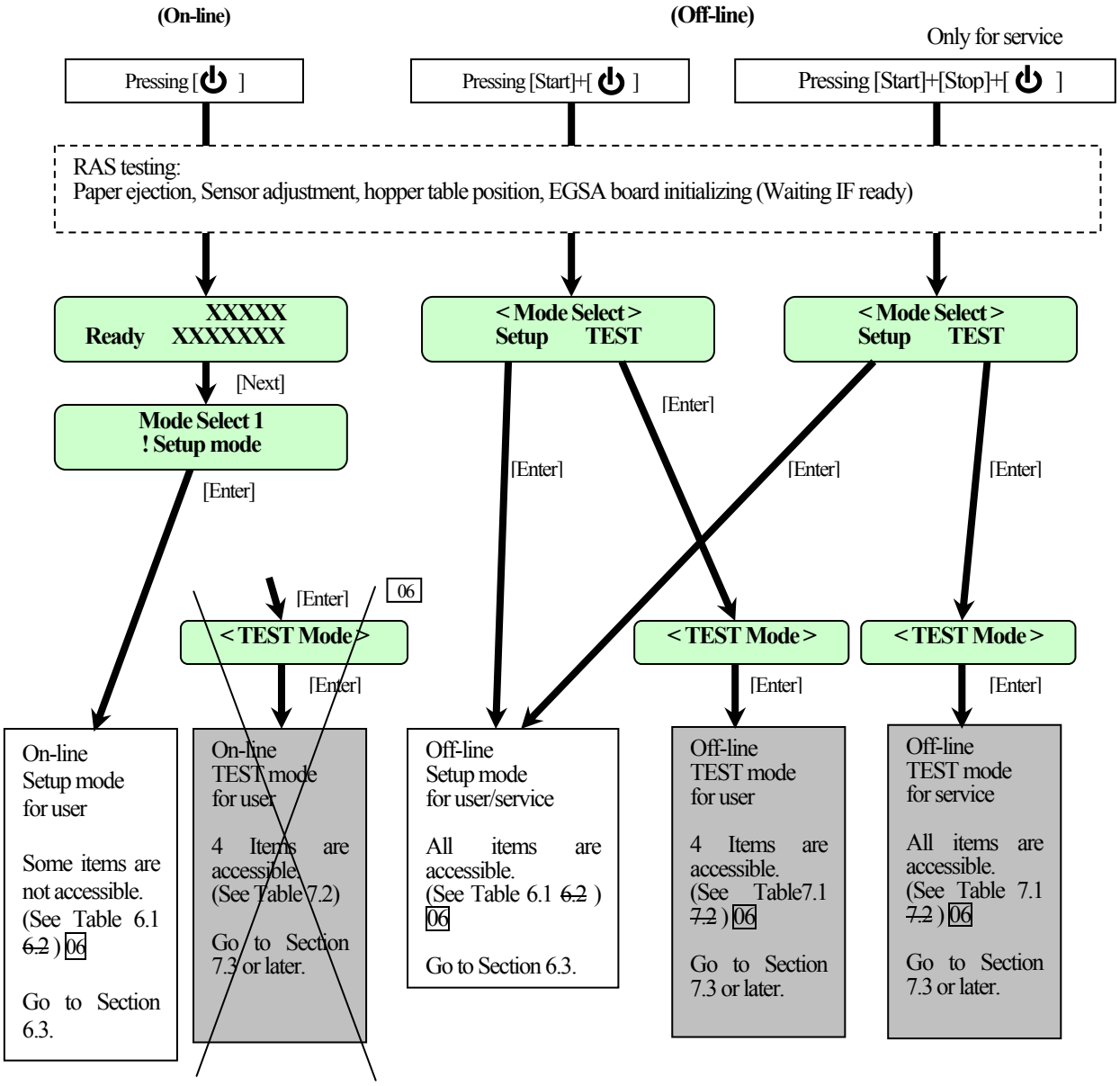


Table 7.1 Test mode item list (Availability A: for general user B: for service person)

Item	Screen Display	Description	Availability	
			A	B
1	Single feed	Tests feeding for a single paper. (See Section 7.3)	√	√
2	Multi feed	Tests continuous feeding with several paper on the hopper. (See Section 7.4)	√	√
3	Device Life	Displays the cumulative lamp on hours. (See Section 7.5)	√	√
4	Options	Displays whether Pre imprinter or Post imprinter is installed. (See Section 7.6)	√	√
5	Offset Adjustment	Sets offset adjustment value for front and backside image. (See Section 7.7)		√
6	Sensor Auto Adjust	Automatically adjust sensors. See Section 7.8)		√
7	Sensor Manual Adjust	Adjust sensors by hand. (See Section 7.9)		√
8	Sensor Monitor	Displays sensor status. (See Section 7.10)		√
9	Density Adjustment	Sets white level adjustment value. (See Section 7.11)		√
10	EEPROM setting	Refers to and changes EEPROM data from the operator panel. (See Section 7.12)		√
11	OP Panel	Tests display, LED and switch of the operator panel. (See Section 7.13)		√
05 12	Ultrasonic	Adjusts the slice level, which is suitable for current ultrasonic sensor (US Sensor).		√
13	Firmware Version	Displays firmware version. (See Section 7.14)		√

7.2 Activating the Test mode

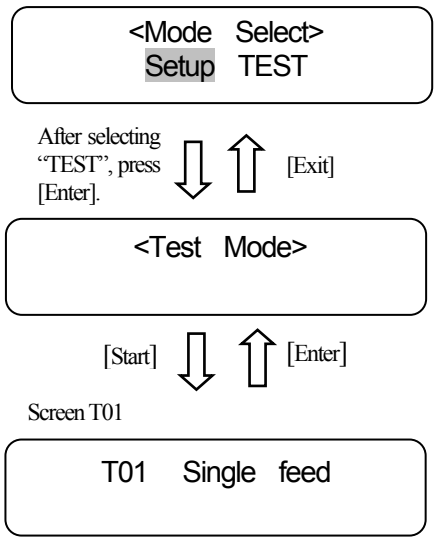
Follow the procedure below to activate the Test mode.

1. For a general user, press [Power] while [Start] is pressed.
   For a service person, press [Power] while [Start] and [Stop] is pressed.
   After initial processing, "Mode Select" screen appears.

2. At "Mode Select" screen, chose "Test" by using [→] or [←] and press [Enter].
   "Test Mode" screen appears.

3. At "Test mode" screen, press [Start] or [Enter]. Screen T01 appears.
   Select a Setup item you desire by pressing [Next] and [Prev].

   To terminate the Test mode, press [Exit].



7.3 Single feed test
7.4 Multi feed test

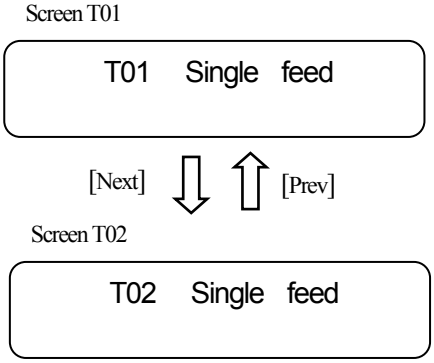
Single feed test is used to check one-time feeding when scanning a single paper at the specified speed.
In contrast, multi feed test checks continuous feeding when scanning sequent paper at the specified speed.
The scanner also check the optical system during these test by running AGC operation for front side when scanning in simplex, and for both front and back side when scanning in duplex.

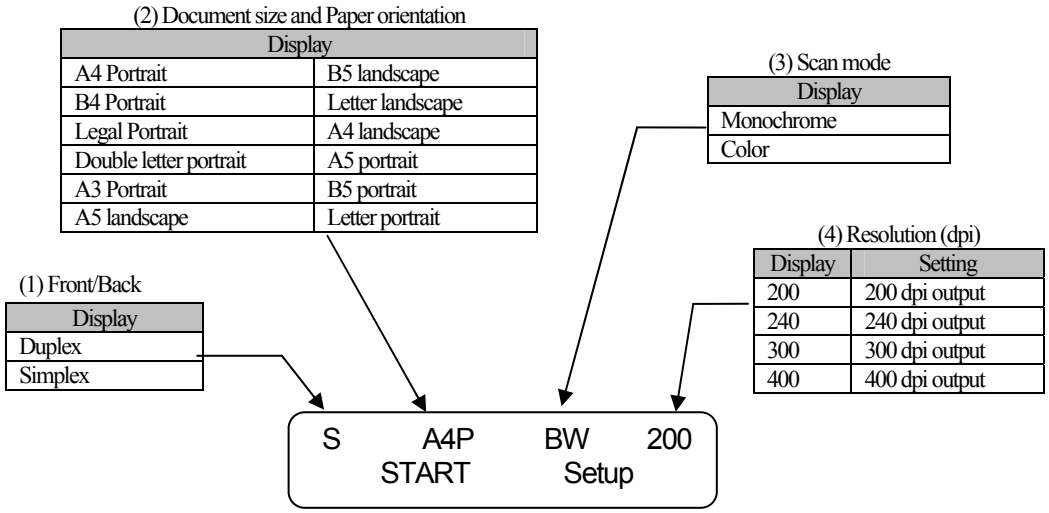
Follow the procedure below to test this mode.

1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T01 for Single feed test or T02 for Multi feed test by pressing [Next] or [Prev]. When Screen T01 or T02 appears, press [Start] or [Enter].

   Feed test setting screen (Screen T01-1) appears. (See next page.)





Screen T01-1

3. At Screen T01-1, select "Setup" by using [→] or [←].
"Setup" starts blinking. Press [Enter] or [Start] to go to Screen T01-2. (Go to Step 4).

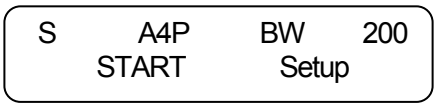
   If you select "Start" by using [→] or [←] and press [Start], the feed test starts provided that imprinter is not installed. (See Note 1)
   If imprinter is installed, Screen T01-3 appears. (Go to Step 6)

   Note 1: "Paper empty" is displayed after Multi feed test but not after Single feed test.

   When [Exit] or [Stop] is pressed, Screen T01 or T02 appears.

   When [Stop] is pressed, the reading operation stops and Screen T01 or T02 appears.

Screen T01-1

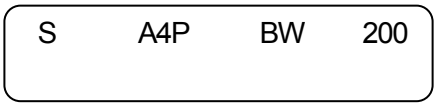


4. At Screen T01-2, select a setting item you want to change by using [←] and [→], and press [Enter] to confirm it.
   According to the item you selected, one of the following screen appears: T01-2a, T01-2b, T01-2c, T01-2d. (Go to Step 5)

   To abort the feed test, press [Stop]. Screen T01 or T02 appears.

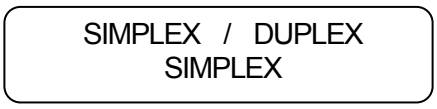
   If you do not want to change the current settings displayed on Screen T01-2, press [Exit] to return to Screen T01-1.

Screen T01-2



5. When item (1) is selected at Screen T01-2, Screen T01-2a appears. Select simplex or duplex scanning by using [←] and [→], and press [Enter] to confirm it. Then Screen T01-2 appears.

Screen T01-2a

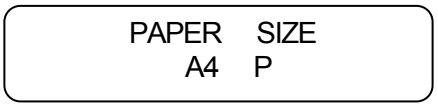


(1) Front/Back

Display
Duplex
Simplex

When item (2) is selected at Screen T01-2, Screen T01-2b appears. Select Document size and Paper orientation by using [←] and [→], and press [Enter] to confirm it. Then Screen T01-2 appears.

Screen T01-2b



(2) Document size and Paper orientation

Display
A4 Portrait
B4 Portrait
Legal Portrait
Double letter portrait
A3 Portrait
A5 landscape
B5 landscape
Letter landscape
A4 landscape
A5 portrait
B5 portrait
Letter portrait

When item (3) is selected at Screen T01-2, Screen T01-2c appears. Select scan mode by using [←] and [→], and press [Enter] to confirm it. Then Screen T01-2 appears.

Screen T01-2c

(3) Scan mode

Display
Monochrome
Color

When item (4) is selected at Screen T01-2, Screen T01-2d appears. Set reading resolution by using [←] and [→], and press [Enter] to confirm it. Then Screen T01-2 appears.

Screen T01-2d

(4) Resolution (dpi)

Display	Setting
200	200 dpi output
240	240 dpi output
300	300 dpi output
400	400 dpi output

6. At Screen T01-3, select whether to run print test as well as the feed test by using [←] and [→].

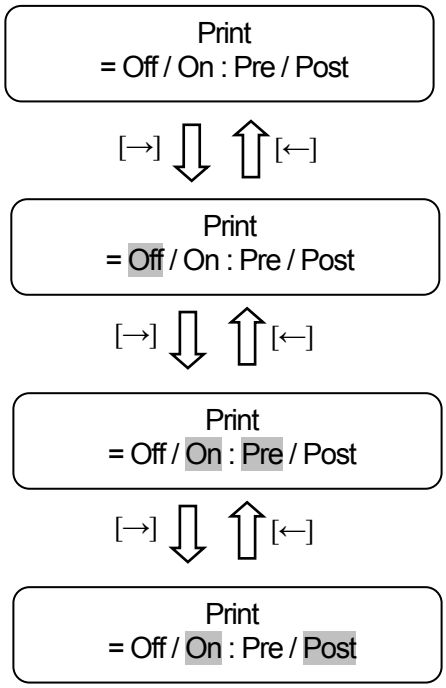
Display	Setting
= Off / On : Pre / Post	Does not run print test.
= Off / On : Pre / Post	Run print test with pre imprinter.
= Off / On : Pre / Post	Run print test with post imprinter.

Note: Only installed imprinters can be selected.

Press [Start] to initiate feed test and print test.

To abort the test, press [Stop]. Screen T01 or T02 appears.

Screen T01-2d



7.5 Device Life

This mode displays the cumulative lamp on time.

Follow the procedure below to activate the Test mode.

1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T03 by pressing [Next] or [Prev]. At Screen T03, press [Start] or [Enter]. Screen T03-1 appears indicating cumulative lamp on time.

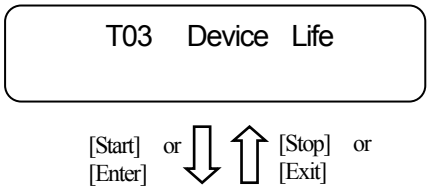
   "F" shows cumulative front lamp on time.
   "B" shows cumulative back lamp on time.

   To return to Screen T03, press [Stop] or [Exit].

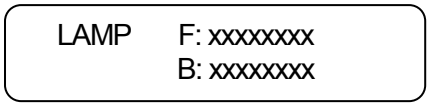
   Note 1:
   Device life displayed on Screen T03-1 cannot be reset, while "Front/Back side counter", one of the abrasion counters, can be reset.
   (Refer to Section 6.3.9)

   Note 2:
   The lamp on time is shown in unit of minute.

Screen T03



Screen T03-1



7.6 Options

This mode displays whether optional imprinters (pre, post) are installed or not.

Follow the procedure below to activate the Test mode.

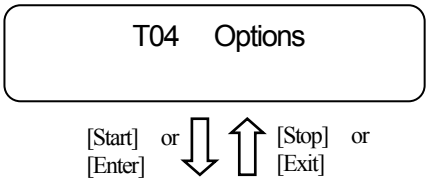
1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T04 by pressing [Next] or [Prev]. At Screen T04, press [Start] or [Enter]. Screen T04-1 appears indicating whether post/pre imprinter is installed or not.

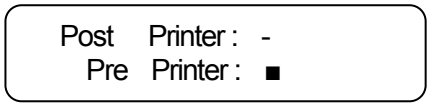
   - : No imprinter option installed.
   ■: Imprinter option installed.

   To return to Screen T04, press [Stop] or [Exit].

Screen T04



Screen T04-1



7.7 Offset Adjustment

This mode calculates offset adjustment value for both front and backside. Before adjustment, prepare a designated offset adjustment sheet shown in Fig. 7.7. (See next page)

Follow the procedure below to activate the Test mode.

1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T05 by pressing [Next] or [Prev]. At Screen T05, press [Start] or [Enter]. Screen T05-1 appears to prompt an operator to set the adjustment sheet on the hopper for front side offset adjustment.

3. Set the adjustment sheet on the hopper with its black edged side facing up. Press [Start] to initiate the offset adjustment for front side. Screen T05-2 appears.

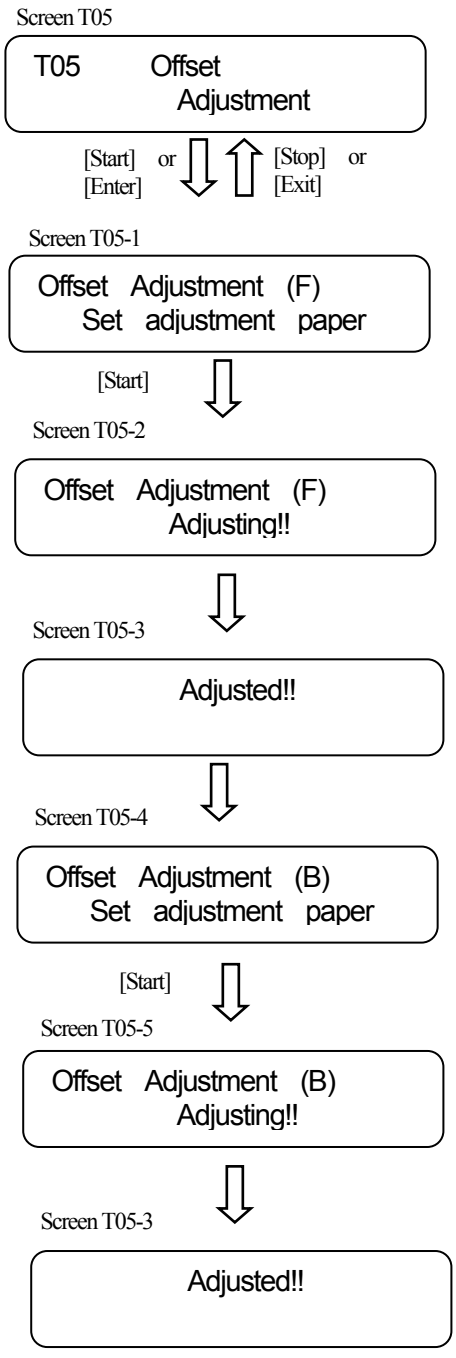
4. When the offset adjustment completes, Screen T05-3 appears for 2 seconds. Then Screen T05-4 appears to prompt an operator to set the adjustment sheet on the hopper for backside offset adjustment.

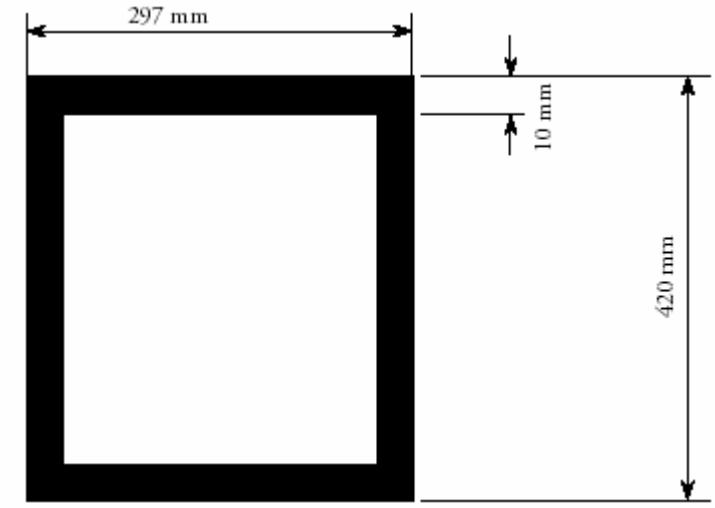
5. Set the adjustment sheet on the hopper with its black edged side facing down. Press [Start] to initiate the offset adjustment for backside. Screen T05-5 appears.

6. When the offset adjustment completes, the scanner displays Screen T05-3 for 2 seconds, and then returns to Screen T05.

   When [Stop] or [Exit] is pressed, Screen T05 appears.

   If error message appears, press [Stop] and return to Screen T51 (when front side adjustment) or T54 (when back side adjustment). The countermeasures against the errors are described in Note. (See 2 pages ahead)





You can use an adjustment sheet with black edge on one side, or on both sides.

Fig. 7.7 Offset adjustment sheet

Note : The followings are the errors that possibly occur at offset adjustment and the countermeasures against them.

a) Offset adjustment main scanning error

The right screen appears when either X1 or X2, which is smaller, is out of the range of – 128 ~ +127 dot (@4001dpi). This error is adjusted so that this value becomes X=12 dot.

Mainscan error : x

X shows F or B:
F: Front image error
B: Backside image error

When this error happens, check the followings and adjust offset again.
- Is the adjustment sheet aligned by the Side guide on the hopper?
- Are you using the adjustment sheet that satisfies the specification described in Fig.7.7?
- Are the CCD unit and ADF installed properly?
- Is the Background unit clean?

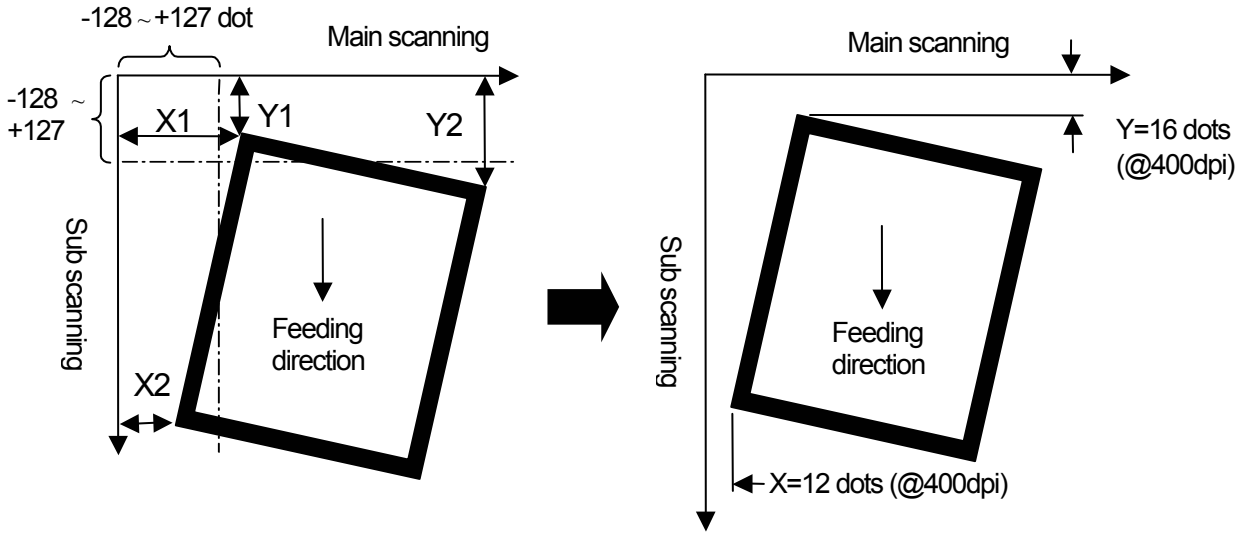
b) Offset adjustment sub scanning error

The right screen appears when either Y1 or Y2, which is smaller, is out of the range of – 128 ~ +127 dot (@4001dpi). This error is adjusted so that this value becomes Y=16 dot.

Subscan error : x

X shows F or B:
F: Front image error
B: Backside image error

When this error happens, check the followings and adjust offset again.
- Is the adjustment sheet aligned by the Side guide on the hopper?
- Are you using the adjustment sheet that satisfies the specification described in Fig.7.7?
- Are the CCD unit and ADF installed properly?
- Is the Background unit clean?



After adjustment

c) Offset adjustment detection error

The right screen appears when the edge of the adjustment sheet cannot be detected at offset adjustment.

Detect error : x

X shows F or B:
F: Front image error
B: Backside image error

When this error happens, check the followings and adjust offset again.
- Is the adjustment sheet aligned by the Side guide on the hopper?
- Are you using the adjustment sheet that satisfies the specification described in Fig.7.7?
- Are the CCD unit and ADF installed properly?
- Is the Background unit clean?

7.8 Sensor Auto Adjustment

This mode automatically adjusts sensors. Refer to Section 2.8 " Sensor dirty " error for theory of sensor operation.
When automatic sensor adjustment starts, the scanner sets sensor output slice level to D5 and gradually increases the current of photodiode until it reaches the value at which the sensor output switches from 1 to 0 (this means from "With paper" to "Without paper").
Before adjustment, make sure that there is no paper in the transport path.

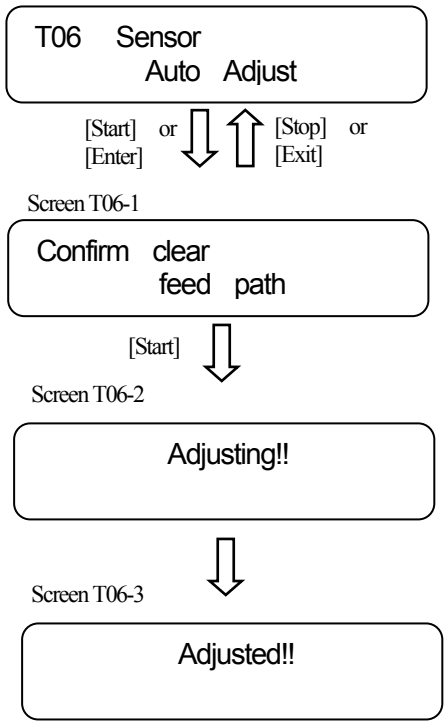
1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T06 by pressing [Next] or [Prev].
   At Screen T06, press [Start] or [Enter] to go to Screen T06-1.

3. At Screen T06-1, press [Start]. The sensor automatic adjustment starts and Screen T06-2 appears.

   When the adjustment completes, Screen T06-3 appears for 2 seconds and then Screen T6 appears.

   To return to Screen T06, press [Stop] or [Exit].



7.9 Sensor Manual Test

This mode enables operators to test slice level of photo diode output and LED current manually. In case that the following sensors detect "xxx sensor error" or "xxx sensor dirty error", conduct the Sensor manual test. Refer to Table 2.8 (16) in Section 2.8 for theory of sensor operation.

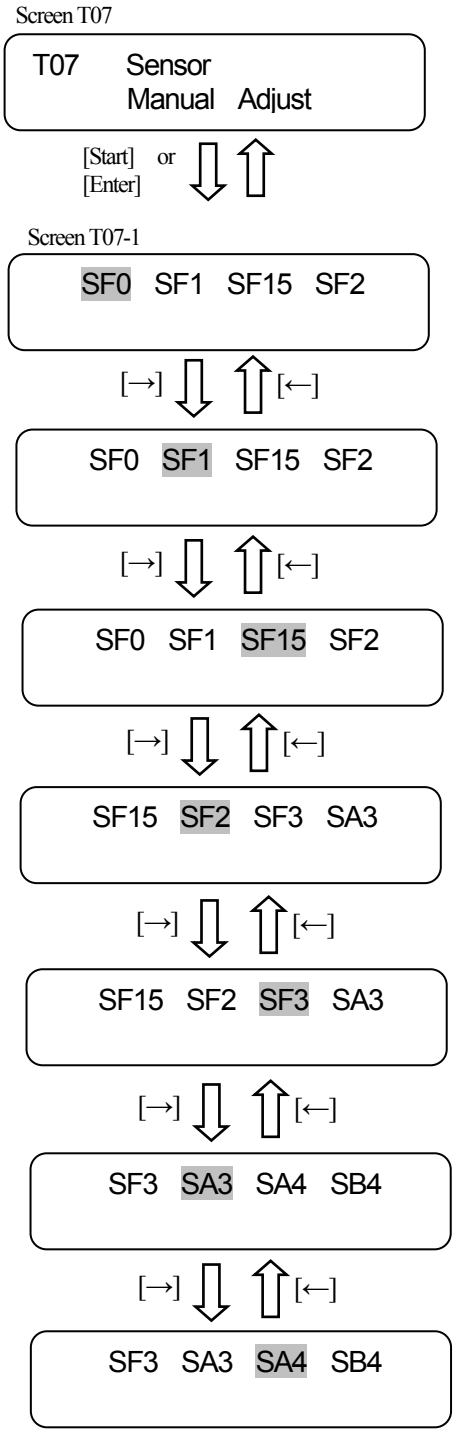
1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T07 by pressing [Next] or [Prev].
   At Screen T07, press [Start] or [Enter] to go to Screen T07-1.

3. At Screen T07-1, select a sensor to be tested by using [←] and [→], and press [Enter] to confirm it. Selectable sensors at Screen T07-1 are as follows:

Display	Setting
SF0 SF1 SF15 SF2	Tests sensor SF0.
SF0 SF1 SF15 SF2	Tests sensor SF01.
SF0 SF1 SF15 SF2	Tests sensor SF15.
SF15 SF2 SF3 SA3	Tests sensor SF2.
SF15 SF2 SF3 SA3	Tests sensor SF3.
SF3 SA3 SA4 SB4	Tests sensor SA3.
SF3 SA3 SA4 SB4	Tests sensor SA4.
SA4 SB4 SB5 SKR	Tests sensor SB4.
SA4 SB4 SB5 SKR	Tests sensor SB5.
SB4 SB5 SKR SKL	Tests sensor SKR.
SB4 SB5 SKR SKL	Tests sensor SKL

To return to Screen T07, press [Exit] or [Stop].



(Continue to next page)

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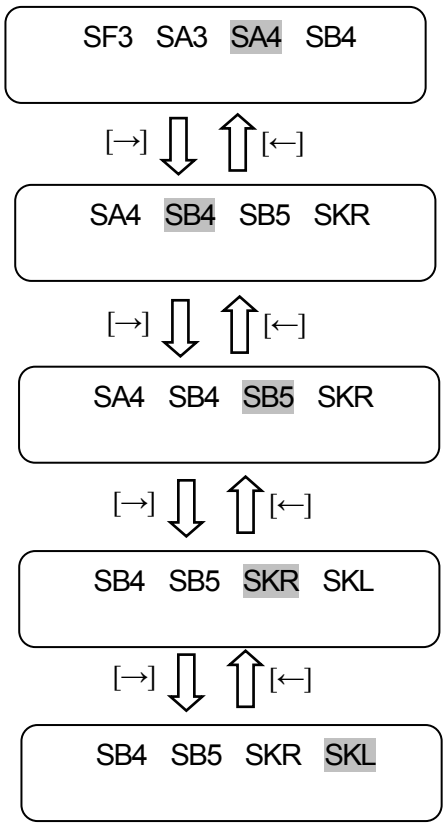
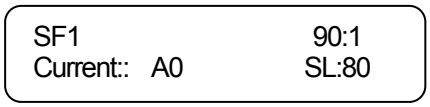
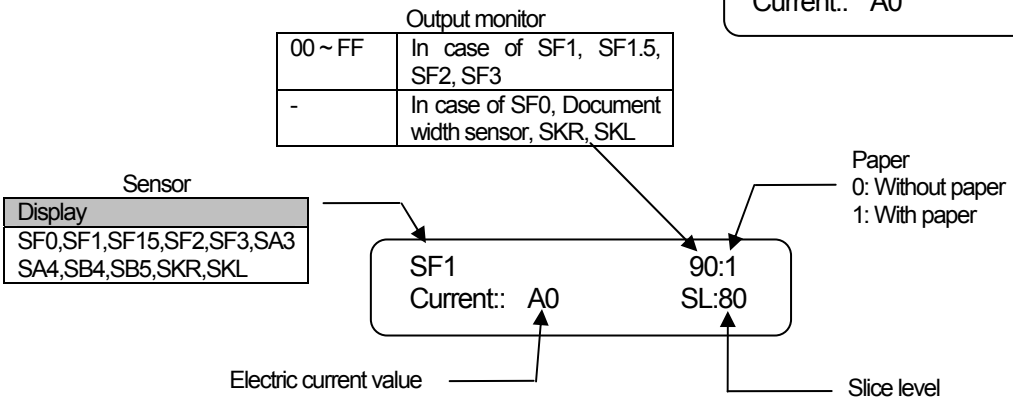


4. After selecting a sensor at Screen T07-1, Screen T07-2 appears. (The current electric current value and slice level are shown.

Screen T07-2





5. Select the electric current value by using [←] and [→]. The electric current value blinks while selected. Press [Next] to increase the value. If the output monitor value is below 20 after cleaning the sensor and setting the electric current value to FF, it means the sensor is defective. Replace the sensor.

When [Exit] is pressed, Screen T07-1 appears.
When [Stop] is pressed, Screen T07 appears.

