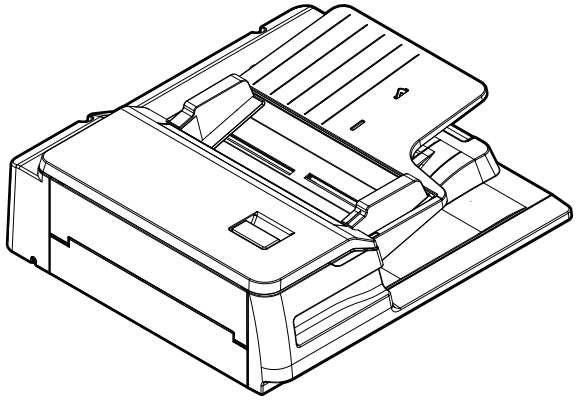
TOSHIBA

SERVICE MANUAL

DUAL SCAN DOCUMENT FEEDER

MR-4000



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Trademarks

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GENERAL PRECAUTIONS REGARDING THE SERVICE FOR THIS DSDF

The installation and service shall be done by a qualified service technician.

1. When installing the DSDF to the Equipment, be sure to follow the instructions described in the “Unpacking/Set-Up Procedure for the DSDF” booklet which comes with each unit of the DSDF.

2. The DSDF shall be installed by an authorized/qualified person.

3. The equipment must be grounded for safety.

4. Before starting installation, servicing or maintenance work, be sure to turn OFF and unplug the equipment first.

5. The equipment shall be installed near the socket outlet and shall be easily accessible.

6. Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.

7. Unplug the power cable and clean the area around the prongs of the plug and socket outlet once a year or more. A fire may occur when dust lies on this area.

8. The DSDF should be grounded to the specified positions on the machine frame.

9. When servicing or maintaining the DSDF, be careful about the rotating or operation sections such as gears, pulleys, sprockets, cams, belts, etc.

10. Reassembly of disassembled parts is the reverse of the disassembly unless otherwise noted in this manual or other related documents.
    Care should be taken that small parts, such as screws, washers, pins, E-rings, star washers, harnesses are not installed in the wrong places.

11. Basically, the machine should not be operated with any parts removed or disassembled.

12. When servicing the equipment with the power turned ON, be sure not to touch live sections and rotating/operating sections.

13. Delicate parts for preventing safety hazard problems (such as switches, sensors, etc. if any) should be handled/installed/adjusted correctly.

14. Use suitable measuring instruments and tools.

15. During servicing or maintenance work, be sure to check the serial No. plate and other cautionary labels (if any) to see if they are clean and firmly fixed. If not, take appropriate actions.

16. The PC board must be stored in an anti-electrostatic bag and handled carefully using a wristband, because the ICs on it may be damaged due to static electricity. Before using the wrist band, pull out the power cord plug of the equipment and make sure that there is no uninsulated charged objects in the vicinity.

17. For the recovery and disposal of used DSDF, consumable parts and packing materials, follow the relevant local regulations/rules should be followed.

18. Do not leave plastic bags where children can get at them. This may cause an accident such as suffocation if a child puts his/her head into a bag. Plastic bags of options or service parts must be brought back.

19. There is a risk of an electric shock or fire resulting from the damage to the harness covering or conduction blockage. To avoid this, be sure to wire the harness in the same way as that before disassembling when the equipment is assembled/disassembled.

20. After completing installation, servicing and maintenance of the DSDF, return the DSDF to its original state, and check operation.

21. Check the procedures and perform as described in the Service Manual.

22. Make sure you do not lose your balance.

23. Avoid exposure to your skin and wear protective gloves as needed.

24. After the power cable is disconnected, an electric charge may remain in the boards of the equipment. Therefore, be sure to disconnect or connect the connectors when about 1 minute (e.g.: the time for taking off the rear cover) has passed after the power cable is disconnected.

25. The DSDF equips the function to transmit its adjustment values to the equipment only at the first normal startup (power OFF/ON) once the DSDF has been installed.
    This function will not work when the equipment is started in the self-diagnosis mode by means of pressing buttons on the control panel or at the easy set-up mode during unpacking. Therefore, even if various adjustments of the DSDF are carried out in the self-diagnosis mode at the first startup of the equipment once the DSDF has been installed, the values set in the adjustment are overwritten by the adjustment values of the DSDF when the normal startup (power OFF/ON) is performed since they are transmitted at this timing.

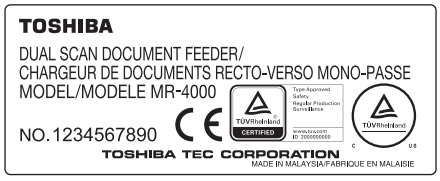
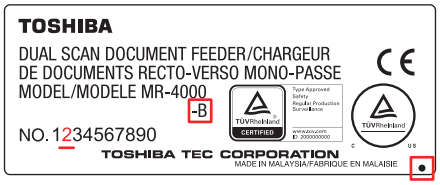
    In addition, this function will not work when the DSDF, which was already installed in another MFP, is installed in other one. In such a case, perform FS-05-3240 and FS-05-3400 in order to transmit the adjustment values of the DSDF to the equipment. (When they are performed, the adjustment values of the DSDF or RADF which was previously installed will be changed.) In the similar way, when the DSDF is replaced with the RADF, perform FS-05-3401. (When this is performed, the adjustment values of the DSDF which was previously installed will be changed.)

CONTENTS

1. SPECIFICATIONS

Item	Contents
Maximum number of originals on the original feeding tray	Up to 300 sheets or 38 mm in height. * 35 - 80 g/m^2 (9.3 - 21.3 lb. Bond)
Acceptable paper size	A5-R, A4, A4-R, B5, B5-R, B4, A3, FOLIO, ST-R, LT, LT-R, LG, LD, COMPUTER
Acceptable paper weight	35 - 209 g/m^2 (9.3 - 41.8 lb. Bond / 77.3 lb. Cover)
Acceptable paper type	Plain paper, Recycled paper
Scanner (CCD module)	3-line CCD (RGB) 7450 pix.
Scanning speed	Color / Black / Gray scale (A4/LT) • Simplex: 120 spm, Duplex: 240 spm (200 dpi / 300 dpi) • Simplex: 70 spm, Duplex: 140 spm (600 dpi)
Dimensions	W575 x D531 x H180 (mm) * Excluding original tray and hinge space
Weight	14 kg
Power consumption	Approx. 60 W
Power requirements	DC5 V, DC24 V * Supplied from the equipment
Co-packed items	Unpacking Instruction (1 set) Charts (A4/LT: 1 sheet each) Mounting screws (6 pcs) Stopper bracket (2 pcs) Stopper bracket fixing screw (4 pcs) DSDF I/F board (1 pc) DSDF I/F board fixing screw (2 pcs) Lock support (1 pc) Hinge cover (1 pc) Positioning pins (2 pcs) Washer (2 pcs) Label (1 pc)
Remarks	

Comparison of MR-4000 and MR-4000-B

Model Name	MR-4000	MR-4000-B
European safety standards complied with	Safety standard: EN60950-1 RoHS2: 2011/65/EU	Safety standard: EN60950-1, EN62368-1 RoHS2: 2011/65/EU 2011/65/EU+(EU)2015/863
Applicable models	e-STUDIO2505AC/3005AC/3505AC/ 4505AC/5005AC e-STUDIO2008A/2508A/3008A/3508A/ 4508A/5008A e-STUDIO3508LP/4508LP/5008LP	e-STUDIO2505AC/3005AC/3505AC/ 4505AC/5005AC e-STUDIO2008A/2508A/3008A/3508A/ 4508A/5008A e-STUDIO3508LP/4508LP/5008LP e-STUDIO 2015AC/2515AC/3015AC/ 3515AC/4515AC/5015AC e-STUDIO2018A/2518A/3018A/3518A/ 3518A/4518A/5018A
Rating label <for identification>	No mark applied  Fig. 1-1	Black dot mark and “-B” applied The 2nd digit of the serial number differs 
Notes	Purchasing this is not possible after June, 2019.	

2. GENERAL DESCRIPTION

2.1 Main Components

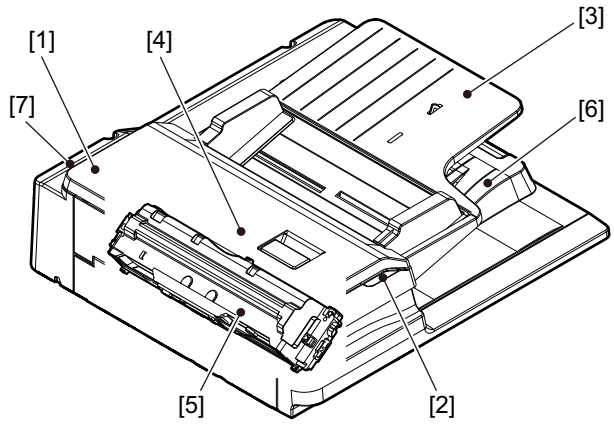


Fig. 2-1

No.	Location	Components		
1	Original jam access cover			
2	LED	LEDD	DSDF-LED PC board	
3	Original tray section	SD1	DSDF tray original length sensor-1	Original tray
		SD2	DSDF tray original length sensor-2	Original tray lift
		SD3	DSDF tray original width sensor	
		SD4	DSDF original empty sensor	
4	Feeding/ Transporting section	SD5	DSDF feed sensor	DSDF pickup roller
		SD6	DSDF registration sensor	DSDF separation roller
		SD7	DSDF original width detection sensor-1	DSDF feed roller
		SD8	DSDF original width detection sensor-2	DSDF registration roller
		SD9	DSDF tray lift upper limit sensor	Pre-read roller-1
		SD10	DSDF tray lift lower limit sensor	Post-read roller-1
		SD11	DSDF read-in sensor-1	Pre-read roller-2
		SD12	DSDF read-in sensor-2	Post-read roller-2
		SD13	DSDF exit sensor	DSDF exit roller
		SD15	DSDF lower cover opening/closing detection sensor	
		SD16	DSDF upper cover opening/closing detection sensor	
		SWD1	DSDF lower cover interlock switch	
		SWD2	DSDF upper cover interlock switch	
5	Original Scanning Section	CCDD	DSDF-CCD module	DSDF shading sheet
		SD14	DSDF shading sheet HP sensor	
6	Original exit tray section			

No.	Location	Components		
7	Drive/Control section	MD1	DSDF feed motor	
		MD2	DSDF separation motor	
		MD3	DSDF registration motor	
		MD4	DSDF read motor	
		MD5	DSDF exit motor	
		FD1	DSDF cooling fan motor	
		FD2	DSDF control PC board cooling fan motor	
		CLD	DSDF tray-up clutch	
		DLGD	DSDF control PC board	

2.2 Sectional View

MR-4000

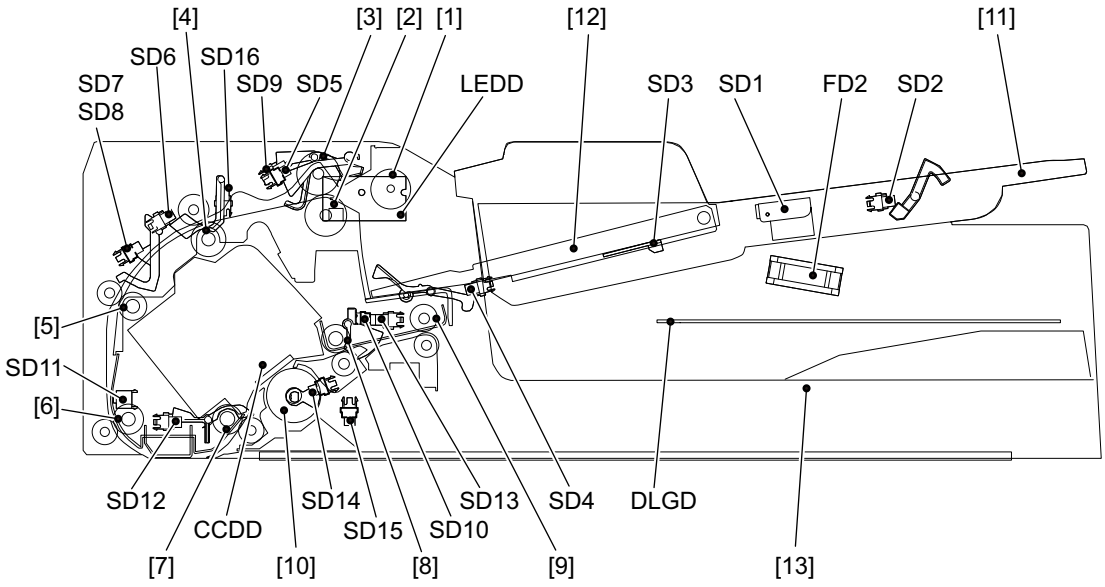


Fig. 2-2

MR-4000-B

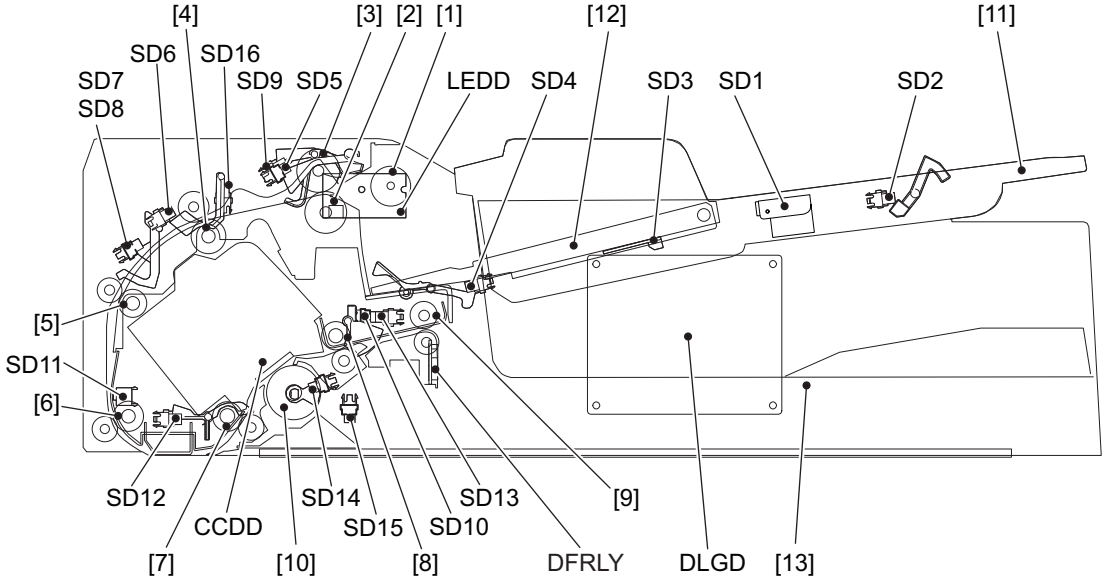


Fig. 2-3

Symbol	Name	Symbol	Name
LEDD	DSDF-LED PC board	CCDD	DSDF-CCD module
SD1	DSDF tray original length sensor-1	DLGD	DSDF control PC board
SD2	DSDF tray original length sensor-2	FD2	DSDF control PC board cooling fan motor
SD3	DSDF tray original width sensor	1	DSDF pickup roller
SD4	DSDF original empty sensor	2	DSDF separation roller
SD5	DSDF feed sensor	3	DSDF feed roller
SD6	DSDF registration sensor	4	DSDF registration roller
SD7	DSDF original width detection sensor-1	5	Pre-read roller-1
SD8	DSDF original width detection sensor-2	6	Post-read roller-1
SD9	DSDF tray lift upper limit sensor	7	Pre-read roller-2
SD10	DSDF tray lift lower limit sensor	8	Post-read roller-2
SD11	DSDF read-in sensor-1	9	DSDF exit roller
SD12	DSDF read-in sensor-2	10	DSDF shading sheet
SD13	DSDF exit sensor	11	Original tray
SD14	DSDF shading sheet HP sensor	12	Original tray lift
SD15	DSDF lower cover opening/closing detection sensor	13	Original exit tray
SD16	DSDF upper cover opening/closing detection sensor	DFRLY	DSDF Relay board

2.3 Electric Parts Layout

MR-4000

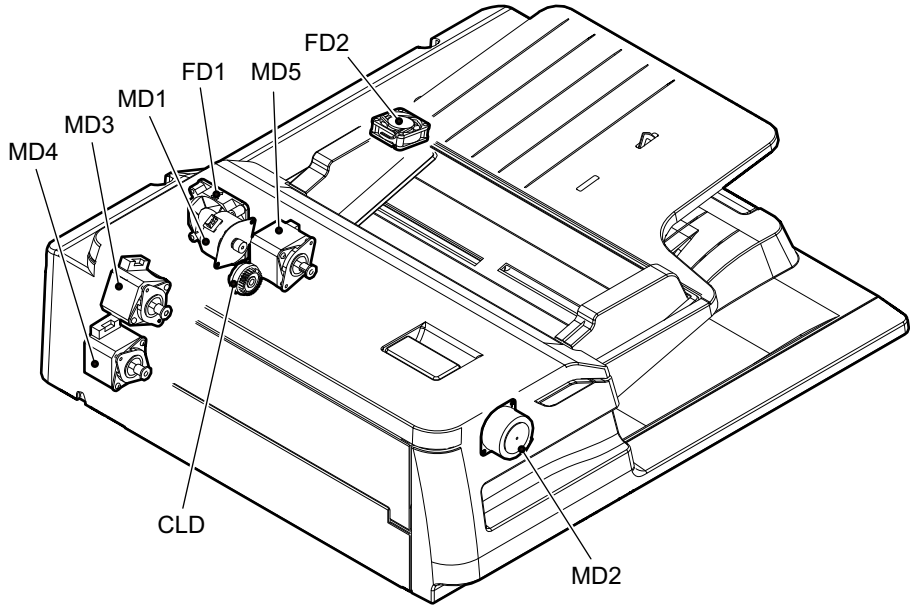


Fig. 2-4

MR-4000-B

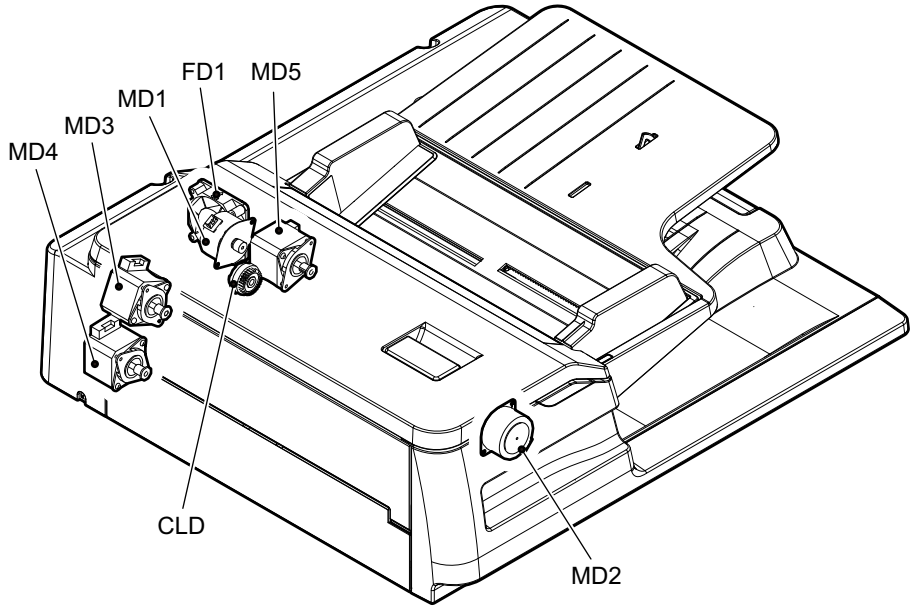


Fig. 2-5

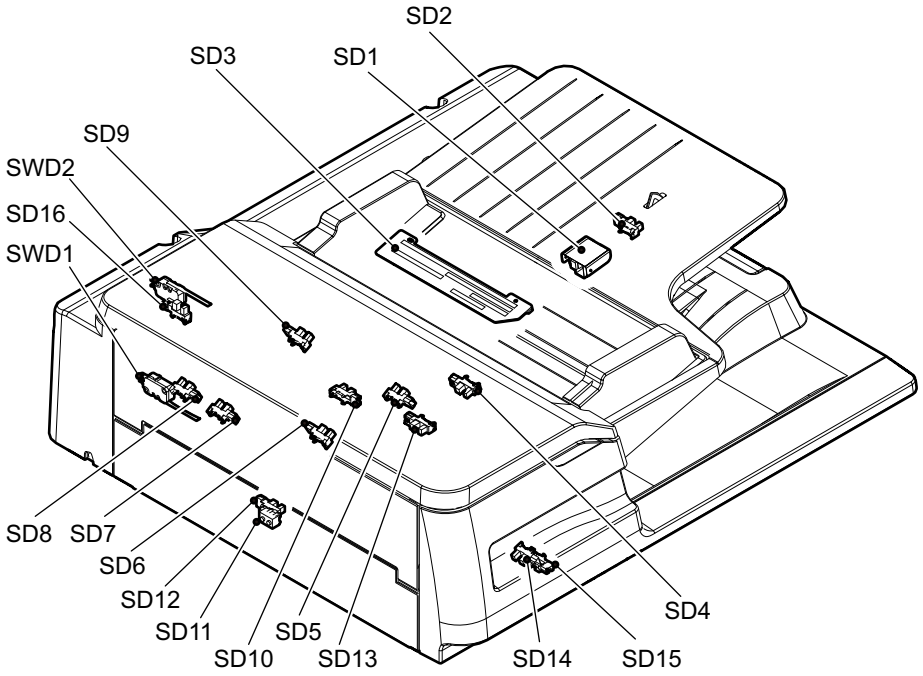


Fig. 2-6

MR-4000

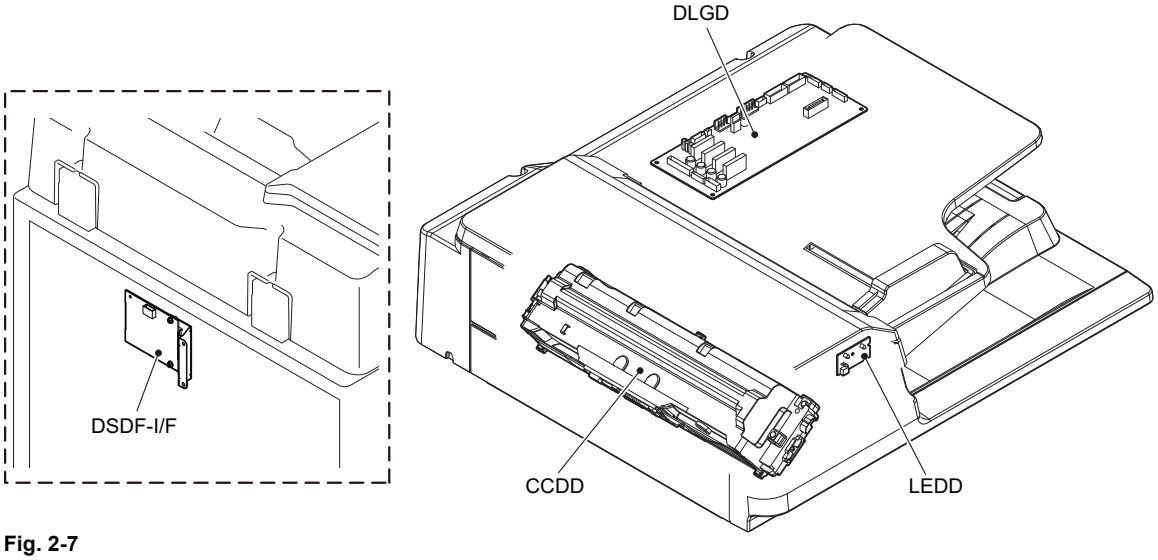


Fig. 2-7

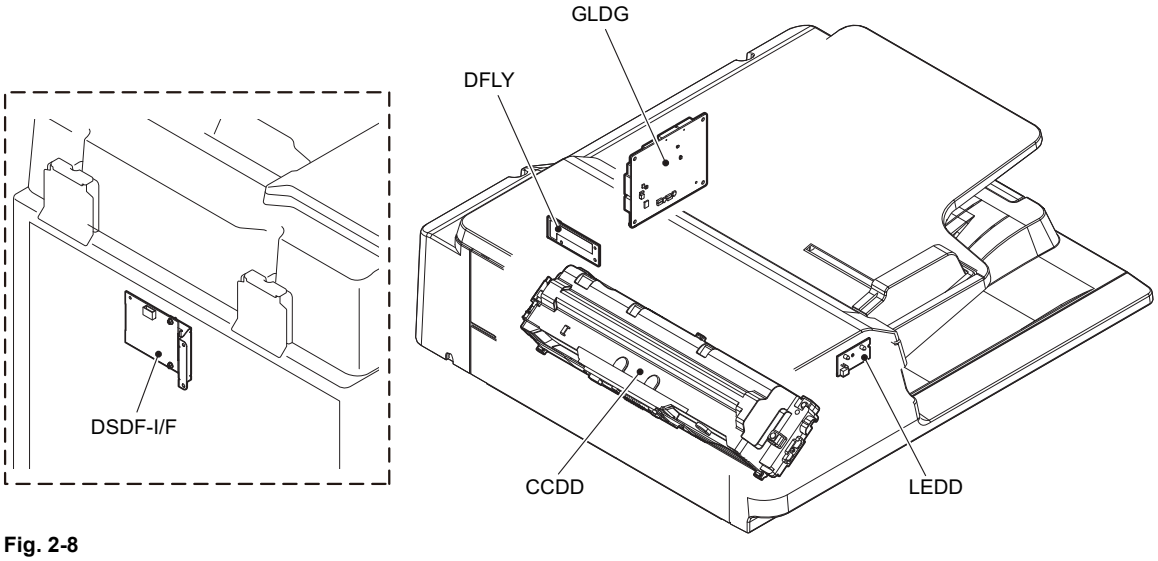


Fig. 2-8

2.4 Symbols and Functions of Various Components

The column "P-I" shows the page and item number in the parts list.

2.4.1 Motors

Symbol	Name	Function	Remarks	P-I
MD1	DSDF feed motor	Driving the DSDF pickup roller and the DSDF feed roller	Fig. 2-4 Fig. 2-5	6 - 8
MD2	DSDF separation motor	Performing the reverse operation of the DSDF separation roller and moving (up/lowering) the original tray lift	Fig. 2-4 Fig. 2-5	5 - 10
MD3	DSDF registration motor	Driving the original registration roller	Fig. 2-4 Fig. 2-5	6 - 4
MD4	DSDF read motor	Driving the pre-read roller-1, post-read roller-1, pre-read roller-2 and post-read roller-2	Fig. 2-4 Fig. 2-5	10 - 5
MD5	DSDF exit motor	Driving the original exit motor and rotating the shading sheet	Fig. 2-4 Fig. 2-5	10- 5
FD1	DSDF cooling fan motor	Cooling down inside of the DSDF	Fig. 2-4 Fig. 2-5	5 - 1
FD2	DSDF control PC board cooling fan motor	Cooling down the DSDF control PC board	Fig. 2-4	16 - 22

2.4.2 Clutch

Symbol	Name	Function	Remarks	P-I
CLD	DSDF tray-up clutch	Transmitting the driving force to move (up/lowering) the original tray	Fig. 2-4 Fig. 2-5	8 - 13

2.4.3 Sensors and switches

Symbol	Name	Function	Remarks	P-I
SD1	DSDF tray original length sensor-1	Detecting the original size (length) set on the original tray	Fig. 2-6	2 - 4
SD2	DSDF tray original length sensor-2	Detecting the original size (length) set on the original tray	Fig. 2-6	2 - 4
SD3	DSDF tray original width sensor	Detecting the original size (width) set on the original tray	Fig. 2-6	2-12
SD4	DSDF original empty sensor	Detecting the presence/absence of the original set on the original tray	Fig. 2-6	2 - 4
SD5	DSDF feed sensor	Detecting the original in the original feeding section	Fig. 2-6	4 - 7
SD6	DSDF registration sensor	Detecting transport of the original in the DSDF registration roller section, as well as the original size (length)	Fig. 2-6	4 - 7
SD7	DSDF original width detection sensor-1	Detecting the original size (width)	Fig. 2-6	3 - 11
SD8	DSDF original width detection sensor-2	Detecting the original size (width)	Fig. 2-6	3 - 11
SD9	DSDF tray lift upper limit sensor	Detecting the upper limit position of the original tray lift	Fig. 2-6	4 - 7
SD10	DSDF tray lift lower limit sensor	Detecting the lower limit position of the original tray lift	Fig. 2-6	11 - 5
SD11	DSDF read-in sensor-1	Detecting the original leading edge position at the original scanning section of the equipment	Fig. 2-6	14 - 14
SD12	DSDF read-in sensor-2	Detecting the original leading edge position at the CCD module original scanning section of the DSDF	Fig. 2-6	14 - 15

Symbol	Name	Function	Remarks	P-I
SD13	DSDF exit sensor	Detecting the original in the original exit section	Fig. 2-6	11 - 5
SD14	DSDF shading sheet HP sensor	Detecting the home position of the DSDF shading sheet	Fig. 2-6	15 - 8
SD15	DSDF lower cover opening/closing detection sensor	Detecting the opening/closing status of the DSDF lower cover	Fig. 2-6	15 - 8
SD16	DSDF upper cover opening/closing detection sensor	Detecting the opening/closing status of the DSDF upper cover	Fig. 2-6	6 - 22
SWD1	DSDF lower cover interlock switch	Shutting down the 24 V power by opening the DSDF lower cover	Fig. 2-6	16 - 5
SWD2	DSDF upper cover interlock switch	Shutting down the 24 V power by opening the DSDF upper cover	Fig. 2-6	6 - 19

2.4.4 PC board

Symbol	Name	Function	Remarks	P-I
DLGD	DSDF control PC board	Controlling the DSDF	Fig. 2-7 Fig. 2-8	16 - 1
LEDD	DSDF-LED PC board	Lighting the LED when an original is set or an abnormality occurs	Fig. 2-7 Fig. 2-8	5 - 9
DSDF-I/F	DSDF-I/F board	Transmits signals among the DSDF-CCD module and System control PC board.	Fig. 2-7 Fig. 2-8	20 - 5
DFRLY	DSDF Relay board	Transmits signals among the DSDF-CCD module and DSDF-I/F board.	Fig. 2-8	16-28

2.4.5 Others

Symbol	Name	Function	Remarks	P-I
CCDD	DSDF-CCD module	Scanning the back side of the original in the DSDF	Fig. 2-7 Fig. 2-8	5 - 22

2.5 Diagram of Signal Blocks

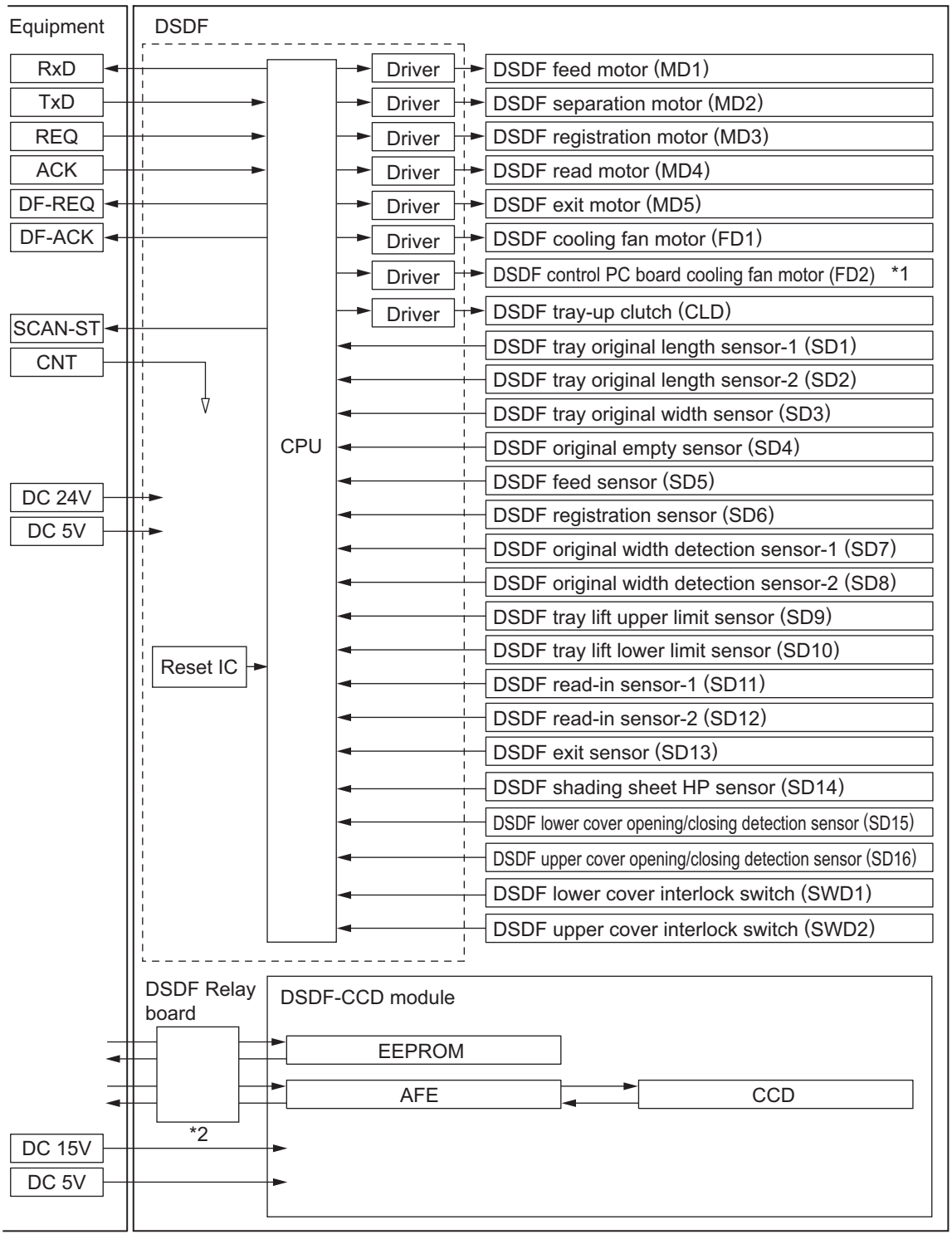


Fig. 2-9

*1 MR-4000 only
*2 MR-4000-B only

2.6 Description of Interface Signals

The following 6 lines are used to transmit/receive signals between the equipment and the DSDF.

1. REQ: Communication request signal (from equipment to the DSDF)
2. DF-REQ: Communication request signal (from the DSDF to equipment)
3. DF-ACK: Communication request acknowledging signal (from the DSDF to equipment)
4. ACK: Communication request acknowledging signal (from equipment to the DSDF)
5. TxD: Data transmitted from equipment to the DSDF
6. RxD: Data transmitted from the DSDF to equipment

Data communication (RxD and TxD) between the scanner and the DSDF has adopted the serial communication system which does not allow checking using testing devices to see whether the signals are transmitted/received properly in the field.

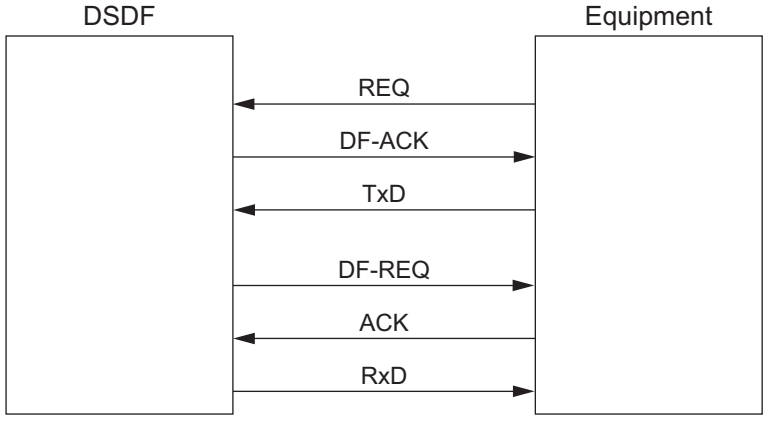


Fig. 2-10

3. DESCRIPTION OF OPERATIONS

3.1 General Descriptions

3.1.1 Original transport path

An original is transported by each transport roller via the path shown in the figure. The front side of the original is scanned by the CCD (DF original glass section) of the equipment and the back side is scanned by the DSDF-CCD module embedded in the DSDF.

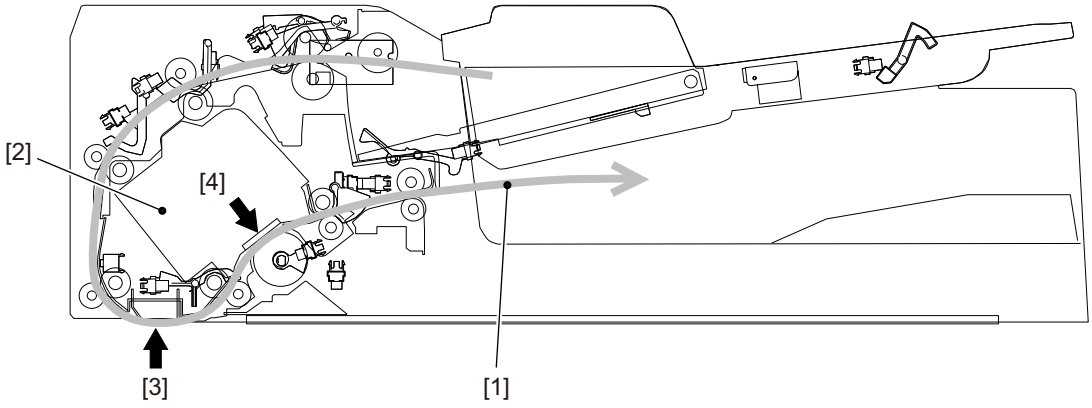


Fig. 3-1

[1] Transport path
[2] DSDF-CCD module
[3] Front side scanning section (DF original glass section)
[4] Back side scanning section (DSDF-CCD module scanning section)

3.2 Drive Section

3.2.1 Motor

Transportation of originals is operated by the DSDF feed motor, DSDF read motor and DSDF exit motor.
The role for each motor is as below.

Motor	Type	Rotational direction	Function
DSDF feed motor	Stepping motor	Clockwise	Driving the DSDF pickup roller and the DSDF feed roller
DSDF separation motor	Stepping motor	Clockwise	Lowering the original tray lift
	Stepping motor	Counterclockwise	Performing the reverse operation of the DSDF separation roller and moving the original tray lift upward
DSDF registration motor	Stepping motor	Counterclockwise	Driving the DSDF registration roller
DSDF read motor	Stepping motor	Counterclockwise	Driving the pre-read roller-1, post-read roller-1, pre-read roller-2 and post-read roller-2
DSDF exit motor	Stepping motor	Clockwise	Rotating the shading sheet
		Counterclockwise	Driving the original exit roller

3.2.2 DSDF feed motor

When the feed signal from the equipment is received, feeding and transporting of an original will start. The DSDF feed motor starts rotating to drive the DSDF pickup roller and the DSDF feed roller to transport the original to the registration roller.

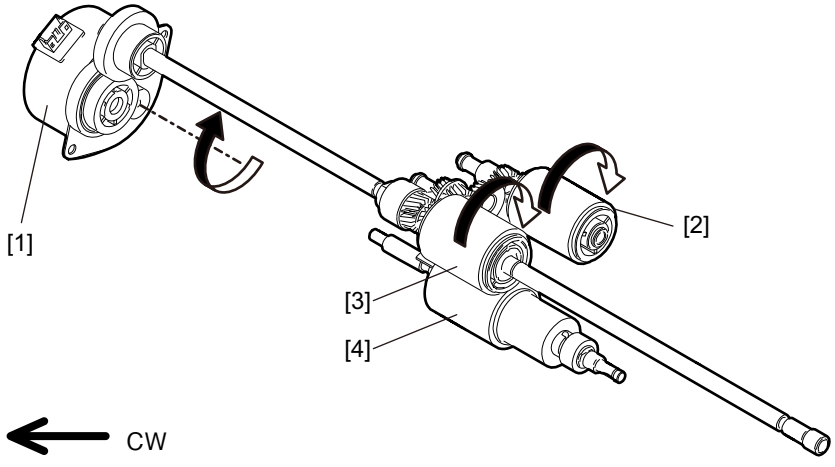


Fig. 3-2

No.	Name	No.	Name
[1]	DSDF feed motor	[3]	DSDF feed roller
[2]	DSDF pickup roller	[4]	DSDF separation roller

3.2.3 DSDF separation motor

The DSDF separation motor performs the reverse operation of the original separation roller and moves (up/lowering) the original tray lift.

When original feeding starts, the DSDF separation motor rotates clockwise to perform the reverse operation of the original separation roller.
This will prevent multiple feeding of an original.

Moreover, when the DSDF empty sensor is turned ON, the DSDF separation motor rotates counterclockwise, resulting in the original tray lift going up.
When the DSDF empty sensor is turned OFF, the DSDF separation motor rotates counterclockwise, resulting in the original tray lift lowering.
Transmitting the driving force from the DSDF separation motor to the original tray lift is controlled by the DSDF tray-up clutch.

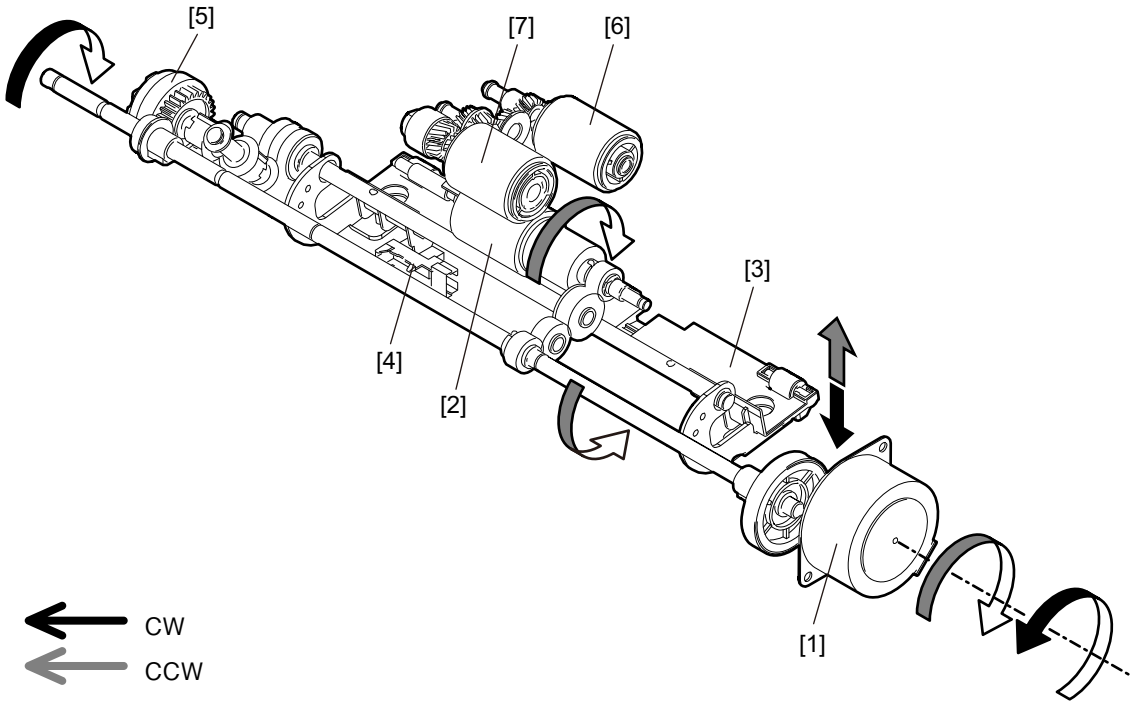


Fig. 3-3

No.	Name	No.	Name
[1]	DSDF separation motor	[5]	DSDF tray-up clutch
[2]	DSDF separation roller	[6]	DSDF pickup roller
[3]	Original tray lift	[7]	DSDF feed roller
[4]	DSDF tray lift lower limit sensor		

3.2.4 DSDF registration motor

The DSDF registration motor rotates the DSDF registration roller.
The DSDF registration roller aligns the paper and transports it to the pre-read roller-1.

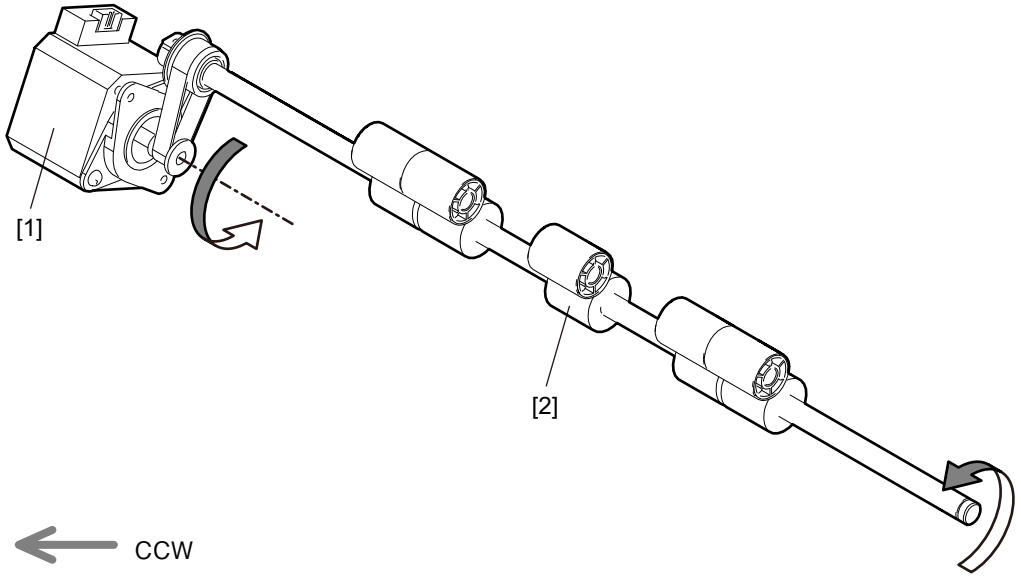


Fig. 3-4

No.	Name	No.	Name
[1]	DSDF registration motor	[2]	DSDF registration roller

3.2.5 DSDF read motor

The DSDF read motor drives four rollers; the pre-read roller-1, post-read roller-1, pre-read roller-2 and post-read roller-2, by means of the timing belt.
The pre-read roller-1 and the post-read roller-1 perform paper transporting at the scanning section of the ADF original glass.
The pre-read roller-2 and the post-read roller-2 perform paper transporting at the scanning section of the DSDF-CCD module.

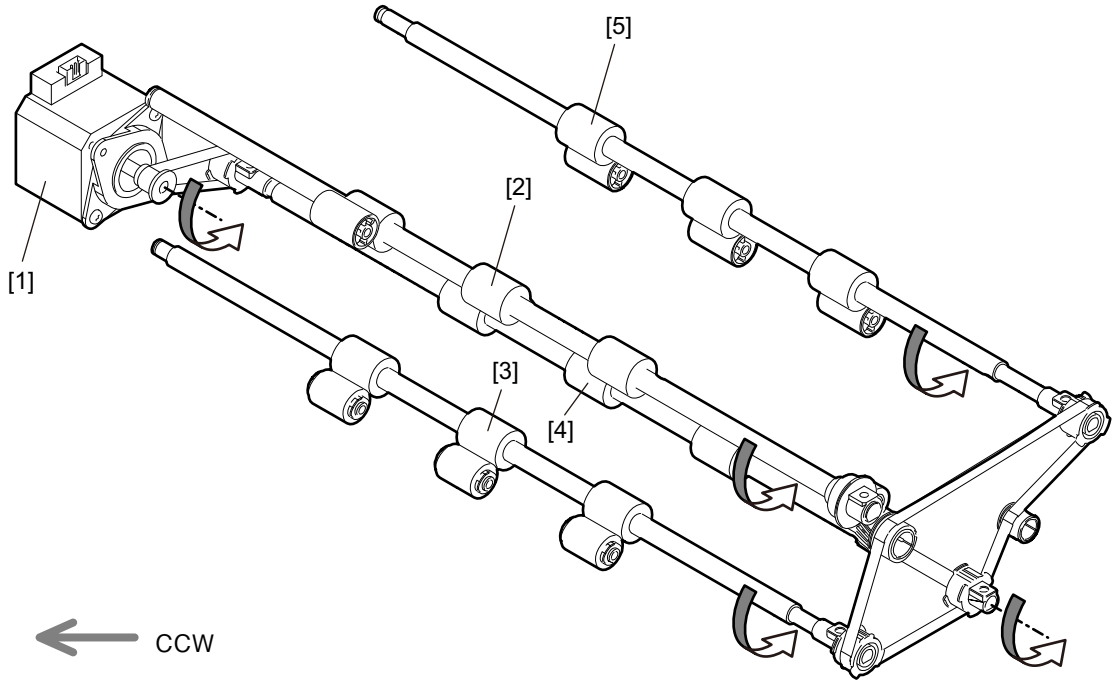


Fig. 3-5

No.	Name	No.	Name
[1]	DSDF read motor	[4]	Pre-read roller-2
[2]	Pre-read roller-1	[5]	Post-read roller-2
[3]	Post-read roller-1		

3.2.6 DSDF exit motor

When the DSDF exit motor rotates counterclockwise, the DSDF exit roller starts rotating to exit an original.
When the DSDF exit motor rotates clockwise, the guide covering the DSDF shading sheet starts rotating and then it appears.
The home position of the guide covering the DSDF shading sheet is detected by the DSDF shading sheet HP sensor.
The DSDF shading sheet is used to correct the values of the background peak of the DSDF-CCD module.

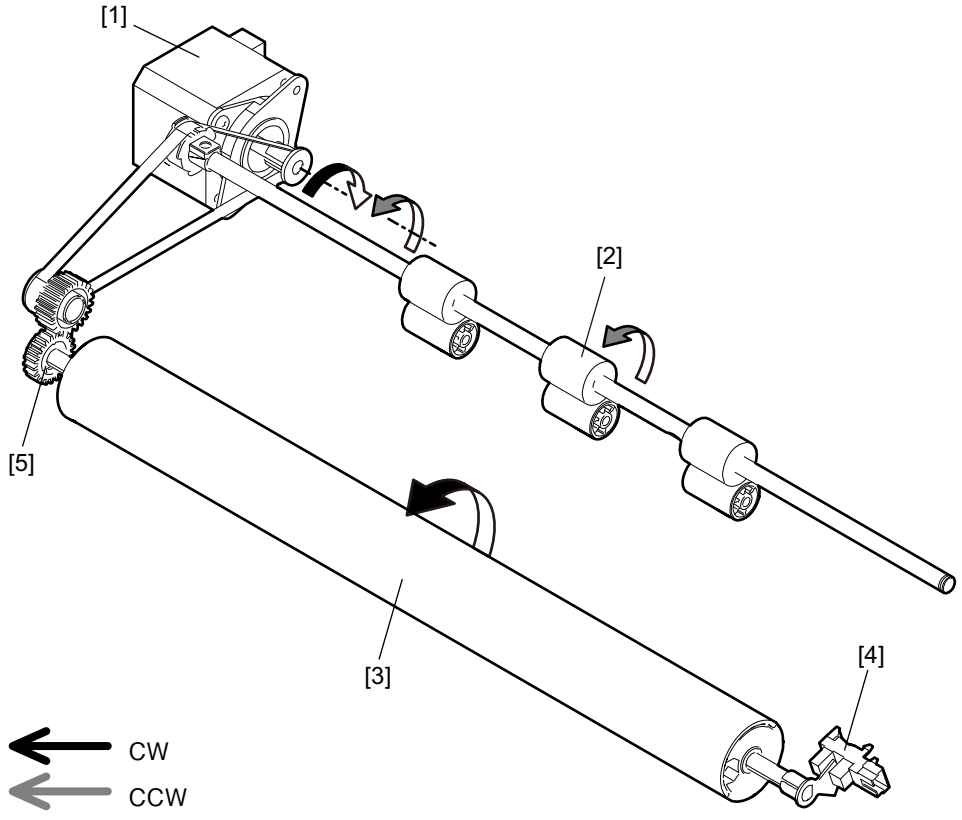


Fig. 3-6

No.	Name	No.	Name
[1]	DSDF exit motor	[4]	DSDF shading sheet HP sensor
[2]	DSDF exit roller	[5]	One-way clutch
[3]	DSDF shading sheet		

3.3 Original Size Detection

The size of the original on the original tray is detected by the combination of the DSDF tray original width sensor, DSDF tray original length sensor-1 and -2.
Moreover, in the mixed size mode, after an original on the original tray has been fed and transported, the original size is detected again by the combination of the DSDF original width detection sensor-1 and -2 and the DSDF registration sensor to determine the paper size.

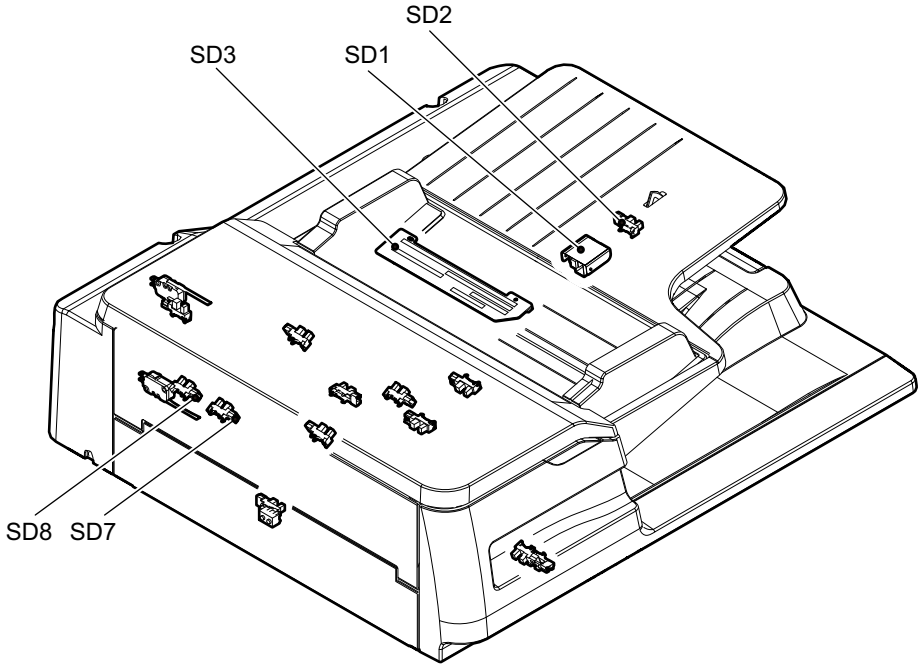


Fig. 3-7

Symbol	Name	Symbol	Name
SD1	DSDF tray original length sensor-1	SD7	DSDF original width detection sensor-1
SD2	DSDF tray original length sensor-2	SD8	DSDF original width detection sensor-2
SD3	DSDF tray original width sensor		

3.3.1 DSDF tray original width sensor, DSDF tray original length sensor-1 / -2

The DSDF tray original width sensor, DSDF tray original length sensor-1 and -2 detect the size of an original placed on the original tray.

It is detected by the brush attached to the rack moving on the original tray width sensor, which is a board with the different length of the patterns written. This brush is moved as the original width guide is moved. Signals (TWID0S, TWID1S, TWID2S) are opened and shorted to SG by this movement. The combination of these short (= low level) and open (= high level) can determine the width of the original.

The size of the original is determined by the combination of the ON/OFF status of the DSDF tray original width sensor, DSDF tray original length sensor-1 and -2. Therefore, if the sensors cannot detect the size of the original properly due to its being folded or bent, an incorrect size may be detected.

Sizes detectable in combination of these open and short of the signals are as follows:

DSDF tray original width sensor			DSDF tray original length sensor-1	DSDF tray original length sensor-2	Original size (A series)	Original size (LT series)
TWID2S	TWID1S	TWID0S				
L	L	H	*	*	Business card	Business card
H	H	L	*	*	B5-R	-
H	L	H	*	*	A5-R	ST-R
H	L	L	OFF	OFF	A4	LT
			*	ON	A3	LD
L	H	L	OFF	OFF	A4-R	8.5” x 8.5”
			ON	OFF		LT-R
			*	ON	FOLIO	LG
L	L	L	OFF	OFF	B5	COMPUTER
			*	ON	B4	

H (= high level): Open, L (= low level): Short
*: Not related to the ON/OFF status

3.3.2 DSDF original width sensor-1 and -2 / DSDF registration sensor

In the mixed size mode, the size of the original is determined by the size which is detected by the DSDF tray original width sensor, DSDF tray original length sensor-1 and -2 located on the original tray by adding the result of the redetection during its transportation.
Redetection is performed by the ON/OFF status of the DSDF tray original width sensor-1 and -2 and by the period in which the DSDF registration is ON (transportation period) to determine the original size.

Sizes detectable in combination of these sensors are as follows:

A4 series

Original size on the tray	DSDF original width sensor-1	DSDF original width sensor-2	ON period of the DSDF registration sensor	Determined size
A3	*	ON	A4 size paper transportation period or longer	A3
			Less than A4 size paper transportation period	A4
	ON	OFF	A4 size paper transportation period or longer	B4
			Less than A4 size paper transportation period	B5
	OFF	OFF	A4-R size paper transportation period or longer	FOLIO
			B5-R size paper transportation period or longer	A4-R
			Less than A4-R size paper transportation period	
			Less than B5-R size paper transportation period	B5-R
A4	*	ON	**	A4
	ON	OFF	A4 size paper transportation period or longer	A4
			Less than A4 size paper transportation period	B5
	OFF	OFF	**	A4
B4	ON	*	A4 size paper transportation period or longer	B4
			Less than A4 size paper transportation period	B5
	OFF	OFF	A4-R size paper transportation period or longer	FOLIO
			B5-R size paper transportation period or longer	A4-R
			Less than A4-R size paper transportation period	
			A4 size paper transportation period or longer	B5-R
			Less than B5-R size paper transportation period	
			Less than A4 size paper transportation period	A5-R
B5	*	*	**	B5

Original size on the tray	DSDF original width sensor-1	DSDF original width sensor-2	ON period of the DSDF registration sensor	Determined size
FOLIO	ON	*	A4-R size paper transportation period or longer	FOLIO
			Less than A4-R size paper transportation period	A4-R
	OFF	OFF	A4 size paper transportation period or longer	B5-R
			Less than A4 size paper transportation period	A5-R
A4-R	ON	*	**	A4-R
	OFF	OFF	A4 size paper transportation period or longer	B5-R
			Less than A4 size paper transportation period	A5-R
B5-R	*	*	A4 size paper transportation period or longer	B5-R
			Less than A4 size paper transportation period	A5-R
A5-R	*	*	**	A5-R

* Not related to the ON/OFF status
** Not related to the transportation period

LT series

Original size on the tray	DSDF original width sensor-1	DSDF original width sensor-2	ON period of the DSDF registration sensor	Determined size
LD	*	ON	LT size paper transportation period or longer	LD
			Less than LT size paper transportation period	LT
	OFF	OFF	13”LG size paper transportation period or longer	LG
			LT-R size paper transportation period or longer Less than 13”LG size paper transportation period	13”LG
			LT size paper transportation period or longer Less than LT-R size paper transportation period	LT-R
			Less than LT size paper transportation period	8.5”SQ
LT	*	ON	**	LT
	OFF	OFF	LT size paper transportation period or longer	LT
			Less than LT size paper transportation period	8.5”SQ
COMPUTER	ON	*	**	COMPUTER
	OFF	OFF	13”LG size paper transportation period or longer	LG
			LT-R size paper transportation period or longer Less than 13”LG size paper transportation period	13”LG
			LT size paper transportation period or longer Less than LT-R size paper transportation period	LT-R
			Less than LT size paper transportation period	8.5”SQ
LG	ON	*	13”LG size paper transportation period or longer	LG
			LT-R size paper transportation period or longer Less than 13”LG size paper transportation period	13”LG
			LT size paper transportation period or longer Less than LT-R size paper transportation period	LT-R
			Less than LT size paper transportation period	8.5”SQ
	OFF	OFF	**	ST-R
LT-R	ON	*	LT size paper transportation period or longer	LT-R
			Less than LT size paper transportation period	8.5”SQ
	OFF	OFF	**	ST-R
ST-R	OFF	OFF	**	ST-R

* Not related to the ON/OFF status

** Not related to the transportation period

4. DISASSEMBLY AND ASSEMBLY (MR-4000)

Notes:

Be sure to attach the stopper jig or to take off the DSDF from the equipment before starting the 🕮 P. 4-40 "4.7 Original Transport Section" or later. If the unit is taken off from the DSDF while it is installed in the equipment, the DSDF will be pulled up as its weight becomes lighter, resulting in danger.

4.1 Preventive Maintenance Parts

4.1.1 DSDF pickup unit

(1) Open the original jam access cover [1].

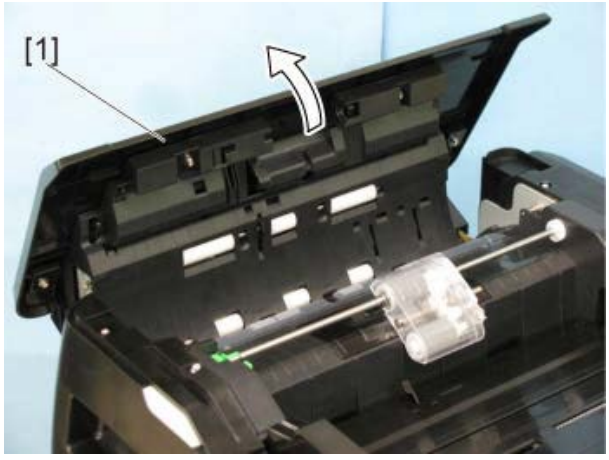


Fig. 4-1

(2) Turn the lever [2] and take off the DSDF pickup unit [3].

