



DU-300

**SERVICE
MANUAL**

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Revision history

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Safety precautions


This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions

Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

 **DANGER:** High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

 **WARNING:** Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

 **CAUTION:** Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

The triangle (\triangle) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.



General warning.



Warning of risk of electric shock.



Warning of high temperature.

 indicates a prohibited action. The specific prohibition is shown inside the symbol.



General prohibited action.



Disassembly prohibited.

 indicates that action is required. The specific action required is shown inside the symbol.



General action required.





Remove the power plug from the wall outlet.











Always ground the copier.

1. Installation Precautions

WARNING











- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. 
- Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. 

CAUTION:






- Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury. 
- Do not install the copier in a humid or dusty place. This may cause fire or electric shock. 
- Do not install the copier near a radiator, heater, other heat source or near flammable material. This may cause fire. 
- Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. 
- Always handle the machine by the correct locations when moving it. 
- Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury. 
- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. 
- Advise customers that they must always follow the safety warnings and precautions in the copier's instruction handbook. 

2. Precautions for Maintenance

WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly. 
- Always follow the procedures for maintenance described in the service manual and other related brochures. 
- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits. 
- Always use parts having the correct specifications. 
- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident. 
- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully. 
- Always check that the copier is correctly connected to an outlet with a ground connection. 
- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock. 
- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight. 
- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly. 

CAUTION

- Wear safe clothing. If wearing loose clothing or accessories such as ties, make sure they are safely secured so they will not be caught in rotating sections. 
- Use utmost caution when working on a powered machine. Keep away from chains and belts. 
- Handle the fixing section with care to avoid burns as it can be extremely hot. 
- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures. 
- Do not remove the ozone filter, if any, from the copier except for routine replacement. 

• Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself.



• Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item.



• Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks.



• Remove toner completely from electronic components.



• Run wire harnesses carefully so that wires will not be trapped or damaged.



• After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws.



• Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary.



• Handle greases and solvents with care by following the instructions below:



- Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
- Ventilate the room well while using grease or solvents.
- Allow applied solvents to evaporate completely before refitting the covers or turning the main switch on.
- Always wash hands afterwards.

• Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc.



• Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately.



3. Miscellaneous

WARNING

• Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas.



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1-1-1 Specifications

Compatible printer	FS-C5016N
Loadable paper sizes	ISO A4 (210 × 297 mm) JIS B5 (182 × 257 mm) ISO A5 (148 × 210 mm) ISO C5 (162 × 229 mm) ISO B5 (176 × 250 mm) Letter (8 ¹ / ₂ " × 11") Legal (8 ¹ / ₂ " × 14") Executive (7 ¹ / ₄ " × 10 ¹ / ₂ ") Folio (210 × 330 mm) Oficio II (8 ¹ / ₂ " × 13") 16 kai (197 × 273 mm) Others (148 × 210 to 216 × 356 mm)
Loadable paper type	60 to 105 g/m ²
Environmental requirements	Temperature: 10 to 32.5°C/50 to 90.5°F Humidity: 15 to 80% RH Ideal conditions are 23°C/65% RH, altitude under 2000 m.
Power supply	Supplied from printer (5 V DC, 24 V DC)
Dimensions	345 (W) × 559 (D) × 40(H) mm (Rear unit: 247mm) 13 ⁹ / ₁₆ " (W) × 22 ¹ / ₂ " (D) × 1 ⁹ / ₁₆ " (H) (Rear unit: 9 ³ / ₄ "
Weight	5.6 kg/12 ³ / ₈ lbs

1-1-2 Parts names and their functions

(1) Parts names

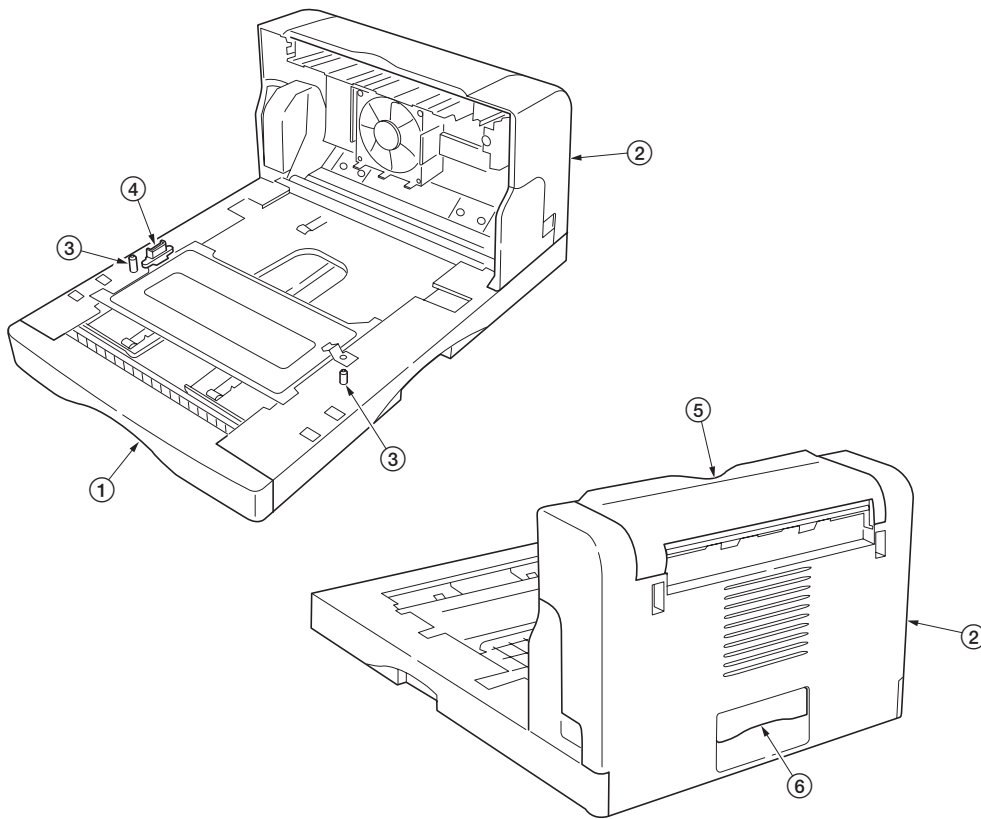
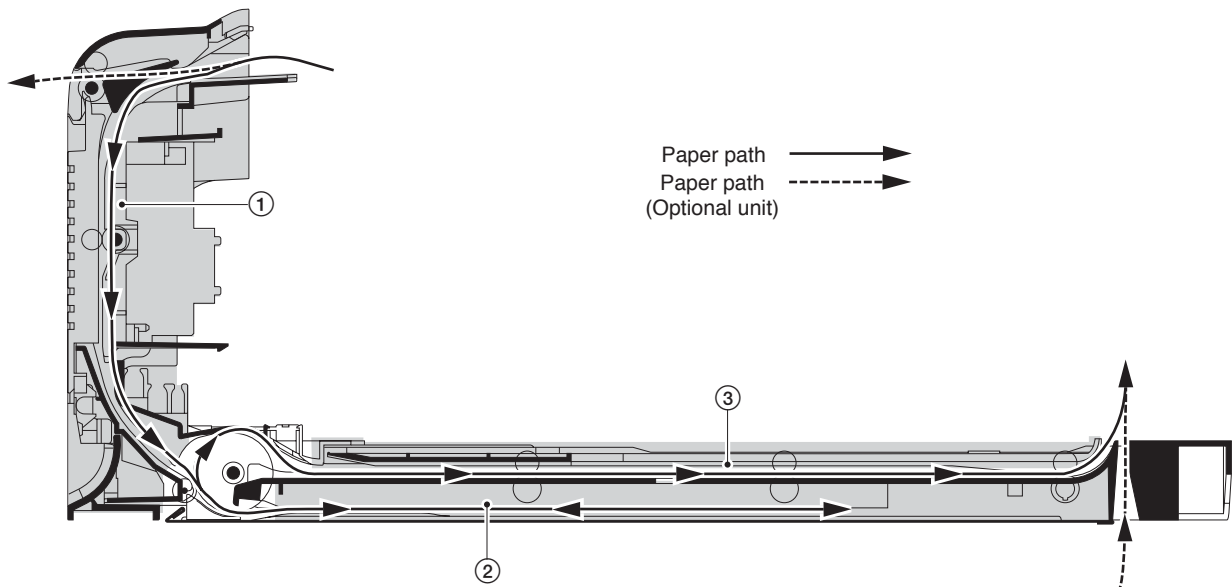


Figure 1-1-1

- ① Duplexer drawer
- ② Rear unit
- ③ Positioning pin
- ④ Interface connector
- ⑤ Top cover
- ⑥ Rear unit lever

1-1-3 Machine cross section**Figure 1-1-2 Machine cross section**

- ① Vertical path section
- ② Lower paper path section
- ③ Upper paper path section