7.10 Sensor Monitor

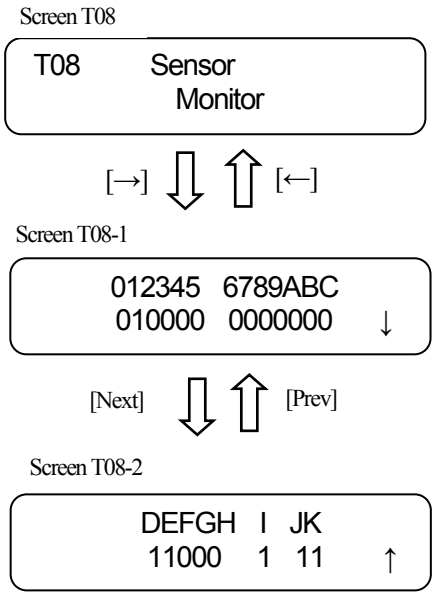
This mode shows the current sensor status in real time.

1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T08 by pressing [Next] or [Prev].
   At Screen T08, press [Start] or [Enter] to go to Screen T08-1.
   Screen T08-1 shows some sensor status. Press [Next] to go to Screen T08-2 for remaining sensor status.
   To return to Screen T08-1 from Screen T08-2, press [Prev].

   When [Exit] or [Stop] is pressed, Screen T08 appears.

   The number and alphabet on the first line of the screen corresponds to sensors listed below, and the number on the second line indicates the current status of the sensor.



Second line on the screen	Setting
1	Sensor is currently ON.
0	Sensor is currently OFF.

First line on the screen	Sensor	Category
0	Sensor SF0	Document feeding system (Sensor for Sub scanning direction)
1	Sensor STR	
2	Sensor SF1	
3	Sensor SF1.5	
4	Sensor SF2	
5	Sensor SF3	
6	Sensor A3	Document width detection system (Sensor for Main scanning direction)
7	Sensor A4	
8	Sensor SKL	
9	Sensor SF1 (equal to 2)	
A	Sensor SKR	
B	Sensor B5	
C	Sensor B4	
D	Sensor SHE (Empty)	Hopper system sensor
E	Sensor SHB (Hopper bottom)	
F	Sensor SPK (Pick/Hopper top)	
G	Sensor SMTP (TOP at manual feed)	
H	Sensor SMF (used to confirm manual feed mode)	
I	Sensor FBP (used to confirm background for front side)	Sensor for confirmation of Background
J	Sensor BBP (used to confirm background for back side)	
K	Sensor SPJ (used to detect FRI rotation)	Document feed amount (Sensor for Sub scanning direction)

7.11 Density Adjustment

This mode automatically adjusts white level correction value for front and backside respectively in order to remove the difference in density between front side image and backside image.
This adjustment is required when replacing CCD unit.

1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T09 by pressing [Next] or [Prev]. At Screen T09, press [Start] or [Enter]. Screen T09-1 appears to prompt an operator to set the white paper attached to CCD unit on the hopper.

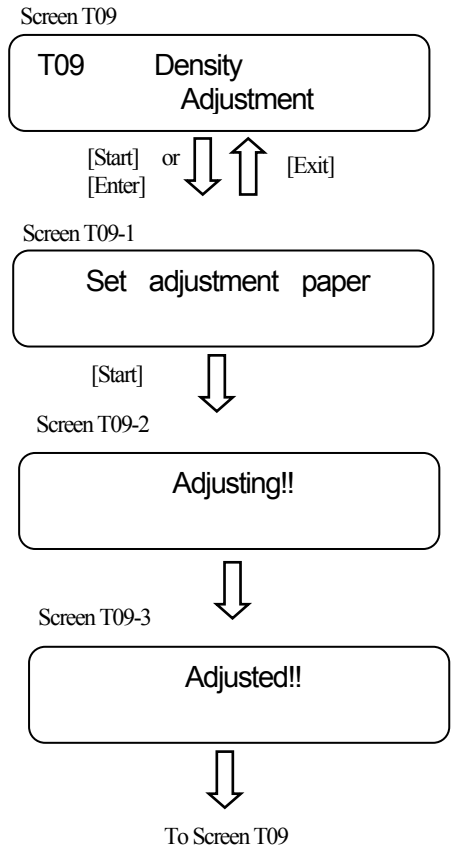
04

07

3. Set the paper (Note 1) on the hopper in landscape orientation and press [Start]. Screen T09-2 appears indicating feed operation starts for density adjustment.

   If error message appears, press [Stop] and return to Screen T09-1.

4. When the density adjustment completes, the scanner displays Screen T09-3 for 2 seconds, and then returns to Screen T09.



04 Note 1: The paper is attached to the CCD unit. PIN is shown in Section 5.3.

7.12 EEPROM Setting

This mode enables an operator to browse and change EEPROM data from the operator panel.
Refer to Appendix C for EEPROM data.

1. Activate Setup mode by referring to Section 7.2.

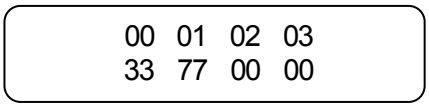
2. Go to Screen T10 by pressing [Next] or [Prev]. At Screen T10, press [Start] or [Enter]. Screen T10-1 appears with EEPROM data of 4 addresses.

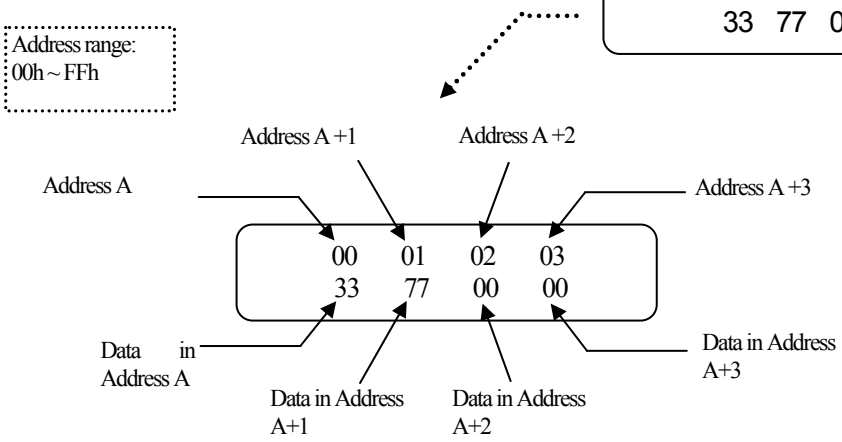
   The number on the first line of the screen indicates EEPROM address.
   The number on the second line of the screen indicates EEPROM data corresponding to the address.

Screen T10

[Start] [Enter] or [Stop] [Exit] or

Screen T10-1





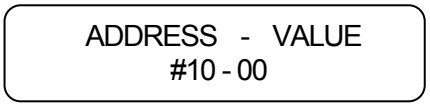
Press [→] to move selection to the right. (Currently selected item blinks.)
When [→] is pressed while rightmost data on the screen is blinking (in the above screen, it means "Data in Address A+3"), the next address in EEPROM map appears with its corresponding data.

Press [←] to move selection to the left. (Currently selected item blinks.)
When [←] is pressed while leftmost data on the screen is blinking (in the above screen, it means "Data in Address A"), the previous address in EEPROM map appears with its corresponding data.

Press [Next] to advance 4 addresses ahead.
Press [Prev] to return to 4 addresses before.

Press [Enter] to go to Screen T10-2.
To return to Screen T10, press [Exit] or [Stop].

Screen T10-2



3. At Screen T10-2, the data in the address selected at Screen T10-1 appears. Specify the EEPROM value by using [→] (data increase) and [←] (data decrease), and press [Enter] to confirm it.

   Press [Exit] to return to Screen T10-1 without saving the change you made here.
   Press [Stop] to return to Screen T10 without saving the change you made here.

7.13 Operator panel test

This mode tests the operator panel (LCD, LEDs, switch).

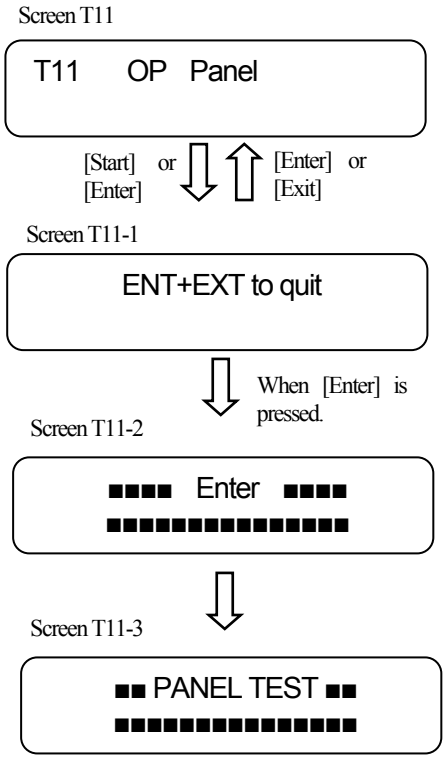
1. Activate Setup mode by referring to Section 7.2.

2. Go to Screen T11 by pressing [Next] or [Prev]. At Screen T11, press [Start] or [Enter].
   Screen T11-1 appears. Three LEDs blinks in turns in interval of 1.5 seconds (light on for 0.5 seconds, light off for 1 seconds).

3. At Screen T11-1, the button being pressed is displayed on the LCD. Screen T11-2 shows an example of LCD in the case when [Enter] is pressed. In the meantime, the LED stops blinking.

4. When the button is released, the LCD shows Screen T11-3 indicating that the operator panel test is now underway and the LED start blinking again.
   At Screen T11-3, press any button to return to Screen T11-2. The button being pressed is shown on the screen and the LED stops blinking.
   Release the button to return to Screen T11-3. The LED starts blinking again.

   When [Enter] and [Exit] are pressed at the same time, the scanner stops the operator panel test and returns to Screen T11.



05 7.14 Ultrasonic sensor adjustment (Only new type of scanner)

At the following case, run this adjustment to adjust the slice level of sensor-specific output.
a. When US Sensor is replaced.
b. When Control PCA is replaced, but original EEPROM is not used.
Prepare an Adjustment sheet described in Section 5.3 as it is necessary for this adjustment.

1. Activate Setup mode by referring to Section 7.2.

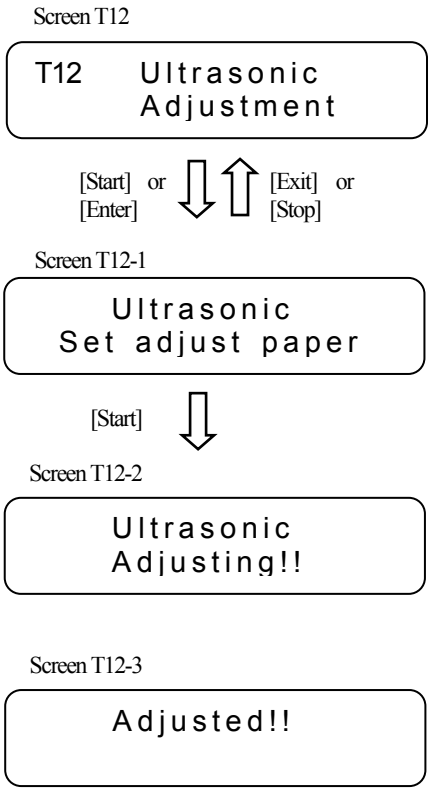
2. Go to Screen T12 by pressing [Next] or [Prev]. At Screen T12, press [Start] or [Enter]. Then Screen T12-1 appears requesting Adjustment sheet setting on the Hopper.

   To return to Screen 12 press [Exit] or [Stop].

3. After setting Adjustment sheet on the Hopper, press [Start] to start adjustment. Screen T12-2 appears during setting.
   After the adjustment Screen T12-3 appears for 2 seconds, and then return to Screen T12.

   If "SUS Sensor error" appers during adjustment, refer to Section 4.41

   Press [Exit] or [Stop] to return to Screen T12, and press [Prev] to return to Screen T12-1.



05 7.15 Program Version display

This mode displays firmware version. The scanner has three kinds of firmware plus one firmware for EGSA If board, and when optional imprinters (pre and post) are installed, plus additional two firmware.

4. Activate Setup mode by referring to Section 7.2.

5. Go to Screen T13 by pressing [Next] or [Prev]. At Screen T13, press [Start] or [Enter]. Screen T13-1 appears with firmware version of the scanner controller. (Note 1)

Second line on the screen	Description
SDC	Interface, Image processing control system
MDC	Mechanical control system
SUC	Sensor control system

Press [Next] to go to Screen T13-2.
To return to Screen 13 press [Exit] or [Stop].

6. At Screen T13-2, firmware version of EGSA board (for fi-4860C) or CGA board (for fi-4860C2) is displayed.

07

Second line on the screen	Description
EGSA	Interface, Image processing control system for fi-4860C
CGA	Interface, Image processing control system for fi-4860C2 Revision No. is displayed as "CGA x xx xxx".

When imprinter option is installed, press [Next] to go to Screen T13-3. (The down arrow on the screen is displayed only when imprinter is installed.)

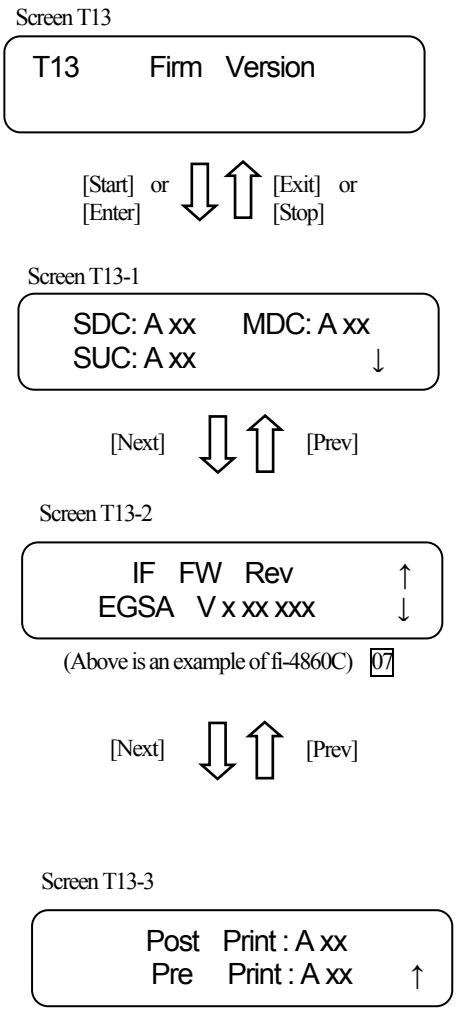
Press [Exit] or [Stop] to return to Screen T13, and press [Prev] to return to Screen T13-1.

7. At Screen T13-3, the firmware version of imprinter is displayed. (Screen T13-3 is displayed only when imprinter is installed.) (Note 1)

Second line on the screen	Description
Pre	Print controller for pre imprinter
Post	Print controller for post imprinter

Press [Exit] or [Stop] to return to Screen T13, and press [Prev] to return to Screen T13-2.

Note 1) The firmware version is indicated as "A00" at first release, and then updated to "B00", "C00". The alphabet at the top shows the firmware revision.



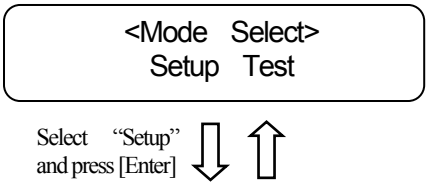
Chapter 8 Double feed detection thickness setup

When double feed detection by paper thickness is specified in Section 6.3.4 (when "Yes" is selected at Screen S04 in Setup mode), determine standard document thickness to detect double feed error. This setting is generally used by users.

8.1 Setting paper thickness

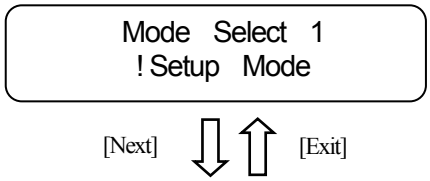
Follow the procedure below to specify standard paper thickness.

1. Press and hold [Start] and [⏻], or [Start] and [Stop] and [⏻] together until any characters appear on the LCD. After initial processing, the right screen is displayed.



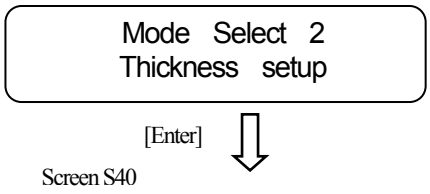
2. Select "Setup" by using [→] or [←] and press [Enter] to confirm it. Screen M2 appears.

Screen M2



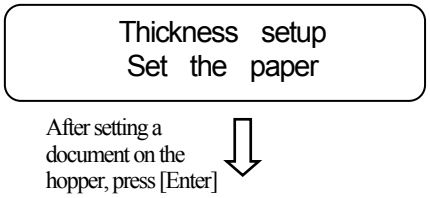
3. Press [Next] to go to Screen M3.

Screen M3



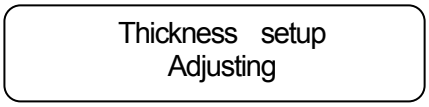
4. Press [Enter]. Screen S40 appears. Set a document on the hopper that is to be specified as standard paper thickness at double feed detection. Press [Start].

Screen S40

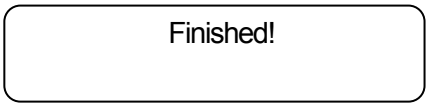


5. The scanner starts calculating slice level and shows Screen S40-1.
Then, Screen S40-2 appears for approx. 2 seconds and after that changes to Screen M3.

Screen S40-1



Screen S40-2



6. When [Exit] is pressed at Screen M3, the initial screen appears.

Chapter 9 Maintenance Parts

9.1 Inverter 07

	Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
			fi-4860C		fi-4860C2		
			Old	New			
	Inverter	~~CA03950-0450~~	Yes	Yes	No		Fig. 9.1
07		PA03950-0235	Yes	Yes	Yes		

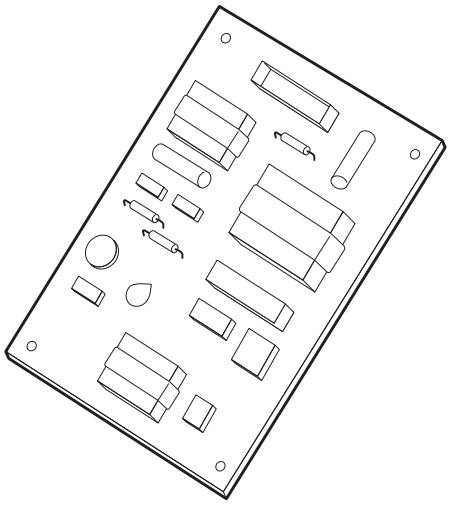


Fig. 9.1

9.2 High speed EGSA board / CGA Board 07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
High speed EGSA board	CA04315-0531	Yes	Yes	No	Not including two 128 MB size memory boards	Fig. 9.2a
CGA Board	~~PA03296-D533~~ PA03296-K921 09	No	No	Yes	Not including two 256 MB size memory boards	Fig. 9.2b

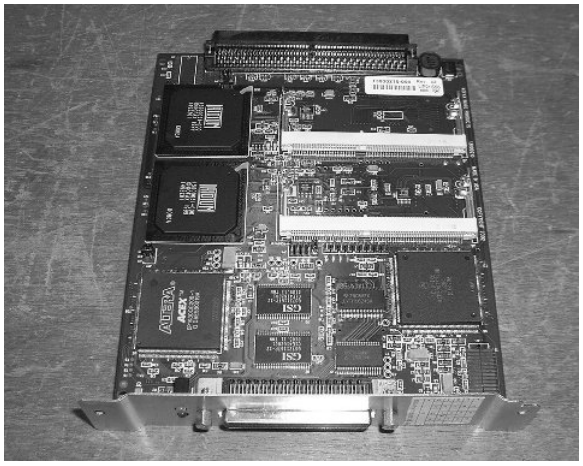


Fig. 9.2a

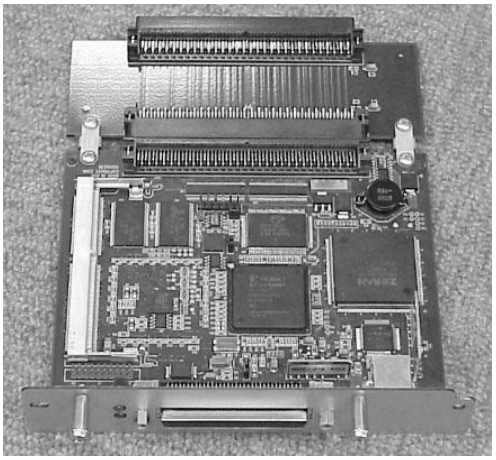


Fig. 9.2b 07

9.3 Power supply unit

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Power supply unit	~~CA04315-0777~~	Yes	Yes	No		Fig. 9.3
07	PA03010-1061	Yes	Yes	Yes		

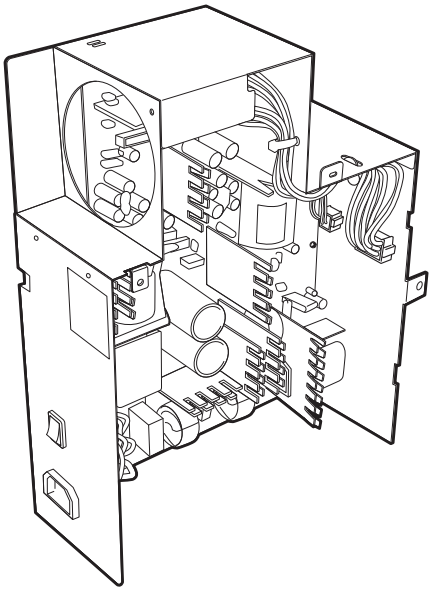


Fig. 9.3

9.4 Fan ASY

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Fan ASY	~~CA04315-0810~~	Yes	Yes	No		Fig. 9.4
07	PA03950-0241	Yes	Yes	Yes		

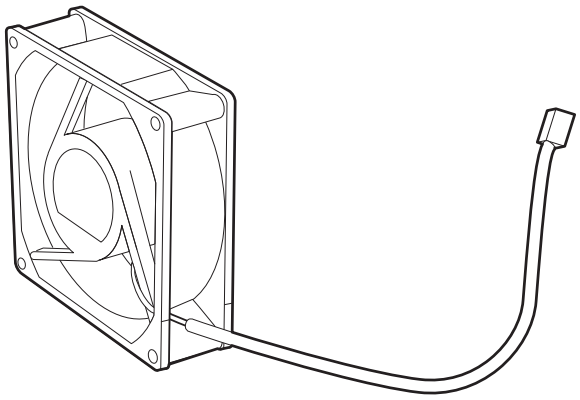


Fig. 9.4

9.5 Sensor ~~SF3~~

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor ~~SF3~~ 07	~~CA04315-0890~~	Yes	Yes	No		Fig. 9.5
	PA03950-0228	Yes	Yes	Yes		

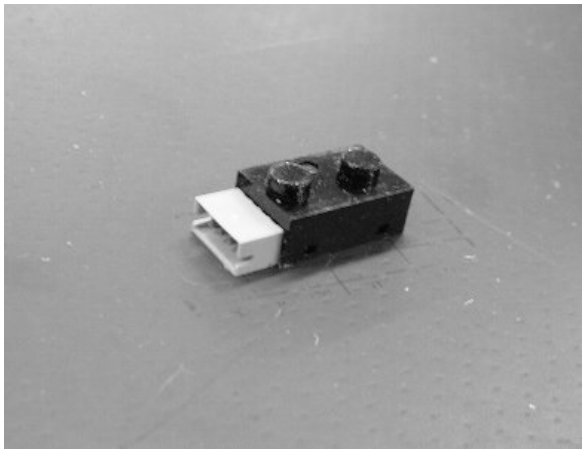


Fig. 9.5

9.6 Sensor ~~SPJ~~

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor ~~SPJ~~ 07	~~PA46009-0012 06~~	Yes	Yes	No		Fig. 9.6a
	PA03296-D929	Yes	Yes	Yes		Fig. 9.6b

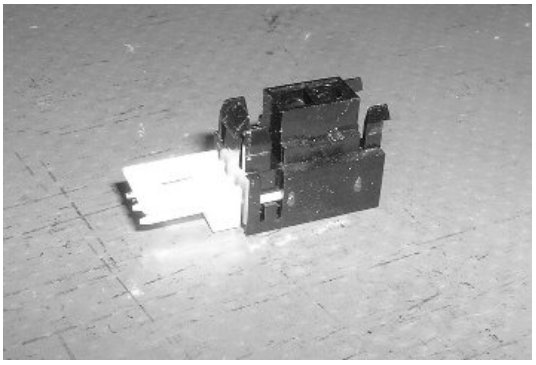


Fig. 9.6a

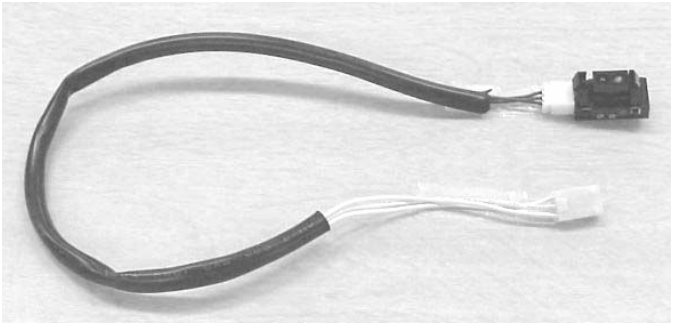


Fig. 9.6b

9.7 Fuse

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Fuse	CA53004-0223 CA53004-0225 CA53004-0227 CA53004-0231	Yes	Yes	Yes	0.5A 1A 1.6A 3.15A	Fig. 9.7

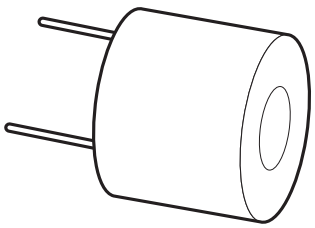


Fig. 9.7

9.8 Sensor

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor 07	~~CA98010-1884~~	Yes	Yes	No	Includes SHE, SHB, SMTP, SPK, SMF, STR, FBP, BBP	Fig. 9.4
	PA03950-0227	Yes	Yes	Yes		

Fig. 9.8

9.9 Microswitch

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Microswitch	CA98010-2258	Yes	Yes	Yes		Fig. 9.9

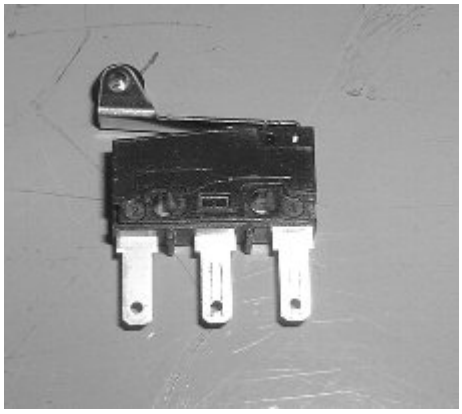


Fig. 9.9

9.10 Feed motor

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Feed motor 07	~~PA03296-D050~~	Yes	Yes	No		Fig. 9.10
	PA03296-D940	Yes	Yes	Yes		

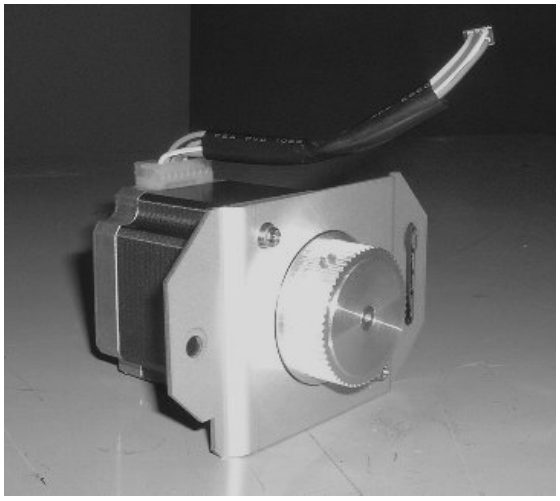


Fig. 9.10

9.11 Background unit, front

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
05 Background unit , front	~~PA03296-D280~~ **	Yes	No	No	* Includes Background motor, Sensor FBP, Sensor SF1.5, Sensor SF2 ** This part is terminated.	Fig. 9.11A
	~~PA03296-D290~~ PA03296-D936 07	Yes	Yes	Yes		Fig. 9.11B

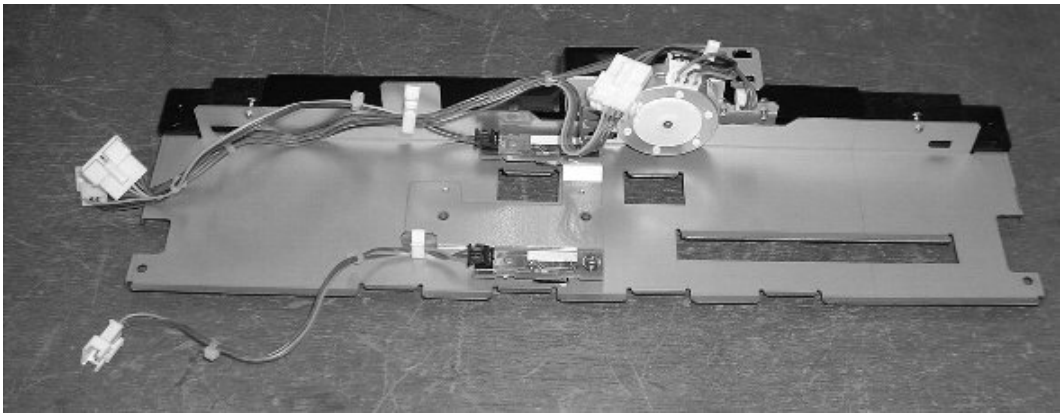


Fig. 9.11A

05

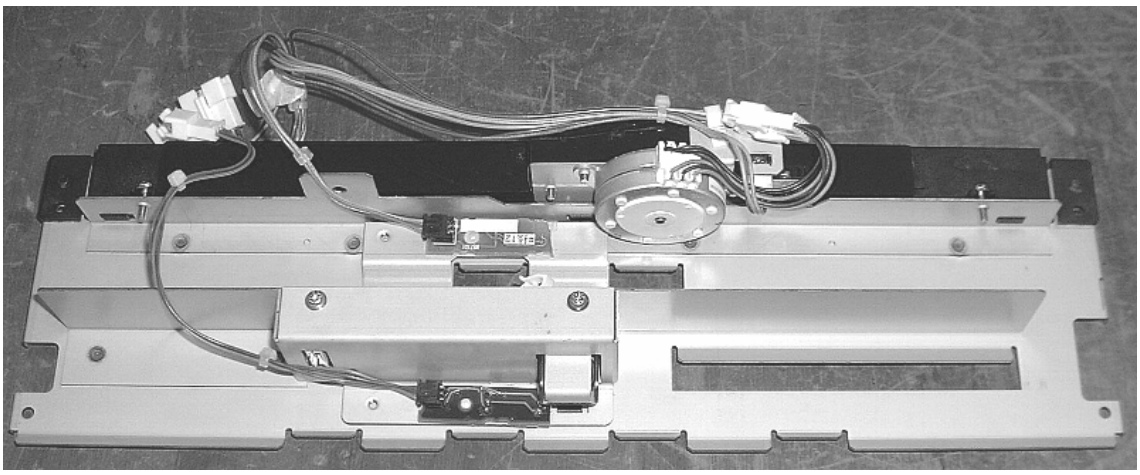


Fig. 9.11B

9.12 Background motor

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Background motor	~~PA03296-D282~~	Yes	Yes	No		Fig. 9.12
07 PA03296-D939		Yes	Yes	Yes		

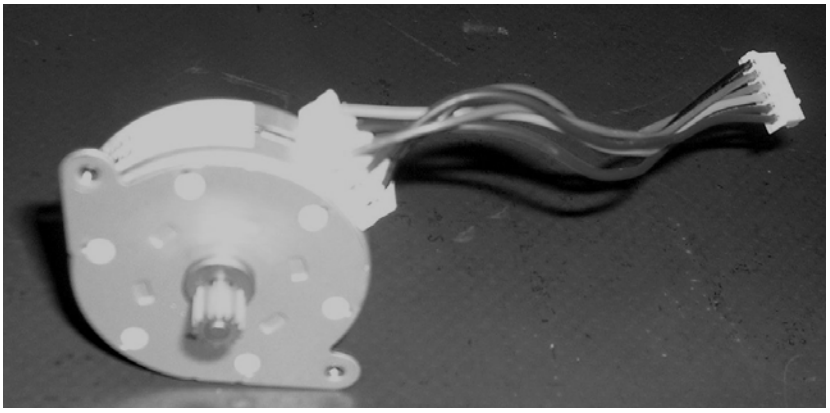


Fig. 9.12

9.13 Background unit, back

07

05 Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Background unit (back)	~~PA03296-D390~~ **	Yes	No	No	* Includes Background motor, Sensor BBP ** This part is terminated.	Fig. 9.13
07	~~PA03296-D395~~ PA03296-D938 06	Yes	Yes	Yes		