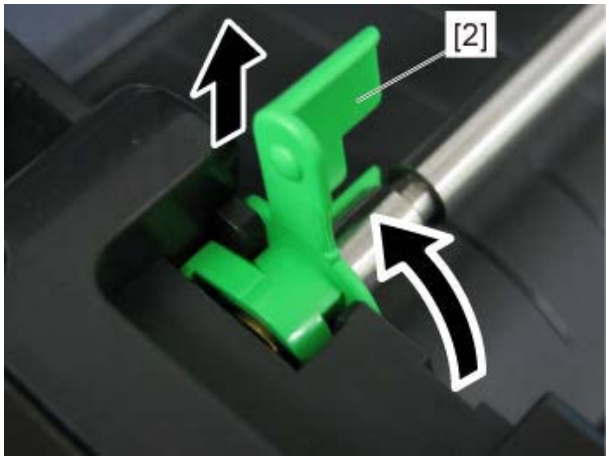


Fig. 4-2

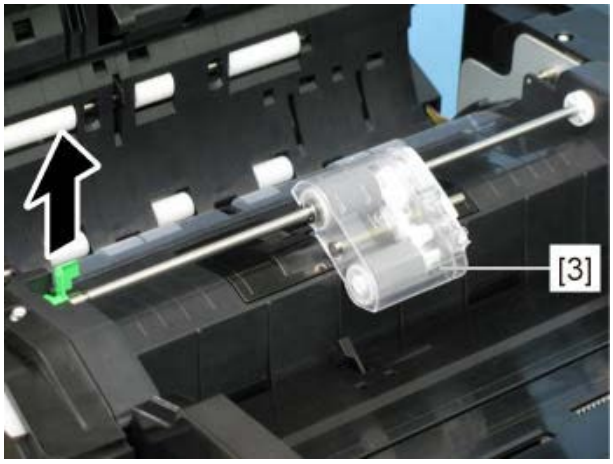


Fig. 4-3

DSDF pickup unit

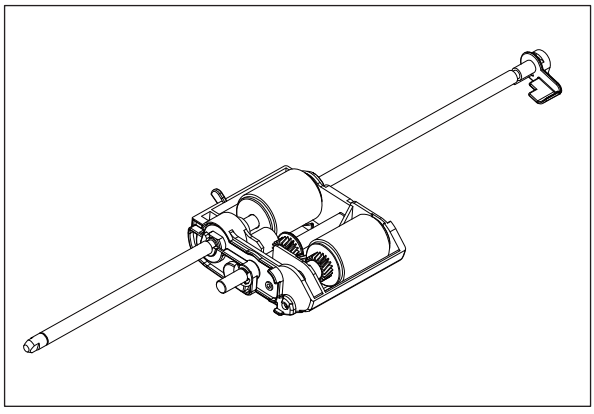


Fig. 4-4

4.1.2 DSDF separation roller PM

(1) Take off the DSDF pickup unit.
(📖 P. 4-1 "4.1.1 DSDF pickup unit")

(2) Open the DSDF separation roller cover [4].

Fig. 4-5

(3) Turn the arm [5] to release the lock.

Fig. 4-6

Fig. 4-7

(4) Turn the lever [6] of the front side to align the protrusion to the groove.

Fig. 4-8

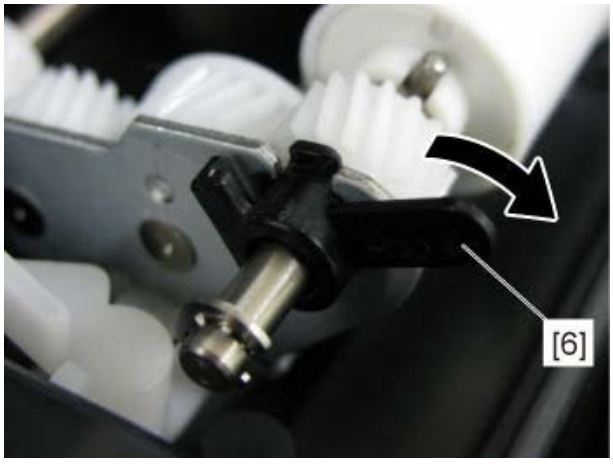


Fig. 4-9

(5) Turn the lever [7] of the rear side to align the protrusion to the groove.

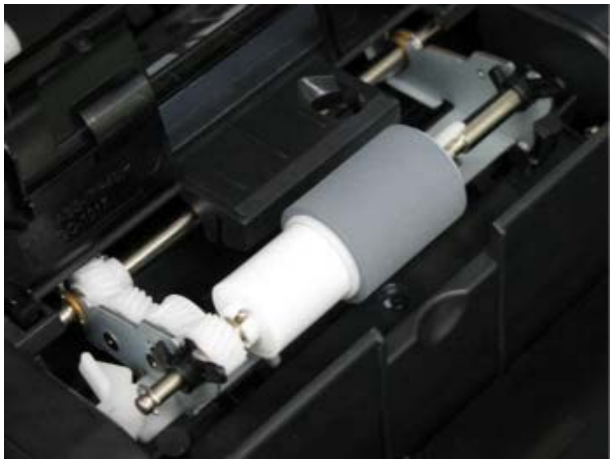


Fig. 4-10

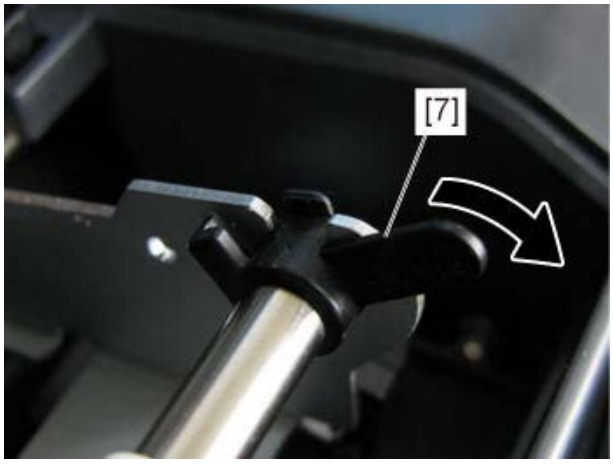


Fig. 4-11

(6) Slide the DSDF separation roller unit [8] to the front side to take it off.

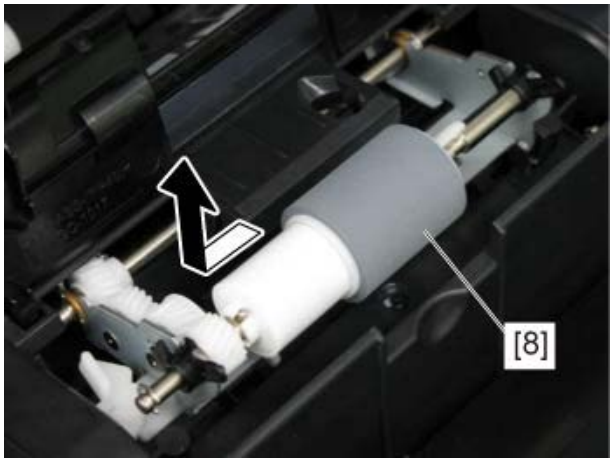


Fig. 4-12

DSDF separation roller unit

Fig. 4-13

(7) Take off the lever [7] of the rear side from the DSDF separation roller unit [8].
(8) Release the latch and take off the DSDF separation roller [9].

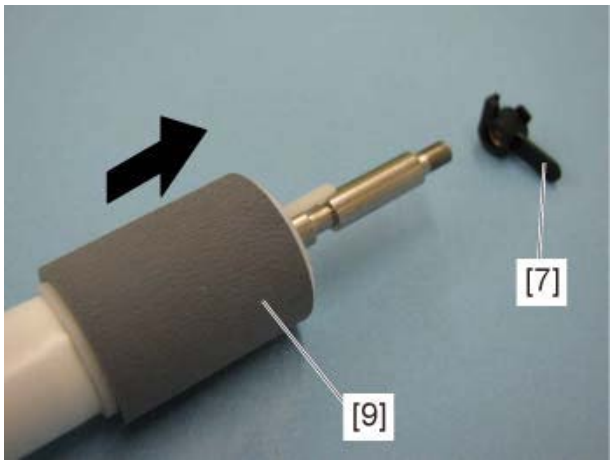


Fig. 4-14

DSDF separation roller

Fig. 4-15

4.1.3 DSDF pickup roller PM

(1) Take off the DSDF pickup unit.
(📖 P. 4-1 "4.1.1 DSDF pickup unit")
(2) Take off the DSDF pickup roller [10].

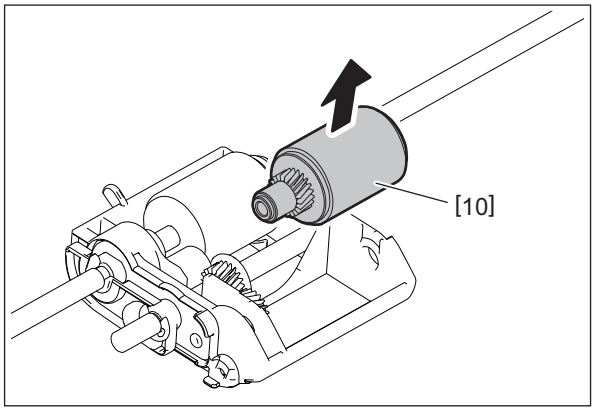


Fig. 4-16

DSDF pickup roller

Fig. 4-17

4.1.4 DSDF feed roller PM

(1) Take off the DSDF pickup unit.
(📖 P. 4-1 "4.1.1 DSDF pickup unit")
(2) Release the stopper lever [11].
(3) Pull out the shaft [12].

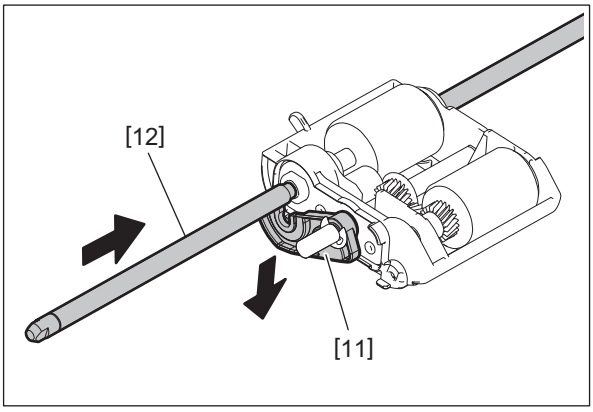


Fig. 4-18

(4) Take off the DSDF feed roller [13].

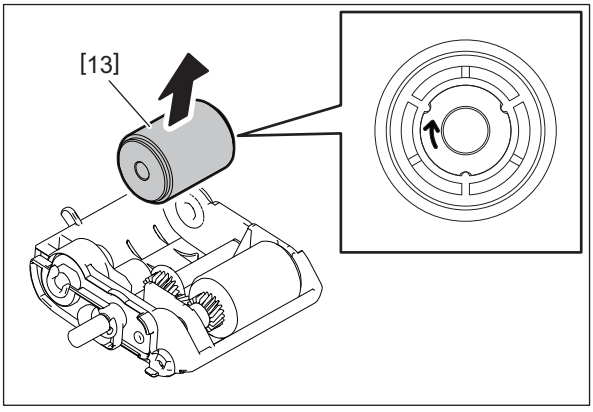


Fig. 4-19

DSDF feed roller

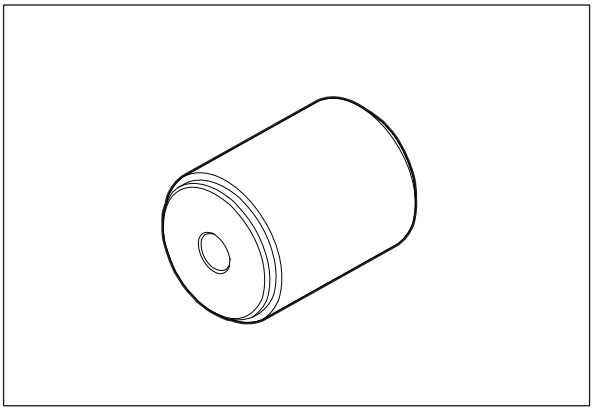


Fig. 4-20

4.2 Covers

4.2.1 DSDF rear cover

(1) Remove 2 screws.

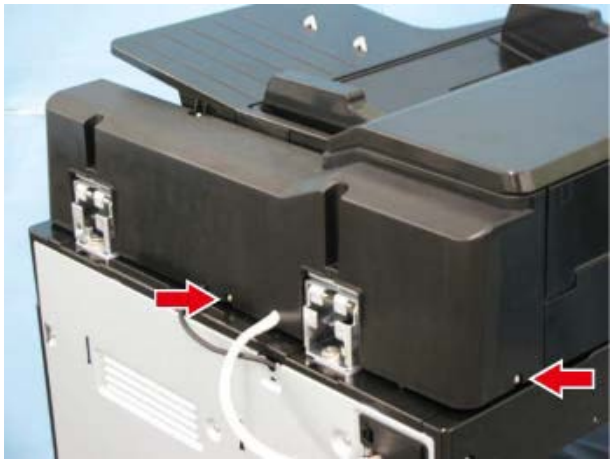


Fig. 4-21

(2) Remove 1 screw.

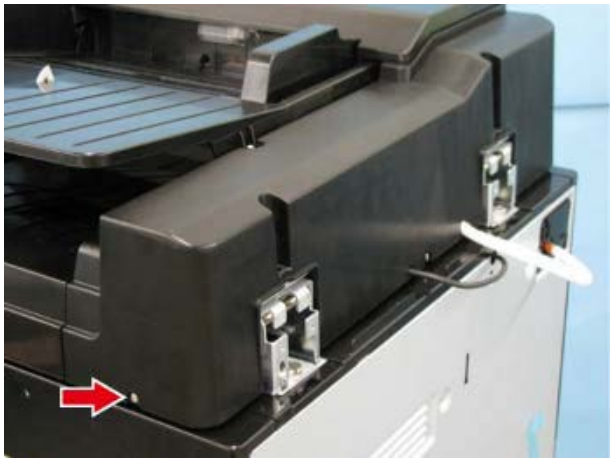


Fig. 4-22

(3) Open the original jam access cover and remove 2 screws [1][2].

Remarks:

[1] Screw for the metal part (paper feed side)
[2] Screw for the plastic part (paper exit side)

(4) While lifting up the original tray [3], take off the DSDF rear cover [4].

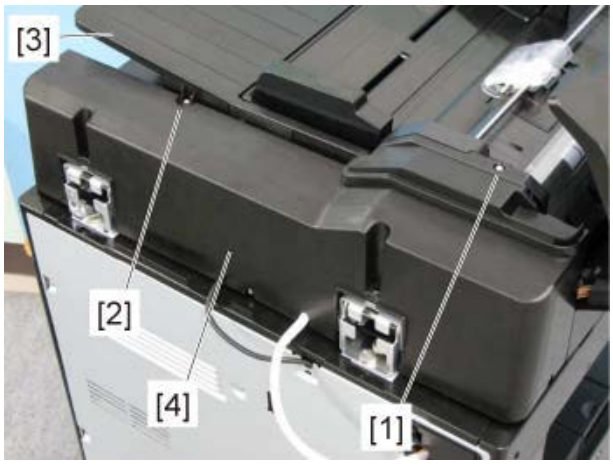


Fig. 4-23

4.2.2 DSDF front cover

(1) Open the DSDF.
(2) Remove 2 screws [1] for the plastic part and another 2 screws [2] for the metal part.

Remarks:
[1] Screws for the metal part (paper feed side)
[2] Screws for the plastic part (paper exit side)

Fig. 4-24

(3) Remove 1 screw and take off the DSDF front cover [5].

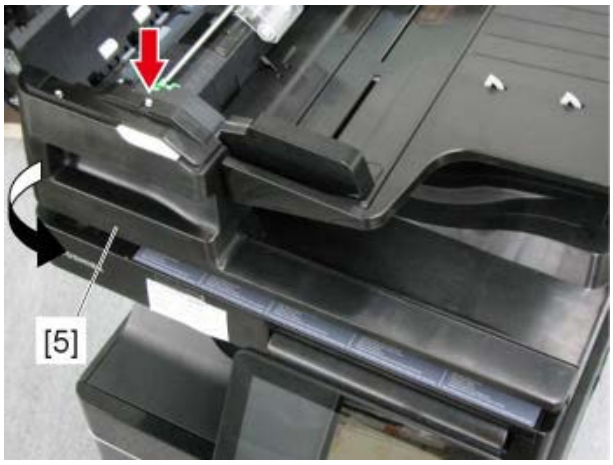


Fig. 4-25

4.2.3 Original jam access cover

(1) Take off the DSDF rear cover.
(📖 P. 4-9 "4.2.1 DSDF rear cover")
(2) Take off the DSDF front cover.
(📖 P. 4-10 "4.2.2 DSDF front cover")
(3) Disconnect 1 connector.
(4) Remove 1 screw and the hinge pin [6] of the rear side.

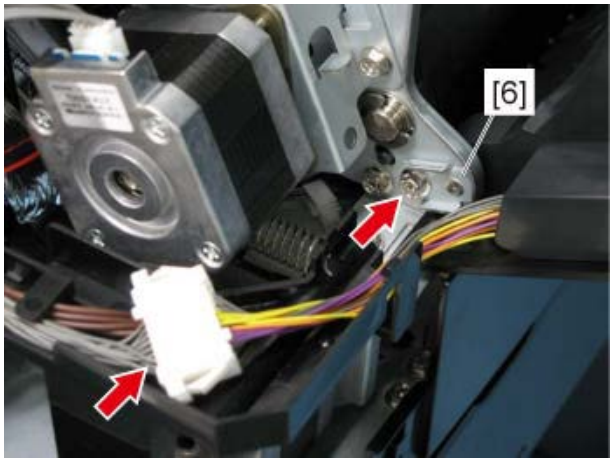


Fig. 4-26

(5) Remove 1 screw and the hinge pin [7] of the front side.
(6) Remove 1 screw of the original jam access cover stopper.

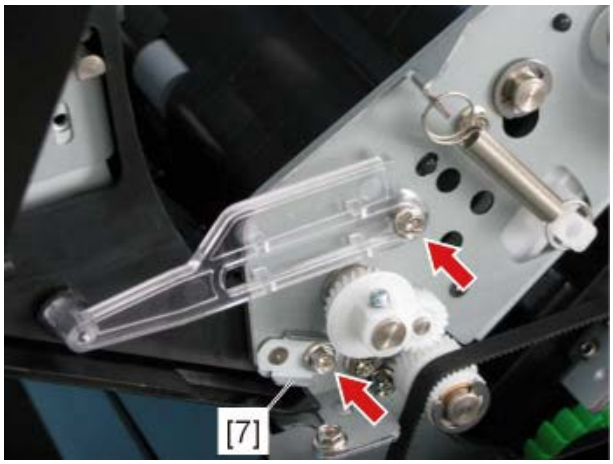


Fig. 4-27

(7) Turn the original jam access cover [8] to the direction for closing it and then lift it up to remove it.

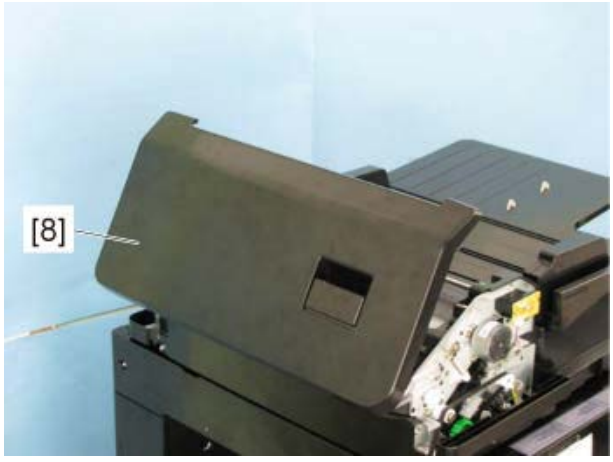


Fig. 4-28

Notes:

When installing and taking off the original jam access cover, be careful not to damage it or the transport guide of the DSDF left cover.

4.2.4 DSDF left cover

(1) Take off the original jam access cover.
(🕮 P. 4-11 "4.2.3 Original jam access cover")

(2) Remove 2 screws [1] for the plastic part and another 2 screws [2] for the metal part.

Remarks:
[1] Screws for the metal part (front side)
[2] Screws for the plastic part (rear side)

(3) Take off the DSDF left cover [9] upward.

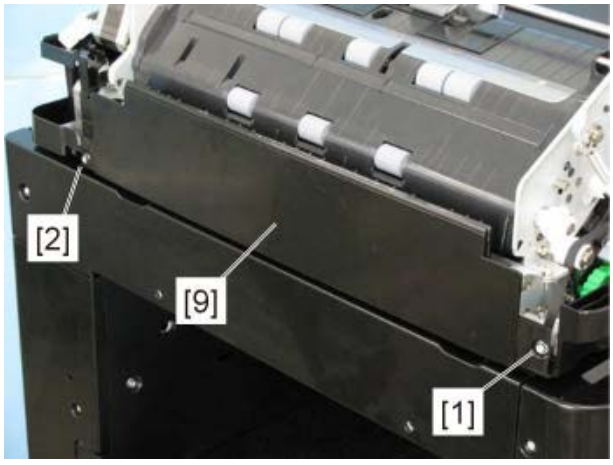


Fig. 4-29

4.3 PC Boards

4.3.1 DSDF-LED PC board (LEDD)

(1) Take off the DSDF front cover.
(📖 P. 4-10 "4.2.2 DSDF front cover")
(2) Disconnect 1 connector.
Remove 1 screw and take off the DSDF-LED PC board [12].

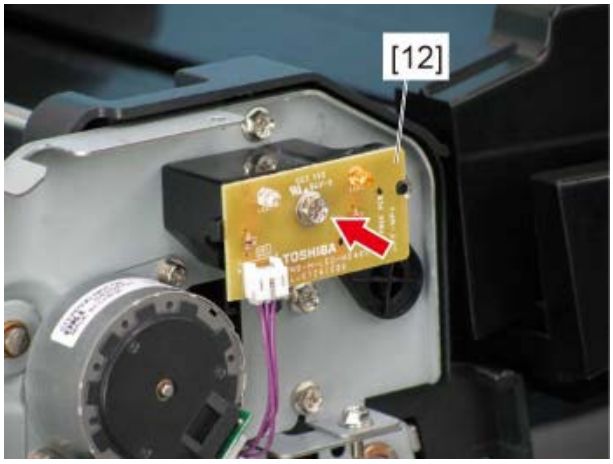


Fig. 4-30

4.3.2 DSDF control PC board cooling fan motor (FD2)

(1) Take off the DSDF rear cover.
(📖 P. 4-9 "4.2.1 DSDF rear cover")
(2) Release 1 harness clamp [1] and disconnect 1 connector.
(3) Remove 2 screws [3] and take off the DSDF control PC board cooling fan motor [4].

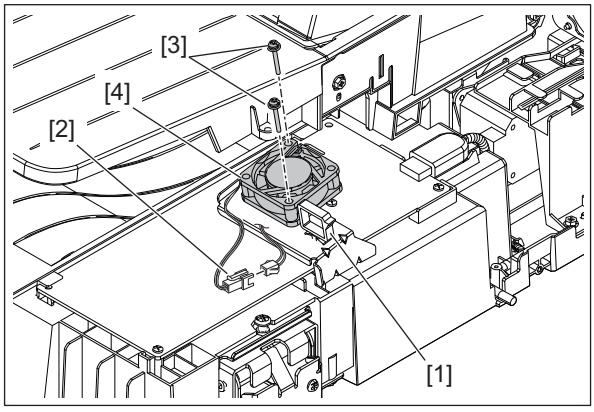


Fig. 4-31

(4) Remove 1 screw and take off the bracket [5].
(5) Remove 1 screw and take off the bracket [6].

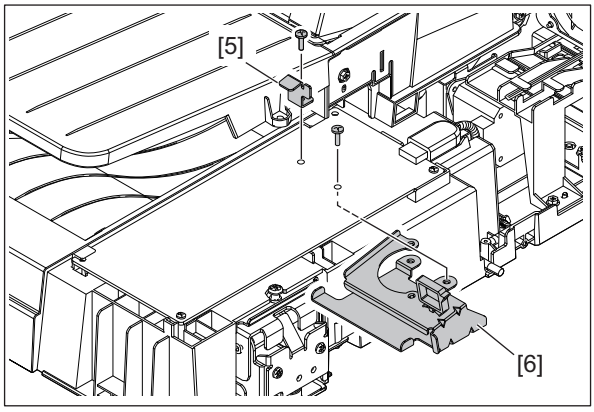


Fig. 4-32

4.3.3 DSDF control PC board (DLGD)

(1) Take off the DSDF rear cover.
(🕮 P. 4-9 "4.2.1 DSDF rear cover")
(2) Take off 2 DSDF control PC board cooling fan motor brackets.
(🕮 P. 4-14 "4.3.2 DSDF control PC board cooling fan motor (FD2)")
(3) Disconnect 13 connectors and 1 HDMI cable. Release the lock and disconnect 1 flat cable.
(4) Remove 2 screws and take off the DSDF control PC board [13].

Fig. 4-33

Notes:

- When installing the flat cable, do not push it in strongly.
- When installing the flat cable, be careful not to insert it at an angle.
- Do not apply pressure to or damage the edge of the flat cable.
- When installing a flat cable, make sure that the conductor side will be the upper side.

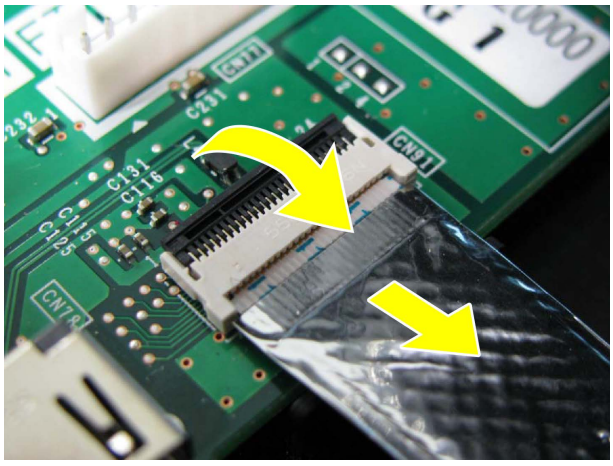


Fig. 4-34

4.4 Original Tray Section

4.4.1 Original tray

(1) Take off the DSDF rear cover.
(🕮 P. 4-9 "4.2.1 DSDF rear cover")
(2) Take off the DSDF front cover.
(🕮 P. 4-10 "4.2.2 DSDF front cover")
(3) Disconnect 2 connectors (CN73 and CN76) from the DSDF control PC board.

Fig. 4-35

(4) Take off the bracket cover [1].
(5) Remove 1 screw and then take off the original tray bracket [2] and the original tray holder [3].

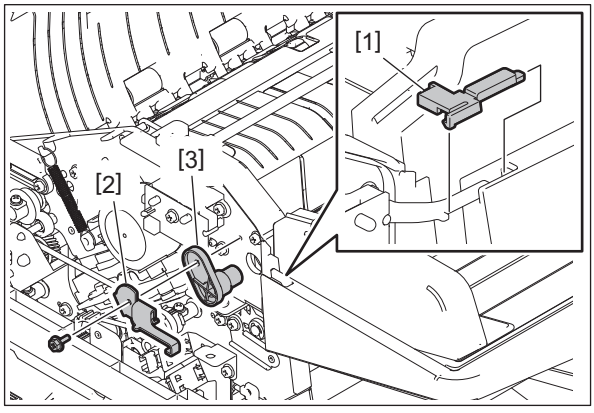


Fig. 4-36

(6) Take off the original tray [11].

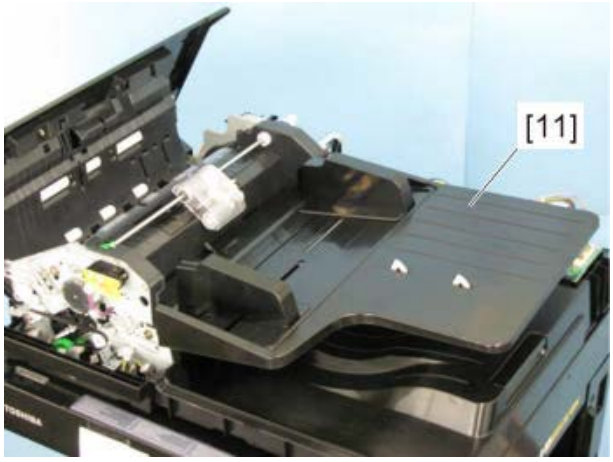


Fig. 4-37

4.4.2 DSDF tray original length sensor-1 (SD1) / DSDF tray original length sensor-2 (SD2)

(1) Take off the original tray.
(📖 P. 4-17 "4.4.1 Original tray")
(2) Remove 1 screw and take off the sensor cover [14].

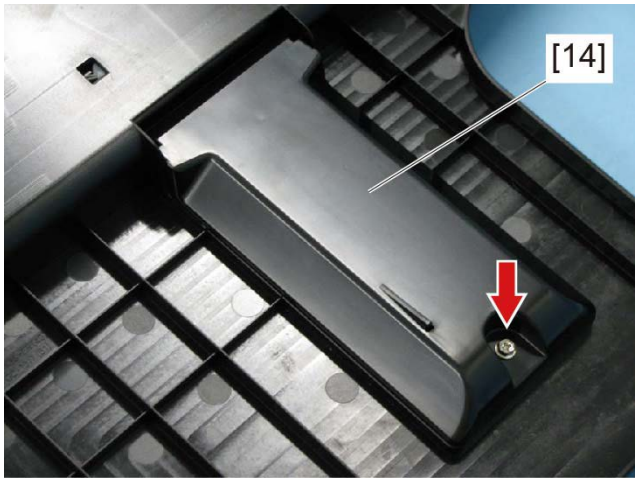


Fig. 4-38

(3) Disconnect 1 connector respectively from the DSDF tray original length sensor-1 [15] and the DSDF tray original length sensor-2 [16].
(4) Release the latch from each sensor. Take off the DSDF tray original length sensor-1 [15] and the DSDF tray original length sensor-2 [16].

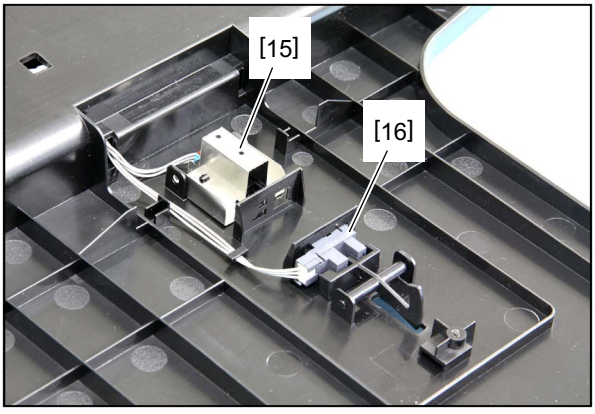


Fig. 4-39

4.4.3 DSDF tray original width sensor (SD3)

(1) Take off the original tray.
(🕮 P. 4-17 "4.4.1 Original tray")

(2) Remove 1 screw and take off the tray holder [17].
Take off the movable tray [18].

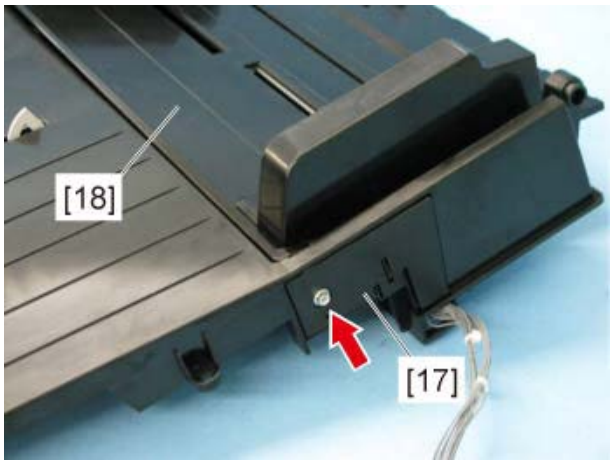


Fig. 4-40

Notes:
When installing the tray holder, be careful not to catch the harness.

(3) Remove 1 screw and take off the original width sensor cover [19].

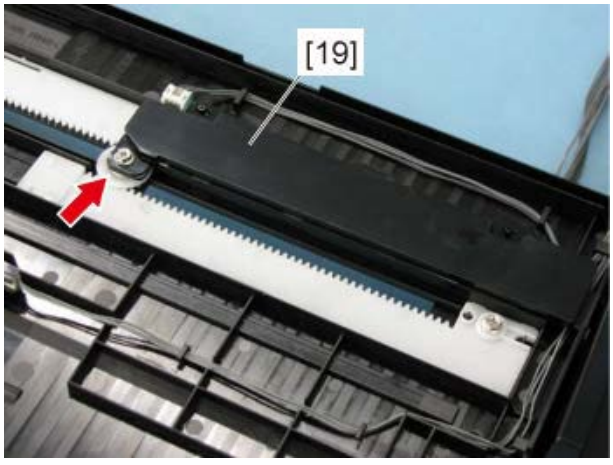


Fig. 4-41

Notes:

Pay attention not to remove the washer and the wave washer of the pinion.

Fig. 4-42

(4) Disconnect 1 connector and take off the DSDF tray original width sensor [20].

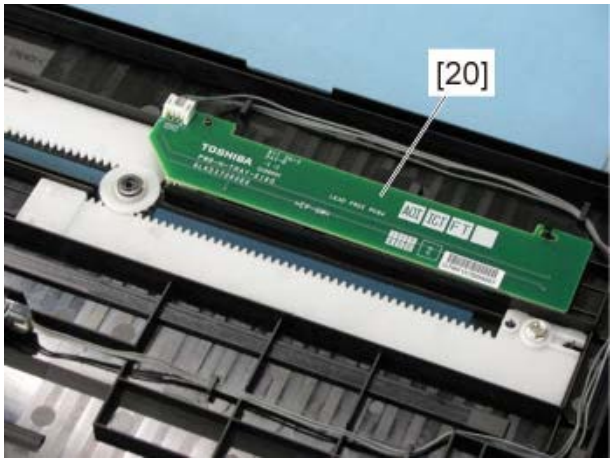


Fig. 4-43

4.4.4 DSDF original empty sensor (SD4)

(1) Take off the original tray.
(📖 P. 4-17 "4.4.1 Original tray")

(2) Remove 1 screw and take off the tray holder [17].
Take off the movable tray [18].

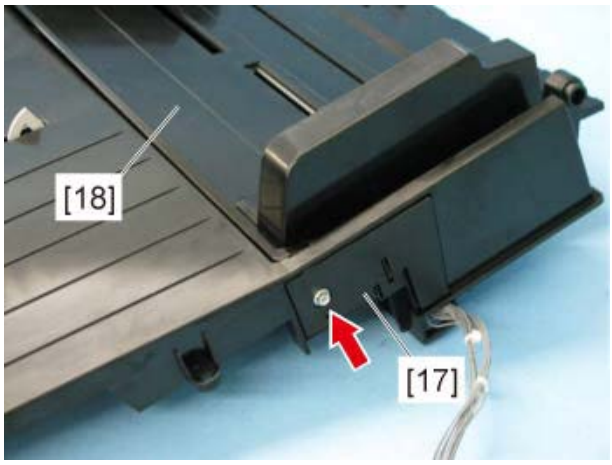


Fig. 4-44

Notes:
When installing the tray holder, be careful not to catch the harness.

(3) Disconnect 1 connector. Release the latch and take off the DSDF original empty sensor [21].

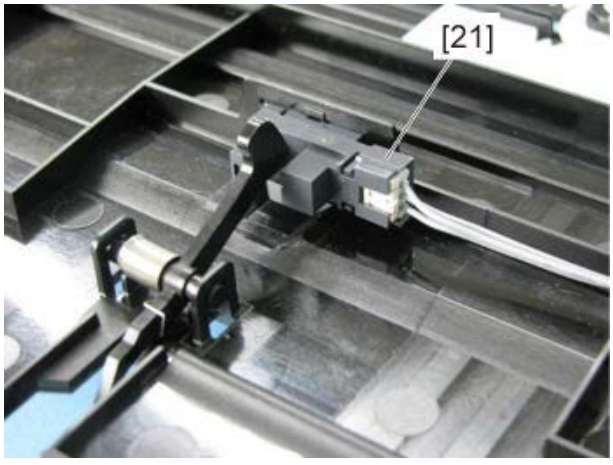


Fig. 4-45

4.5 Original Feeding Section

4.5.1 DSDF feed sensor (SD5) / DSDF tray lift upper limit sensor (SD9)

(1) Take off the original jam access cover.
(📖 P. 4-11 "4.2.3 Original jam access cover")

(2) Remove 4 screws.

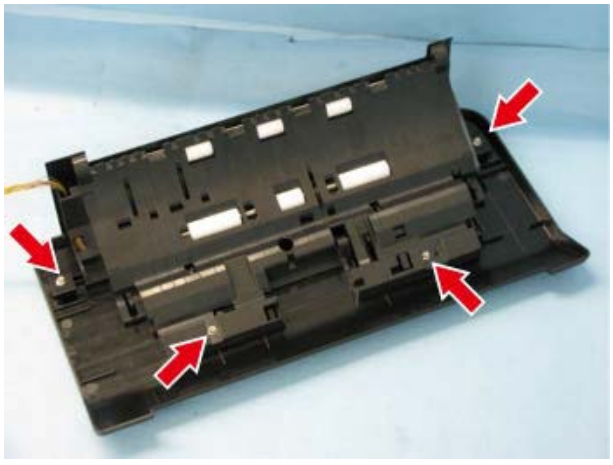


Fig. 4-46

(3) While pulling the lever, take off the top cover [1].

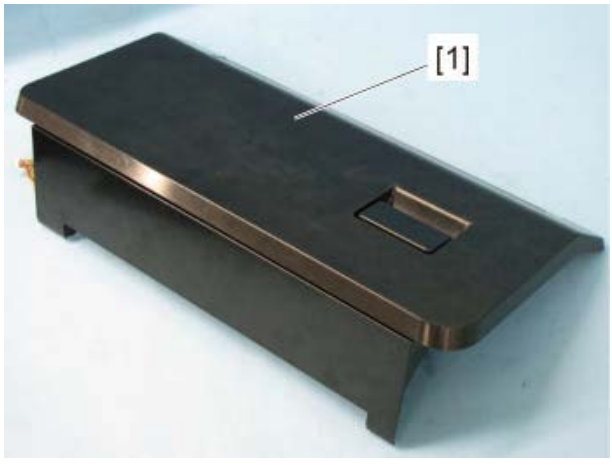


Fig. 4-47

(4) Disconnect 1 connector. Release the latch and take off the DSDF feed sensor [2].

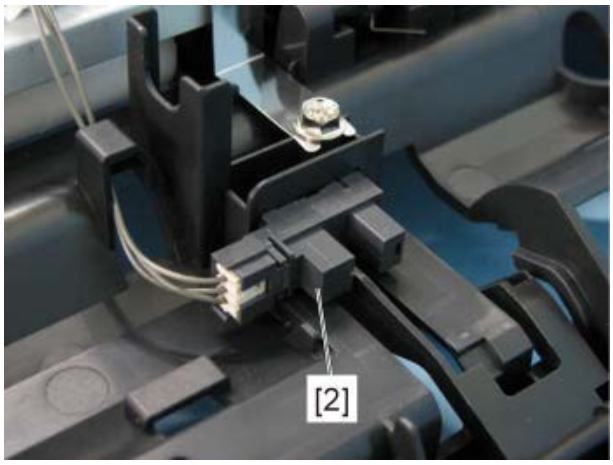


Fig. 4-48

(5) Disconnect 1 connector. Release the latch and take off the DSDF tray lift upper limit sensor [3].

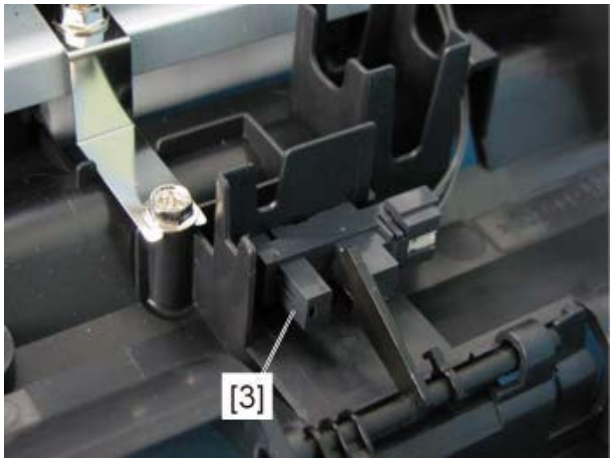


Fig. 4-49

4.5.2 DSDF original width detection sensor-1 (SD7) / DSDF original width detection sensor-2 (SD8)

(1) Take off the original jam access cover.
(🕮 P. 4-11 "4.2.3 Original jam access cover")

(2) Remove 4 screws.

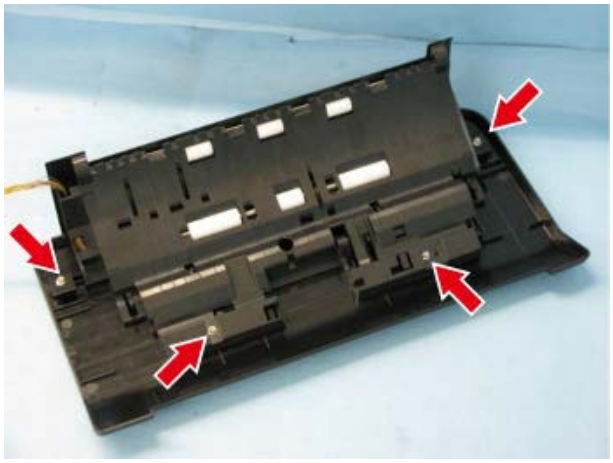


Fig. 4-50

(3) While pulling the lever, take off the top cover [1].

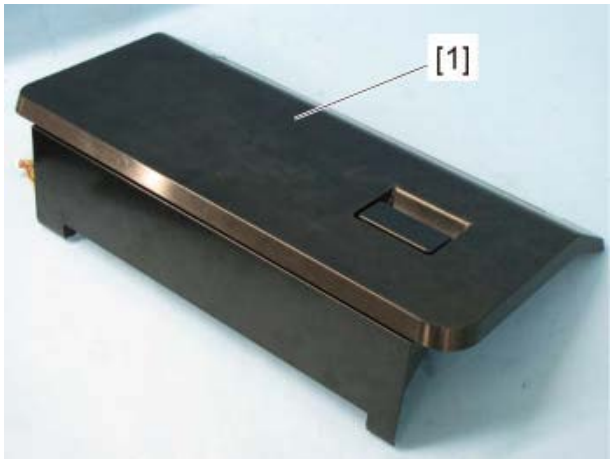


Fig. 4-51

(4) Remove 2 screws and take off the left top cover [4].

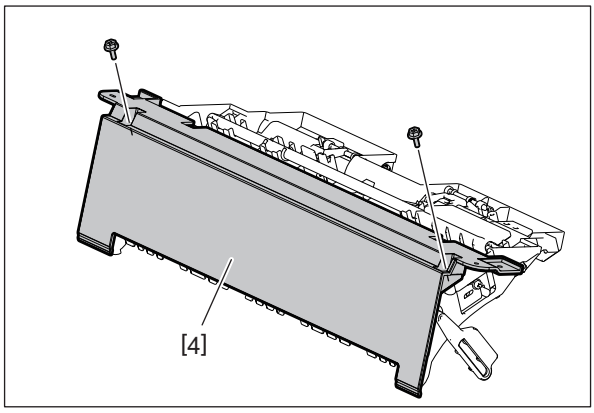


Fig. 4-52

(5) Disconnect 1 connector. Release the latch and take off the DSDF original width detection sensor-1 [5].
(6) Disconnect 1 connector. Release the latch and take off the DSDF original width detection sensor-2 [6].

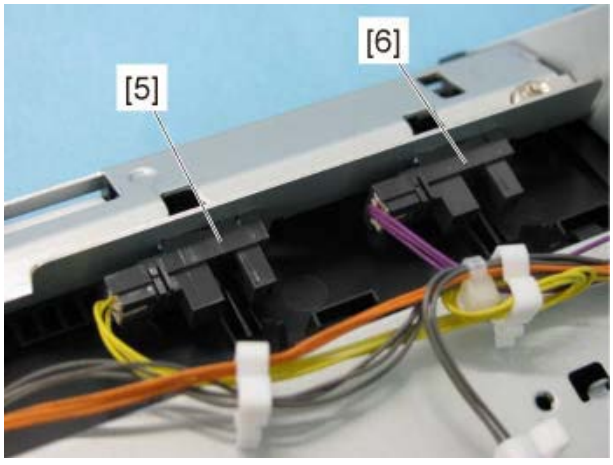


Fig. 4-53

4.5.3 DSDF registration sensor (SD6)

(1) Take off the original jam access cover.
(🕮 P. 4-11 "4.2.3 Original jam access cover")

(2) Remove 4 screws.

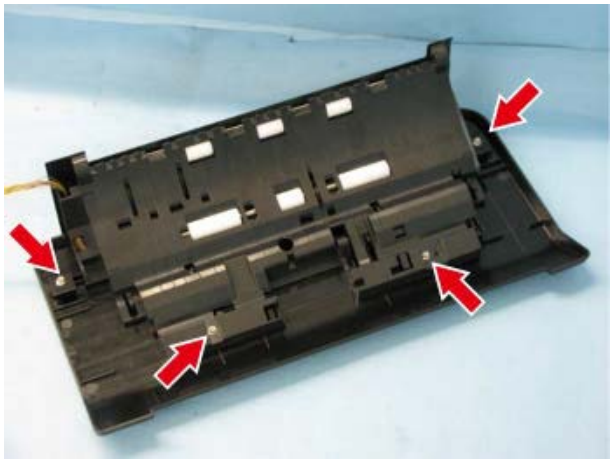


Fig. 4-54

(3) While pulling the lever, take off the top cover [1].

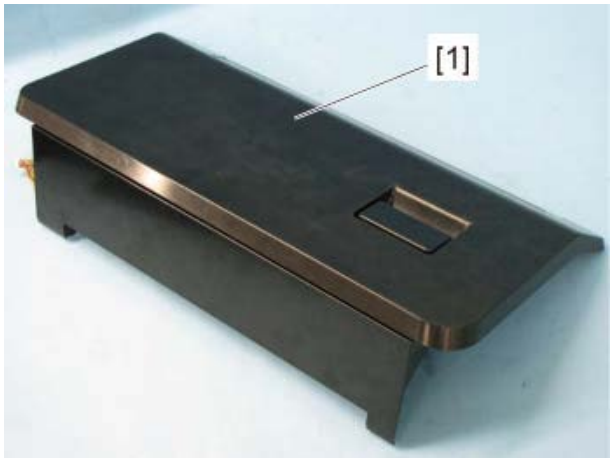


Fig. 4-55

(4) Remove 2 screws and take off the left top cover [4].

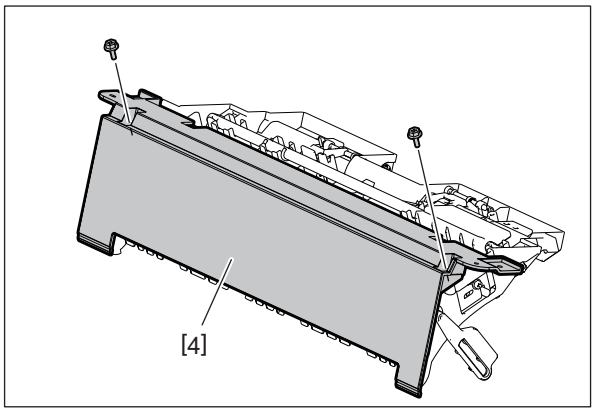


Fig. 4-56

(5) Disconnect 2 connectors [9].
(6) Remove 8 screws and take off the stay [7].

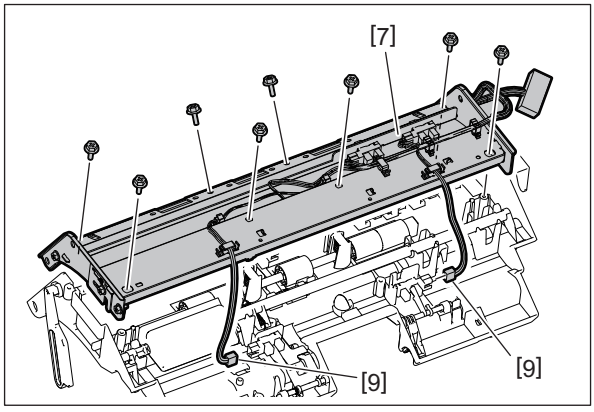


Fig. 4-57

Notes:
Be careful not to drop any of the 6 springs.

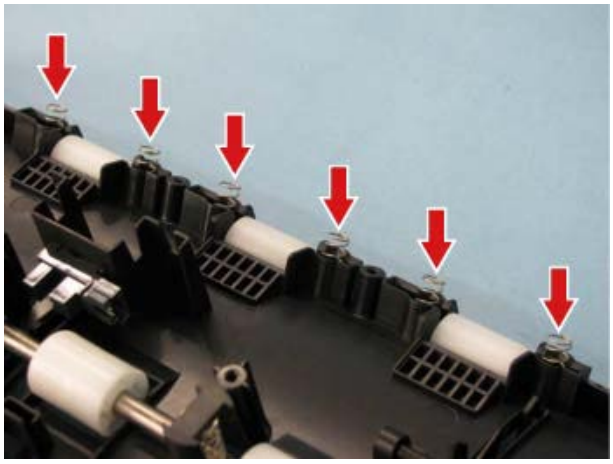


Fig. 4-58

(7) Disconnect 1 connector and take off the DSDF registration sensor [8].

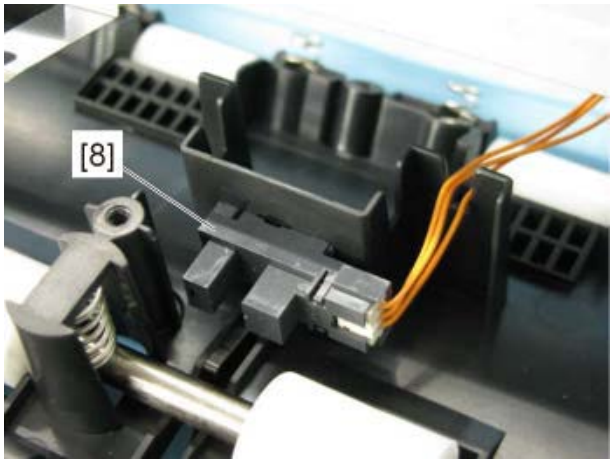


Fig. 4-59

4.6 Drive Section

4.6.1 DSDF cooling fan motor (FD1)

(1) Take off the DSDF rear cover.
(📖 P. 4-9 "4.2.1 DSDF rear cover")

(2) Disconnect 1 connector [1]. Remove 2 screws and take off the DSDF cooling fan motor bracket [2].

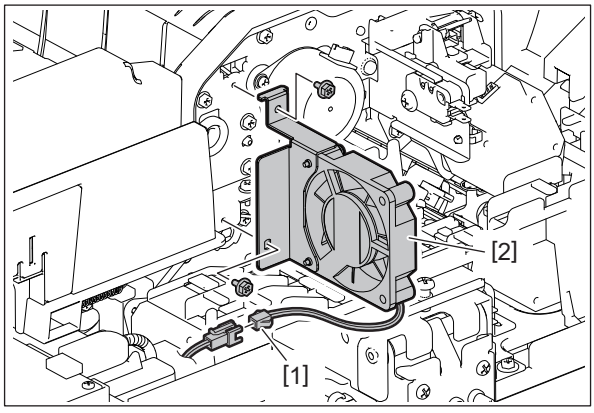


Fig. 4-60

(3) Remove 2 screws and take off the DSDF cooling fan motor [3] from the bracket.

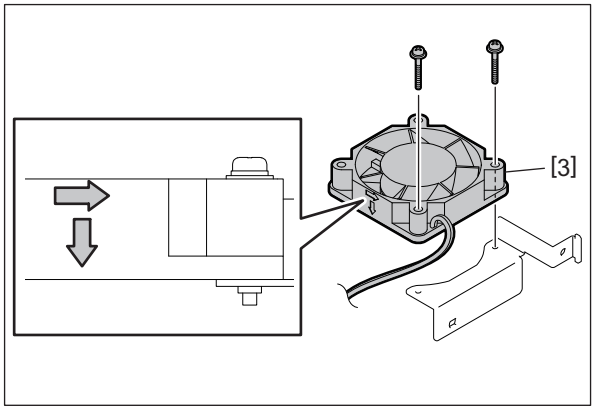


Fig. 4-61

4.6.2 DSDF upper cover interlock switch (SWD2)

Notes:

If the interlock switch is not installed appropriately when it is replaced or installed, it may not work normally. If you carry out the maintenance of the equipment in such a situation, you could get an electric shock by touching live sections or be injured by touching moving sections. Therefore, to avoid this, be sure to perform correct handling and installation.

(1) Take off the DSDF cooling fan motor bracket.
(📖 P. 4-30 "4.6.1 DSDF cooling fan motor (FD1)")

(2) Disconnect 3 connectors. Remove 1 screw and take off the DSDF upper cover interlock switch [4].

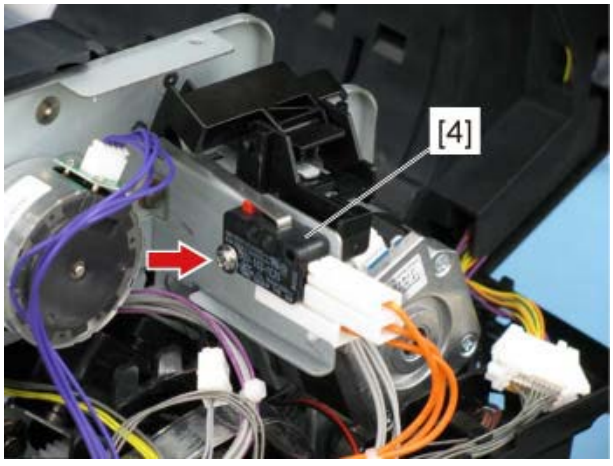


Fig. 4-62

Notes:

The color of all 3 harnesses for the DSDF upper cover interlock switch: Orange

4.6.3 DSDF upper cover opening/closing detection sensor (SD16)

Notes:

If the interlock switch is not installed appropriately when it is replaced or installed, it may not work normally. If you carry out the maintenance of the equipment in such a situation, you could get an electric shock by touching live sections or be injured by touching moving sections. Therefore, to avoid this, be sure to perform correct handling and installation.

(1) Take off the DSDF rear cover.
(📖 P. 4-9 "4.2.1 DSDF rear cover")

(2) Remove 2 screws and take off the sensor bracket [1].

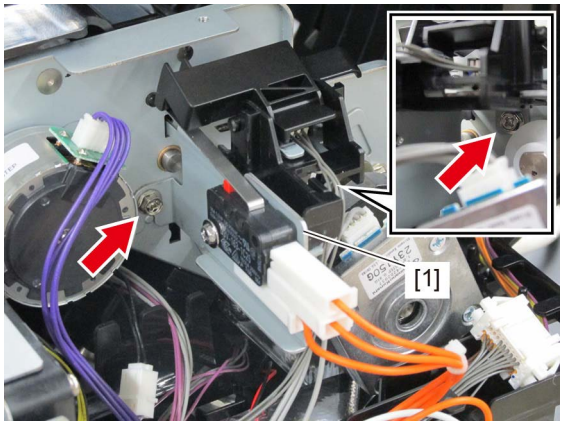


Fig. 4-63

(3) Release the harness [4] from the clamp [2] and the actuator [3]. Release 2 hooks [5] and take off the actuator [3].

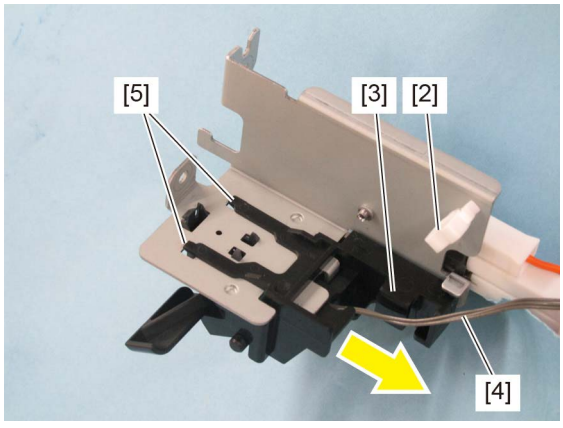


Fig. 4-64

(4) Release 3 hooks [6].

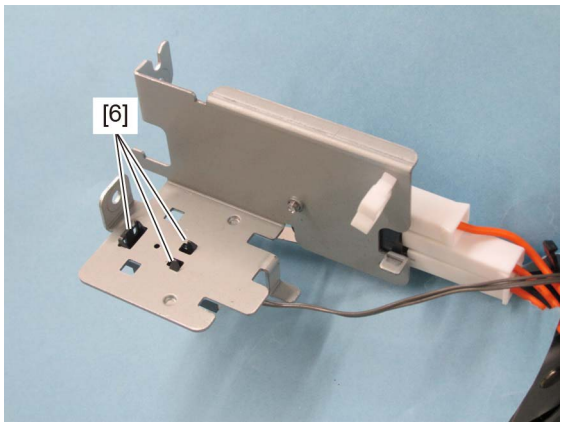


Fig. 4-65

(5) Disconnect 1 connector [7] and then take off the DSDF upper cover opening/closing detection sensor [8].

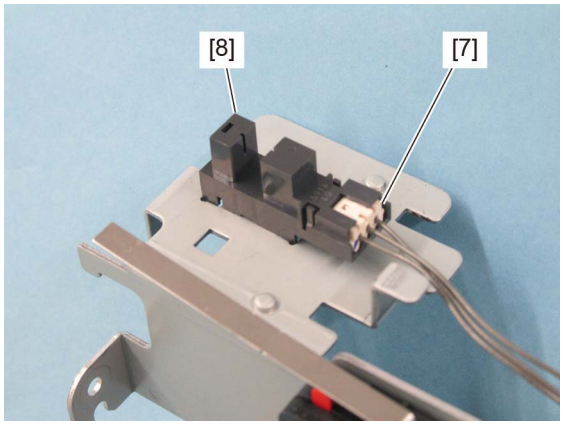


Fig. 4-66

4.6.4 DSDF registration motor (MD3)

(1) Take off the DSDF rear cover.
(🕮 P. 4-9 "4.2.1 DSDF rear cover")

(2) Take off the DSDF cooling fan motor (FD1).
(🕮 P. 4-30 "4.6.1 DSDF cooling fan motor (FD1)")

(3) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

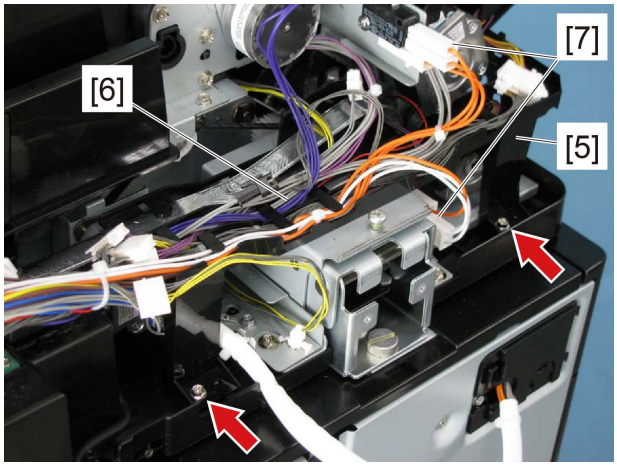


Fig. 4-67

(4) Disconnect 1 connector [9] from the DSDF registration motor.
Remove 2 screws and take off the DSDF registration motor bracket [10].

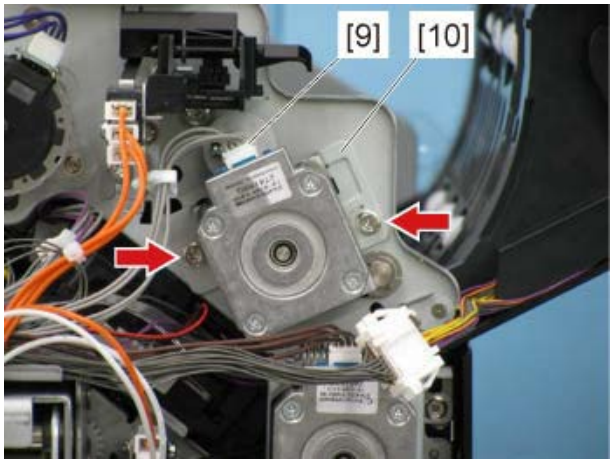


Fig. 4-68

Notes:

- When installing the DSDF registration motor bracket, be sure to hook the pulley to the timing belt.
- The harness color of the DSDF registration motor is gray, be sure to check the harness color at installing.

(5) Remove 2 screws and take off the DSDF registration motor [11] from the DSDF registration motor bracket [10].

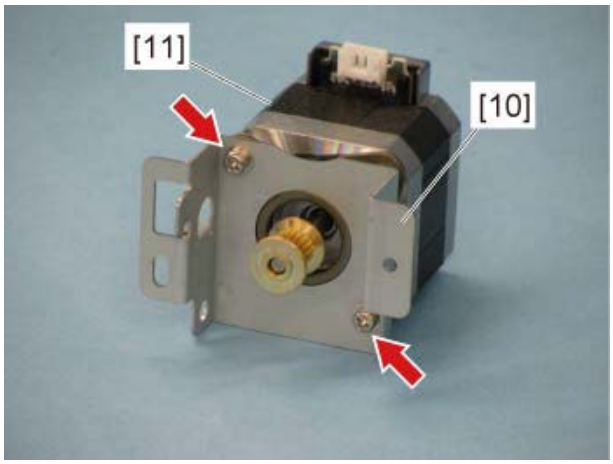


Fig. 4-69

4.6.5 DSDF read motor (MD4)

(1) Take off the DSDF rear cover.
(📖 P. 4-9 "4.2.1 DSDF rear cover")

(2) Take off the DSDF cooling fan motor (FD1).
(📖 P. 4-30 "4.6.1 DSDF cooling fan motor (FD1)")

(3) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

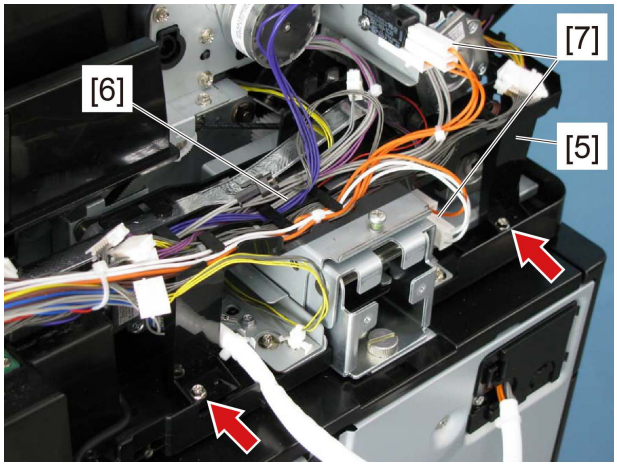


Fig. 4-70

(4) Disconnect 1 connector [12] from the DSDF read motor.
(5) Remove the tension spring [13].
Remove 2 screws and take off the DSDF read motor bracket [14].

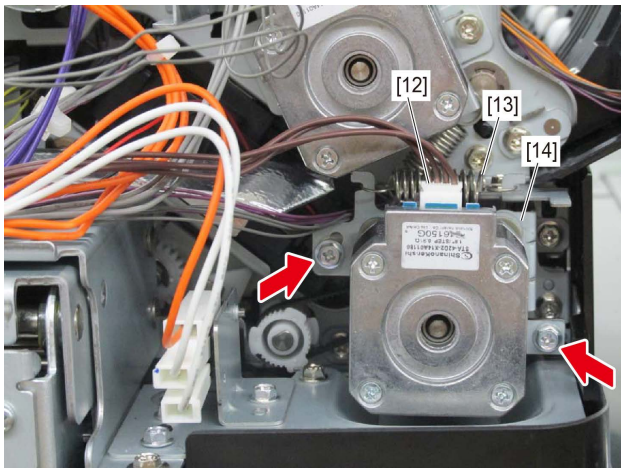


Fig. 4-71

Notes:

- When installing the DSDF read motor bracket, be sure to hook the pulley to the timing belt.
- When installing, temporarily tighten 2 screws, hook the tension spring and then securely tighten them.

(6) Remove 2 screws and take off the DSDF read motor [25] from the DSDF read motor bracket [24].