1-1-4 Drive system

(1) Drive system

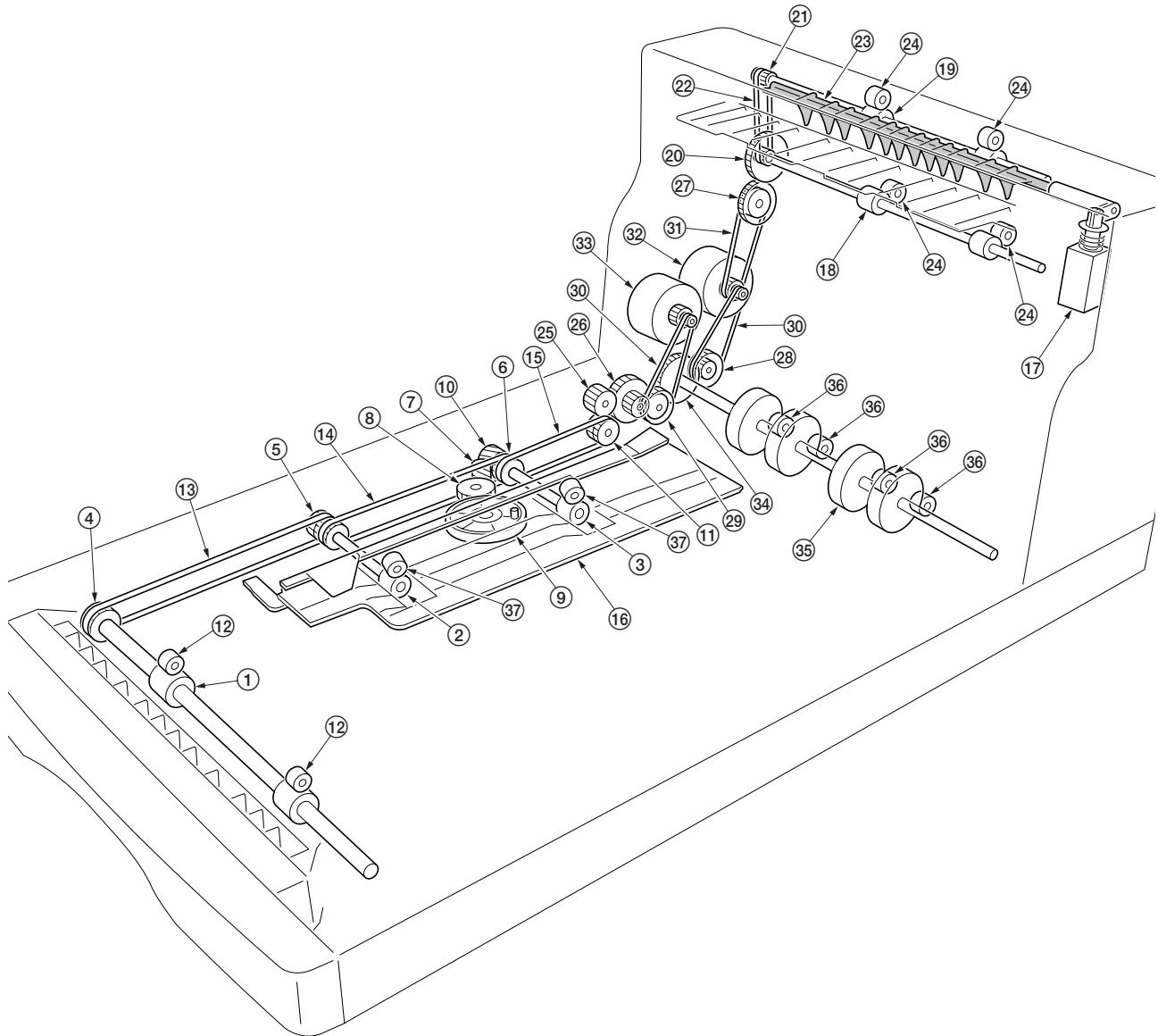


Figure 1-1-3 Drive system

- | | | |
|-----------------------|----------------------|----------------------|
| ① Conveying roller 3 | ⑭ Belt S2M 308 | ⑳ Gear Z22HP31 |
| ② Conveying roller 2 | ⑮ Belt S2M 200 | ㉑ Gear Z15SP29 |
| ③ Conveying roller 1 | ⑯ Adjust guide | ㉒ Gear Z19SP34 |
| ④ Conveying pulley 2C | ⑰ Branch solenoid | ㉓ Belt S2M 148 |
| ⑤ Conveying pulley 2B | ⑱ MID roller | ㉔ Belt S2M 128 |
| ⑥ Conveying pulley 2A | ⑲ FU roller | ㉕ Switchback motor |
| ⑦ Helical gear 1 | ㉑ Conveying pulley 1 | ㉖ Paper refeed motor |
| ⑧ Idle gear A4 | ㉒ Belt S2M 180 | ㉗ Turn over gear |
| ⑨ Slide gear | ㉓ DU flapper | ㉘ Turn roller |
| ⑩ Clutch gear 2 | ㉔ Pinch roller | ㉙ Pinch roller |
| ⑪ Gear Z16SP25 | ㉕ Gear idle Z16 | ㉚ Diagonal roller |
| ⑫ Pinch roller | ㉖ Gear Z14-Z36 | |
| ⑬ Belt S2M 318 | | |

1-2-1 Installation environment

1. Installation location

- Avoid direct sunlight or bright lighting. Ensure that the photoconductor will not be exposed to direct sunlight or other strong light.
- Avoid extremes of temperature and humidity, abrupt ambient temperature changes, and hot or cold air directed onto the machine.
- Avoid dust and vibration.
- Choose a surface capable of supporting the weight of the machine.
- Place the machine on a level surface (maximum allowance inclination: 1°).
- Avoid air-borne substances that may adversely affect the machine or degrade the photoconductor, such as mercury, acidic or alkaline vapors, inorganic gasses, NOx, SOx gases and chlorine-based organic solvents.
- Select a room with good ventilation.

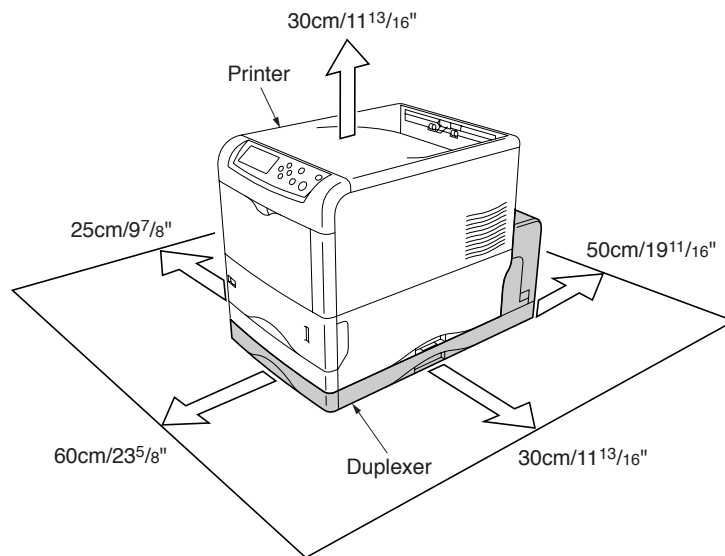


Figure 1-2-1 Installation dimensions

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1-3-1 Unpacking and installation

(1) Installation procedure

Unpacking the machine

1. Unpack the package of duplexer and check that the contents are sufficient.

- ① Duplexer
- ② Operation guide

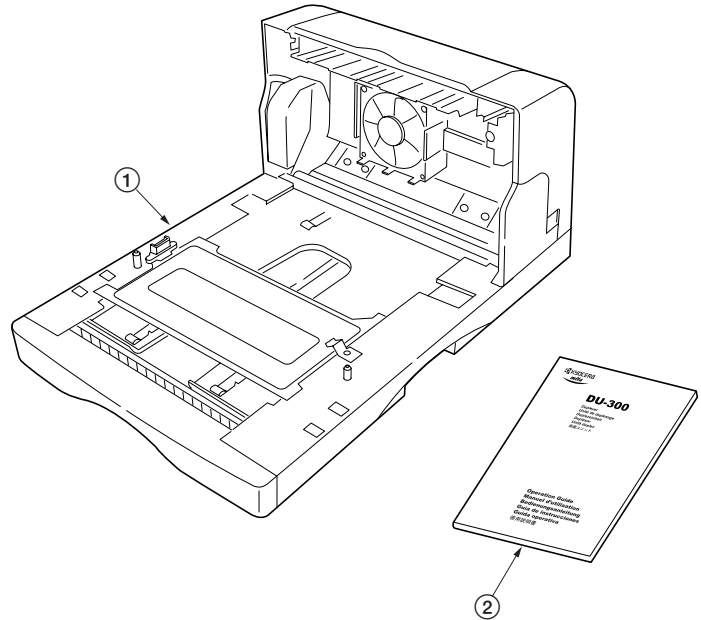


Figure 1-3-1

Attaching the duplexer

1. Pull out the rear unit.
2. Place the printer on top of the duplexer.

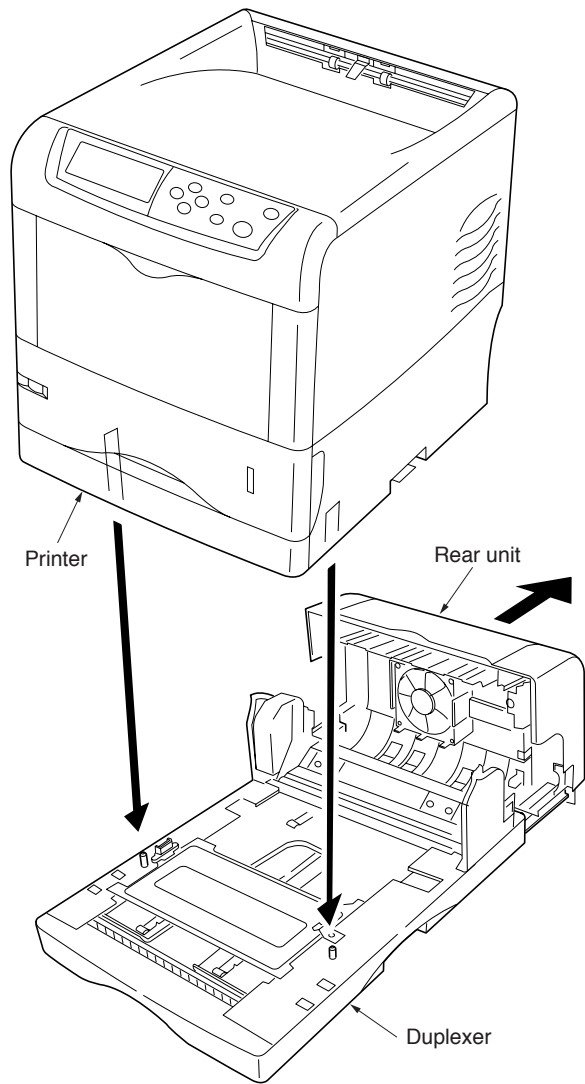


Figure 1-3-2

3. Connect the power cord to the printer and secure it to the duplexer.
4. Connect the printer cable to the printer and pass it through the opening in the duplexer.
5. Close the rear unit.

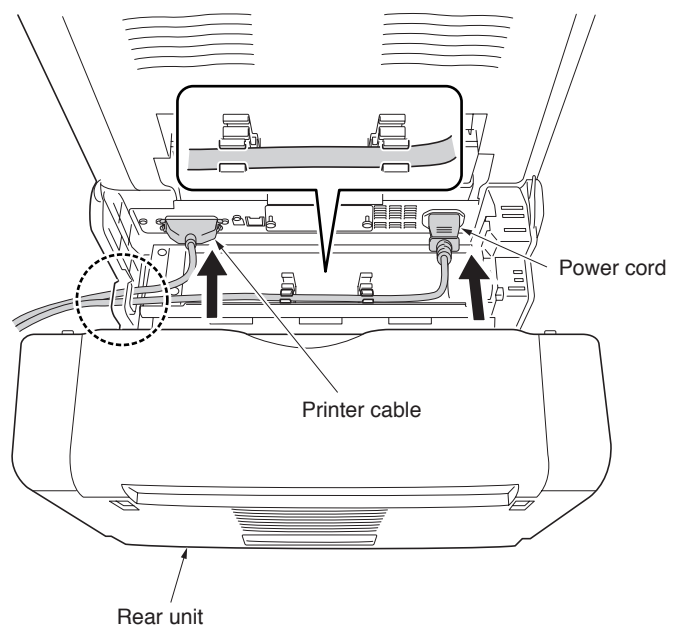


Figure 1-3-3

Completion of the machine installation.

1-4-1 Paper misfeed detection

(1) Paper misfeed indication

When the sensor in the duplexer (vertical path sensor, switchback sensor, duplexer refeed sensor) cannot be turned ON or OFF because the conveying distance of paper does not reach the specified value even if the switchback motor or the paper refeed motor is driven by the specified number of pulses while printing on 2 sides, it is judged that paper misfeed occurred in the duplexer and the paper misfeed indication is displayed on the operation panel of the printer and the printer operation will be stopped.