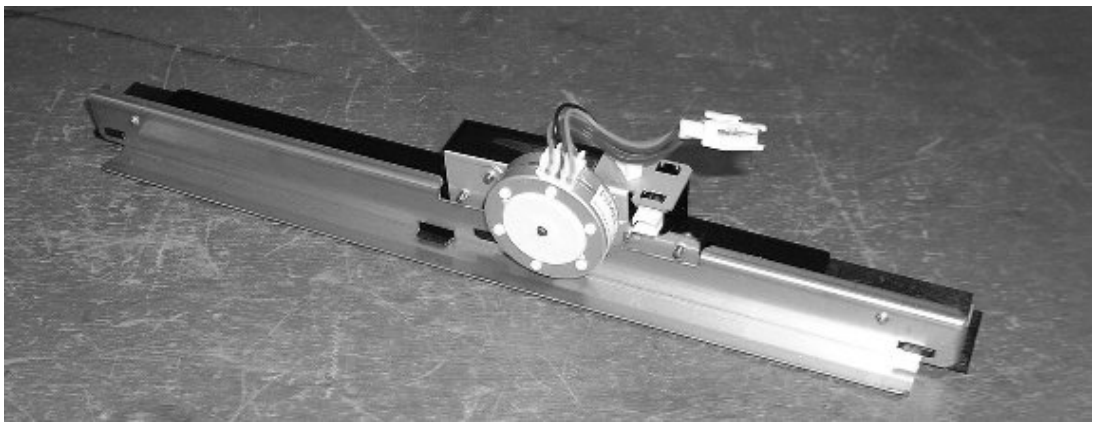


Fig. 9.13

9.14 CCD unit

04

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
CCD unit	~~PA03296-D401~~ ~~PA03296-D400~~ 06	Yes	Yes	No	~~A~~ Test Sheet (W) is attached. 06	Fig. 9.14
07 PA03296-D935 07		Yes	Yes	Yes		

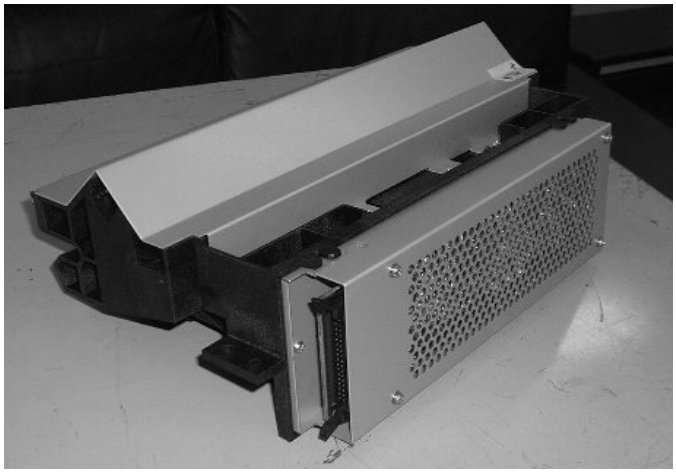


Fig. 9.14

9.15 Hopper unit

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Hopper unit	~~PA03296-D600~~	Yes	Yes	No		Fig. 9.15
07 PA03296-D942		Yes	Yes	Yes		

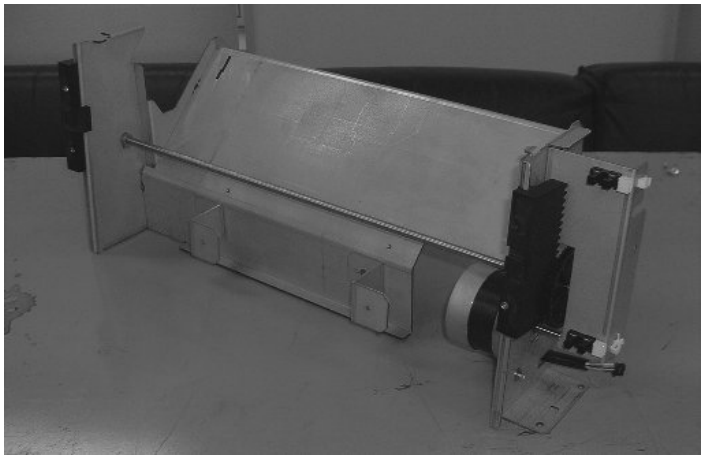


Fig. 9.15

9.16 Document feed section

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Document feed section	~~PA03296-D700~~ **	Yes	No	No	* Including Hopper unit, ADF unit, Belt separation. ** This part is terminated.	Fig. 9.16
	~~PA03296-D785~~ PA03296-D941 07	Yes	Yes	No		
	PA03296-D755 07	No	No	Yes		

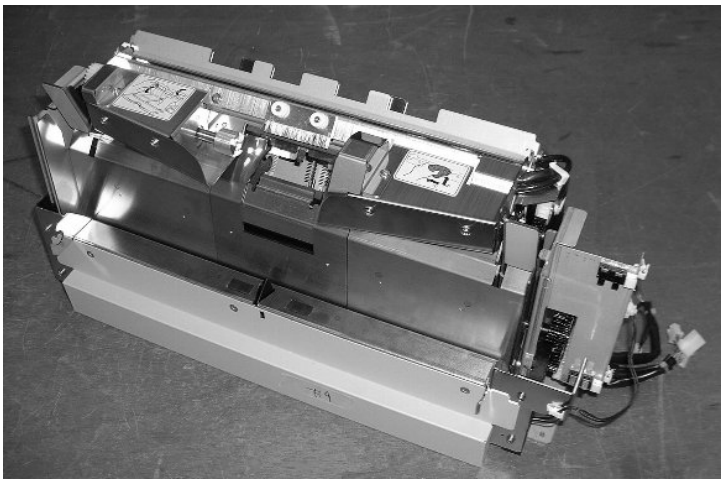


Fig. 9.16

9.17 ADF unit

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
ADF unit	~~PA03296-D710~~ **	Yes	No	No	* Including the following parts: Sensor SEL, Sensor SER, Sensor SF1 PD, Sensor SF1 LED, Sensor SPK, Sensor SMF, Belt pick, Pick motor, Roller brush ** This part is terminated.	Fig. 9.17
05	~~PA03296-D787~~	Yes	Yes	No		
07	PA03296-D944	Yes	Yes	Yes		

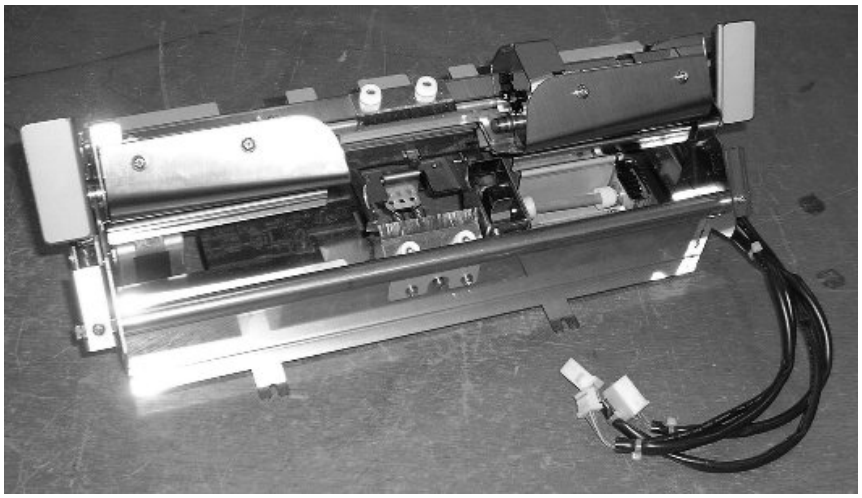


Fig. 9.17

9.18 Separation motor

07

	Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
			fi-4860C		fi-4860C2		
			Old	New			
	Separation motor	~~PA03296-D712~~	Yes	Yes	No		Fig. 9.18
07		PA03296-D943	Yes	Yes	Yes		

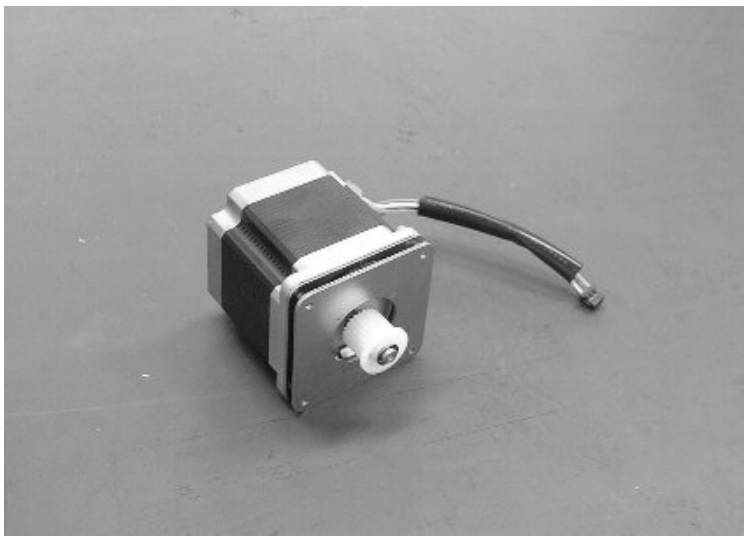


Fig. 9.18

9.19 Pick motor

07

	Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
			fi-4860C		fi-4860C2		
			Old	New			
	Pick motor	~~PA03296-D715~~	Yes	Yes	No		Fig. 9.19
07		PA03296-D948	Yes	Yes	Yes		

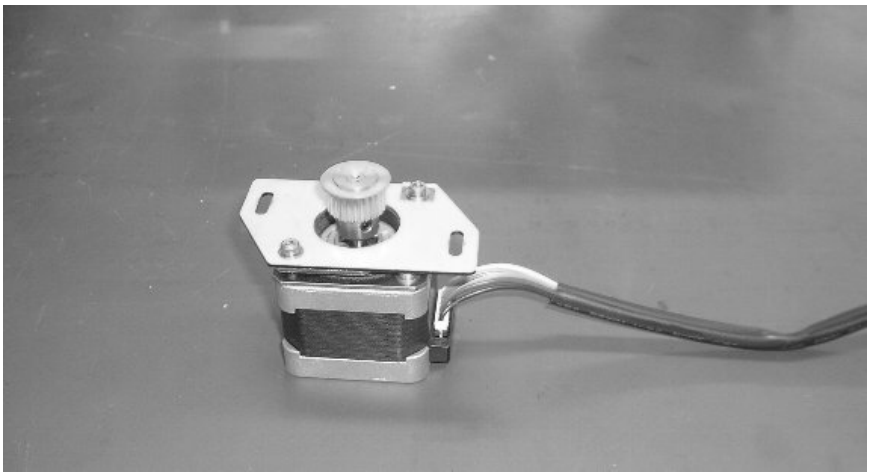


Fig. 9.19

9.20 Brake torque unit

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Brake torque unit	~~PA03296-D772~~	Yes	Yes	No		Fig. 9.20
07 PA03296-D945		Yes	Yes	Yes		

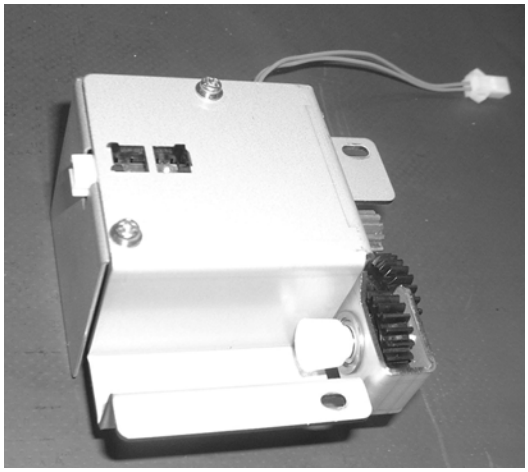


Fig. 9.20

9.21 Control PCA

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
05 Control PCA	~~PA03296-D820~~ **	Yes	No	No	* Including fuse ** This part is terminated.	Fig. 9.21
	~~PA03296-D830~~ 07 PA03296-D930	Yes	Yes	No		
07	07 PA03296-K910	No	No	Yes		

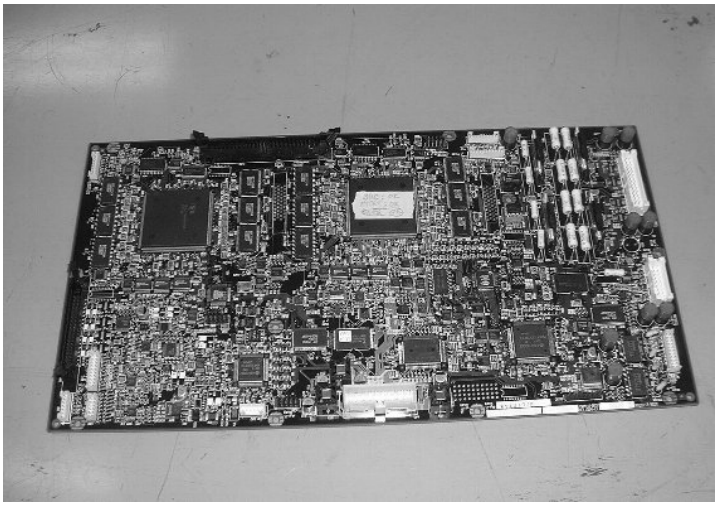


Fig. 9.21

9.22 Back panel PCA

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Back panel PCA	~~PA03296-D840~~	Yes	Yes	No		Fig. 9.22
07 PA03296-D931		Yes	Yes	Yes		

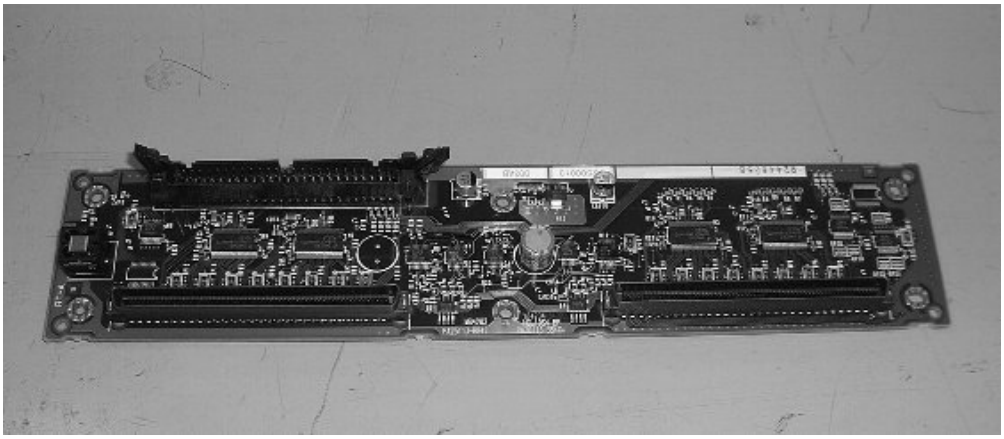


Fig. 9.22

9.23 Sensor SER

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor SER	~~PA03296-D850~~	Yes	Yes	No	Includes SF0, SKR, SB5, SB4	Fig. 9.23
07	PA03296-D946	Yes	Yes	Yes		

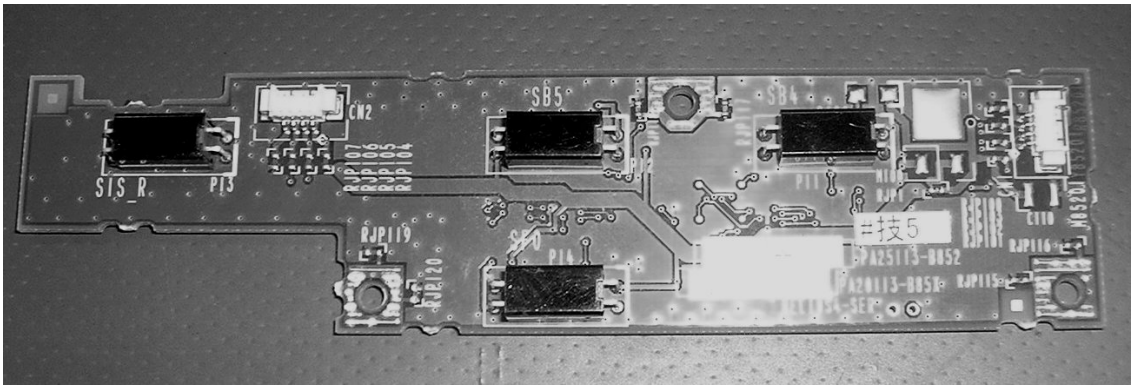


Fig. 9.23

9.24 Sensor SEL

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor SEL	~~PA03296-D860~~	Yes	Yes	No	Includes SKL, SA4, SA3	Fig. 9.24
07	PA03296-D947	Yes	Yes	Yes		

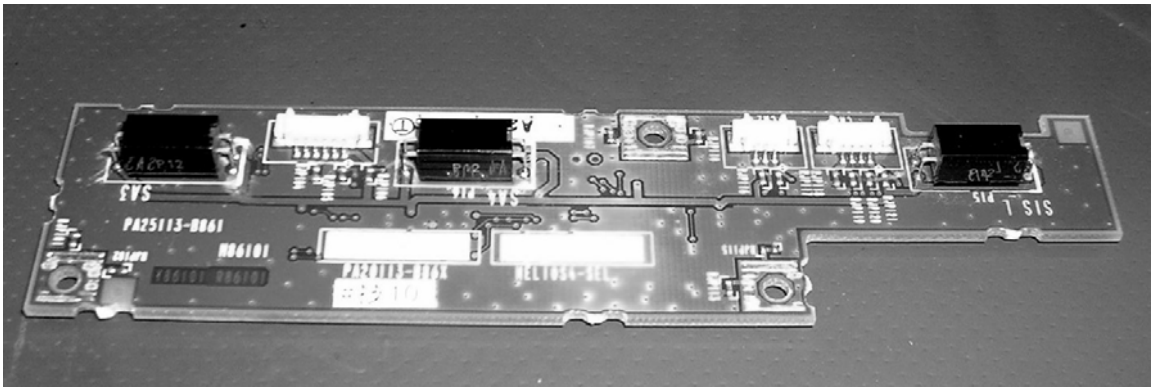


Fig. 9.24

9.25 Sensor PCA

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor PCA	PA03296-D880	Yes	No	No	* Includes SF1.5, SF2	Fig. 9.25A
05	PA03296-D885	No	~~Yes~~ No	No		Fig. 9.25B
	~~PA03296-D933~~ 07 PA03296-D956 11	No	Yes	Yes		

Fig. 9.25A

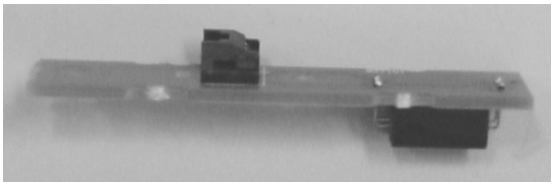


Fig 9..25B

9.26 Console unit

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Console unit	~~PA03296-D890~~	Yes	Yes	No		Fig. 9.25
07 PA03296-D934		Yes	Yes	Yes		

Fig. 9.26

9.27 Stacker table

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Stacker table	~~PA03296-D951~~ PA03296-D950 07	Yes	Yes	No	Not including Stopper A	Fig. 9.27
	PA03296-D955 07	No	No	Yes		

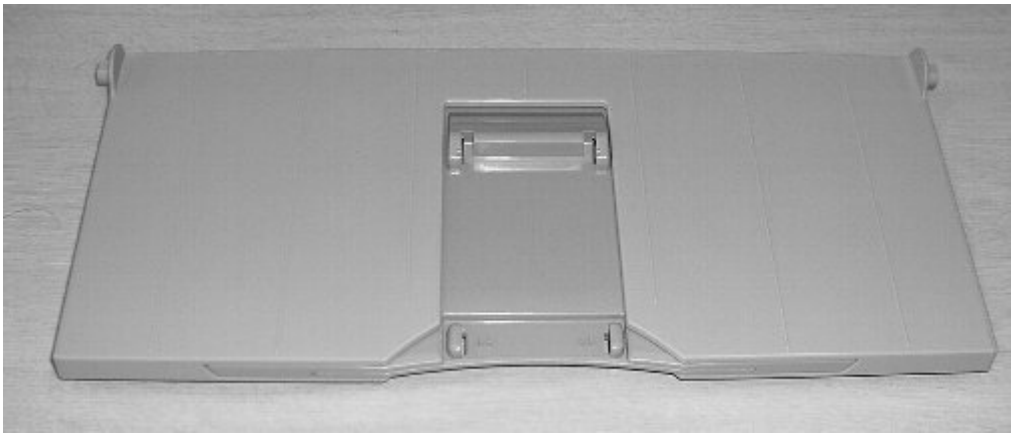


Fig. 9.27

9.28 Hopper table

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Hopper table	~~PA03296-D960~~ PA03296-D949 07	Yes	Yes	No		Fig. 9.28
	PA03296-D965 07	No	No	Yes		

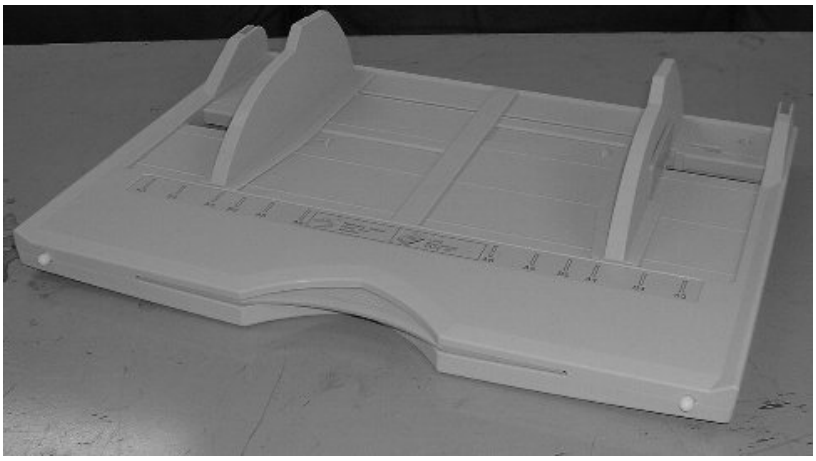


Fig. 9.28

9.29 Diselectric brush

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Diselectric brush	PA03296-Y190	Yes	Yes	Yes		Fig. 9.29

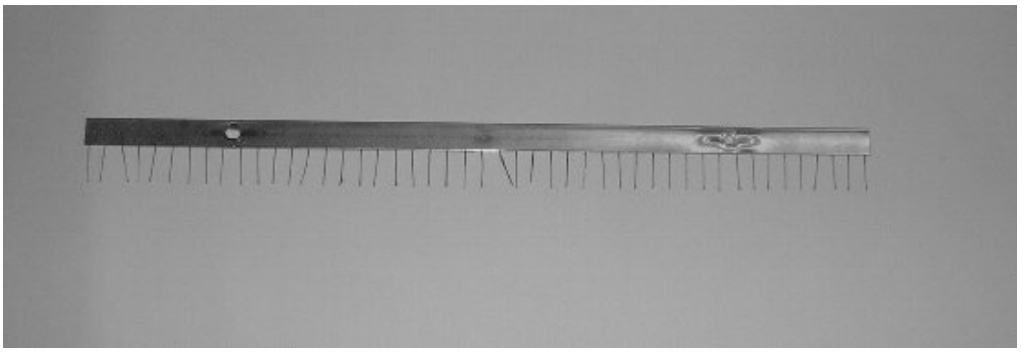


Fig. 9.29

9.30 Roller brush

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Roller brush	PA03296-Y797	Yes	Yes	Yes		Fig. 9.30

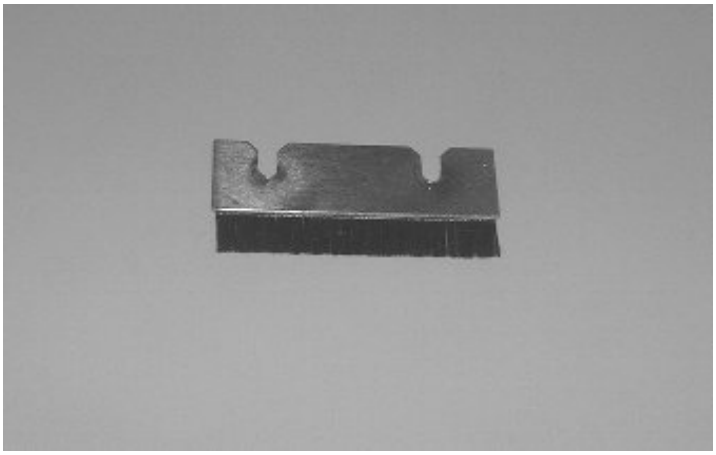


Fig. 9.30

9.31 Stopper A

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Stopper A	PA03296-Y958	Yes	Yes	Yes		Fig. 9.31

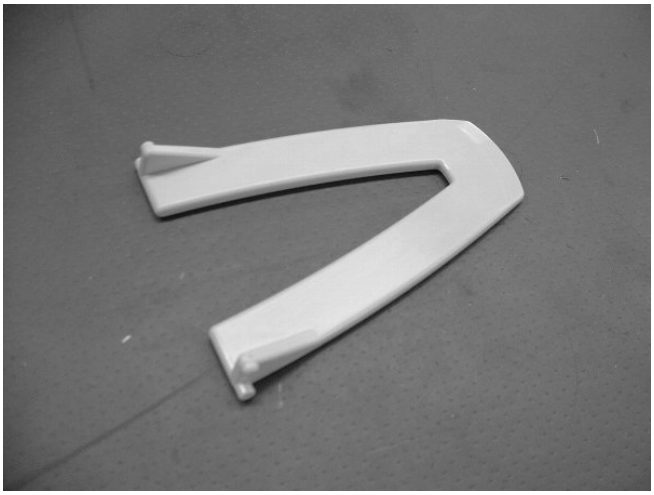


Fig. 9.31

9.32 Sensor SF1 LED

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor SF1 LED	~~PA03951-0160~~	Yes	Yes	No		Fig. 9.32
07	PA03950-0229	Yes	Yes	Yes		

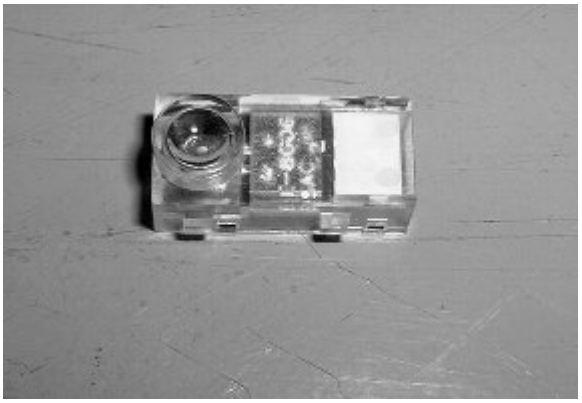


Fig. 9.32

9.33 Sensor SF1 PD

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
Sensor SF1 PD	~~PA03951-0161~~	Yes	Yes	No		Fig. 9.33
07	PA03950-0230	Yes	Yes	Yes		

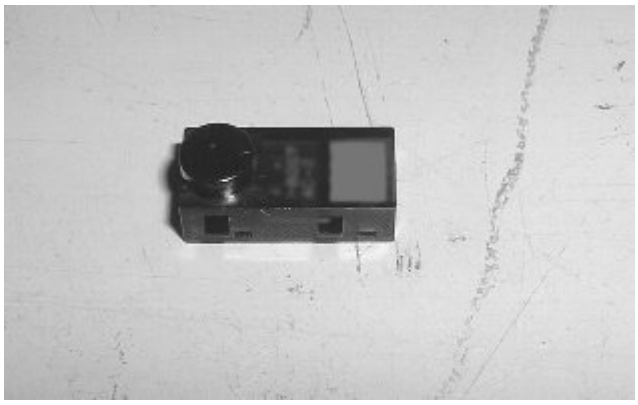


Fig. 9.33

9.34 Belt feed sub

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Belt feed sub	PA83950-0276	Yes	Yes	Yes	Number of teeth: 86 Width: 10 mm (0.4 inch) Length: 172 mm (6.88 inch)	Fig. 9.34

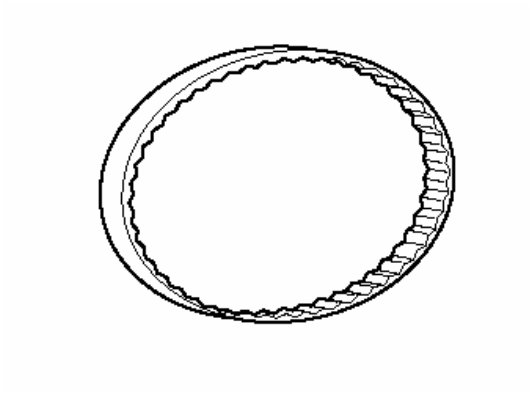


Fig. 9.34

9.35 Belt separation

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Belt separation	PA83950-0277	Yes	Yes	Yes	Number of teeth: 160 Width: 6 mm (0.24 inch) Length: 320 mm (12.8 inch)	Fig. 9.35

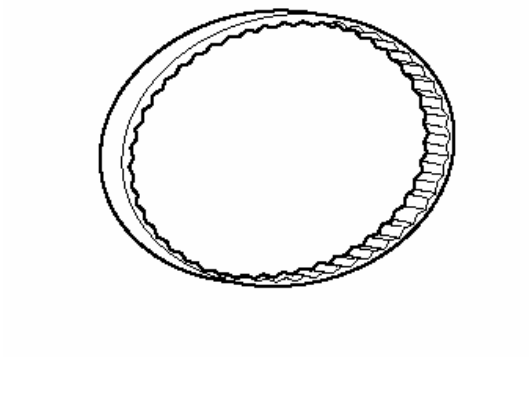


Fig. 9.35

9.36 Belt pick

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Belt pick	PA83950-0278	Yes	Yes	Yes	Number of teeth: 72 Width: 6 (0.24 inch) Length: 144 (5.76 inch)	Fig. 9.36

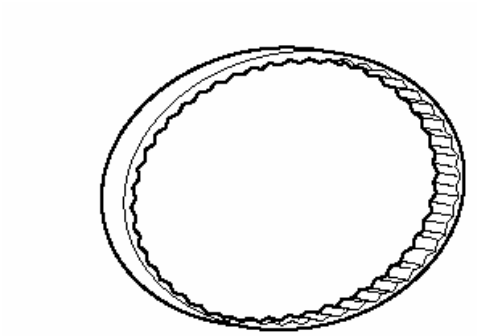


Fig. 9.36

9.37 Belt feed main

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figures
		fi-4860C		fi-4860C2		
		Old	New			
Belt feed main	PA83950-0309	Yes	Yes	Yes	Number of teeth: 526 Width: 9 mm (0.36 inch) Length: 1052 mm (42.08 inch)	Fig. 9.37

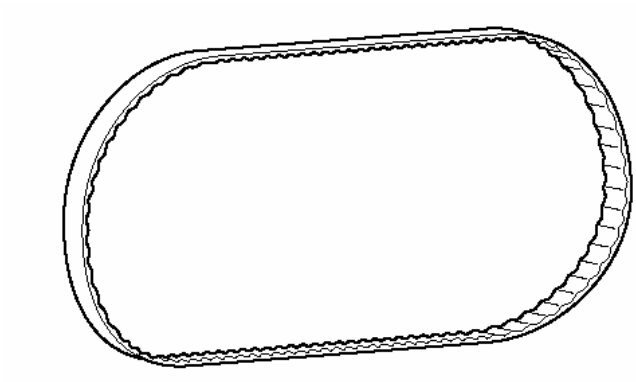


Fig. 9.37

9.38 Control A PCA (Imprinter option)

Description	Parts No.	Remarks	Figures
Control A PCA	~~PA20110-B75X~~ ~~PA20123-B23X~~ 06 PA20126-B36X 07	For fi-486PRFR and fi-486PRRE (option)	Fig. 9.38

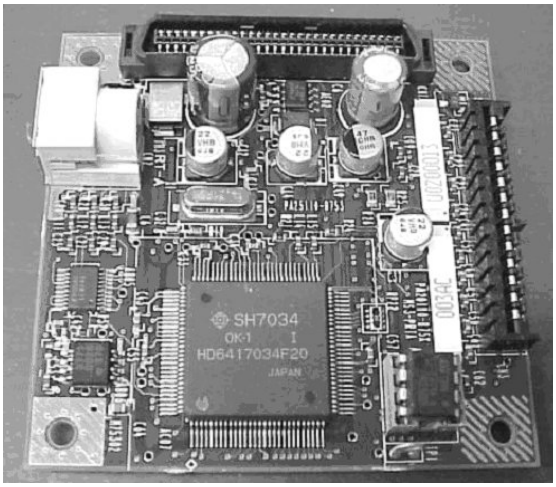


Fig. 9.38

9.39 Control B PCA (Imprinter option)

Description	Parts No.	Remarks	Figures
Control B PCA	~~PA20113-B89X~~ PA20126-B37X 07	For fi-486PRFR and fi-486PRRE (option)	Fig. 9.39