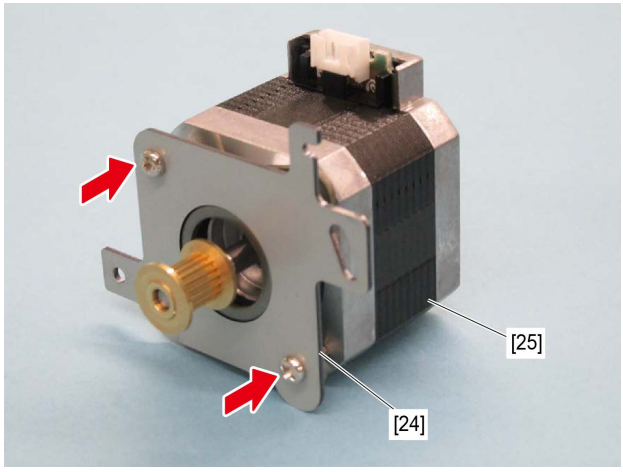


Fig. 4-72

4.6.6 DSDF exit motor (MD5)

(1) Take off the DSDF rear cover.
(🕮 P. 4-9 "4.2.1 DSDF rear cover")
(2) Take off the DSDF cooling fan motor (FD1).
(🕮 P. 4-30 "4.6.1 DSDF cooling fan motor (FD1)")
(3) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

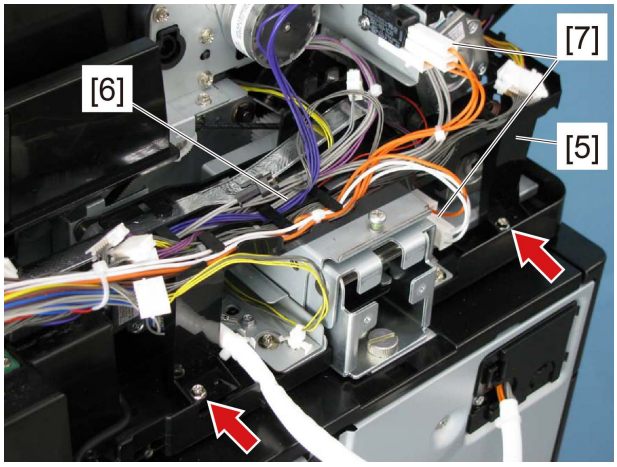


Fig. 4-73

(4) Disconnect 1 connector [15] from the DSDF exit motor.
(5) Remove the tension spring [16].
(6) Remove 2 screws and take off the DSDF exit motor bracket [17].

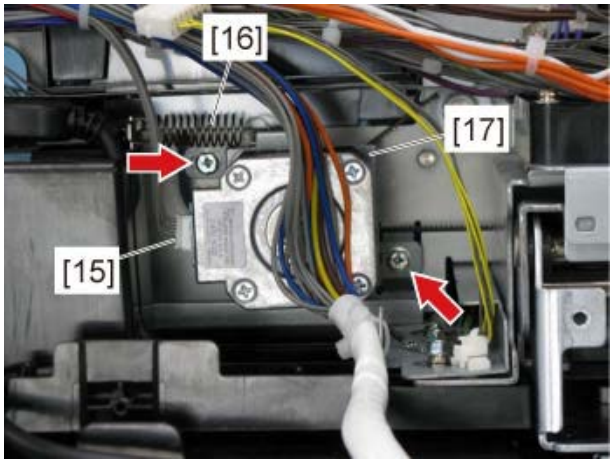


Fig. 4-74

Notes:
- When installing the DSDF exit motor bracket, be sure to hook the pulley to the timing belt.
- When installing, temporarily tighten 2 screws, hook the tension spring and then securely tighten them.

(7) Remove 2 screws and take off the DSDF exit motor [18] from the DSDF exit motor bracket [17].

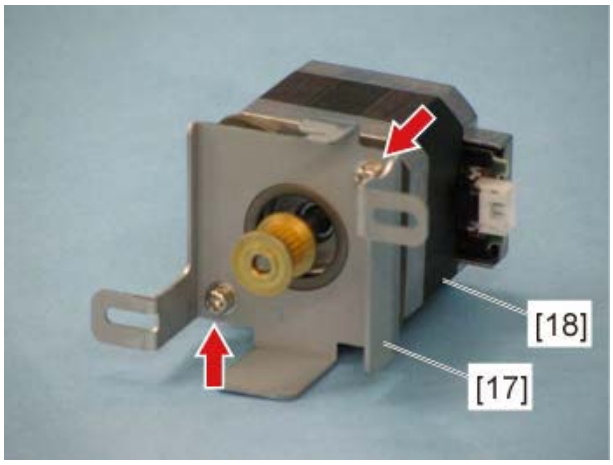


Fig. 4-75

4.6.7 DSDF lower cover interlock switch (SWD1)

Notes:

If the interlock switch is not installed appropriately when it is replaced or installed, it may not work normally. If you carry out the maintenance of the equipment in such a situation, you could get an electric shock by touching live sections or be injured by touching moving sections. Therefore, to avoid this, be sure to perform correct handling and installation.

(1) Take off the DSDF read motor.
(📖 P. 4-35 "4.6.5 DSDF read motor (MD4)")

(2) Disconnect 3 connectors. Remove 1 screw and take off the DSDF lower cover interlock switch [19].

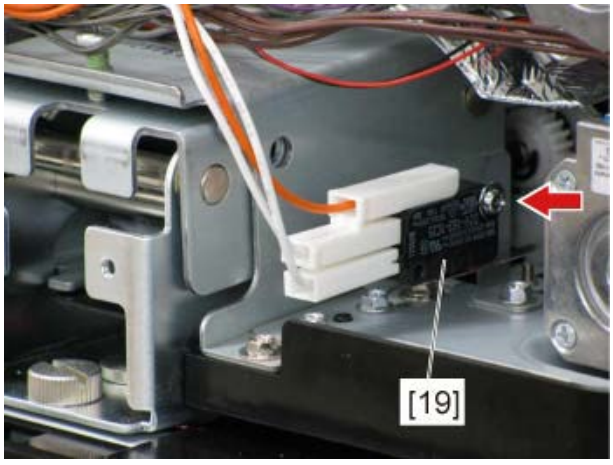


Fig. 4-76

Notes:

The color of 3 harnesses for the DSDF lower cover interlock switch: Orange (1) and white (2).

4.6.8 DSDF feed motor (MD1)

(1) Take off the rear cover.
(📖 P. 4-9 "4.2.1 DSDF rear cover")

(2) Disconnect 1 connector [20]. Remove 2 screws and slide the DSDF feed motor [21] to the upper left to take it off.

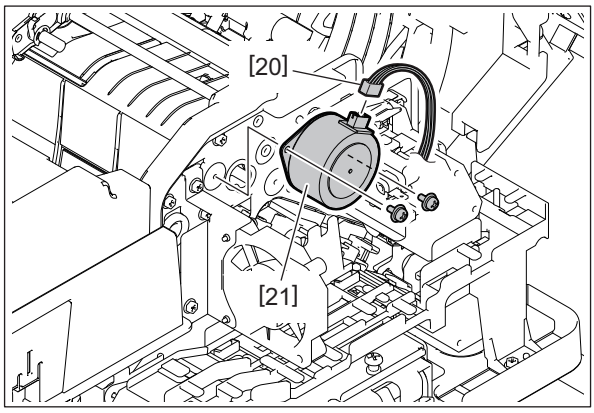


Fig. 4-77

Notes:

The harness color of the DSDF feed motor is purple, be sure to check the harness color at installing.

4.6.9 DSDF separation motor (MD2)

(1) Take off the DSDF-LED PC board.
(📖 P. 4-14 "4.3.1 DSDF-LED PC board (LEDD)")

(2) Disconnect 1 connector [22]. Remove 2 screws. Turn the DSDF separation motor [23] clockwise and slide it to the upper right to take it off.

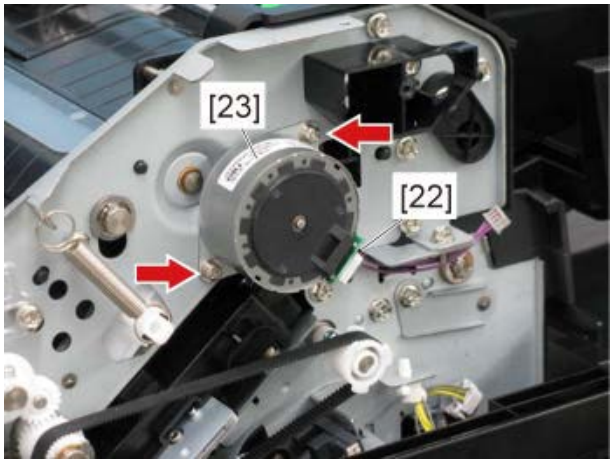


Fig. 4-78

4.7 Original Transport Section

Notes:

- Be sure to attach the stopper jig or to take off the DSDF from the equipment before starting the🕮 P. 4-40 "4.7 Original Transport Section" or later. If the unit is taken off from the DSDF while it is installed in the equipment, the DSDF will be pulled up as its weight becomes lighter, resulting in danger.
- When taking the DSDF from the equipment to disassemble it, be sure to put it on an even workspace.
- Take off the platen sheet before maintenance to prevent it from being damaged or dirtied.

4.7.1 Intermediate transport unit

(1) Take off the original jam access cover.
(🕮 P. 4-11 "4.2.3 Original jam access cover")

(2) Take off the original tray.
(🕮 P. 4-17 "4.4.1 Original tray")

(3) Take off the DSDF cooling fan motor (FD1).
(🕮 P. 4-30 "4.6.1 DSDF cooling fan motor (FD1)")

(4) Disconnect 5 connectors.

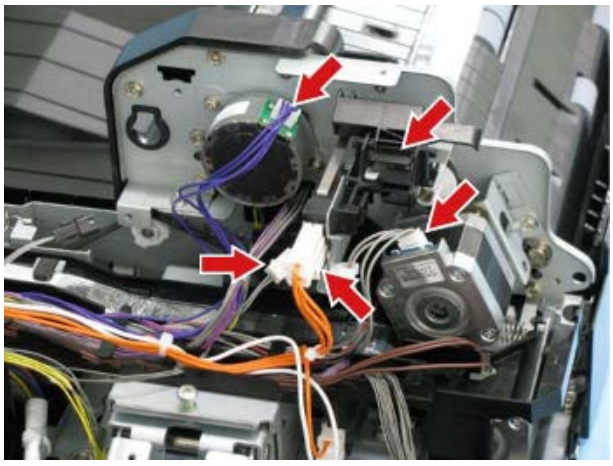


Fig. 4-79

(5) Disconnect 2 connectors.

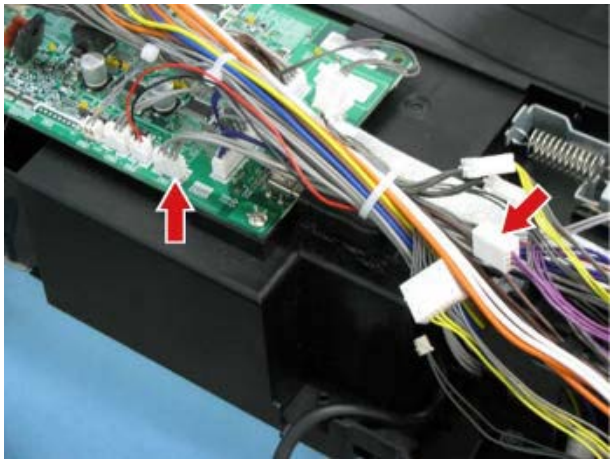


Fig. 4-80

(6) Remove 1 screw and take off the pulley bracket [14] toward the front side.
(7) Remove 1 screw.

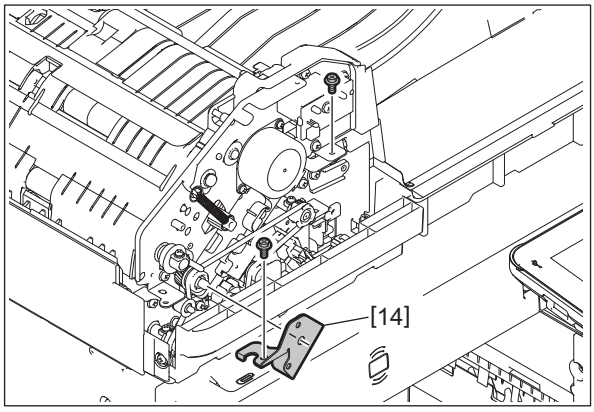


Fig. 4-81

(8) Remove 2 screws.

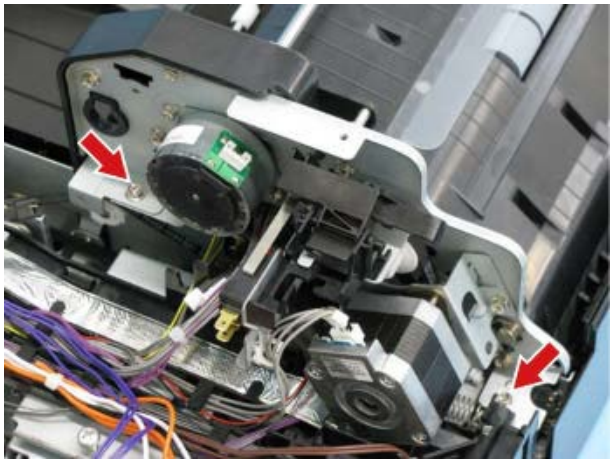


Fig. 4-82

(9) Take off the intermediate transport unit [1].

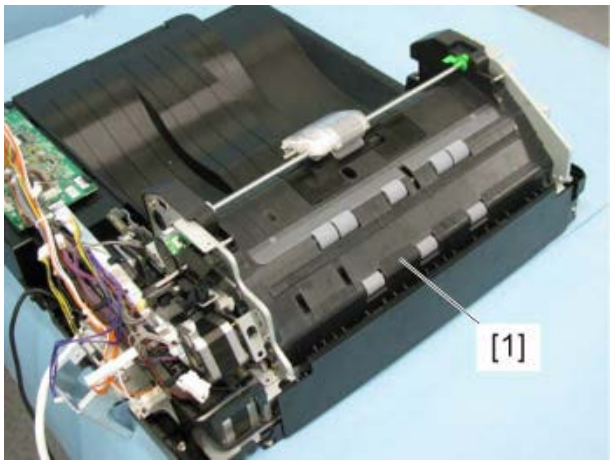


Fig. 4-83

Intermediate transport unit

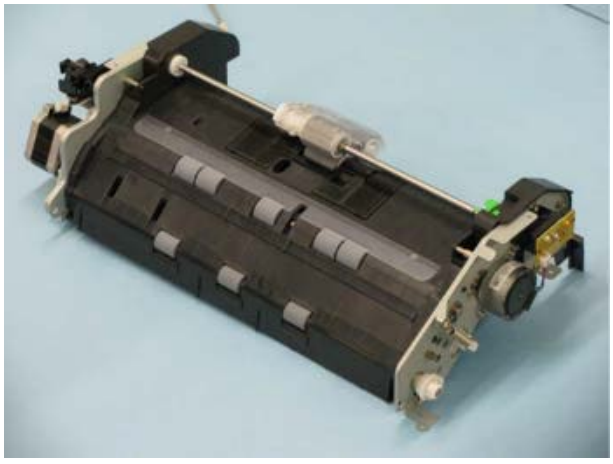


Fig. 4-84

4.7.2 DSDF read-in sensor-1 (SD11) / DSDF read-in sensor-2 (SD12)

(1) Take off the DSDF-CCD module.
(🕮 P. 4-50 "4.8.1 DSDF-CCD module (CCDD)")
(2) Disconnect 2 connectors and remove 1 screw. Take off the sensor bracket [2].

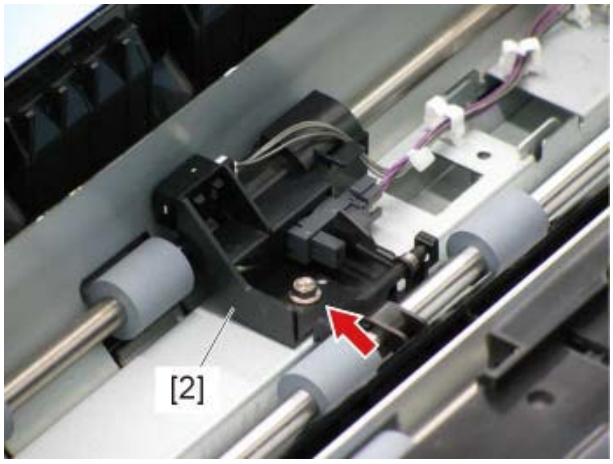


Fig. 4-85

(3) Release the latch and take off the DSDF read-in sensor-1 [3] from the sensor bracket.
(4) Release the latch and take off the DSDF read-in sensor-2 [4] from the sensor bracket.

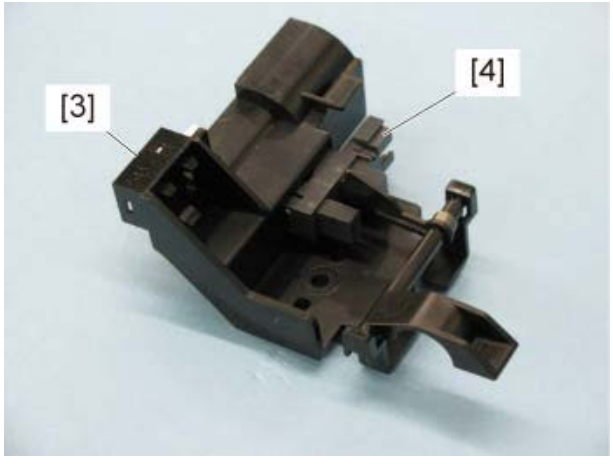


Fig. 4-86

4.7.3 DSDF exit sensor (SD13) / DSDF tray lift lower limit sensor (SD10)

(1) Take off the intermediate transport unit.
(🕮 P. 4-40 "4.7.1 Intermediate transport unit")

(2) Disconnect 1 connector [10].

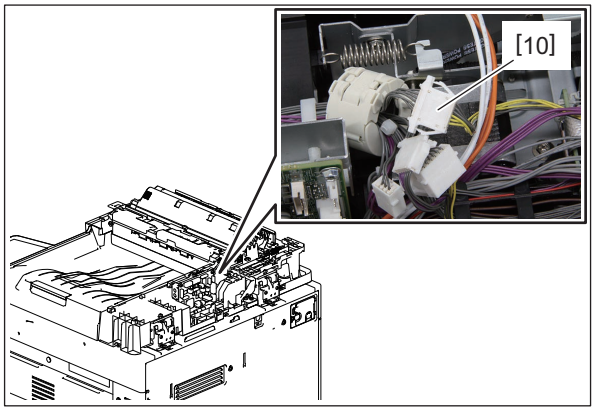


Fig. 4-87

(3) Remove 1 screw. Remove the pin [6] at the front of the sensor stay [5] and release the latch [7] at the center. Take off the sensor stay.

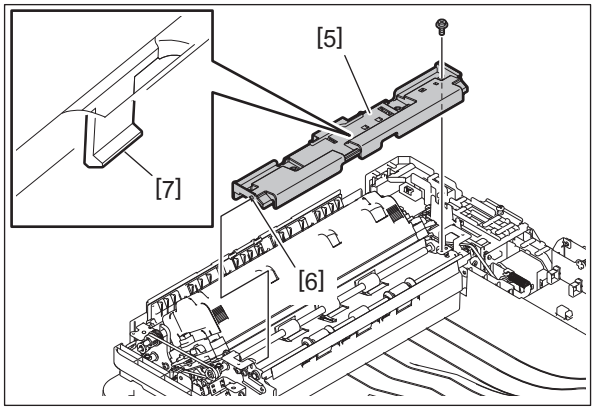


Fig. 4-88

(4) Disconnect 1 connector. Release the latch and take off the DSDF exit sensor [8].

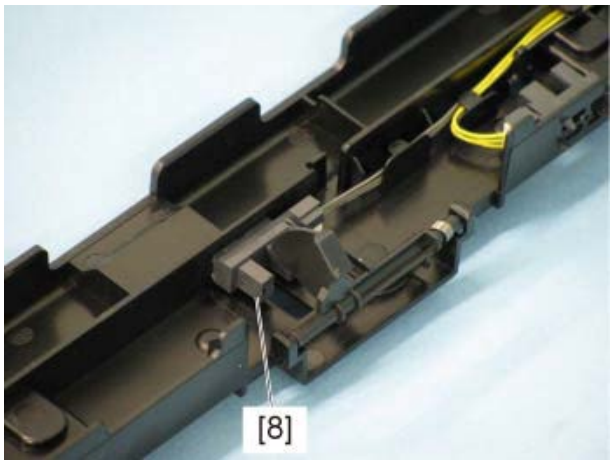


Fig. 4-89

(5) Disconnect 1 connector. Release the latch and take off the DSDF tray lift lower limit sensor [9].

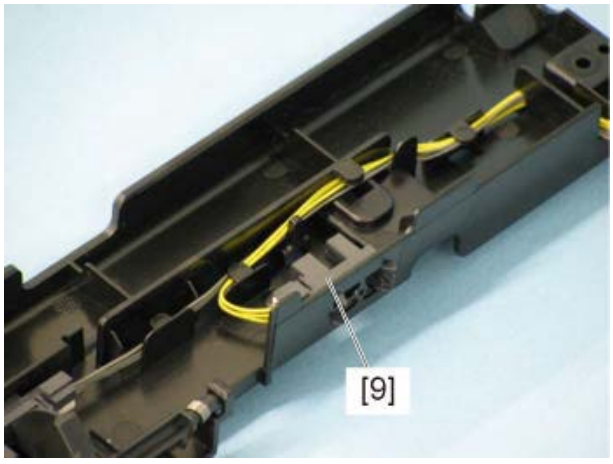


Fig. 4-90

4.7.4 Lower transport unit

(1) Take off the DSDF rear cover.
(🕮 P. 4-9 "4.2.1 DSDF rear cover")

(2) Take off the DSDF front cover.
(🕮 P. 4-10 "4.2.2 DSDF front cover")

(3) Take off the DSDF-CCD module.
(🕮 P. 4-50 "4.8.1 DSDF-CCD module (CCDD)")

(4) Take off the DSDF left cover.
(🕮 P. 4-13 "4.2.4 DSDF left cover")

(5) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

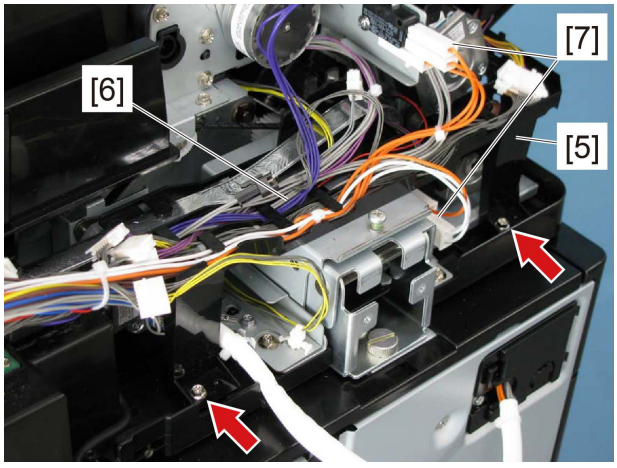


Fig. 4-91

(6) Remove 8 screws and take off the lower transport unit [10].

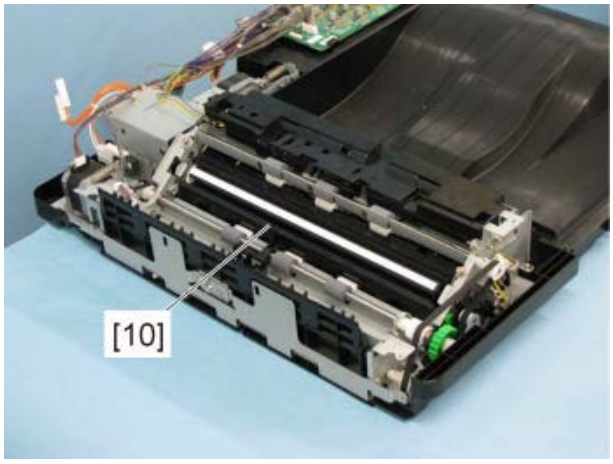


Fig. 4-92

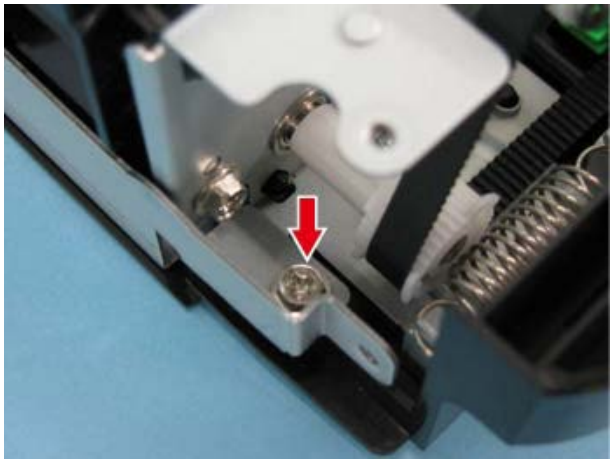


Fig. 4-93

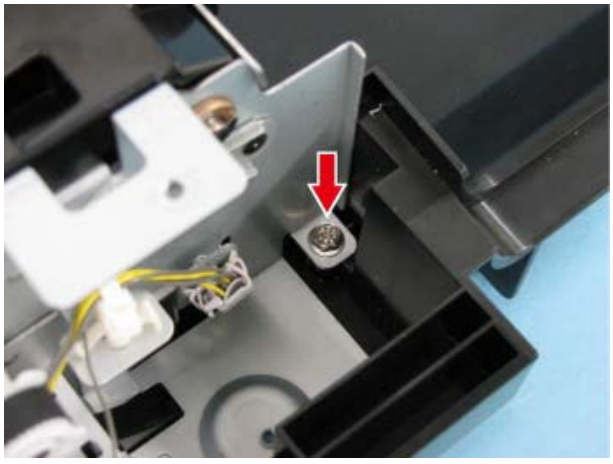


Fig. 4-94

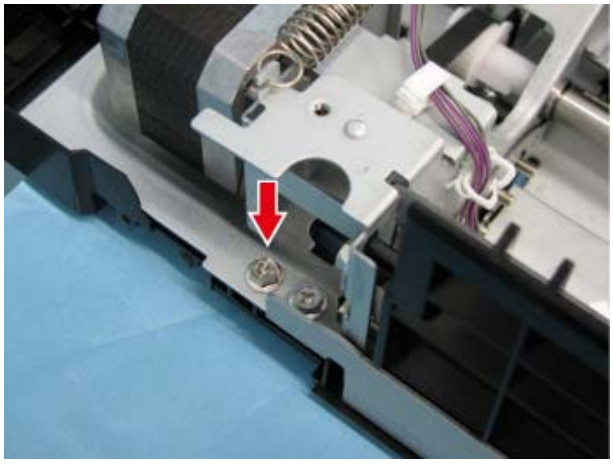


Fig. 4-95

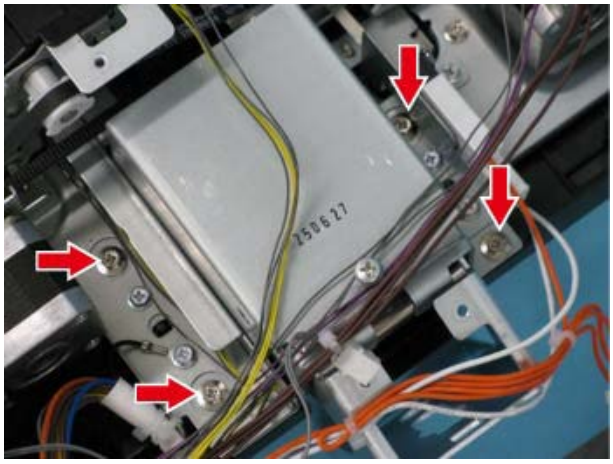


Fig. 4-96

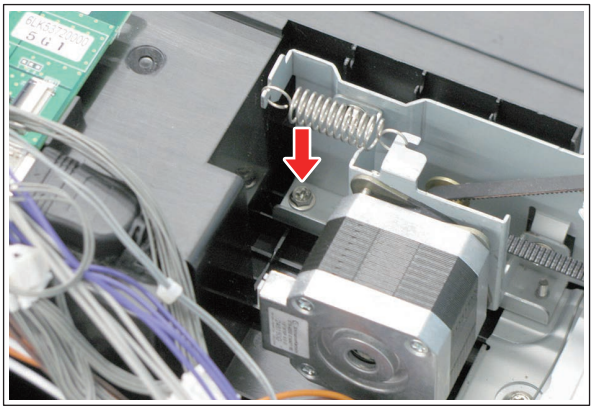


Fig. 4-97

Lower transport unit

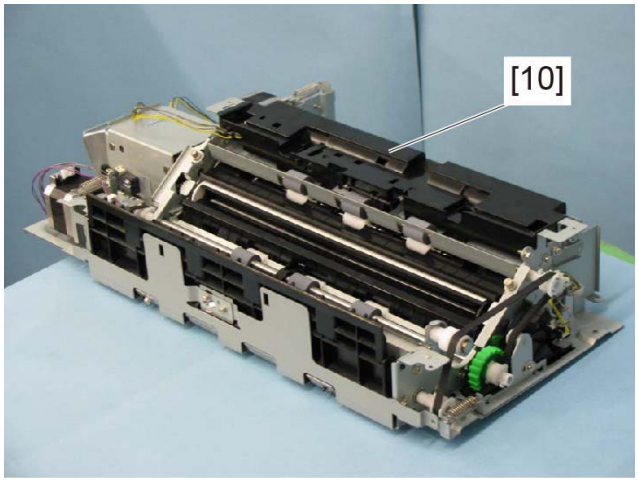


Fig. 4-98

4.7.5 DSDF shading sheet HP sensor (SD14) / DSDF lower cover opening/closing detection sensor (SD15)

(1) Take off the lower transport unit.
(🕮 P. 4-46 "4.7.4 Lower transport unit")
(2) Remove 1 screw and take off the sensor bracket [11].

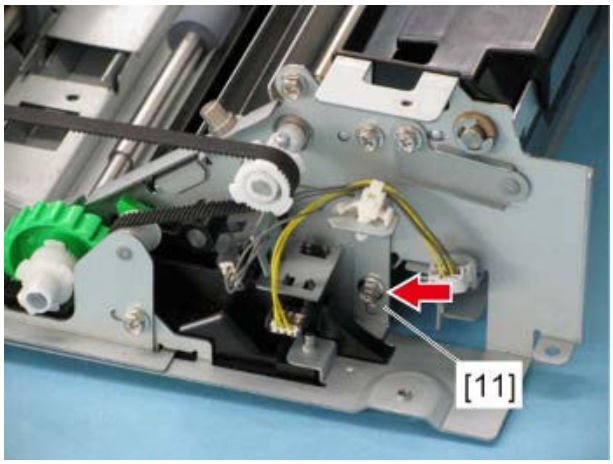


Fig. 4-99

(3) Disconnect the connector. Release the latch and take off the DSDF shading sheet HP sensor [12] from the sensor bracket.
(4) Disconnect the connector. Release the latch and take off the DSDF lower cover opening/closing detection sensor [13] from the sensor bracket.

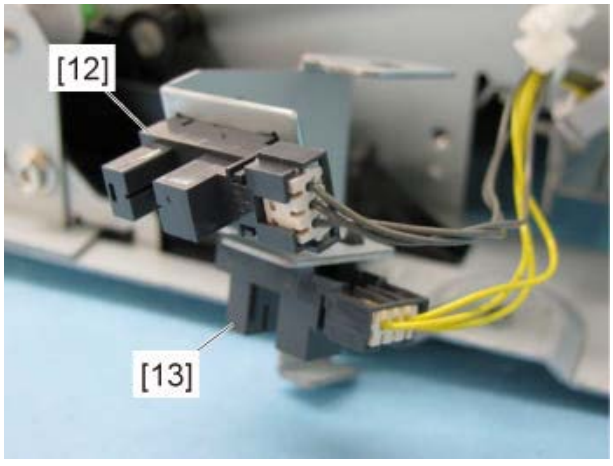


Fig. 4-100

4.8 Original Scanning Section

4.8.1 DSDF-CCD module (CCDD)

Notes:

- Be sure to attach the stopper jig or to take off the DSDF from the equipment before starting the 📖 P. 4-40 "4.7 Original Transport Section" or later. If the unit is taken off from the DSDF while it is installed in the equipment, the DSDF will be pulled up as its weight becomes lighter, resulting in danger.
- A characteristic value for image process is embedded in this DSDF-CCD module. When the DSDF or DSDF-CCD module has been replaced, be sure to perform the data acquisition of characteristic value of the scanner (FS-05-3240).

(1) Take off the intermediate transport unit.
(📖 P. 4-40 "4.7.1 Intermediate transport unit")

(2) Disconnect 1 flat harness and 1 connector.

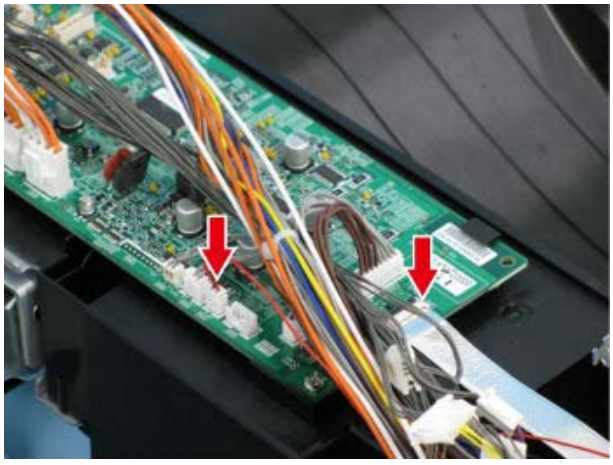


Fig. 4-101

(3) Take off the DSDF-CCD module [1].

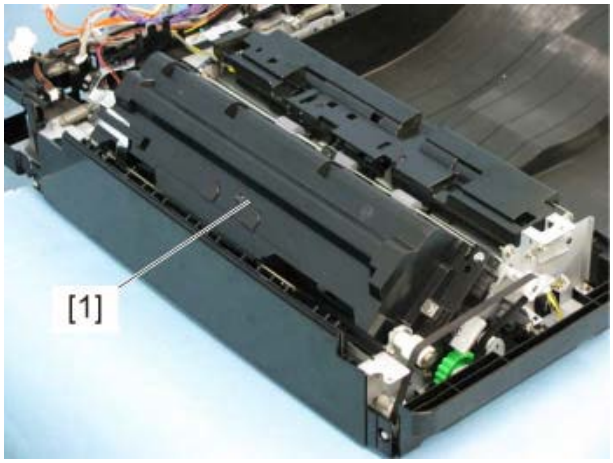


Fig. 4-102

DSDF-CCD module

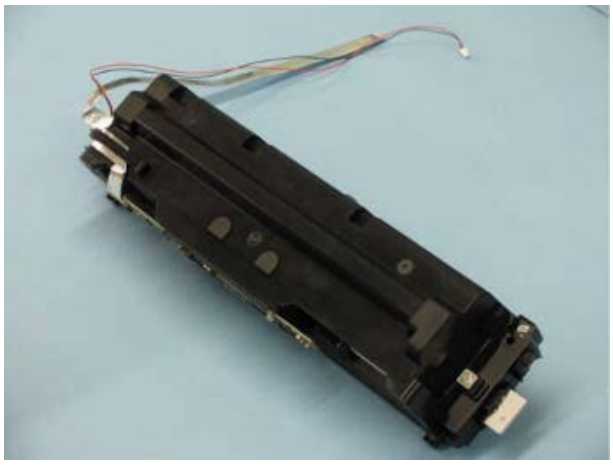


Fig. 4-103

Notes:

1. Do not leave fingerprints or stains on the slit glass of the DSDF-CCD module [2].
2. Pay close attention not to cause any impact or vibration to the DSDF-CCD module because it is a precision apparatus.

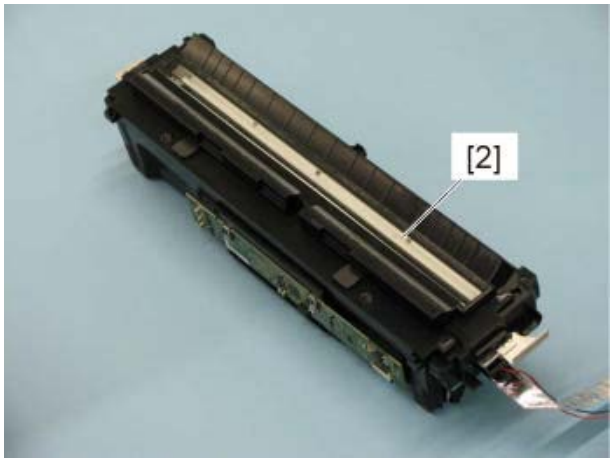


Fig. 4-104

5. DISASSEMBLY AND ASSEMBLY (MR-4000-B)

Notes:

Be sure to attach the stopper jig or to take off the DSDF from the equipment before starting the 📖 P. 5-39 "5.7 Original Transport Section" or later. If this unit is taken off from the DSDF while it is installed in the equipment, the DSDF will be pulled up as its weight becomes lighter, and this could prove dangerous.

5.1 Preventive Maintenance Parts

5.1.1 DSDF pickup unit

(1) Open the original jam access cover [1].

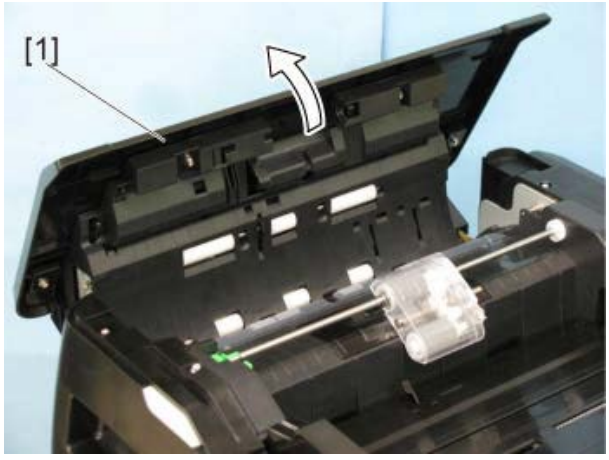


Fig.5-1

(2) Turn the lever [2] and take off the DSDF pickup unit [3].

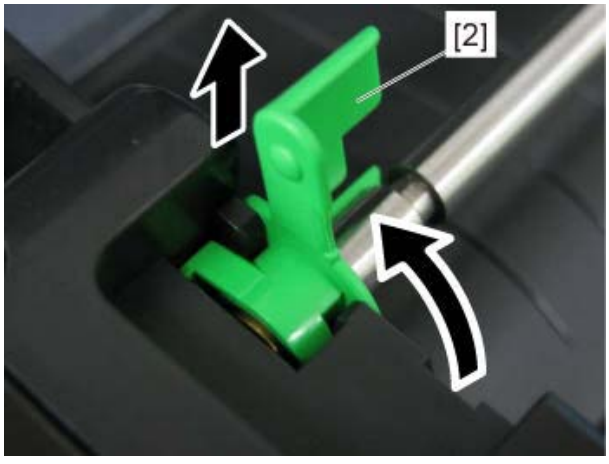


Fig.5-2

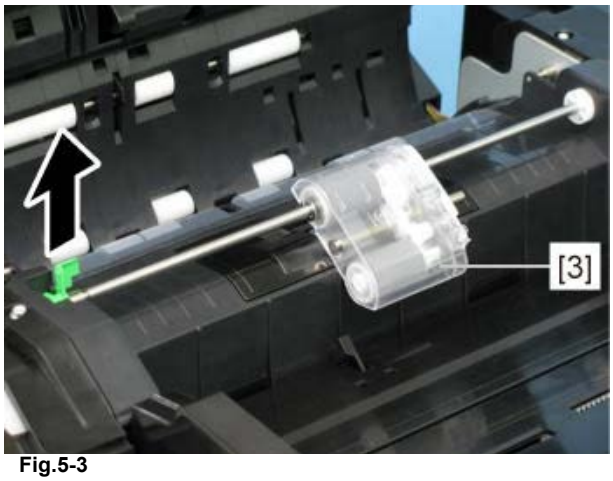


Fig.5-3

DSDF pickup unit

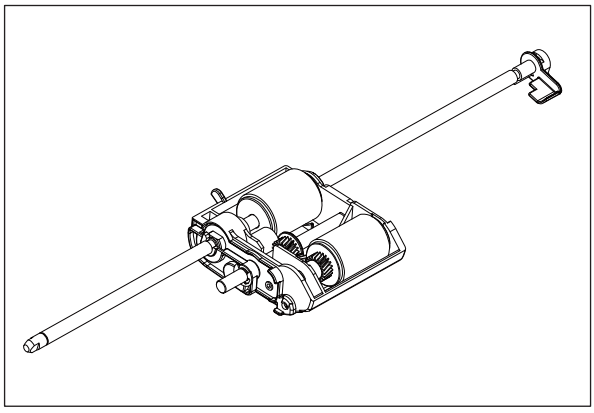


Fig.5-4

5.1.2 DSDF separation roller PM

(1) Take off the DSDF pickup unit.
(📖 P. 5-1 "5.1.1 DSDF pickup unit")

(2) Open the DSDF separation roller cover [4].

Fig.5-5

(3) Turn the arm [5] to release the lock.

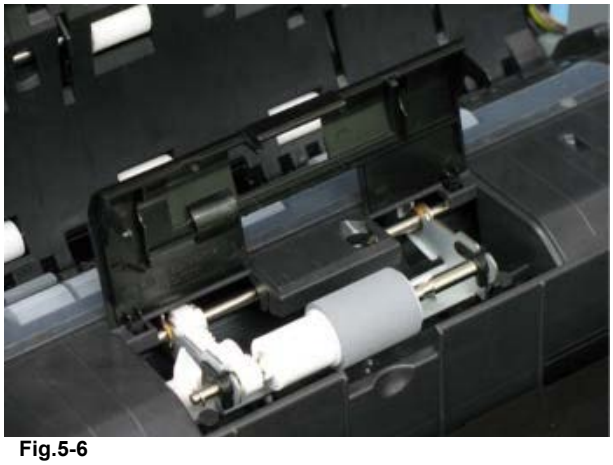


Fig.5-6

Fig.5-7

(4) Turn the lever [6] of the front side to align the protrusion to the groove.

Fig.5-8

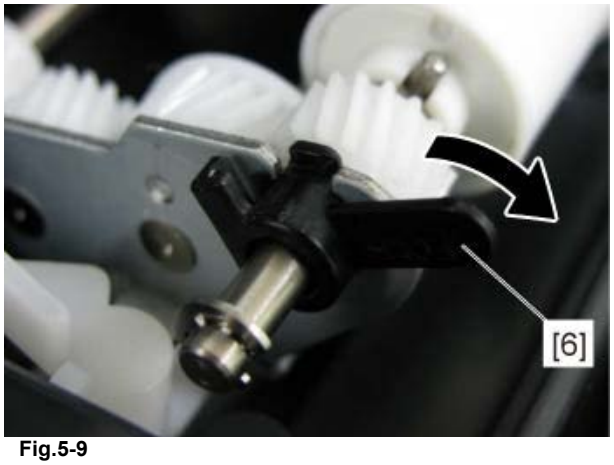


Fig.5-9

(5) Turn the lever [7] of the rear side to align the protrusion to the groove.

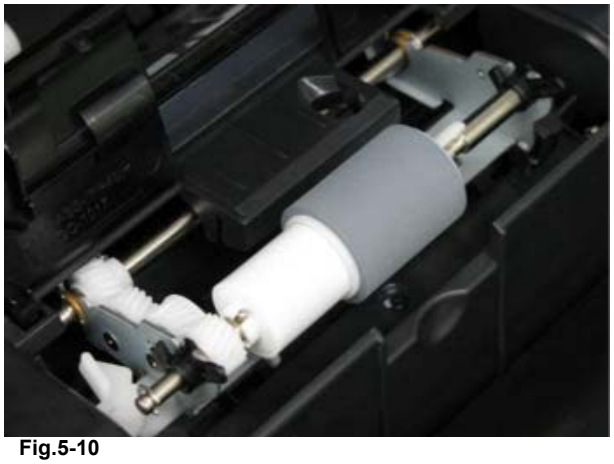


Fig.5-10

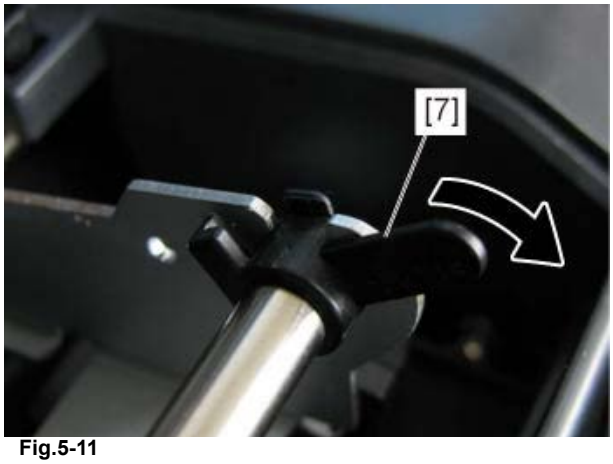


Fig.5-11

(6) Slide the DSDF separation roller unit [8] to the front side to take it off.

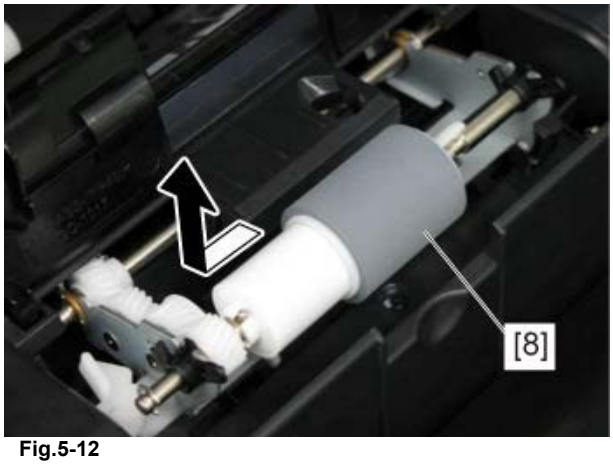


Fig.5-12

DSDF separation roller unit

Fig.5-13

(7) Take off the lever [7] of the rear side from the DSDF separation roller unit [8].
(8) Release the latch and take off the DSDF separation roller [9].

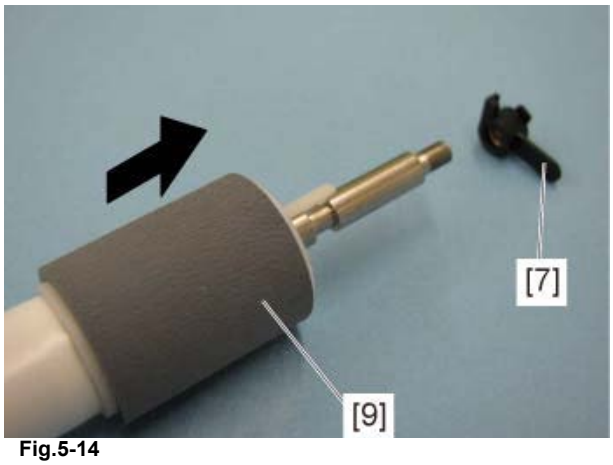


Fig.5-14

DSDF separation roller

Fig.5-15

5.1.3 DSDF pickup roller PM

(1) Take off the DSDF pickup unit.
(📖 P. 5-1 "5.1.1 DSDF pickup unit")
(2) Take off the DSDF pickup roller [10].

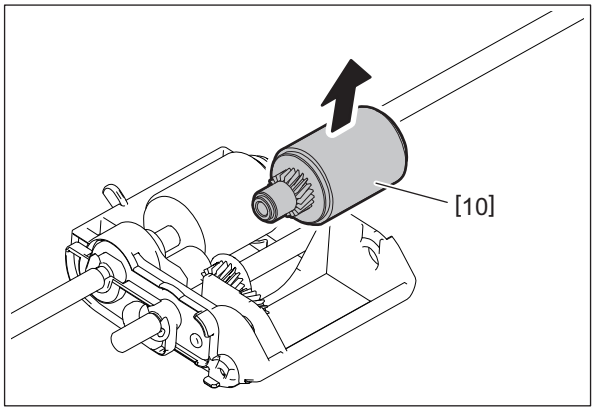


Fig.5-16

DSDF pickup roller

Fig.5-17

5.1.4 DSDF feed roller PM

(1) Take off the DSDF pickup unit.
(📖 P. 5-1 "5.1.1 DSDF pickup unit")
(2) Release the stopper lever [11].
(3) Pull out the shaft [12].

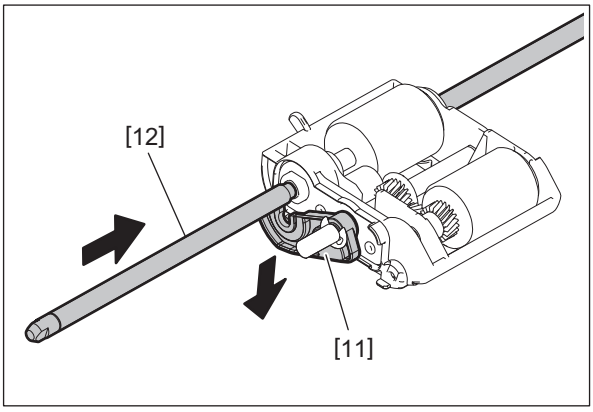


Fig.5-18

(4) Take off the DSDF feed roller [13].

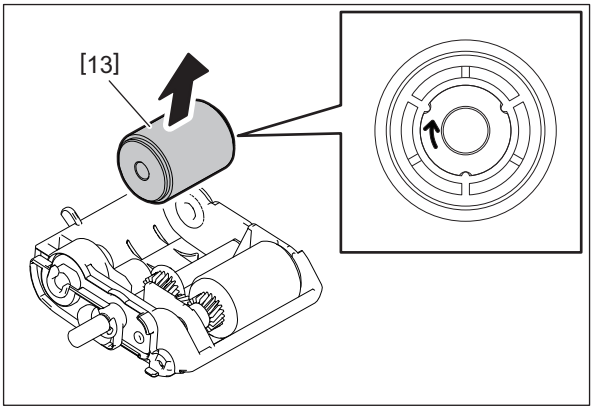


Fig.5-19

DSDF feed roller

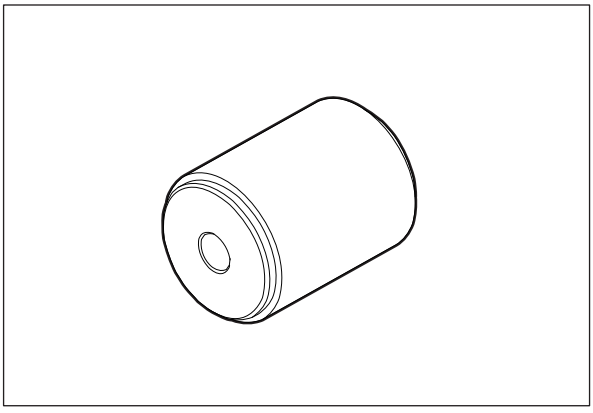


Fig.5-20

5.2 Covers

5.2.1 DSDF rear cover

(1) Remove 3 screws.

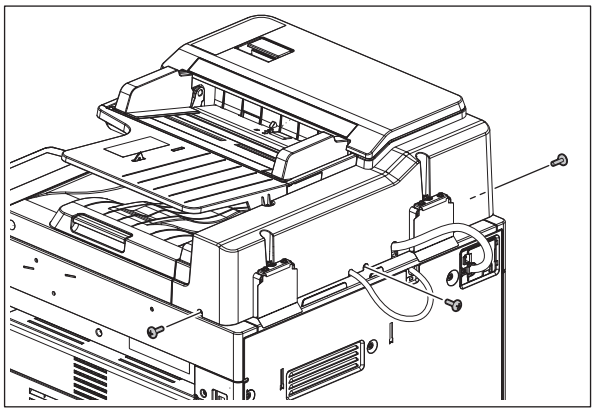


Fig.5-21

(2) Open the original jam access cover and remove 2 screws [1][2].

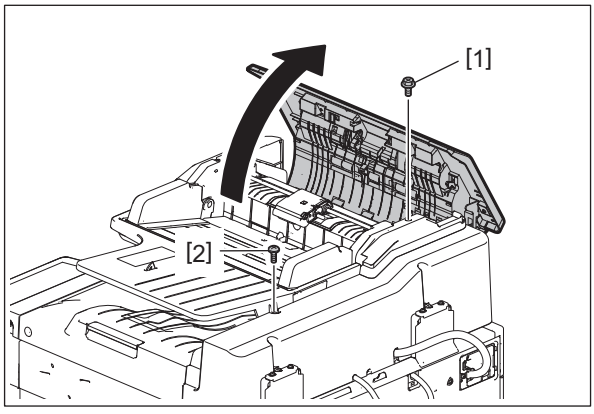


Fig.5-22

Remarks:

[1] Screw for the metal part (paper feed side)
[2] Screw for the plastic part (paper exit side)

(3) While lifting up the original tray [3], take off the DSDF rear cover [4].

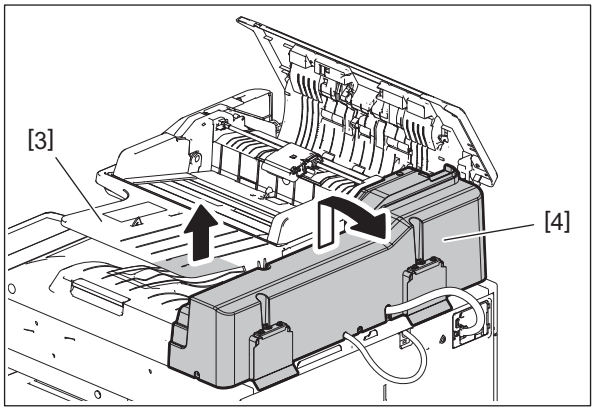


Fig.5-23

5.2.2 DSDF front cover

(1) Open the DSDF.
(2) Remove 2 screws [1] for the plastic part and another 2 screws [2] for the metal part.

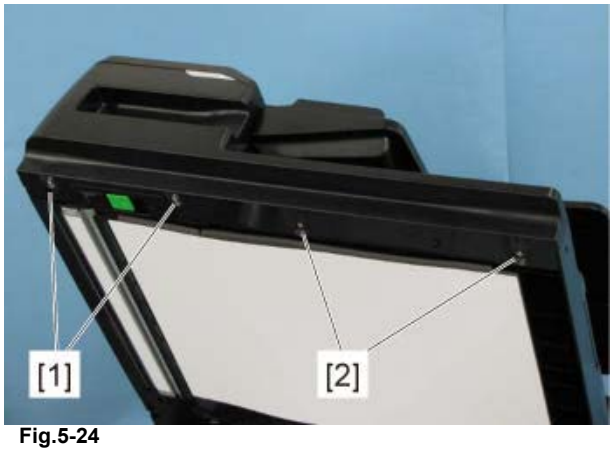


Fig.5-24

Remarks:
[1] Screw for the metal part (paper feed side)
[2] Screw for the plastic part (paper exit side)

(3) Remove 1 screw and take off the DSDF front cover [5].

Fig.5-25

5.2.3 Original jam access cover

(1) Take off the DSDF rear cover.
(📖 P. 5-9 "5.2.1 DSDF rear cover")
(2) Take off the DSDF front cover.
(📖 P. 5-10 "5.2.2 DSDF front cover")
(3) Disconnect 1 connector.
(4) Remove 1 screw and the hinge pin [6] of the rear side.

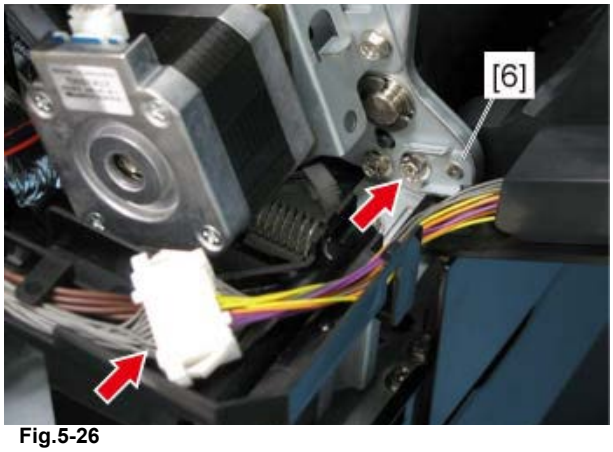


Fig.5-26

(5) Remove 1 screw and the hinge pin [7] of the front side.
(6) Remove 1 screw of the original jam access cover stopper.

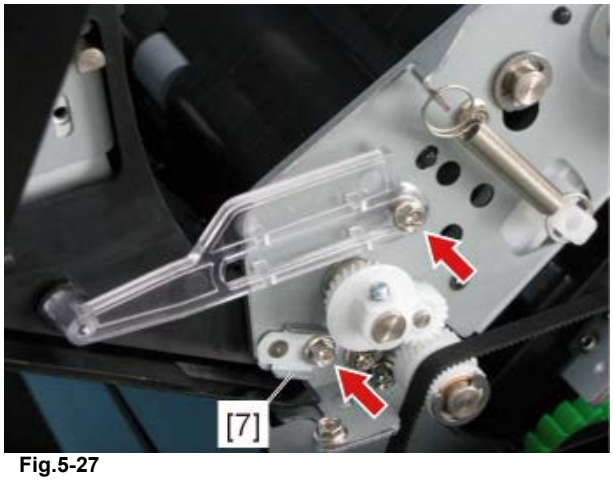


Fig.5-27

(7) Turn the original jam access cover [8] to the direction for closing it and then lift it up to remove it.

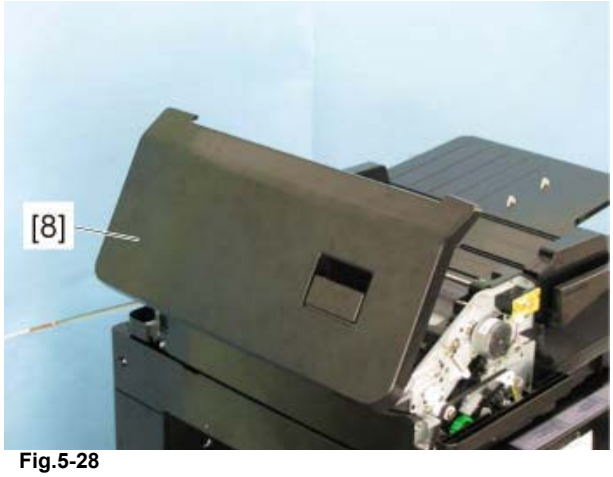


Fig.5-28

Notes:

When installing or removing the original jam access cover, be careful not to damage it or the transport guide of the DSDF left cover.

5.2.4 DSDF left cover

(1) Take off the original jam access cover.
(📖 P. 5-11 "5.2.3 Original jam access cover")

(2) Remove 2 screws [1] for the plastic part and another 2 screws [2] for the metal part.

Remarks:

[1] Screw for the metal part (front side)
[2] Screw for the plastic part (rear side)

(3) Take off the DSDF left cover [9] upward.

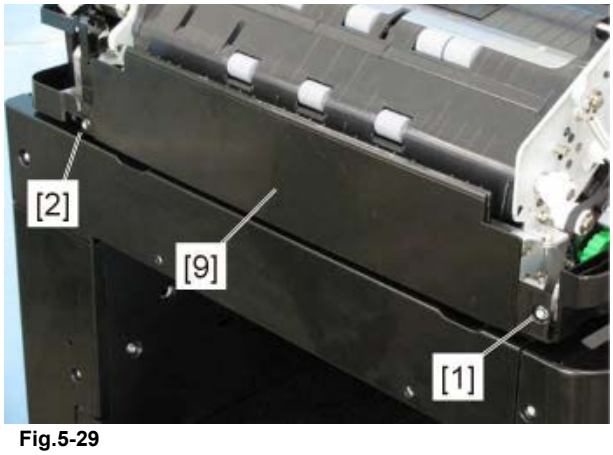


Fig.5-29

5.3 PC Boards

5.3.1 DSDF-LED PC board (LEDD)

(1) Take off the DSDF front cover.
(📖 P. 5-10 "5.2.2 DSDF front cover")
(2) Disconnect 1 connector.
Remove 1 screw and take off the DSDF-LED PC board [12].

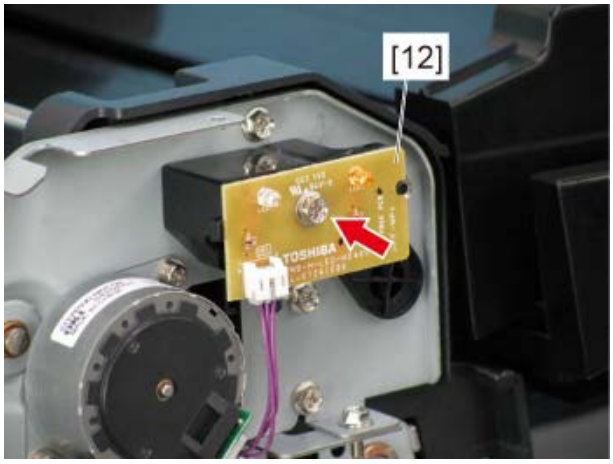


Fig.5-30

5.3.2 DSDF control PC board (DLGD)

(1) Take off the DSDF rear cover.
(📖 P. 5-9 "5.2.1 DSDF rear cover")
(2) Disconnect 12 connectors.
(3) Remove 2 screws and take off the DSDF control PC board [13].

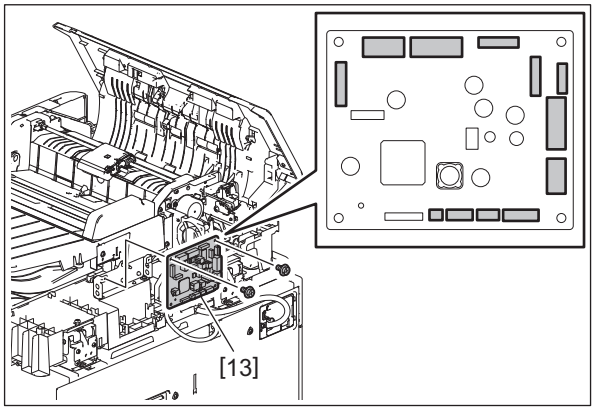


Fig.5-31

5.3.3 DSDF relay board (DFRLY)

(1) Take off the DSDF rear cover.
🕮 P. 5-9 "5.2.1 DSDF rear cover"

(2) Take off the DSDF cooling fan motor (FD1).
🕮 P. 5-27 "5.6.1 DSDF cooling fan motor (FD1)"

(3) Disconnect 1 HDMI cable. Release the lock and disconnect 1 flat cable.