(2) Detecting conditions of paper misfeed

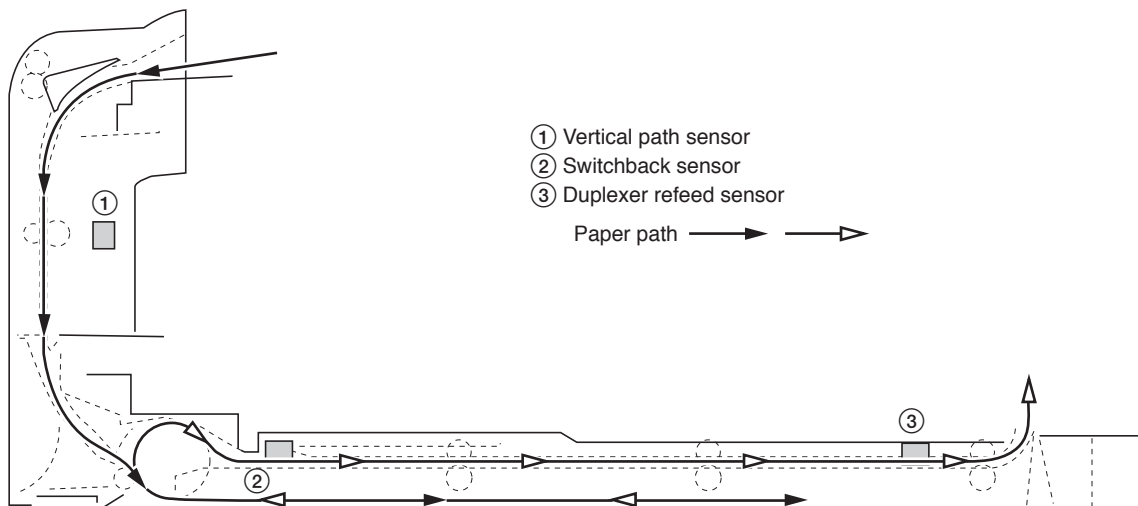


Figure 1-4-1 Paper misfeed detection

* Detecting condition of paper misfeed

- When the printer power supply is turned on, a paper was detected with either of the vertical path sensor, switchback sensor or duplexer refeed sensor.
- Upon reception of the command of 2 side printing from the printer, the leading edge of paper cannot be detected with the vertical path sensor. (Vertical path section delay)
- After detecting the leading edge of paper with the vertical path sensor, the trailing edge of paper cannot be detected with the vertical path sensor. (Vertical path section retention)
- After the turn roller started reverse rotation, the trailing edge of paper cannot be detected with the switch back sensor. (Turn roller delay)
- * After switching back, the leading edge and trailing edge of paper will be reversed.
- After refeeding of paper started, the leading edge of paper cannot be detected with the duplexer refeed sensor. (Refeed delay)
- After refeeding of paper started, the trailing edge of paper cannot be detected with the duplexer refeed sensor. (Refeed retention)
- The vertical path sensor detected the leading edge of paper with the inversing paper existed. (Duplexer overflow)

(3) Correcting a paper misfeed

If paper misfeed occurs with the duplexer, reset all conditions to the original state by removing jammed paper by means of following methods; pulling out the rear unit, opening the top cover and pulling out the duplexer drawer, and reset the paper misfeed indication by closing the rear unit, top cover, and duplex drawer and then printer will resume its operation.

Procedure

1. Pull out the rear unit.
2. Remove the jammed paper.

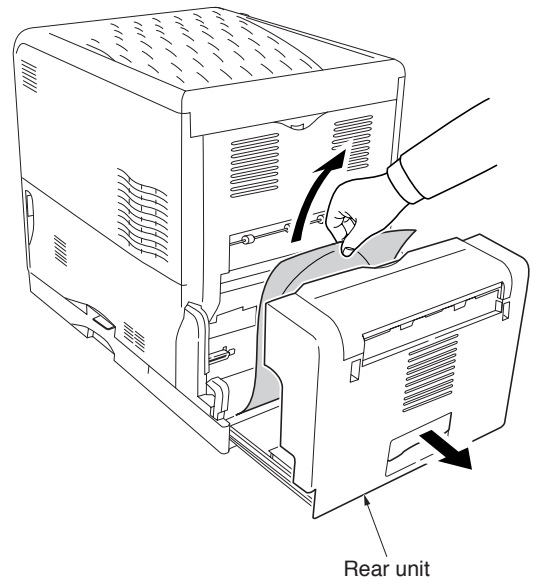


Figure 1-4-2 Correcting a paper misfeed (1)

3. Open the top cover.
4. Remove the jammed paper.

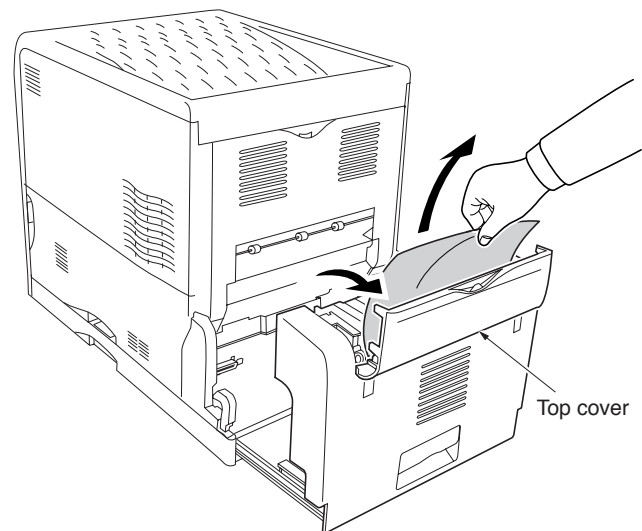


Figure 1-4-3 Correcting a paper misfeed (2)

5. Pull out the duplex drawer.

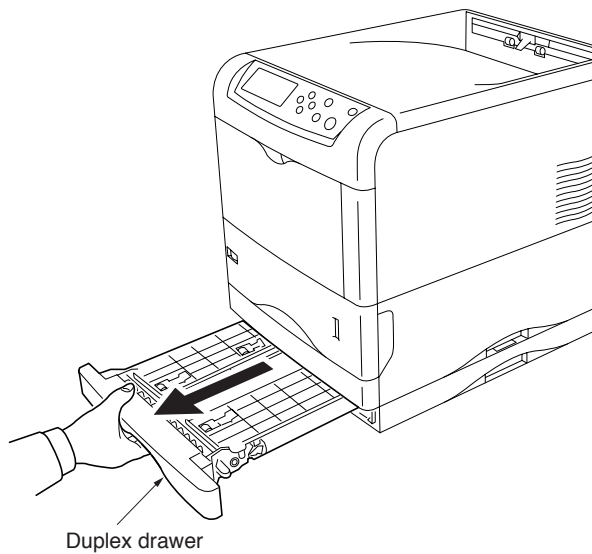


Figure 1-4-4 Correcting a paper misfeed (3)

6. Remove the jammed paper.
7. Close the top cover, rear unit, and duplex drawer. The printer automatically warms up, goes on-line, and continues printing.

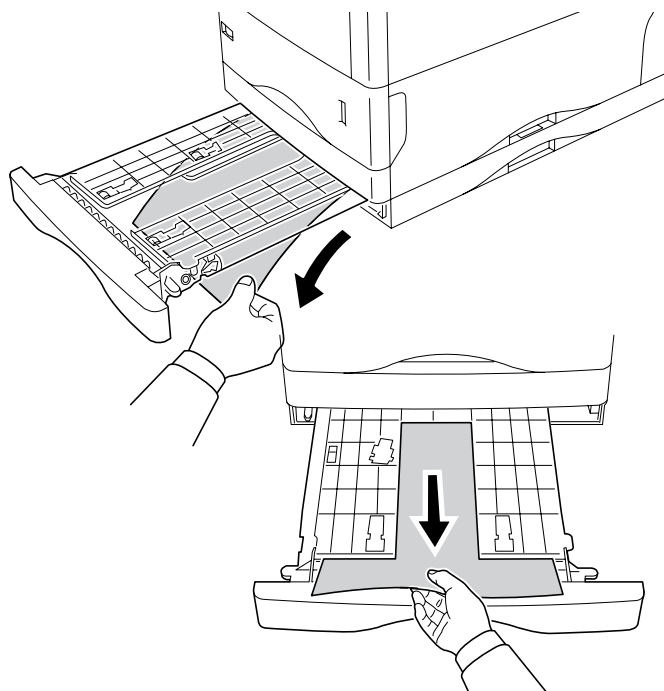


Figure 1-4-5 Correcting a paper misfeed (4)

1-4-2 Self-diagnosis

(1) Self-diagnostic function

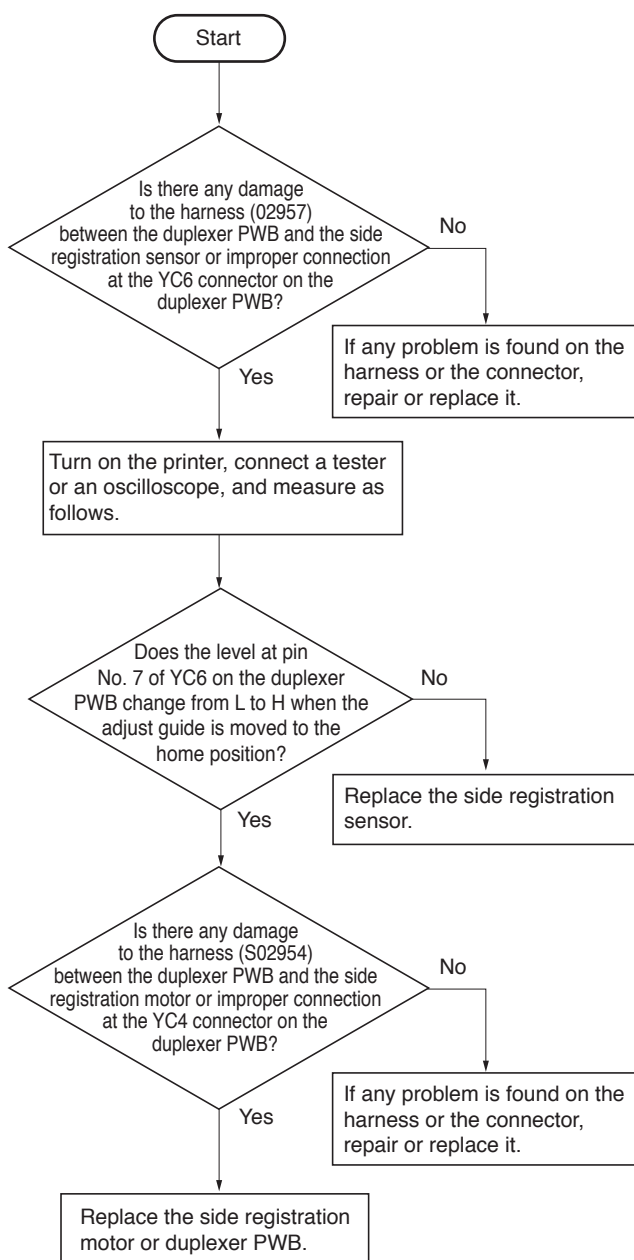
The printer is equipped with a self-diagnostic function. When a problem is detected, the printer stops printing and an error message is displayed on the operation panel. An error message consists of a message prompting contact to service personnel, total print count, and a four-digit error code (2 digits for F0 only) indicating the type of the error.