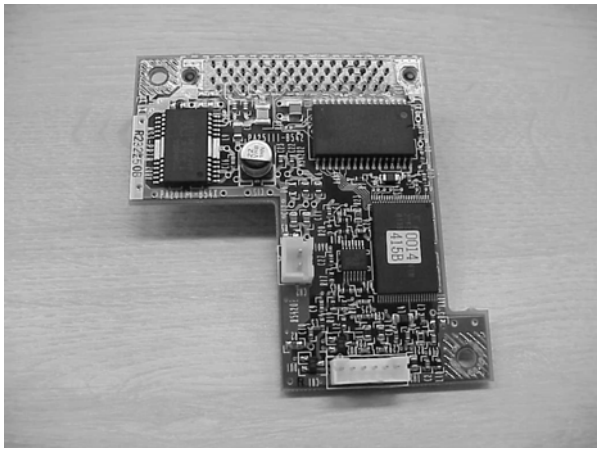


Fig. 9.39

9.40 Holder R (Imprinter option)

Description	Parts No.	Remarks	Figures
Holder R	PA03296-F201	For fi-486PRFR and fi-486PRRE (option)	Fig. 9.40

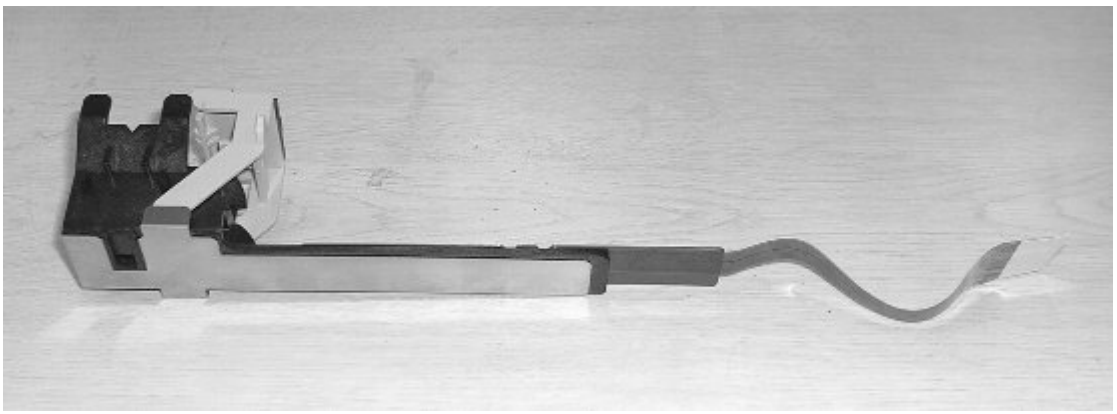


Fig. 9.40

9.41 Holder F (Imprinter option)

Description	Parts No.	Remarks	Figures
Control B PCA	PA03296-F207	For fi-486PRFR and fi-486PRRE (option)	Fig. 9.41

Fig. 9.41

05

9.42 US PCA

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
US PCA	~~PA03334-K902~~ PA03334-K906 07	No	Yes	Yes		Fig. 9.4

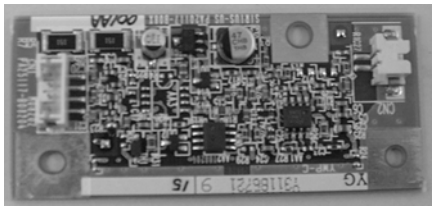


Fig. 9.42

05

9.43 USDV PCA

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
USDV PCA	~~PA20118-B26X~~ PA20126-B26X 07	No	Yes	Yes		Fig. 9.43

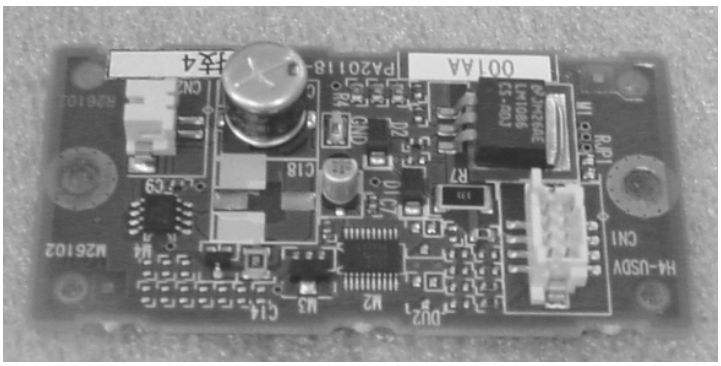


Fig. 9.43

05

9.44 US Sensor

07

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
US Sensor	PA03334-F902	No	Yes	Yes		Fig. 9.44

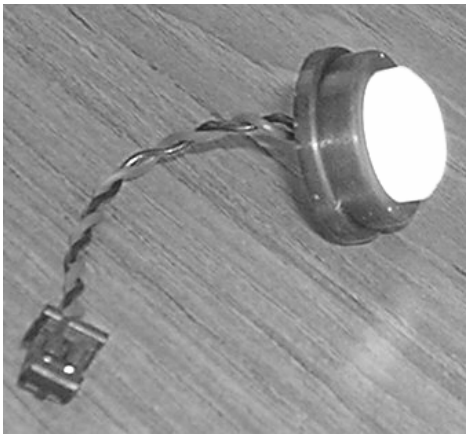


Fig. 9.44

07

9.45 DIMM

Description	Parts No.	Applicable scanner type (Section 1.1)			Remarks	Figure
		fi-4860C		fi-4860C2		
		Old	New			
DIMM	PA03450-D950	No	No	Yes		Fig. 9.45

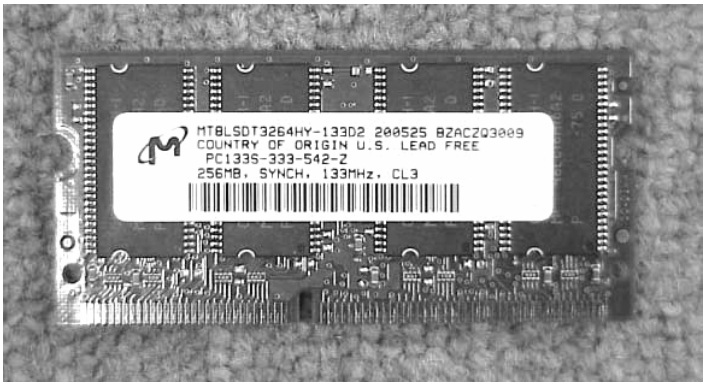


Fig. 9.45

09

~~07~~

~~9.50 CGA Board~~

~~Description~~	~~Parts No.~~	~~Applicable scanner type (Section 1.1)~~			~~Remarks~~	~~Figure~~
		~~fi-4860C~~		~~fi-4860C2~~		
		~~Old~~	~~New~~			
~~CGA Board~~	~~PA03450-~~	~~No~~	~~No~~	~~Yes~~		~~Fig. 9.50~~

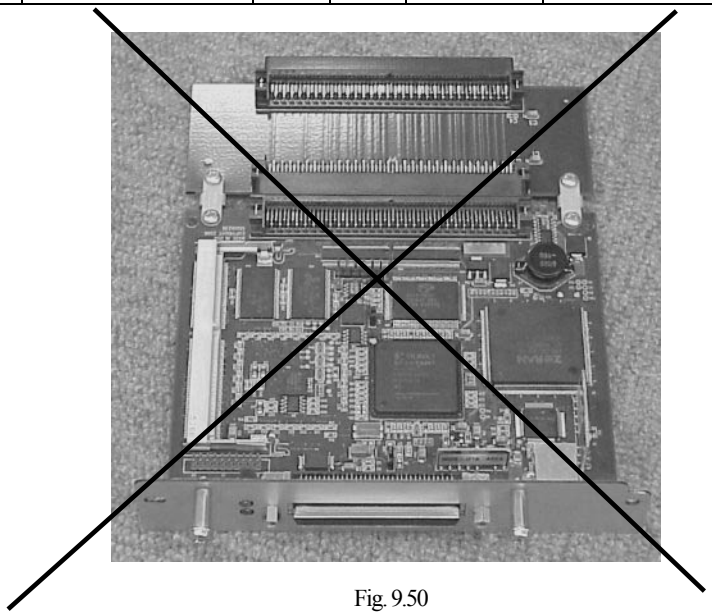


Fig. 9.50

Chapter 10 Imprinter (Option)

10.1 About Imprinter

The scanner can install two optional imprinters, but only one imprinter becomes available at a time. Select one imprinter you want to use at Imprinter setting in the Setup mode. (See Section 6.3.24)
The scanner supports the following imprinters:

Imprinters (option)	Remarks
fi-486PRFR	Imprinter (Front)
fi-486PRRE	Imprinter (Rear)

To use number printing function, specify Numbering setting in the Setup mode (See Section 6.3.25)
Print cartridge is a consumable and needs replacing if necessary. (Refer to Section 3.3.1 for details.)
For maintenance parts of the imprinter, refer to Section 9.38 and 9.39.
For error and alarm information regarding the imprinter, refer to the following table and go to corresponding section.

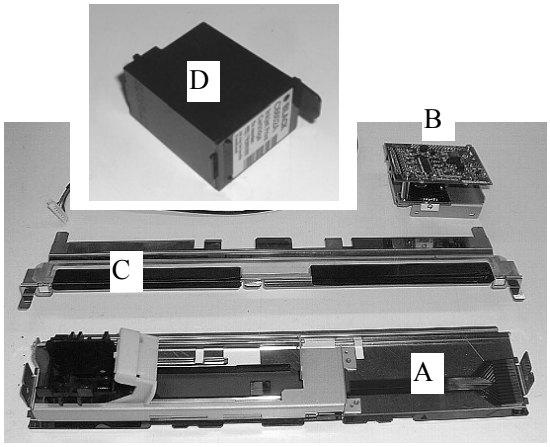
No.	Error / Alarm	Description	Troubleshooting
1	"No ink cartridge"	Section 2.7, Table 2.7	Section 4.25
2	"Imprinter Alarm"	Section 2.8, Table 2.8	Section 4.34

10.2 Imprinter parts

The imprinter is consisted of the following parts listed below.

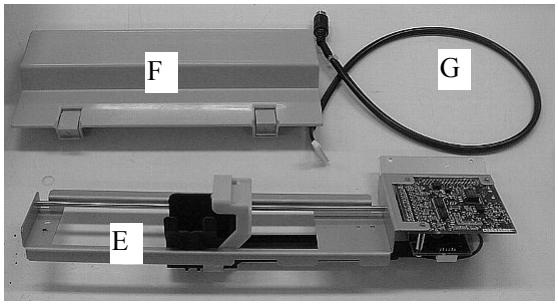
fi-486PRFR parts

No.	Description	Quantity	Symbol
1	Front imprinter ASSY	1	A
2	Front imprinter PCA ASSY	1	B
3	Glass sheet guide	1	C
4	Print cartridge	1	D
5	Print position sticker A	1	H
6	Screw	2	
7	Operator's guide	1	
8	Operation instruction label	1	J

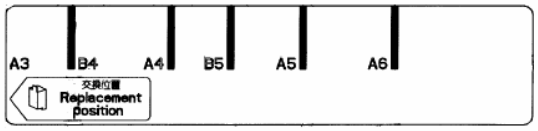


fi-486PRRE parts

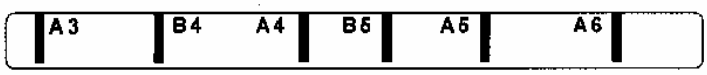
No.	Description	Quantity	Symbol
1	Rear imprinter ASSY	1	E
2	Imprinter cover	1	F
3	Cable	1	G
4	Print cartridge	1	D
5	Print position sticker B	1	I
6	Screw	2	
7	Operator's guide	1	



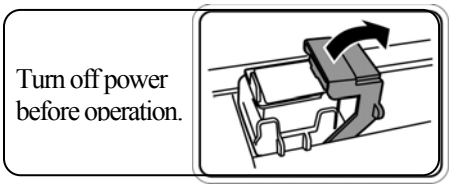
H



I



J



10.3 Installation

10.3.1 fi-486PRFR

Install the fi-486PRFR imprinter as follows.

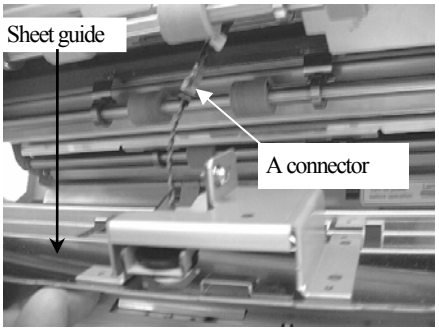
Note 1: We recommend you to cover the lower sheet guide and ADF unit with a piece of sheet or a cloth before replacement to avoid dropping screws inside the scanner.
Note 2: Turn off the scanner before installing fi-486PRFR.

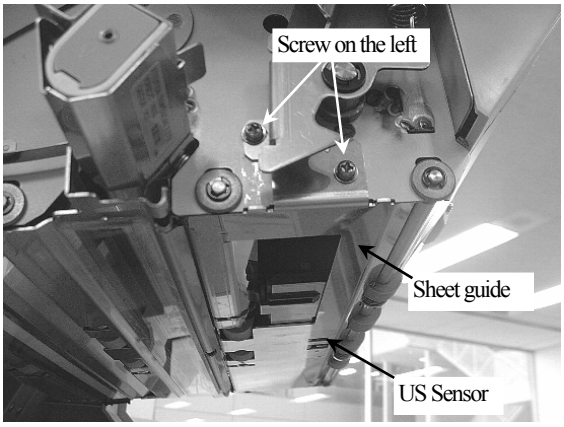
1. Remove Upper transport cover by referring to Section 5.6.1.

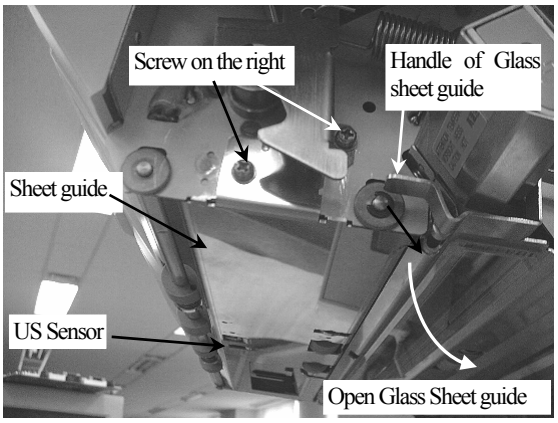
2. Open Upper transport unit.
Remove 4 screws from the side frame of Upper transport unit. Open the Glass sheet guide by pulling the handle down, while holding the Sheet guide.

05 If the scanner is New type (See Section 1.1), lower the Sheet guide a little and disconnect a connector that is connected to a PCA on the Sheet Guide.

Then remove the Sheet guide from the scanner.



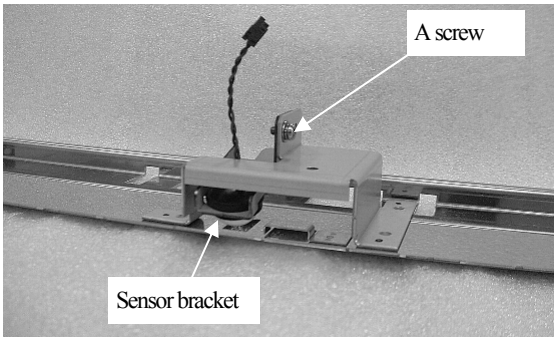




Note 1: Do not lose the removed Sheet guide as it needs to install again when removing Imprinter.

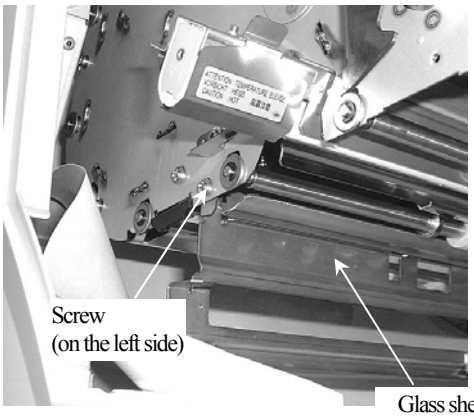
Note 2: Be careful not to lose the removed 4 screws as they are needed later.

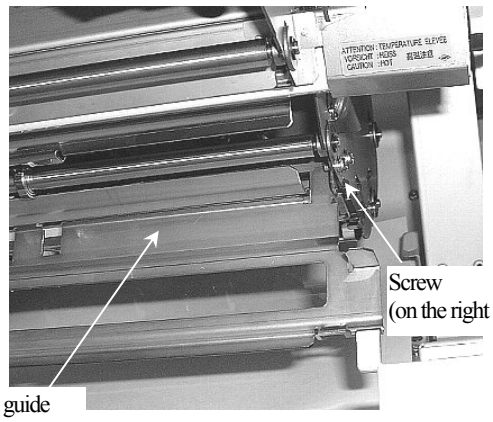
3. If the scanner is New type (See Section 1.1), remove a screw from Sensor bracket and remove Sensor bracket. Then remove an US Sensor from the bracket.



05 4. Remove 2 screws from the side frame of Upper transport unit and remove Glass sheet guide.

Note 1: Do not lose the removed Sheet guide as it needs to install again when removing Imprinter.
Note 2: Two screws are special screws. Be careful not to lose these screws as they are necessary for assembling later.



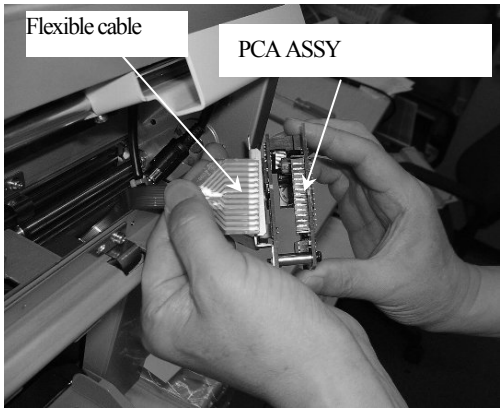


10.3.1

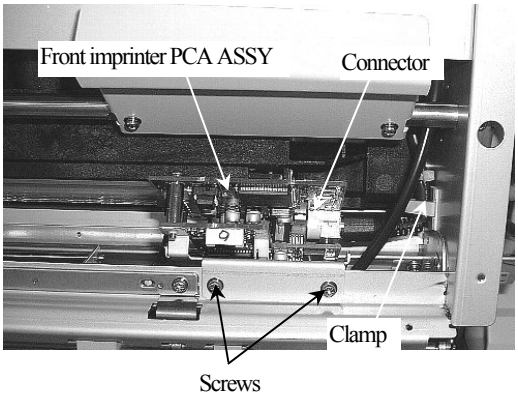
5. If the scanner is New type (See Section 1.1), attach the UN sensor on new Imprinter unit in he reverse order of Step 3.

6. Move the cartridge holder to the leftmost end. Install the Front imprinter ASSY with 4 screws. (Use same screws removed in Step 2.)

7. Connect the flexible cable coming from the Front Imprinter ASSY to PCA ASSY. See right photo for the orientation of flexible cable.



8. Connect the cable connector, which is fixed to the scanner by a clamp, to the Front imprinter PCA ASSY. Fix the Front imprinter PCA ASSY with two screws (these screws are included in the option).
   Note: The cable does not need to be fixed with a clamp.

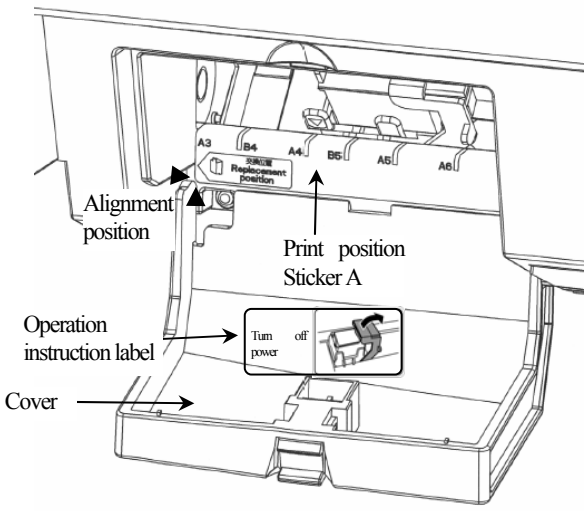


9. Install the Glass sheet guide that is included in the option. (Follow Step 3 in reverse and use the same screws removed in Step 3.)

10. Check if the print cartridge holder slides smoothly to the right and left.

11. Install the Upper transport cover. (Follow Step 2 in reverse.)

12. Put the Print position sticker A so that it is aligned to both edges of the Imprinter unit. Attach the Operation instruction label somewhere you like on the cover.



13. Install a Print cartridge.

14. Confirm that number printing function works properly in the Test mode (T01 or T02). (Refer to Section 7.4)

10.3.2 fi-486PRRE

Install the fi-486PRRE imprinter as follows.

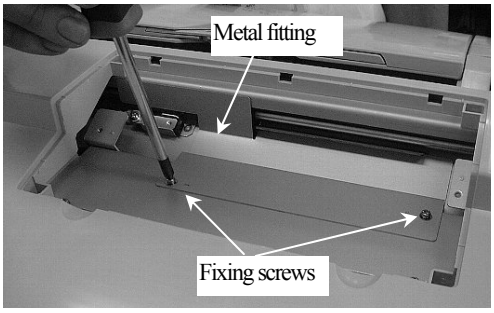
Note 1: We recommend you to cover the lower sheet guide and ADF unit with a piece of sheet or a cloth before replacement to avoid dropping screws inside the scanner.
Note 2: Turn off the scanner before installing fi-486PRRE.

1. Remove the Imprinter cover by referring to Section 5.6.2.

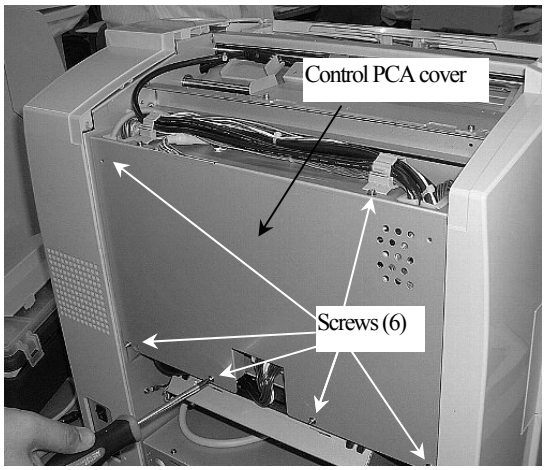
2. Remove two fixing screws and remove the metal fitting.

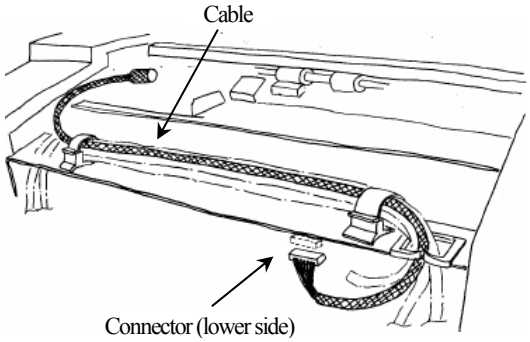
   Note 1: Store the removed metal fitting in a secure place as it needs installing again when removing imprinter.

   Note 2: Be careful not to lose the removed 2 screws as they are needed later.

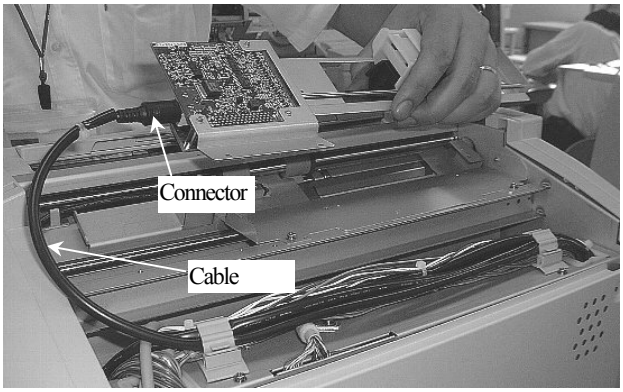


3. Remove the Rear cover and Top cover.
   Remove screws in 6 locations and remove the Control PCA box cover.
   Then install the attached cable as shown in the photo below. Arrange the excess length of the cable after connecting the cable by referring to next step (Step 4)

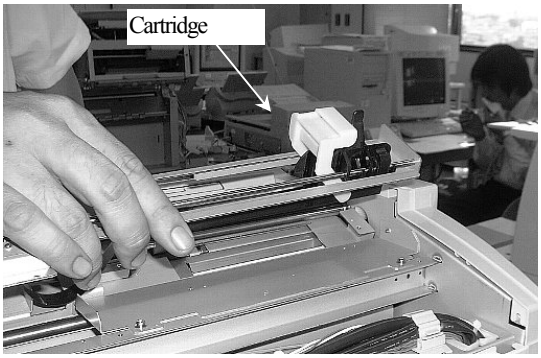




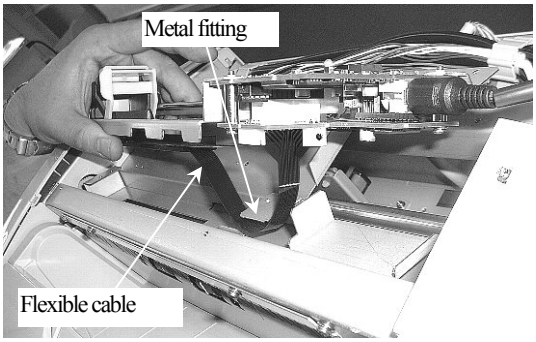
4. Connect the cable connector, one end of which was connected to the Control PCA at step 3, to the Rear imprinter ASSY.

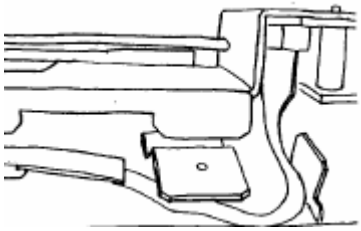


5. Move the cartridge to the position of 5 ~ 10 mm left from the outmost end.

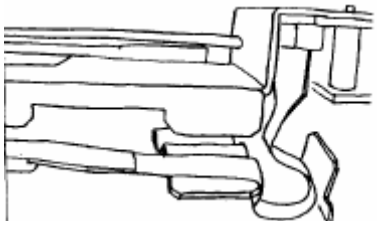


Then install the Rear imprinter ASSY so that the flexible cable and cable guide (black color) are located under the metal fitting. (See good and bad examples below)



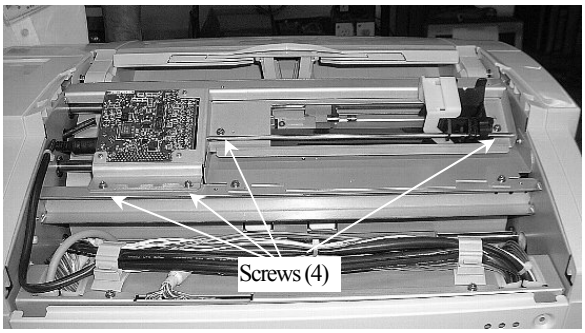


Good example

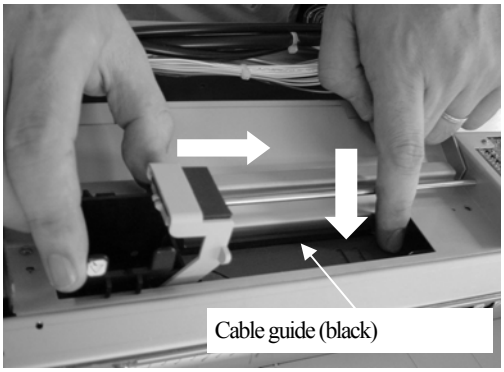


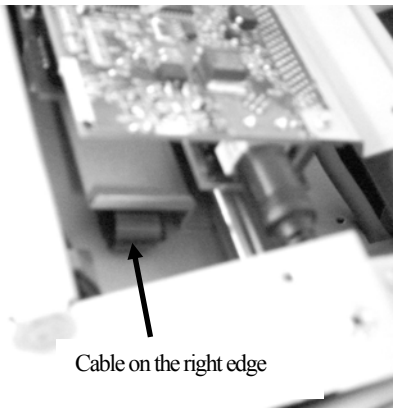
Bad example

Align the location holes of the Rear imprinter ASSY with the pins of the scanner and fix the Rear imprinter ASSY with 4 screws, two of which are the same screws removed in Step 2 and another two of which are included in the option.



6. Press and hold down the cable guide and move the cartridge to the right so that the cable is reformed
Note: Make sure that the cable is positioned so that you can see the cable in the right edge.

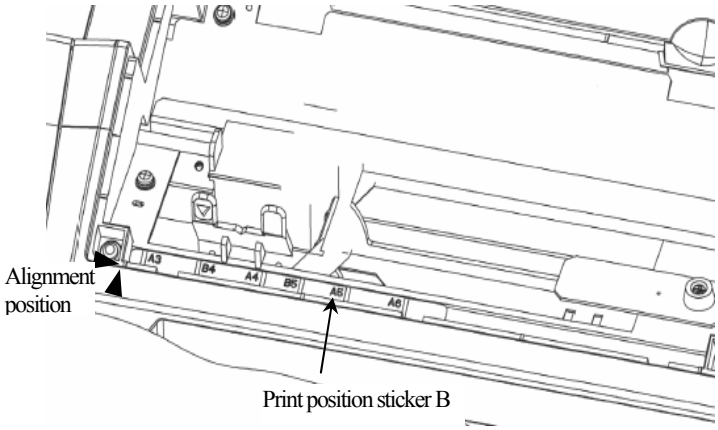




7. Check if the print cartridge holder slides smoothly to the right and left.

8. After connecting the cable, assemble the Control PCA cover, Rear cover and Top cover again. (Follow Step 3 in reverse.)

9. Put the Print position sticker B so that it is aligned to the both edge of the Imprinter unit.



10. Install a Print cartridge.

11. Confirm that number printing function works properly in the Test mode (T01 or T02). (Refer to Section 7.4.)

12. Install the Imprinter cover.

10.4 Replacing maintenance parts for Imprinter

10.4.1 Control A PCA and Control B PCA

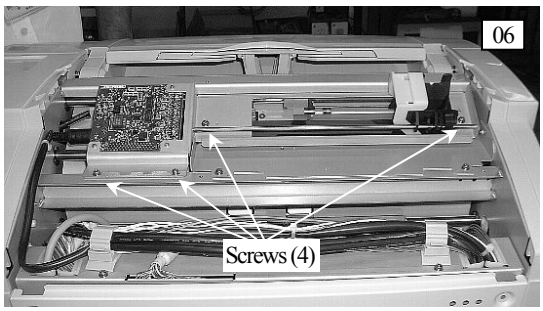
Replacement procedure differs depending on which imprinter you use.

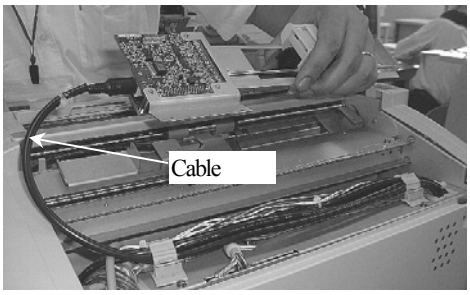
Note: Turn off the scanner before replacement.

- When using fi-486PRRE, remove the Control A PCA and Control B PCA as follows.

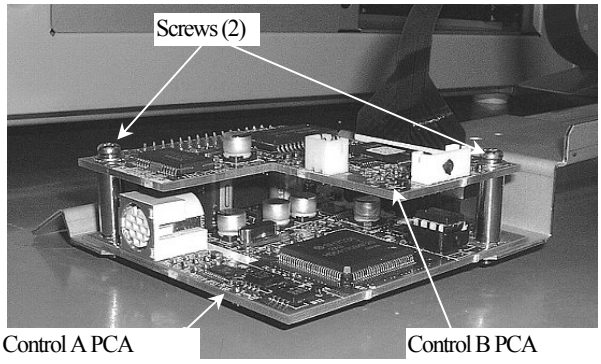
1. Remove the Imprinter cover and Top cover.