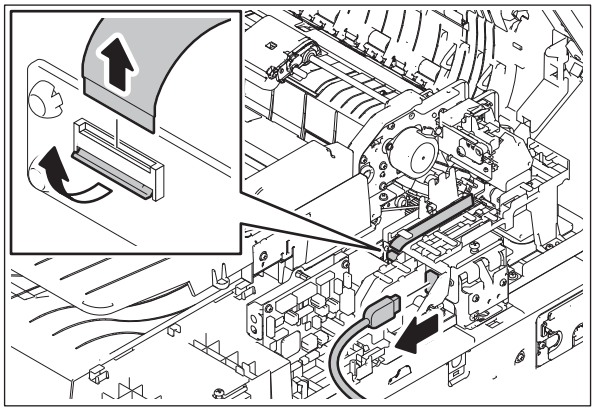


Fig.5-32

Notes:

- When installing the flat cable, do not push it in strongly.
- When installing the flat cable, be careful not to insert it at an angle.
- Do not apply pressure to or damage the edge of the flat cable.
- When installing a flat cable, make sure that the conductor side will be the upper side.

(4) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

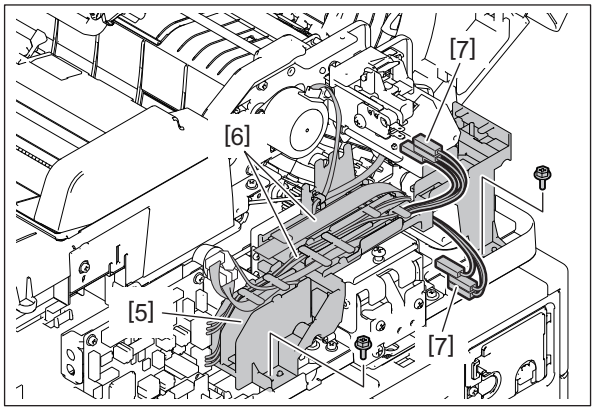


Fig.5-33

Notes:

Release the harness from the clamp of the harness guide [5].

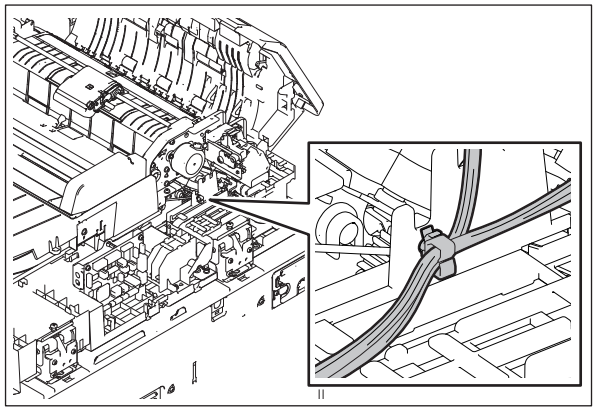


Fig.5-34

(5) Take off the DSDF relay board [14] from the harness guide.

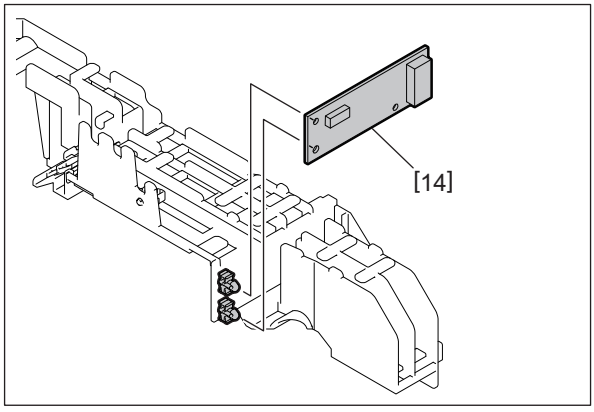


Fig.5-35

5.4 Original Tray Section

5.4.1 Original tray

(1) Take off the DSDF rear cover.
(🕮 P. 5-9 "5.2.1 DSDF rear cover")
(2) Take off the DSDF front cover.
(🕮 P. 5-10 "5.2.2 DSDF front cover")
(3) Disconnect 2 connectors (CN73 and CN76) from the DSDF control PC board.

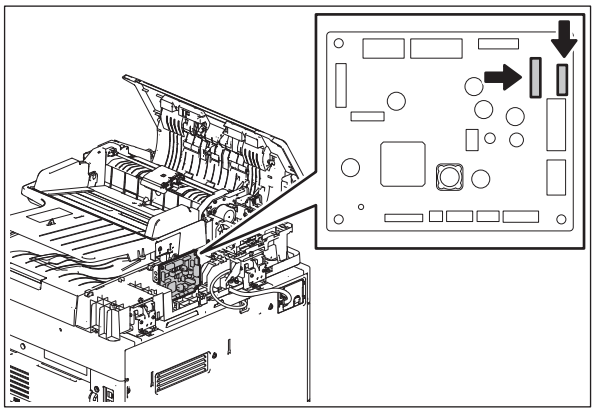


Fig.5-36

(4) Take off the bracket cover [1].
(5) Remove 1 screw and then take off the original tray bracket [2] and the original tray holder [3].

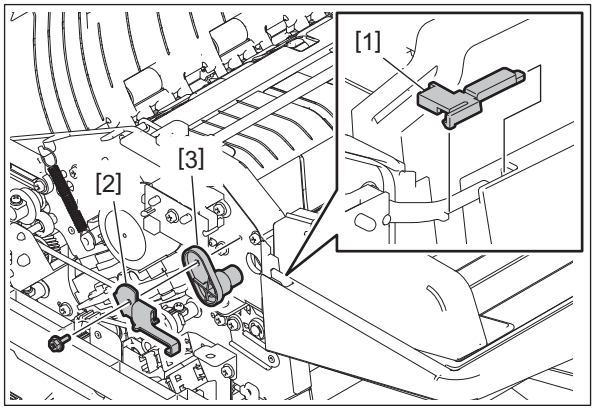


Fig.5-37

(6) Take off the original tray [11].

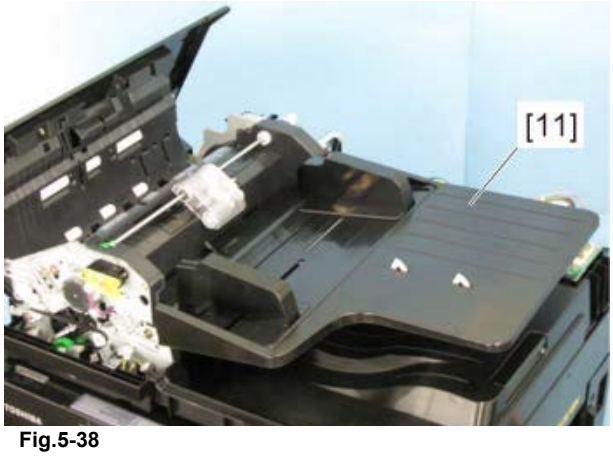


Fig.5-38

5.4.2 DSDF tray original length sensor-1 (SD1) / DSDF tray original length sensor-2 (SD2)

(1) Take off the original tray.
(🕮 P. 5-16 "5.4.1 Original tray")
(2) Remove 1 screw and take off the sensor cover [14].

Fig.5-39

(3) Disconnect 1 connector respectively from the DSDF tray original length sensor-1 [15] and the DSDF tray original length sensor-2 [16].
(4) Release the latch from each sensor. Take off the DSDF tray original length sensor-1 [15] and the DSDF tray original length sensor-2 [16].

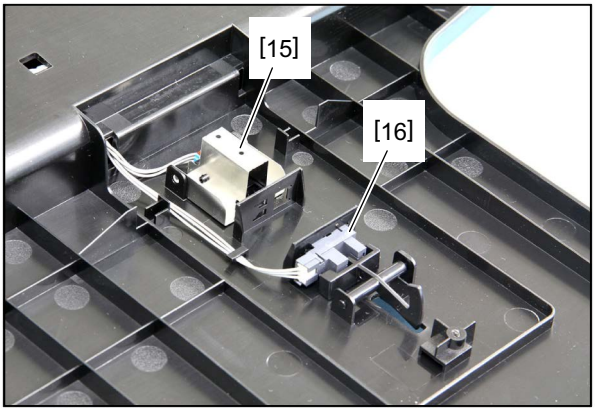


Fig.5-40

5.4.3 DSDF tray original width sensor (SD3)

(1) Take off the original tray.
(🕮 P. 5-16 "5.4.1 Original tray")

(2) Remove 1 screw and take off the tray holder [17].
Take off the movable tray [18].

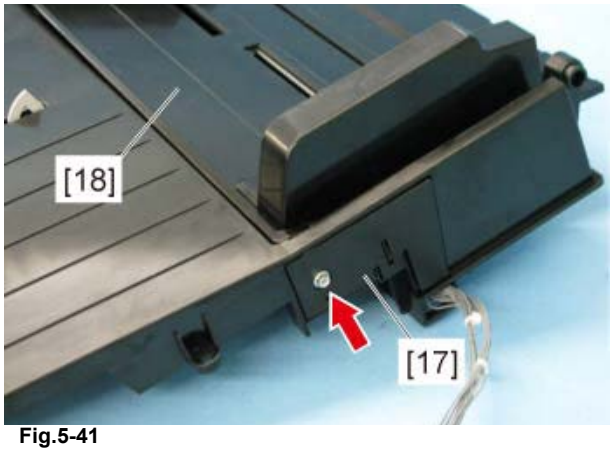


Fig.5-41

Notes:
When installing the tray holder, be careful not to catch the harness.

(3) Remove 1 screw and take off the original width sensor cover [19].

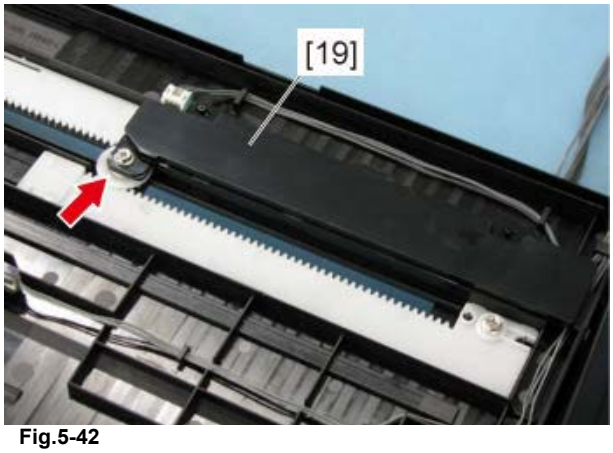


Fig.5-42

Notes:
Pay attention not to remove the washer and the wave washer of the pinion.

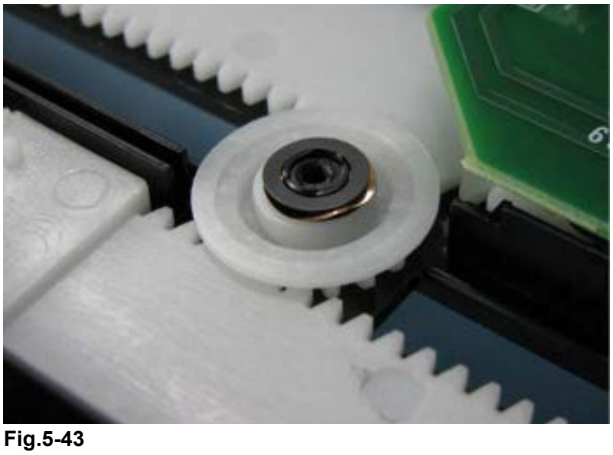


Fig.5-43

(4) Disconnect 1 connector and take off the DSDF tray original width sensor [20].

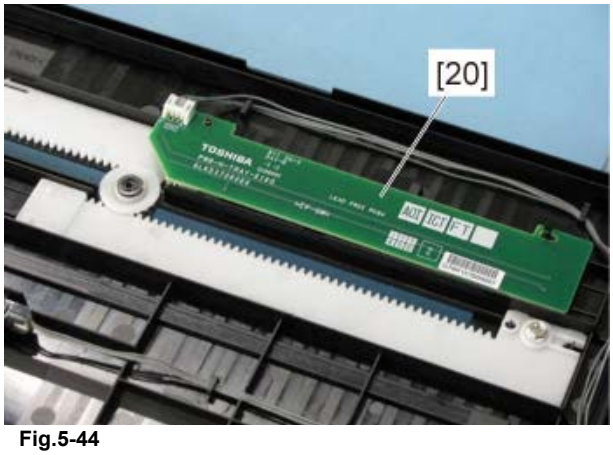


Fig.5-44

5.4.4 DSDF original empty sensor (SD4)

(1) Take off the original tray.
(🕮 P. 5-16 "5.4.1 Original tray")

(2) Remove 1 screw and take off the tray holder [17].
Take off the movable tray [18].

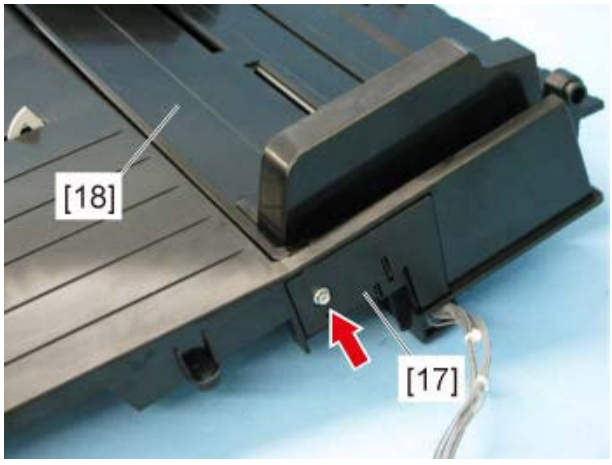


Fig.5-45

Notes:
When installing the tray holder, be careful not to catch the harness.

(3) Disconnect 1 connector. Release the latch and take off the DSDF original empty sensor [21].

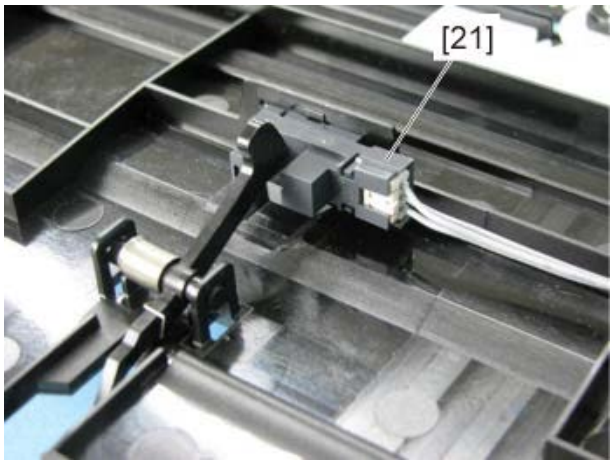


Fig.5-46

5.5 Original Feeding Section

5.5.1 DSDF feed sensor (SD5) / DSDF tray lift upper limit sensor (SD9)

(1) Take off the original jam access cover.
(📖 P. 5-11 "5.2.3 Original jam access cover")

(2) Remove 4 screws.

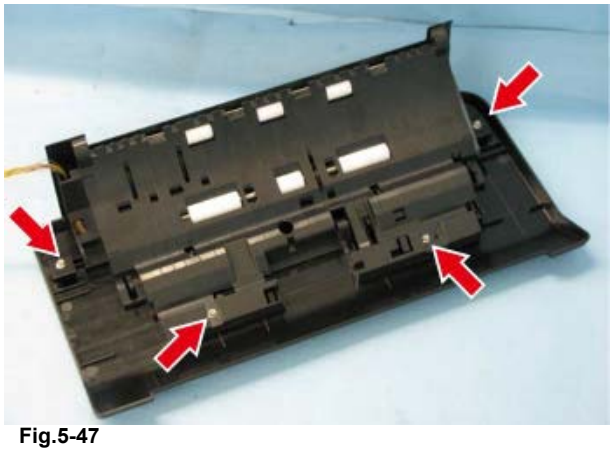


Fig.5-47

(3) While pulling the lever, take off the top cover [1].

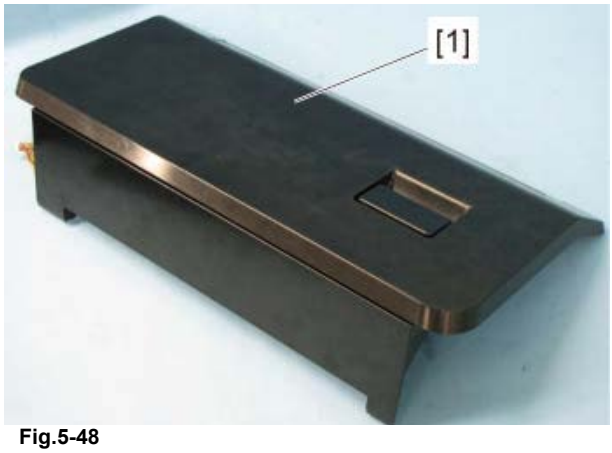


Fig.5-48

(4) Disconnect 1 connector. Release the latch and take off the DSDF feed sensor [2].

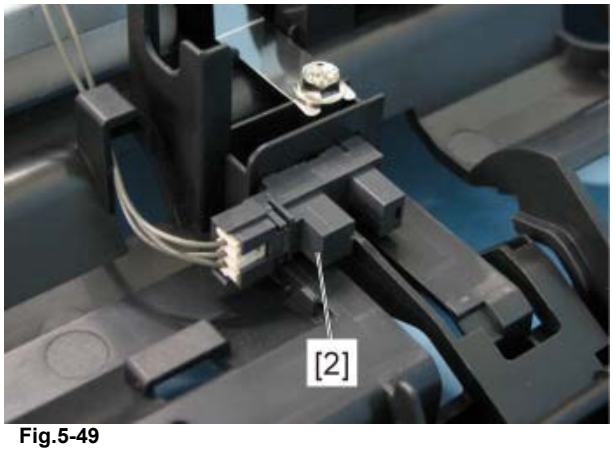


Fig.5-49

(5) Disconnect 1 connector. Release the latch and take off the DSDF tray lift upper limit sensor [3].

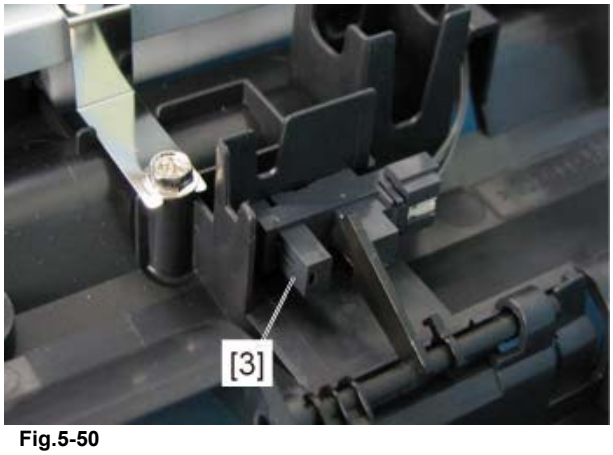


Fig.5-50

5.5.2 DSDF original width detection sensor-1 (SD7) / DSDF original width detection sensor-2 (SD8)

(1) Take off the original jam access cover.
(📖 P. 5-11 "5.2.3 Original jam access cover")

(2) Remove 4 screws.

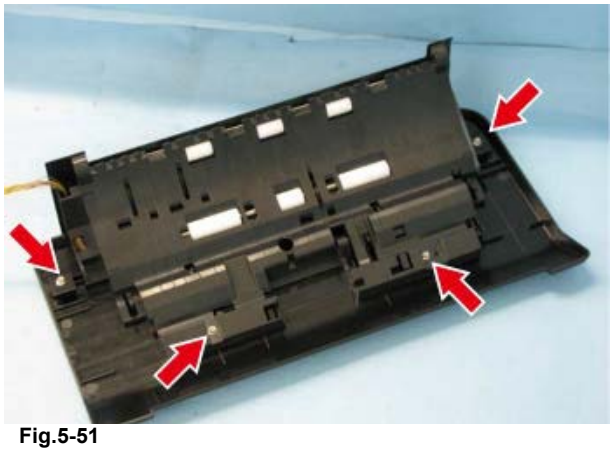


Fig.5-51

(3) While pulling the lever, take off the top cover [1].

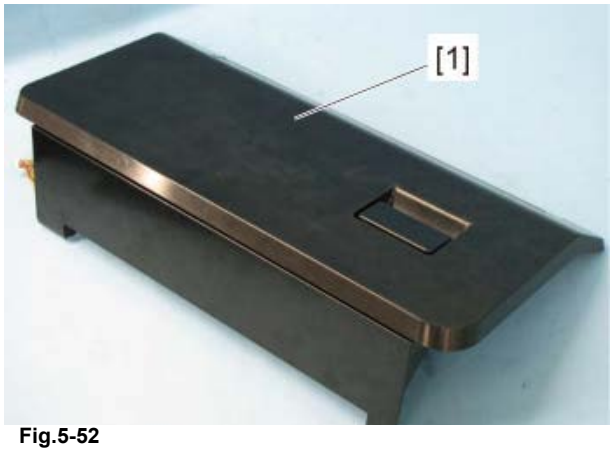


Fig.5-52

(4) Remove 2 screws and take off the left top cover [4].

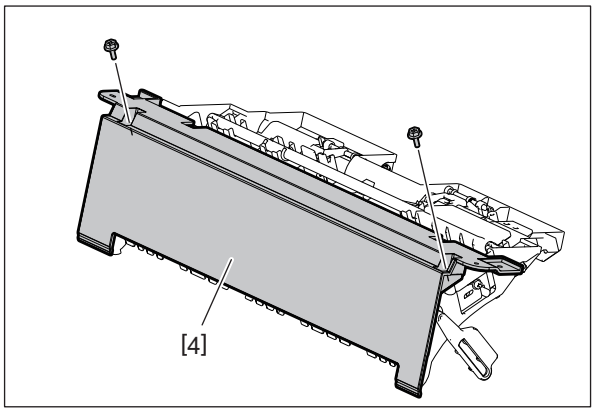


Fig.5-53

(5) Disconnect 1 connector. Release the latch and take off the DSDF original width detection sensor-1 [5].
(6) Disconnect 1 connector. Release the latch and take off the DSDF original width detection sensor-2 [6].

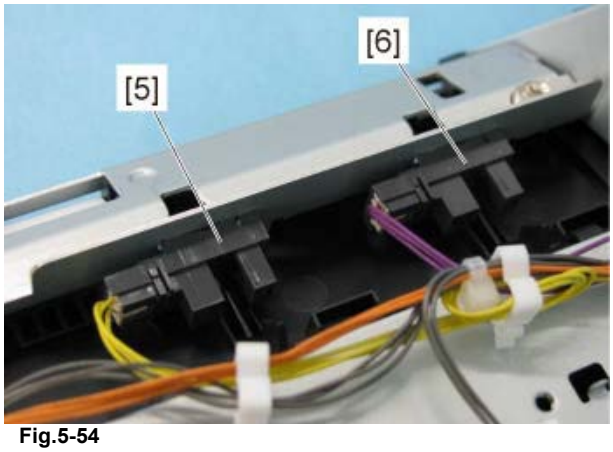


Fig.5-54

5.5.3 DSDF registration sensor (SD6)

(1) Take off the original jam access cover.
(📖 P. 5-11 "5.2.3 Original jam access cover")
(2) Remove 4 screws.

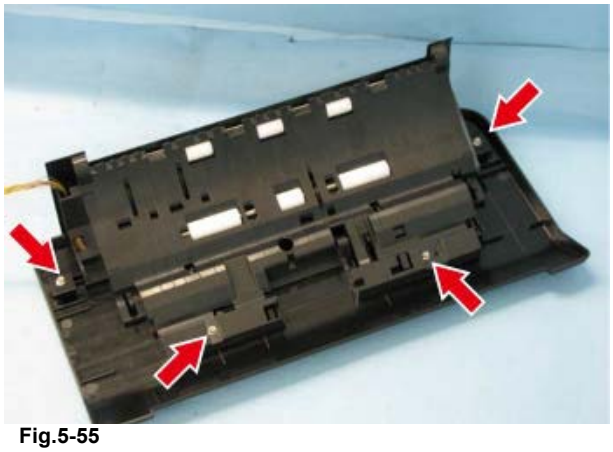


Fig.5-55

(3) While pulling the lever, take off the top cover [1].

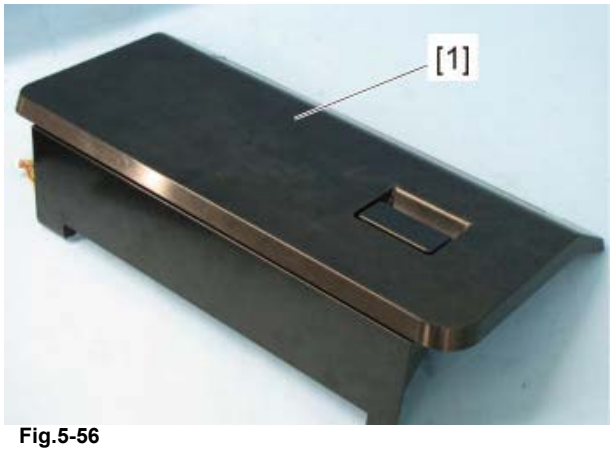


Fig.5-56

(4) Remove 2 screws and take off the left top cover [4].

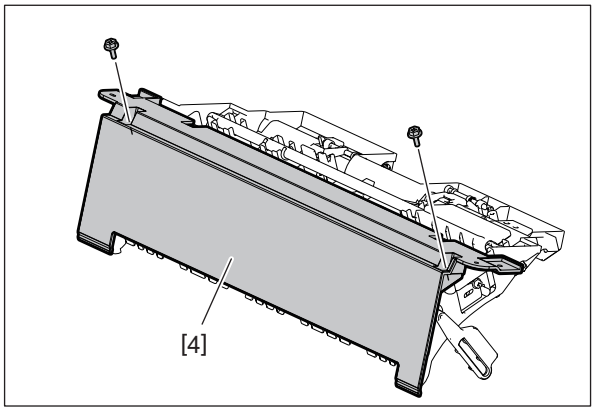


Fig.5-57

(5) Disconnect 2 connectors [9].
(6) Remove 8 screws and take off the stay [7].

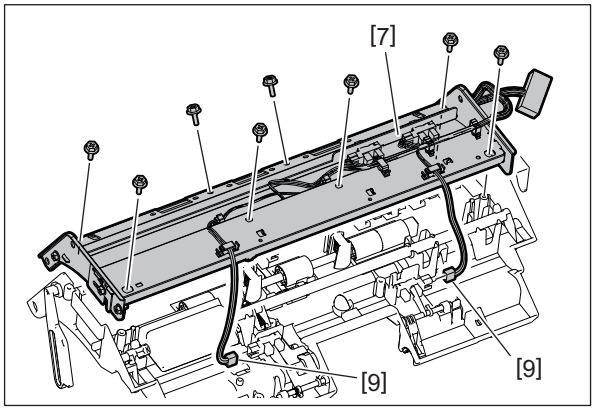


Fig.5-58

Notes:

Be careful not to drop any of the 6 springs.

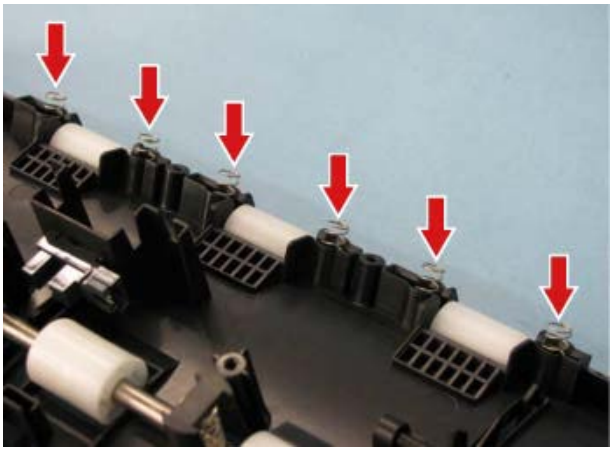


Fig.5-59

(7) Disconnect 1 connector and take off the DSDF registration sensor [8].

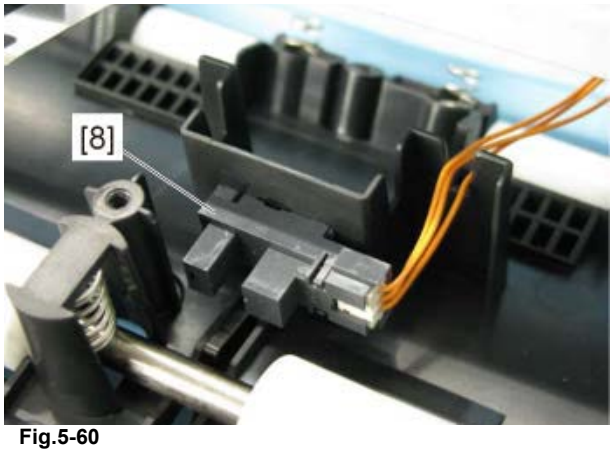


Fig.5-60

5.6 Drive Section

5.6.1 DSDF cooling fan motor (FD1)

(1) Take off the DSDF rear cover.
(📖 P. 5-9 "5.2.1 DSDF rear cover")

(2) Disconnect 1 connector [1]. Remove 2 screws and take off the DSDF cooling fan motor bracket [2].

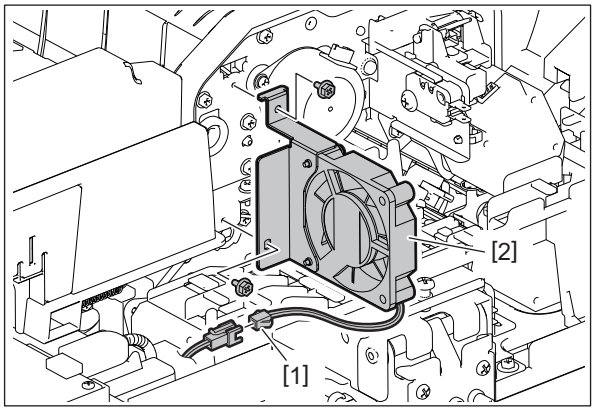


Fig.5-61

(3) Remove 2 screws and take off the DSDF cooling fan motor [3] from the bracket.

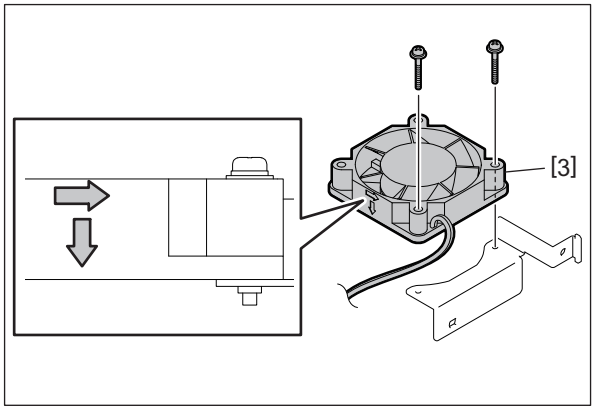


Fig.5-62

5.6.2 DSDF upper cover interlock switch (SWD2)

Notes:

If the interlock switch is not installed appropriately when it is replaced or installed, it may not work normally. If you carry out the maintenance of the equipment in such a situation, you could get an electric shock by touching live sections or be injured by touching moving sections. Therefore, to avoid this, be sure to perform correct handling and installation.

(1) Take off the DSDF cooling fan motor bracket.
(📖 P. 5-27 "5.6.1 DSDF cooling fan motor (FD1)")

(2) Disconnect 3 connectors. Remove 1 screw and take off the DSDF upper cover interlock switch [4].

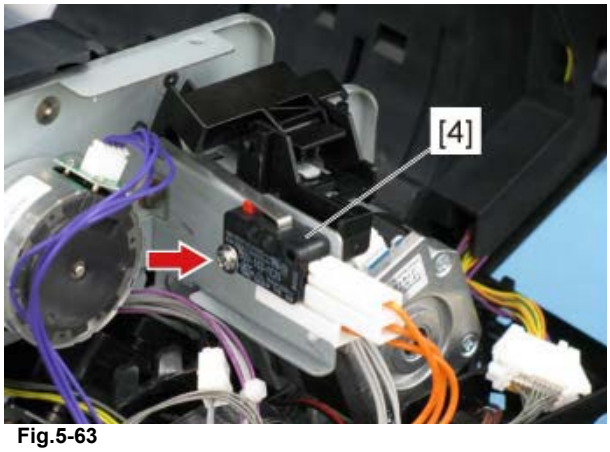


Fig.5-63

Notes:

The color of all 3 harnesses for the DSDF upper cover interlock switch: Orange

5.6.3 DSDF upper cover opening/closing detection sensor (SD16)

Notes:

If the interlock switch is not installed appropriately when it is replaced or installed, it may not work normally. If you carry out the maintenance of the equipment in such a situation, you could get an electric shock by touching live sections or be injured by touching moving sections. Therefore, to avoid this, be sure to perform correct handling and installation.

(1) Take off the DSDF rear cover.
(📖 P. 5-9 "5.2.1 DSDF rear cover")

(2) Remove 2 screws and take off the sensor bracket [1].

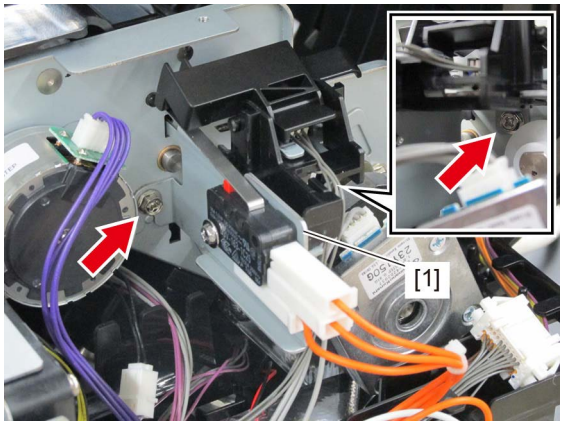


Fig.5-64

(3) Release the harness [4] from the clamp [2] and the actuator [3]. Release 2 hooks [5] and take off the actuator [3].

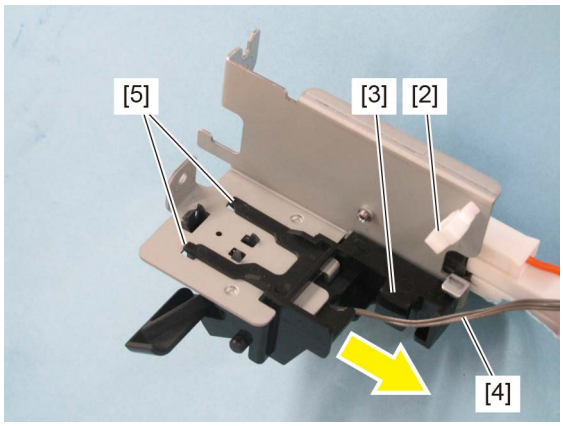


Fig.5-65

(4) Release 3 hooks [6].

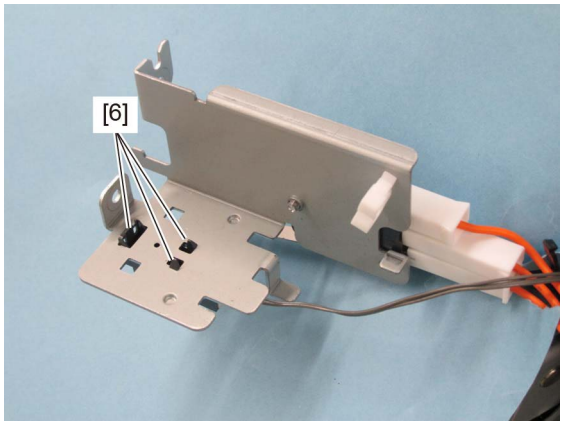


Fig.5-66

(5) Disconnect 1 connector [7] and then take off the DSDF upper cover opening/closing detection sensor [8].

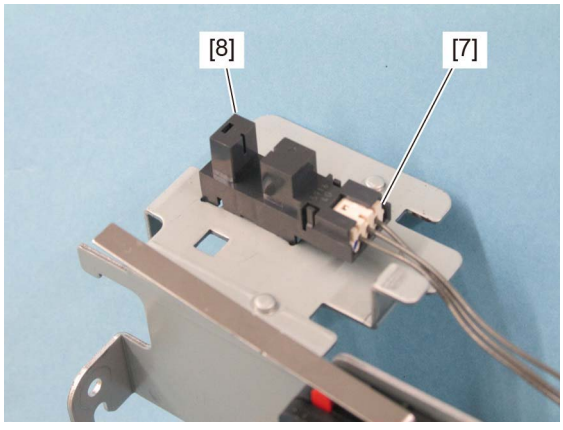


Fig.5-67

5.6.4 DSDF registration motor (MD3)

(1) Take off the DSDF rear cover.
(🕮 P. 5-9 "5.2.1 DSDF rear cover")

(2) Take off the DSDF cooling fan motor (FD1).
🕮 P. 5-27 "5.6.1 DSDF cooling fan motor (FD1)"

(3) Disconnect 1 HDMI cable. Release the lock and disconnect 1 flat cable.

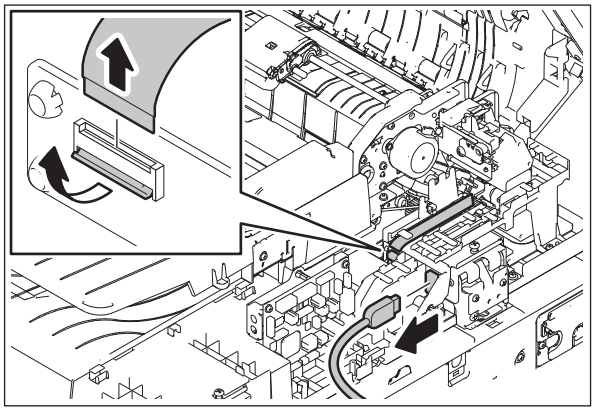


Fig.5-68

Notes:

- When installing the flat cable, do not push it in strongly.
- When installing the flat cable, be careful not to insert it at an angle.
- Do not apply pressure to or damage the edge of the flat cable.
- When installing a flat cable, make sure that the conductor side will be the upper side.

(4) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

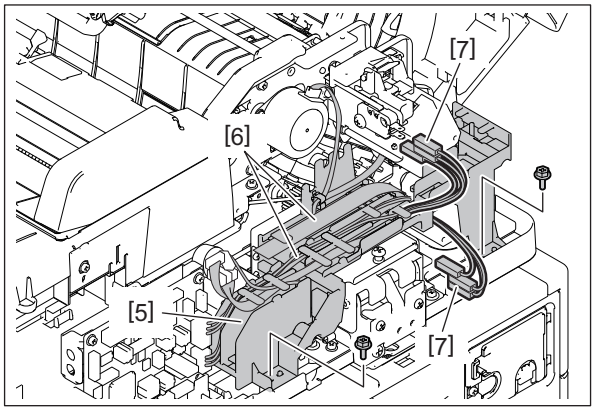


Fig.5-69

Notes:

Release the harness from the clamp of the harness guide [5].

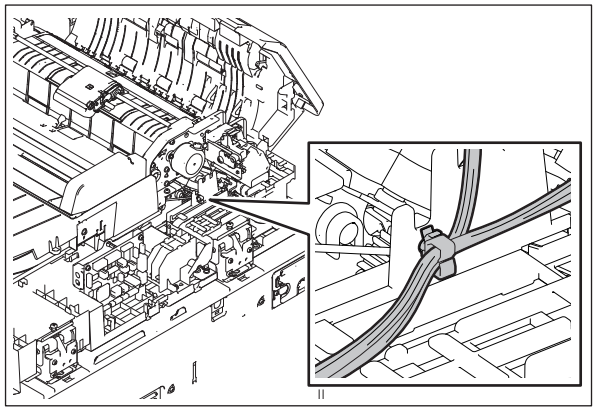


Fig.5-70

(5) Disconnect 1 connector [9] from the DSDF registration motor.
Remove 2 screws and take off the DSDF registration motor bracket [10].

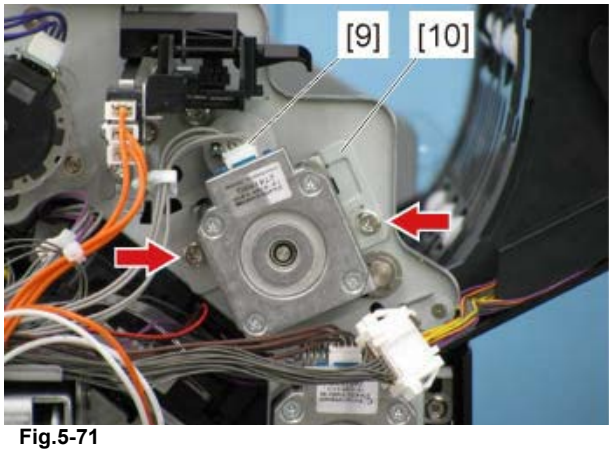


Fig.5-71

Notes:

- When installing the DSDF registration motor bracket, be sure to hook the pulley to the timing belt.
- The harness color of the DSDF registration motor is gray, be sure to check the harness color at installing.

(6) Remove 2 screws and take off the DSDF registration motor [11] from the DSDF registration motor bracket [10].

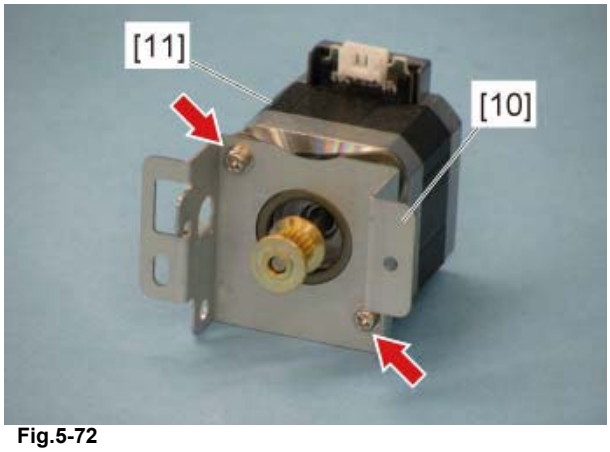


Fig.5-72

5.6.5 DSDF read motor (MD4)

(1) Take off the DSDF rear cover.
(🕮 P. 5-9 "5.2.1 DSDF rear cover")
(2) Take off the DSDF cooling fan motor (FD1).
🕮 P. 5-27 "5.6.1 DSDF cooling fan motor (FD1)"
(3) Disconnect 1 HDMI cable. Release the lock and disconnect 1 flat cable.

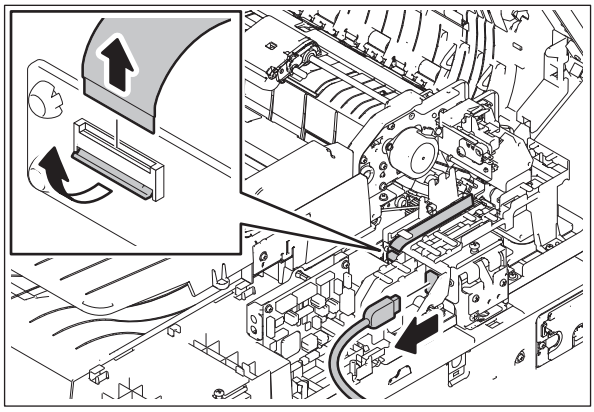


Fig.5-73

Notes:

- When installing the flat cable, do not push it in strongly.
- When installing the flat cable, be careful not to insert it at an angle.
- Do not apply pressure to or damage the edge of the flat cable.
- When installing a flat cable, make sure that the conductor side will be the upper side.

(4) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

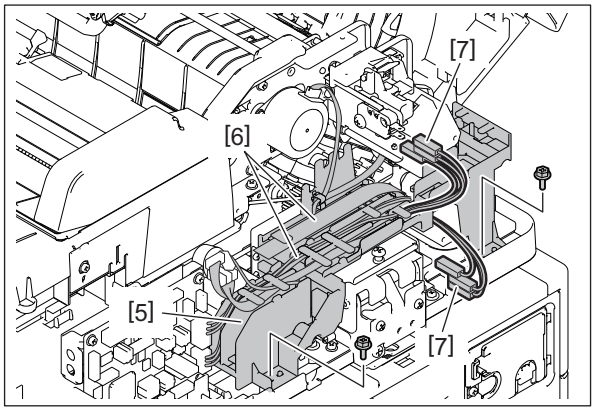


Fig.5-74

Notes:
Release the harness from the clamp of the harness guide [5].

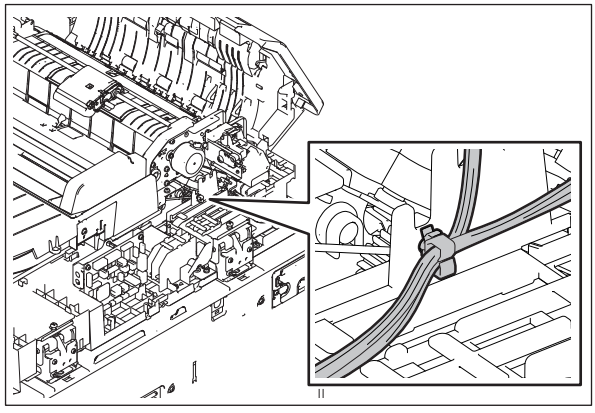


Fig.5-75

(5) Disconnect 1 connector [12] from the DSDF read motor.
(6) Remove the tension spring [13].
Remove 2 screws and take off the DSDF read motor bracket [14].

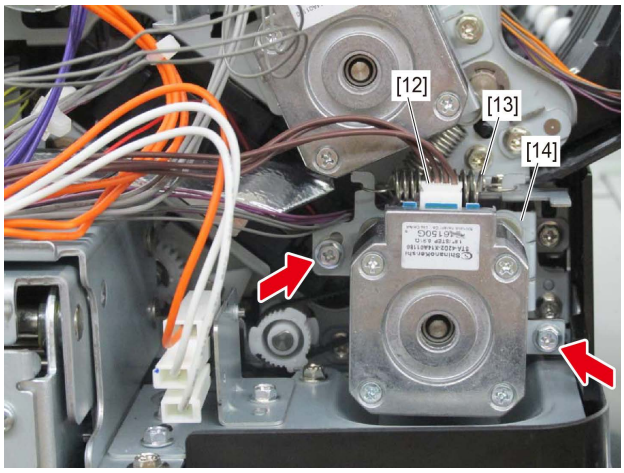


Fig.5-76

Notes:

- When installing the DSDF read motor bracket, be sure to hook the pulley to the timing belt.
- When installing, temporarily tighten 2 screws, hook the tension spring and then securely tighten them.

(7) Remove 2 screws and take off the DSDF read motor [25] from the DSDF read motor bracket [24].

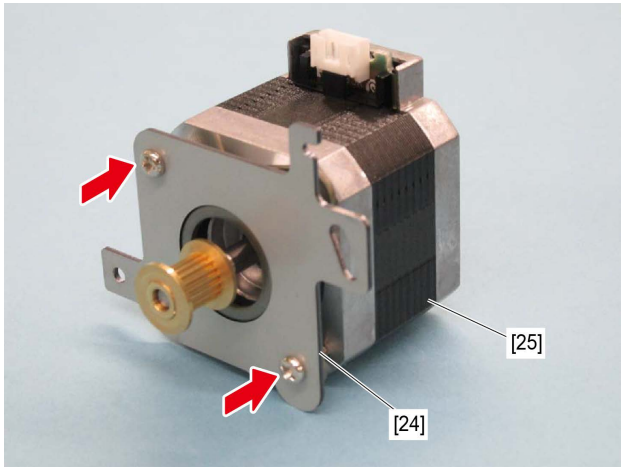


Fig.5-77

5.6.6 DSDF exit motor (MD5)

(1) Take off the DSDF rear cover.
(📖 P. 5-9 "5.2.1 DSDF rear cover")

(2) Take off the DSDF cooling fan motor (FD1).
📖 P. 5-27 "5.6.1 DSDF cooling fan motor (FD1)"

(3) Disconnect 1 HDMI cable. Release the lock and disconnect 1 flat cable.

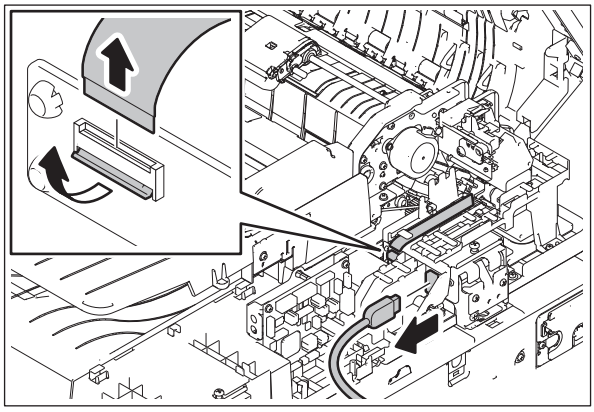


Fig.5-78

Notes:

- When installing the flat cable, do not push it in strongly.
- When installing the flat cable, be careful not to insert it at an angle.
- Do not apply pressure to or damage the edge of the flat cable.
- When installing a flat cable, make sure that the conductor side will be the upper side.

(4) Release the harness [6] from the harness guide [5].
Disconnect the connectors [7] for the DSDF upper cover interlock switch and the DSDF lower cover interlock switch.
Remove 2 screws and take off the harness guide [5].

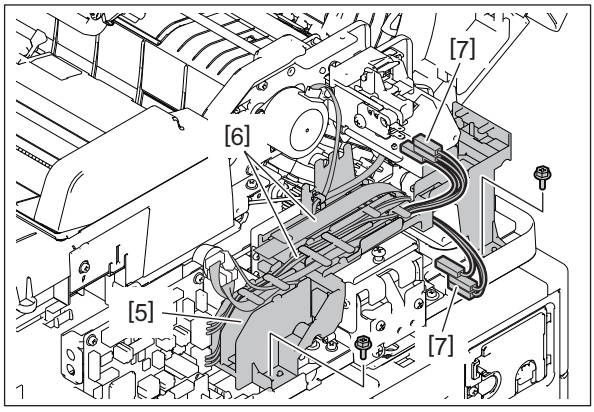


Fig.5-79

Notes:

Release the harness from the clamp of the harness guide [5].

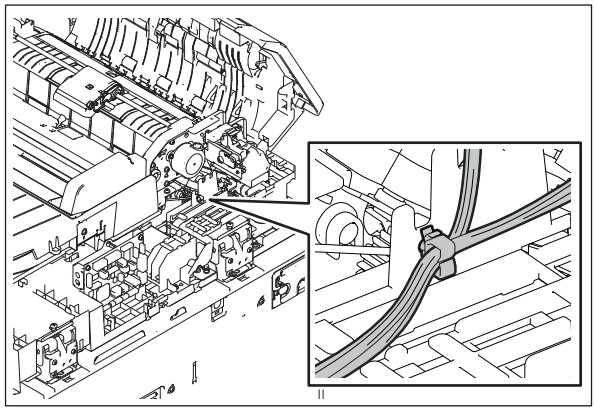


Fig.5-80

(5) Disconnect 1 connector [15] from the DSDF exit motor.
(6) Remove the tension spring [16].
(7) Remove 2 screws and take off the DSDF exit motor bracket [17].

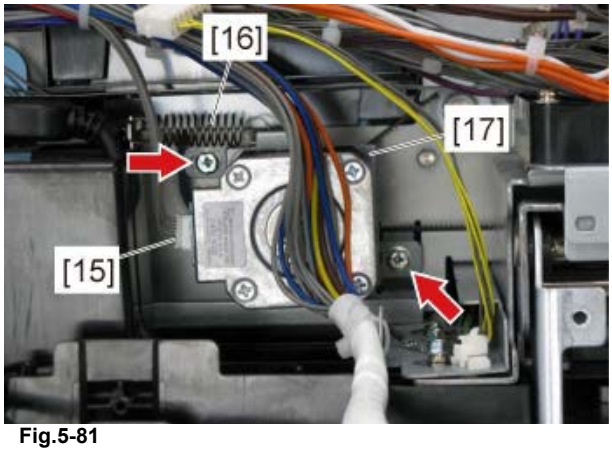


Fig.5-81

Notes:

- When installing the DSDF exit motor bracket, be sure to hook the pulley to the timing belt.
- When installing, temporarily tighten 2 screws, hook the tension spring and then securely tighten them.

(8) Remove 2 screws and take off the DSDF exit motor [18] from the DSDF exit motor bracket [17].

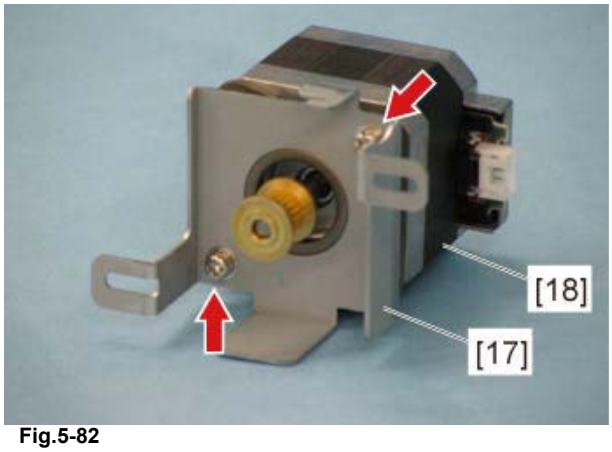


Fig.5-82

5.6.7 DSDF lower cover interlock switch (SWD1)

Notes:

If the interlock switch is not installed appropriately when it is replaced or installed, it may not work normally. If you carry out the maintenance of the equipment in such a situation, you could get an electric shock by touching live sections or be injured by touching moving sections. Therefore, to avoid this, be sure to perform correct handling and installation.

(1) Take off the DSDF read motor.
(📖 P. 5-32 "5.6.5 DSDF read motor (MD4)")

(2) Disconnect 3 connectors. Remove 1 screw and take off the DSDF lower cover interlock switch [19].

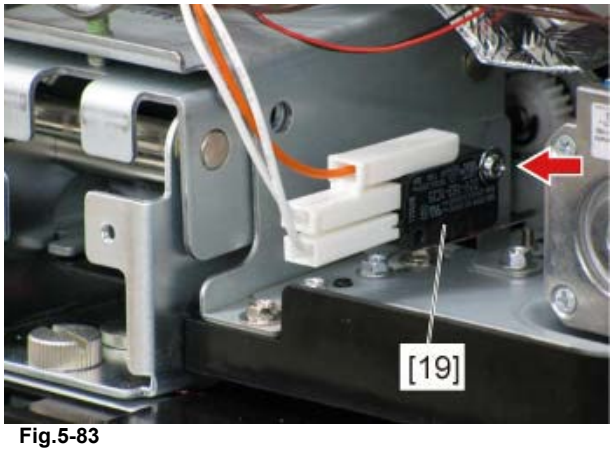


Fig.5-83

Notes:

The color of 3 harnesses for the DSDF lower cover interlock switch: Orange (1) and white (2)

5.6.8 DSDF feed motor (MD1)

(1) Take off the DSDF rear cover.
(🕮 P. 5-9 "5.2.1 DSDF rear cover")

(2) Disconnect 1 connector [20]. Remove 2 screws. Slide the DSDF feed motor [21] to the upper left to take it off.

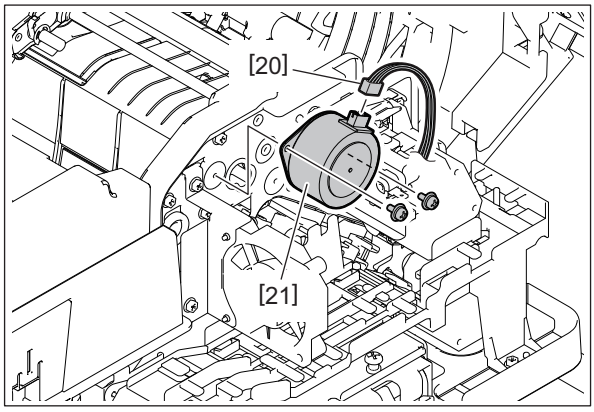


Fig.5-84

Notes:

The harness color of the DSDF feed motor is purple, be sure to check the harness color at installing.

5.6.9 DSDF separation motor (MD2)

(1) Take off the DSDF-LED PC board.
(🕮 P. 5-13 "5.3.1 DSDF-LED PC board (LEDD)")

(2) Disconnect 1 connector [22]. Remove 2 screws. Turn the DSDF separation motor [23] clockwise and slide it to the upper right to take it off.

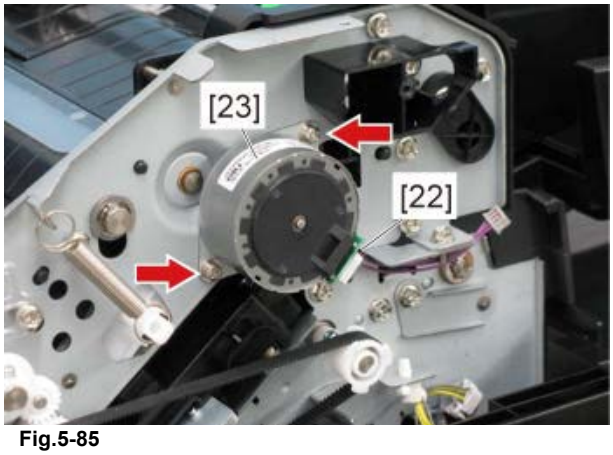


Fig.5-85

5.7 Original Transport Section

Notes:

- Be sure to attach the stopper jig or to take off the DSDF from the equipment before starting the procedures 4.7 or later. If this unit is taken off from the DSDF while it is installed in the equipment, the DSDF will be pulled up as its weight becomes lighter, and this could prove dangerous.
- When taking the DSDF from the equipment to disassemble it, be sure to put it on an even workspace.
- Take off the platen sheet before maintenance to prevent it from being damaged or dirtied.

5.7.1 Intermediate transport unit

(1) Take off the original jam access cover.
(📖 P. 5-11 "5.2.3 Original jam access cover")

(2) Take off the original tray.
(📖 P. 5-16 "5.4.1 Original tray")

(3) Take off the DSDF cooling fan motor (FD1).
📖 P. 5-27 "5.6.1 DSDF cooling fan motor (FD1)"

(4) Disconnect 5 connectors.

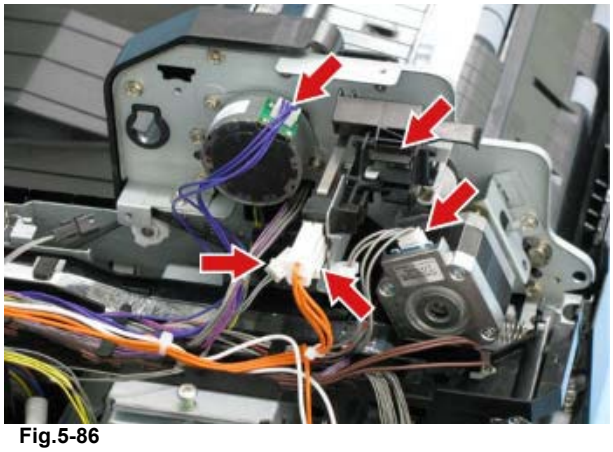


Fig.5-86

(5) Disconnect 2 connectors.

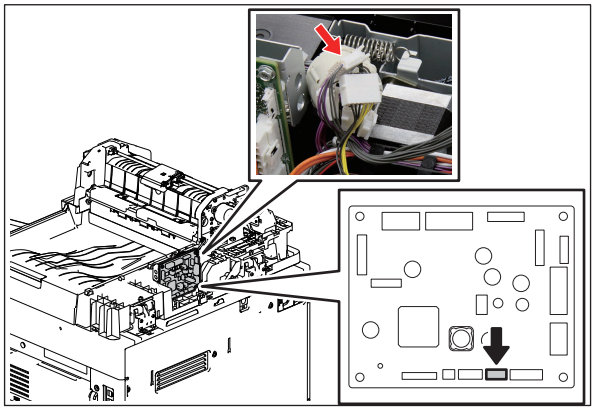


Fig.5-87

(6) Remove 1 screw and take off the pulley bracket [14] toward the front side.
(7) Remove 1 screw.

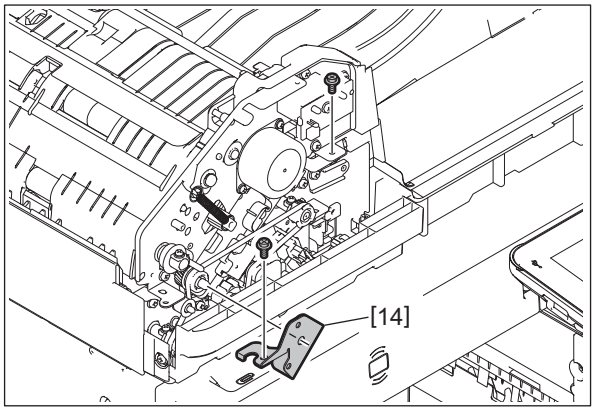


Fig.5-88

(8) Remove 2 screws.

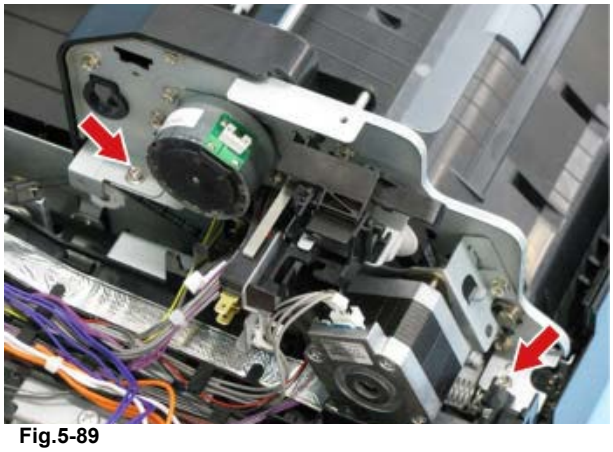


Fig.5-89

(9) Take off the intermediate transport unit [1].

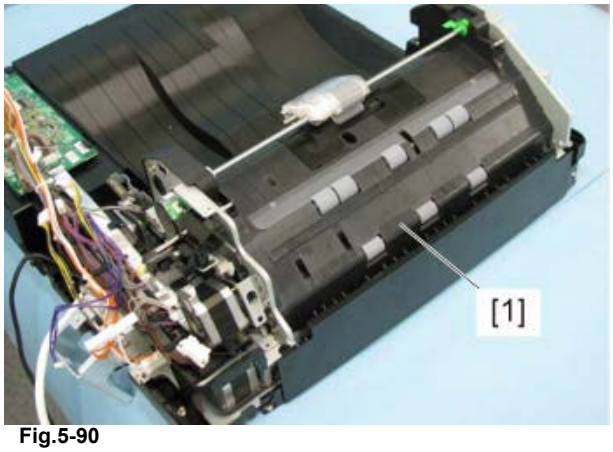


Fig.5-90

Intermediate transport unit

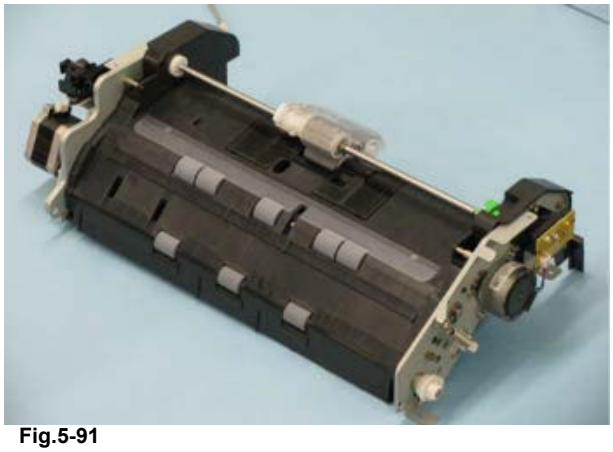


Fig.5-91

5.7.2 DSDF read-in sensor-1 (SD11) / DSDF read-in sensor-2 (SD12)

(1) Take off the DSDF-CCD module.
(📖 P. 5-47 "5.8.1 DSDF-CCD module (CCDD)")

(2) Disconnect 2 connectors and remove 1 screw. Take off the sensor bracket [2].