(1-1) Error code 1200 (Side registration motor error)

Detection conditions

- The duplexer PWB of the optional duplexer cannot detect the home position of the adjust guide.

Corrective measures



1-4-3 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) Even if the top cover is closed, the message "Close duplex top cover" remains.	Defective top cover switch.	Check to see if the level at pin Nos. 1 of the YC10 connector on the duplex PWB changes to H or L when top cover switch is pressed. If any problem is found, replace the top cover switch.
	Defective harness between the rear unit connector and the duplex PWB, or poor insertion of connector.	Check to see if the harness (S02958) between the rear unit connector and the duplex PWB is damaged or if the connector YC10 of the duplex PWB is improperly connected. If any problem is found, repair or replace it.
	Defective harness between the rear unit connector and the top cover switch.	Check to see if the harness (S02959) between the rear unit connector and the top cover switch is damaged or if the connector of the top cover switch is improperly connected. If any problem is found, repair the relevant component.
	Defective duplex PWB.	Replace the duplex PWB. (See page 1-5-7.)
(2) Even if the rear unit is closed, the message "Close duplex rear unit" remains.	Defective harness between the rear unit connector and the duplex PWB, or poor insertion of connector.	Check to see if the harness (S02958) between the rear unit connector and the duplex PWB is damaged or if the connector YC9 of the duplex PWB is improperly connected. If any problem is found, repair or replace it.
	Malfunctioning rear unit connector.	Check to see if the rear unit connector malfunctions. If it malfunctions, repair it.
	Defective duplex PWB.	If 24 V DC is not output to pin Nos. 1 and 2 of the YC9 connector on the duplex PWB when the rear unit is closed, replace the duplex PWB. (See page 1-5-7.)
(3) Even if the duplex drawer is closed, the message "Missing duplex drawer" remains.	Dirt of the drawer detection sensor reflector.	Clean the drawer detection sensor reflector.
	Defective harness between the drawer detection sensor and the duplex PWB, or poor insertion of connector.	Check to see if the harness (S02955) between the drawer detection sensor and the duplex PWB is damaged or if the connector YC5 of duplex PWB is improperly connected. If any problem is found, repair or replace it.
	Defective drawer detection sensor.	If the level at pin No. 5 of the YC5 connector on the duplex PWB remains high when the duplex drawer is closed, replace the drawer detection sensor.
(4) The message "Paper Jam Duplexer" remains.	Defective duplex PWB.	Replace the duplex PWB. (See page 1-5-7.)
	Paper pieces remain near the vertical path sensor (actuator), switchback sensor (actuator), or the duplex refeed sensor.	Check the locations near the, vertical path sensor (actuator), switchback sensor (actuator), or the duplex refeed sensor and remove any paper pieces.
	Malfunctioning actuator of the vertical path sensor.	Check to see if the actuator of the vertical path sensor malfunctions or is damaged. If it malfunctions, repair or replace it.
	Defective harness between the vertical path sensor and the duplex PWB, or poor insertion of connector.	Check to see if the harness (S02957) between the vertical path sensor and the duplex PWB is damaged or if the connector YC6 of duplex PWB is improperly connected. If any problem is found, repair or replace it.

Problem	Causes	Check procedures/corrective measures
<p>(4) The message “Pa- per Jam Du- plexer” remains.</p>	Defective vertical path sensor.	If the level at pin No. 1 of the YC6 connector on the duplexer PWB remains high when the actuator of the vertical path sensor is not operating, replace the vertical path sensor.
	Malfunctioning actuator of the switchback sensor.	Check to see if the actuator of the switchback sensor malfunctions or is damaged. If it malfunctions, repair or replace it.
	Defective harness between the switchback sensor and the duplexer PWB, or poor insertion of connector.	Check to see if the harness (S02955) between the switchback sensor and the duplexer PWB is damaged or if the connector YC5 of duplexer PWB is improperly connected. If any problem is found, repair or replace it.
	Defective switchback sensor.	If the level at pin No. 1 of the YC5 connector on the duplexer PWB remains high when the actuator of the switchback sensor is not operating, replace the switchback sensor.
	Malfunctioning actuator of the duplexer refeed sensor.	Check to see if the actuator of the duplexer refeed sensor malfunctions or is damaged. If it malfunctions, repair or replace it.
	Defective harness between the duplexer refeed sensor and the duplexer PWB, or poor insertion of connector.	Check to see if the harness (S02956) between the duplexer refeed sensor and the duplexer PWB is damaged or if the connector YC3 of duplexer PWB is improperly connected. If any problem is found, repair or replace it.
	Defective duplexer refeed sensor.	If the level at pin No. 1 of the YC6 connector on the duplexer PWB remains high when the actuator of the duplexer refeed sensor is not operating, replace the duplexer refeed sensor.
	Defective duplexer PWB.	Replace the duplexer PWB. (See page 1-5-7.)

1-5-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the main switch off and disconnect the power plug before starting disassembly.
- When handling PCBs, do not touch connectors with bare hands or damage the board.
- Do not touch any PCB containing ICs with bare hands or any object prone to static charge.
- Use the following testers when measuring voltages:

Hioki 3200

Sanwa MD-180C

Sanwa YX-360TR

1-5-2 Duplexer

(1) Detaching and refitting the rear unit

Procedure

1. Pull out the rear unit.
2. Remove the four screws and then remove the rear unit.

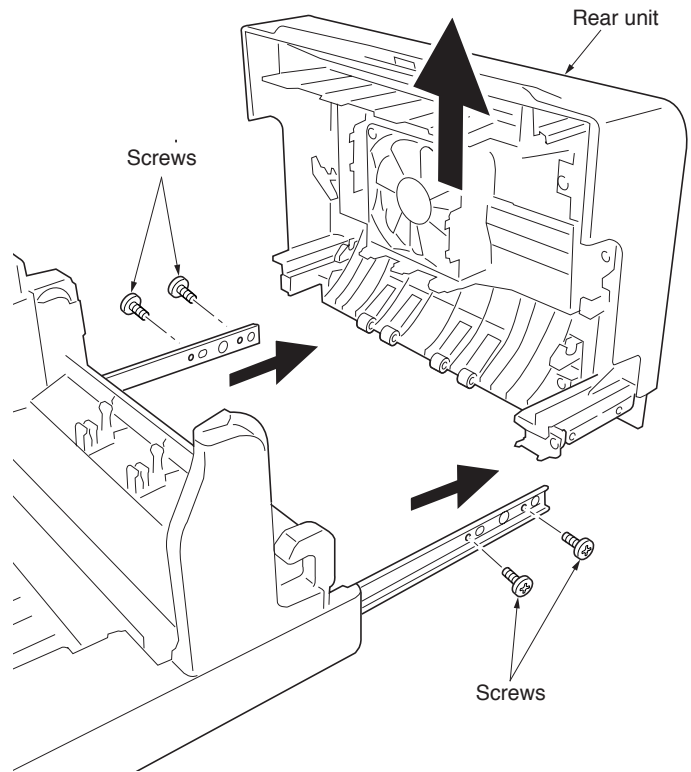
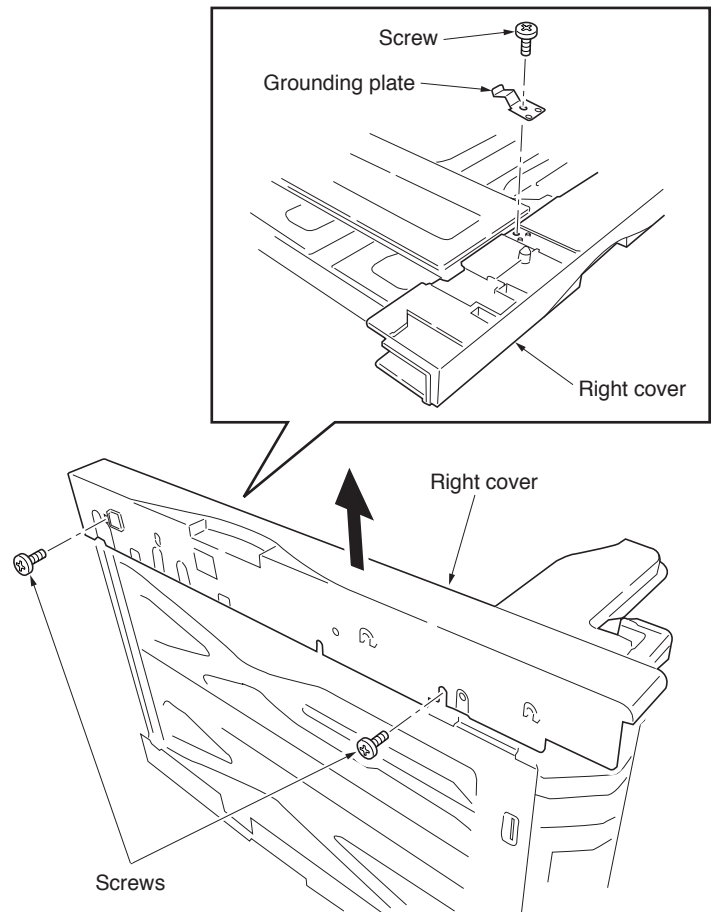


Figure 1-5-1

(2) Detaching and refitting the right cover**Procedure**

1. Remove the duplexer drawer from the duplexer.
2. Remove the one screw and then remove the grounding plate.
3. Remove the two screws and then remove the right cover.

**Figure 1-5-2**

(3) Detaching and refitting the left cover

Procedure

1. Remove the duplexer drawer from the duplexer.
2. Remove the five screws and then remove the left cover.

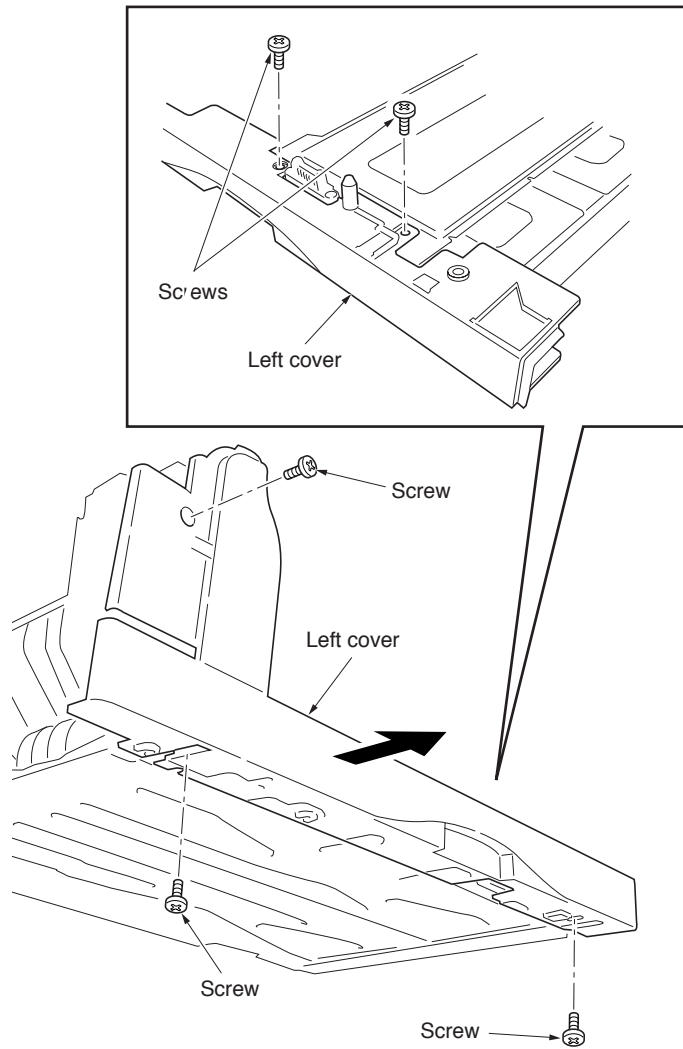


Figure 1-5-3

(4) Detaching and refitting the conveying roller 1 and 2

Follow the procedure below to check or replace the conveying roller 1 and 2.