2. Remove the 4 fixing screws and take out the Imprinter. Disconnect the cable from the Imprinter.





3. Remove the 2 fixing screws and take out the Control A PCA and Control B PCA. Be careful not to lose the spacers.

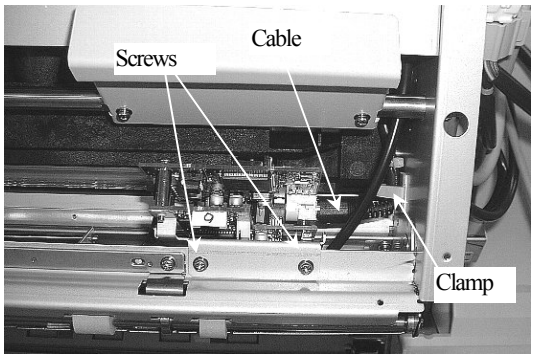


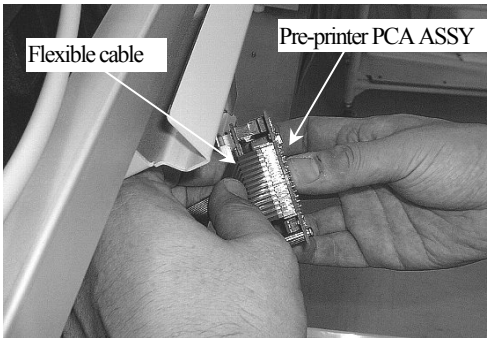
For assembling, follow the removal procedure in reverse.

- When using fi-486PRFR, remove the Control A PCA and Control B PCA as follows.

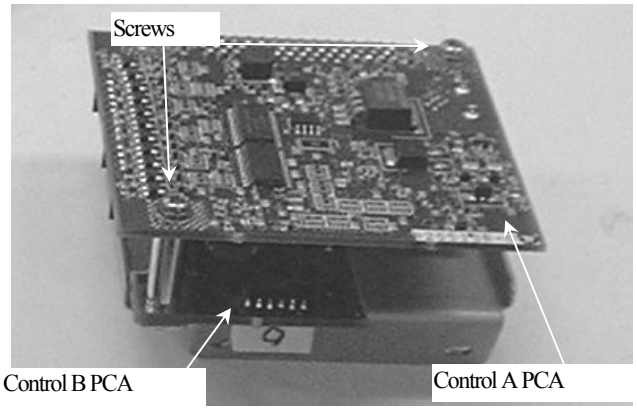
1. Remove the Upper transport cover.

2. Open the Upper transport unit.
   Disengage the cable from the clamp and remove two screws to take out the Front imprinter PCA ASSY.
   Disconnect the flexible cable from the Front imprinter PCA ASSY





3. Remove two fixing screws and remove the Control A PCA and Control B PCA. Be careful not to lose the spacers.



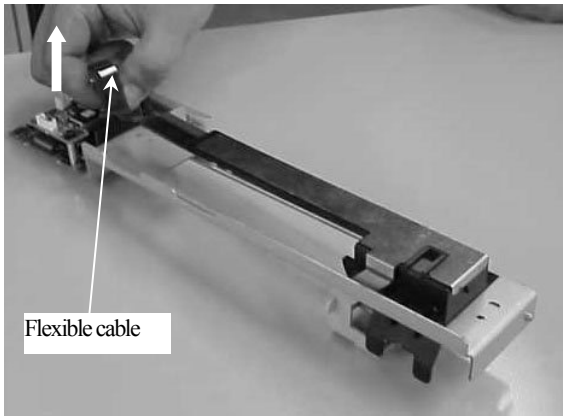
For assembling, follow the removal procedure in reverse.

10.4.2 Replacing Holder R

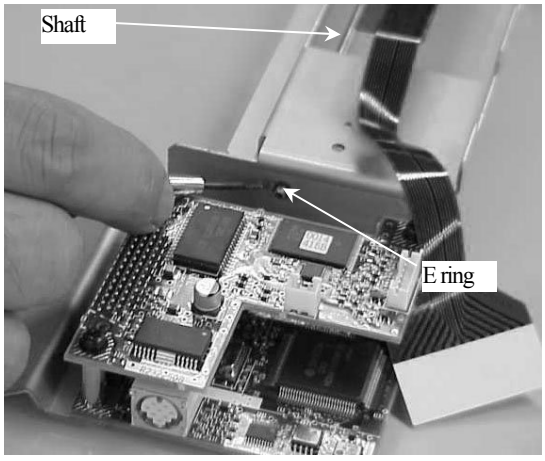
Replace Holder R as follows.

1. Take out fi-486PRRE from the scanner by referring to Section 10.3.2.

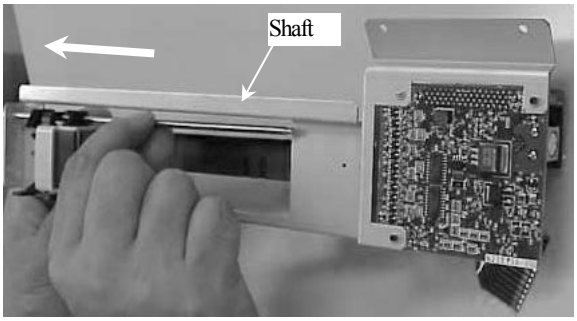
2. Remove the flexible cable from the print circuit board.



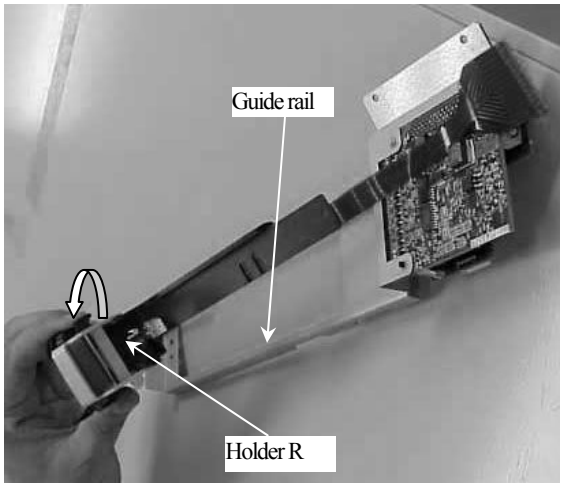
3. Remove E-ring that fixes the shaft of imprinter using a small flat head screwdriver.



4. Pull out the shaft in the direction of arrow.

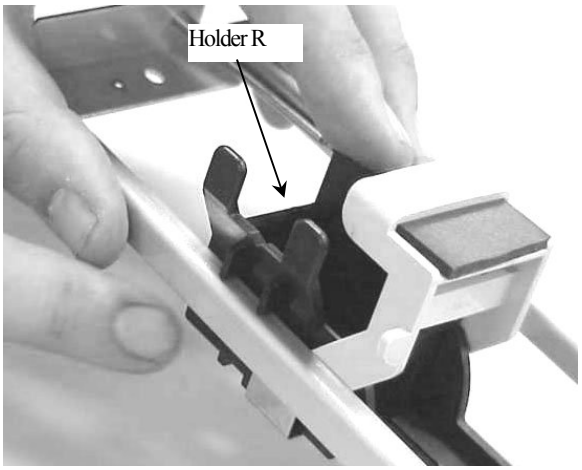


5. Remove Holder R from the guide rail.



For assembling, follow the removing procedure in reverse.

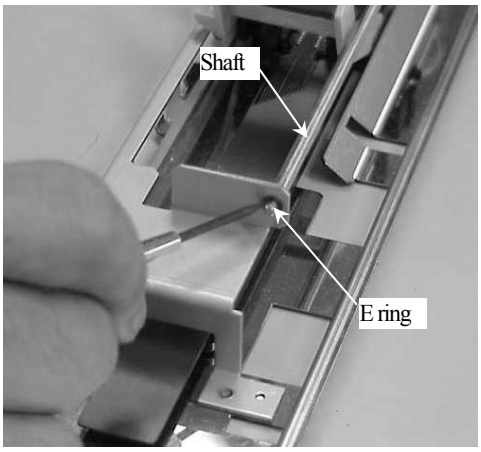
Note: Make sure to install Holder R as shown in the right photo.



10.4.3 Replacing Holder F

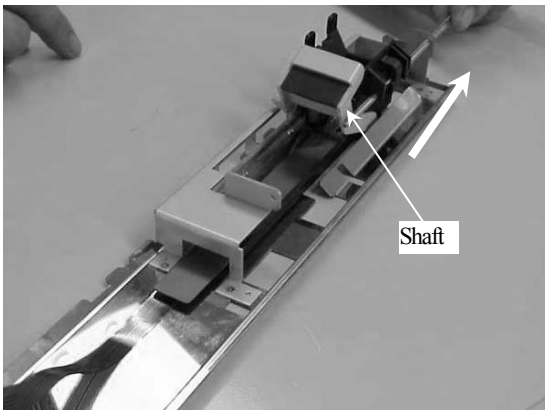
Replace Holder F as follows.

1. Take out fi-486PRRE from the scanner by referring to Section 10.3.2.

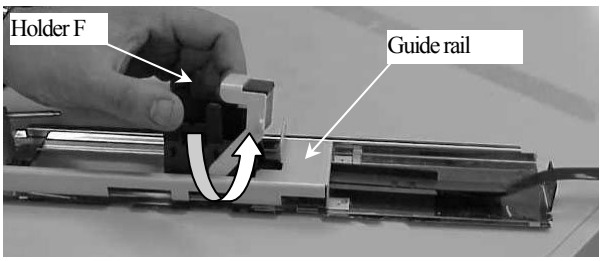


2. Remove E-ring that fixes the shaft of imprinter using a small flat head screwdriver.

3. Pull out the shaft in the direction of arrow.

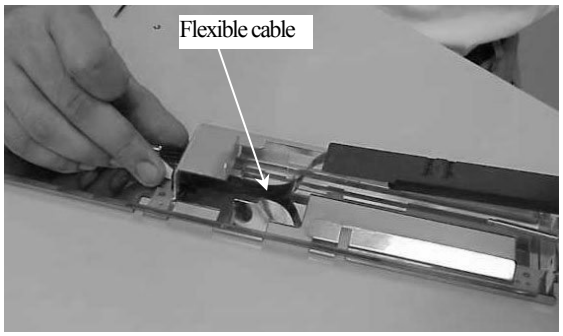


4. Move Holder F to the right and remove the holder from the guide rail.



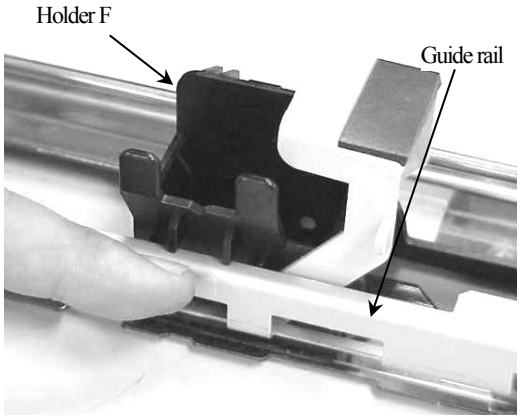
5. Pull out the flexible cable from the guide rail.

   Note: The edge of flexible cable is wider than the hol guide rail,
   Make the edge of flexible cable compact so that it through the hole of guide rail.



For assembling, follow the removing procedure in reverse.

Note: Make sure to install Holder R as shown in the right photo.

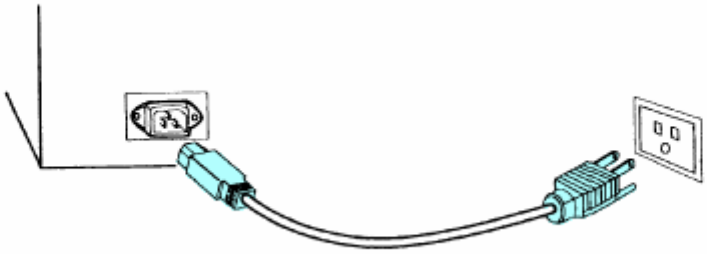


Appendix A Installation Guide

A.1 Connecting the scanner

■ Connecting the power cable

Connect the power cable to the power inlet of the device and to a outlet.



■ Connecting the interface cable

An interface cable and a SCSI card are required.

- Interface cable

  The physical specifications of connector is complied with Ultra wide SCSI.
  The 68 pin contact shielded high-density SCSI device connector is used.

- SCSI card

  The recommended SCSI card indicated in the following homepage.

  http://imagescanner.fujitsu.com/jp/

ATTENTION

When connecting the SCSI interface cable, be sure to first connect the SCSI interface cable then turn on the power of the scanner and the PC.

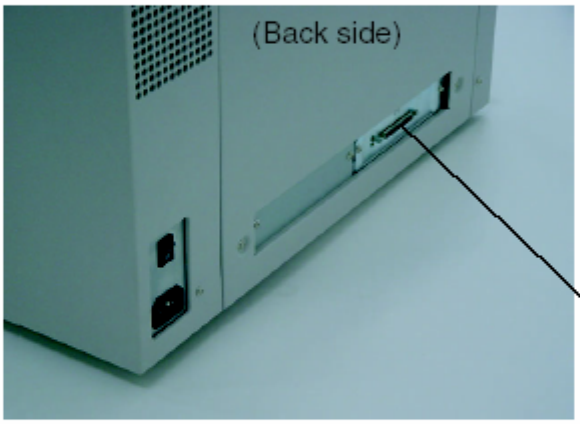
ATTENTION

Connect the scanner so that it is the terminal device on the SCSI daisy chain.

ATTENTION

The SCSI card and SCSI interface cable has to be purchased separately.

1. Connect and fix the interface cable into the interface connector of the scanner.



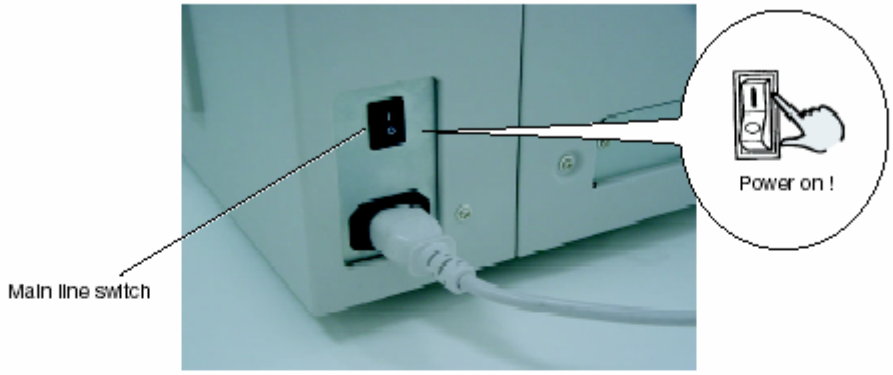
2. Connect and fix the other end of the interface cable to the PC.

HINT

The factory default setting for SCSI ID is "No.5".
If the SCSI ID of another SCSI device is set to the same ID, either change the scanner's SCSI ID or change the SCSI ID of the other SCSI device.
For details on how to change the SCSI ID ,refer to the "Chapter 7. OPERATOR PANEL MENUS of the Operator's Guide" included in the "User manual (CD-ROM)" .

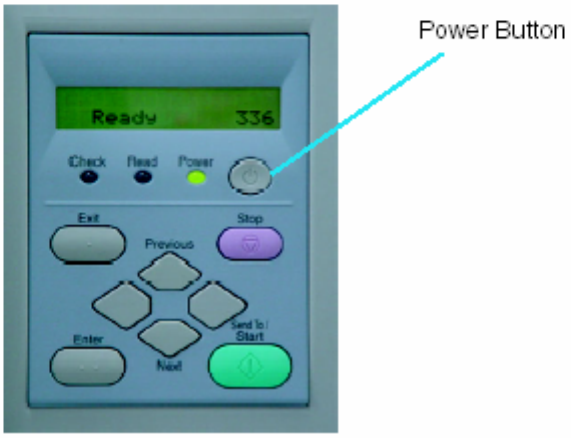
3. Turn on the scanner

Press the side of " | " on the Main line switch.

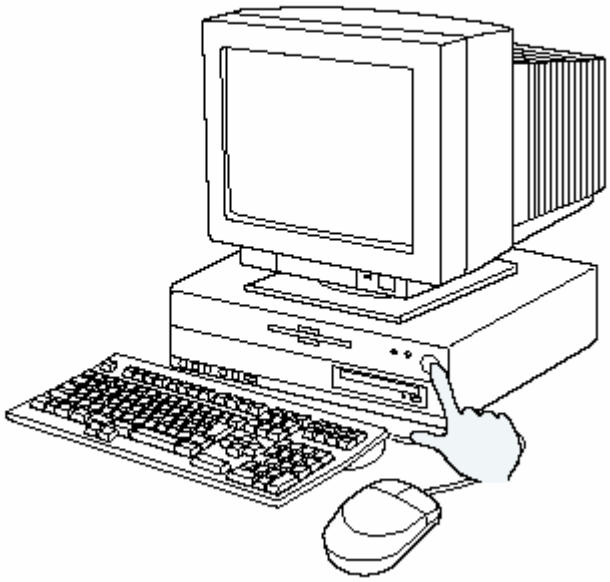


(Back side)

Then press the Power button on the Operator panel.
When the power is supplied, the green LED on the Operator panel lights.



4. Press the power switch on your PC.



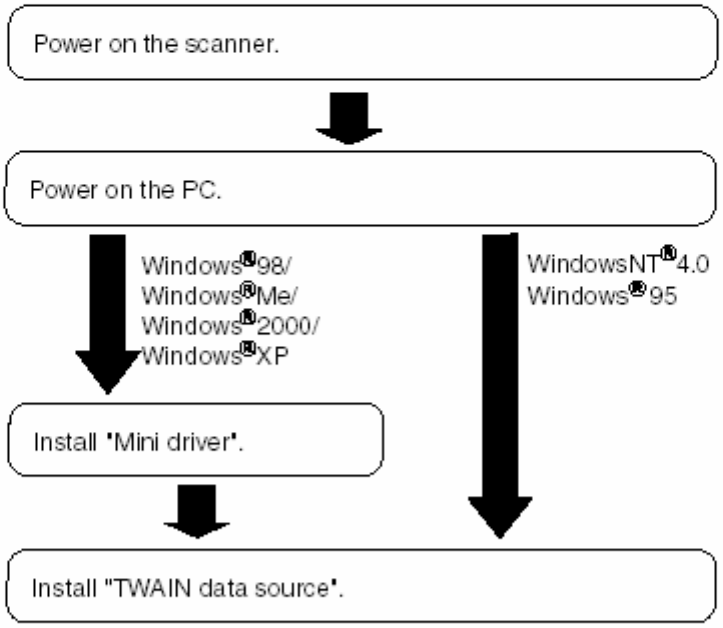
A.2 Installing the Scanner Driver and Application

To enable scanning of documents on the scanner, the Scanner driver (FUJITSU TWAIN32 scanner driver) and Image Capturing Software Utilities "ScandAll 21" (ScandAll 21) must be installed on your PC.

This section explains about installing the FUJITSU TWAIN32 scanner driver and Image Capturing Software "ScandAll 21" (ScandAll 21) .

For further details on installing the FUJITSU TWAIN32 scanner driver, refer to the Scanner Utility for Microsoft® Windows® User's Guide on the scanner driver CD-ROM.

The flowchart for the Scanner Driver installation



ATTENTION

The scanner driver consists of "Mini driver" part and "TWAIN data source" part.

■ Installing FUJITSU TWAIN32 Scanner Driver

When you use Windows®98, Windows®Me, Windows®2000, and Windows®XP (Please use FUJITSU TWAIN32 Version 9.9.)

Confirm to install the TWAIN data source after installing the mini-driver.

If the old version of FUJITSU TWAIN32 Scanner driver is installed to your PC, refer to the "Scanner Utility for Microsoft® Windows® User's Guide" of the Scanner driver (CD-ROM) to update the mini-driver.

The Windows®XP screen samples are shown below. The screens and operations will differ slightly depending on your OS type.

(1) Preparation

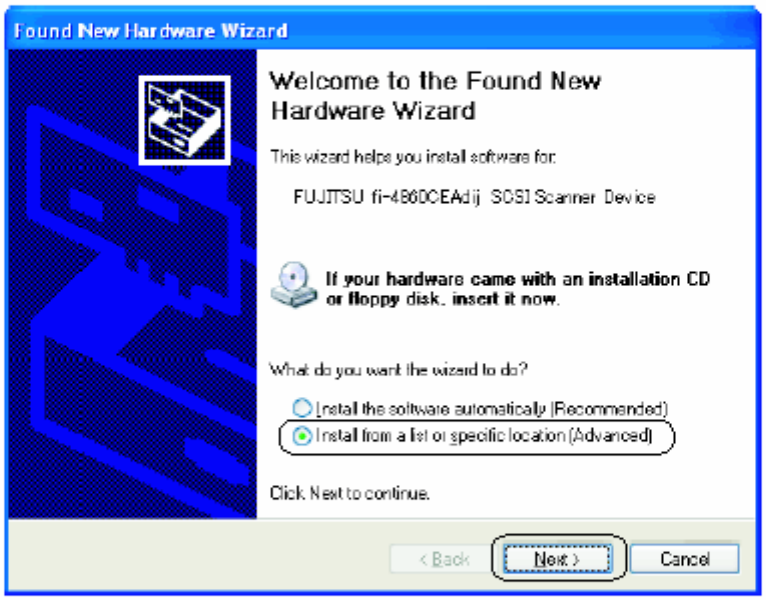
Confirm that the Scanner is connected to your personal computer with the SCSI interface cable.

(2) Installing the mini-driver

1. Turn on the power by pushing the power switch on the scanner's control panel. The green LED on the control panel lights, and then "Ready" is displayed on the LCD.

2. Turn on your PC and log on to Windows®.
   When using Windows®2000 or Windows®XP, log on as an administrator.
   The "Found New Hardware Wizard" dialog box is displayed.

3. Check "Install from list or specified location", then click [Next>].

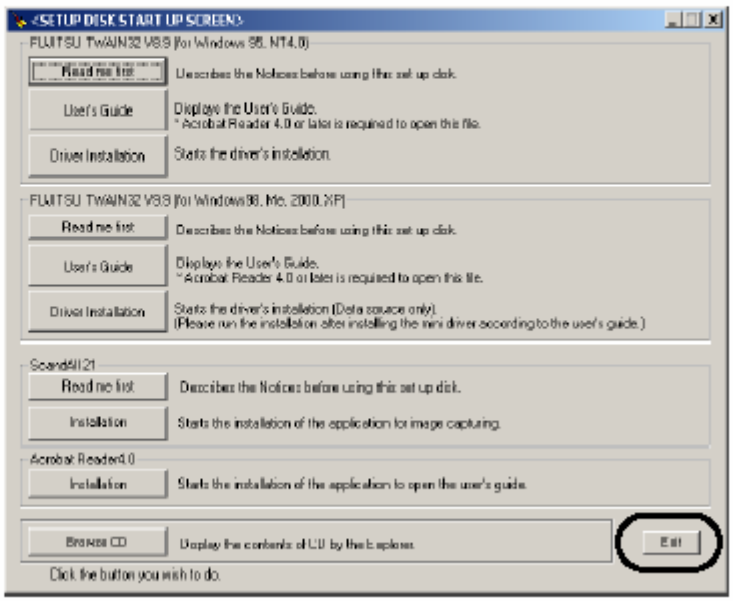


- For Windows®Me check "Specify the driver location",the then click [Next>].
- For Windows®2000 and Windows®98, clicking on [Next>] the select search method screen is displayed.
- For Windows®98 select "Find the most suitable driver for the devise being used" then click [Next>].
- For Windows®2000 select "Find the most suitable driver for the devise" then click [Next>].

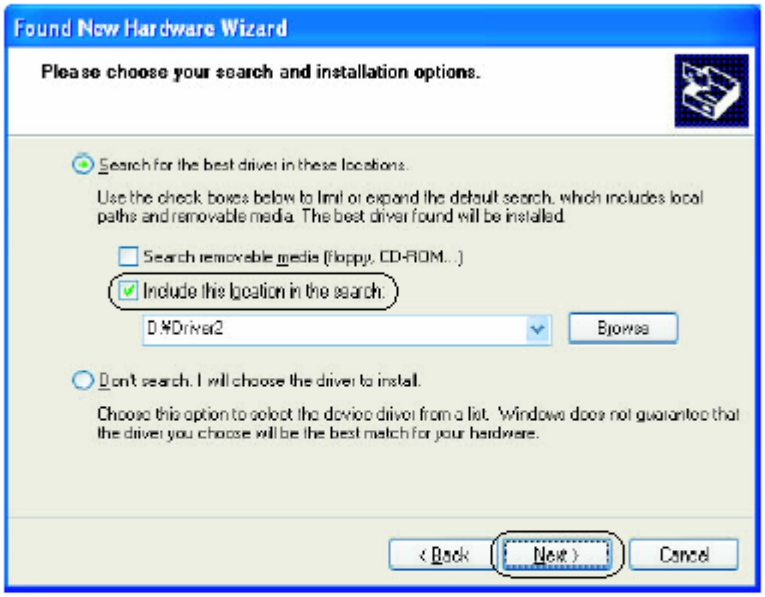
4. Insert the Scanner driver (CD-ROM) to the CD-ROM drive

HINT

When automatic start has been set up, start up screen for the setup disk is displayed.
Click the [Exit] button and close this screen.

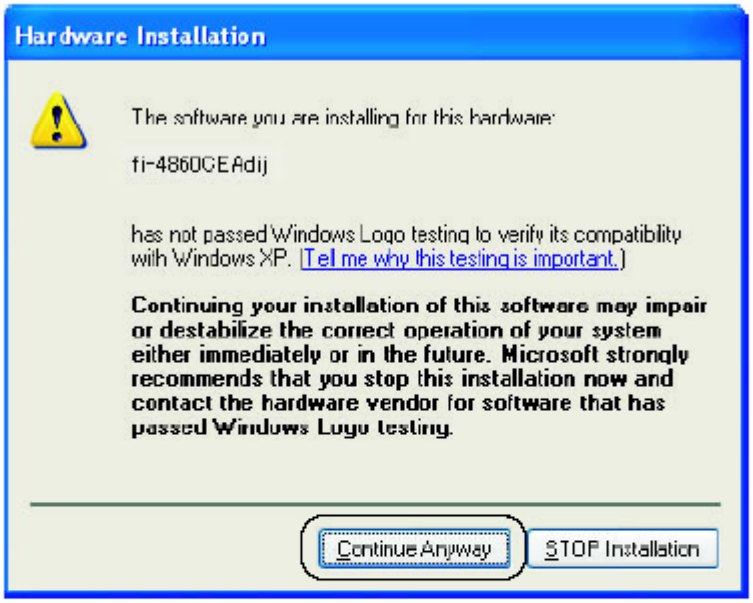


5. Select "Find the most suitable driver in the next location". Check "Include the next location" then specify **D:\Driver2** (When your CD-ROM is the D drive). After that click [Next>].



- For Windows®98, just check "Specify search location" then specify D:\Driver2 (When your CD-ROM is the D drive). After that click [Next>].
- For Windows®Me, select "Find the most suitable driver for the devise being used" then click [Next>]. Check "Specify search location" then specify **D:\Driver2** (When your CD-ROM is the D drive). After that click [Next>].
- For Windows®2000, just check "Specify location" and then in the next screen specify "Copy source for origination file" then specify **D:\Driver2** (When your CD-ROM is the D drive), then click [OK].

6. For Windows®XP, the next screen is displayed, click [Continue] and complete the installation. For other operating systems click [Next>].



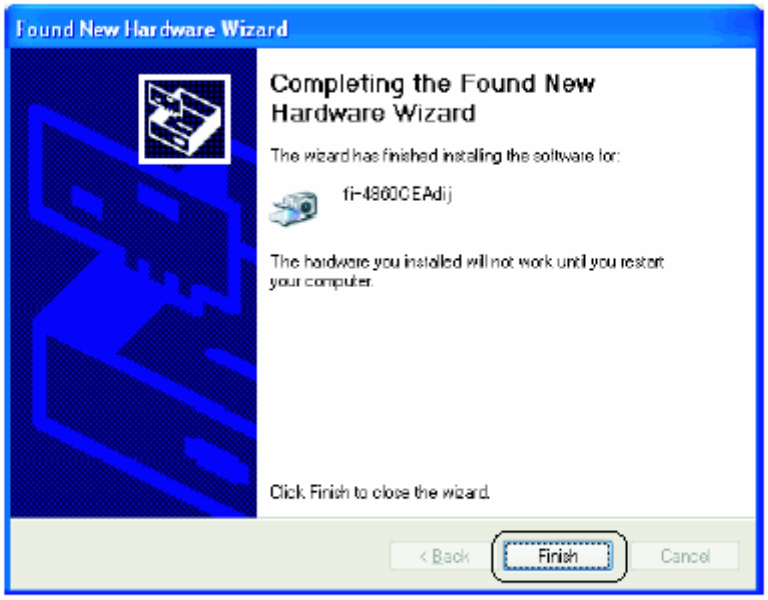
ATTENTION

For Windows®2000, "Digital Signature Not Found" is displayed. Click [Yes] and continue the installation.

ATTENTION

For Windows®98 there is a request to insert a disc. When this happens, insert the Windows®98 CD-ROM.

7. The following screen is displayed, Click [Finish].



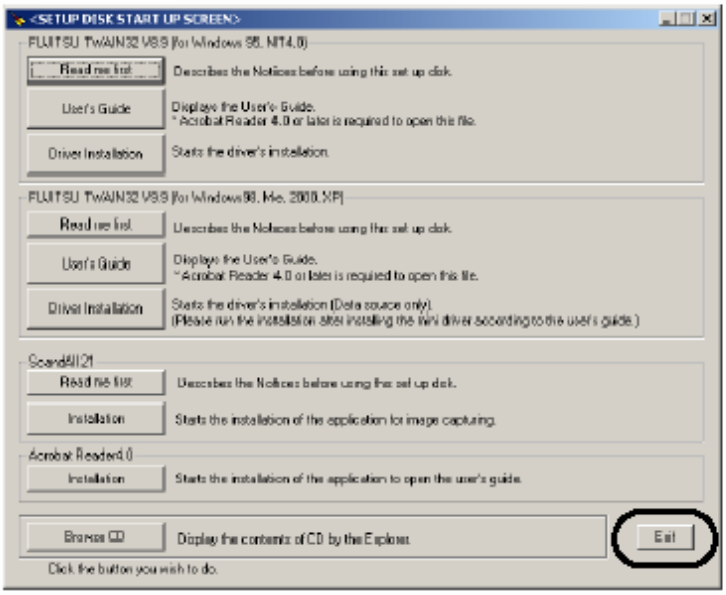
8. Restart the system.
   After restarting the system, install the TWAIN data source.

(3) Installing TWAIN data source

1. Insert the Scanner Driver CD-ROM, then use the explorer to double click on **D:\Driver2\Setup\install.exe** (when your CD-ROM is the D drive).

HINT

When automatic start has been set up, start up screen for the setup disk is displayed.
Click the [Exit] button and close this screen.



2. Follow the instruction on the screen to complete the installation. Make the best selection that suits your needs.
   - Select the language you will use during installation.
   - Check the names of components that need to be installed in [Select Components]. Explanation of the component is displayed below.
   - Check the installation directory. If you need to change the installation destination, click the [Change Directory] button then specify the destination.
   - Click the [Continue] button to start the installation.

3. When installation is finished, confirm that the following folder has been created. The icons displayed differ depending on the setting in [Select Component] during installation.

HINT

When installing the "TWAIN data source", the folder named [Scanner Utility for Microsoft Windows] is created in [Start]-[Programs].

Continuously, install the Image Capturing Software "ScandAll 21".

When you use Windows®95, WindowsNT®4.0 (Please use FUJITSU TWAIN32 Version 8.9.)

(1) Preparation

1. Confirm that the SCSI adapter is attached to your personal computer.
2. Confirm that the SCSI driver and ASPI manager are correctly integrated and operating.

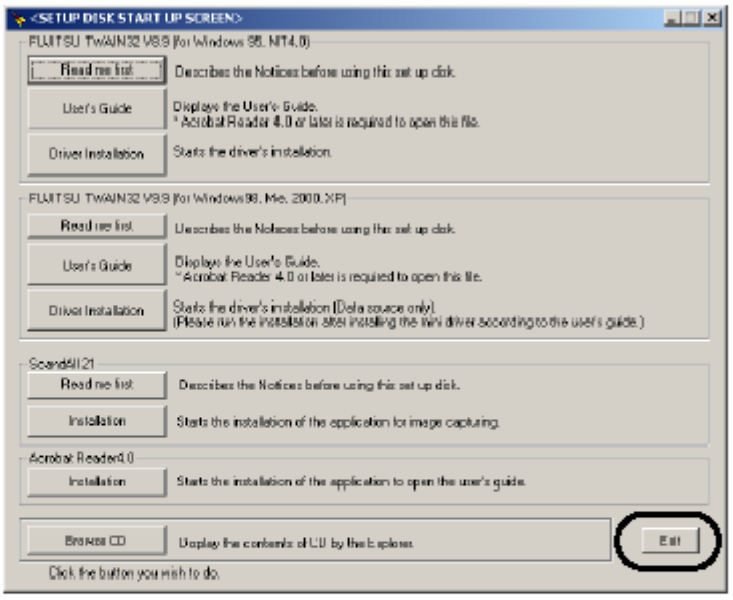
ASPI manager Version 4.01 or later is required. Check the WNASPI32.DLL file version with explorer.
Please refer to "Scanner Utility for Microsoft® Windows® User's Guide" for details.