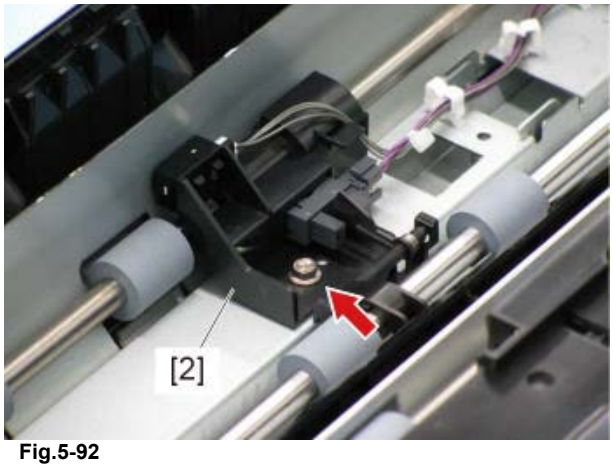


Fig.5-92

(3) Release the latch and take off the DSDF read-in sensor-1 [3] from the sensor bracket.
(4) Release the latch and take off the DSDF read-in sensor-2 [4] from the sensor bracket.

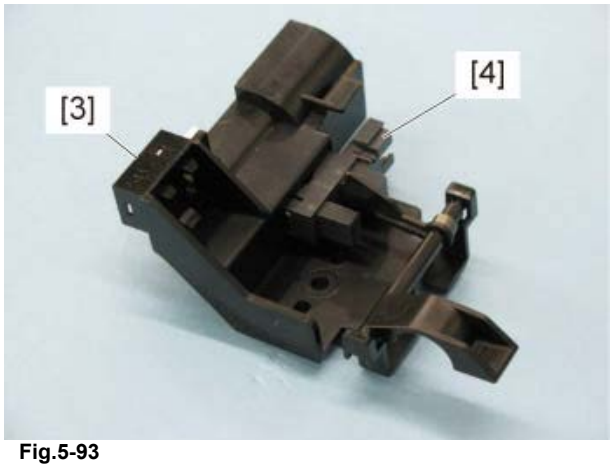


Fig.5-93

5.7.3 DSDF exit sensor (SD13) / DSDF tray lift lower limit sensor (SD10)

(1) Take off the intermediate transport unit.
(📖 P. 5-39 "5.7.1 Intermediate transport unit")
(2) Disconnect 1 connector [10].

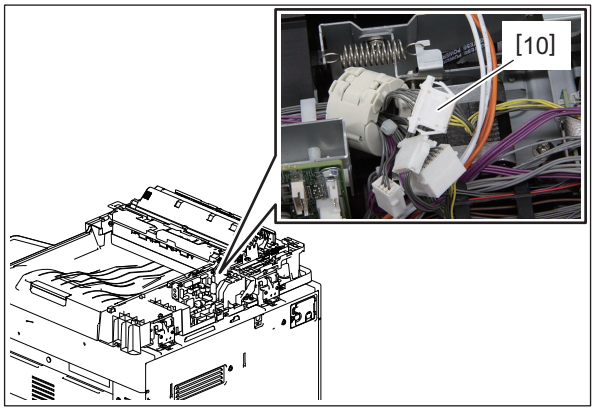


Fig.5-94

(3) Remove 1 screw. Remove the pin [6] at the front of the sensor stay [5] and release the latch [7] at the center. Take off the sensor stay.

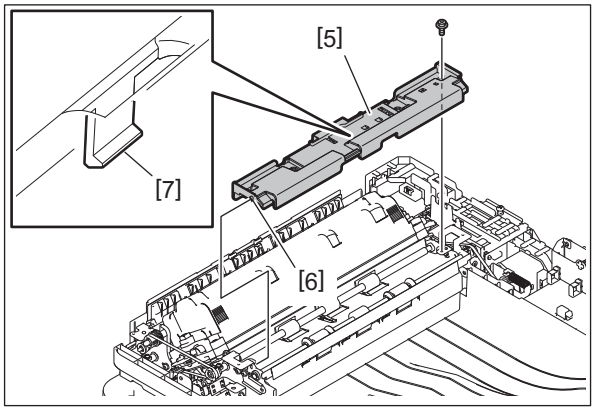


Fig.5-95

(4) Disconnect 1 connector. Release the latch and take off the DSDF exit sensor [8].

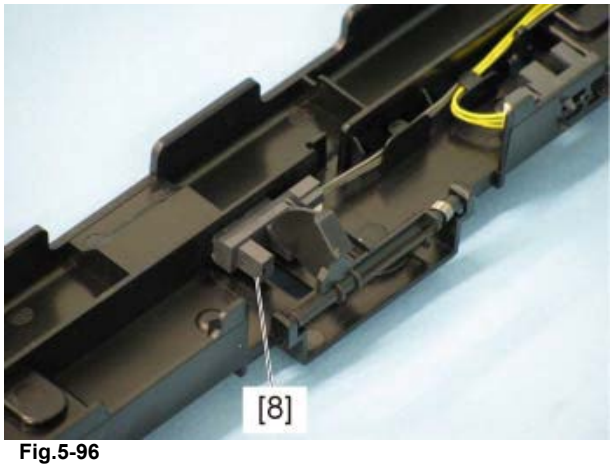


Fig.5-96

(5) Disconnect 1 connector. Release the latch and take off the DSDF tray lift lower limit sensor [9].

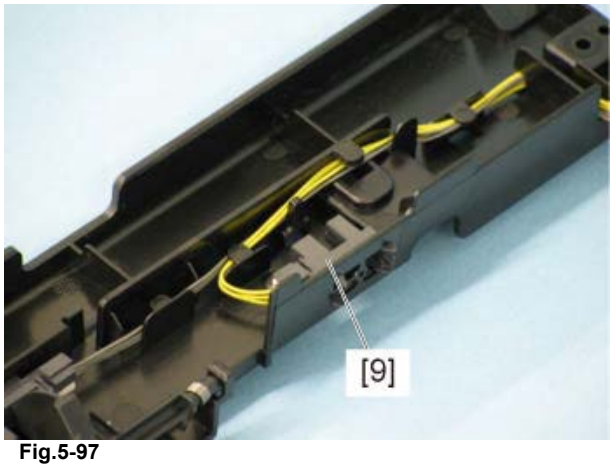


Fig.5-97

5.7.4 Lower transport unit

(1) Take off the DSDF-CCD module.
🕮 P. 5-47 "5.8.1 DSDF-CCD module (CCDD)"
(2) Take off the DSDF left cover.
🕮 P. 5-12 "5.2.4 DSDF left cover"
(3) Remove 8 screws and take off the lower transport unit [10].

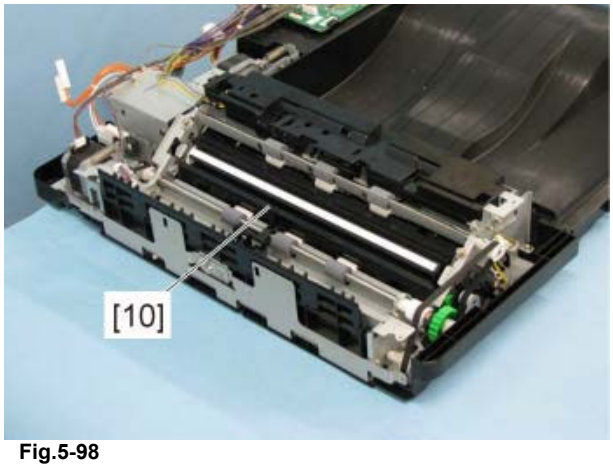


Fig.5-98

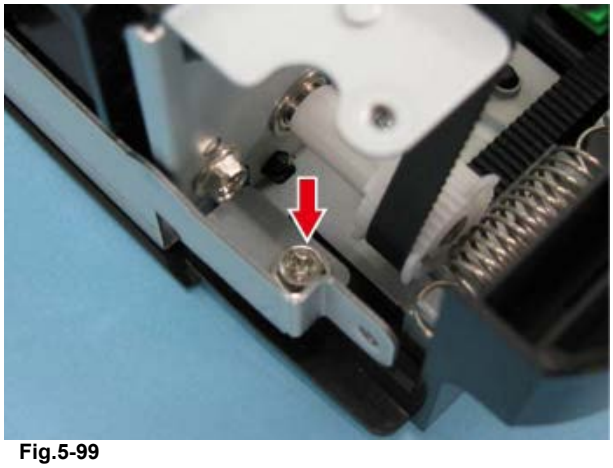


Fig.5-99

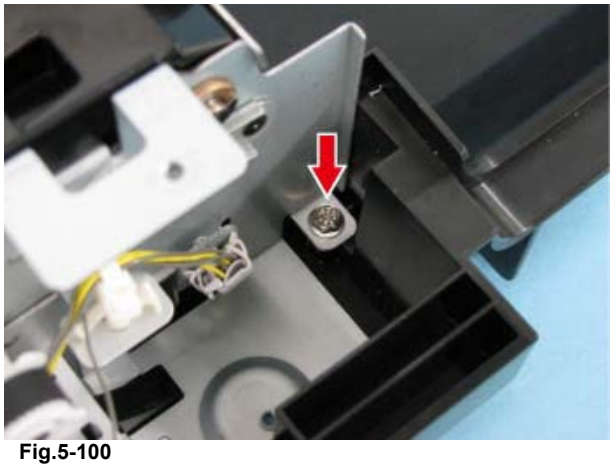


Fig.5-100

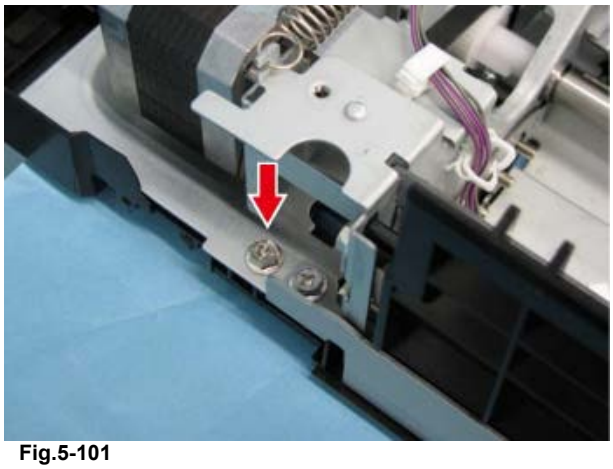


Fig.5-101

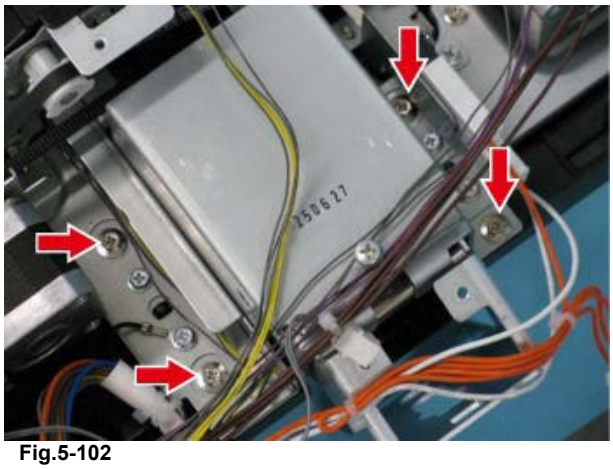


Fig.5-102

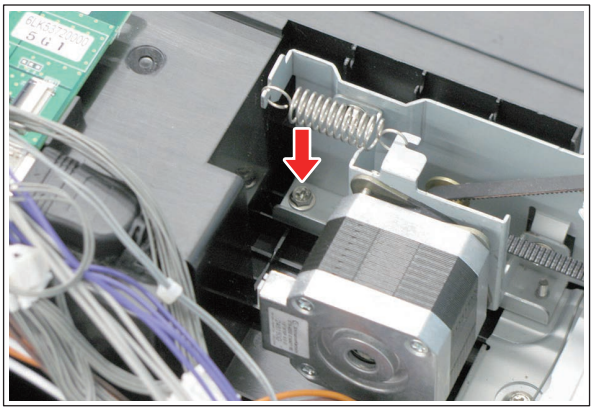


Fig.5-103

Lower transport unit

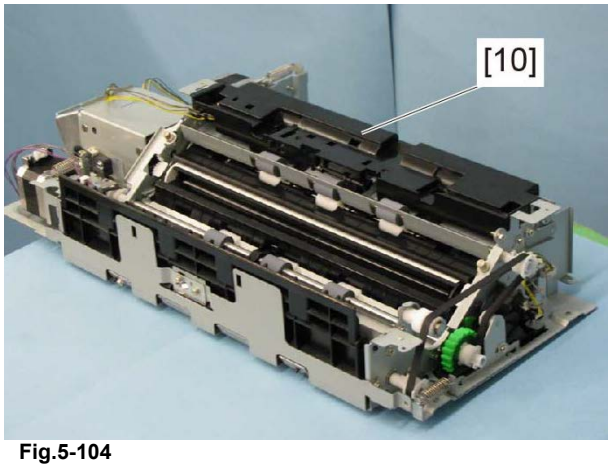


Fig.5-104

5.7.5 DSDF shading sheet HP sensor (SD14) / DSDF lower cover opening/closing detection sensor (SD15)

(1) Take off the lower transport unit.
(🕮 P. 5-44 "5.7.4 Lower transport unit")

(2) Remove 1 screw and take off the sensor bracket [11].

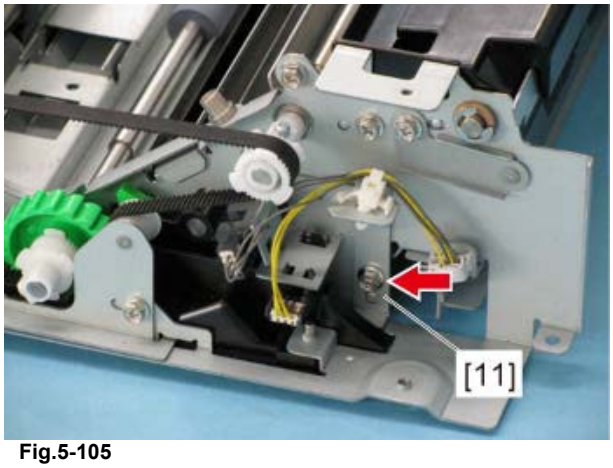


Fig.5-105

(3) Disconnect the connector. Release the latch and take off the DSDF shading sheet HP sensor [12] from the sensor bracket.

(4) Disconnect the connector. Release the latch and take off the DSDF lower cover opening/closing detection sensor [13] from the sensor bracket.

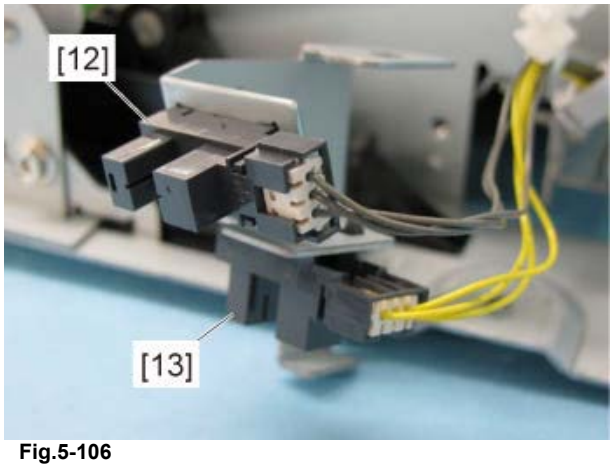


Fig.5-106

5.8 Original Scanning Section

5.8.1 DSDF-CCD module (CCDD)

Notes:

- Be sure to attach the stopper jig or to take off the DSDF from the equipment before starting the procedures 4.7 or later. If this unit is taken off from the DSDF while it is installed in the equipment, the DSDF will be pulled up as its weight becomes lighter, and this could prove dangerous.
- A characteristic value for image process is embedded in this DSDF-CCD module. When the DSDF or DSDF-CCD module has been replaced, be sure to perform FS-05-3240 (Data acquisition of characteristic value of the scanner).

(1) Take off the intermediate transport unit.
(📖 P. 5-39 "5.7.1 Intermediate transport unit")

(2) Disconnect 1 flat harness and 1 connector.

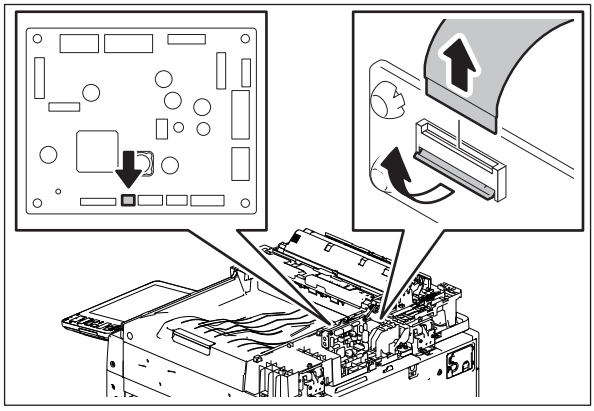


Fig.5-107

(3) Take off the DSDF-CCD module [1].

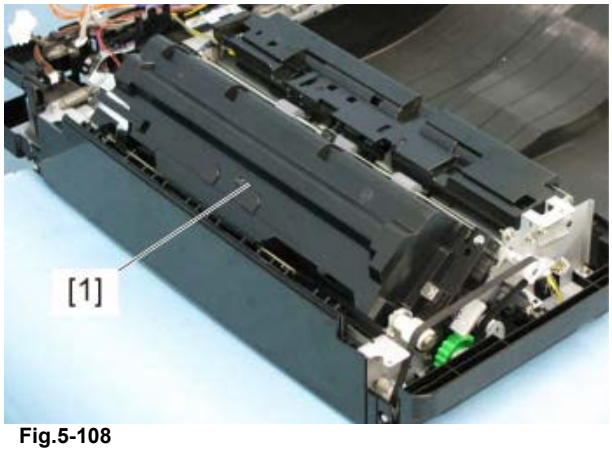


Fig.5-108

DSDF-CCD module

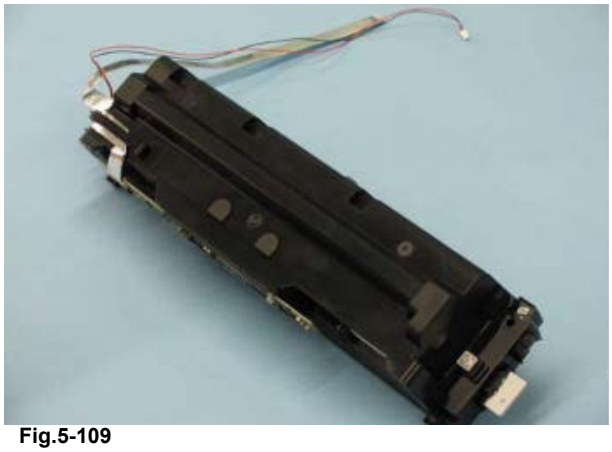


Fig.5-109

Notes:

- Do not leave fingerprints or stains on the slit glass of the DSDF-CCD module [2].
- Pay close attention not to cause any impact or vibration to the DSDF-CCD module because it is a precision apparatus.

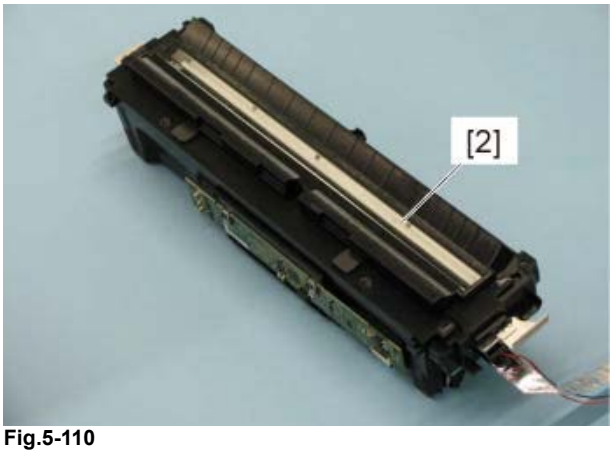


Fig.5-110

5.9 Film Attachment Reference

5.9.1 Registration films F/R

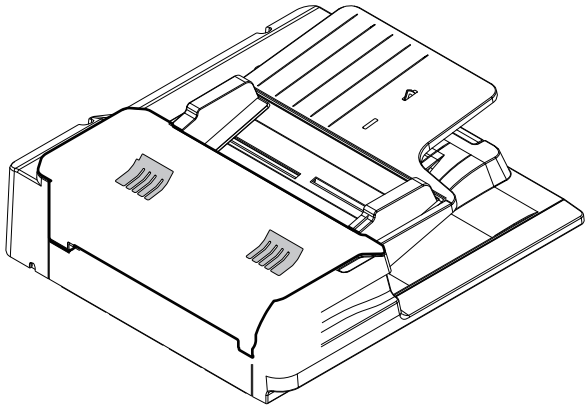


Fig.5-111

Attach them as shown in the figure below.

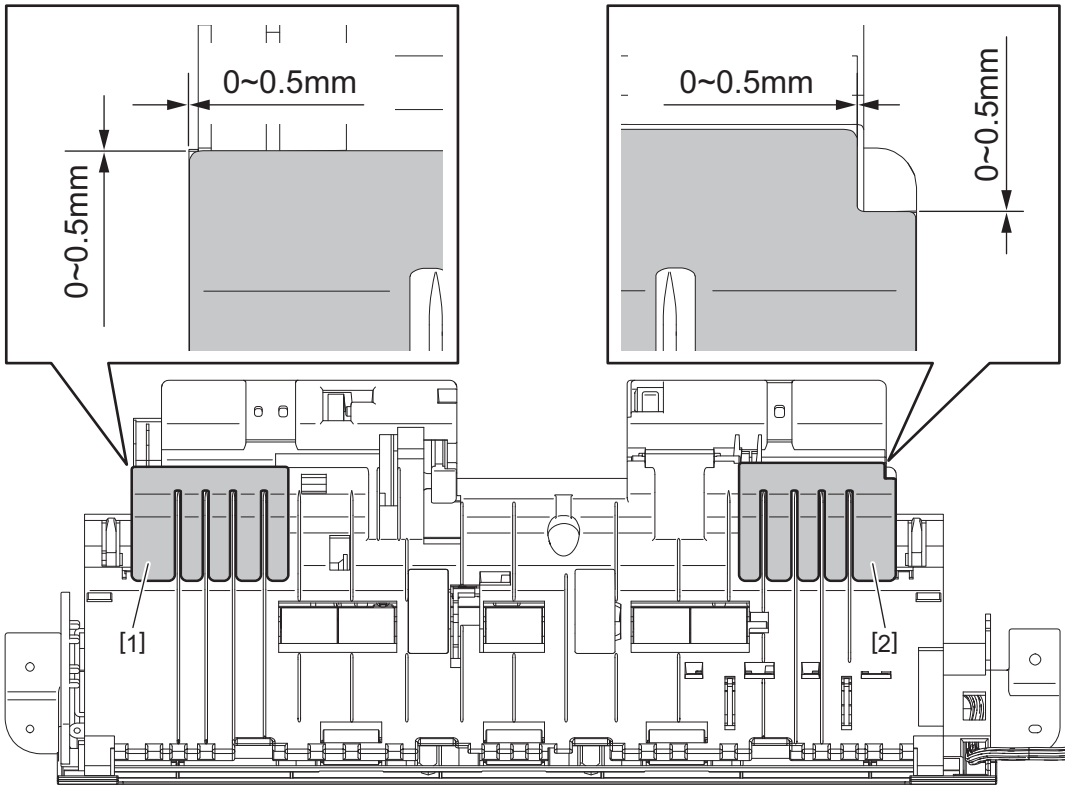


Fig.5-112

[1] Registration films R
[2] Registration films F

5.9.2 Films with a spacer

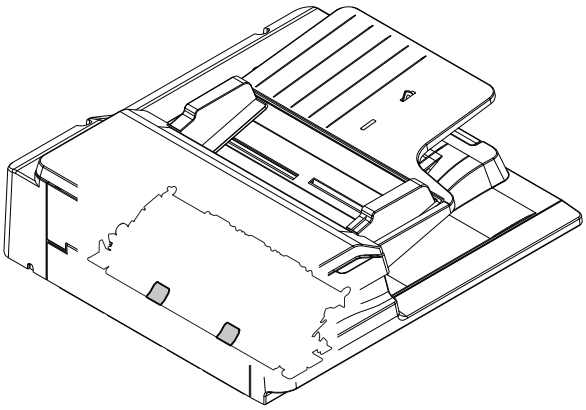


Fig.5-113

Attach them as shown in the figure below.

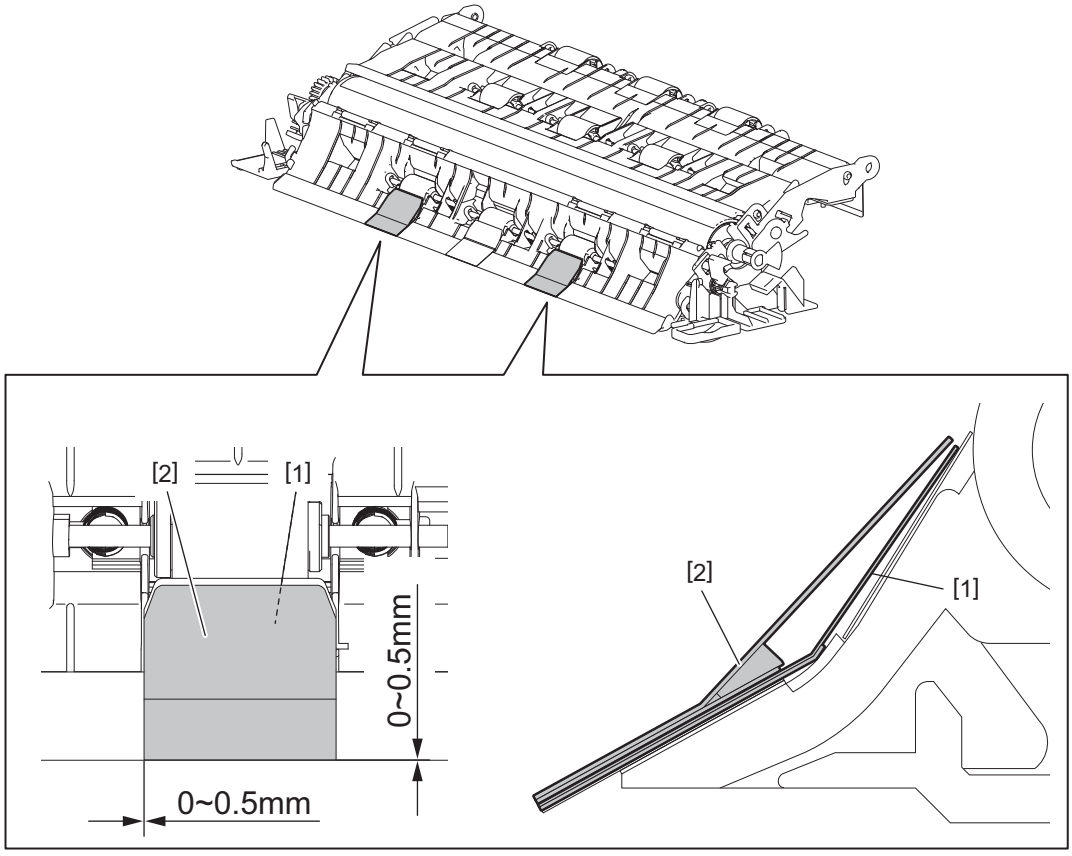


Fig.5-114

[1] Film
[2] Films with a spacer

6. ADJUSTMENT

6.1 Adjustment of Position

Perform this adjustment when the DSDF is not installed in the correct position.

Notes:

Check if the image adjustment for the equipment is performed properly before this adjustment of the DSDF. (See the Service Manual of the applicable equipment.)

6.1.1 Checking

(1) Open the DSDF and install 2 positioning pins.

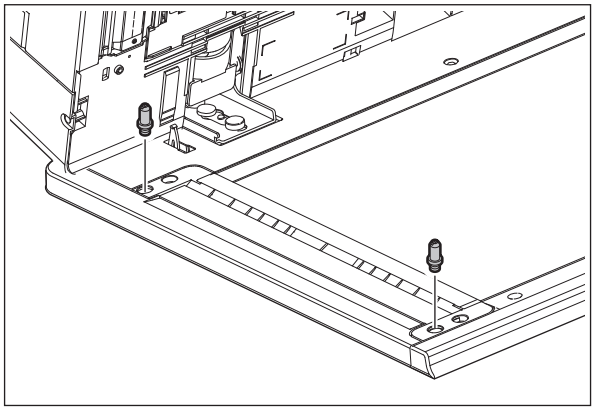


Fig.6-1

(2) Remove the platen sheet.

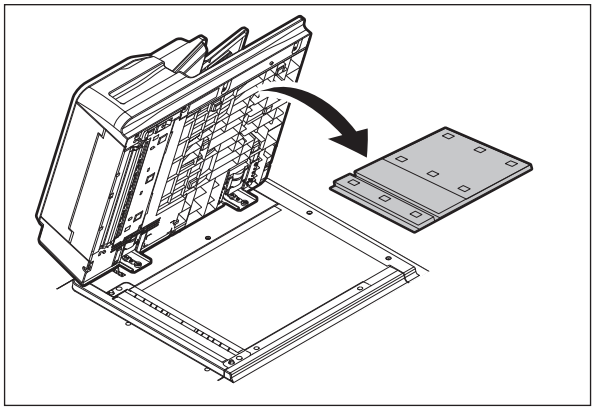


Fig.6-2

(3) Close the DSDF and check if the positioning pins fit the holes on the DSDF.

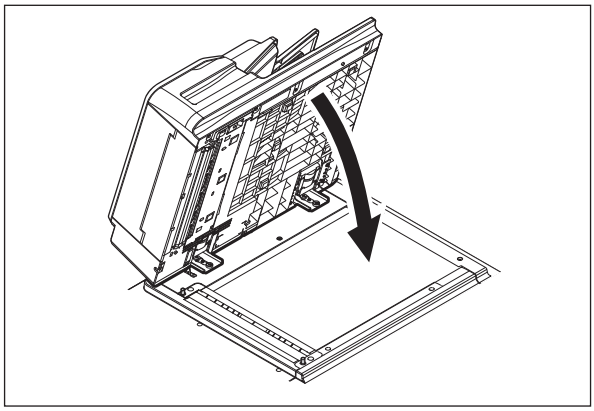


Fig.6-3

Notes:

If the positioning pins cannot be fitted into the holes on the DSDF properly, go to 📖 P. 6-3 "6.1.2 Adjustment" to adjust the position of the DSDF and then install it.

(4) Place the platen sheet on the original glass and align it to the top left corner.
Close the DSDF gently and open it to check if the platen sheet is attached properly.

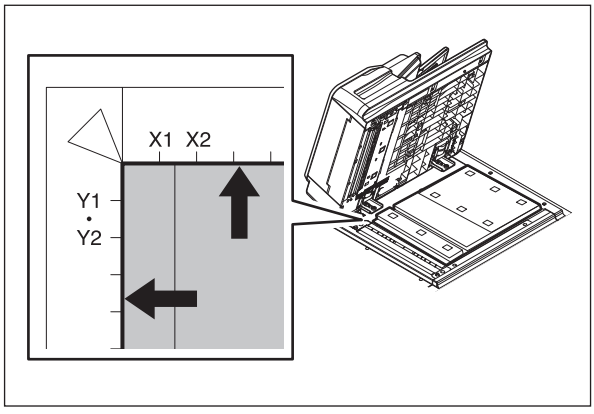


Fig.6-4

6.1.2 Adjustment

If the pins cannot be fitted into the holes, perform the adjustment according to the following procedure.

(1) Remove the brackets on the hinges.

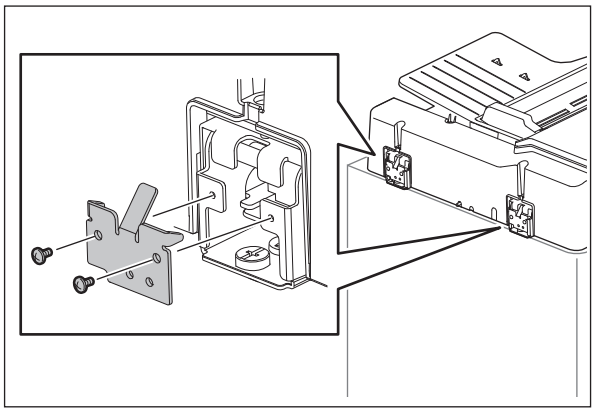


Fig.6-5

(2) Loosen fixing screws.

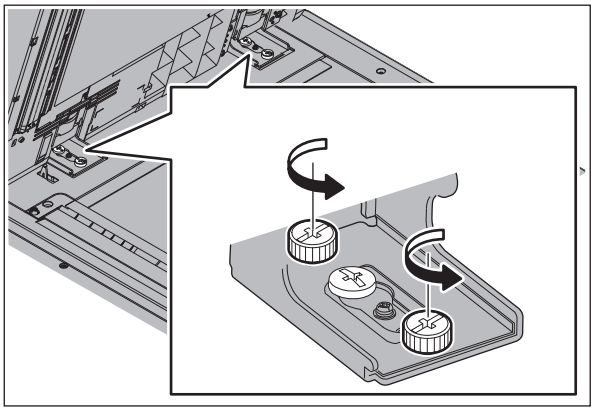


Fig.6-6

(3) Position the pins with the holes on the DSDF by moving it so that the pins fit into the holes when the DSDF is closed.

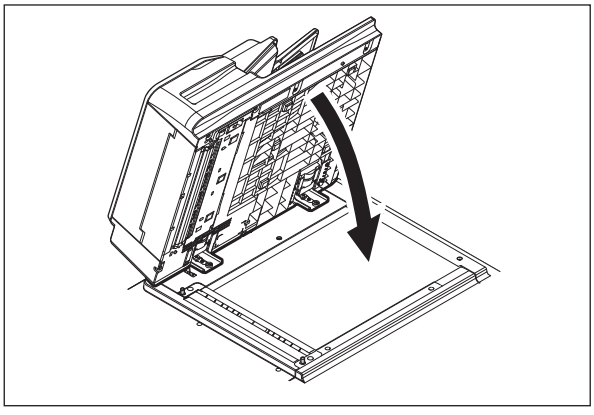


Fig.6-7

(4) Tighten the fixing screws of the rear side.

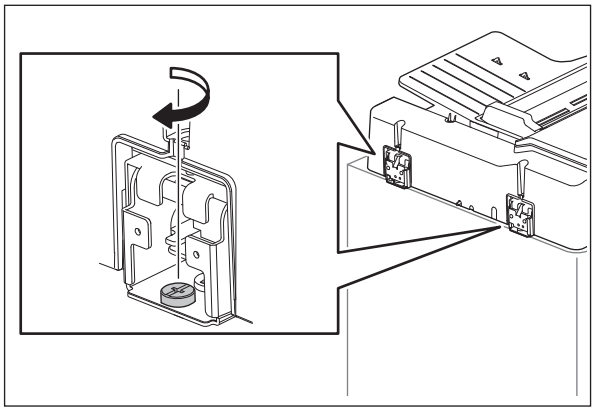


Fig.6-8

(5) Tighten the fixing screws of the front side.

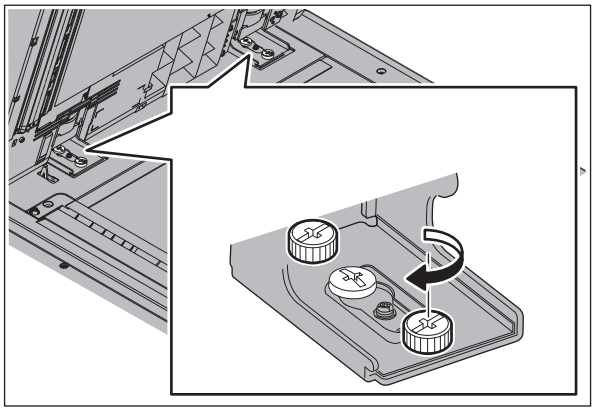


Fig.6-9

(6) Install the brackets on the hinges.

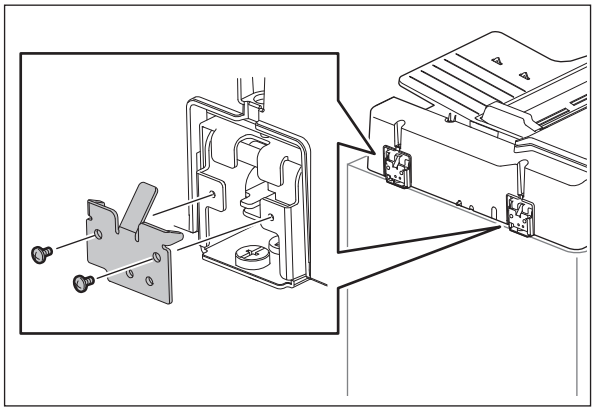


Fig.6-10

(7) Place the platen sheet on the original glass and align it to the top left corner.
Close the DSDF gently and open it to check if the platen sheet is attached properly.

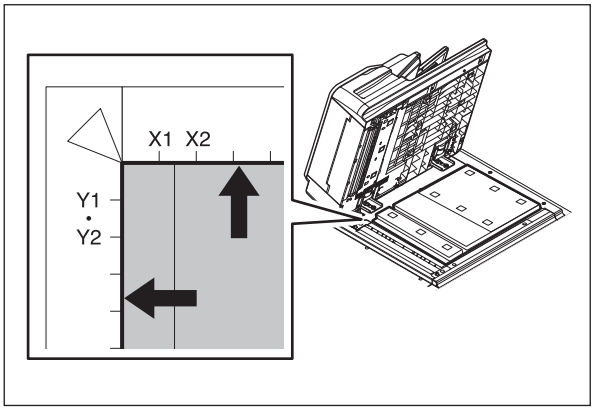


Fig.6-11

6.2 Adjustment of Height

Notes:

Check if the image adjustment for the equipment is performed properly before this adjustment of the DSDF. (See the Service Manual of the applicable equipment.)

6.2.1 Checking

(1) Close the DSDF.
(2) Light the exposure lamp.
- Perform FS-03-267.

(3) Visually check the gap between platen guide holder "A" and upper surface of the cover "B" from the left hand side of the equipment. If the value is not within the tolerance, perform the adjustment according to the following procedure.

[Tolerance of the gap]
Rear side: 0 - 0.5 mm
Front side: 0 mm

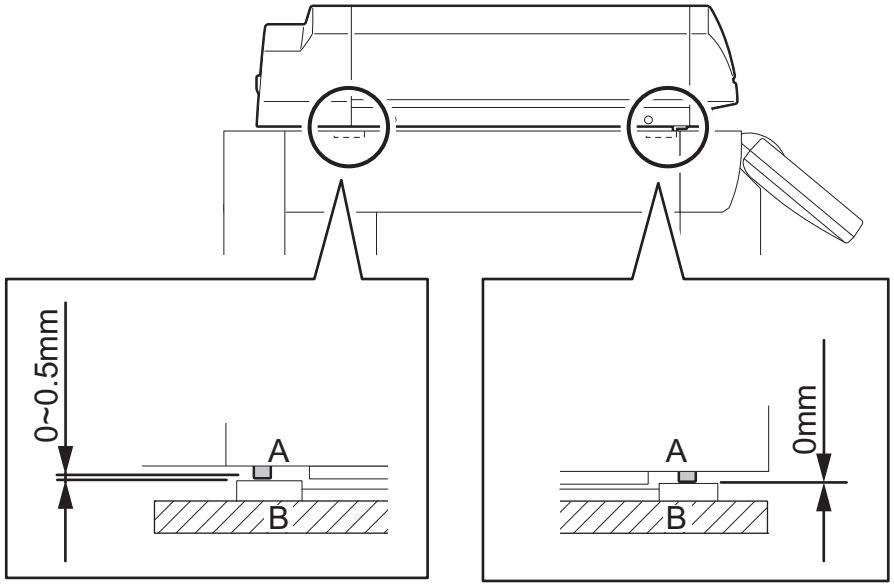


Fig.6-12

6.2.2 Adjustment

(1) Close the DSDF.
(2) Adjust it by turning the adjustment screws on the hinges.
- Adjust the height on the rear side by means of the screw on the hinge on the feed side of the DSDF.
  Turn it clockwise: Heightened
  Turn it counterclockwise: Lowered

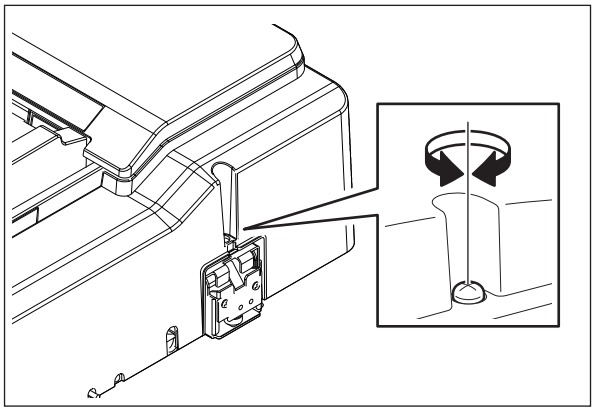


Fig.6-13

- Adjust the gap on the front side by means of the screw on the hinge on the exit side of the DSDF.
  Turn it clockwise: Lowered
  Turn it counterclockwise: Heightened

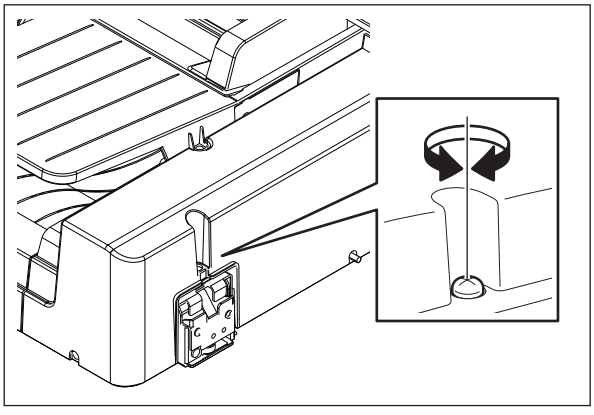


Fig.6-14

6.3 Adjustment of Skew

Notes:

- Check if the image adjustment for the equipment is performed properly before this adjustment of the DSDF. (See the Service Manual of the applicable equipment.)
- The DSDF position adjustment shall be adjusted properly.

6.3.1 Checking

Check the image using the chart (original) with vertical and horizontal lines in the following procedure.

[1] Simplex (front side) copying

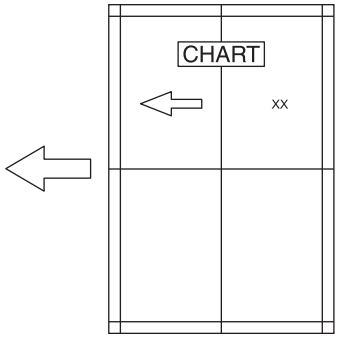


Fig.6-15

(1) Place the chart provided as an original with its face up on the original tray of the DSDF, select [Sort mode] and [1 Sided -> 1 Sided] and then press the [START] button.
(2) Superimpose the chart on the copy and check the inclination of the copy image.

[2] Duplex (back side) copying

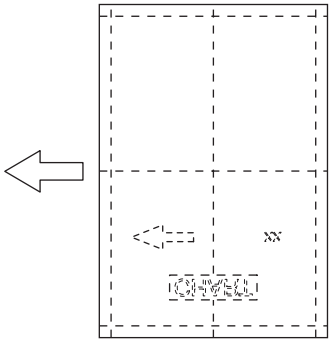


Fig.6-16

(1) Place the chart provided as an original with its face down on the original tray of the DSDF, select [Sort mode] and [2 Sided -> 2 Sided] and then press the [START] button.
(2) Superimpose the chart on the copy and check the inclination of the copy image.

6.3.2 Adjustment

[1] Simplex (front side) copying

(1) Change the fixing screws of the front side to the shoulder head screw (service parts).

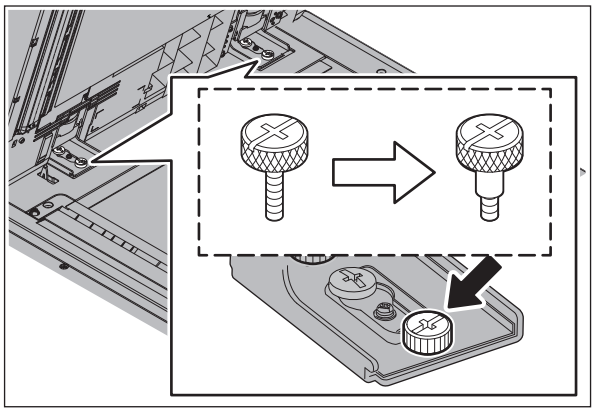


Fig.6-17

(2) Turn the adjustment screw while checking the scale of the hinge.

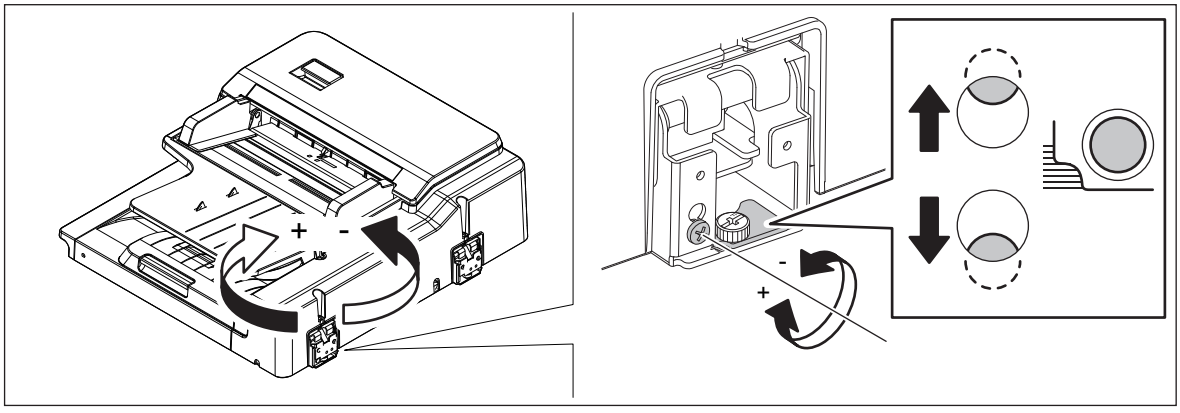


Fig.6-18

(3) If the image skew is "C" as shown in the figure below, shift the aligning plate in the direction of "-", and if "D", shift it to "+".

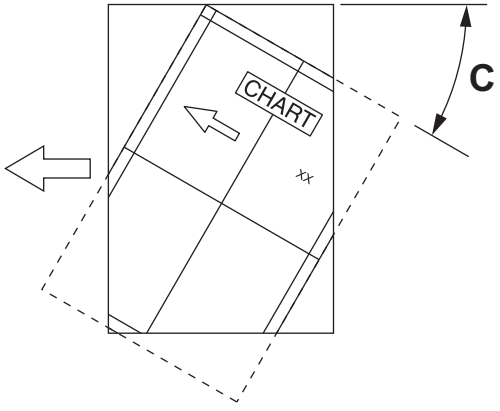


Fig.6-19
Shift the aligning plate in the direction of "-".

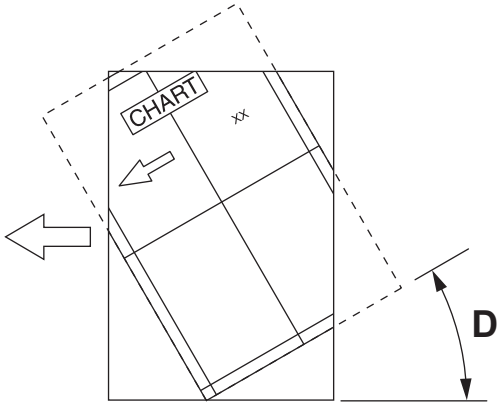


Fig.6-20
Shift the aligning plate in the direction of "+".

(4) Check the skew of the copy image by using a chart.

[2] Duplex (back side) copying

(1) Remove the DSDF front side cover. 🕮 P. 4-10 "4.2.2 DSDF front cover"

(2) Clarify the attachment position of the plate by drawing a marking-off line.

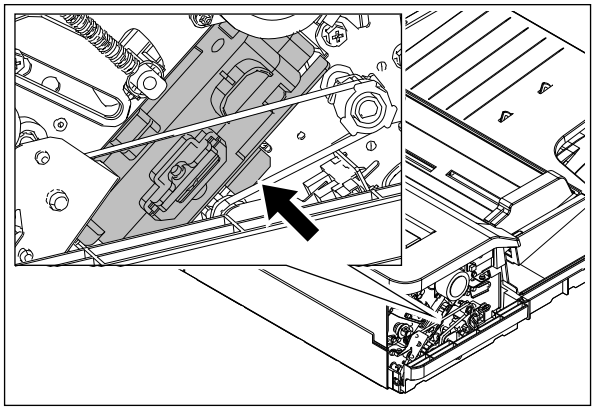


Fig.6-21

(3) Loosen 1 screw.

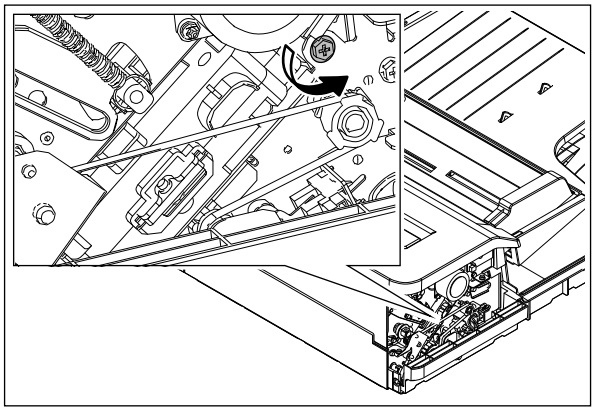


Fig.6-22

(4) If the image skew is "C" as shown in the figure below, shift the aligning plate in the direction of "-", and if "D", shift it to "+".

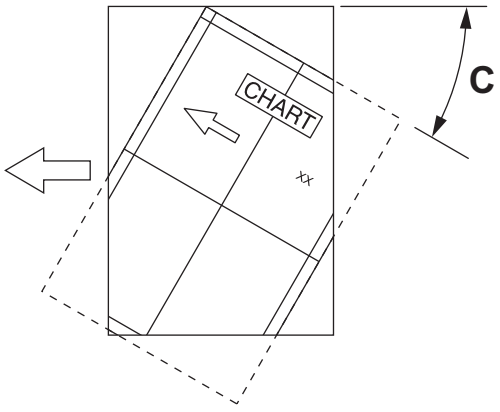


Fig.6-23
Shift the aligning plate in the direction of "-".

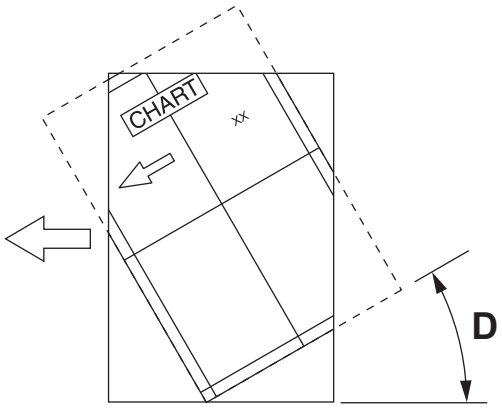


Fig.6-24
Shift the aligning plate in the direction of "+".

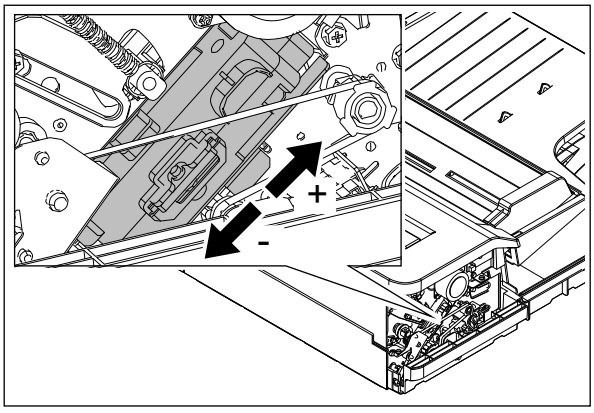


Fig.6-25

(5) Tighten the screw loosened in step (3). Check the skew of the copy image by using a chart.
(6) Install the DSDF front side cover.

6.4 Adjustment of the Leading Edge Position

Notes:

Check if the image adjustment for the equipment is performed properly before this adjustment of the DSDF. (See the Service Manual of the applicable equipment.)
Also, the DSDF position and height shall be adjusted properly.

6.4.1 Checking

Check the image using the chart (original) with vertical and horizontal lines in the following procedure.

[A] Simplex (front side) copying

(1) Place the chart provided as an original with its face up on the original tray of the DSDF, select [Sort mode] and [1 Sided -> 1 Sided] and then press the [START] button.
(2) Superimpose the chart on the copy and check the leading edge E of the chart and F of the copy.

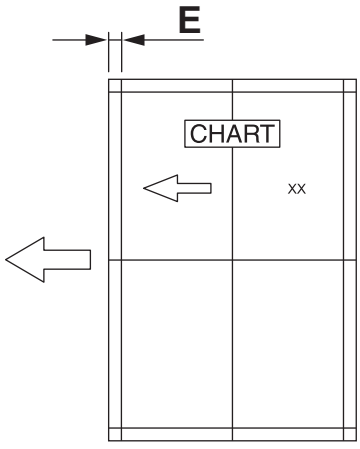


Fig.6-26 Chart (Original)

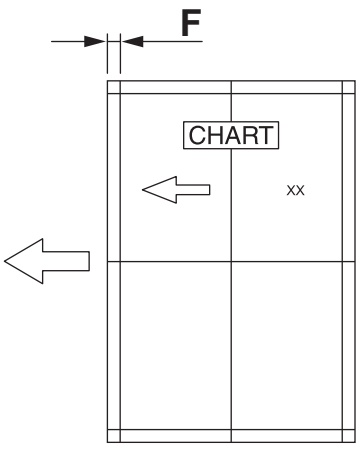


Fig.6-27 Copy

[B] Duplex (back side) copying

(1) Place the chart provided as an original with its face down on the original tray of the DSDF, select [Sort mode] and [2 Sided -> 2 Sided] and then press the [START] button.
(2) Superimpose the chart on the copy and check the leading edge E of the chart and F of the copy.

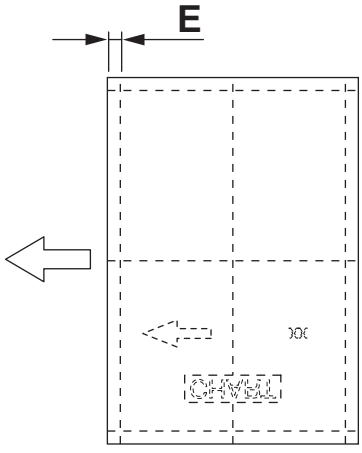


Fig.6-28 Chart (Original)

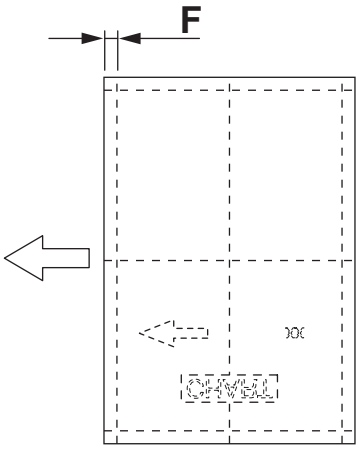


Fig.6-29 Copy

6.4.2 Adjustment

[A] Simplex (front side) copying:

(1) Perform FS-05-3044.
(2) Enter the value.
- If the leading edge (F) margin of the copy image is larger than the (E) margin of the chart, enter a value smaller than the current one.
- If the leading edge (F) margin of the copy image is smaller than the (E) margin of the chart, enter a value larger than the current one.

Notes:
Changing one value shifts the copy image by 0.1 mm.

(3) Press [OK].

[B] Duplex (back side) copying:

(1) Perform FS-05-3045.
(2) Enter the value.
- If the leading edge (F) margin of the copy image is larger than the (E) margin of the chart, enter a value smaller than the current one.
- If the leading edge (F) margin of the copy image is smaller than the (E) margin of the chart, enter a value larger than the current one.

Notes:
Changing one value shifts the copy image by 0.1 mm.

(3) Press [OK].

6.5 Adjustment of Horizontal Position

Notes:

Check if the image adjustment for the equipment is performed properly before this adjustment of the DSDF.
(See the Service Manual of the applicable equipment.)
Also, the DSDF position and height shall be adjusted properly.

6.5.1 Front side

[A] Checking (Front side)

Check the image using the chart (original) with a center line in the following procedure.

(1) Place the chart provided as an original with its face up on the original tray of the DSDF.
(2) Select the [Sort mode] and press the [START] button.
(3) Fold the copy in half and check if the center line is misaligned.

[B] Adjustment (Front side)

(1) Perform FS-05-3043.

- If the center line of the copy image is shifted to the front side of the equipment, enter a value larger than the current one.

Notes:

Changing one value shifts the copy image by 0.0423 mm.

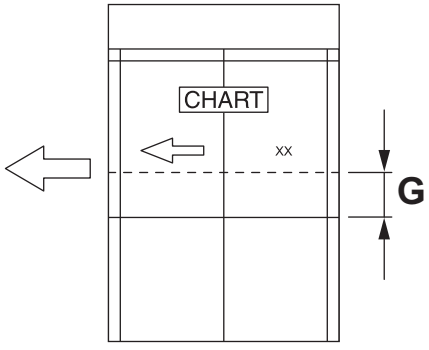


Fig.6-30

- If the center line of the copy image is shifted to the rear side of the equipment, enter a value smaller than the current one.

Notes:

Changing one value shifts the copy image by 0.0423 mm.

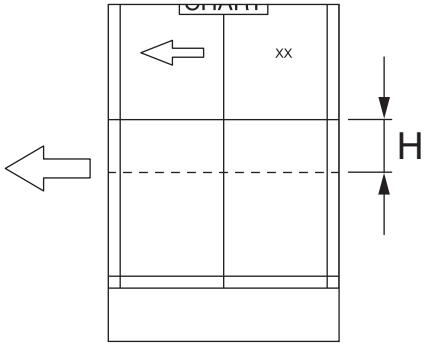


Fig.6-31

(2) Press [OK].

6.5.2 Back side

[A] Checking (back side)

Check the image using the chart (original) with a center line in the following procedure.

(1) Place the chart provided as an original with its face down on the original tray of the DSDF.

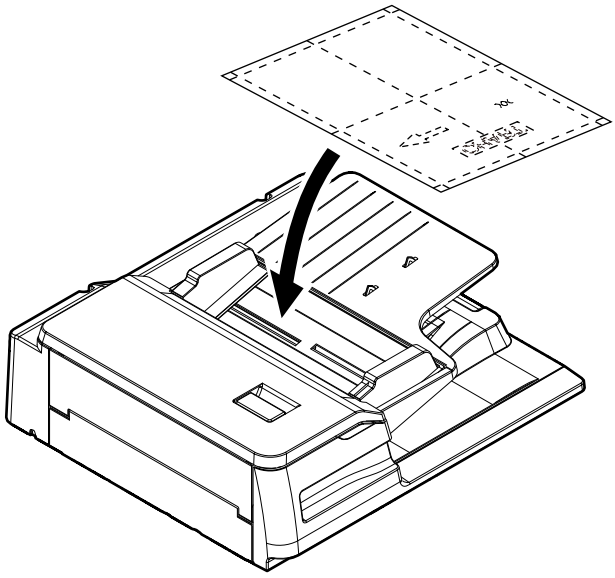


Fig.6-32

(2) Select [2 Sided -> 1 Sided] and press the [START] button.

(3) Fold the copy in half and check if the center line is misaligned.

[B] Adjustment (Back side)

(1) Perform FS-05-3049.

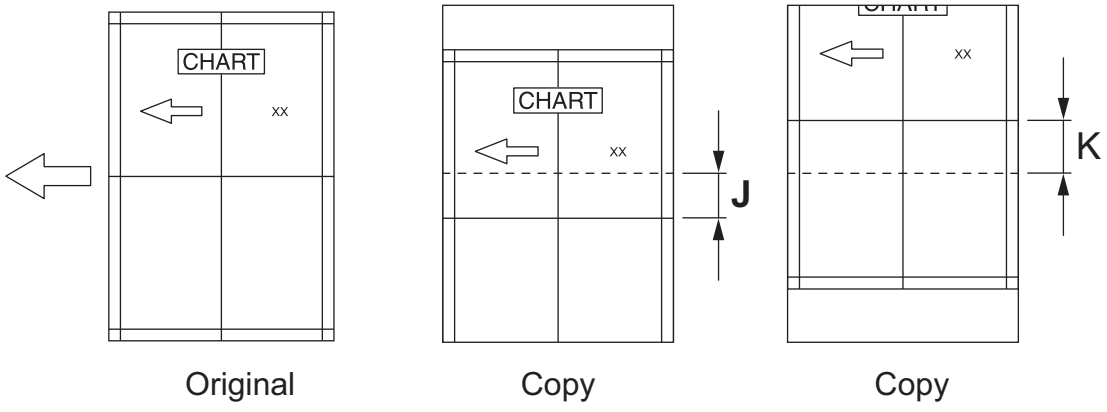


Fig.6-33

- If the center line of the copy image is shifted to the right side to the feeding direction (J), enter a value larger than the current one.
- If the center line of the copy image is shifted to the left side to the feeding direction (K), enter a value smaller than the current one.

Notes:

Changing one value shifts the copy image by 0.0423mm.

(2) Press [OK].

6.6 Adjustment of Copy Ratio

Notes:

Check if the image adjustment for the equipment is performed properly before this adjustment of the DSDF.
(See the Service Manual of the applicable equipment.)
Also, the DSDF position and height shall be adjusted properly.

6.6.1 Checking

Check the image using the chart (original) with vertical and horizontal lines in the following procedure.

(1) Place the chart provided as an original with its face up on the original tray of the DSDF.
(2) Select the [Sort mode] and press the [START] button.
(3) Superimpose the chart on the copy and check the image dimension “I”.

6.6.2 Adjustment

(1) Perform FS-05-3042.

- If the copy image dimension “I” is larger than the chart dimension, enter a value smaller than the current one.
- If the copy image dimension “I” is smaller than the chart dimension, enter a value larger than the current one.

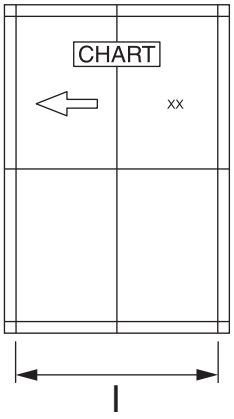


Fig.6-34

(2) Press [OK].