Procedure

1. Remove the duplexer drawer from the duplexer.
2. Remove the five screws and then remove the middle upper guide.

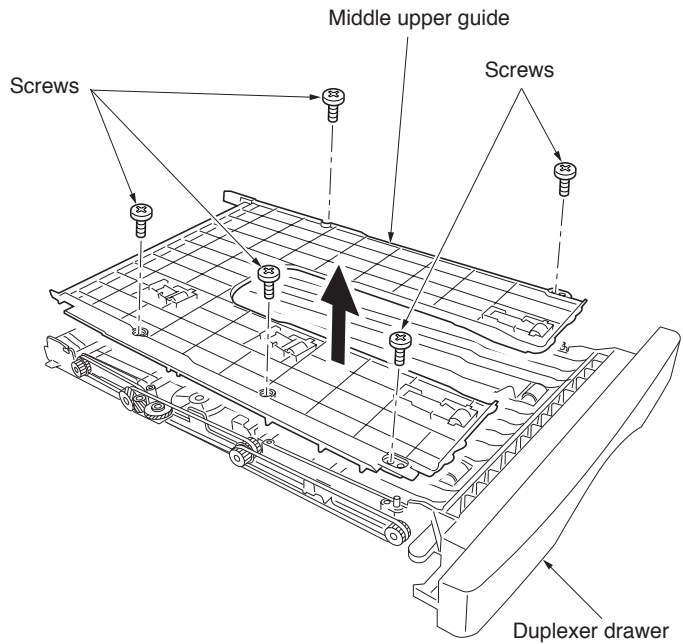


Figure 1-5-4

3. Remove the slide shaft and then remove the adjust guide.
4. Remove the three belts from the conveying pulley 2A and 2B.
5. While unlatching the latches and then remove the conveying pulley 2B.
6. Remove the bush and the conveying roller 2.
7. Remove the one E-ring and then remove the clutch gear 2.
8. Remove the conveying pulley 2A, pin, bush, and conveying roller 1.
9. Check or replace the conveying roller 1 and 2.
10. Refit all the removed parts.

* When fitting the clutch gear 2, put the one-way clutch located with the gear face to the conveying pulley 2A.

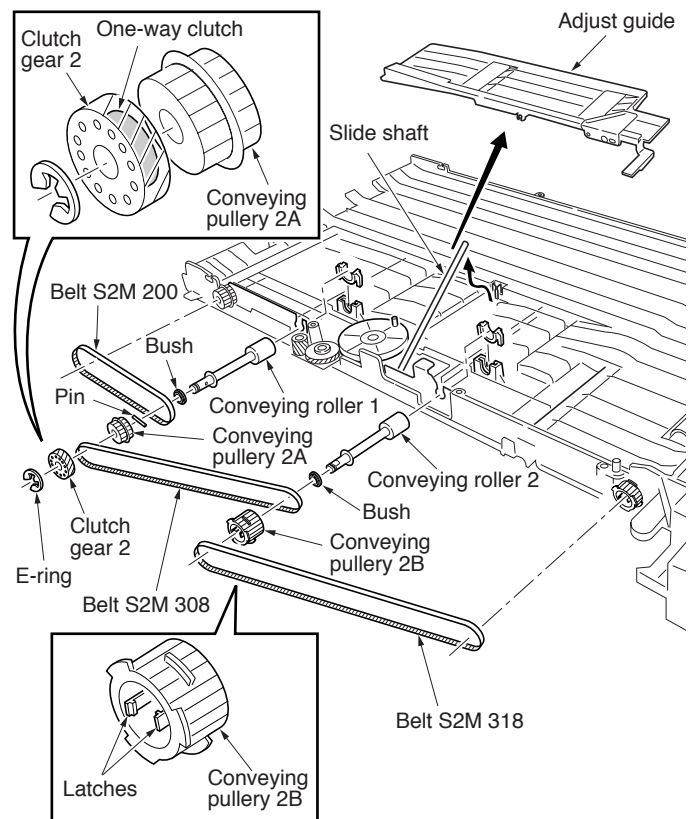


Figure 1-5-5

(5) Detaching and refitting the conveying roller 3

Follow the procedure below to check or replace the conveying roller 3.

Procedure

1. Remove the duplexer drawer from the duplexer.
2. Remove the belt S2M 318 from the conveying pulley 2C.
3. Remove the bush H.
4. While unlatching the latches and then remove the conveying pulley 2C and bush E.
5. Remove the stopper ring and then remove the bush E.
6. Remove the conveying roller 3.
7. Check or replace the conveying roller 3.
8. Refit all the removed parts.

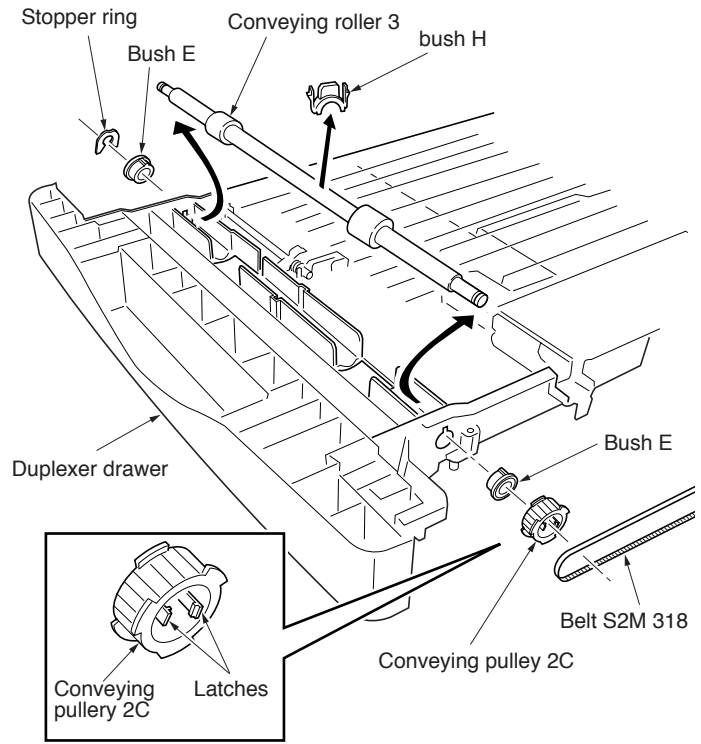


Figure 1-5-6

(6) Detaching and refitting the duplexer PWB

Follow the procedure below to check or replace the duplexer PWB.

Procedure

1. Remove the duplexer right cover (see page 1-5-3).
2. Remove all (ten) connectors from the duplexer PWB.
3. Remove the three screws and then remove the duplexer PWB.
4. Check or replace the duplexer PWB.
5. Refit all the removed parts.

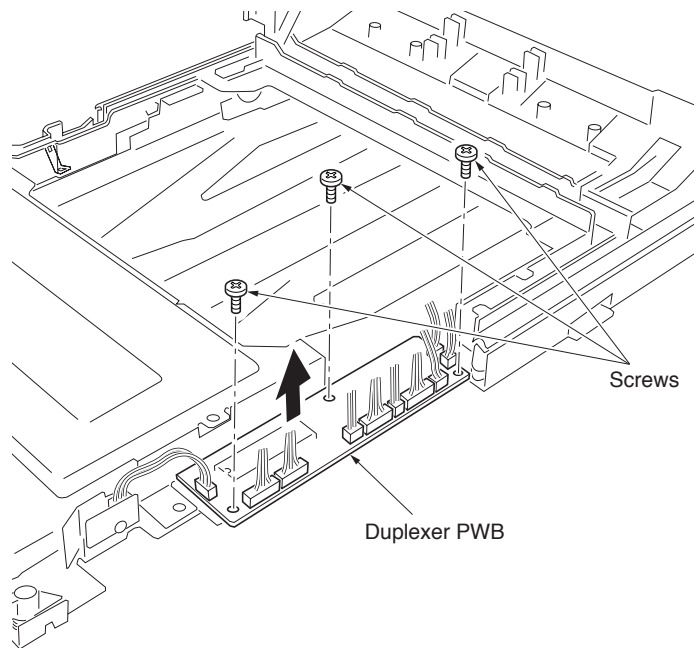


Figure 1-5-7

(7) Detaching and refitting the paper refeed motor and switchback motor

Follow the procedure below to check or replace the paper refeed motor and switchback motor .

Procedure

1. Remove the left and right cover (see page 1-5-3, 4).
2. Remove the nine connectors from the duplexer PWB.
3. Remove the cord cover and then remove the harness.

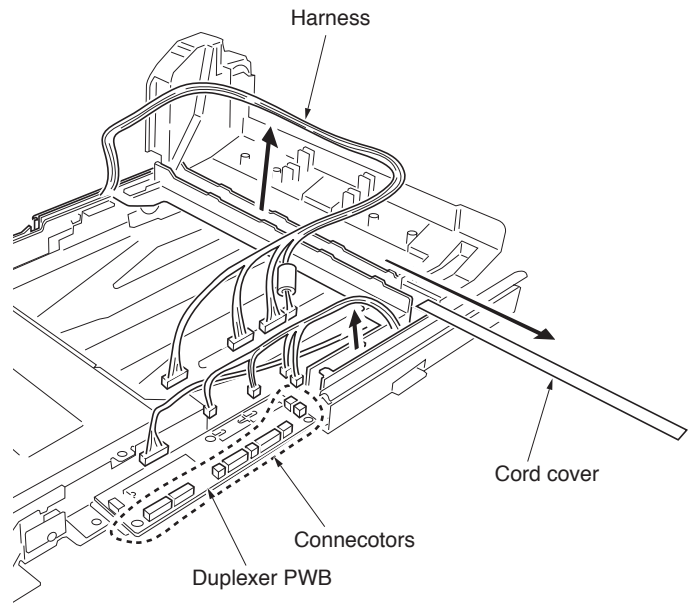


Figure 1-5-8

4. Remove the four screws and then remove the base cover.

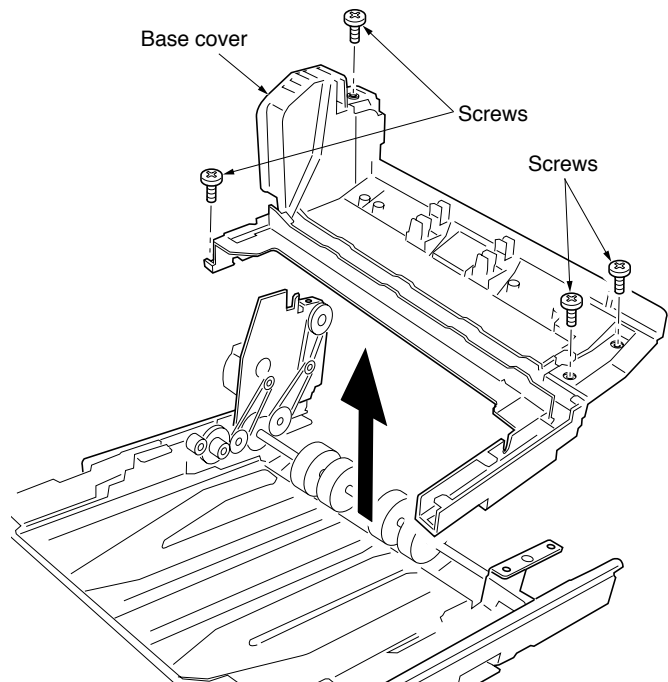


Figure 1-5-9

5. Remove the two connectors.
6. Remove the four screws.
7. Remove the one belt and then remove the switchback motor.
8. Remove the two belts and then remove the paper refeed motor.
9. Check or replace the switchback motor and paper refeed motor.
10. Refit all the removed parts.