3. If an older version is installed, uninstall it before doing the installation.

(2) Installation

1. Turn on the power by pushing the power button on the scanner's control panel. The green LED on the control panel lights and "Ready" is display on the LCD.
2. Turn on your PC and log on Windows®.
   When using Windows NT®4.0, log on as an administrator.
3. Insert the Scanner driver (CD-ROM) to the CD-ROM drive and use explorer to double click on **D:\Driver1\ASPI\install.exe** (when your CD-ROM is the D drive).

When automatic start has been set up, start up screen for the setup disk is displayed.
Click the [Exit] button and close this screen.



4. Follow the instruction on the screen to complete the installation. Make the best selection that suits your needs.
   - Select the language you will use during installation.
   - Check the names of components that need to be installed in [Select Components]. Explanation of the component is displayed below.
   - Check the installation directory. If you need to change the installation destination, click the [Change Directory] button then specify the destination.
   - Click the [Continue] button to start the installation.

5. When installation is finished, confirm that the following folder has been created. The icons displayed differ depending on the setting in [Select Component] during installation.

HINT

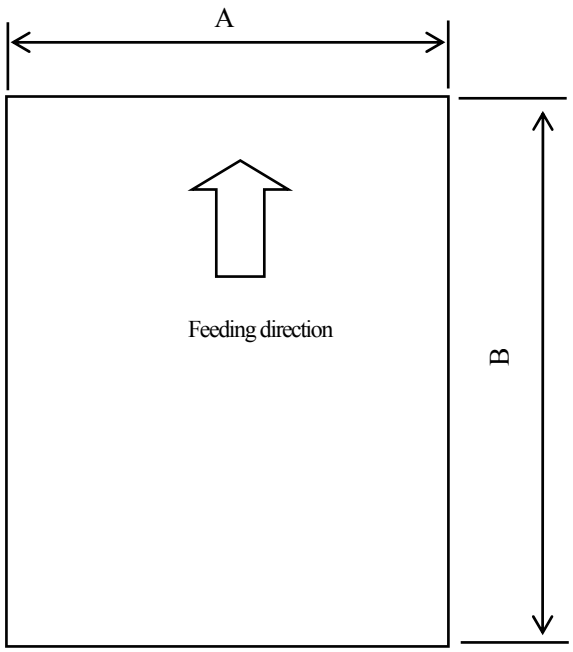
When installing the "TWAIN data source", the folder named [Scanner Utility for Microsoft Windows] is created in [Start]-[Programs].

Appendix B Document Specifications

B.1 Document size

Figure B.1 shows the document size supported by the scanner.

Note: When scanning a document with length of less than 80 mm, set paper length to "Short" in the Setup mode.



Scanner	Maximum document size		Minimum document size
	A	B	
fi-4860C	297 (11.7 inch)	432 (17 inch)	74 x 74 mm

Unit: mm

Figure B.1 Document size

B.2 Document quality

This section describes paper types of documents and ream weight of paper available for the scanner, and precautions.

<Document type>

The recommended paper type for document is as follows:

・Woodfree paper
・Wood containing paper

When using any other types of paper, test feeding a few sheets to ensure the satisfactory scan performance before ADF continuous reading.

<Paper thickness>

The following shows paper thickness (indicated as paper weight) available for scanning.

・ 52 to 127 g/m2 (13.9 lb to 34 lb)

05 Note: If Thinner paper roller kit (Option) is installed on New type scanner (Section 1.1), the feeding with following paper thickness is additionally available.

・ 31 to 52 g/m2 (9.6 lb to 13.9 lb) with A4 size or smaller

<Precautions>

1. Be careful not to scan the following documents. Preliminary document feed test may be necessary to avoid unexpected errors.

- Paper with clips or staples (remove them if any)
- Paper with wet ink. (wait until the paper gets dry)
- Paper with inconsistent thickness (such as an envelope).
- Paper with large rumples or curl (See Note 5).
- Paper with folds or tears.
- Tracing paper
- Coating paper
- Carbon paper
- Carbonless paper
- Paper smaller than 74 x 74 , or larger than A3
- Other than paper such as clothes, metal foil which is hard to be fed. (Copy the contents to paper and then scan.)
- Photographic paper
- Paper with notches on its side
- Other than rectangle paper

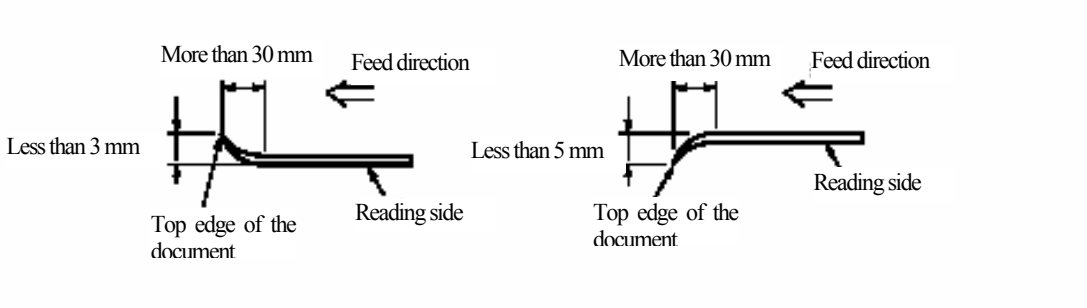
2. When scanning a translucent document, set the density to light mode.

3. To prevent roller smudging, avoid scanning a document filled out in pencil. Clean the roller as often as possible when scanning many documents. Cleaning once every 1,000 sheets is recommended.

4. The chemical composition of some carbonless paper reacts with the roller rubber and damages the rubber. Check the carbonless paper before use and be careful about the followings.

- When reading the carbonless paper, the life of Pad and rollers may become shorter than reading wood containing paper.
- Clean the roller after every 1 butch scan.

5. Remove curl on a document to be scanned so that it satisfies the following specification.



6. When you read curled, wrinkled, or creased documents, documents may not be successfully arranged in the stacker. Remove curl or crease before scan.

7. Scanning delicate, important, historical documents with ADF must be carefully considered under user responsibility, in order to prevent any damage to them. For such kind of documents we suggest to use one of our many scanner models equipped with flatbed capability.

8. When reading wood containing paper, the life of Pad and rollers may become shorter than reading woodfree paper.

B.3 Document limitations

This section describes restrictions on document used for the scanner.

<Areas that must not be perforated>

Perforations are prohibited in the shaded area of Figure B.3-1 to avoid document size detection error, document detection error and paper jam error.
Refer to Section B.6 for specified paper.

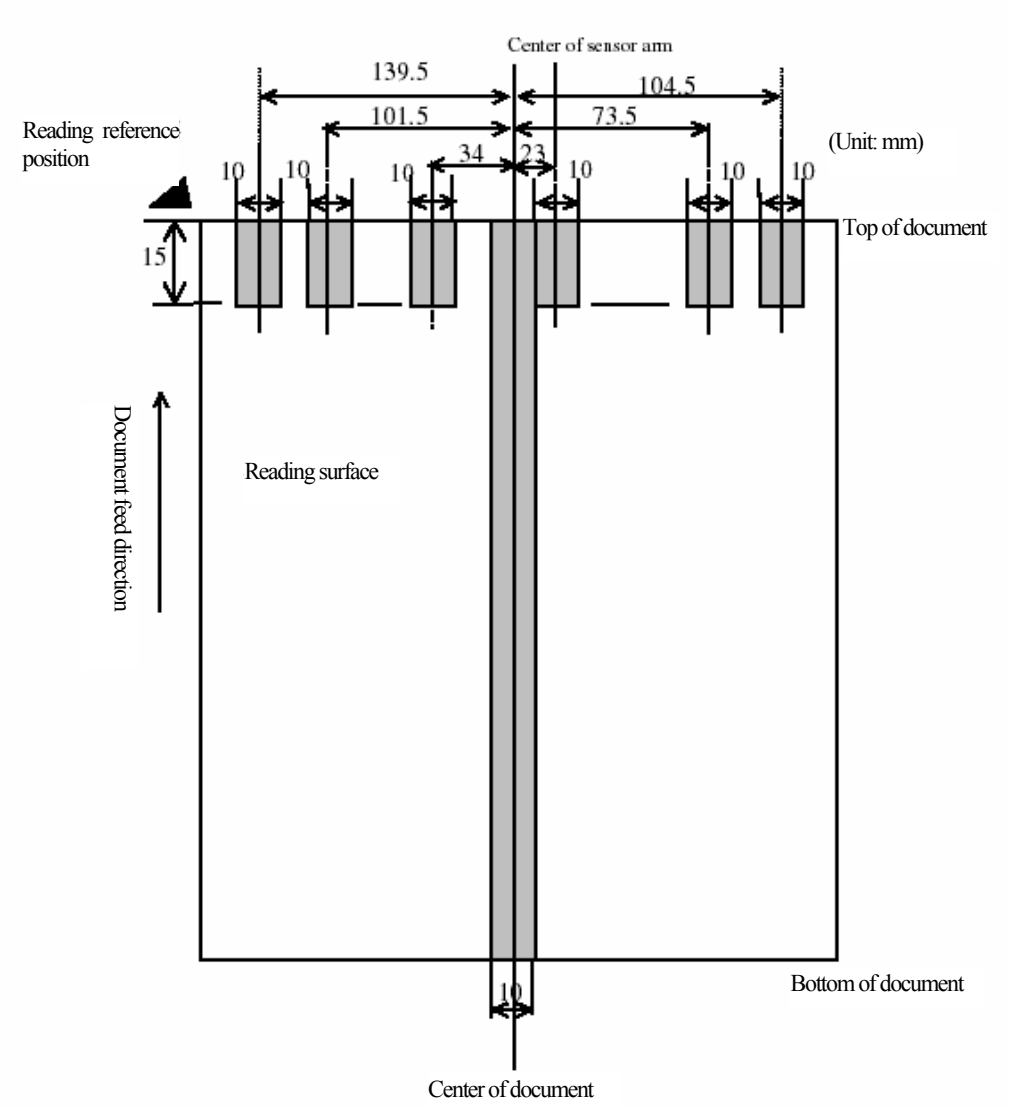


Fig. B.3-1 Areas that must not be perforated

<Restrictions when double feed detection by optical transmission or paper length comparison is enabled>

a) Ream weight: 45 – 110 kg/ream
   Thickness: 0.065 mm to 0.155 mm
b) Paper length precision (dispersion): Within 1%
c) Black print prohibit area in the center top of a document. (10 mm x 10 mm)
d) Perforation prohibit area in the center of a document (35 mm width)
e) Print Duty: Less than 12% (10 mm width in the center of a document: Vertical boarder not allowed)
f) Transmitted light intensity through a document (grounding color area): Within 10%
g) Mixed documents not allowed

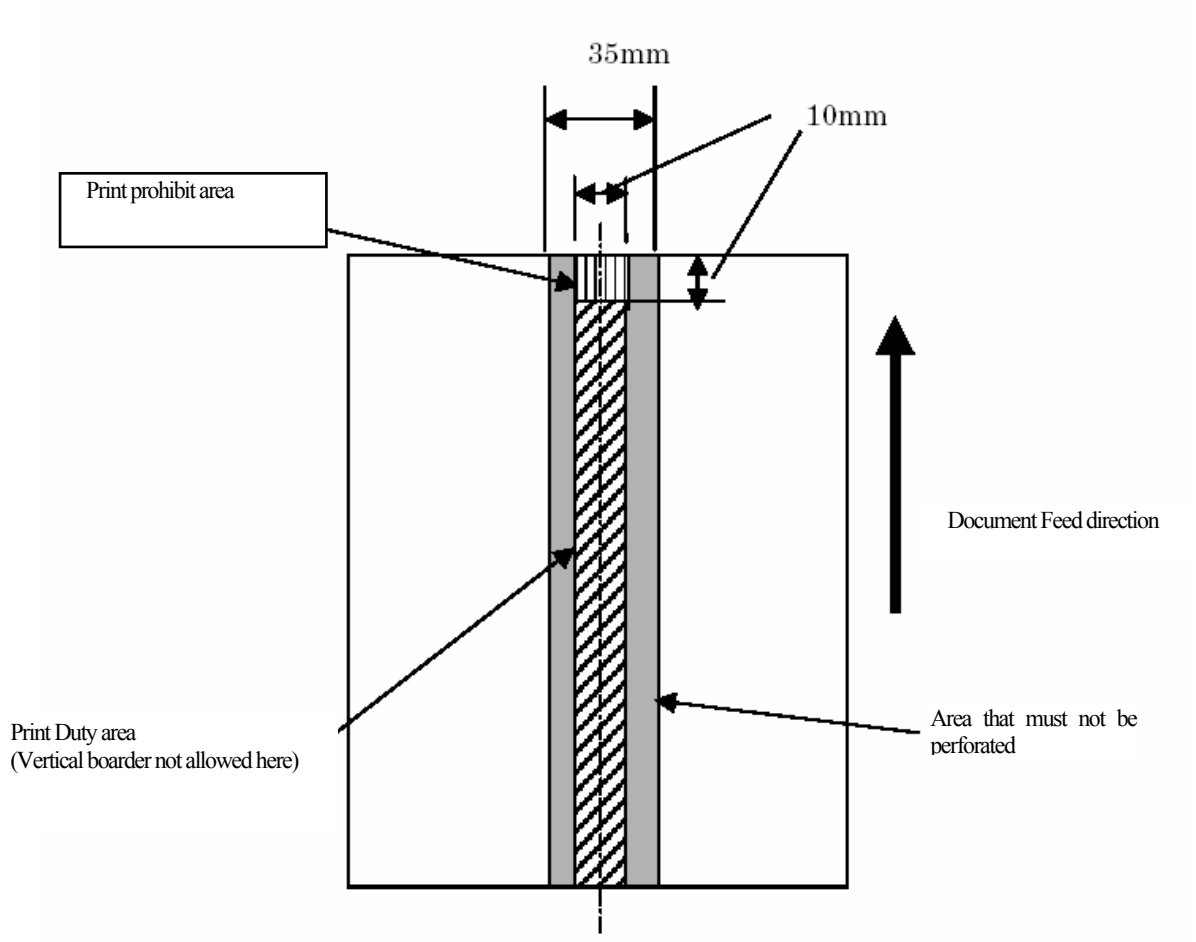


Figure B.3-2 Document restrictions at double feed detection

B.4 Grounding color area

As shown in Figure B.4, the top 3 mm part of the reading area on each surface should be left blank. If the drop-out color cannot be specified, select "Photo" in the selection of line-drawing or photograph from the driver setting screen.

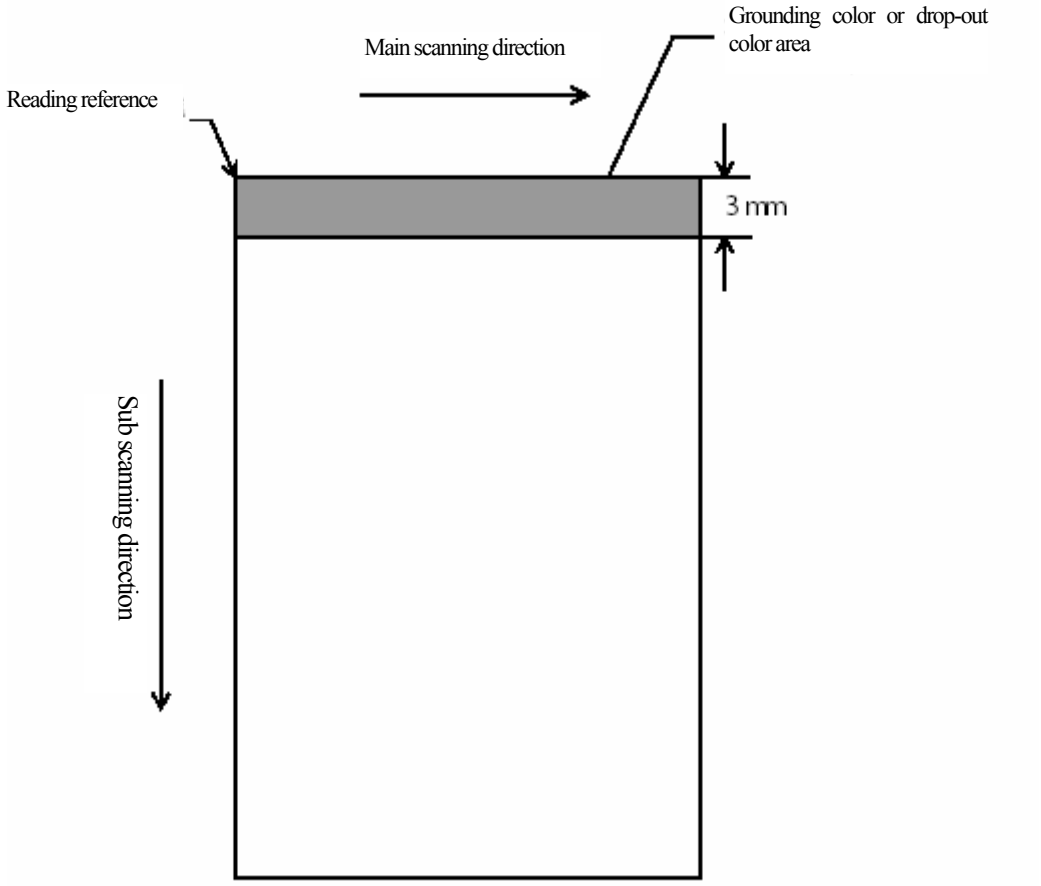


Figure B.4 Grounding color area

B.5 Specified paper

Shape

Figure B.5 shows the shape of the specified document.

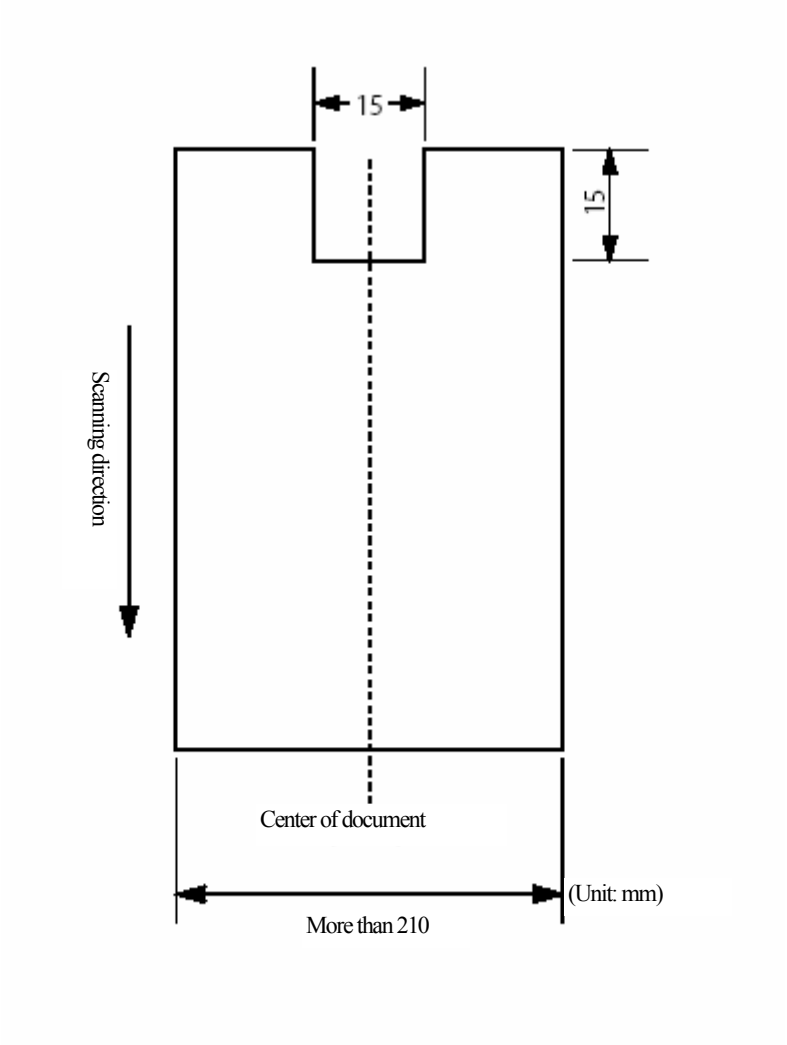


Figure B.5 Specified paper

Document type

The document type and ream weight specifications are the same as the one described in B.2.
However, the document size shall be A4 or larger (more than 210 mm width).

Appendix C EEPROM data

C.1 EEPROM address, data map and Factory default

Address	Data	Factory default
#00	Initialized code	0x33
#01	Initialized code	0x77
#02	EEPROM compare error address	0x00
#03	DF detection paper length equivalent (hidden function)	0x00
#04	Reserved	0x00
#05	Waiting time to start picking a document for manual feed	0x00
#06	Sensor SF1 retry setting	0x00
#07	Reserved	0x00
#08	Manual feed time-out	0x00
#09	Reserved	0x00
#0A	TPS baud rate setting	0x08
#0B	SCSI ID, Product ID setting	0x05
#0C	Imprinter setting (POST)	0x00
#0D	Imprinter print offset setting (POST)	0x00
#0E	Reserved	0x00
#0F	Double feed detection mode	0x01
#10	Reserved	0x00
#11	Reserved	0x00
#12	Double feed detection method setting, Pre-pick setting, and so on	0x80
#13	Reserved	0x00
#14	Reserved	0x00
#15	Lamp off time	0x00
#16	Reserved	0x00
#17	Double feed detection by paper length	0x01
#18	Reserved	0x00
#19	IPC4 Pre-set pattern No.	0x00
#1A	White level follower mode	0x00
#1B	Device control	0x00
#1C	Reserved	0x00
#1D	Device control 2	0x00
#1E	Main scanning offset adjustment value for front side	Adjusted
#1F	Sub scanning offset adjustment value for front side	Adjusted

Note: Set 0 to undefined bit.

Address	Data	Factory default
#20	Main scanning offset adjustment value for back side	Adjusted
#21	Sub scanning offset adjustment value for back side	Adjusted
#22	Reserved	0x00
#23	Sensor SF1 current set value	Adjusted *2
#24	Sensor SF1.5 current set value	Adjusted *2
#25	Sensor SF3 current set value	Adjusted *2
#26	Sensor SB5 current set value	Adjusted *2
#27	Sensor SA4 current set value	Adjusted *2
#28	Sensor SB4 current set value	Adjusted *2
#29	Sensor SA3 current set value	Adjusted *2
#2A	Sensor SF1 slice value	0xAA
#2B	Sensor SF1.5 slice value	0x6A
#2C	Sensor SF3 slice value	0x6A
#2D	Sensor SB5 slice value	0x6A
#2E	Sensor SA4 slice value	0x6A
#2F	Sensor SB4 slice value	0x6A
#30	Sensor SA3 slice value	0x6A
#31	Reserved	0x00
#32	Reserved	0x80
#33	Reserved	0x00
#34	Reserved	0x00
#35	Reserved	0x00
#36	Reserved	0x00
#37	Reserved	0x00
#38	Reserved	0x00
#39	Reserved	0x00
#3A	Reserved	0x00
#3B	Reserved	0x00
#3C	Reserved	0x00
#3D	Drop out color setting	0x00
#3E	Reserved	0x00
#3F	Reserved	0x00

Note: Set 0 to undefined bit.

*2: The scanner automatically adjusts this value at power-on or when the Upper transport unit is closed.
(This value is not written at Sensor manual test.) (See Section 7.9)

Address	Data	Factory default
#40	Reserved	0x00
#41	Reserved	0x00
#42	Reserved	0x00
#43	Sensor SKR current set value	Adjusted *2
#44	Sensor SKR slice value	0x6A
#45	Sensor SKL current set value	Adjusted *2
#46	Sensor SKL slice value	0x6A
#47	Sensor SSK0 (SF0) current set value	Adjusted *2
#48	Sensor SSK0 (SF0) slice value	0x6A
#49	Paper separation function	0x00
#4A	Reserved	0x00
#4B	Sensor SF1.5 retry setting	0x00
#4C	Reserved	0x00
#4D	Reserved	0x00
#4E	Reserved	0x00
#4F	Reserved	0x00
#50	Reserved	0x00
#51	Reserved	0x00
#52	Reserved	0x80
#53	Fluorescent lamp control	0x00
#54	Reserved	0x00
#55	Reserved	0x00
#56	Reserved	0x00
#57	Reserved	0x00
#58	Reserved	0x00
#59	Reserved	0x00
#5A	Reserved	0x00
#5B	Reserved	0x00
#5C	Sleep mode	0x0F
#5D	LCD display language select	0x00 or 0x02 *1
#5E	Scanner specifications/Document size	0x00
#5F	Control switch	0x00

Note: Set 0 to undefined bit.

*1: 0x00 is set for Japan model, 0x02 is set for oversea model

*2: The scanner automatically adjusts this value at power-on or when the Upper transport unit is closed. (This value is not written at Sensor manual test.) (See Section 7.9)

Address	Data	Factory default
#60	Abrasion alarm interval setting	0x1E
#61	Fluorescent lamp lighting time (front): H	0x00
#62	Fluorescent lamp lighting time (front): M	0x00
#63	Fluorescent lamp lighting time (front): L	0x00
#64	Fluorescent lamp lighting time (back): H	0x00
#65	Fluorescent lamp lighting time (back): M	0x00
#66	Fluorescent lamp lighting time (back): L	0x00
#67	Device life counter: H1	0x00
#68	Device life counter: H2	0x00
#69	Device life counter: L1	0x00
#6A	Device life counter: L2	0x00
#6B	Imprinter number initial value (Post): H	0x00
#6C	Imprinter number initial value (Post): L	0x00
#6D	Abrasion counter (Pad): H	0x00
#6E	Abrasion counter (Pad): M	0x00
#6F	Abrasion counter (Pad): L	0x00
#70	Reserved	0x00
#71	Reserved	0x00
#72	Paper separation "Thin" current value	0x4B
#73	Paper separation "Thick" current value	0x70
#74	Paper separation "Slightly thick" current value	0x64
#75	Paper separation "Normal" current value	0x5C
#76	FRI slipping coefficient 03	~~0x00~~ Adjusted (*3)
#77	Sensor SF1 current value for double feed detection	0x08
#78	Reserved	0x00
#79	Reserved	0x00
#7A	Paper separation "Slightly thin" current value	0x53
#7B	Reserved	0x00
#7C	Imprinter number initial value (Post): HH	0x00
#7D	Reserved	0x00
#7E	Reserved	0x00
#7F	Reserved	0x00

Note: Set 0 to undefined bit.

03 *3 : This value is to compensate the Jam detection timing, when the paper slips during feeding. Do not change this value. If this value is changed, the Jam error will not be warranted.

Address	Data	Factory default
#80	I/F Board Slot setting	0x00
#81	Reserved	0x00
#82	Reserved	0x00
#83	Reserved	0x00
#84	Reserved	0x00
#85	Reserved	0x00
#86	Reserved	0x00
#87	VCLK signal setting	0x00
#88	SCSI bus width setting	0x00
#89	Reserved	0x00
#8A	White balance relaxation value (front)	Adjusted
#8B	White balance relaxation value (back)	Adjusted
#8C	Sensor SF2 current set value	Adjusted *2
#8D	Sensor SF2 slice value	0x6A
#8E	Reserved	0x00
#8F	Reserved	0x00
#90	Black level value Front side Red	0x00
#91	Black level value Front side Green	0x00
#92	Black level value Front side Blue	0x00
#93	Black level value Back side Red	0x00
#94	Black level value Back side Green	0x00
#95	Black level value Back side Blue	0x00
#96	Reserved	0x00
#97	Reserved	0x00
#98	Imprinter function setting (PRE)	0x00
#99	Imprinter print offset setting (PRE)	0x00
#9A	PRE imprinter initial value: HH	0x00
#9B	PRE imprinter initial value: H	0x00
#9C	PRE imprinter initial value: L	0x00
#9D	Abrasion counter (Pick roller unit): H	0x00
#9E	Abrasion counter (Pick roller unit): M	0x00
#9F	Abrasion counter (Pick roller unit): L	0x00

Note: Set 0 to undefined bit.

*2: The scanner automatically adjusts this value at power-on or when the Upper transport unit is closed.
(This value is not written at Sensor manual test.) (See Section 7.9)

Address	Data	Factory default	
#A0	Manual density correction value Front R	0x00	
#A1	Manual density correction value Front G	0x00	
#A2	Manual density correction value Front B	0x00	
#A3	Manual density correction value Back R	0x00	
#A4	Manual density correction value Back G	0x00	
#A5	Manual density correction value Back B	0x00	
#A6	Density correction value coefficient	0x00	
#A7	Reserved	0x00	
#A8	White level conversion ratio Front R	Adjusted	
#A9	White level conversion ratio Front G	Adjusted	
#AA	White level conversion ratio Front B	Adjusted	
#AB	White level conversion ratio Back R	Adjusted	
#AC	White level conversion ratio Back G	Adjusted	
#AD	White level conversion ratio Back B	Adjusted	
#AE	Reserved	0x00	
#AF	Reserved	0x00	
#B0	Setup item selection setting 1	0x00	To be overwritten after shipment
#B1	Setup item selection setting 2	0x00	
#B2	Setup item selection setting 3	0x00	
#B3	Setup item selection setting 4	0x00	
#B4	Reserved	0x00	
#B5	Reserved	0x00	
#B6	Reserved	0x00	
#B7	Fluorescent lamp lighting time abrasion counter (front): H	0x00	
#B8	Fluorescent lamp lighting time abrasion counter (front): M	0x00	
#B9	Fluorescent lamp lighting time abrasion counter (front): L	0x00	
#BA	Fluorescent lamp lighting time abrasion counter (back): H	0x00	
#BB	Fluorescent lamp lighting time abrasion counter (back): M	0x00	
#BC	Fluorescent lamp lighting time abrasion counter (back): L	0x00	
#BD	Abrasion counter (Brake roller): H	0x00	
#BE	Abrasion counter (Brake roller): M	0x00	
#BF	Abrasion counter (Brake roller): L	0x00	

Note: Set 0 to undefined bit.

Address	Data	Factory default
#C0	First activate date (Year)	To be overwritten
#C1	First activate date (Month)	To be overwritten
#C2	First activate date (Date)	To be overwritten
#C3	Reserved	0x00
#C4	Reserved	0x00
#C5	Reserved	0x00
#C6	Reserved	0x00
#C7	Reserved	0x00
#C8	Reserved	0x00
#C9	Reserved	0x00
#CA	Reserved	0x00
#CB	Reserved	0x00
#CC	Reserved	0x00
#CD	Reserved	0x00
#CE	Reserved	0x00
#CF	Reserved	0x00
#D0	Reserved	0x00
#D1	Reserved	0x00
#D2	Reserved	0x00
#D3	Reserved	0x00
#D4	Reserved	0x00
#D5	Reserved	0x00
#D6	Reserved	0x00
#D7	Reserved	0x00
#D8	Reserved	0x00
#D9	Reserved	0x00
#DA	Reserved	0x00
#DB	Reserved	0x00
#DC	Reserved	0x00
#DD	Reserved	0x00
#DE	Reserved	0x00
#DF	Reserved	0x00

Note: Set 0 to undefined bit.

Address	Data	Factory default
#E0	EGSA firmware revision 0	03 These data is used only in the factory, and can not be used in the field..
#E1	EGSA firmware revision 1	
#E2	EGSA firmware revision 2	
#E3	EGSA firmware revision 3	
#E4	EGSA firmware revision 4	
#E5	EGSA firmware revision 5	
#E6	EGSA firmware revision 6	
#E7	EGSA firmware revision 7	
#E8	EGSA firmware revision 8	
#E9	EGSA firmware revision 9	
#EA	EGSA firmware revision A	
#EB	EGSA firmware revision B	
#EC	EGSA firmware revision C	
#ED	EGSA firmware revision D	
#EE	EGSA firmware revision E	
#EF	EGSA firmware revision F	
#F0	Reserved	0x00
#F1	Reserved	0x00
#F2	Reserved	0x00
#F3	Reserved	0x00
#F4	Reserved	0x00
#F5	Reserved	0x00
#F6	Reserved	0x00
#F7	Reserved	0x00
#F8	Reserved	0x00
#F9	Reserved	0x00
#FA	Reserved	0x00
#FB	Reserved	0x00
#FC	Reserved	0x00
#FD	Reserved	0x00
#FE	Reserved	0x00
#FF	Reserved	0x00

Note: Set 0 to undefined bit.