6.7 DSDF read-in sensor-1 adjustment

6.7.1 DSDF read-in sensor-1 automatic adjustment

Notes:

When the DSDF control PC board or the DSDF read-in sensor-1 is replaced, be sure to perform this adjustment.

(1) Perform FS-05-3210.

Notes:

- Be sure to close all of the DSDF cover before the adjustment is performed.
- Check that there is no paper on the DSDF read-in sensor-1 so that the light is not shielded.

6.7.2 DSDF read-in sensor-1 manual adjustment

Notes:

When the DSDF read-in sensor-1 is replaced or re-installed, perform this manual adjustment.

(1) Take off the DSDF left cover. P. 4-13 "4.2.4 DSDF left cover"
(2) Install the original jam access cover.
(3) Close the original jam access cover and the DSDF.
(4) Perform FS-05-3221.

Notes:

Be sure not to close or open the original jam access cover and the DSDF until step (5) is finished. If you do so, the adjustment value will be reset. In this case, repeat the adjustment from step (2).

(5) Loosen 1 prism adjustment screw.

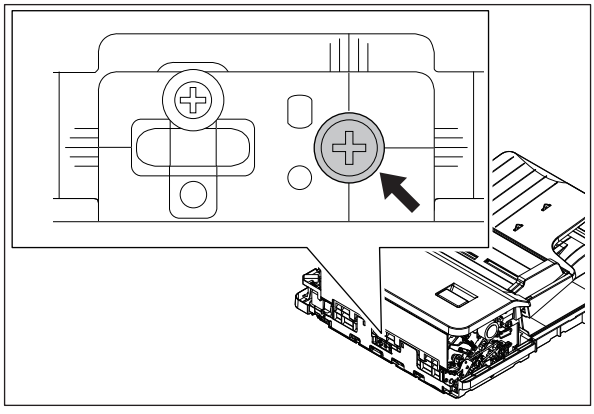


Fig.6-35

(6) Slide the prism vertically. When the prism comes to the proper adjustment position, LED1 on the DSDF control PC board lights. At this position, tighten 1 prism adjustment screw.

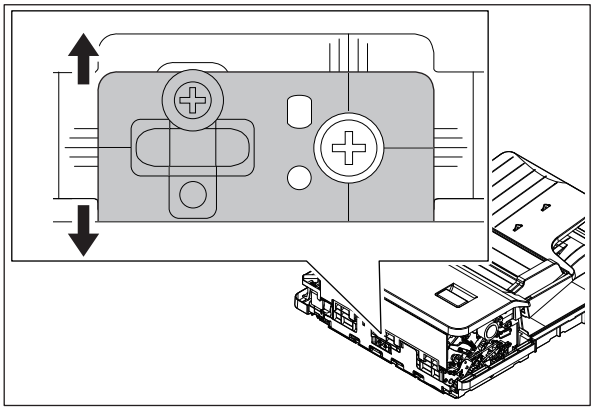


Fig.6-36

MR-4000

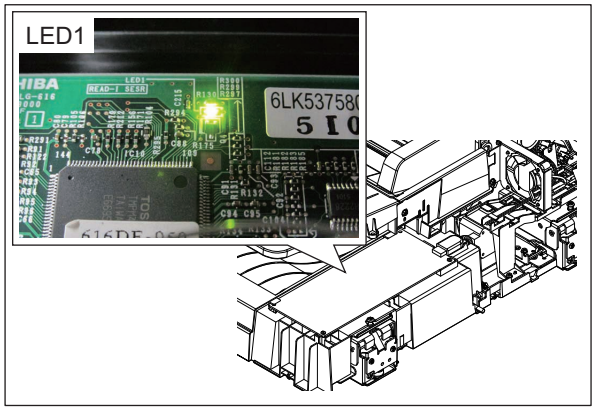


Fig.6-37

MR-4000-B

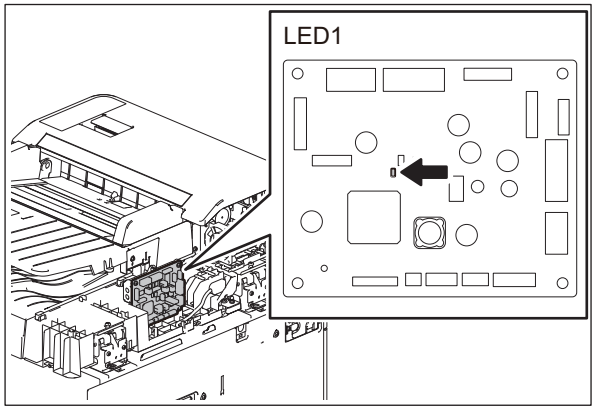


Fig.6-38

(7) Perform automatic adjustment (FS-05-3210).

Notes:

After the manual adjustment is performed, be sure to do the automatic one.

(8) Turn the power OFF and install the cover.

6.8 Platen Sheet

If a shadow-like dark area appears on the edge of the image, reset the platen sheet.

(1) Open the RADF and remove the platen sheet.

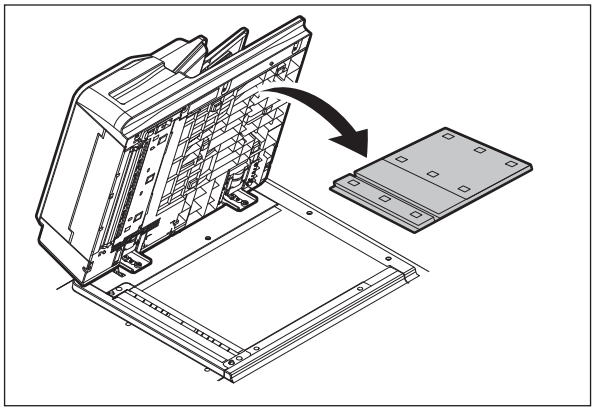


Fig.6-39

(2) Place the platen sheet on the original glass and align it to the top left corner. Close the DSDF gently and open it to check if the platen sheet is attached properly.

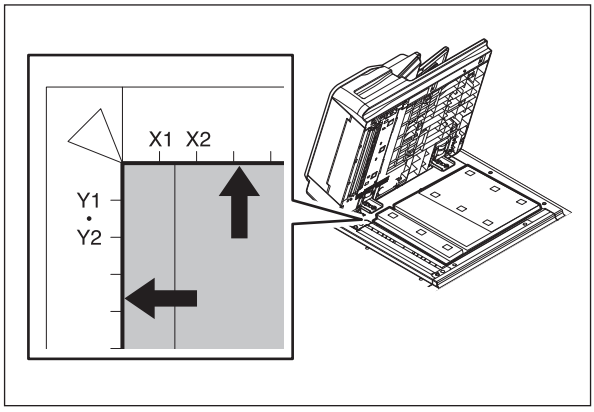


Fig.6-40

6.9 DSDF separation roller pressure force adjustment

In some cases the life of the separation roller may be shortened or paper jams (E712, E721) and multiple feeding (E724) may occur regardless of the operation frequency of the DSDF. This comes from the weight or edge status of paper used and the amount of paper dust.
Generally paper jams and multiple feeding often occur as the life end of the roller approaches. However, if they often occur even though its life has not yet reached its replacement timing, or if the life end comes much earlier than the scheduled replacement timing, the jams and multiple feeding can be suppressed by adjusting the pressure force of the separation roller.
In this method; however, when the roller life becomes longer, jams and multiple feeding may occur frequently, and when the jams and multiple feeding are suppressed, the roller life may become shorter. Therefore, perform this adjustment while checking the status carefully, and if necessary, give a sufficient explanation to users.

(1) Remove the DSDF pickup unit [1].

(2) Open the DSDF separation roller cover [1].

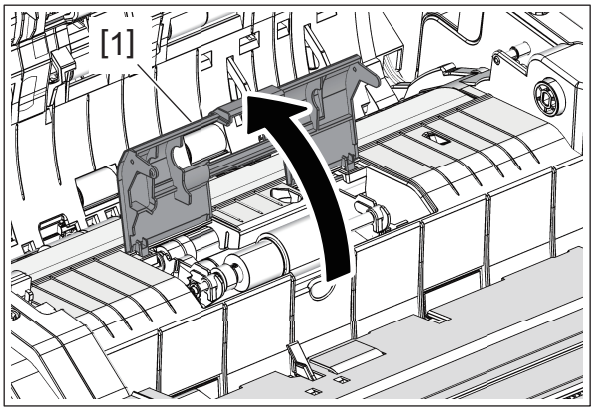


Fig.6-41

(3) Turn the arm [2] to release the lock.

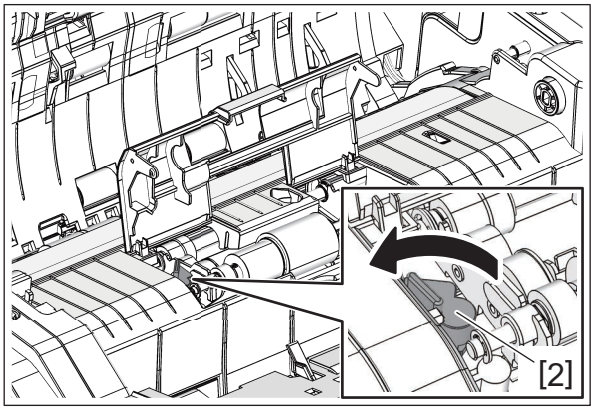


Fig.6-42

(4) Lift up the DSDF separation roller unit [3].

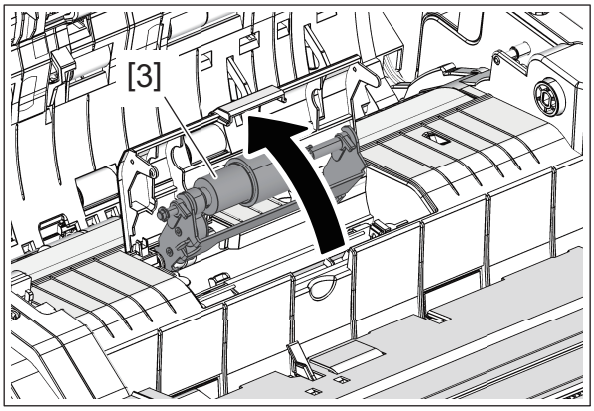


Fig.6-111

(5) Move the adjustment plate [4] in the direction of F or R by 1 scale.
- Move to the direction F: Paper jams (E712, E721) will be suppressed. The roller life will become longer (but multiple feeding may occur frequently).
- Move to the direction R: Multiple feeding will be suppressed (but the roller life may become shorter).

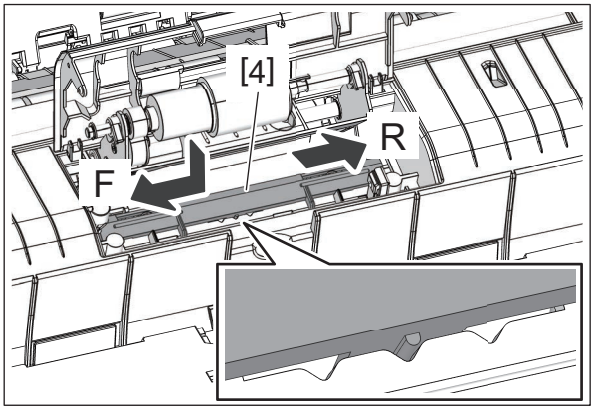


Fig.6-112

7. TROUBLESHOOTING

7.1 Error Code List

7.1.1 Jam

Error code	Classification	Contents	Detail	Trouble shooting
E712	Paper feed section jam	Original not reaching the DSDF registration sensor jam	The original fed from the original tray does not reach the DSDF registration sensor.	P. 7-4
E714	Paper feed section jam	Paper feed signal reception jam in DSDF	The DSDF has received the paper feed signal from the MFP even though there is no original on the original tray.	P. 7-5
E717	Paper feed section jam	Original not reaching the DSDF original feed sensor jam	The original does not reach the DSDF original feed sensor even though original feeding has started.	P. 7-5
E718	Paper feed section jam	Original setting jam, original tray lift abnormality	• The original tray lift has been driven to raise itself and the DSDF tray lift upper limit sensor has not been turned ON within a specified time. • The original tray lift has been driven to lower itself and the DSDF tray lift lower limit sensor has not been turned ON within a specified time.	P. 7-6
E721	Paper transport section jam	Original not reaching the DSDF read-in sensor-1 jam	The original passed through the DSDF registration sensor does not reach the DSDF read-in sensor-1.	P. 7-7
E722	Paper transport section jam	Original not reaching the DSDF original exit sensor jam	The original passed through the DSDF read-in sensor-2 does not reach the DSDF original exit sensor.	P. 7-7
E724	Paper transport section jam	Original stopping at the DSDF registration sensor jam	The trailing edge of the original does not pass through the DSDF registration sensor after its leading edge has passed through this sensor.	P. 7-8
E725	Paper transport section jam	Original stopping at the DSDF read-in sensor-1 jam	The trailing edge of the original does not pass through the DSDF read-in sensor-2 after its leading edge has passed through this sensor.	P. 7-9
E726	Paper transport section jam	DSDF transport or paper exit signal reception jam	A transport or paper exit signal has been received even if no original is in the DSDF.	P. 7-9
E727	Paper transport section jam	Original not reaching the DSDF read-in sensor-2 jam	The original passed through the DSDF read-in sensor-1 does not reach the DSDF read-in sensor-2.	P. 7-10
E729	Paper transport section jam	Original stopping at the DSDF read-in sensor-2 jam	The trailing edge of the original does not pass through the DSDF read-in sensor-2 after its leading edge has passed through this sensor.	P. 7-11
E72A	Paper transport section jam	DSDF original scanning start time-out jam	Preparation of the page memory has not been completed within a specified time.	P. 7-11
E731	Paper exit section jam	Original stopping at the DSDF original exit sensor jam	The trailing edge of the original does not pass through the DSDF original exit sensor after its leading edge has passed through this sensor.	P. 7-12
E762	Paper remaining jam	Original remaining at the DSDF registration sensor jam	The DSDF registration sensor remains turned ON.	P. 7-12
E769	Paper remaining jam	Original remaining at the DSDF original feed sensor jam	The DSDF original feed sensor remains turned ON.	P. 7-13

Error code	Classification	Contents	Detail	Trouble shooting
E770	Paper remaining jam	Original remaining at the DSDF original width detection sensor-1 jam	The DSDF original width detection sensor-1 remains turned ON.	P. 7-13
E771	Paper remaining jam	Original remaining at the DSDF original width detection sensor-2 jam	The DSDF original width detection sensor-2 remains turned ON.	P. 7-14
E774	Paper remaining jam	Original remaining at the DSDF read-in sensor-1 jam	The DSDF read-in sensor-1 remains turned ON.	P. 7-14
E775	Paper remaining jam	Original remaining at the DSDF read-in sensor-2 jam	The DSDF read-in sensor-2 remains turned ON.	P. 7-15
E777	Paper remaining jam	Original remaining at the DSDF original exit sensor jam	The DSDF original exit sensor remains turned ON.	P. 7-15
E860	Cover open jam	DSDF original jam access cover open jam, DSDF shading sheet HP sensor abnormality	• The DSDF original jam access cover has become open during DSDF operation. • The paper exit motor has been driven and the DSDF shading sheet HP sensor has not been turned ON within a specified time.	P. 7-16
E870	Cover open jam	DSDF open jam	The DSDF has become open during DSDF operation.	P. 7-17

7.1.2 Service call

Error code	Classification	Contents	Detail	Trouble shooting
C550	Communication error	Communication error between the scanner and the DF	Communication cannot be made properly between the scanner and the DF.	P. 7-19
C551	DSDF error	DF model detection abnormality	An incorrect DF is installed in the MFP.	P. 7-19
C552	DSDF error	DF abnormality	DF abnormality	P. 7-20
C553	DSDF-CCD module error	DSDF-CCD module peak detection abnormality	• The light source of the DSDF-CCD module does not light. • There is a detection error of the light source.	P. 7-20
C554	Communication error	AFE communication error	Communication error between the DSDF-CCD module and the SYS board (This error is determined when the problem is not solved even if the MFP is rebooted by the specified number of times.)	P. 7-21
C558	Communication error	EERPOM communication error (back side)	Communication error between the DSDF-CCD module and the SYS board (The MFP will be rebooted at the first time the error occurs.)	P. 7-21
C559	Communication error	ASIC communication error (back side)	Communication error between the DSDF I/F board and the SYS board (The MFP will be rebooted at the first time the error occurs.)	P. 7-22
C730	EEPROM error	DSDF EEPROM writing abnormality	An abnormality has occurred while the data are being written in the EEPROM of the DSDF.	P. 7-22
C7B0	Initial time-out	Initialization performance abnormality	The initialization is not completed within the specified time.	P. 7-23
C8C0	Read-in sensor error	DSDF read-in sensor-1 automatic adjustment abnormality	An adjustment value becomes outside the specified one during DSDF read-in sensor-1 automatic adjustment.	P. 7-23
C8E0	Communication protocol abnormality	DF communication protocol abnormality	System stop is required due to the control abnormality.	P. 7-23
F115	Time-out error	S-VDEN ON signal time-out error	The scanning job has not finished normally.	P. 7-24
F116	Time-out error	S-VDEN OFF signal time-out error	The scanning job has not finished normally.	P. 7-24
F117	Time-out error	S-VDEN ON (back side) signal time-out error	The scanning job has not finished normally.	P. 7-24
F118	Time-out error	S-VDEN OFF (back side) signal time-out error	The scanning job has not finished normally.	P. 7-24

7.2 Diagnosis and Prescription for Each Error Code

7.2.1 Check item

Check item	Contents
Sensor check	• Check the sensor in the test mode. • Check that there is no dust on the sensor. • Check that the actuator is correctly operated.
Connector check	• Check that the connector is not disconnected. • Check that the pins are not deformed and do not come off. • Disconnect and reconnect the connector. Even if the connector is not apparently disconnected, it may be connected loosely. Therefore check carefully that it is secure.
Harness check	• Check if the harnesses are open circuited. • Check that the harness is not caught.
Motor check	• Check the motor in the test mode. • Check that there is no abnormality in the driving section. • Check that there is no abnormality in the roller.
Board check	• Check if the board is short circuited or open circuited. • Check that the boards are installed properly. • Check if the boards are deformed due to a forcible installation.

7.2.2 Jam

[E712] Original not reaching the DSDF registration sensor jam

Classification	Error content
DSDF jam	The original fed from the original tray does not reach the DSDF registration sensor.

Check item	Measures
Original	Flatten and reload an original if it is abnormally curled or is folded.
DSDF pickup roller DSDF original feed roller DSDF separation roller	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF registration sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[H] • Actuator check • Connector check (J975, J950, CN74) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF pickup roller	
DSDF original feed roller	
DSDF separation roller	
DSDF registration sensor	
DSDF control PC board	

[E714] Paper feed signal reception jam in DSDF

Classification	Error content
DSDF jam	The DSDF has received the paper feed signal from the MFP even though there is no original on the original tray.

Check item	Measures
Reproducibility	Release the misfeeding and reattempt copying or scanning.
DSDF original empty sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[B] • Actuator check • Connector check (CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN75) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF original empty sensor	
DSDF control PC board	

[E717] Original not reaching the DSDF original feed sensor jam

Classification	Error content
DSDF jam	The original does not reach the DSDF original feed sensor even though original feeding has started.

Check item	Measures
DSDF original feed sensor	• Sensor check Input check: FS-03-[F2]ON/[8]/[E] • Actuator check • Connector check (J974, J950, CN74) • Harness check • Replace the sensor.
DSDF original feed motor	• Check that the motor is working. Output check: FS-03-281 • Connector check (J990, CN77) • Harness check • Replace the motor.
DSDF control PC board	• PC board check • Connector check (CN74, CN77) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF original feed sensor	
DSDF original feed motor	
DSDF control PC board	

[E718] Original setting jam, original tray lift abnormality

Classification	Error content
DSDF jam	• The original tray lift has been driven to raise itself and the DSDF tray lift upper limit sensor has not been turned ON within a specified time. • The original tray lift has been driven to lower itself and the DSDF tray lift lower limit sensor has not been turned ON within a specified time.

Check item	Measures
During original feeding or the initial operation, when an original is pulled out after being placed	
Malfunction	Check whether an operation to apply a load to the original tray has been performed while it is being raised or lowered. Check that there is no foreign matter in the original tray lifting section. If the cause of this problem is any of the above, take an appropriate measure, open and then close the cover to release the problem. If the cause of this problem is other than the above, take the following measure.
When the original tray lift is being rising (When this problem has occurred after the original placing or during original transporting)	
DSDF tray lift upper limit sensor	There will be an abnormality in the DSDF tray lift upper limit sensor when an error occurs while the tray is being raised. • Sensor check Input check: FS-03-[F2]ON/[6]/[E] • Actuator check • Connector check • Harness check • Replace the sensor.
When the original tray lift is being lowering (When this problem has occurred if an original is pulled out during the initial operation or the operation itself)	
DSDF tray lift lower limit sensor	There will be an abnormality in the DSDF tray lift lower limit sensor when an error occurs while the tray is being lowered. • Sensor check Input check: FS-03-[F2]ON/[6]/[F] • Actuator check • Connector check • Harness check • Replace the sensor.
When the original tray lift does not work (not being raised and lowered)	
DSDF tray-up clutch	There will be an abnormality in the DSDF tray-up clutch if it does not work. • Check that the clutch is working. • Connector check • Harness check • Replace the clutch.
DSDF separation motor	There will be an abnormality in the DSDF separation motor if it does not work. • Check that the motor is working. Output check: FS-03-291, 292 • Connector check • Harness check • Replace the motor.
All	
DSDF control PC board	Check that there is no abnormality on the DSDF control PC board when operation failure has occurred in the DSDF tray lift upper limit sensor, DSDF tray lift lower limit sensor, DSDF tray-up clutch or DSDF separation motor. If there is any abnormality, replace it.

Parts to be replaced	Remarks
DSDF tray lift upper limit sensor	
DSDF tray lift lower limit sensor	
DSDF tray-up clutch	
DSDF separation motor	

Parts to be replaced	Remarks
DSDF control PC board	

[E721] Original not reaching the DSDF read-in sensor-1 jam

Classification	Error content
DSDF jam	The original passed through the DSDF registration sensor does not reach the DSDF read-in sensor-1.

Check item	Measures
DSDF registration roller Pre-read roller	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF read-in sensor-1	• Sensor check Input check: FS-03-[F2]ON/[7]/[G] • Connector check (J983, J956, CN75) • Harness check • Replace the sensor.
Aligning amount	Perform FS-05-3040 (Alignment position adjustment).
DSDF read motor	• Check that the motor is working. Output check: FS-03-283 • Connector check (J992, CN79) • Harness check • Replace the motor.
DSDF registration motor	• Check that the motor is working. Output check: FS-03-282 • Connector check (J982, CN79) • Harness check • Replace the motor.
DSDF control PC board	• PC board check • Connector check (CN75, CN79) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF registration roller	
Pre-read roller	
DSDF read-in sensor-1	
DSDF read motor	
DSDF registration motor	
DSDF control PC board	

[E722] Original not reaching the DSDF original exit sensor jam

Classification	Error content
DSDF jam	The original passed through the DSDF read-in sensor-2 does not reach the DSDF original exit sensor.

Check item	Measures
Post-read roller-2	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF original exit sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[E] • Actuator check • Connector check (J985, J957, CN75) • Harness check • Replace the sensor.

Check item	Measures
DSDF control PC board	• PC board check • Connector check (CN75) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Post-read roller-2	
DSDF original exit sensor	
DSDF control PC board	

[E724] Original stopping at the DSDF registration sensor jam

Classification	Error content
DSDF jam	The trailing edge of the original does not pass through the DSDF registration sensor after its leading edge has passed through this sensor.

Check item	Measures
DSDF registration roller	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF registration sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[H] • Actuator check • Connector check (J975, J950, CN74) • Harness check • Replace the sensor.
DSDF tray original length sensor-1 DSDF tray original length sensor-2 DSDF tray original width sensor-1 DSDF tray original width sensor-2	• Sensor check Input check for the DSDF tray original width sensor-1 and -2: FS-03-[F2]ON/[8]/[F], FS-03-[F2]ON/[8]/[G] Input check for the DSDF tray original length sensor-1 and -2: FS-03-[F2]ON/[8]/[D], FS-03-[F2]ON/[7]/[A] • Actuator check • Connector check (J970, J971, CN76) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN75) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF registration roller	
DSDF registration sensor	
DSDF tray original length sensor-1	
DSDF tray original length sensor-2	
DSDF tray original width sensor-1	
DSDF tray original width sensor-2	
DSDF control PC board	

[E725] Original stopping at the DSDF read-in sensor-1 jam

Classification	Error content
DSDF jam	The trailing edge of the original does not pass through the DSDF read-in sensor-2 after its leading edge has passed through this sensor.

Check item	Measures
Post-read roller-1	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF read-in sensor-1	• Sensor check Input check: FS-03-[F2]ON/[7]/[G] • Perform DSDF read-in sensor-1 automatic adjustment. • Connector check (J983, J956, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Post-read roller-1	
DSDF read-in sensor-1	
DSDF control PC board	

[E726] DSDF transport or paper exit signal reception jam

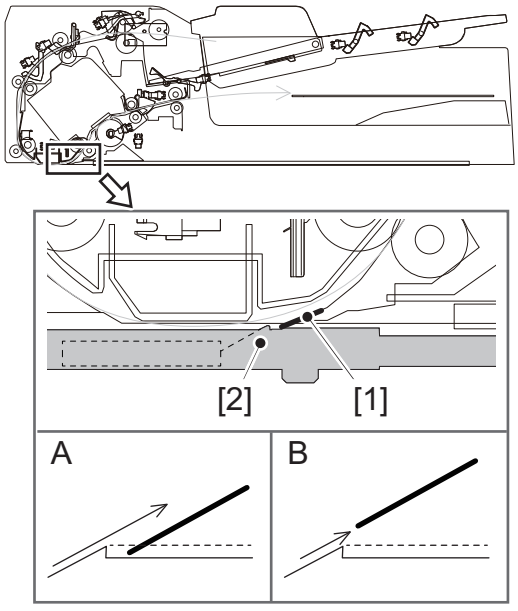
Classification	Error content
DSDF jam	A transport or paper exit signal has been received even if no original is in the DSDF.

Check item	Measures
Reproducibility	Turn the power OFF and then back ON to check the occurrence.
DSDF control PC board	• PC board check • Connector check • Harness check • Replace the PC board.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.
Switching regulator	• Check that the 24 V power supply is working. • Check that the 5 V power supply is working. • PC board check • Connector check • Harness check • Fuse check • Replace the switching regulator.

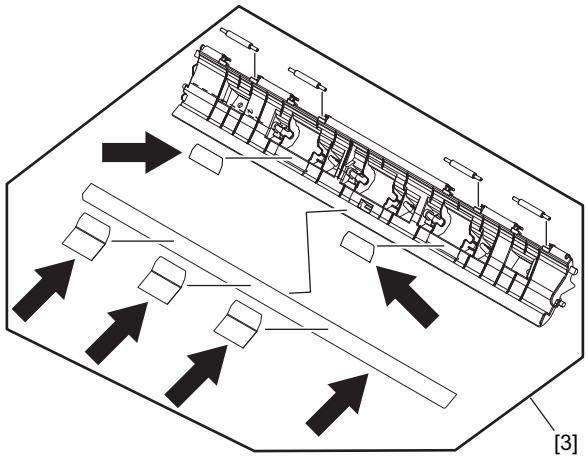
Parts to be replaced	Remarks
DSDF control PC board	
SYS board	
Switching regulator	

[E727] Original not reaching the DSDF read-in sensor-2 jam

Classification	Error content
DSDF jam	The original passed through the DSDF read-in sensor-1 does not reach the DSDF read-in sensor-2.

Check item	Measures
Film [1]	If an original has stopped at the transparent film [1], turn on the exposure lamp (output check: FS-03-267) and confirm the position between the film [1] and the upper edge of the slope [2].  **Fig. 7-1** State A (throughout the whole of the transparent film): OK (Go to the next step.) State B: Perform the height adjustment. Replace the film if the position between it and the upper edge of the slope cannot be adjusted as shown above [A].
Post-read roller-1	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
Installation	Check that the DSDF is installed properly.
DSDF read-in sensor-2	• Sensor check Input check: FS-03-[F2]ON/[6]/[D] • Connector check (J984, J956, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN75) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Post-read roller-1	
DSDF read-in sensor-2	
DSDF control PC board	

Parts to be replaced	Remarks
Film	Replace all the films or the guide [3].  Fig. 7-2

[E729] Original stopping at the DSDF read-in sensor-2 jam

Classification	Error content
DSDF jam	The trailing edge of the original does not pass through the DSDF read-in sensor-2 after its leading edge has passed through this sensor.

Check item	Measures
DSDF pre-read roller-2	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF read-in sensor-2	• Sensor check Input check: FS-03-[F2]ON/[6]/[D] • Connector check (J984, J956, CN75) • Harness check • Replace the sensor.
DSDF original exit motor	• Check that the motor is working. Output check: FS-03-284 • Connector check (J991, CN77) • Harness check • Replace the motor.
DSDF control PC board	• PC board check • Connector check (CN75) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF pre-read roller-2	
DSDF read-in sensor-2	
DSDF original exit motor	
DSDF control PC board	

[E72A] DSDF original scanning start time-out jam

Classification	Error content
DSDF jam	Preparation of the page memory has not been completed within a specified time.

Check item	Measures
Reproducing ability	Release the paper jam and reattempt copying or scanning.

Parts to be replaced	Remark
-	

[E731] Original stopping at the DSDF original exit sensor jam

Classification	Error content
DSDF jam	The trailing edge of the original does not pass through the DSDF original exit sensor after its leading edge has passed through this sensor.

Check item	Measures
DSDF original exit roller	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
Original exit section	Check that there is no original or foreign matter in the transport path. If there is any, remove it.
DSDF original exit sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[E] • Actuator check • Connector check (J985, J957, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN75) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF original exit roller	
DSDF original exit sensor	
DSDF control PC board	

[E762] Original remaining at the DSDF registration sensor jam

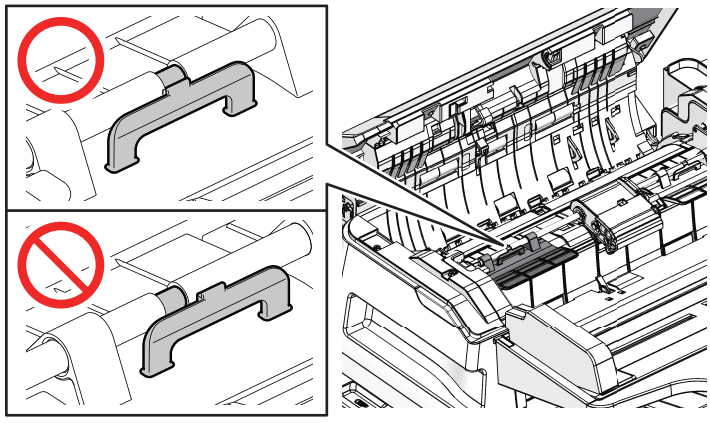
Classification	Error content
DSDF jam	The DSDF registration sensor remains turned ON.

Check item	Measures
Original exit section	Check that there is no original or foreign matter in the transport path. If there is any, remove it.
DSDF registration sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[H] • Actuator check • Connector check (J975, J950, CN74) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF registration sensor	
DSDF control PC board	

[E769] Original remaining at the DSDF original feed sensor jam

Classification	Error content
DSDF jam	The DSDF original feed sensor remains turned ON.

Check item	Measures
Corner folding prevention guide	• Check if the guide is installed properly. • If its latch has come off from the shaft groove, slide the guide to reinstall it. • Connector check (J975, J950, CN74) • Replace the corner folding protective guide if it is damaged.  Fig. 7-3
DSDF original feed sensor	• Sensor check Input check: FS-03-[F2]ON/[8]/[E] • Actuator check • Connector check (J974, J950, CN74) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Corner folding prevention guide	
DSDF original feed sensor	
DSDF control PC board	

[E770] Original remaining at the DSDF original width detection sensor-1 jam

Classification	Error content
DSDF jam	The DSDF original width detection sensor-1 remains turned ON.

Check item	Measures
DSDF original width detection sensor-1	• Sensor check Input check: FS-03-[F2]ON/[8]/[F] • Actuator check • Connector check (J972, J950, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF original width detection sensor-1	
DSDF control PC board	

[E771] Original remaining at the DSDF original width detection sensor-2 jam

Classification	Error content
DSDF jam	The DSDF original width detection sensor-2 remains turned ON.

Check item	Measures
DSDF original width detection sensor-2	• Sensor check Input check: FS-03-[F2]ON/[8]/[G] • Connector check (J973, J950, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF original width detection sensor-2	
DSDF control PC board	

[E774] Original remaining at the DSDF read-in sensor-1 jam

Classification	Error content
DSDF jam	The DSDF read-in sensor-1 remains turned ON.

Check item	Measures
DSDF read-in sensor-1	• Sensor check Input check: FS-03-[F2]ON/[7]/[G] • Actuator check • Connector check (J983, J956, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF read-in sensor-1	
DSDF control PC board	

[E775] Original remaining at the DSDF read-in sensor-2 jam

Classification	Error content
DSDF jam	The DSDF read-in sensor-2 remains turned ON.

Check item	Measures
Pre-read roller-2	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF read-in sensor-2	• Sensor check Input check: FS-03-[F2]ON/[6]/[D] • Connector check (J984, J956, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Pre-read roller-2	
DSDF read-in sensor-2	
DSDF control PC board	

[E777] Original remaining at the DSDF original exit sensor jam

Classification	Error content
DSDF jam	The DSDF original exit sensor remains turned ON.

Check item	Measures
DSDF original exit roller	Check the condition of the roller. If it has been stained, clean it. If it has deteriorated, replace it.
DSDF original exit sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[E] • Actuator check • Connector check (J985, J957, CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF original exit roller	
DSDF original exit sensor	
DSDF control PC board	

[E860] DSDF original jam access cover open jam, DSDF shading sheet HP sensor abnormality

Classification	Error content
DSDF jam	The DSDF original jam access cover has become open during DSDF operation. The paper exit motor has been driven and the DSDF shading sheet HP sensor has not been turned ON within a specified time. Details: If this problem has occurred at the start of a duplex copying or scanning job or at the end of a copying or scanning job, the cover may have opened as a result. The home position detection is carried out by the DSDF shading sheet HP sensor when the cover or the DSDF is closed, the power is turned ON, during the initial operation or at the end of a job. This home position detection checks that the DSDF shading sheet HP sensor is turned ON within a specified time after the DSDF exit motor has started driving. If the home position cannot be detected when the cover or the DSDF is closed or the power is turned ON, a cover open error will be displayed. If the home position cannot be detected during the initial operation or at the end of a job, a DSDF shading sheet HP sensor abnormality will occur and this error code will be displayed.

Check item	Measures
When paper misfeeding has occurred at the start or end of the original transportation	
DSDF lower cover	Check that the cover is closed appropriately.
DSDF lower cover opening/ closing detection sensor	• Sensor check Input check: FS-03-[F2]ON/[6]/[C] • Actuator check • Connector check (J980, J953, CN75) • Harness check • Replace the sensor.
DSDF lower cover interlock switch	• Check that the switch is working properly. • Connector check • Harness check • Replace the switch.
DSDF original exit motor	• Check that the motor is working. If yes, check the DSDF shading sheet HP sensor. Output check: FS-03-284 • Connector check (J991, CN77) • Harness check • Replace the motor.
DSDF shading sheet HP sensor	• Sensor check Input check: FS-03-[F2]ON/[6]/[A] • Actuator check • Connector check (CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.
When paper misfeeding has occurred during original transportation	
DSDF upper cover DSDF lower cover Front cover (MFP)	Check that the cover is closed appropriately.
DSDF upper cover opening/ closing detection sensor	• Sensor check Input check: FS-03-[F2]ON/[7]/[C] • Actuator check • Connector check (J981, J954, CN75) • Harness check • Replace the sensor.

Check item	Measures
DSDF upper cover interlock switch	• Check that the switch is working properly. • Connector check • Harness check • Replace the switch.
DSDF lower cover opening/ closing detection sensor	• Sensor check Input check: FS-03-[F2]ON/[6]/[C] • Actuator check • Connector check (J980, J953, CN75) • Harness check • Replace the sensor.
DSDF lower cover interlock switch	• Check that the switch is working properly. • Connector check • Harness check • Replace the switch.
DSDF original exit motor	• Check that the motor is working. If yes, check the DSDF shading sheet HP sensor. Output check: FS-03-284 • Connector check (J991, CN77) • Harness check • Replace the motor.
DSDF shading sheet HP sensor	• Sensor check Input check: FS-03-[F2]ON/[6]/[A] • Actuator check • Connector check (CN75) • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check (CN74) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF lower cover opening/closing detection sensor	
DSDF lower cover interlock switch	
DSDF original exit motor	
DSDF shading sheet HP sensor	
DSDF control PC board	
DSDF upper cover opening/ closing detection sensor	
DSDF upper cover interlock switch	

[E870] DSDF open jam

Classification	Error content
DSDF jam	The DSDF has become open during DSDF operation.

Check item	Measures
Platen sensor-1	• Sensor check Input check: FS-03-[F2]ON/[5]/[C] • Actuator check • Connector check • Harness check • Replace the sensor.

Check item	Measures
Platen sensor-2	• Sensor check Input check: FS-03-[F2]ON/[5]/[G] • Actuator check • Connector check • Harness check • Replace the sensor.
DSDF control PC board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Platen sensor-1	
Platen sensor-2	
DSDF control PC board	

7.2.3 Service call

[C550] Communication error between the scanner and the DF

Classification	Error content
DSDF abnormality	Communication cannot be made properly between the scanner and the DF.

Check item	Measures
HDMI cable	Check that the HDMI cable is connected properly.
DSDF I/F board	• PC board check • Connector check (CN89) • Harness check • Replace the PC board.
DSDF board	• PC board check • Connector check (CN71) • Harness check • Replace the PC board.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
HDMI cable	
DSDF I/F board	
DSDF board	
SYS board	

[C551] DF model detection abnormality

Classification	Error content
DSDF abnormality	An incorrect DF is installed in the MFP.

Check item	Measures
DSDF	• Check if the installed DSDF is an option exclusively set for the model. • Replace the DSDF with the one exclusively set for the model.
DSDF I/F board	• PC board check • Connector check • Harness check • Replace the PC board.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF	
DSDF I/F board	
SYS board	

[C552] DSDF abnormality

Classification	Error content
DSDF abnormality	DF abnormality

Check item	Measures
DSDF control PC board	• PC board check • Connector check (CN71) • Harness check • Replace the PC board.
Firmware	• Reinstall the DSDF firmware. • Reinstall the RADF firmware.

Parts to be replaced	Remarks
DSDF control PC board	

[C553] DSDF-CCD module peak detection abnormality

Classification	Error content
DSDF abnormality	• The light source of the DSDF-CCD module does not light. • There is a detection error of the light source.

Check item	Measures
HDMI cable	Check that the HDMI cable is connected properly.
DSDF I/F board	• PC board check • Connector check (CN89) • Harness check • Replace the PC board.
DSDF control PC board	• PC board check • Connector check (CN71) • Harness check • Replace the PC board.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.
Switching regulator	• PC board check • Connector check • Harness check • Replace the PC board.
DSDF original exit motor	• Check that the motor is working. Output check: FS-03-284, FS-03-285 • Connector check • Harness check • Replace the motor.
DSDF-CCD module	• Check if the connectors of the DSDF-CCD module are connected properly. • Check if there is any abnormality in the DSDF-CCD module.

Parts to be replaced	Remarks
DSDF I/F board	
DSDF control PC board	
SYS board	
DSDF original exit motor	
DSDF-CCD module	

[C554] AFE communication error

Classification	Error content
DSDF abnormality	Communication error between the DSDF-CCD module and the SYS board (This error is determined when the problem is not solved even if the MFP is rebooted by the specified number of times.)

Check item	Measures
HDMI cable	Check that the HDMI cable is connected properly.
Flat cable	Check that the flat cable is connected properly.
DSDF I/F board	• PC board check • Connector check (CN89) • Harness check • Replace the PC board.
DSDF relay PC board	• PC board check • Connector check • Harness check • Replace the PC board.
DSDF-CCD module	• Check if the connectors of the DSDF-CCD module are connected properly. • Check if there is any abnormality in the DSDF-CCD module.
SYS board	• PC board check • Connector check (CN129) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF I/F board	
SYS board	
DSDF relay PC board	
DSDF-CCD module	
HDMI cable	
Flat cable	

[C558] EERPOM communication error (back side)

Classification	Error content
DSDF abnormality	Communication error between the DSDF-CCD module and the SYS board (The MFP will be rebooted at the first time the error occurs.)

Check item	Measures
HDMI cable	Check that the HDMI cable is connected properly.
Flat cable	Check that the flat cable is connected properly.
DSDF I/F board	• PC board check • Connector check (CN89) • Harness check • Replace the PC board.
DSDF relay PC board	• PC board check • Connector check (CN129) • Harness check • Replace the PC board.
DSDF-CCD module	• Check if the connectors of the DSDF-CCD module are connected properly. • Check if there is any abnormality in the DSDF-CCD module.

Check item	Measures
SYS board	• PC board check • Connector check (CN129) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF I/F board	
SYS board	
DSDF relay PC board	
DSDF-CCD module	
HDMI cable	
Flat cable	

[C559] ASIC communication error (back side)

Classification	Error content
DSDF abnormality	Communication error between the DSDF I/F board and the SYS board (The MFP will be rebooted at the first time the error occurs.)

Check item	Measures
DSDF I/F board	• PC board check • Connector check (CN89) • Harness check • Replace the PC board.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF I/F board	
SYS board	

[C730] DSDF EEPROM writing abnormality

Classification	Error content
DSDF abnormality	An abnormality has occurred while the data are being written in the EEPROM of the DSDF.

Check item	Measures
Adjustment	Perform DSDF read-in sensor-1 automatic adjustment.
DSDF control PC board	• PC board check • Connector check (CN75) • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF control PC board	

[C7B0] Initialization performance abnormality

Classification	Error content
DSDF abnormality	The initialization is not completed within the specified time.

Check item	Measures
Reproducibility	Turn the power OFF and then back ON to check the occurrence.
DSDF shading sheet	Clean the DSDF shading sheet.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF shading sheet	
SYS board	

[C8C0] DSDF read-in sensor-1 automatic adjustment abnormality

Classification	Error content
DSDF abnormality	An adjustment value becomes outside the specified one during DSDF read-in sensor-1 automatic adjustment.

Check item	Measures
DSDF read-in sensor-1	• Sensor check • Connector check • Harness check • Perform DSDF read-in sensor-1 adjustment manually. • Replace the sensor.
DSDF control PC board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF read-in sensor-1	
DSDF control PC board	

[C8E0] DF communication protocol abnormality

Classification	Error content
DSDF abnormality	System stop is required due to the control abnormality.

Check item	Measures
Reproducibility	Turn the power OFF and then back ON to check the occurrence.
DSDF control PC board	• PC board check • Connector check (CN71) • Harness check • Replace the PC board.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
DSDF control PC board	
SYS board	

[F115] S-VDEN ON signal time-out error
[F116] S-VDEN OFF signal time-out error

Classification	Error content
Scanning system related service call	The scanning job has not finished normally.

Check item	Measures
Reproducibility	Turn the power OFF and then back ON to check the occurrence. If it changes to another code, follow its troubleshooting procedure.
Harness, connector	• Check if the joint connector between the DSDF and the MFP is connected properly or there is any abnormality in it. • Check if there is any abnormality in the harnesses between the SYS board and the joint connector, and between the joint connector and the DSDF control PC board. • If there is any abnormality such as scratches, open-circuit and catching on the harness or its pin is deformed, replace them.
DSDF control PC board	• PC board check • Connector check (CN71) • Harness check • Replace the PC board.
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Harness	
DSDF control PC board	
SYS board	

[F117] S-VDEN ON (back side) signal time-out error
[F118] S-VDEN OFF (back side) signal time-out error

Classification	Error content
Scanning system related service call	The scanning job has not finished normally.

Check item	Measures
Reproducibility	Turn the power OFF and then back ON to check the occurrence. If it changes to another code, follow its troubleshooting procedure.
Harness, connector	• Check if the joint connector between the DSDF and the MFP is connected properly or there is any abnormality in it. • Check if there is any abnormality in the harnesses between the SYS board and the joint connector, and between the joint connector and the DSDF control PC board. • If there is any abnormality such as scratches, open-circuit and catching on the harness or its pin is deformed, replace them.
DSDF control PC board	• PC board check • Connector check (CN71) • Harness check • Replace the PC board.

Check item	Measures
SYS board	• PC board check • Connector check • Harness check • Replace the PC board.

Parts to be replaced	Remarks
Harness	
DSDF control PC board	
SYS board	

7.3 Other Errors

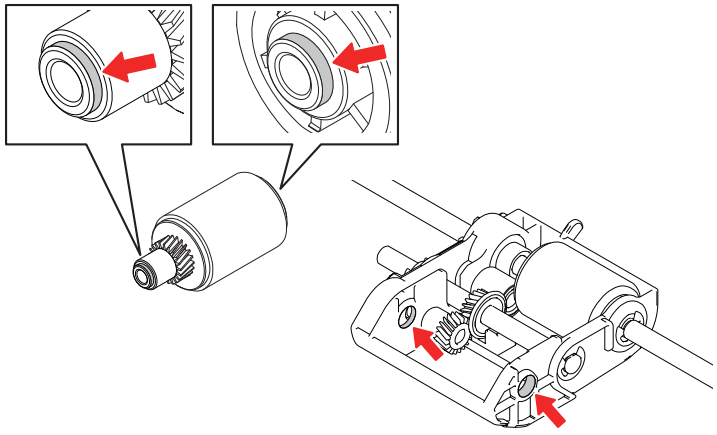
1. Misdetection of the original size in the DSDF

Classification	Error content
DSDF	Original size misdetection

Check item	Measures
DSDF tray original length sensor-1	• Check that the sensor is working properly. (Input check: FS-03-[F2]ON/[7]/[A]) • Check that the actuator is working properly. • Connector check (CN970, CN76) • Harness check • Check if the sheet attached to the sensor is warped. • Replace the sensor.
DSDF tray original length sensor-2	• Check that the sensor is working properly. (Input check: FS-03-[F2]ON/[8]/[D]) • Check that the actuator is working properly. • Connector check (CN971, CN76) • Harness check • Check if the sheet attached to the sensor is warped. • Replace the sensor.
DSDF tray original width sensor	• Check that the sensor is working properly. (Input check: FS-03-[F2]ON/[8]/[A][B][C]) • Replace the sensor.
Contact point leaf spring of the DSDF tray original width sensor	Replace the contact point leaf spring of the DSDF tray original width sensor.

Parts to be replaced	Remarks
DSDF tray original length sensor-1	
DSDF tray original length sensor-2	
DSDF tray original width sensor	
Contact point leaf spring of the DSDF tray original width sensor	

2. Multiple originals are transported simultaneously

Check item	Measures
Original	Flatten and reload an original if it is curled abnormally or is folded.
	When an original beyond the specifications is copied or scanned, place it on the original glass.
DSDF separation roller	If the DSDF separation roller is dirty, clean it with alcohol.
	Replace the DSDF separation roller.
DSDF pickup roller, DSDF pickup unit	Take off the pickup roller. Clean it and its shaft holes in the DSDF pickup unit.  **Fig. 7-4**

Check item	Measures
Metal shaft, Gears	• Take off the DSDF feed roller, DSDF pickup roller, gears and DSDF pickup shaft. Clean the holes in the 3 gears and the metal shaft to remove paper dust.

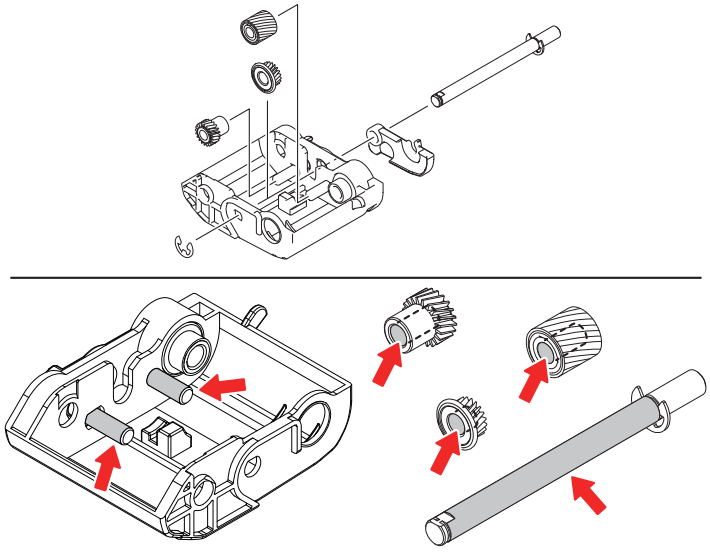


Fig. 7-5

Remarks: Disassembly procedure

(1) Take off the DSDF feed roller.
(2) Take off the DSDF pickup roller.
(3) Remove the E-ring [1].
(4) Pull out the DSDF pickup shaft [2].
(5) Take off 3 gears.

• After they are cleaned, apply white grease (Molykote EM-30L) to the metal shaft and the holes (indicated in the figure) retaining the shaft of the DSDF pickup roller in the DSDF pickup unit.

Notes:

Pay attention not to apply grease to the tooth surface of the gears.

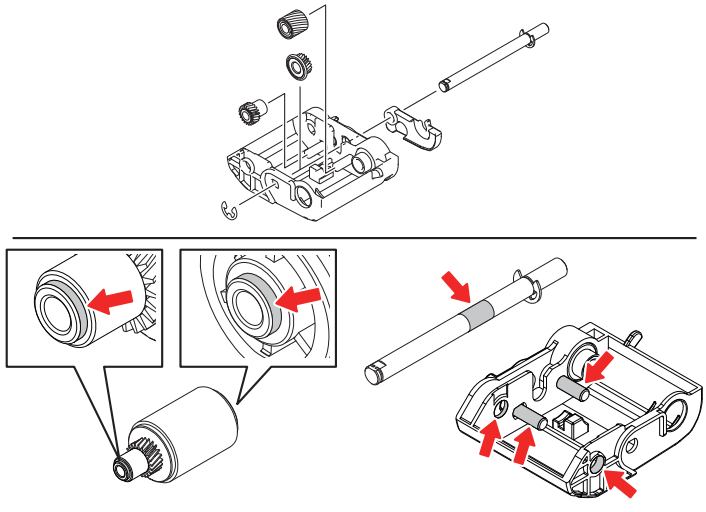
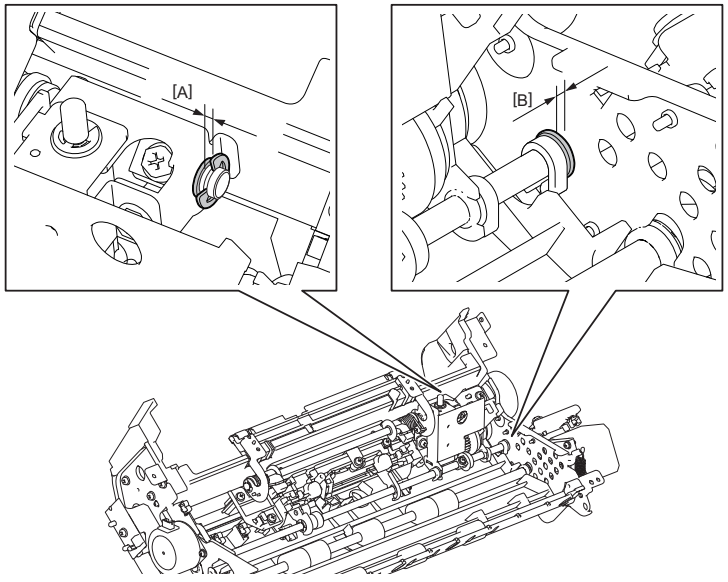
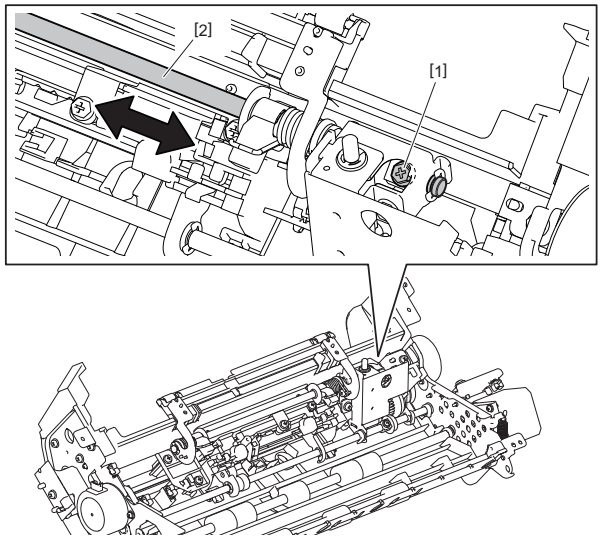
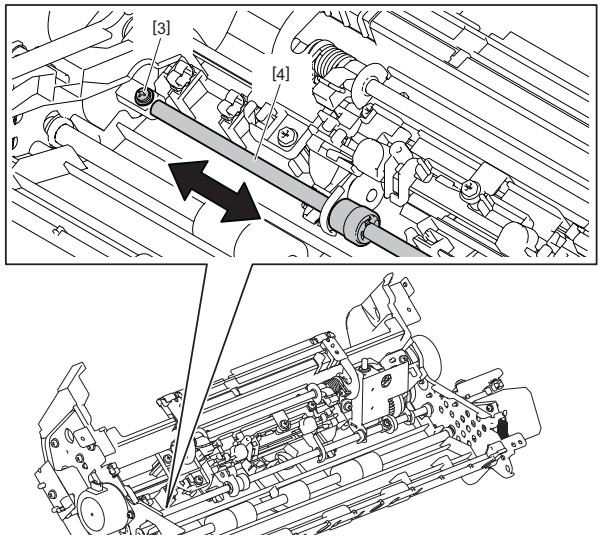


Fig. 7-6

Check item	Measures
Dimension of each shaft of the intermediate transport guide	Take off the intermediate transport guide to check the following dimensions. • Elevator shaft: Dimension A between the E-ring and the bushing is 1 mm or more. • DSDF separation roller drive shaft: Dimension B between the bushing and the frame is 0.3mm or more.  **Fig. 7-7** If the dimensions are less than the above ones, perform the adjustment according to the following procedure. • Arrange the dimension A between the E-ring and the bushing on the elevator shaft so that it becomes 1 mm or. (1) Loosen the screw [1] and move the elevator shaft [2]. (2) Tighten the screw [1].  **Fig. 7-8**

7

Check item	Measures
Dimension of each shaft of the intermediate transport guide	• Arrange the dimension B between the bushing and the frame on the DSDF separation roller drive shaft so that it becomes 0.3mm or. (1) Loosen the screw [3] and move the DSDF separation drive shaft [4]. (2) Tighten the screw [3].  **Fig. 7-9**

3. Original is not transported to registration roller

Check item	Measures
Original	Flatten and reload an original if it is curled abnormally or is folded.
	When an original beyond the specifications is copied or scanned, place it on the original glass.
DSDF pickup roller	If the DSDF pickup roller is dirty, clean it with alcohol.
	Replace the DSDF pickup roller.
DSDF feed roller	If the DSDF feed roller is dirty, clean it with alcohol.
	Replace the DSDF feed roller.
DSDF control PC board	Check if the connector (CN79) is connected properly.
	Check if there is any abnormality in the DSDF control PC board. If there is any abnormality, replace it.
Motor	Check if the harness (purple) for the DSDF original feed motor and the harness (gray) for the DSDF registration motor are connected in reverse. If so, connect the harnesses correctly.

4. Leading edge of original is skewed

Check item	Measures
Transport roller	If the transport roller is dirty, clean it with alcohol.
Left hinge	Check that the protrusions at the front and rear sides of the bottom face of the DSDF contact the glass surface. If not, adjust the height of the left hinge so that the protrusions at the front and rear sides contact the glass surface.
Right hinge	Check that the position of the right hinge is aligned properly. If not, adjust it.
Pinch roller	Check if the springs of the pinch rollers facing each transport roller have come off. Check the installation of the pinch roller. If it is not installed properly, correct this.

Check item	Measures
Transport guide	Check the transport guide. If it has been stained or there is any foreign matter, clean it. Check the film attached to the transport guide. If it is deformed, damaged or has peeled off, replace it.

5. Edges of original and copied image are not aligned

Check item	Measures
Side guides of the original tray	Set the side guides of the original tray by aligning them with the original width.
Original scanning section	Adjust the original scanning section of the equipment.

6. Black streaks appear on copied image

Check item		Measures
Front side	ADF original glass of the equipment	Wipe the ADF original glass of the equipment with a dry cloth or clean it with a well-squeezed cloth.
	Original scanning section	Check if there is no abnormality in the original scanning section of the equipment.
Back side	DSDF-CCD module	Wipe the slit glass of the DSDF-CCD module with a dry cloth or clean it with a well-squeezed cloth.
		Check if there is no abnormality in the DSDF-CCD module.

7. “Place Doc. Feeder in the down position” is displayed.

   When “Place Doc. Feeder in the down position” is displayed even if the DSDF or its cover is closed appropriately, take the following measures.

Check item	Measures
DSDF lower cover	Check if the DSDF lower cover is closed appropriately.
DSDF exit motor	Check if the DSDF exit motor is rotating properly. If not, check the following items. • Check if the connector of the DSDF exit motor is disconnected or the harnesses are open circuited. • Check if the connector of the DSDF control PC board is disconnected or the harnesses are open circuited. • Replace the DSDF exit motor.
DSDF shading sheet	• Check if the DSDF shading sheet is working. • Check the timing belt driving the DSDF shading sheet. If the belt has come off or its tension is loosened, correct this.
DSDF shading sheet HP sensor	• Check if the DSDF shading sheet HP sensor is working properly. (Perform the input check: FS-03-[F2]ON/[6]/[A]) • Check if the connector of the DSDF shading sheet HP sensor is disconnected or the harnesses are open circuited. • Replace the DSDF shading sheet HP sensor.
DSDF control PC board	• Check if the connectors of the DSDF control PC board are disconnected or the harnesses are open circuited. • Replace the DSDF control PC board.
DSDF lower cover opening/closing detection sensor	• Check if the connectors (J980, J953 and CN75) on the DSDF control PC board are disconnected from the DSDF lower cover opening/closing detection sensor or the harnesses are open circuited. Correct if any. • Check if the DSDF lower cover opening/closing detection sensor is working properly. (Perform the input check: FS-03-[F2]ON/[6]/[C]) • Replace the DSDF lower cover opening/closing detection sensor.
DSDF lower cover interlock switch	• Check if the DSDF lower cover interlock switch is working properly. • Replace the DSDF lower cover interlock switch.

Check item	Measures
DSDF upper cover opening/closing detection sensor	• Check if the connectors (J981, J954 and CN75) on the DSDF control PC board are disconnected from the DSDF upper cover opening/closing detection sensor or the harnesses are open circuited. Correct if any. • Check if the DSDF upper cover opening/closing detection sensor is working properly. (Perform the input check: FS-03-[F2]ON/[7]/[C]) • Replace the DSDF upper cover opening/closing detection sensor.
DSDF upper cover interlock switch	• Check if the DSDF upper cover interlock switch is working properly. • Replace the DSDF upper cover interlock switch.
Platen sensor-1	• Check that platen sensor-1 works properly. Platen sensor-1 works properly if the exposure lamp is lit when the DSDF is opened by 25 degrees. • Check the connector. If it is not connected properly, reconnect it. • Replace platen sensor-1. (Refer to the Service Manual for MFP.)
Platen sensor-2	• Check that platen sensor-2 works properly. (Input check: FS-03-[F2]ON/[5]/[G]) • Check the connector. If it is not connected properly, reconnect it. • Replace platen sensor-2. (Refer to the Service Manual for MFP.)

Parts to be replaced	Remark
DSDF exit motor	
DSDF shading sheet HP sensor	
DSDF control PC board	
DSDF lower cover opening/closing detection sensor	
DSDF lower cover interlock switch	
DSDF upper cover opening/closing detection sensor	
DSDF upper cover interlock switch	
Platen sensor-1	
Platen sensor-2	

8. Image distortion (dogleg image)

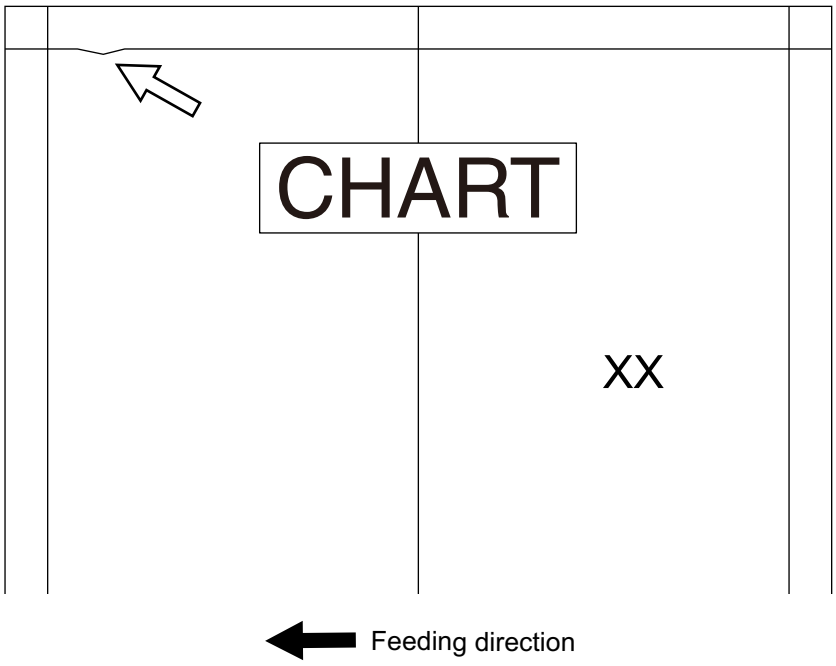


Fig. 7-10

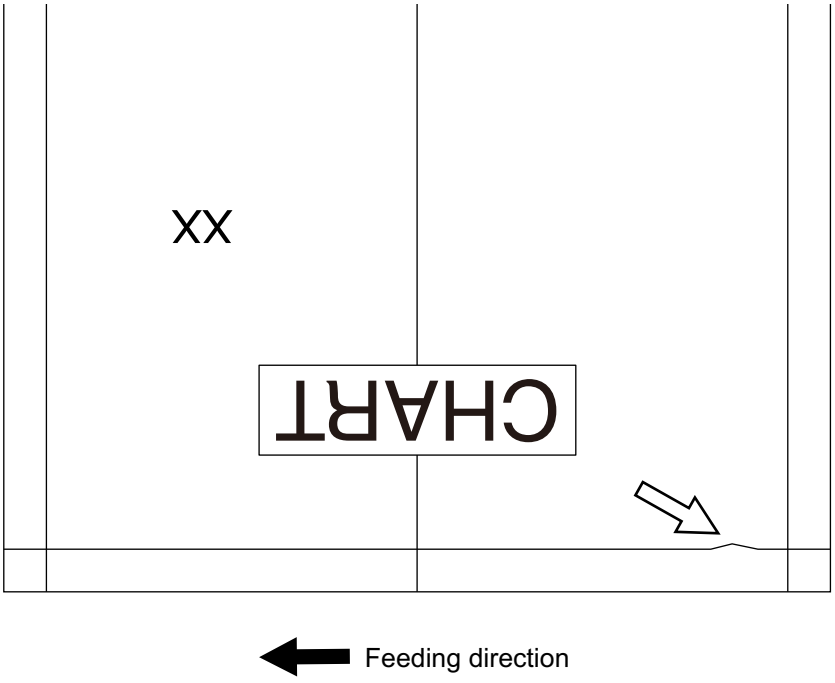
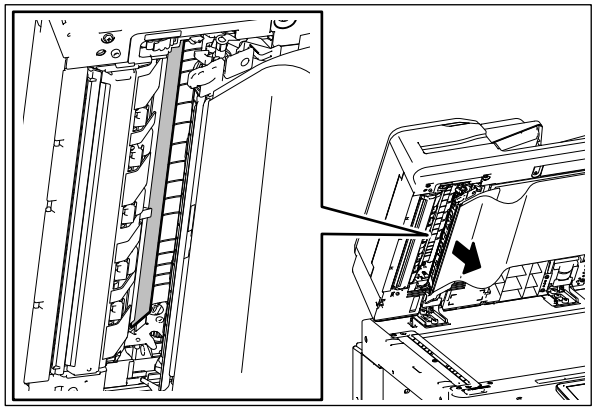
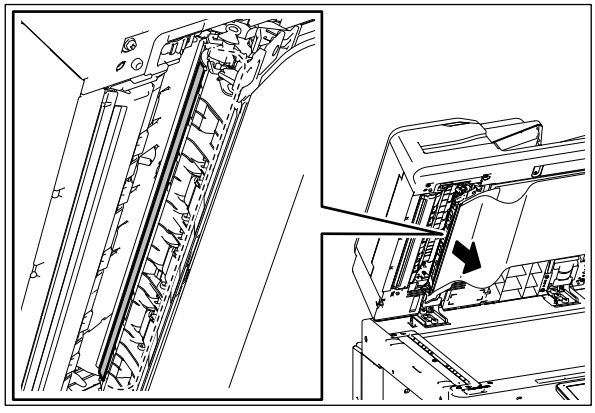


Fig. 7-11

The image distortion (dogleg image) shown upper occur on the leading or trailing edge at the back side of the copied or scanned paper while the DSDF was used.