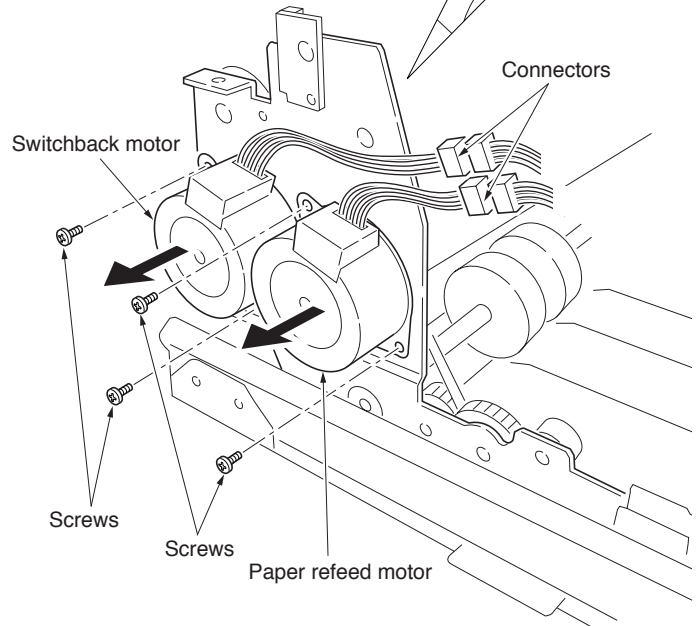
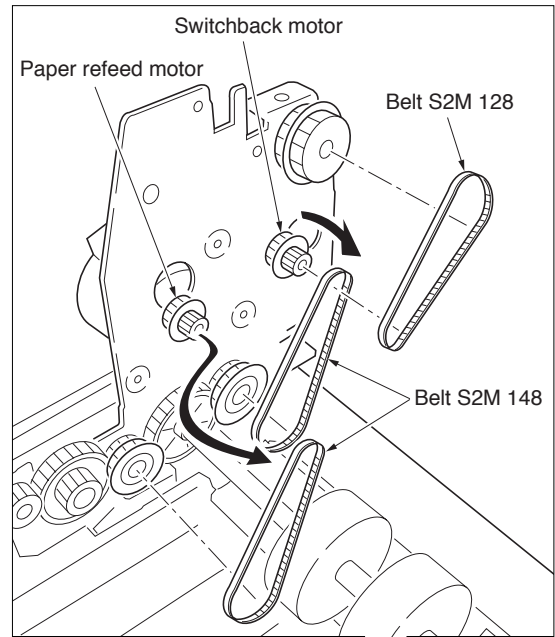


Figure 1-5-10

(8) Detaching and refitting the cooling fan motor and branch solenoid

Follow the procedure below to check or replace the cooling fan motor and branch solenoid.

Procedure

1. Remove the rear unit (see page 1-5-2).
2. Remove four screws and then remove the turn guide.

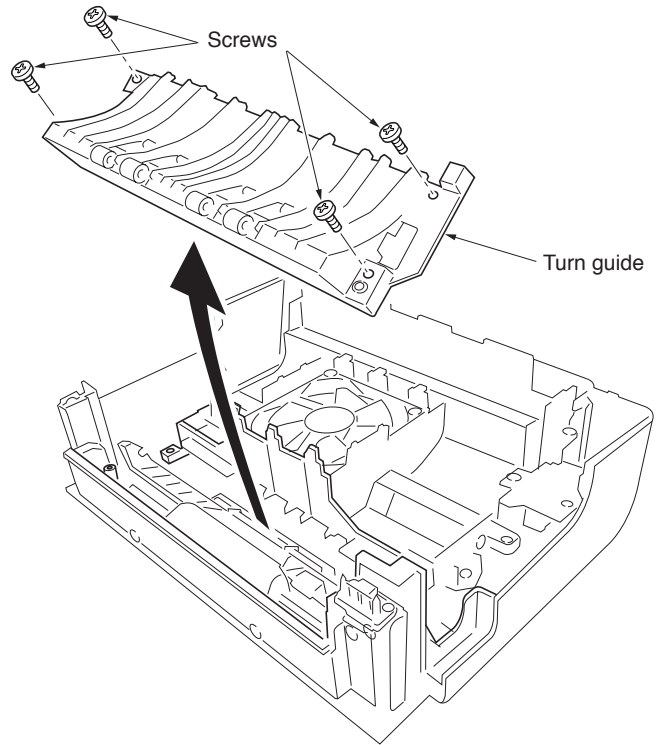


Figure 1-5-11

3. Remove the one screw and then remove the terminal.
4. Remove the three connectors and then remove the rear guide.

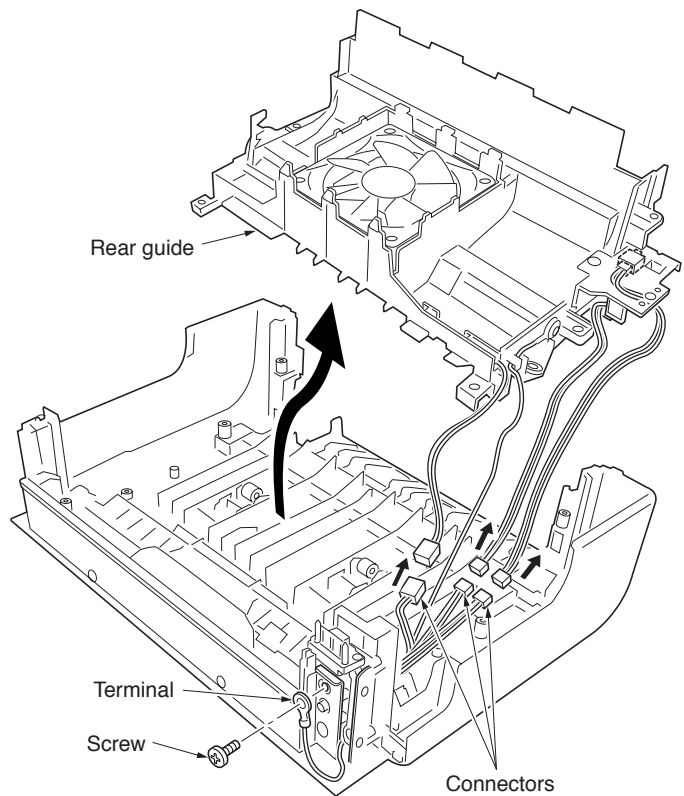
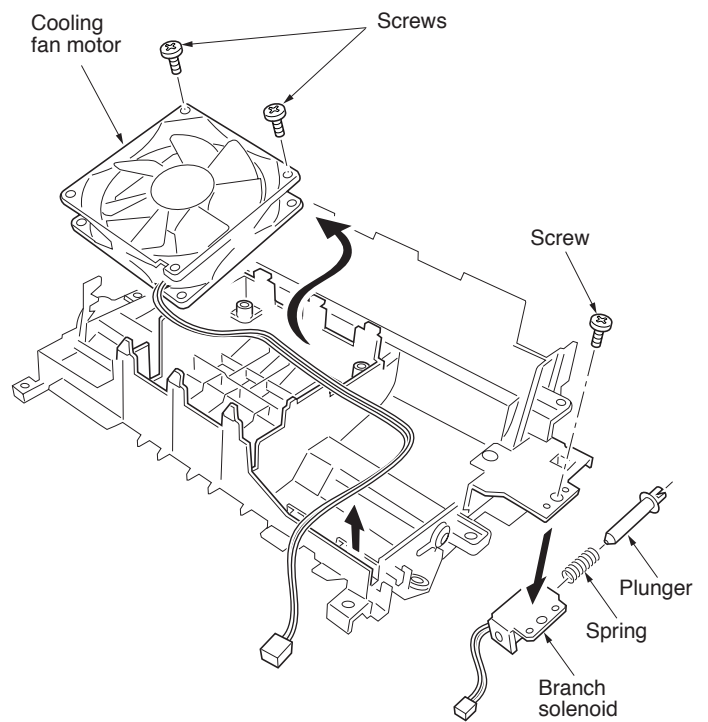


Figure 1-5-12

5. Remove the two screws and then remove the cooling fan motor.
6. Remove the one screw and then remove the branch solenoid.
7. Check or replace the cooling fan motor and branch solenoid.
8. Refit all the removed parts.

**Figure 1-5-13**

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2-1-1 Duplexer unit

Duplexer consists of the following parts and it refeeds the paper after switchback, which is ejected from the printer. The paper with the first side printed after fixing in the printer unit is guided to the vertical path section of the duplexer by the DU flapper activated by the branch solenoid. The paper that is guided to the vertical path assembly is conveyed to the lower paper path of the duplexer by the forward rotation of the turn roller, and the turn roller reverses its rotation when the switchback sensor detected the trailing edge of paper and then the paper is conveyed to the upper paper path. The paper conveyed to the upper paper path strikes the adjust guide according to the action of diagonal roller and it is conveyed by the conveying roller 1, 2 and 3 while creating the skew compensation. Adjust guide have been moved in advance by the paper refeed motor according to the paper width specified from the printer so that the paper can be conveyed on the basis of center line. At the time as the paper leading edge is detected by the duplexer refeed sensor, the unit waits for the refeed command from the printer and the paper is refeed to the printer with its second surface positioned upward by the command of refeed.