C.2 Details of EEPROM data

Address	Data	Remark
#00	Initialized code	0x33
#01	Initialized code	0x77

Address	Data	Remark
#02	EEPROM compare error address	

This address is used to save the address that was found as "compare error" by MCD EEPROM check at power-on. Note that the address number will be added "1" to be able to indicate address #0.

Address	Data	Remark
#03	DF detection paper length equivalent	Hidden function

This address specifies paper length by 1 mm. When the value is specified in this address, the value in address #17 will be ignored.

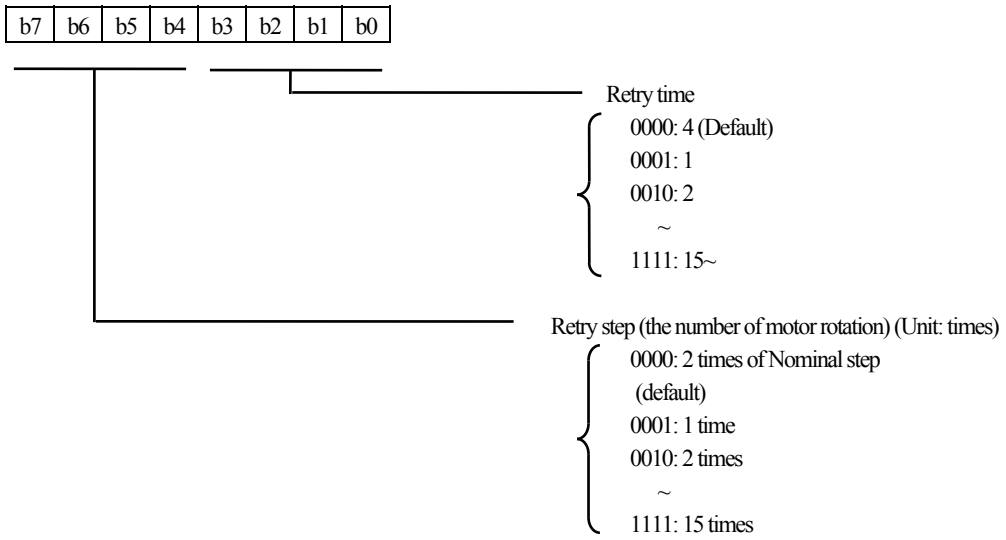
Address	Data	Remark
#04	Reserved	

Address	Data	Remark
#05	Waiting time to start picking a document for manual feed	

This address specifies the time from when paper is detected to when pick operation starts in manual feed mode.
The value can be specified in range of 0.2 (01h) to 29.8 (95h) seconds.
The value "00h" indicates 1 second. (This is default.)

Address	Data	Remark
#06	Sensor SF1 retry setting	

This address specifies Sensor SF1 retry (Pick retry) settings as follows:



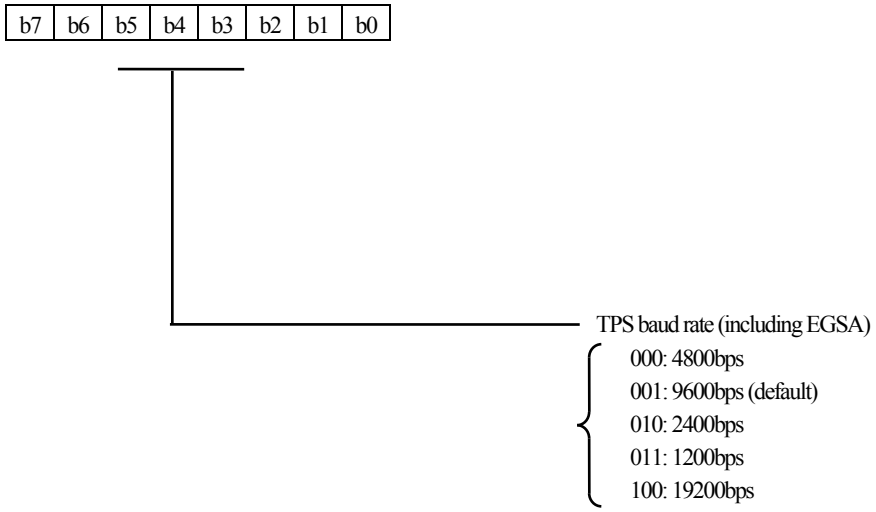
Address	Data	Remark
#07	Reserved	

Address	Data	Remark
#08	Manual feed time-out	

This address specifies the time from when the scanner receives "Object position" from the host to when the scanner reports "No paper" to the host.
The value can be specified by 1 second in the range of 1 (01h) to 255 (FFh).
The value "0 x 00" indicates 30 seconds. (Default)

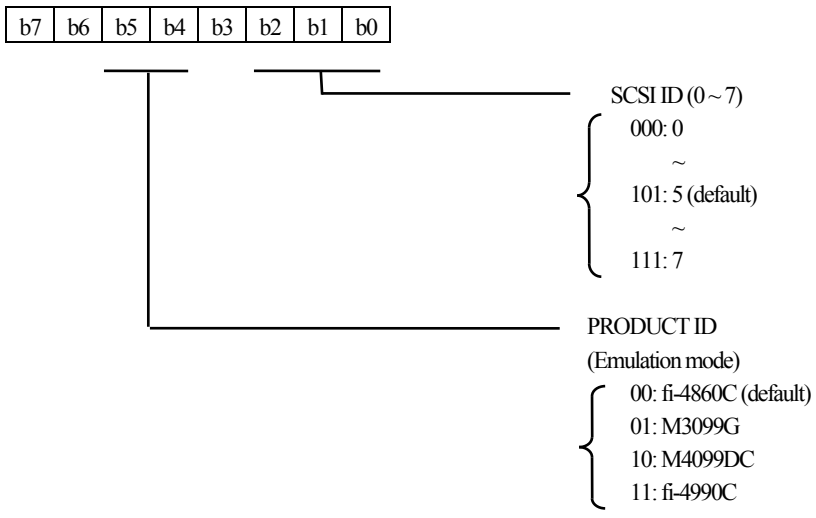
Address	Data	Remark
#09	Reserved	

Address	Data	Remark
#0A	TPS baud rate setting	



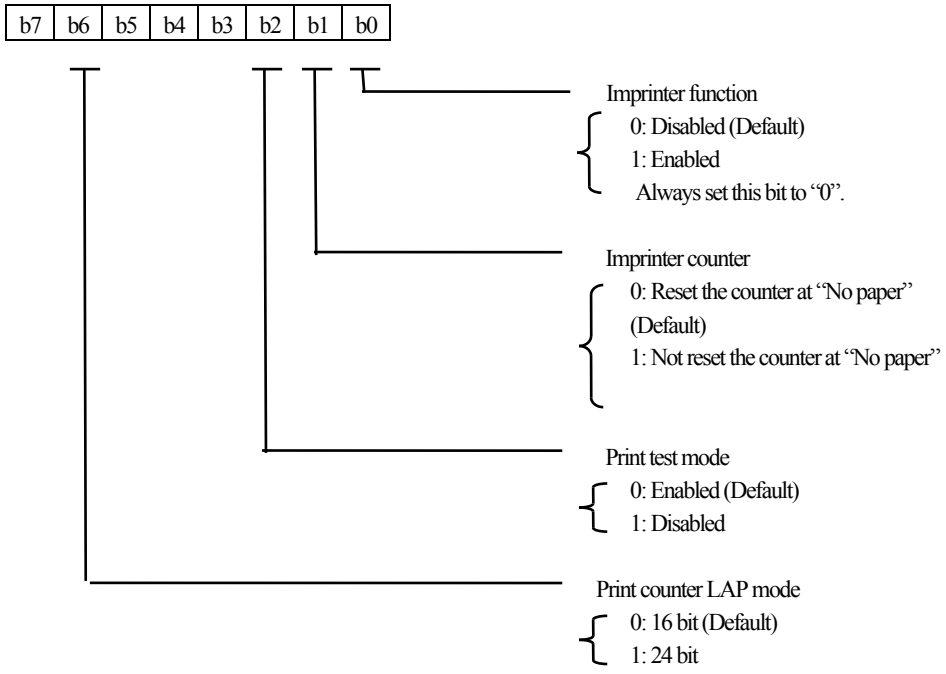
(Bit 7,6 are reserved.)

Address	Data	Remark
#0B	SCSI ID, Product ID setting	



(Bit 7,6,3 are reserved.)

Address	Data	Remark
#0C	Imprinter setting (POST)	



(Bit 7,5, 4, 3 are reserved.)

See address #98 for PRE imprinter.

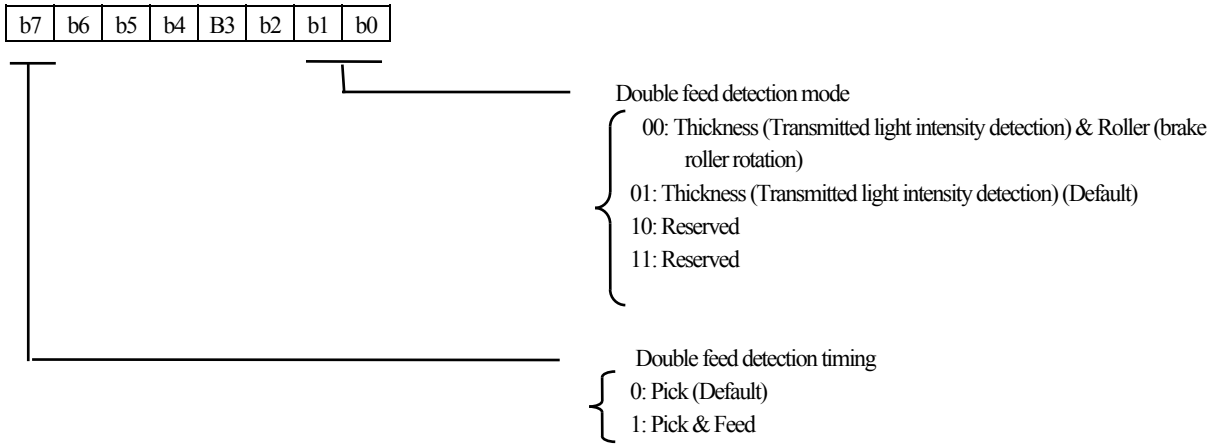
Address	Data	Remark
#0D	Imprinter print offset setting (POST)	

This address adjusts the print start position, specifying the offset from top edge of the document.
The value can be specified in the range of 0 x 01 (1 mm) ~ 0 x FF (+255 mm), unless there are restrictions on imprinter.

When the value is "0 x 00", the offset will be 5 mm (default).

Address	Data	Remark
#0E	Reserved	

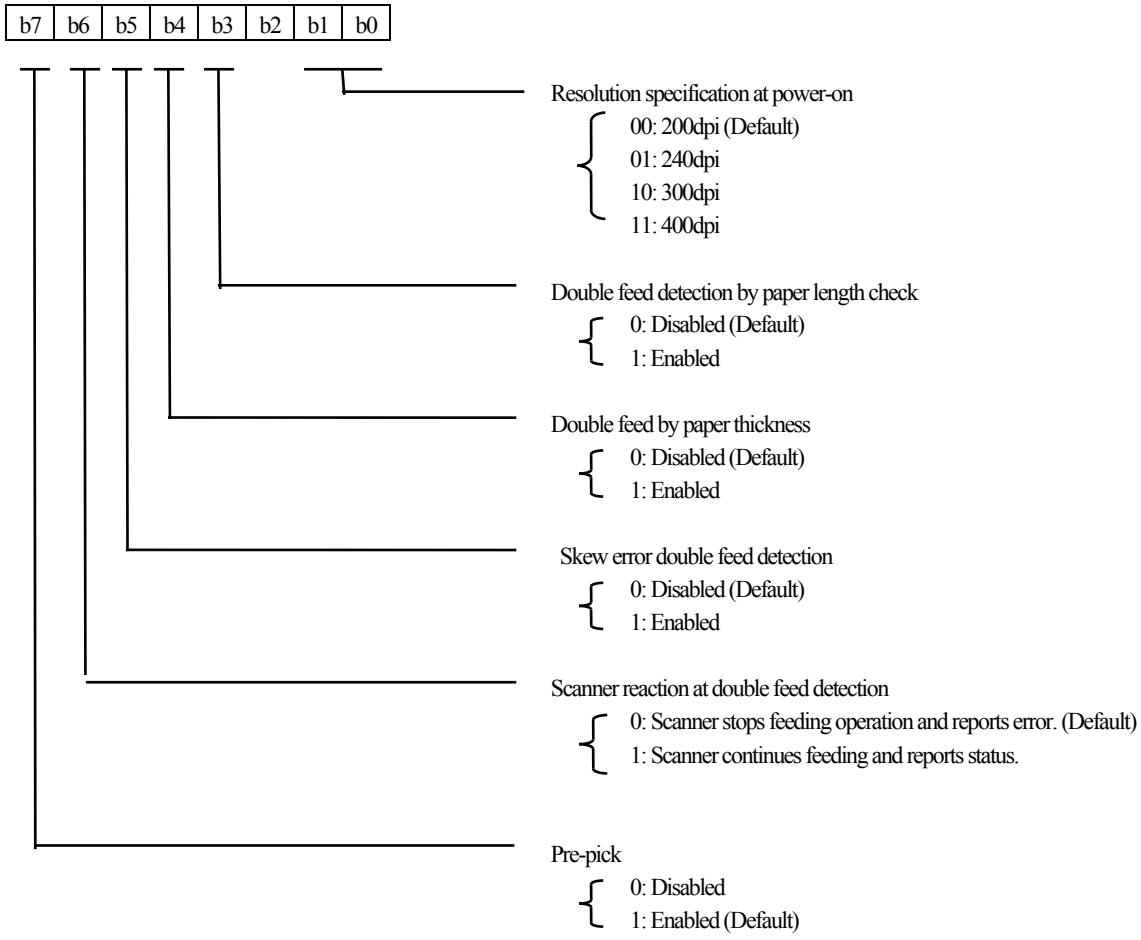
Address	Data	Remark
#0F	Double feed detection mode	



(Bit 6 ~2 are reserved.)

Address	Data	Remark
#10	Reserved	
#11	Reserved	

Address	Data	Remark
#12	Double feed detection method setting, Pre-pick setting, and so on	



(Bit 2 is reserved.)

Address	Data	Remark
#13	Reserved	
#14	Reserved	

Address	Data	Remark
#15	Lamp off time	

b7	b6	b5	b4	b3	b2	b1	b0

Lamp Off time

Lamp Off time: This address specifies the time until Lamp is turned off when scanner is not in reading operation.
The value can be specified by 1 second in the range of 1 (01h) ~255 seconds (FFh).
When the value is "0 x 00", the time will be 60 seconds. (Default)

Address	Data	Remark
#16	Reserved	

Address	Data	Remark
#17	Double feed detection by paper length	

b7	b6	b5	b4	b3	b2	b1	b0

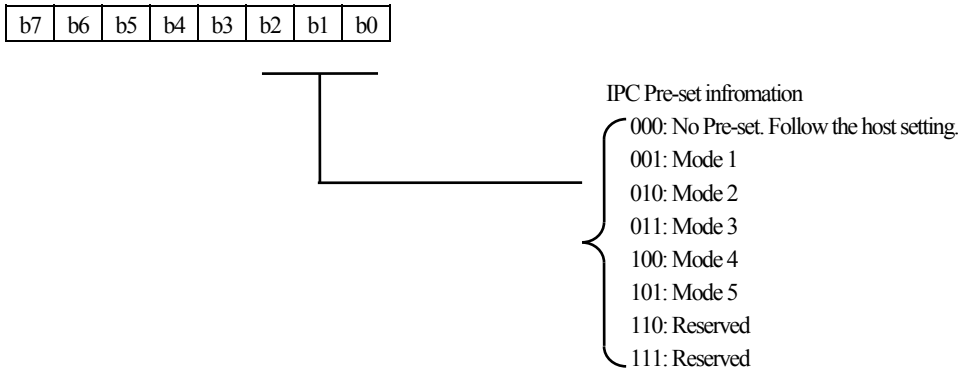
Criteria for paper length check
- 00: ± 15 mm (Default)
- 01: ± 10 mm
- 10: ± 15 mm
- 11: ± 20 mm

(Bit 7 ~ 2 are reserved.)

Address	Data	Remark
#18	Reserved	

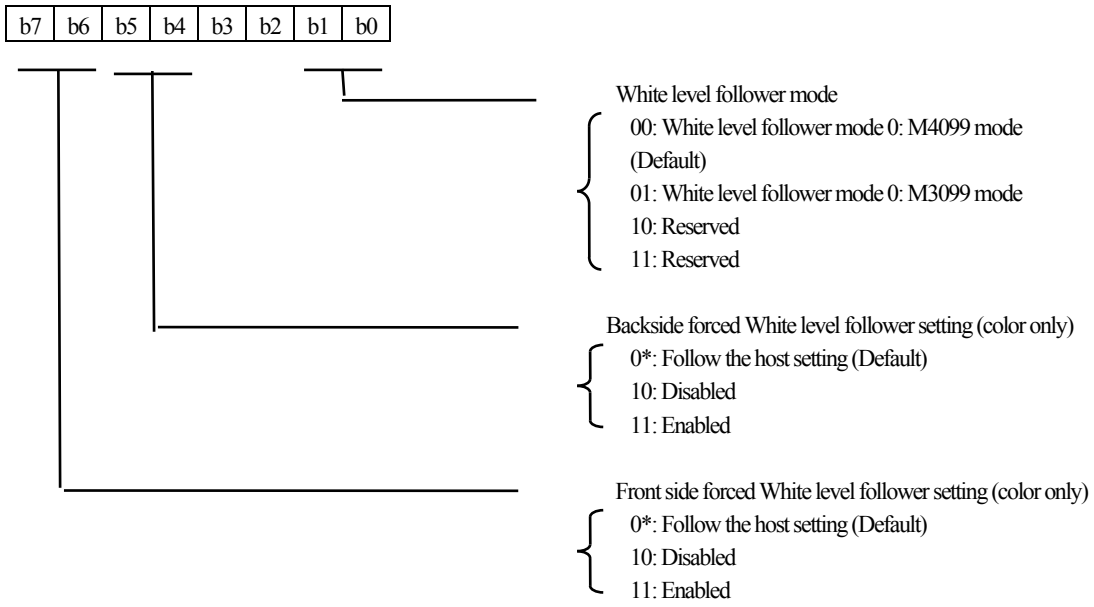
Address	Data	Remark
#19	IPC4 Pre-set pattern No.	

This address specifies IPC4 Pre-set pattern No. that simplifies the setting of IPC4 image processing.
(Can be specified in Setup mode)



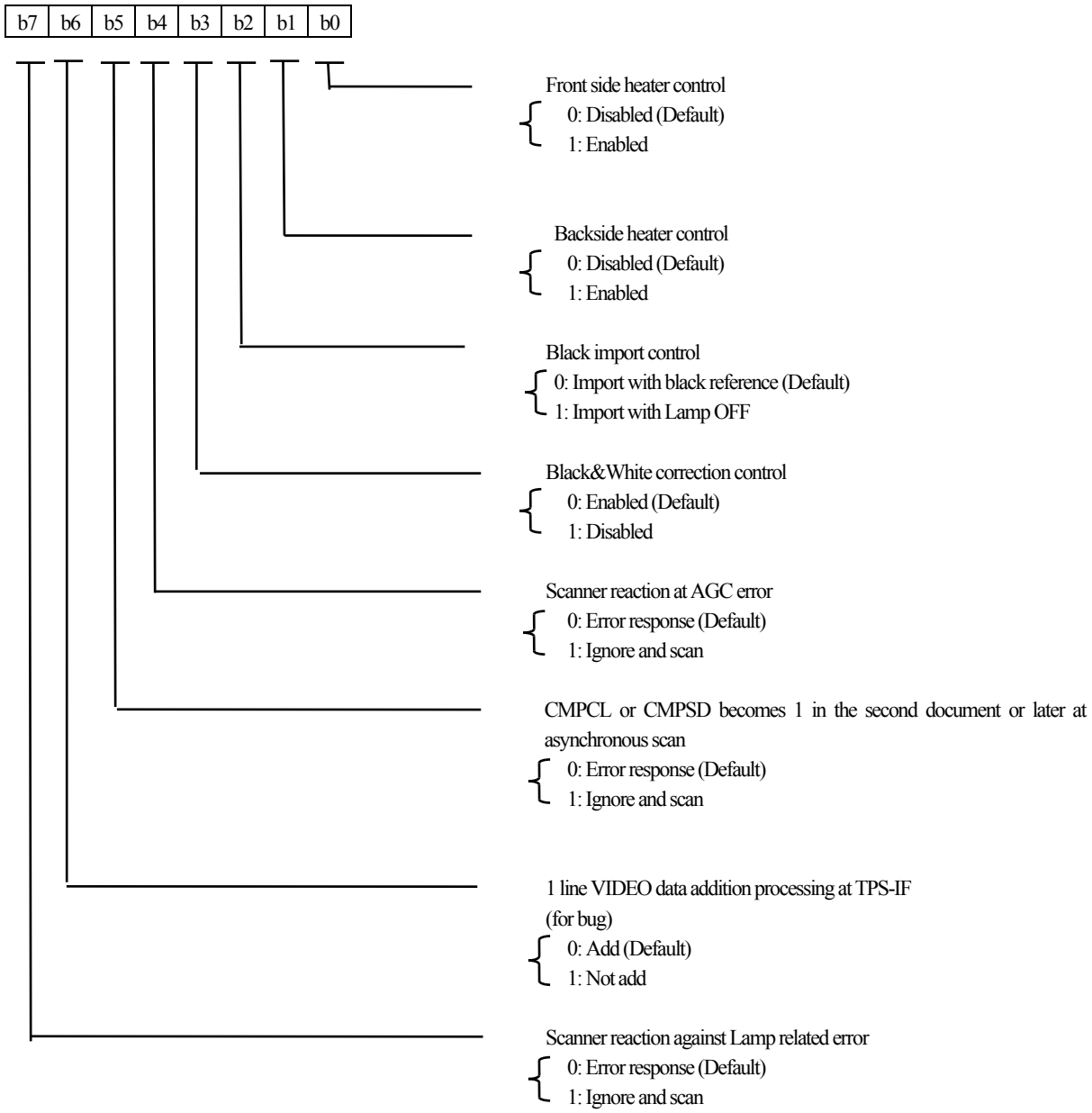
(Bit 7 ~ 3 are reserved.)

Address	Data	Remark
#1A	White level follower mode	



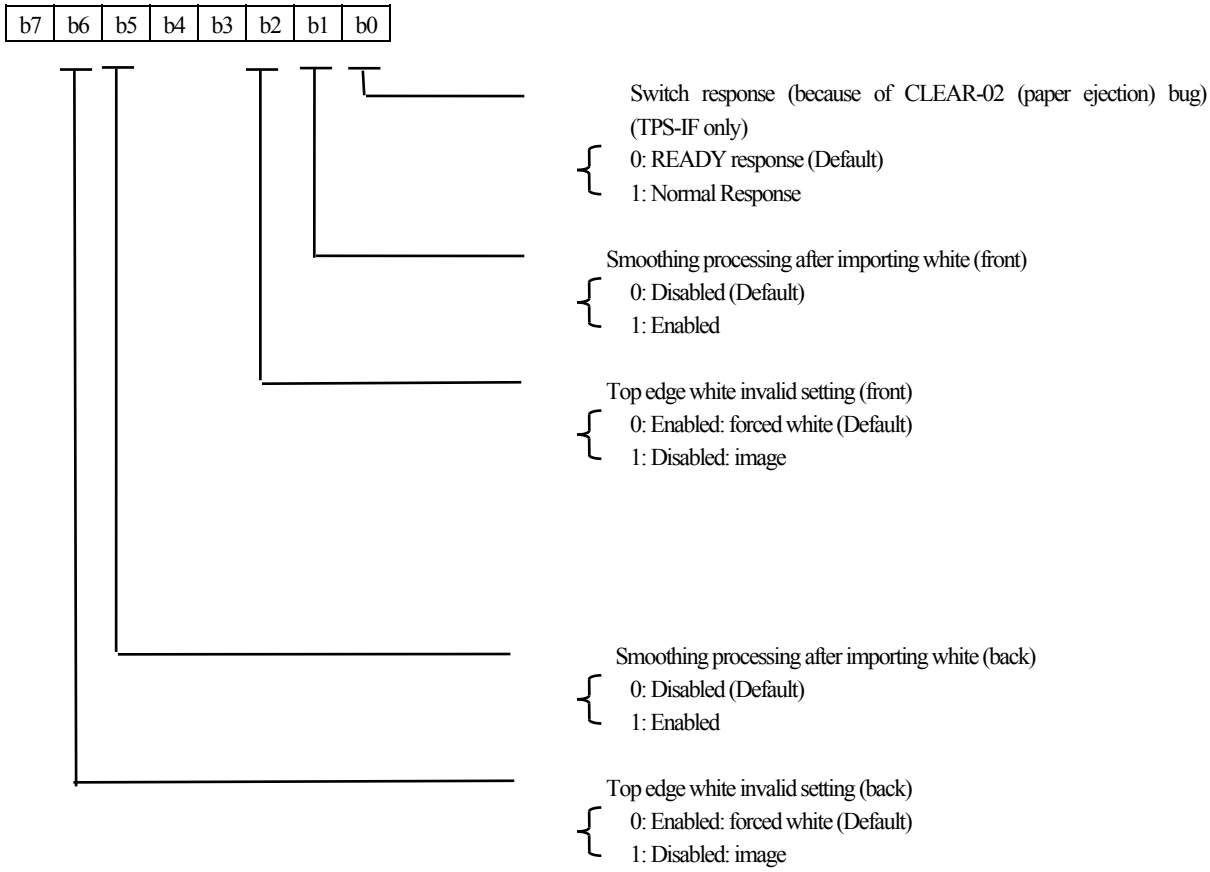
(Bit 3, 2 are reserved.)

Address	Data	Remark
#1B	Device control	



Address	Data	Remark
#1C	Reserved	

Address	Data	Remark
#1D	Device control 2	



(Bit 7, 4, 3 are reserved.)

Address	Data	Remark
#1E	Main scanning offset adjustment value for front side	Can be set in the range of -128 ~ +127
#1F	Sub scanning offset adjustment value for front side	Can be set in the range of -128 ~ +127
#20	Main scanning offset adjustment value for back side	Can be set in the range of -128 ~ +127
#21	Sub scanning offset adjustment value for back side	Can be set in the range of -128 ~ +127

Specify the offset value at 400 dpi in the range of 0 x 80 (-128 dot) ~ 0 x 7F (+ 127 dot).

0 x 7F (+127 dot)
~
0 x 01 (+1 dot)
~
0 x 00 (+ 0 dot: Default)
~
0 x FF (-1 dot)
~
0 x 80 (-128 dot)

For sub scanning, when the offset value is increased, image moves upward, and when the offset value is decreased, image moves downward.
For main scanning, when the offset value is increased, image moves leftward, and when the offset value is decreased, image moves rightward.

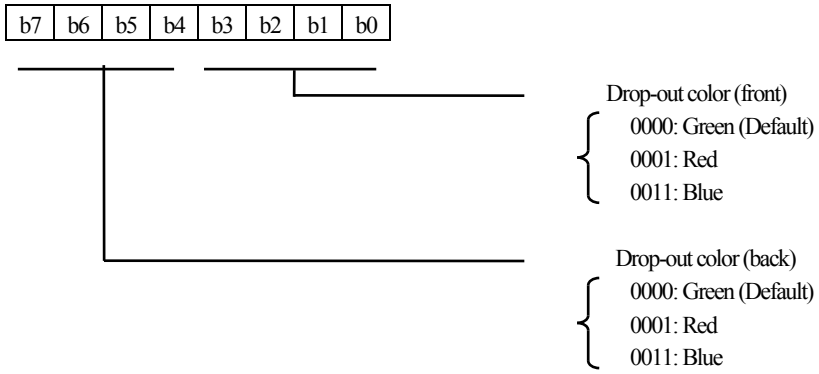
Address	Data	Remark
#22	Reserved	

Address	Data	Remark
#23	Sensor SF1 current set value	
#24	Sensor SF1.5 current set value	
#25	Sensor SF3 current set value	
#26	Sensor SB5 current set value	
#27	Sensor SA4 current set value	
#28	Sensor SB4 current set value	
#29	Sensor SA3 current set value	

Address	Data	Remark
#2A	Sensor SF1 slice value	
#2B	Sensor SF1.5 slice value	
#2C	Sensor SF3 slice value	
#2D	Sensor SB5 slice value	
#2E	Sensor SA4 slice value	
#2F	Sensor SB4 slice value	
#30	Sensor SA3 slice value	

Address	Data	Remark
#31	Reserved	
#32	Reserved	
#33	Reserved	
#34	Reserved	
#35	Reserved	
#36	Reserved	
#37	Reserved	
#38	Reserved	
#39	Reserved	
#3A	Reserved	
#3B	Reserved	
#3C	Reserved	

Address	Data	Remark
#3D	Drop out color setting	



Address	Data	Remark
#3E	Reserved	
#3F	Reserved	
#40	Reserved	
#41	Reserved	
#42	Reserved	

Address	Data	Remark
#43	Sensor SKR current set value	
#44	Sensor SKR slice value	
#45	Sensor SKL current set value	
#46	Sensor SKL slice value	
#47	Sensor SSK0 (SF0) current set value	
#48	Sensor SSK0 (SF0) slice value	

Address	Data	Remark
#49	Paper separation fuction	

b7	b6	b5	b4	b3	b2	b1	b0

Paper separation function
- 000: Automatic (Mode 3): (Default)
- 001: Mode 1
- 010: Mode 2
- 011: Mode 3
- 100: Mode 4
- 101: Mode 5

(Bit 7 ~ 3 are reserved.)

Address	Data	Remark
#4A	Reserved	

Address	Data	Remark
#4B	Sensor SF1.5 retry setting	

This address specifies Sensor SF1.5 retry (Feed retry) settings as follows.

b7	b6	b5	b4	b3	b2	b1	b0

Retry times
- 0000: 4 (Default)
- 0001: 1
- 0010: 2
- ~
- 1111: 15

Retry step (the number of motor step) (Unit:times)
- 0000: 2 times of Nominal step (Default)
- 0001: 1 time
- 0010: 2 times
- ~
- 1111: 15 times

Address	Data	Remark
#4C	Reserved	
#4D	Reserved	
#4E	Reserved	
#4F	Reserved	
#50	Reserved	
#51	Reserved	
#52	Reserved	

Address	Data	Remark
#53	Fluorescent lamp control	

This address controls light intensity at low temperature.

b7	b6	b5	b4	b3	b2	b1	b0

Fluorescent lamp control
- 0: Normal (Default)
- 1: Always Lamp ON

(Bit 7 ~ 1 are reserved.)

Address	Data	Remark
#54	Reserved	
#55	Reserved	
#56	Reserved	
#57	Reserved	
#58	Reserved	
#59	Reserved	
#5A	Reserved	
#5B	Reserved	

Address	Data	Remark
#5C	Sleep mode	

This address specifies the transition time until entering into power save mode.

b7	b6	b5	b4	b3	b2	b1	b0

000000: Reserved
000101: 5 minutes
000110: 6 minutes
000111: 7 minutes
~
111100: 60 minutes MAX 60 minutes (Do not set the value other than 60 minutes)
Set b6, b7 to 0.

Address	Data	Remark
#5D	LCD display language select	

b7	b6	b5	b4	b3	b2	b1	b0

LCD display language
- 00: Katakana display (Default)
- 10: English

(Bit 7 ~ 2 are reserved.)