Cause/Section	Step	Check item	Measures
DSDF	1	Adjustment of position / Adjustment of height	Check the installation condition of the DSDF and confirm that there are no abnormalities in the adjustment for its position and height. 📖 P. 6-1 "6.1 Adjustment of Position" 📖 P. 6-6 "6.2 Adjustment of Height"
	2	Adjustment of skew	Perform the adjustment of image tilting at the back side. 📖 P. 6-8 "6.3 Adjustment of Skew" **Remarks:** The phenomenon tends to be reduced if the CCD module is moved in the "+" direction. Perform the adjustment of image tilting at the front side corresponding to the tilted amount of the back side. **Notes:** • When this adjustment is performed, an entire image may be tilted. • Even if this adjustment is performed, a dogleg image will not be resolved completely.

9. White streaks appear on copied image

Check item	Measures
Slit glass of the DSDF-CCD module	Wipe the slit glass of the DSDF-CCD module with a dry cloth or clean it with a well-squeezed cloth.  **Fig. 7-12**
Shading plate	1. Perform FS-03-274 in order to move the shading plate to its cleaning position. 2. Check if there are any stains on the shading plate. If there is any foreign matter or if dust has adhered, wipe it off with a dry cloth.  **Fig. 7-13** 3. If stains cannot be removed completely, replace the shading plate.
DSDF-CCD module	Check if the DSDF-CCD module is abnormal.

8. MAINTENANCE

8.1 Periodic Maintenance

MR-4000

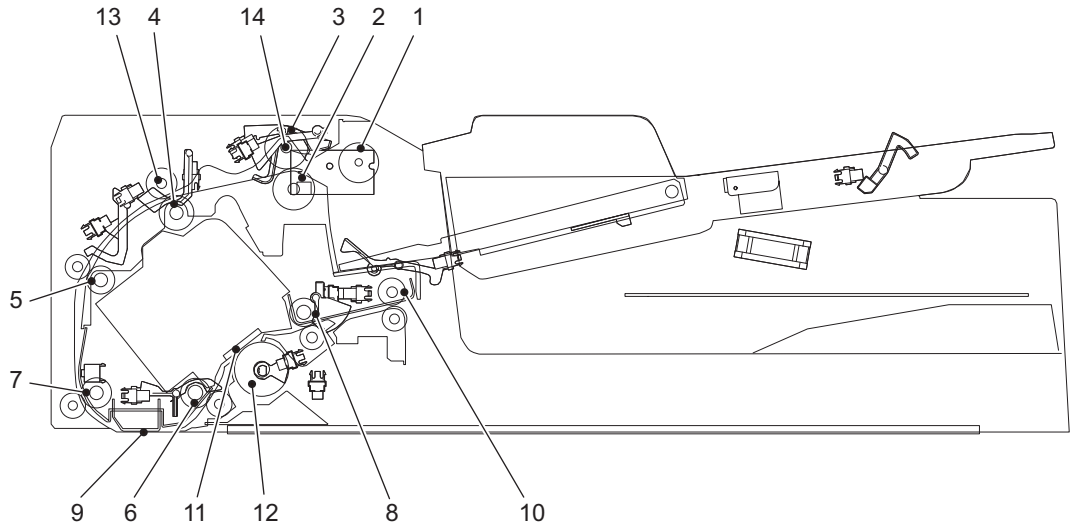


Fig.8-1

MR-4000-B

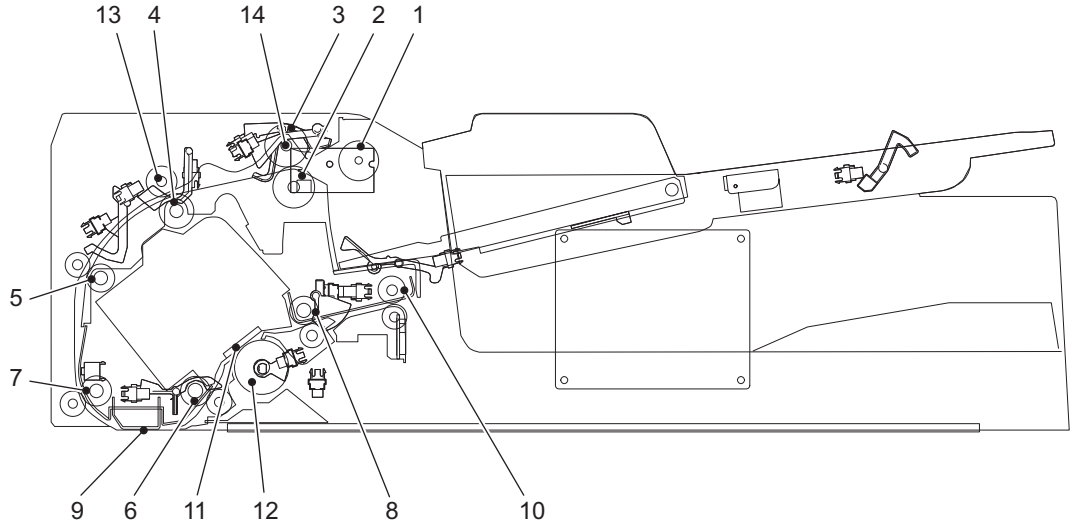


Fig.8-2

Symbols used in the checklist

Cleaning	Lubrication/Coating	Replacement	Operation check
A: Clean with alcohol B: Clean with soft pad, cloth or vacuum cleaner	SI: Silicon oil W: White grease (Molykote EM-30L)	Value: Replacement cycle (Value x 1,000) R1: Replacement R3: Replace if deformed or damaged.	O: After cleaning or replacement, confirm there is no problem

Preventive Maintenance Checklist

	Item to check	Cleaning *1	Lubrication/ Coating *1	Replacement (x1,000)	Operation check	Parts list (P-I)	Remarks
1	DSDF pickup roller	A		R1 120		1-18	*2
2	DSDF separation roller	A		R1 120		5-21	
3	DSDF feed roller	A		R1 120		1-14	
4	DSDF registration roller	A				7-14	
5	Pre-read roller-1	A				7-13	
6	Pre-read roller-2	A				7-21	
7	Post-read roller-1	A				14-12	
8	Post-read roller-2	A				11-15	
9	Reading guide	A				15-3	
10	DSDF exit roller	A				11-12	
11	DSDF-CCD original glass	B				5-22	
12	Shading plate	A				12-14	
13	Registration pinch roller shaft		W			4-2	
14	DSDF feed roller shaft		W			1-21	*3

* Page-Item (P-I) is described in the column of the Parts list.

*1: Perform cleaning / lubrication for the DSDF at the same interval as for the main equipment to which the DSDF is connected.
*2: When the DSDF pickup roller is replaced, clean its shaft holes in the DSDF pickup unit.

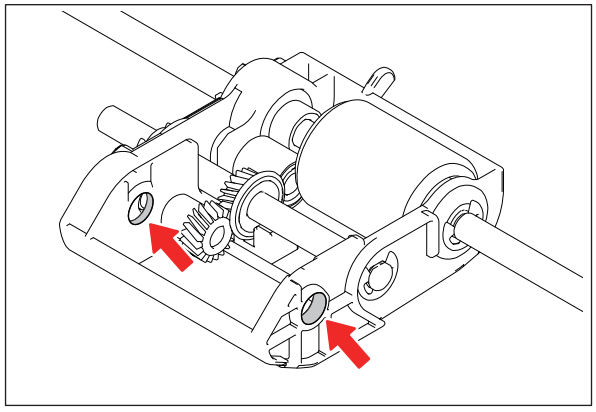


Fig.8-3

*3: Remove the DSDF pickup unit. Release the hook. Remove the lever from the DSDF pickup unit. Apply grease (Molykote EM-30L) by 0.01 cc to the edge of the shaft. (See the figure below.)

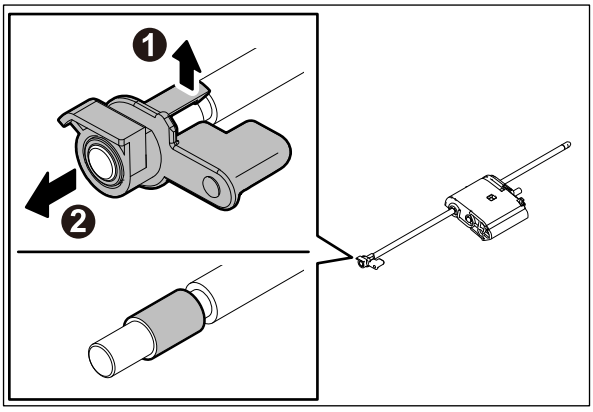


Fig.8-4

8.2 Maintenance Part List

The parts used for the maintenance of this DSDF is as follow.

No.	Item	Purpose	P-I
1	Stopper jig	Use this to press the DSDF to prevent it from becoming open.	-

8.2.1 How to attach the stopper jig

(1) Take off the DSDF front cover.
(📖 P. 4-10 "4.2.2 DSDF front cover")
(2) Take off the front cover of the scanner section in the equipment.
(3) Install the stopper jig.

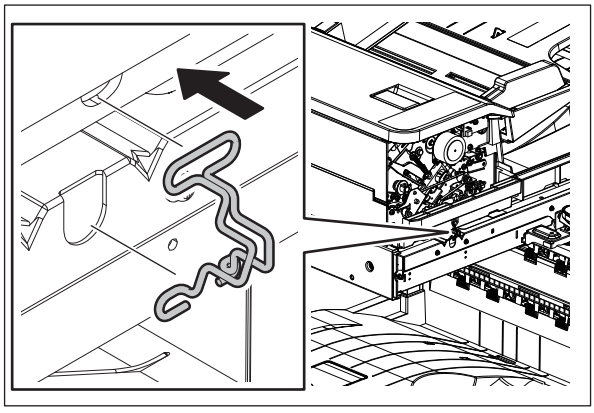


Fig.8-5

Remarks:

1. Insert the upper side of the stopper jig into the hole of the DSDF.

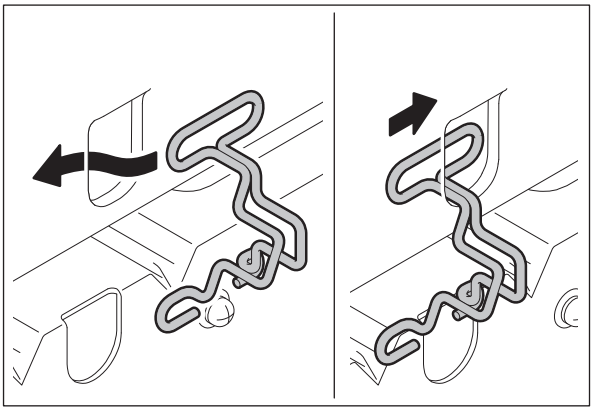


Fig.8-6

2. Hold the stopper jig and insert its lower side into the hole on the frame of the equipment.

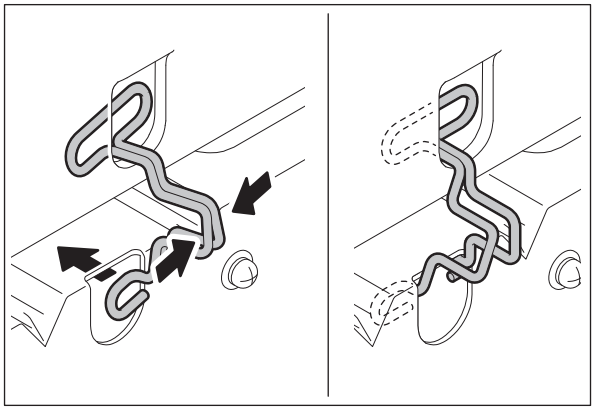


Fig.8-7

9. FIRMWARE UPDATING

For updating firmware, refer to "FIRMWARE UPDATING" in the Service Manual for MFP.