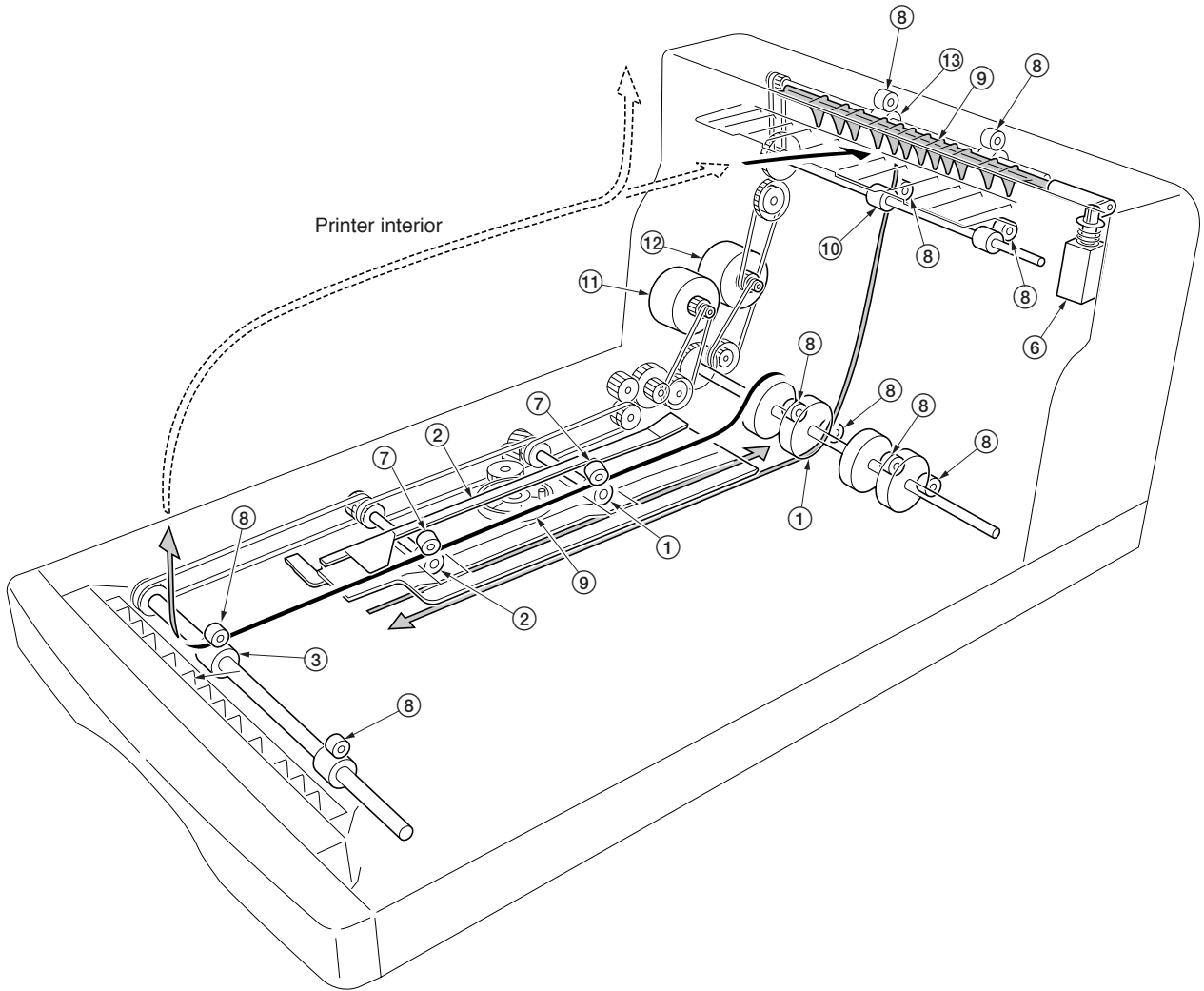


Figure 2-1-1 Duplexer

- | | |
|----------------------|----------------------|
| ① Turn roller | ⑧ Pinch roller |
| ② Adjust guide | ⑨ DU flapper |
| ③ Conveying roller 3 | ⑩ MID roller |
| ④ Conveying roller 2 | ⑪ Paper refeed motor |
| ⑤ Conveying roller 1 | ⑫ Switchback motor |
| ⑥ Branch solenoid | ⑬ FU roller |
| ⑦ Diagonal roller | |

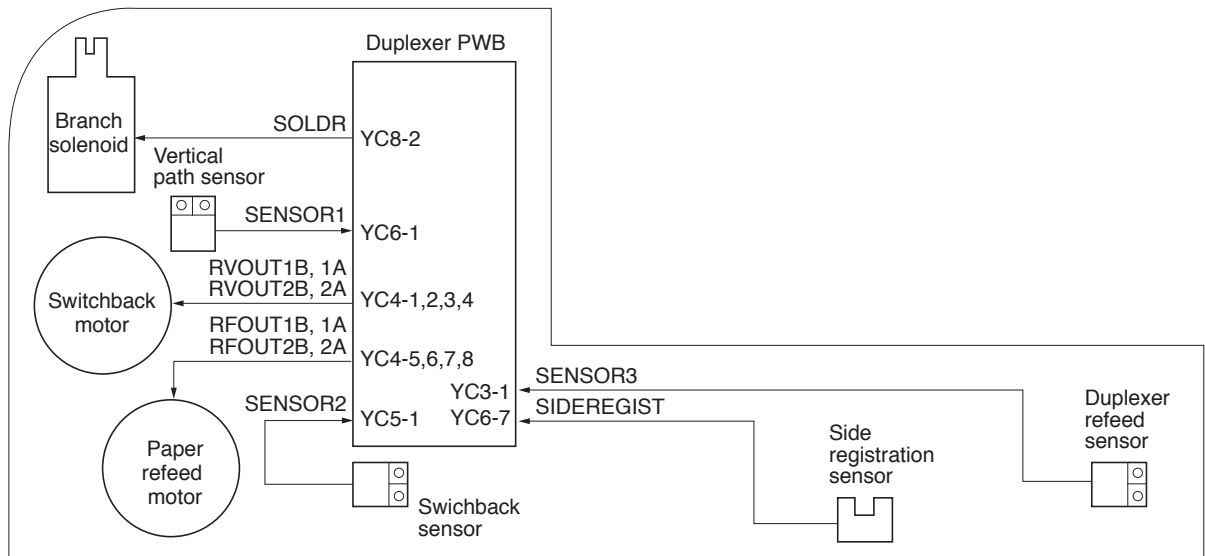


Figure 2-1-2 Duplexer drive circuit block diagram

2-2-1 Electrical parts layout

(1) Electrical parts

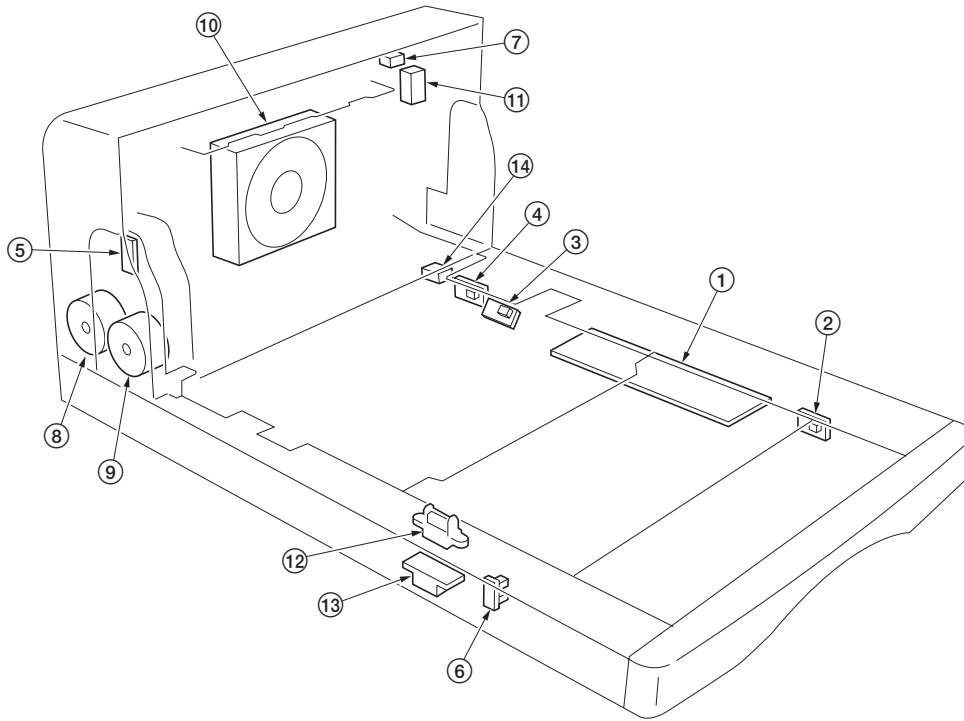


Figure 2-2-1 Electrical parts

- 1. Duplexer PWB Controls the input/output of electrical parts in the duplexer.
- 2. Duplexer refeed sensor Detects the leading edge of paper on the upper paper path. Detects paper misfeed.
- 3. Drawer detection sensor Detects insertion of duplexer drawer.
- 4. Switchback sensor Detects timing of the trailing edge of paper when switched back. Detects paper misfeed.
- 5. Vertical path sensor Detects timing of the leading and trailing edges of paper at the vertical path section. Detects paper misfeed.
- 6. Side registration sensor Detects the adjust guide home position.
- 7. Top cover switch Detects open/close of the top cover.
- 8. Switchback motor Drives forward/reverse rotation of the turn roller.
- 9. Paper refeed motor Drives the conveying rollers 1, 2 and 3 and activates the adjust guide.
- 10. Cooling fan motor Dissipates the heated air in the duplexer.
- 11. Branch solenoid Activates the DU flapper.
- 12. Interface connector Connects the signal lead and 24 V DC power source cord with the printer.
- 13. Interface connector Connects the signal lead and 24 V DC power source cord with the optional paper feeder.
- 14. Rear unit connector Connects the signal lead and 24 V DC power source cord (interlock) with the rear unit.