Address	Data	Remark
#5E	Scanner specifications/Document size	

b7	b6	b5	b4	b3	b2	b1	b0

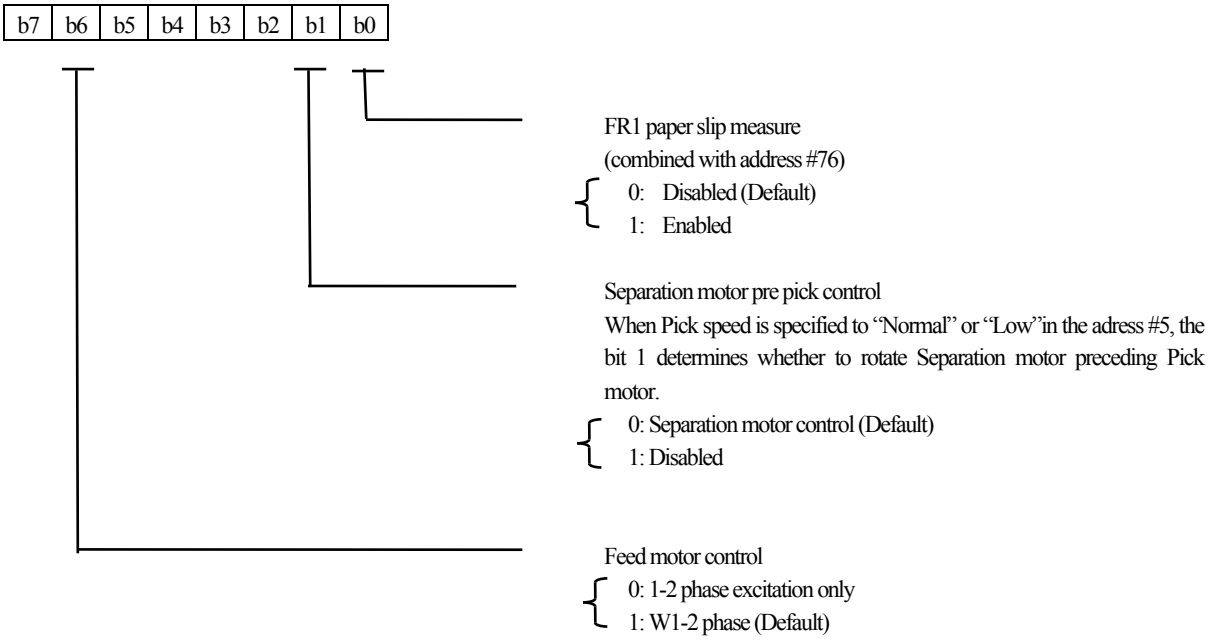
Paper length
- 0: Normal (Default)
- 1: Short

Pick speed is specified by the combination of bit5,2.
- 00: High speed (Default)
- 01: Reserved
- 10: Normal
- 11: Low speed

Abradion alarm control
- 0: Alarm & Stop operation (Default)
- 1: Alarm display only

(Bit 7, 6, 4, 0 are reserved.)

Address	Data	Remark
#5F	Control switch	



(Bit 7, 5 ~ 2 are reserved.)

Address	Data	Remark
#60	Abrasion alarm interval setting	

This address specifies abrasion alarm interval in the range of 1 ~ 2,560,000 sheets.

The value 0 x 00 indicates 2,560,0000 sheets, 0 x 01 indicates 10,000 sheets, 0 x FF indicates 2,560,000 sheets.

Address	Data	Remark
#61	Fluorescent lamp lighting time (front): H	
#62	Fluorescent lamp lighting time (front): M	
#63	Fluorescent lamp lighting time (front): L	
#64	Fluorescent lamp lighting time (back): H	
#65	Fluorescent lamp lighting time (back): M	
#66	Fluorescent lamp lighting time (back): L	

Can be specified in the range of 0 ~ 16777215. (Unit: minute)

Address	Data	Remark
#67	Device life counter: H1	
#68	Device life counter: H2	
#69	Device life counter: L1	
#6A	Device life counter: L2	

Can be specified in the range of 0 ~ 4294967295. (Unit: sheet)

Address	Data	Remark
#6B	Imprinter number initial value (Post): H	
#6C	Imprinter number initial value (Post): L	

Address	Data	Remark
#6D	Abrasion counter (Pad): H	
#6E	Abrasion counter (Pad): M	
#6F	Abrasion counter (Pad): L	

Can be specified in the range of 0 ~ 16777215. (Unit: sheet)

Address	Data	Remark
#70	Reserved	
#71	Reserved	

Address	Data	Remark
#72	Paper separation "Thin" current value	

This address specifies current value for electro magnetic brake when setting "Thin" for paper separation function in the address #49.

Address	Data	Remark
#73	Paper separation "Thick" current value	

This address specifies current value for electro magnetic brake when setting "Thick" for paper separation function in the address #49.

Address	Data	Remark
#74	Paper separation "Slightly thick" current value	

This address specifies current value for electro magnetic brake when setting "Slightly thick" for paper separation function in the address #49.

Address	Data	Remark
#75	Paper separation "Normal" current value	

This address specifies current value for electro magnetic brake when setting "Normal" for paper separation function in the address #49.

Address	Data	Remark
#76	FRI slipping coefficient	

This address specifies the FRI slipping coefficient when slipping measure is enabled in the address #5.

Address	Data	Remark
#77	Sensor SF1 current value for double feed detection	

Address	Data	Remark
#78	Reserved	
#79	Reserved	

Address	Data	Remark
#7A	Paper separation "Slightly thin" current value	

This address specifies current value for electro magnetic brake when setting "Slightly thin" for paper separation function in the address #49.

Address	Data	Remark
#7B	Reserved	

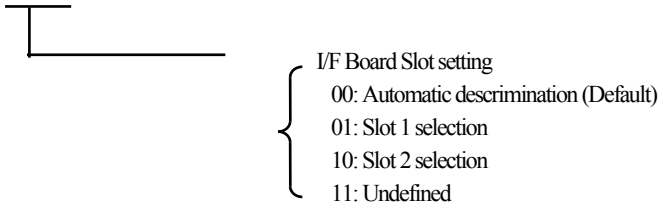
Address	Data	Remark
#7C	Imprinter number initial value (Post): HH	

This address is used in combination of the address 6B, 6C and indicates the highest byte when Imprinter counter is 24 bit.

Address	Data	Remark
#7D	Reserved	
#7E	Reserved	
#7F	Reserved	

Address	Data	Remark
#80	I/F Board Slot setting	

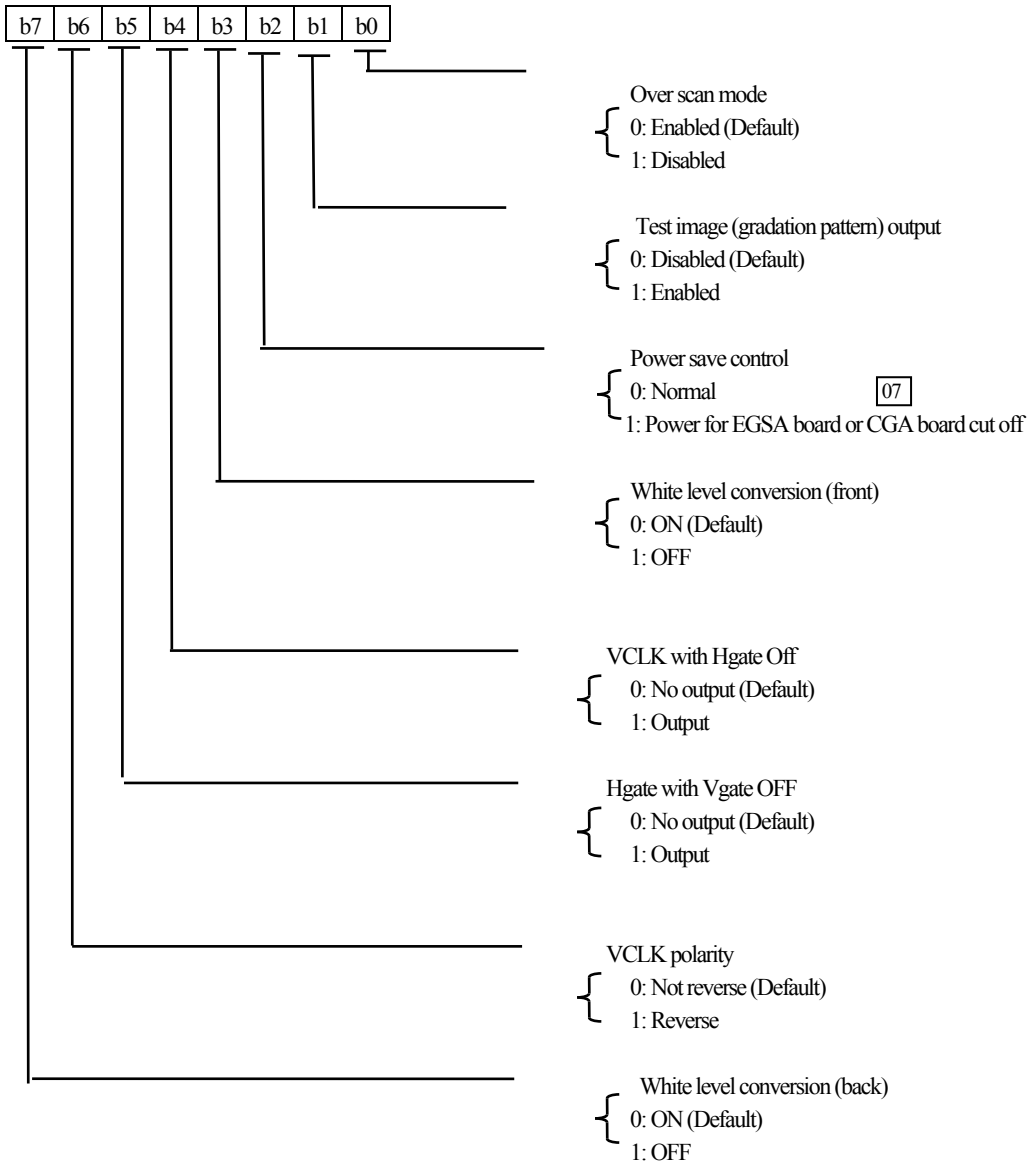
b7	b6	b5	b4	b3	b2	b1	b0



(Bit 7 ~ 2 are reserved.)

Address	Data	Remark
#81	Reserved	
#82	Reserved	
#83	Reserved	
#84	Reserved	
#85	Reserved	
#86	Reserved	

Address	Data	Remark
#87	VCLK signal setting	



Address	Data	Remark
#88	SCSI bus width setting	

b7	b6	b5	b4	b3	b2	b1	b0

SCSI bus width setting
- 0: 16 bit: Wide (Default)
- 1: 8 bit

(Bit 6 ~ 0 are reserved.)

Address	Data	Remark
#89	Reserved	

Address	Data	Remark
#8A	White balance relaxation value (front)	
#8B	White balance relaxation value (back)	

Address	Data	Remark
#8C	Sensor SF2 current set value	
#8D	Sensor SF2 slice value	

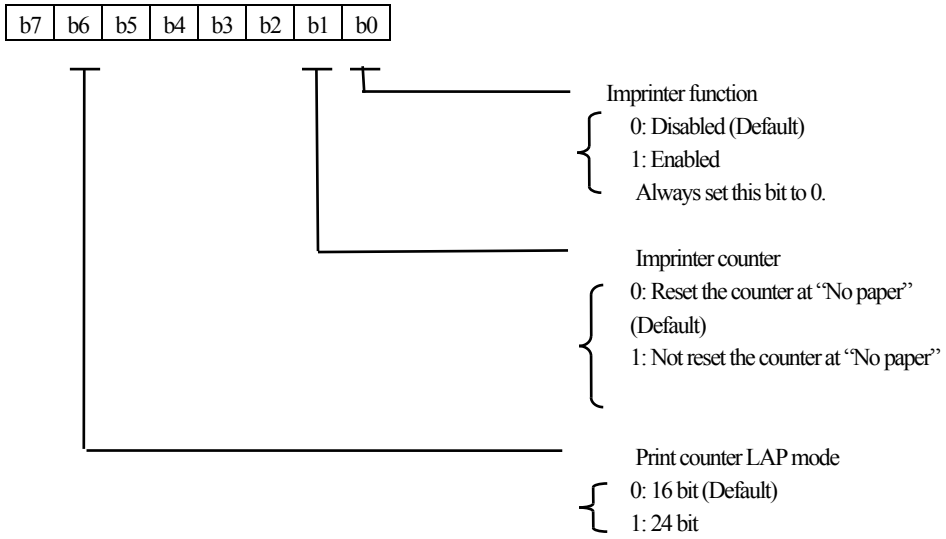
Address	Data	Remark
#8E	Reserved	
#8F	Reserved	

Address	Data	Remark
#90	Black level value Front side Red	
#91	Black level value Front side Green	
#92	Black level value Front side Blue	
#93	Black level value Back side Red	
#94	Black level value Back side Green	
#95	Black level value Back side Blue	

The address #90 ~ #95 are reserved at present, but the value stored corresponding to each color and face may be written into them in the future.

Address	Data	Remark
#96	Reserved	
#97	Reserved	

Address	Data	Remark
#98	Imprinter function setting (PRE)	



(Bit 7, 2 are reserved.)
See address #0C for POST imprinter.

Address	Data	Remark
#99	Imprinter print offset setting (PRE)	

Definition is the same as the one for POST imprinter in the address #0D.

Address	Data	Remark
#9A	PRE imprinter initial value: HH	
#9B	PRE imprinter initial value: H	
#9C	PRE imprinter initial value: L	

Address	Data	Remark
#9D	Abrasion counter (Pick roller unit): H	
#9E	Abrasion counter (Pick roller unit): M	
#9F	Abrasion counter (Pick roller unit): L	

Can be specified in the range of 0 ~ 16777215 (Unit: sheet)

Address	Data	Remark
#A0	Manual density correction value Front R	
#A1	Manual density correction value Front G	
#A2	Manual density correction value Front B	
#A3	Manual density correction value Back R	
#A4	Manual density correction value Back G	
#A5	Manual density correction value Back B	

The address #A0 ~ #A5 are written by Brightness setting in the Setup mode.

Brightness control value
This value is multiplied by the Density correction value coefficient in the address #6.
Range: +6 (06h) ~ -6 (FAh)

#A6	Density correction value coefficient	

The address #A6 is written by Brightness setting in the Setup mode.
Multiply this coefficient by the values set in the address #A0 ~ #A5.
Range: 0 ~ 16 (10h)
0: 8 times (Default)
1: 1 time
2: 2 times
16: 16 times

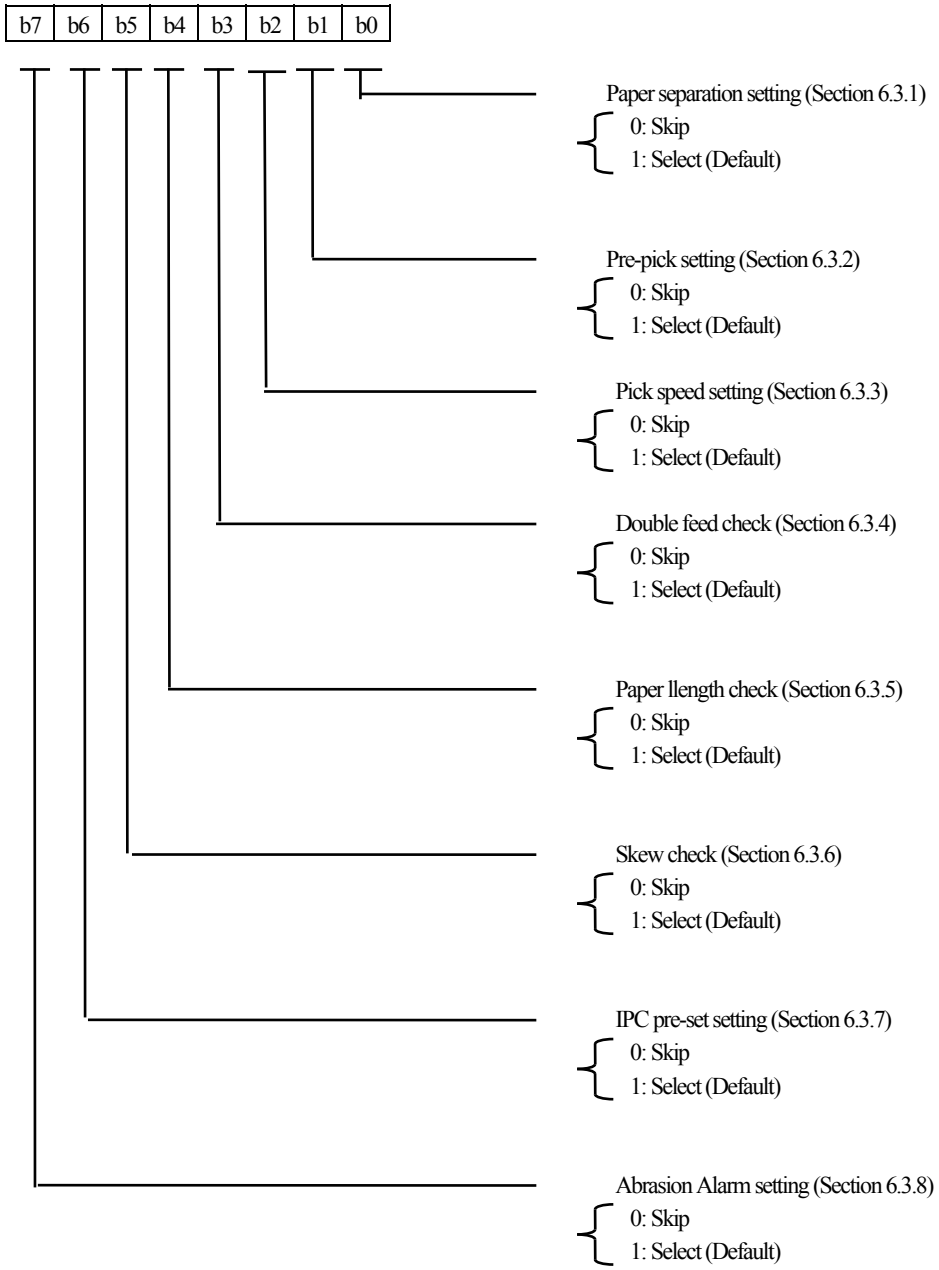
Address	Data	Remark
#A7	Reserved	

Address	Data	Remark
#A8	White level conversion ratio Front R	
#A9	White level conversion ratio Front G	
#AA	White level conversion ratio Front B	
#AB	White level conversion ratio Back R	
#AC	White level conversion ratio Back G	
#AD	White level conversion ratio Back B	

Address	Data	Remark
#AE	Reserved	
#AF	Reserved	

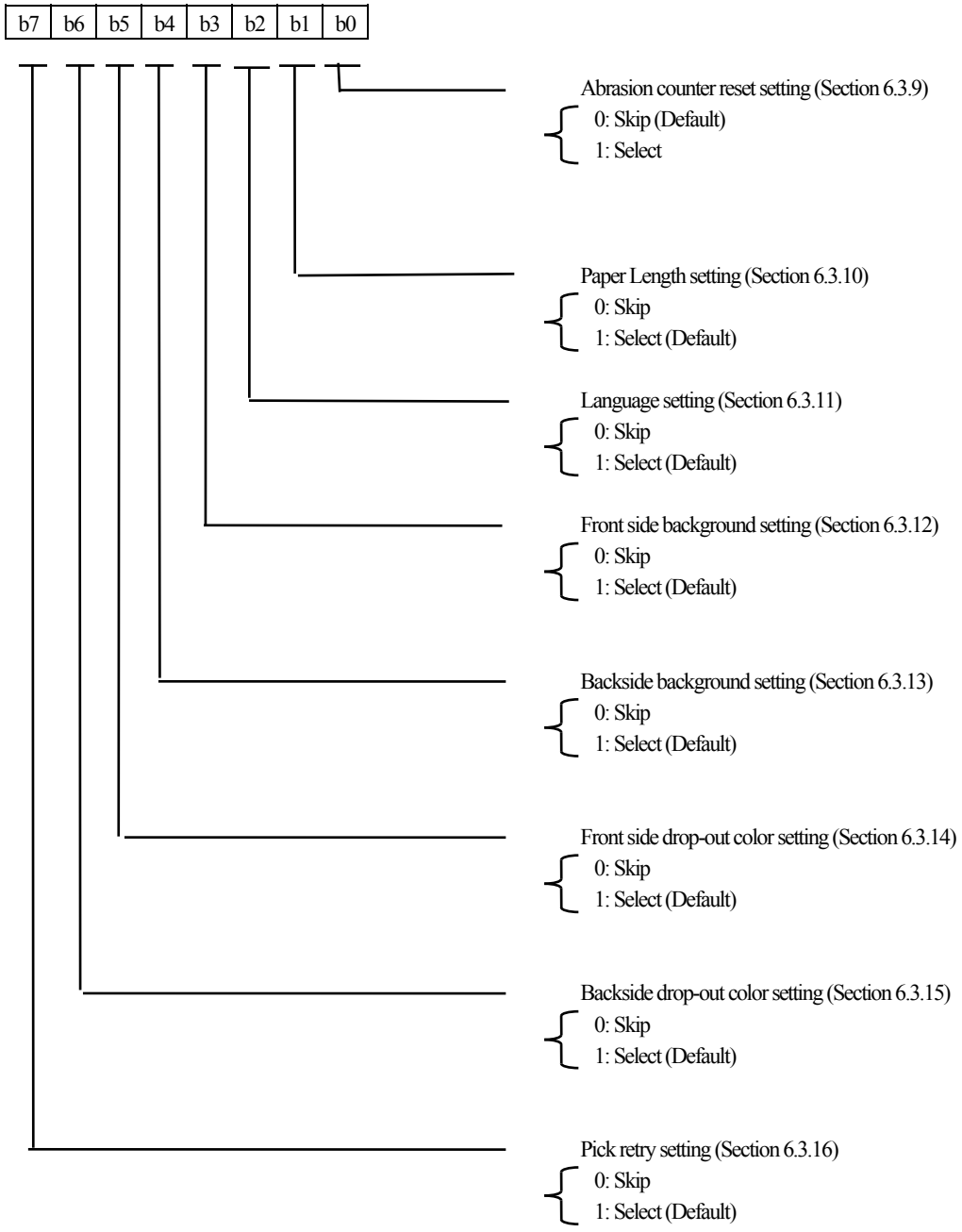
Address	Data	Remark
#B0	Setup item selection setting 1	

This address specifies whether to hide (not displayed) each mode in the Setup mode.



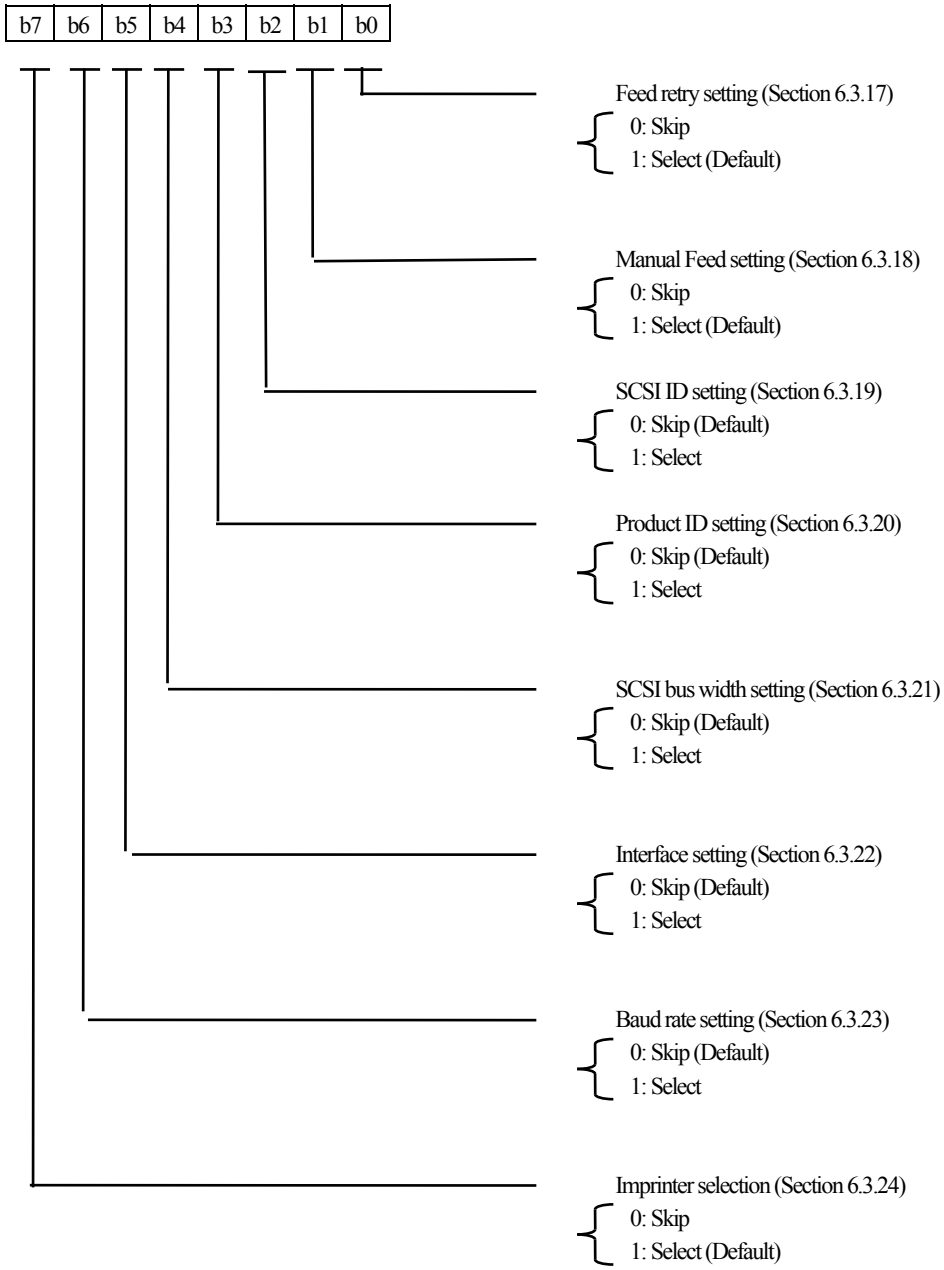
Address	Data	Remark
#B1	Setup item selection setting 2	

This address specifies whether to hide (not displayed) each mode in the Setup mode.



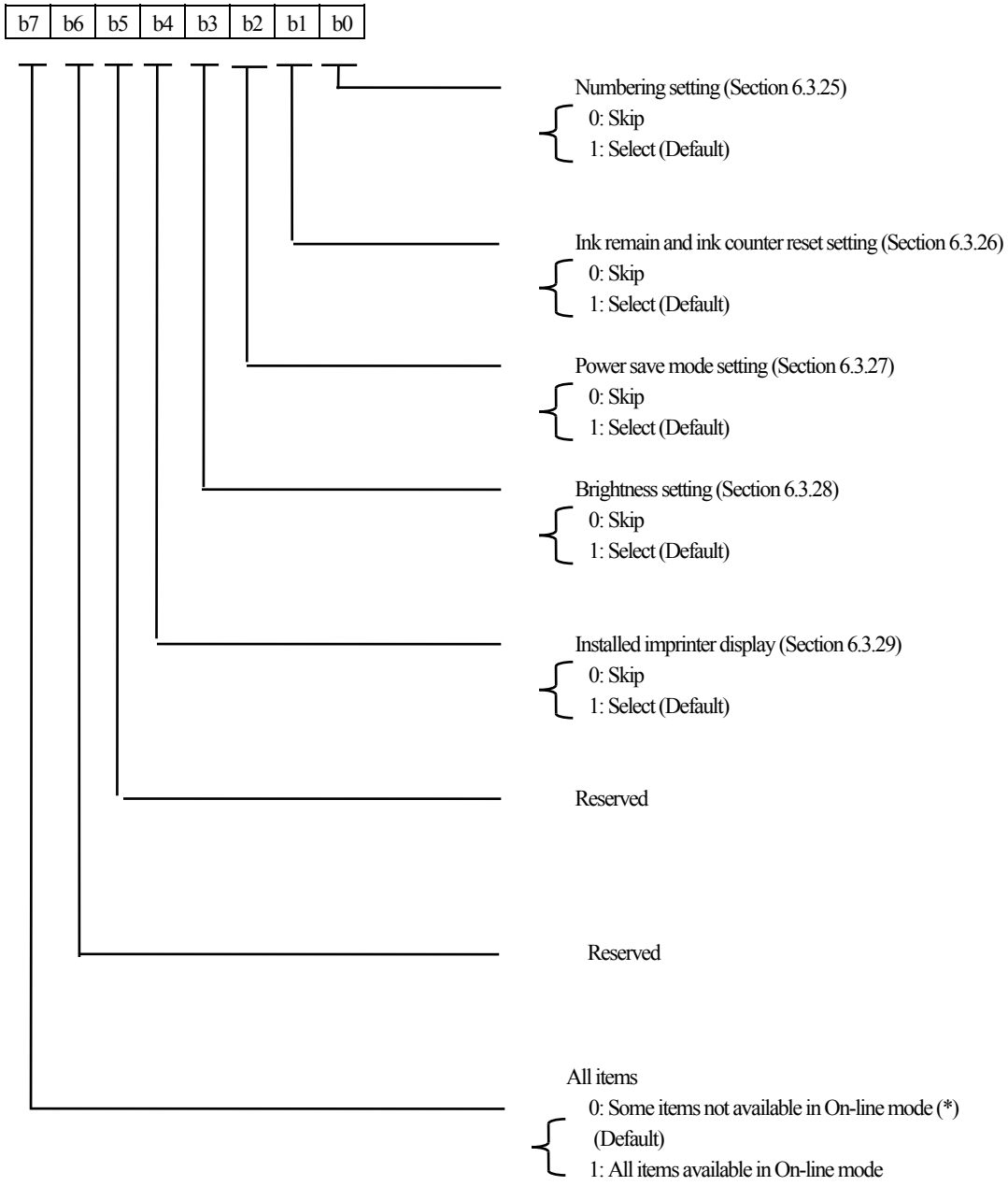
Address	Data	Remark
#B2	Setup item selection setting 3	

This address specifies whether to hide (not displayed) each mode in the Setup mode.



Address	Data	Remark
#B3	Setup item selection setting 4	

This address specifies whether to hide (not displayed) each mode in the Setup mode.



(*): Abrasion counter reset, SCSI ID, Product ID, SCSI bus width, Interface, Baud rate setting

Address	Data	Remark
#B4	Reserved	
#B5	Reserved	
#B6	Reserved	

Address	Data	Remark
#B7	Fluorescent lamp lighting time abrasion counter (front): H	
#B8	Fluorescent lamp lighting time abrasion counter (front): M	
#B9	Fluorescent lamp lighting time abrasion counter (front): L	
#BA	Fluorescent lamp lighting time abrasion counter (back): H	
#BB	Fluorescent lamp lighting time abrasion counter (back): M	
#BC	Fluorescent lamp lighting time abrasion counter (back): L	

Can be specified in the range of 0 ~ 16777215. (Unit: minute)

Address	Data	Remark
#BD	Abrasion counter (Brake roller): H	
#BE	Abrasion counter (Brake roller): M	
#BF	Abrasion counter (Brake roller): L	

Can be specified in the range of 0 ~ 16777215. (Unit: sheet)

Address	Data	Remark
#C0	First activate date (Year)	
#C1	First activate date (Month)	
#C2	First activate date (Date)	

When the values in the address #C0 ~ #C2 are all 0, the date will be written by the host.

Address	Data	Remark
#C3	Reserved	
#C4	Reserved	
#C5	Reserved	
#C6	Reserved	
#C7	Reserved	
#C8	Reserved	
#C9	Reserved	
#CA	Reserved	
#CB	Reserved	
#CC	Reserved	
#CD	Reserved	
#CE	Reserved	
#CF	Reserved	
#D0	Reserved	
#D1	Reserved	
#D2	Reserved	
#D3	Reserved	
#D4	Reserved	
#D5	Reserved	
#D6	Reserved	
#D7	Reserved	
#D8	Reserved	
#D9	Reserved	
#DA	Reserved	
#DB	Reserved	
#DC	Reserved	
#DD	Reserved	
#DE	Reserved	
#DF	Reserved	

Address	Data	Remark
#E0	EGSA or CGA firmware revision 0 07	
#E1	EGSA or CGA firmware revision 1 07	
#E2	EGSA or CGA firmware revision 2 07	
#E3	EGSA or CGA firmware revision 3 07	
#E4	EGSA or CGA firmware revision 4 07	
#E5	EGSA or CGA firmware revision 5 07	
#E6	EGSA or CGA firmware revision 6 07	
#E7	EGSA or CGA firmware revision 7 07	
#E8	EGSA or CGA firmware revision 8 07	
#E9	EGSA or CGA firmware revision 9 07	
#EA	EGSA or CGA firmware revision A 07	
#EB	EGSA or CGA firmware revision B 07	
#EC	EGSA or CGA firmware revision C 07	
#ED	EGSA or CGA firmware revision D 07	
#EE	EGSA or CGA firmware revision E 07	
#EF	EGSA or CGA firmware revision F 07	

Address	Data	Remark
#F0	Reserved	
#F1	Reserved	
#F2	Reserved	
#F3	Reserved	
#F4	Reserved	
#F5	Reserved	
#F6	Reserved	
#F7	Reserved	
#F8	Reserved	
#F9	Reserved	
#FA	Reserved	
#FB	Reserved	
#FC	Reserved	
#FD	Reserved	
#FE	Reserved	
#FF	Reserved	