10. CIRCUIT DIAGRAM / HARNESS DIAGRAM

10.1 Harness Diagram

MR-4000

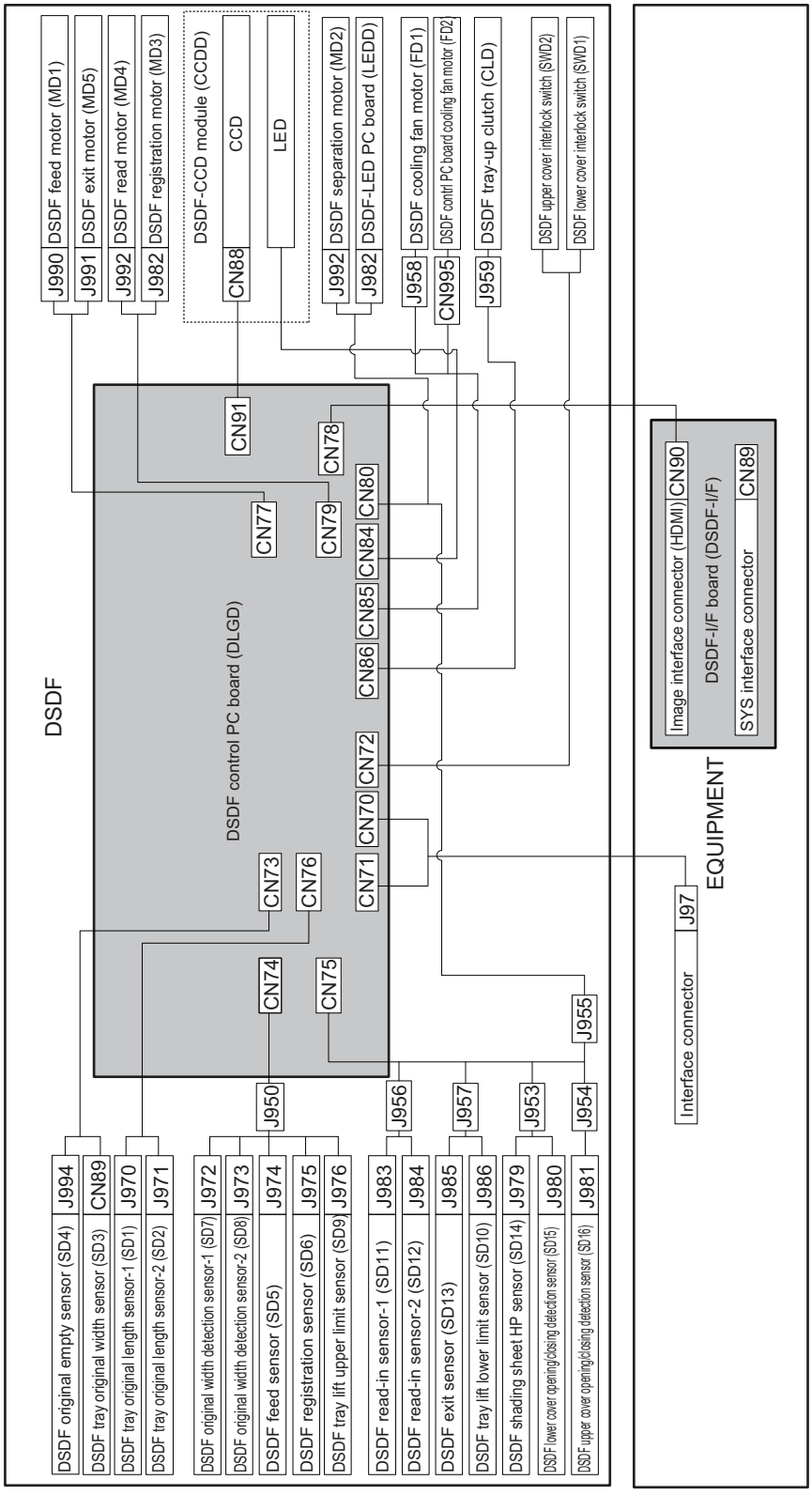


Fig.10-1

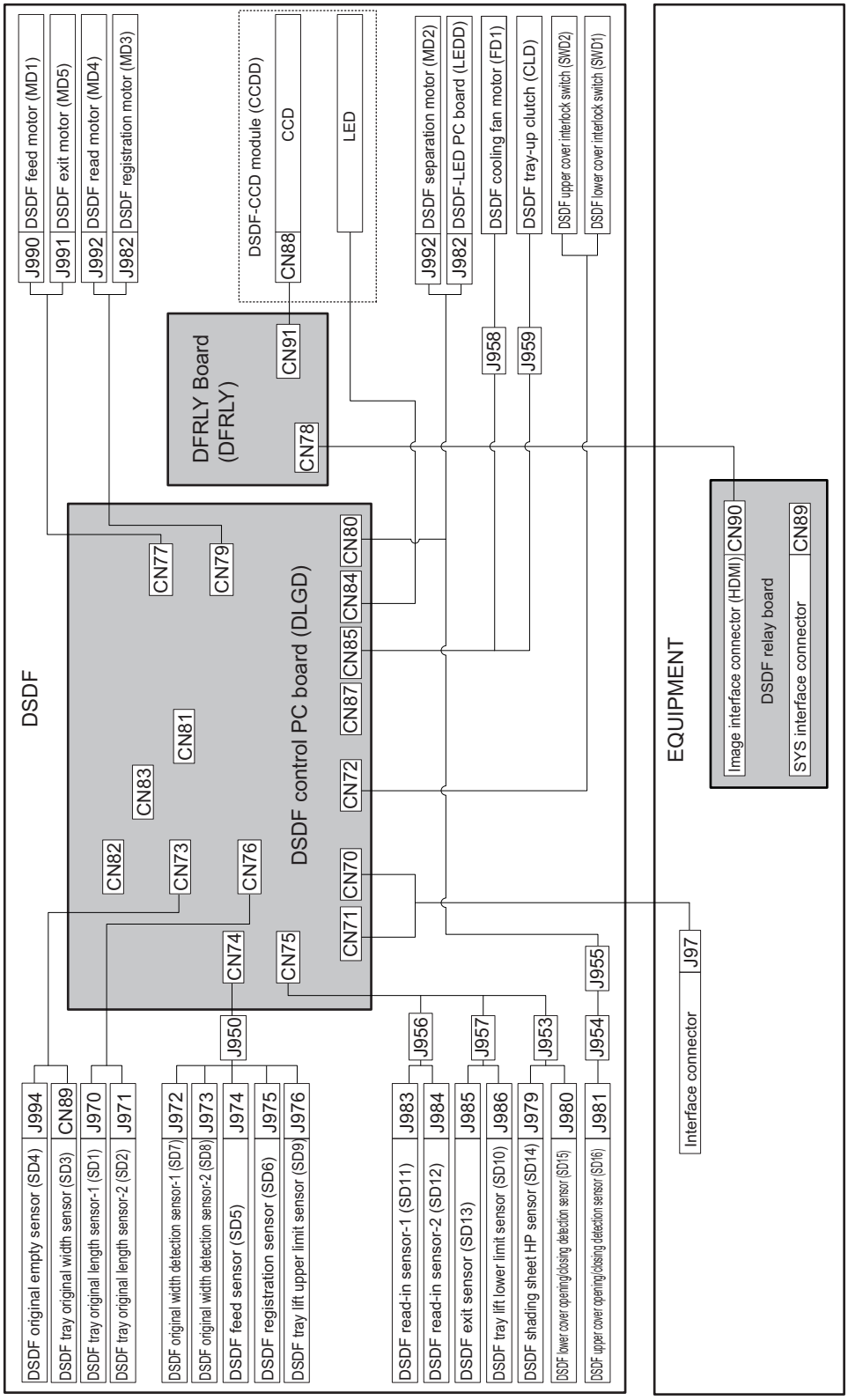


Fig.10-2

10.2 Control PC Board Circuit Diagram

1. DSDF-I/F board (MR-4000 / MR-4000-B)

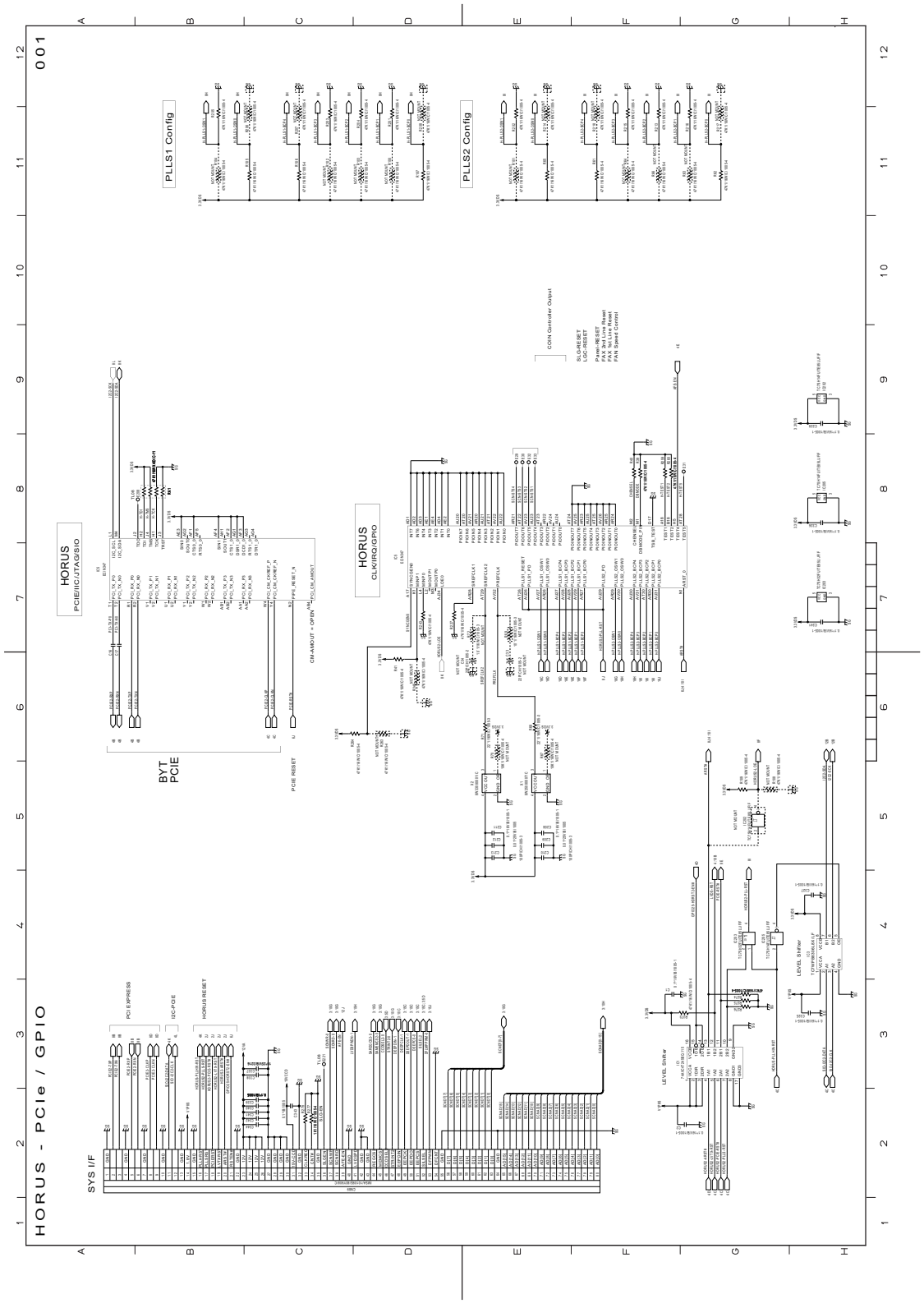


Fig.10-3

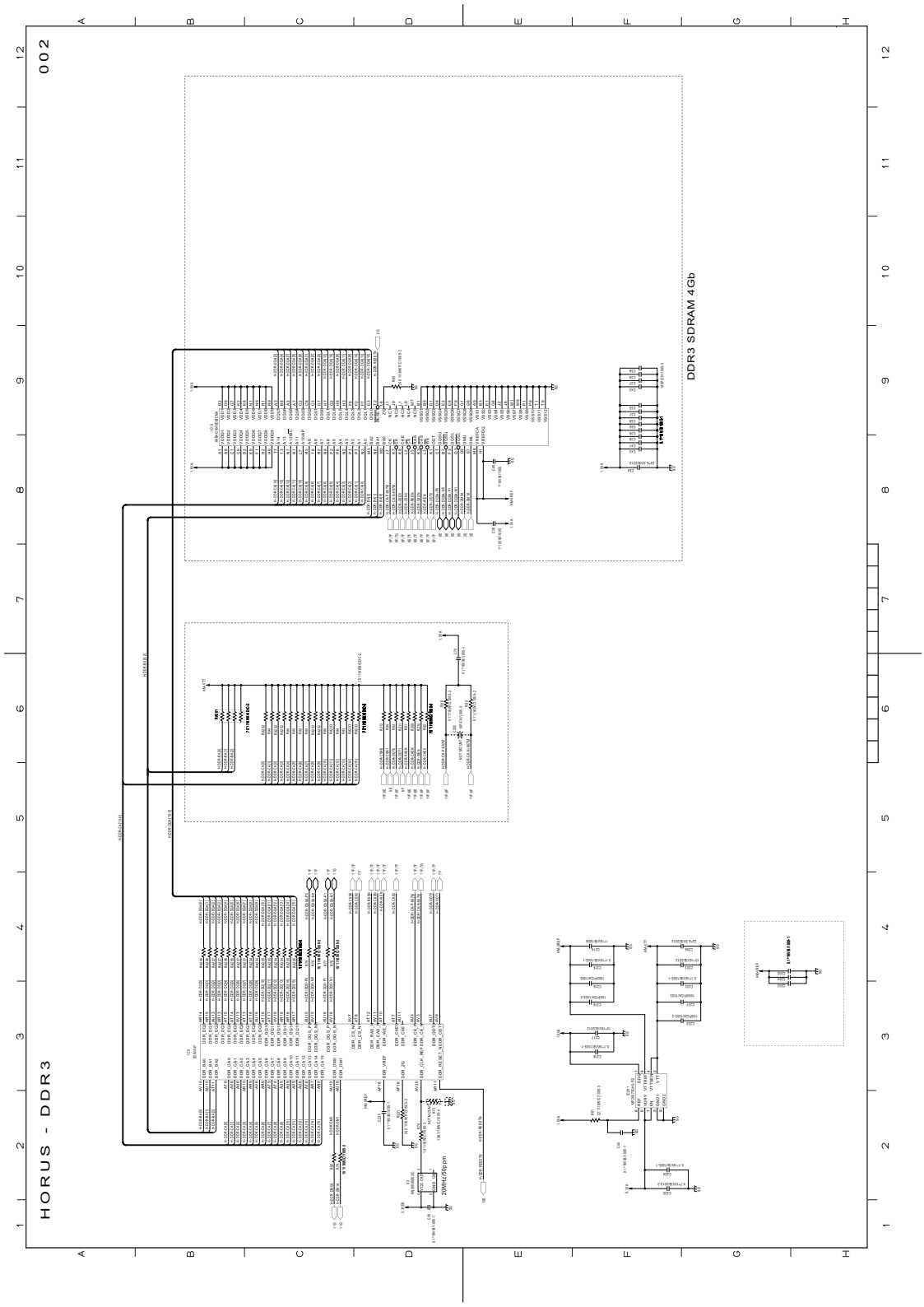


Fig.10-4

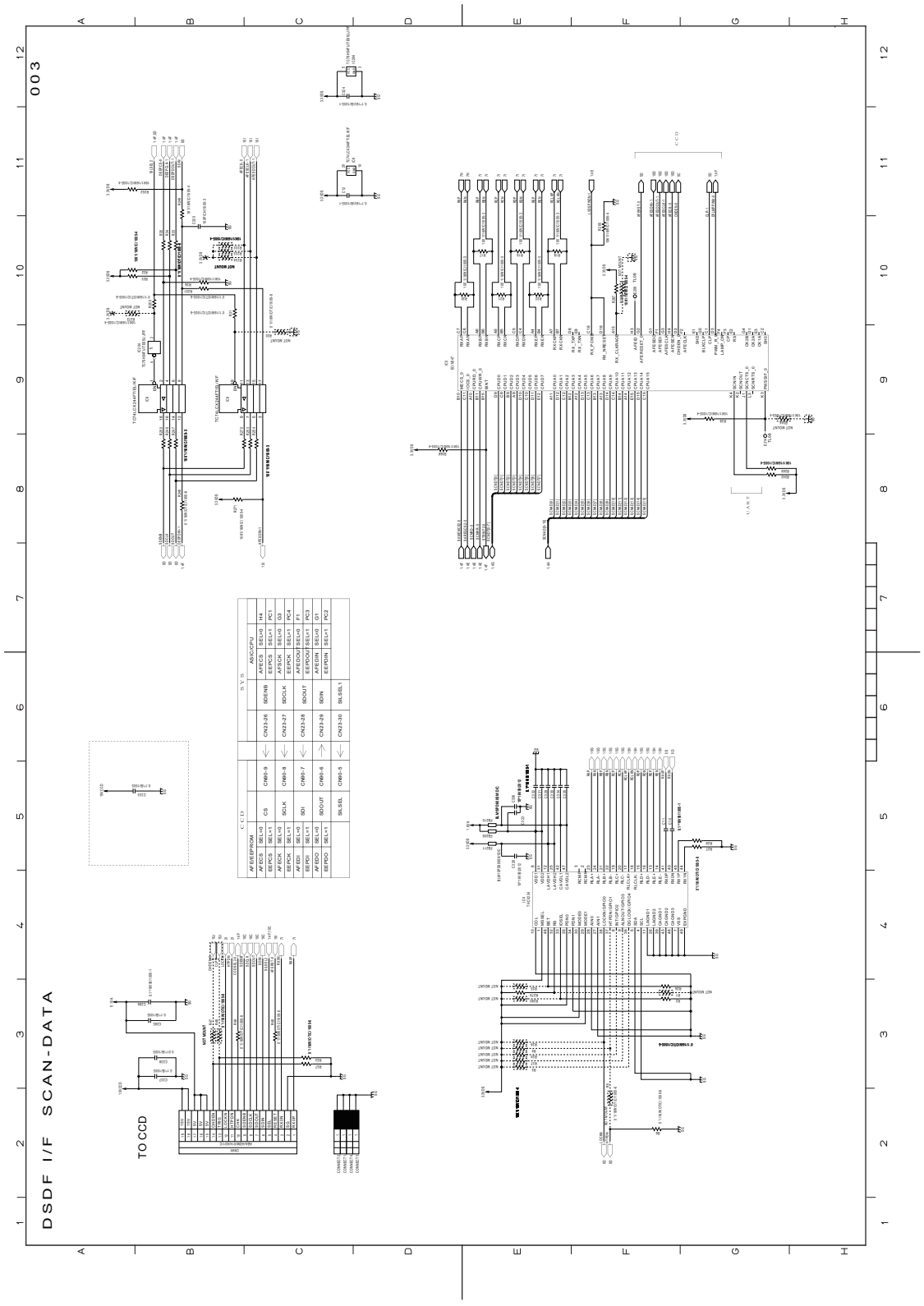


Fig.10-5

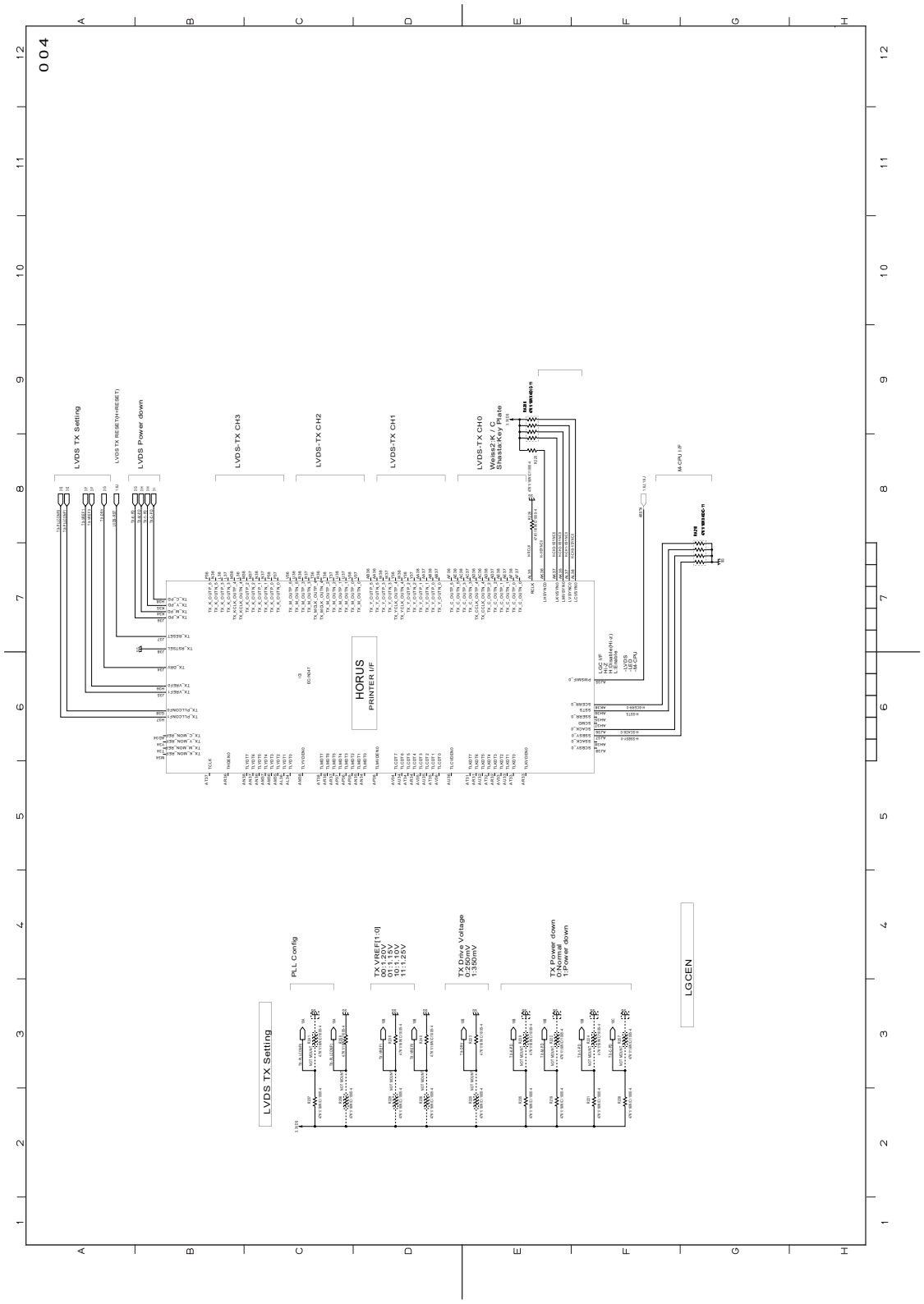


Fig.10-6

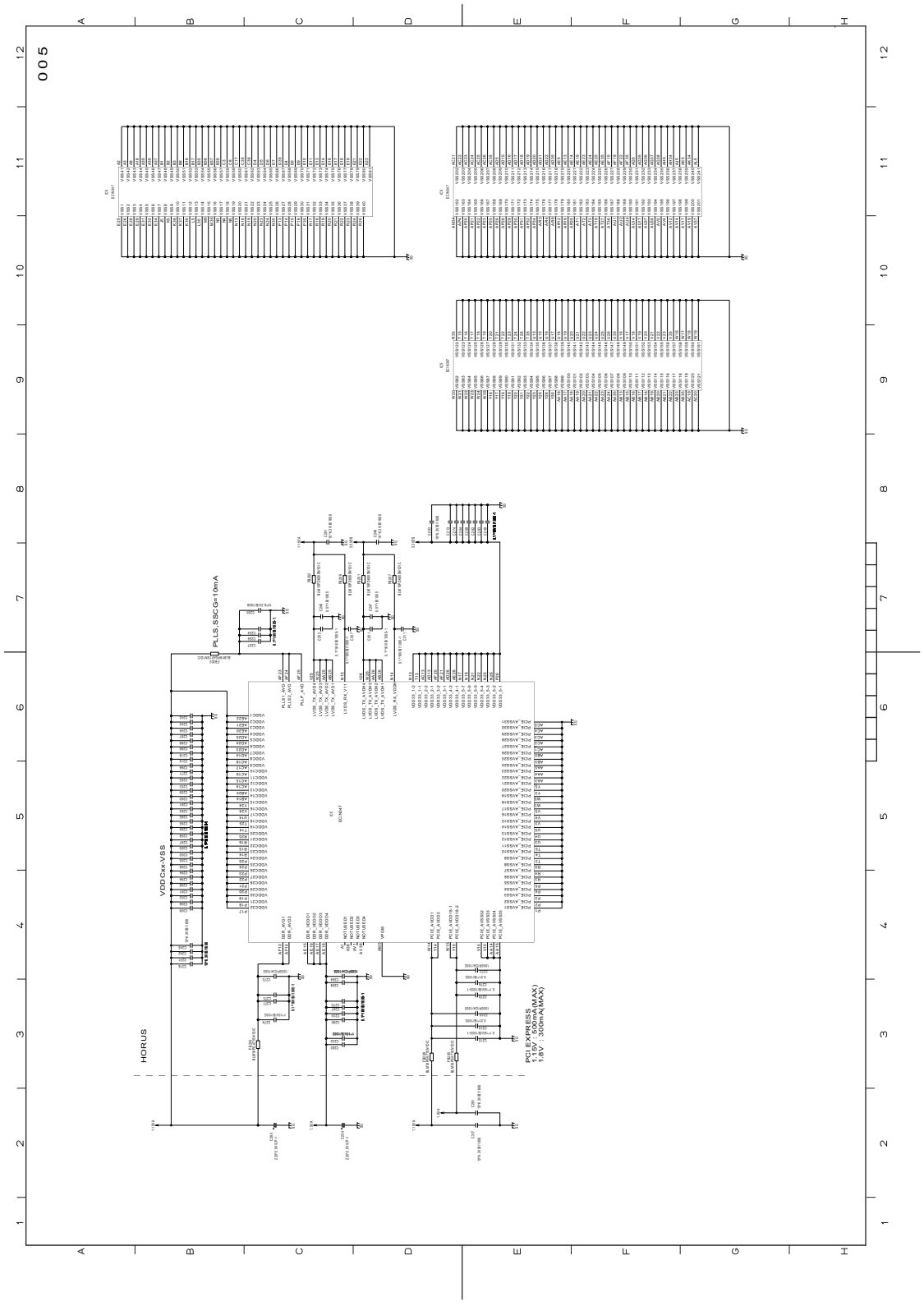


Fig.10-7

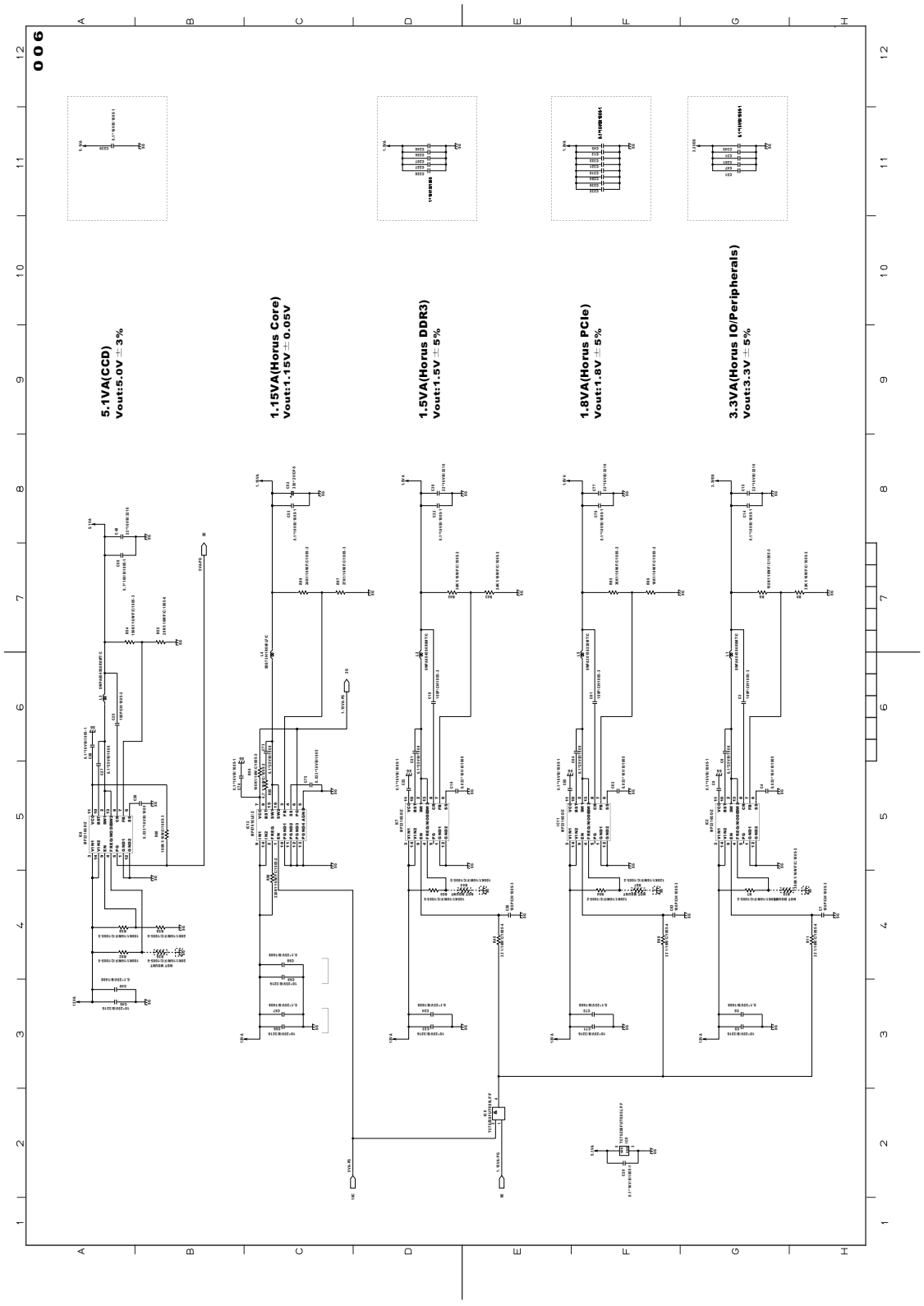


Fig.10-8

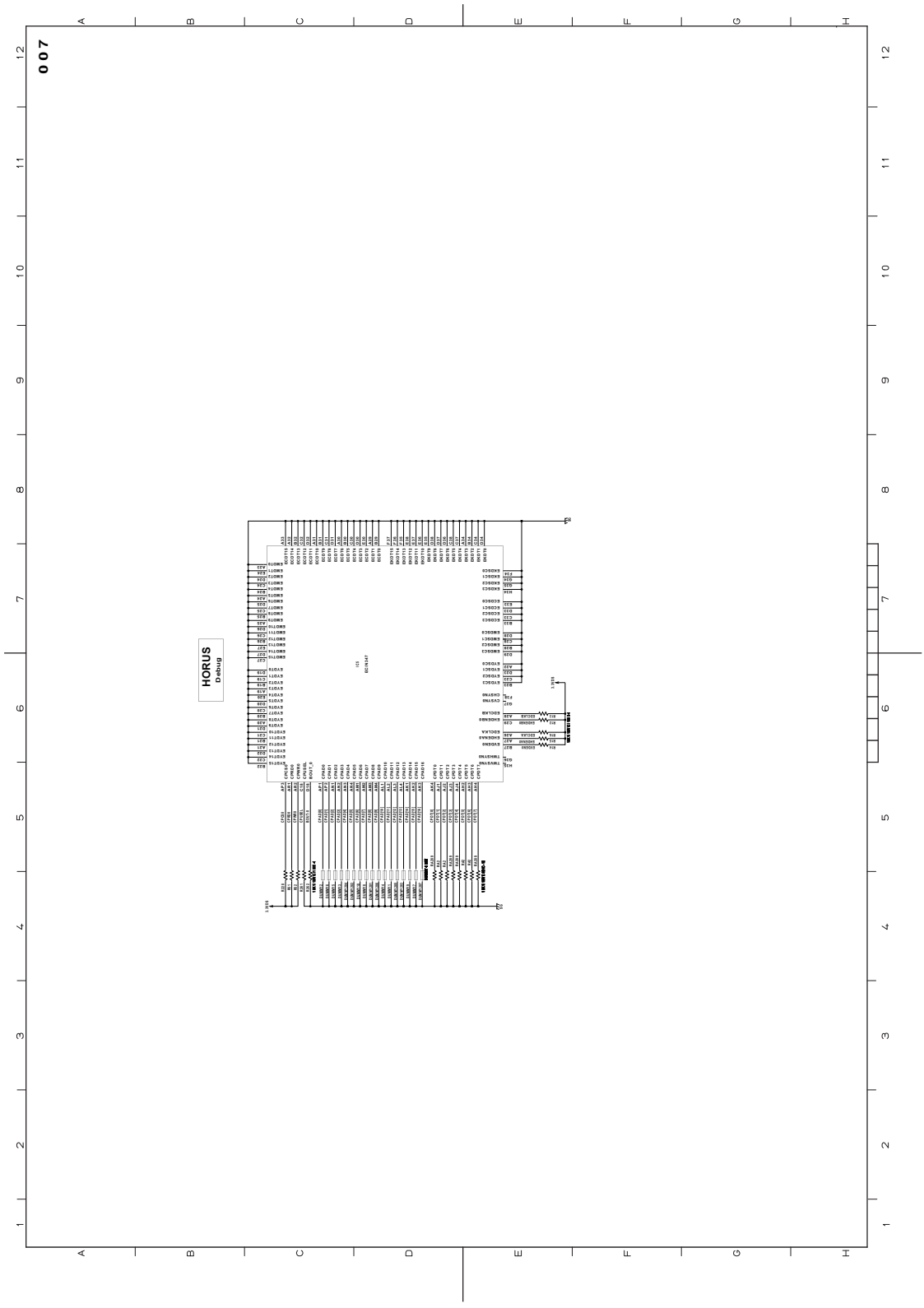


Fig.10-9

2. DSDF control PC board (MR-4000)

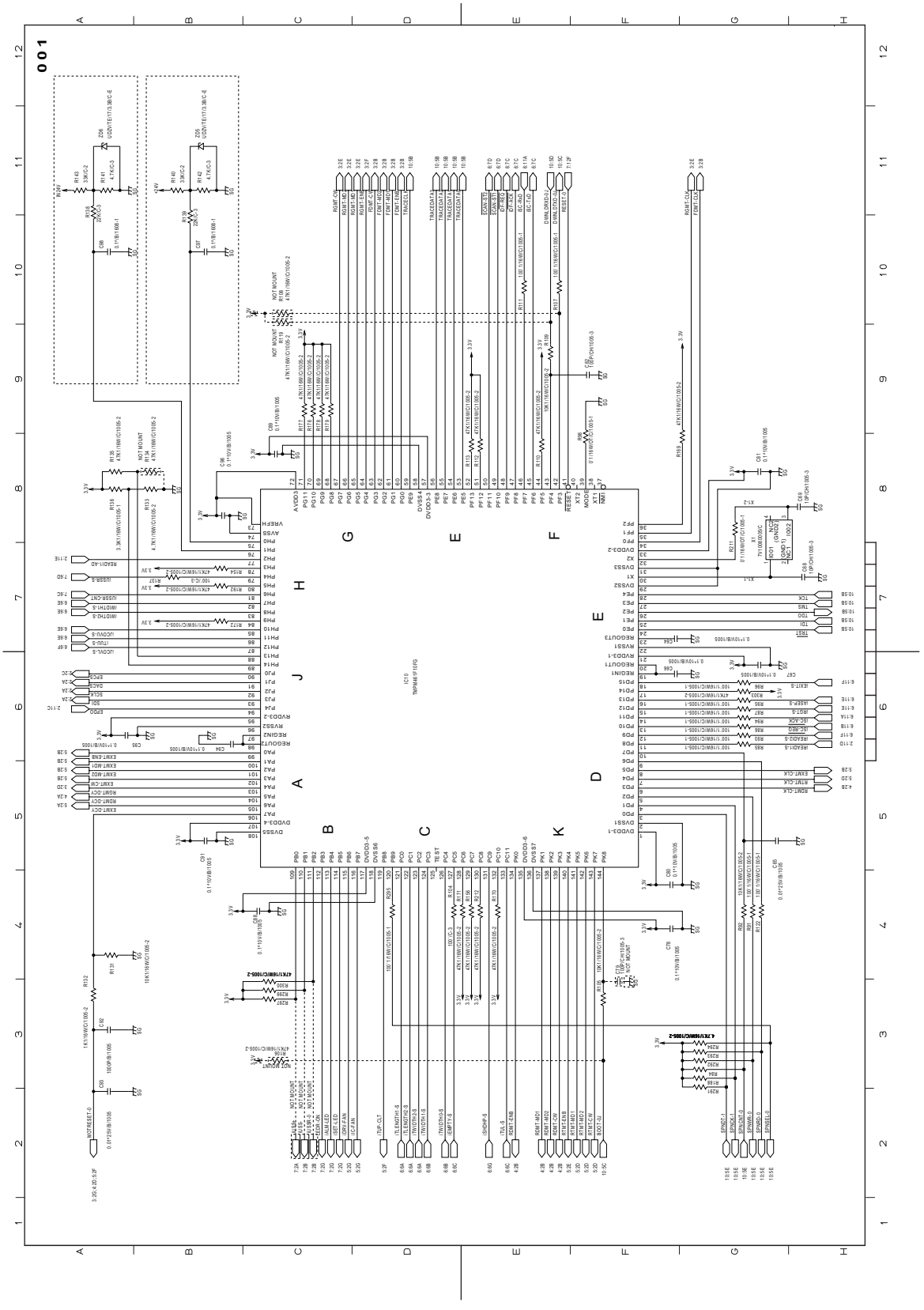


Fig.10-10

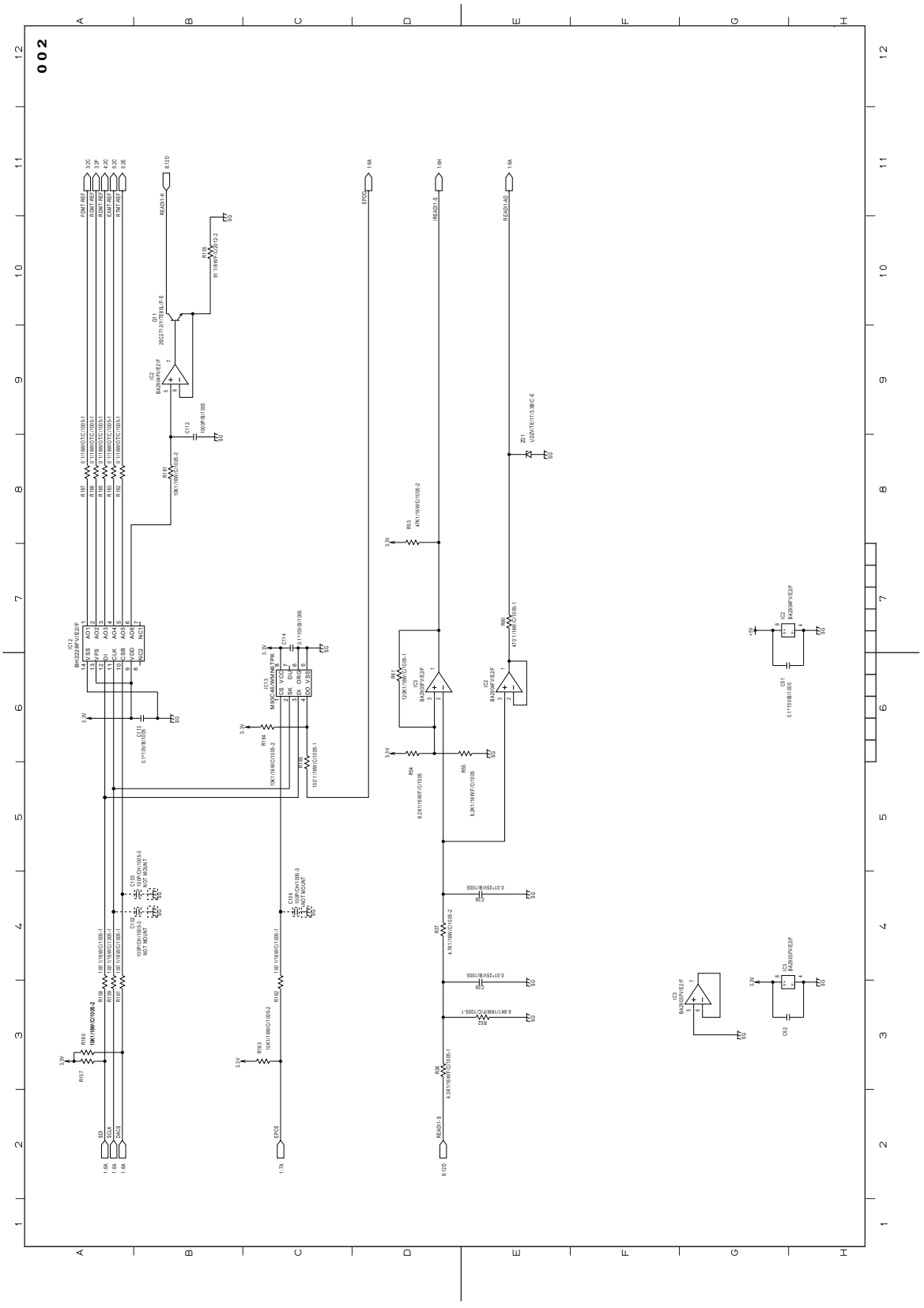


Fig.10-11

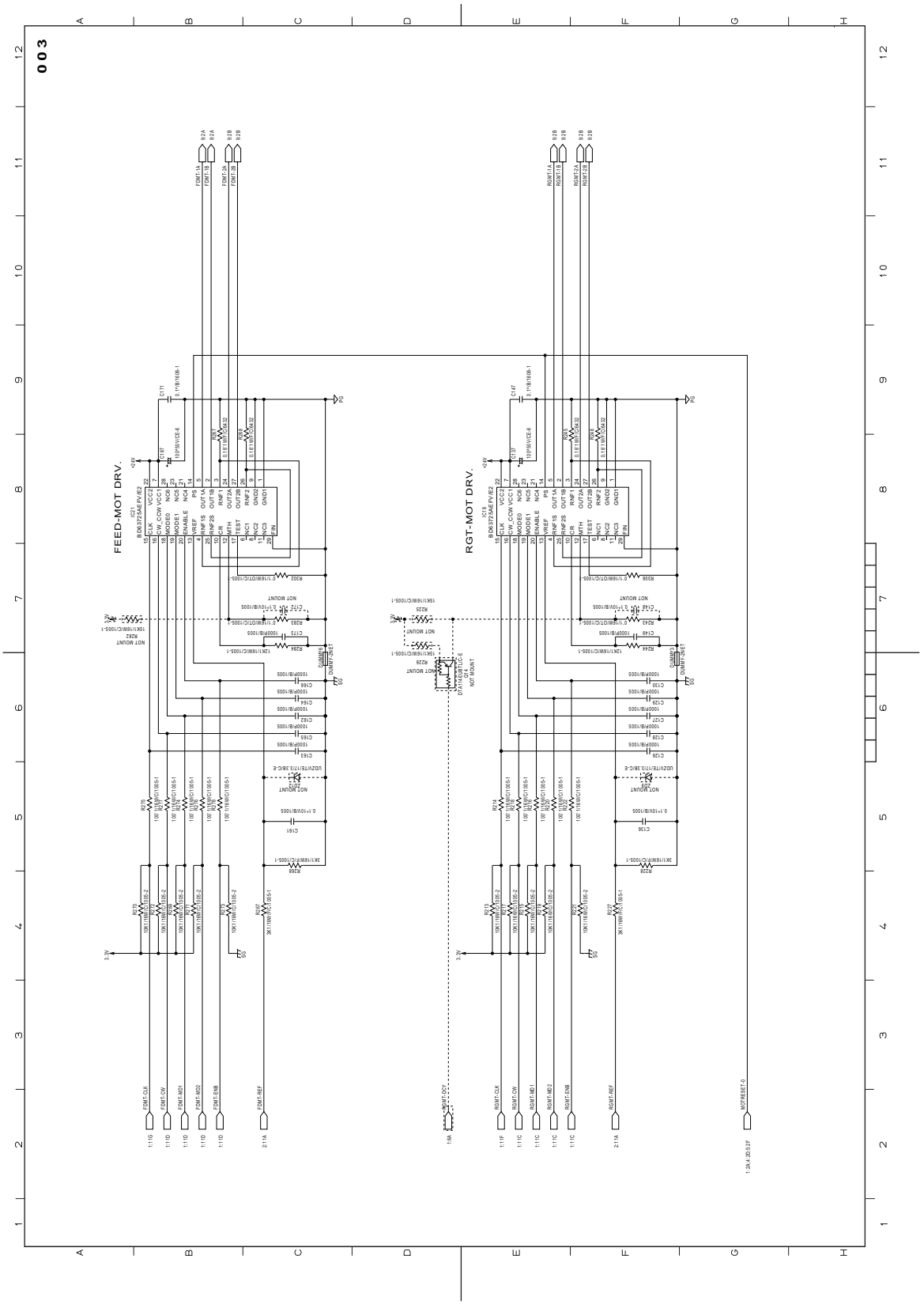


Fig.10-12

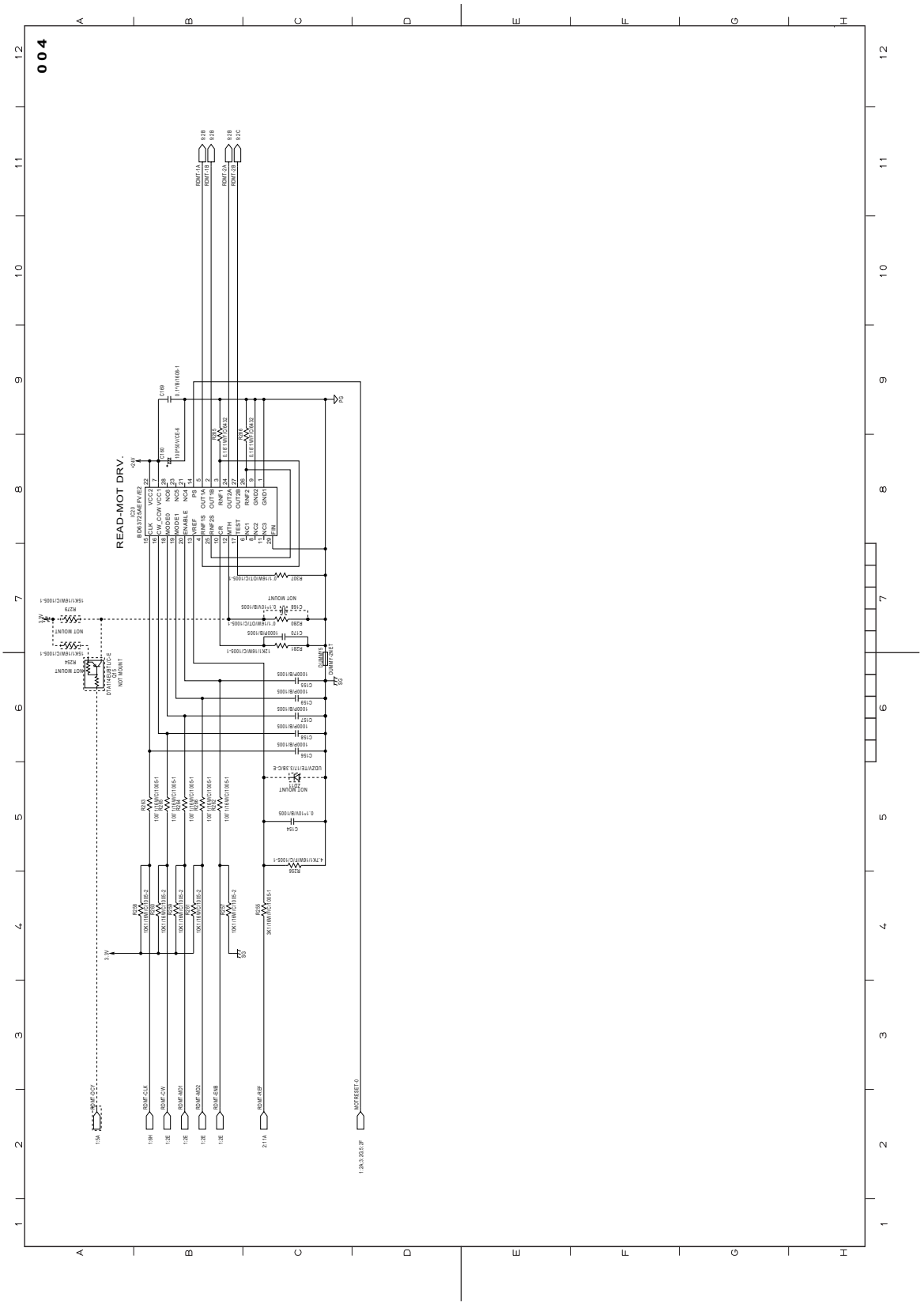


Fig.10-13

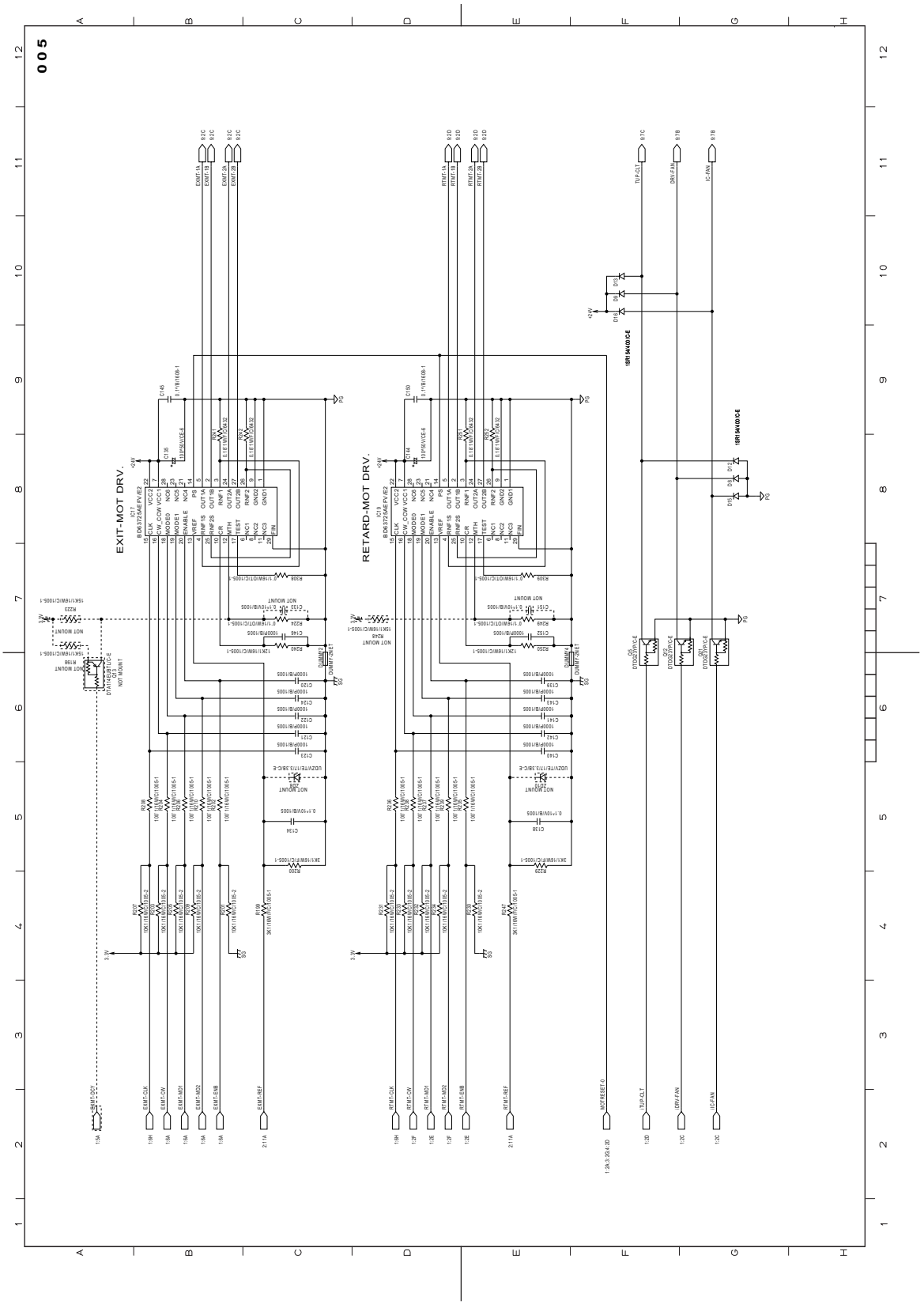


Fig.10-14

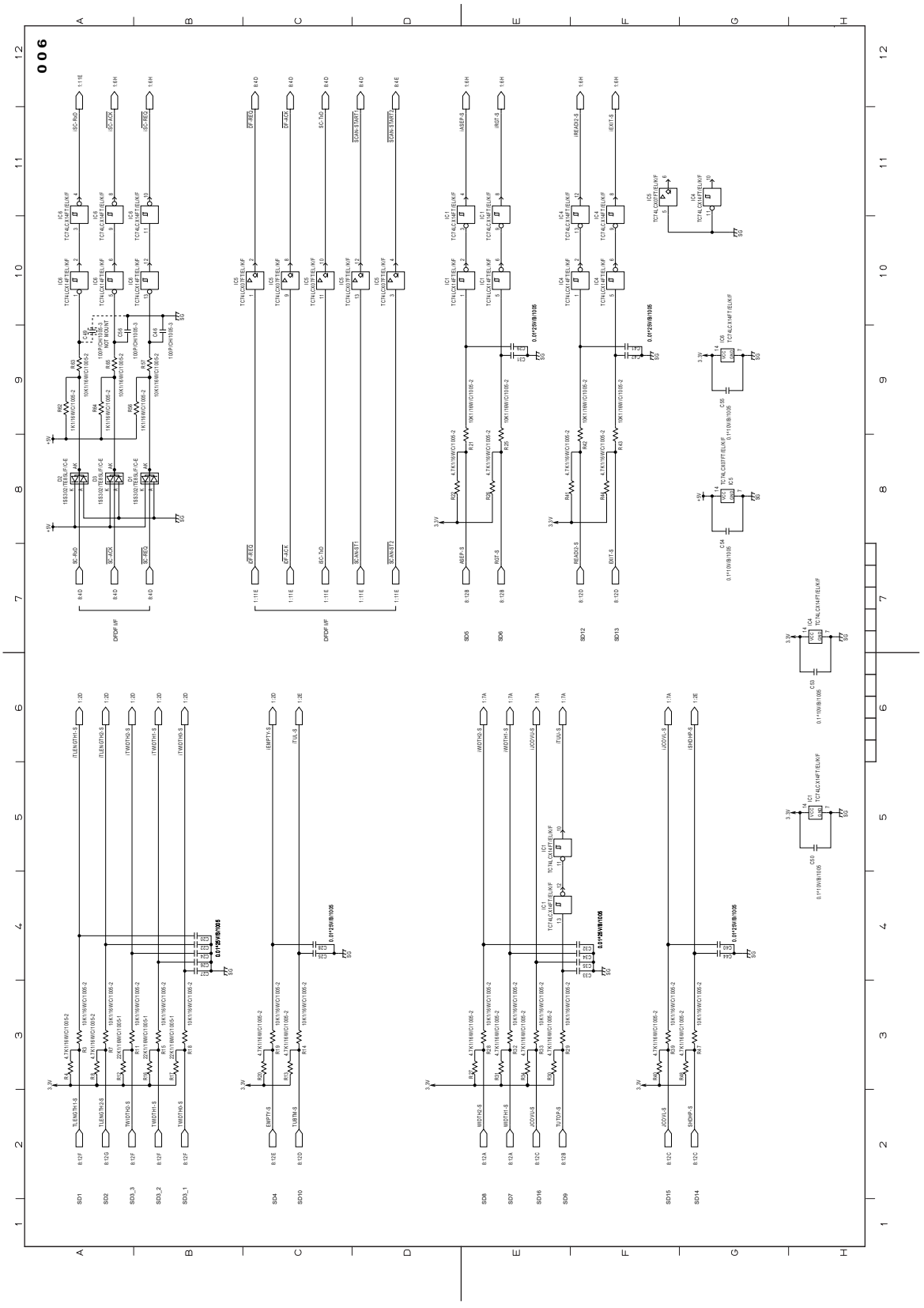


Fig.10-15

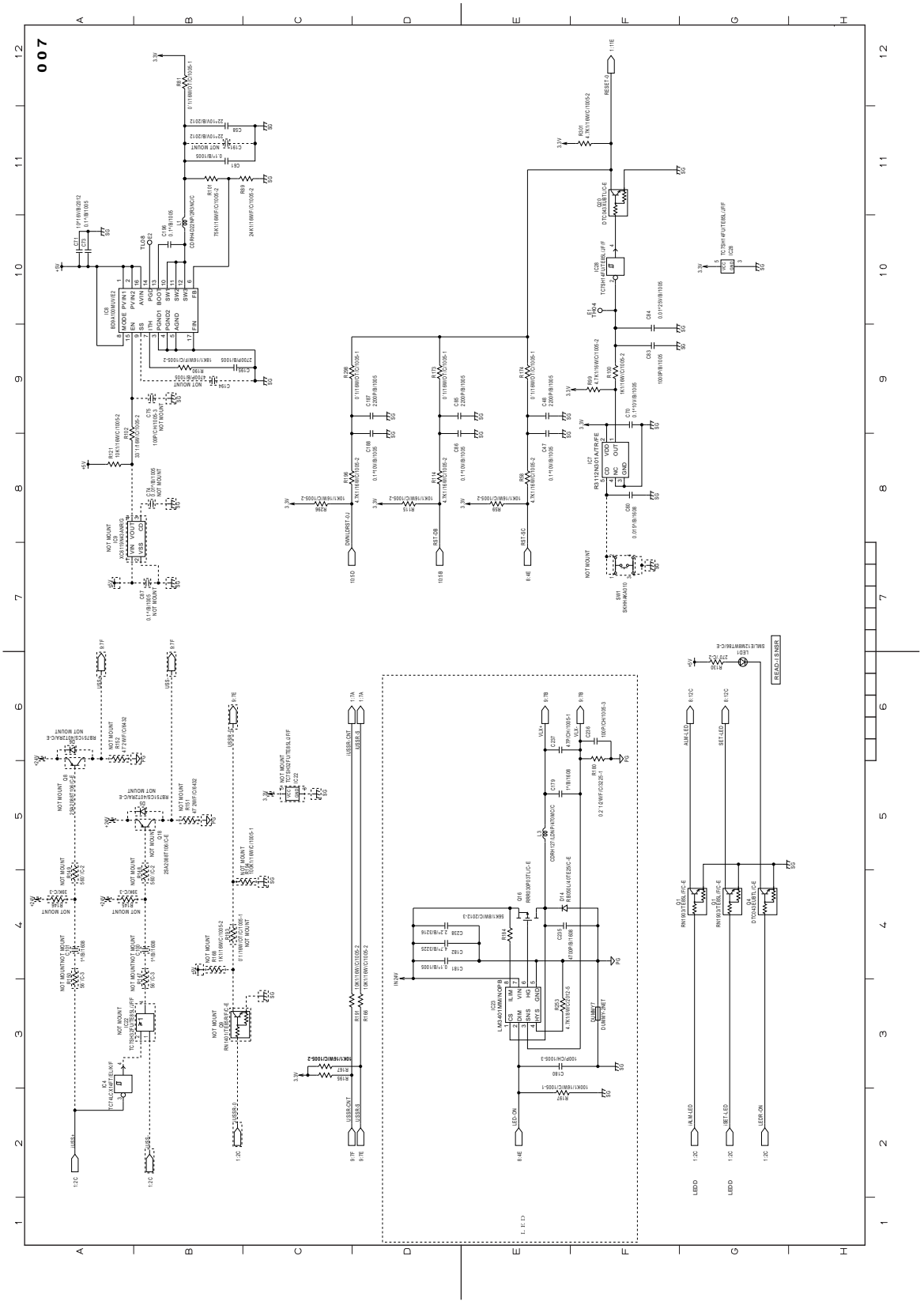


Fig.10-16

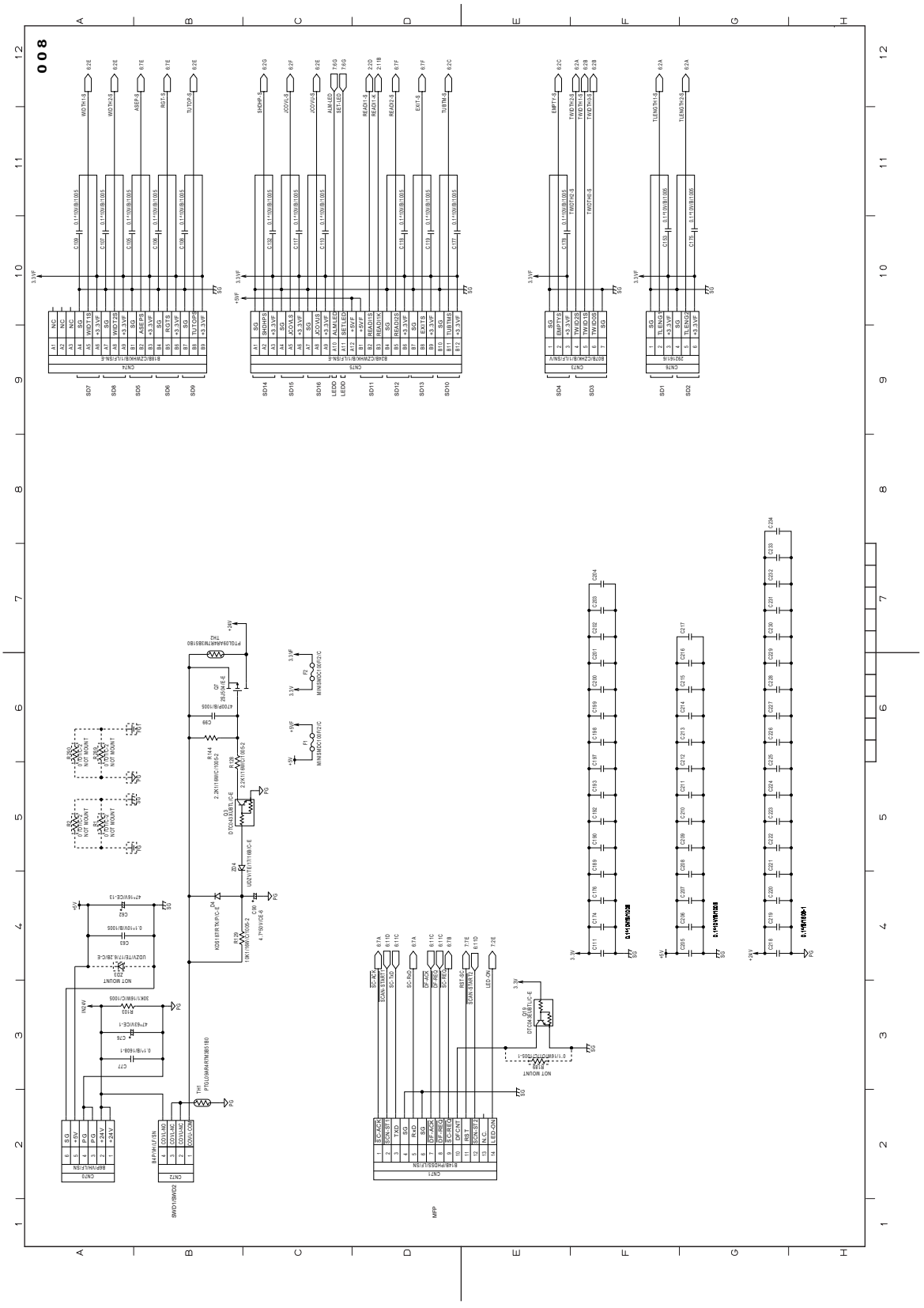


Fig.10-17

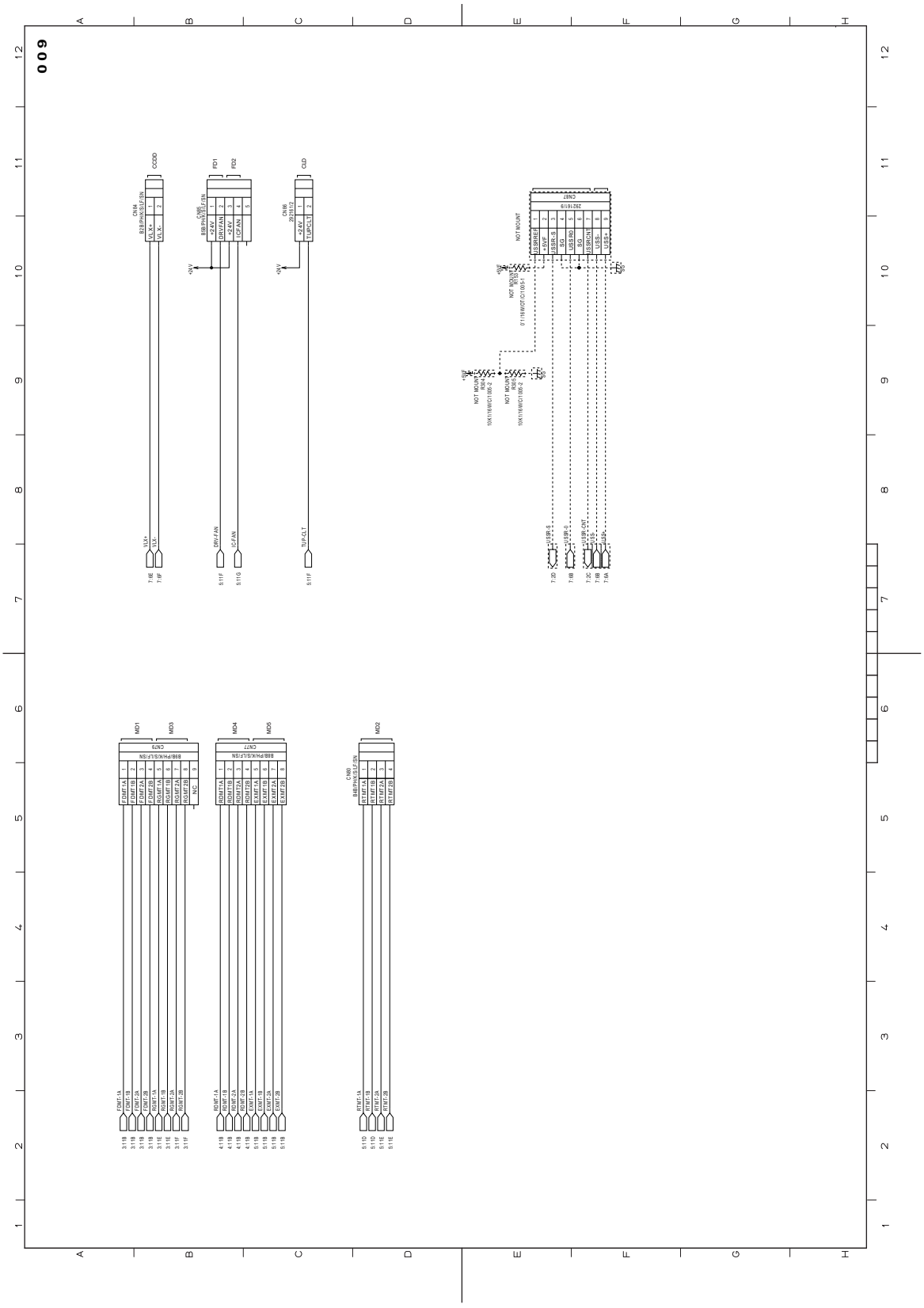


Fig.10-18

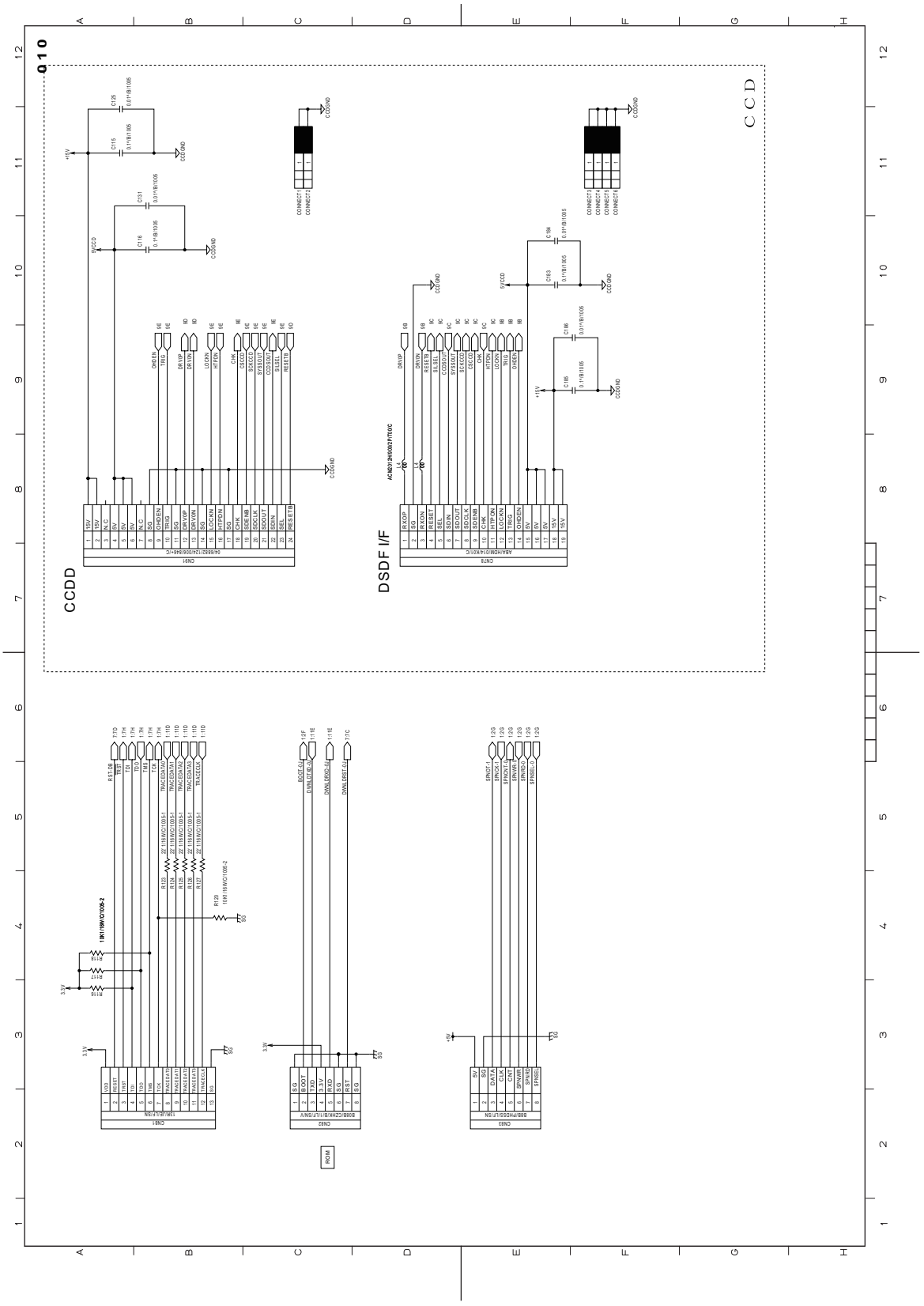


Fig.10-19

3. DSDF control PC board (MR-4000-B)

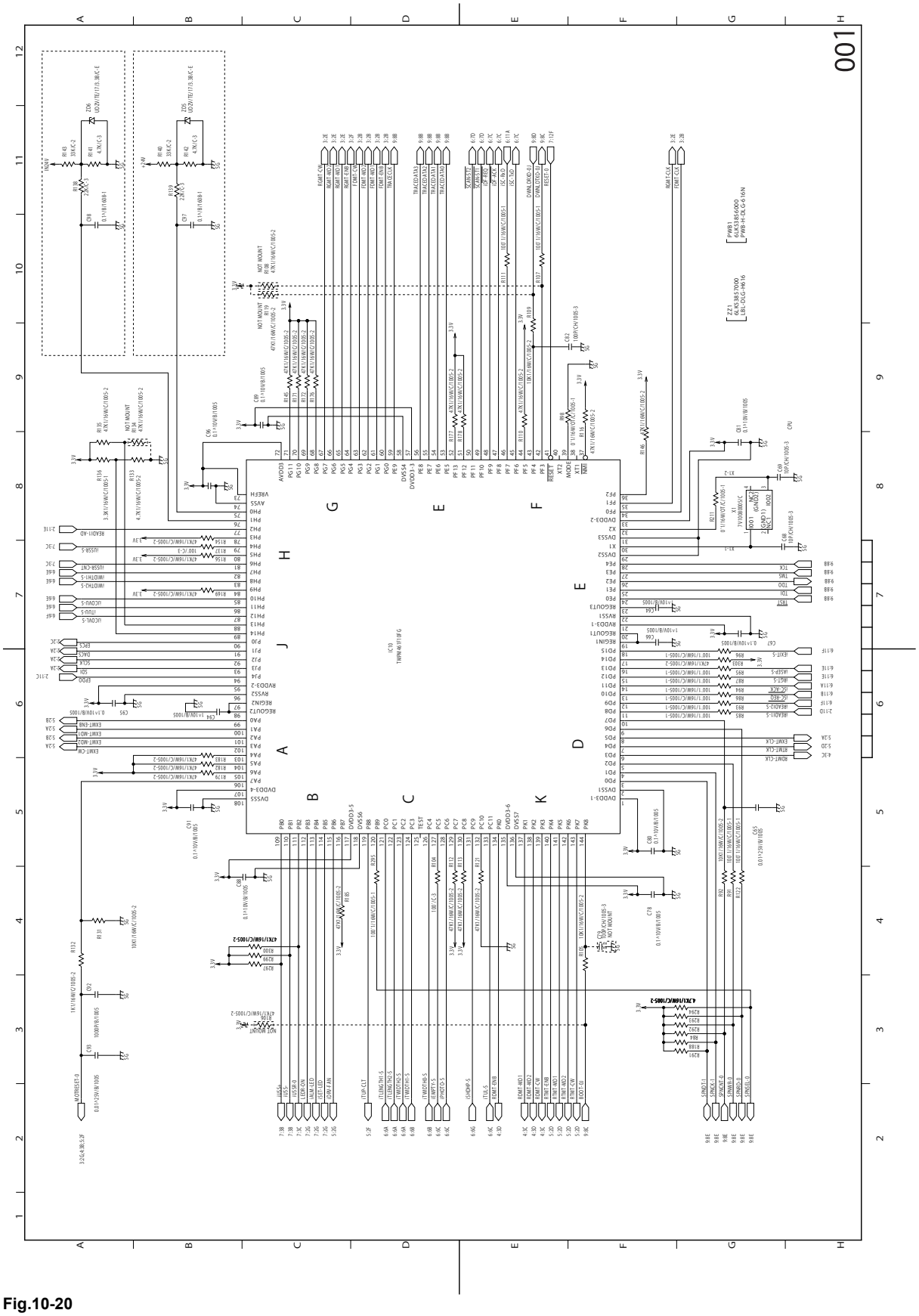


Fig.10-20

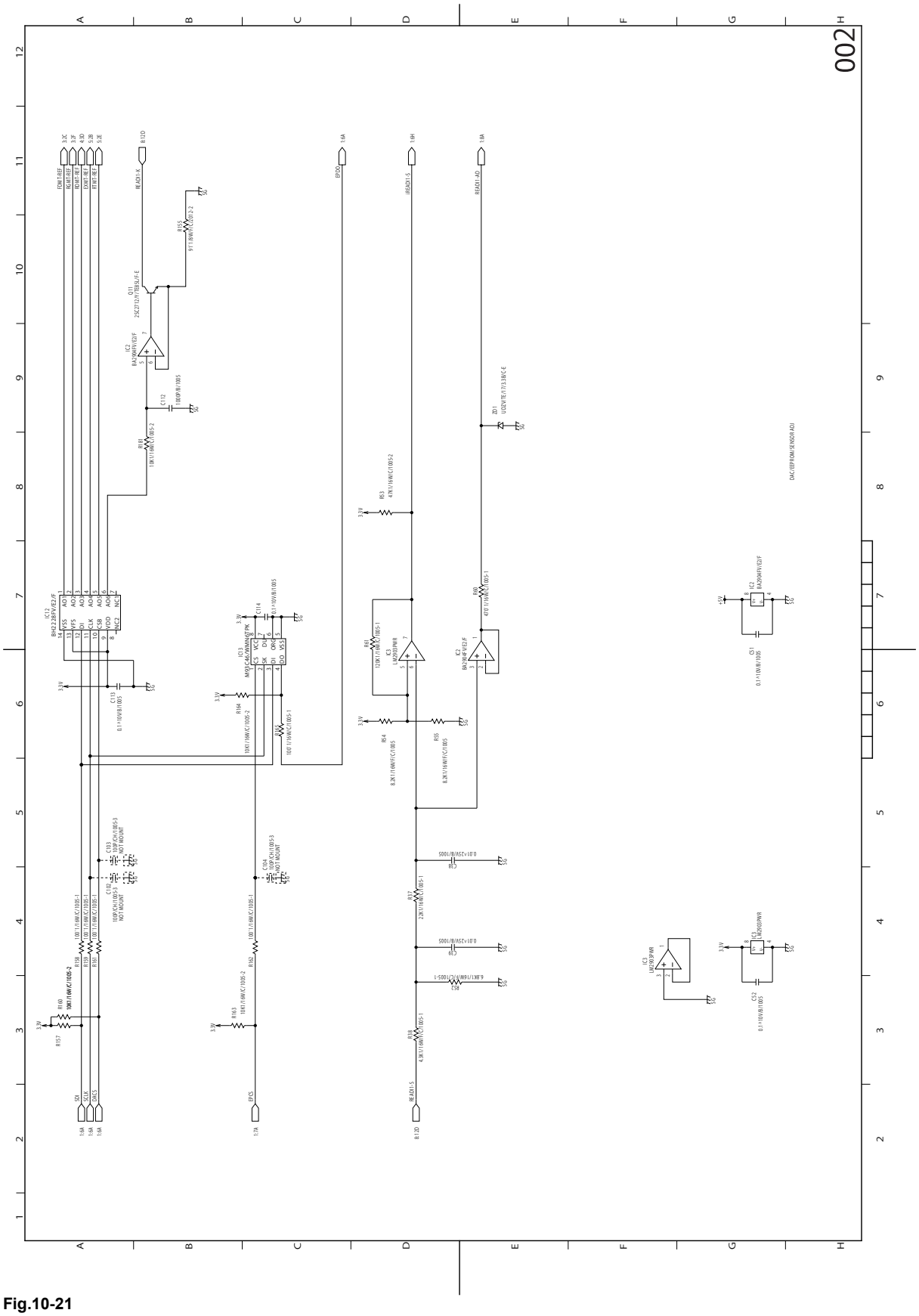


Fig.10-21

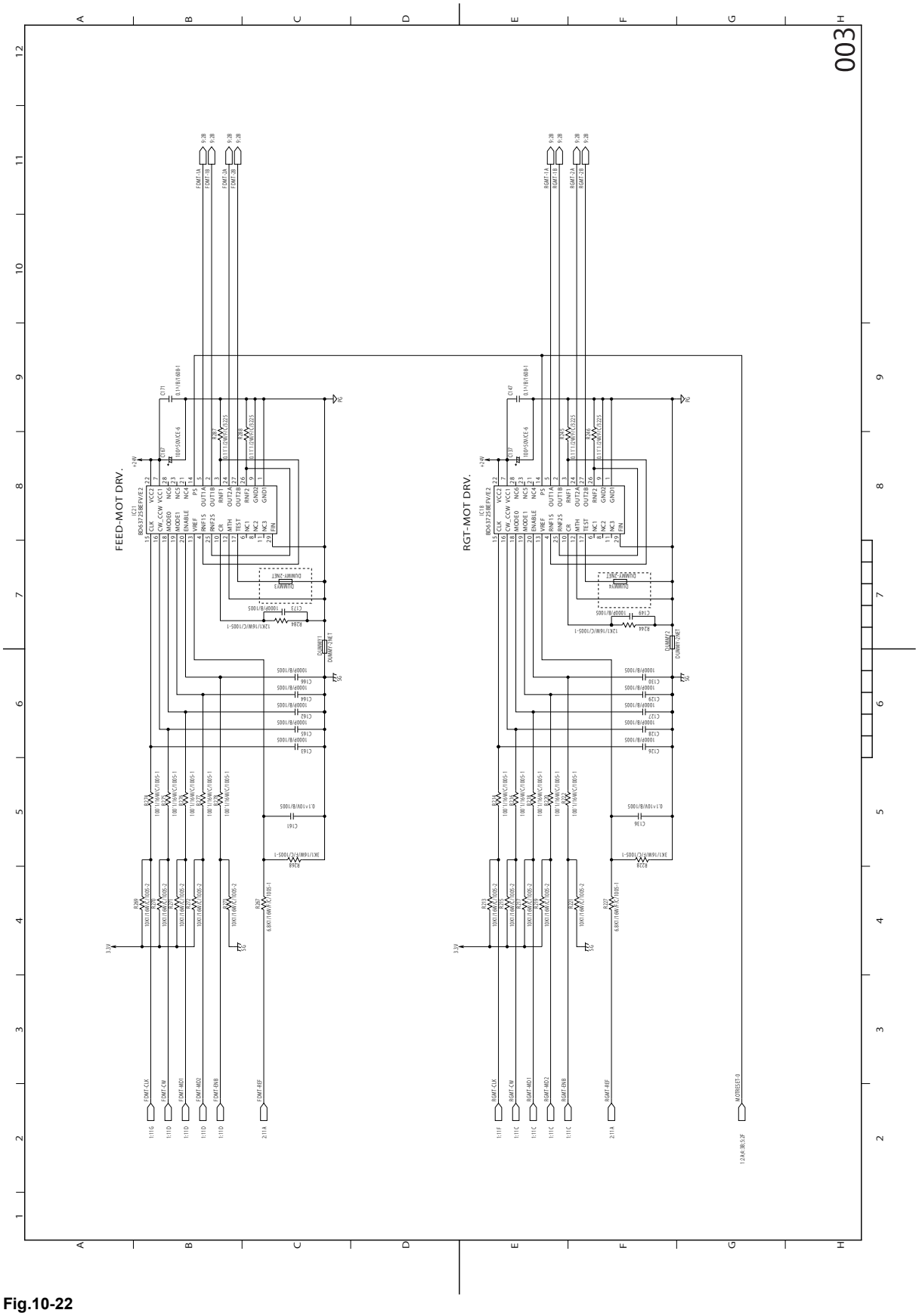


Fig.10-22

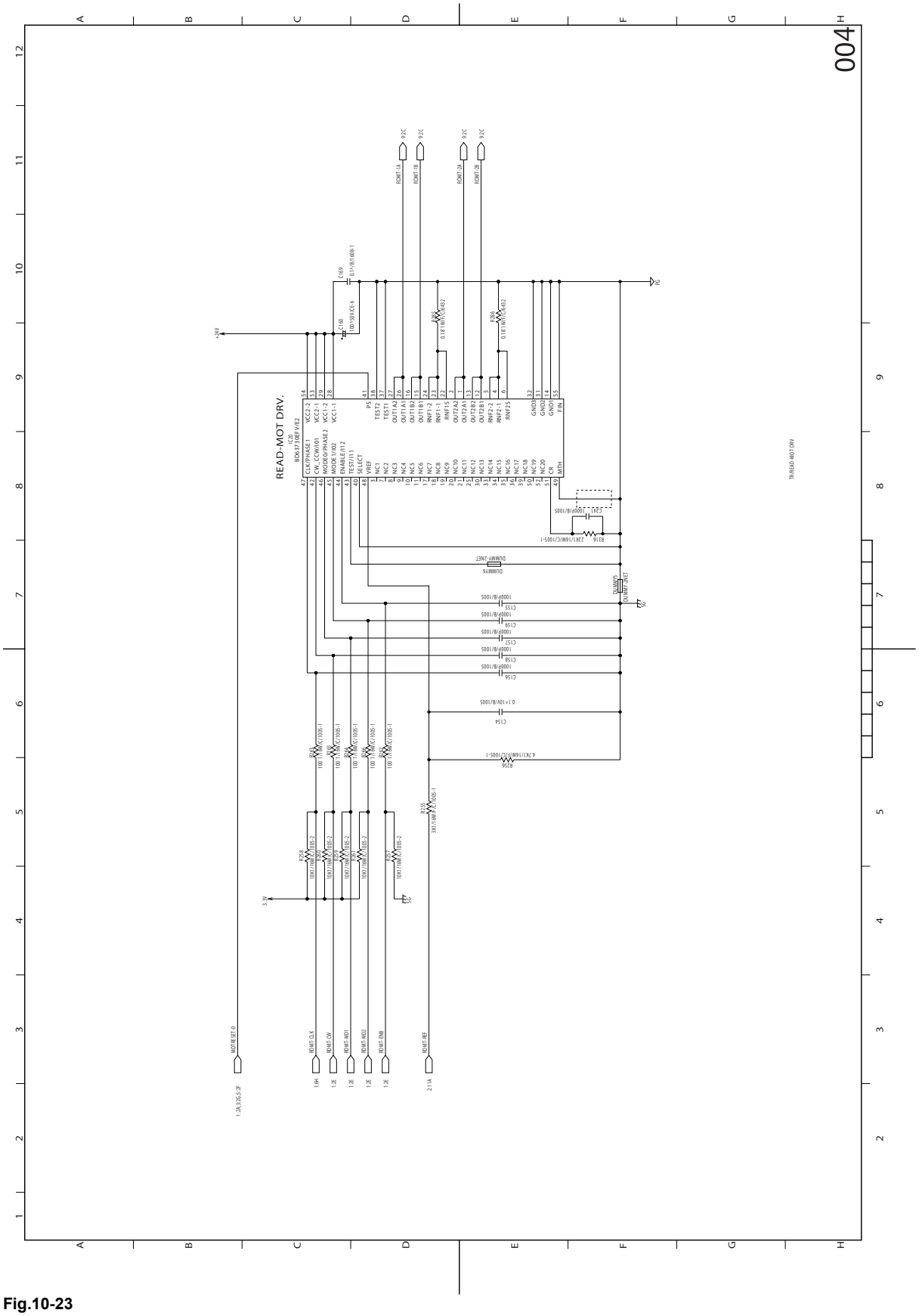


Fig.10-23

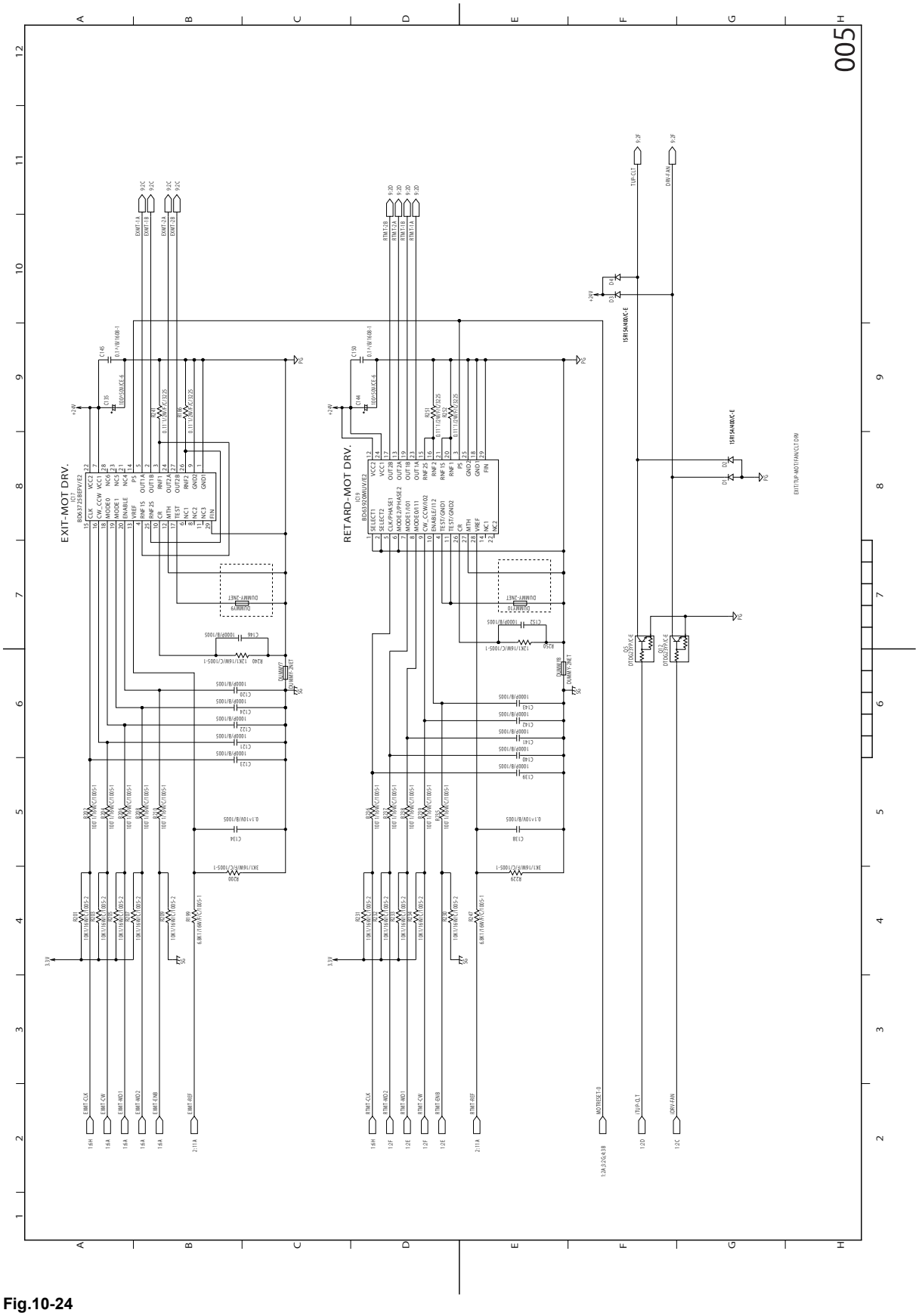


Fig.10-24

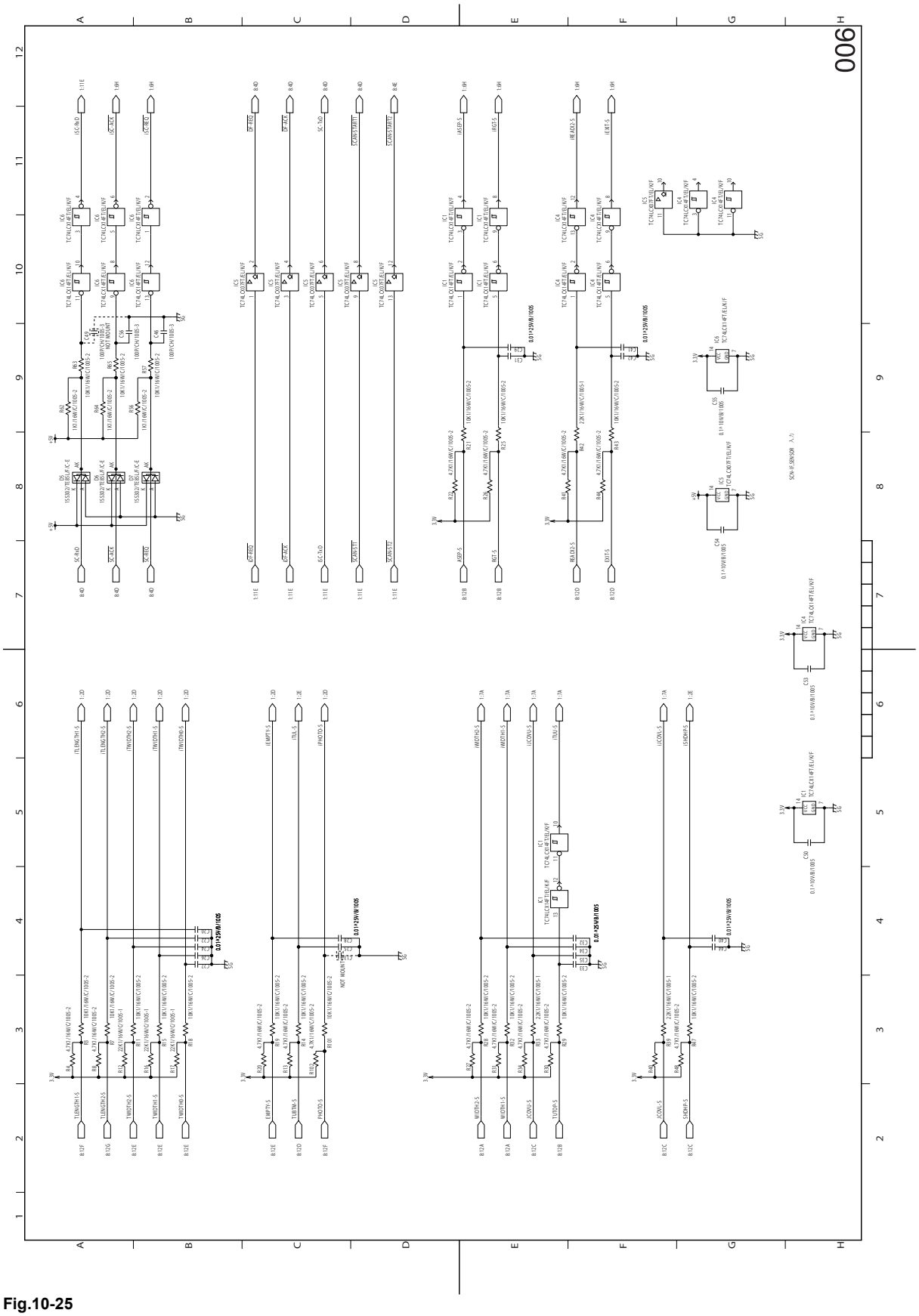


Fig.10-25

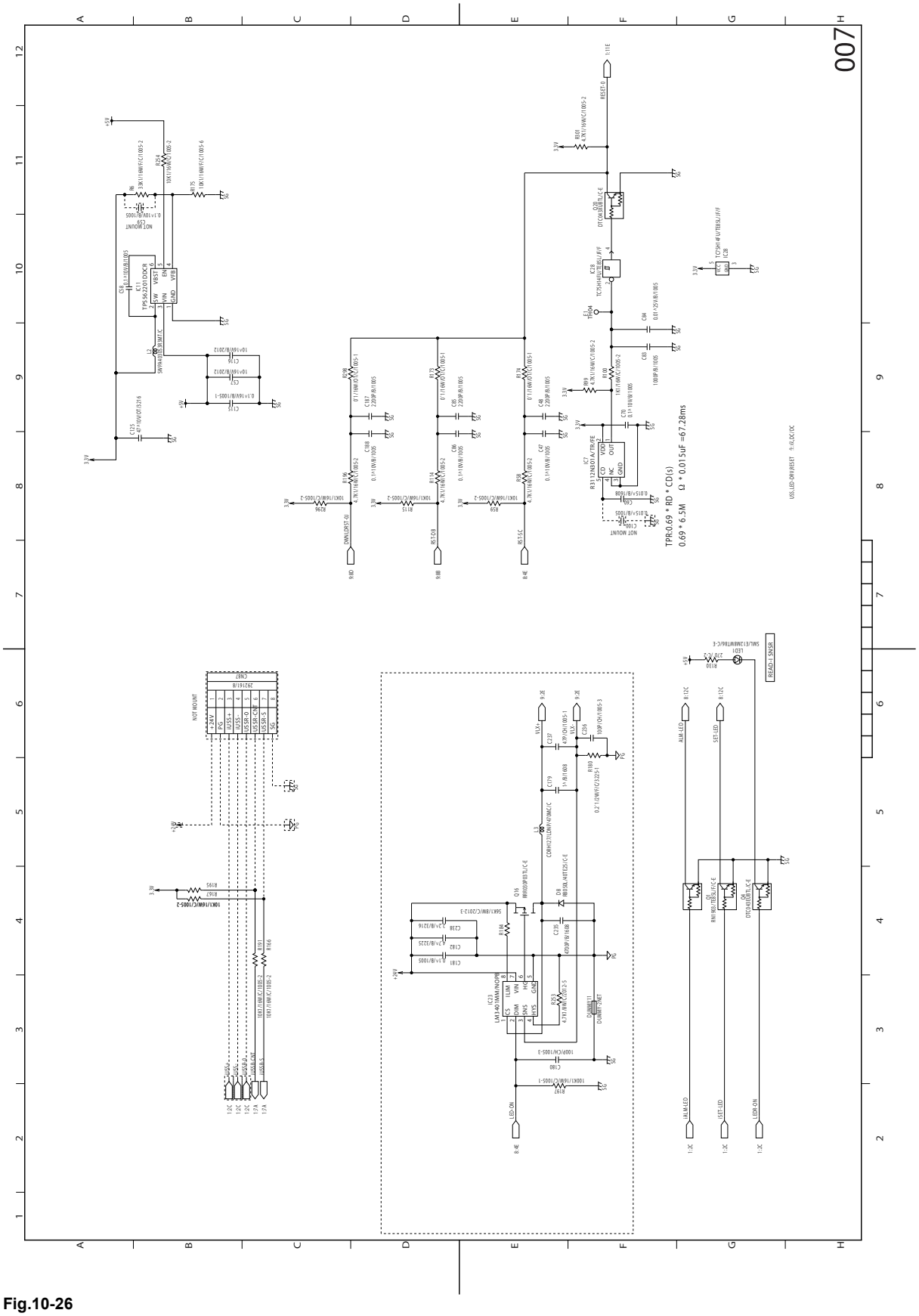


Fig.10-26

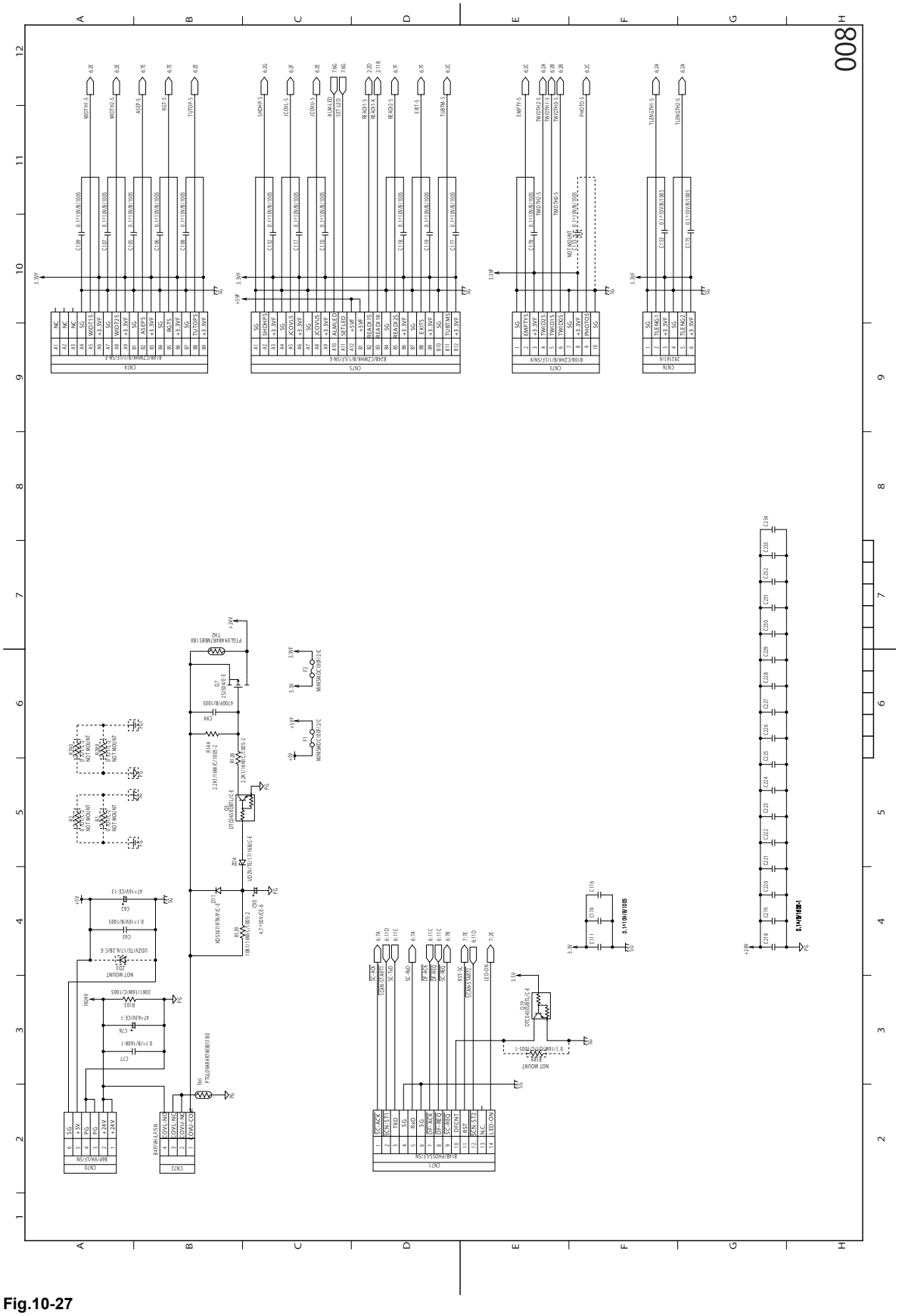


Fig.10-27

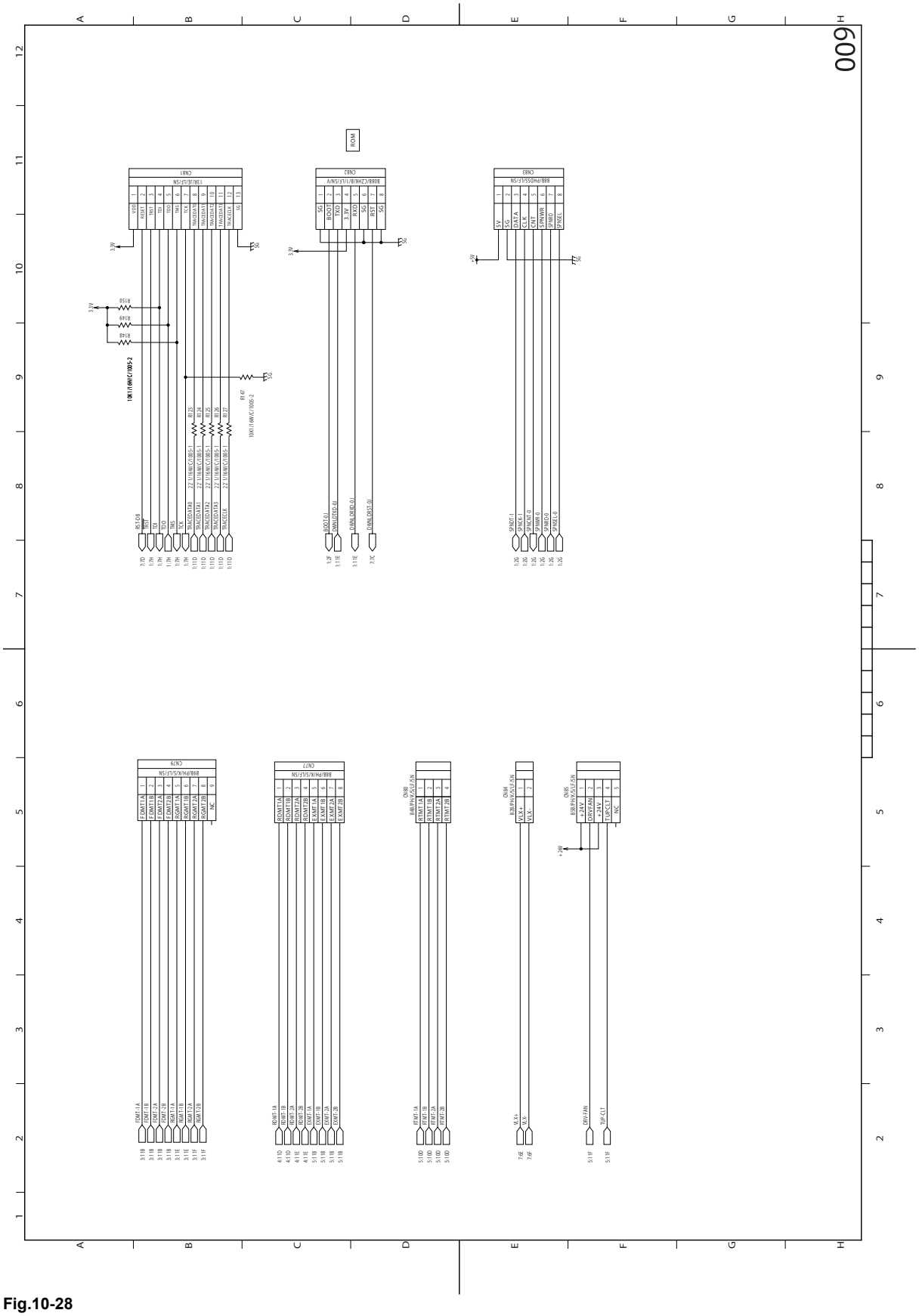


Fig.10-28

4. DSDF Relay board (MR-4000-B)

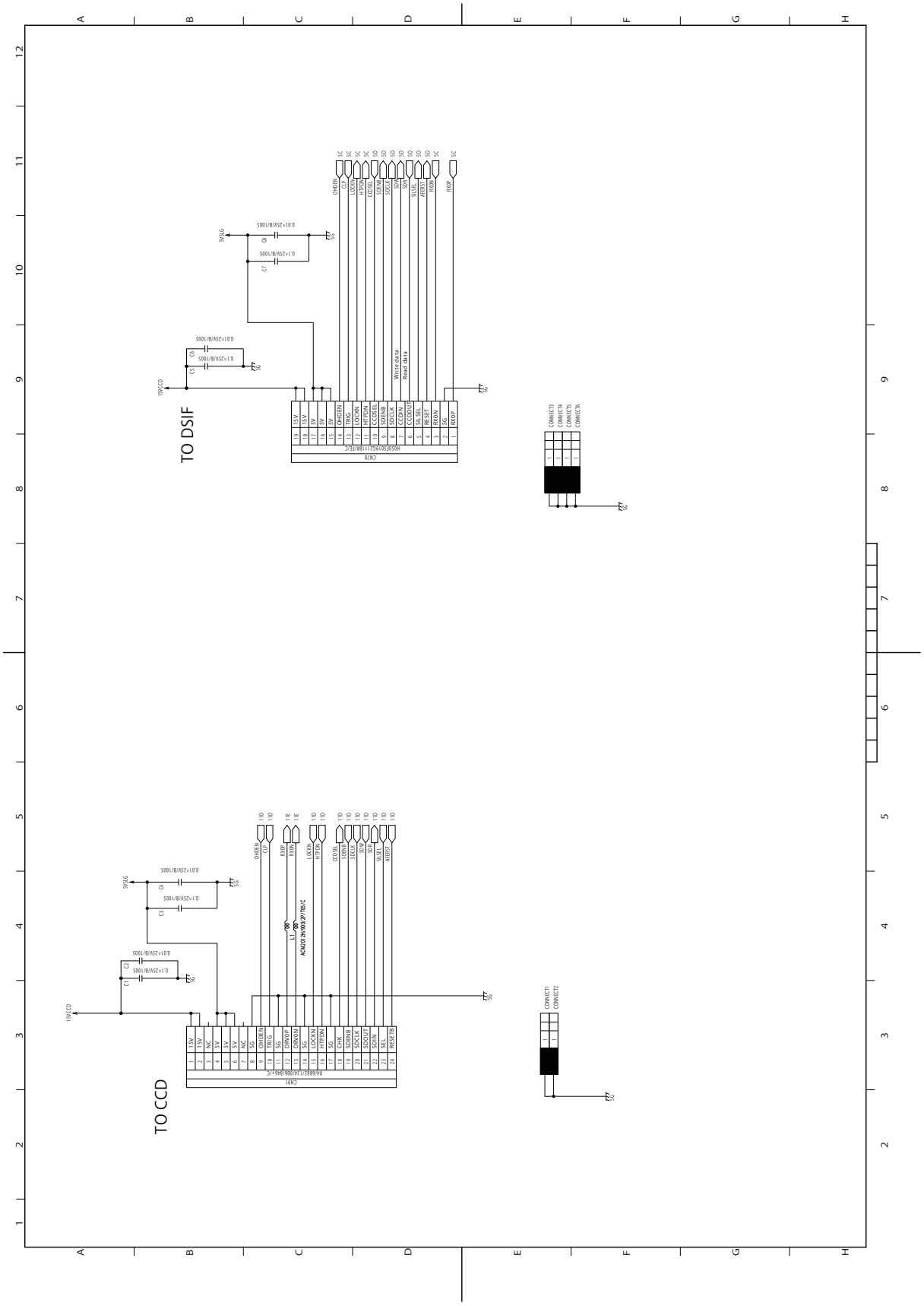


Fig.10-29

REVISION RECORD

Ver.03b

Ver.03b <2022.7.21>	
Page	**Contents**
6-20	Corrected information Section 6.9

Ver.03a

Ver.03a <2020.04.04>	
Page	**Contents**
7-11	Additional E769 error information

Ver.03

Ver.03 <2019.01.31>	
Page	**Contents**
1-2	Descriptions have been added.
2-3	A figure has been changed. Descriptions (MR-4000-B) have been added.
2-4	A part name (DSDF relay board) has been added.
2-5 to 2-7	Descriptions (MR-4000-B) have been added.
2-8 to 2-9	Remarks has been changed. A part name (DSDF relay board) has been added.
2-10	A figure has been changed.
3-1	A figure has been changed.
3-7	A figure has been changed.
4-2, 4-7, 4-8	A figure has been changed.
4-17	The disassembly procedures have been changed.
4-19, 4-26	A figure has been changed.
4-28, 4-30, 4-34, 4-35, 4-37	The disassembly procedures have been changed.
4-39	A figure has been changed.
4-40 to 4-41, 4-44	The disassembly procedures have been changed.
4-48	A figure has been changed.
5-1 to 5-50	Chapter 5 (disassembly procedures of MR-4000-B) has been added.
6-14 to 6-15, 6-17 to 6-18	The adjustment procedure has been changed.
7-8	The mistakes have been corrected.
7-20 to 7-23	The procedures have been added. (Multiple originals are transported simultaneously)
7-28	The procedures have been added. (White streaks appear on copied image)
8-1	A figure has been added.
8-2 to 8-3	Descriptions have been added.
10-2	The harness diagram has been added.
10-20 to 10-29	The circuit diagram has been added.

Ver.02

Ver.02 <2017.06.29>	
Page	**Contents**
1-1	A part name has been changed.
2-5, 2-7	Descriptions have been added.
3-7 to 3-11	The mistake has been corrected.
4-25 to 4-26	A disassembly procedure has been added. (DSDF upper cover opening/closing detection sensor)
6-12	The procedure has been added. (E770)
6-13	The procedure has been added. (E771)
6-18	The procedure has been added. (C550)
6-19	The procedure has been added. (C553)
6-20	The procedure has been added. (C554)
6-24	The procedure has been added. (“Place Doc. Feeder in the down position” is displayed.)
9-1	A part name has been changed.

9-9 to 9-18	Circuit diagram (DSDF control PC board) has been added.

Ver.01

Ver.01 <2016.07.29>	
Page	**Contents**
General precaution	A note has been added.
1-1	The wrong description has been corrected.

Ver.01 <2016.07.29>	
Page	**Contents**
4-13	The notes has been added.
4-14	The wrong procedure has been corrected.
4-25	A note has been added.
4-28	A note has been added.
4-37	The wrong description has been corrected.
5-17	Descriptions have been added to "Chapter 5.8".
6-5	The procedure has been added.
6-25	Descriptions have been added to "Section 7".

Ver.00

Ver.00 <2016.03.24>	
Page	**Contents**
-	Initial release

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