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2-3-1 Duplexer PWB

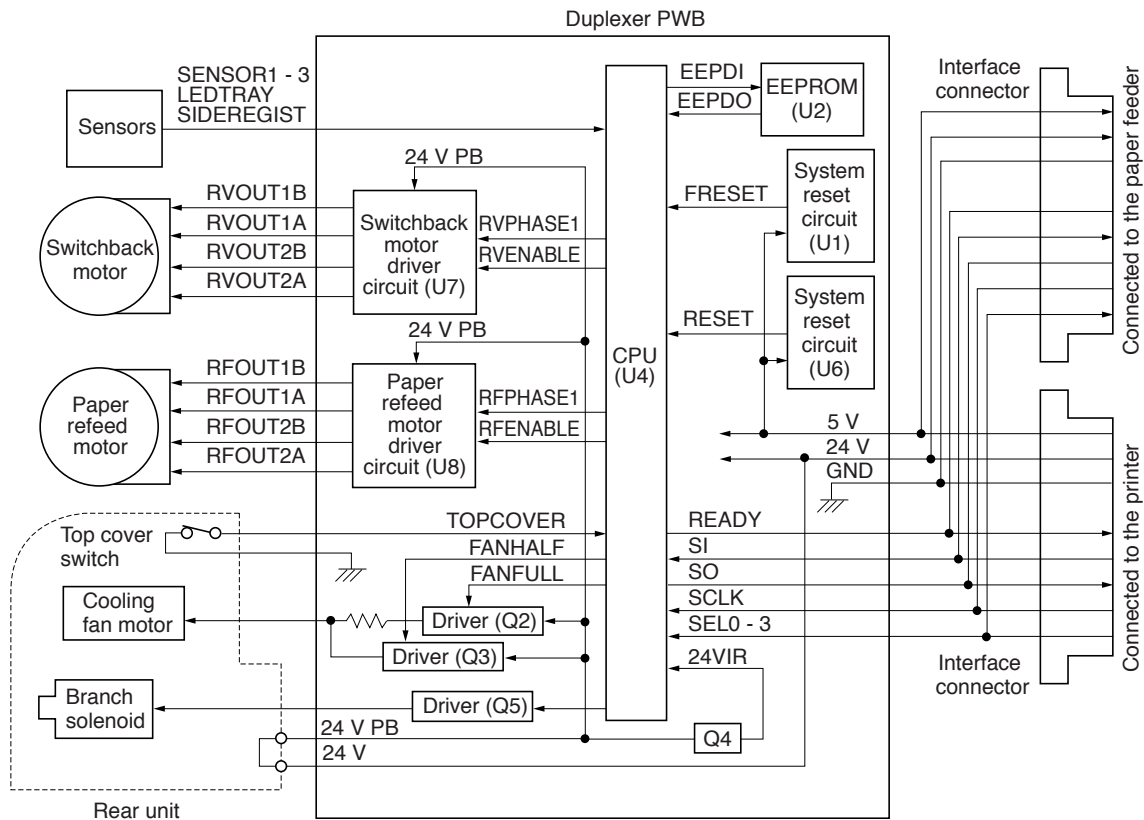


Figure 2-3-1 Duplexer PWB block diagram

Duplexer PWB consists of the switchback motor driver circuit (U7), paper refeed motor driver circuit (U8) and other peripheral circuits with a central focus on CPU (U4) and it is controlled by the engine controller PWB of the printer. Sending/receiving of the control signal is carried out in the serial communication between the duplexer PWB and the engine controller PWB of the printer. The CPU (U4) drives the paper refeed motor via the paper refeed motor driver circuit (U8) while it drives the switchback motor via the switchback motor driver circuit (U7). The CPU (U4) controls forward/reverse rotation of the switchback motor and detects paper misfeed by receiving the detection signal input from the switchback sensor, vertical path sensor and duplexer refeed sensor, and it detects the adjust guide home position according to the detection input from the side registration sensor. System reset circuit monitors the 5 V DC power supply voltage by the operation of power supply detection/system reset IC (U6), therefore this circuit outputs the RESET signal to the CPU (U4) to prevent the system malfunction when the power is turned on or if the power voltage drops.

System reset IC (U1) detects the voltage drop before the RESET signal is output by System reset IC (U6), and activates the CPU (U4) to perform the memory backup (the number of total paper feed) operation to EEPROM (U2).

The printer supplies the 24 V DC and 5 V DC power and this 24 V DC is applied for the drive power source of the switchback motor, paper refeed motor and branch solenoid. The 24 V DC power is supplied via the rear unit, so the supply of 24 V DC is shut off when the rear unit is opened. 5 V DC is the power supply to operate the circuits and sensors.

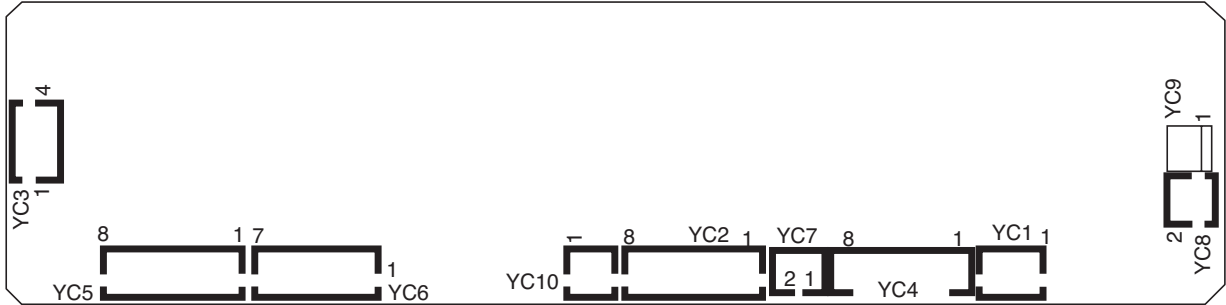


Figure 2-3-2 Duplexer PWB silk-screen diagram

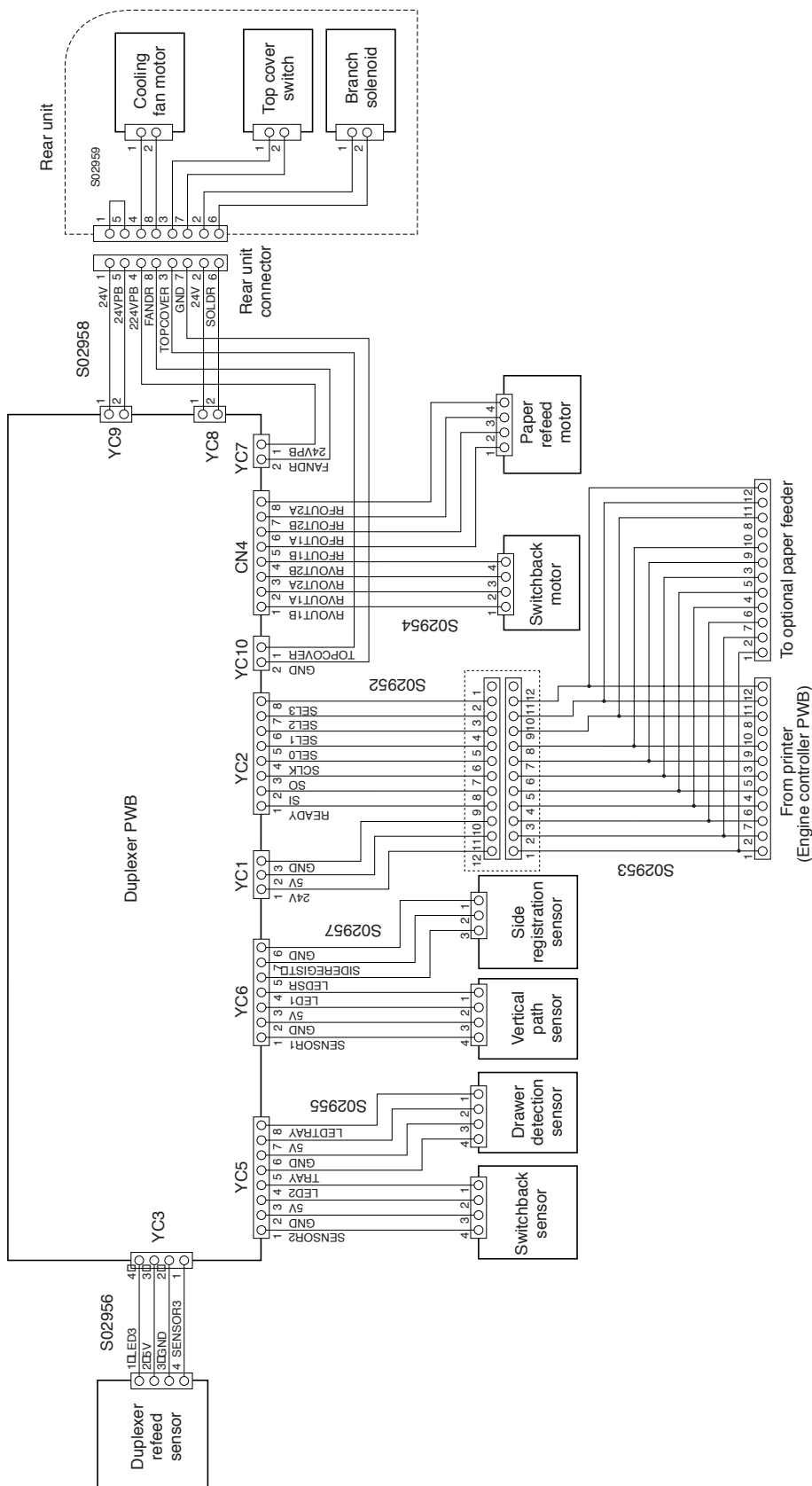
Connector	Pin No.	Signal	I/O	Voltage	Description
YC1 Connected to the interface connector.	1	24 V	I	24 V DC	24 V DC power input
	2	5 V	I	5 V DC	5 V DC power input
	3	GND	-	Ground	Signal ground
YC2 Connected to the interface connector.	1	READY	O	0/5 V DC	Duplexer ready signal
	2	SI	O	0/5 V DC (pulse)	Serial communication data, output
	3	SO	I	0/5 V DC (pulse)	Serial communication data, input
	4	SCLK	I	0/5 V DC (pulse)	Clock pulse for serial communication
	5	SEL0	I	0/5 V DC	Option unit select signal (0)
	6	SEL1	I	0/5 V DC	Option unit select signal (1)
	7	SEL2	I	0/5 V DC	Option unit select signal (2)
	8	SEL3	I	0/5 V DC	Option unit select signal (3)
YC3 Connected to the duplexer refeed sensor.	4	SENSOR3	I	0/5 V DC	duplexer refeed sensor: On/Off
	3	GND	-	Ground	Signal ground
	2	5V	O	5 V DC	5 V DC power supply for duplexer refeed sensor
	1	LED3	O	5 V DC	5 V DC power supply for LED
YC4 Connected to the switchback motor and paper refeed motor.	1	RVOUT1B	O	0/24 V DC (pulse)	Switchback motor coil energization pulse (1B)
	2	RVOUT1A	O	0/24 V DC (pulse)	Switchback motor coil energization pulse (1A)
	3	RVOUT2B	O	0/24 V DC (pulse)	Switchback motor coil energization pulse (2B)
	4	RVOUT2A	O	0/24 V DC (pulse)	Switchback motor coil energization pulse (2A)
	5	RFOUT1B	O	0/24 V DC (pulse)	Paper refeed motor coil energization pulse (1B)
	7	RFOUT1A	O	0/24 V DC (pulse)	Paper refeed motor coil energization pulse (1A)
	8	RFOUT2B	O	0/24 V DC (pulse)	Paper refeed motor coil energization pulse (2B)
	9	RFOUT2A	O	0/24 V DC (pulse)	Paper refeed motor coil energization pulse (2A)
	YC5 Connected to the switchback sensor and drawer detection sensor.	1	SENSOR2	I	0/5 V DC
2		GND	-	Ground	Signal ground
3		5V	O	5 V DC	5 V DC power supply for switchback sensor
4		LED3	O	5 V DC	5 V DC power supply for LED
5		TRAY	I	0/5 V DC	Drawer detection sensor: On/Off
6		GND	-	Ground	Signal ground
7		5V	O	5 V DC	5 V DC power supply for drawer detection sensor
8		LEDTRAY	O	5 V DC	5 V DC power supply for LED
YC6 Connected to the vertical path sensor and side registration sensor.	1	SENSOR1	I	0/5 V DC	Vertical path sensor: On/Off
	2	GND	-	Ground	Signal ground
	3	5V	O	5 V DC	5 V DC power supply for vertical path sensor
	4	LED3	O	5 V DC	5 V DC power supply for LED
	5	TRAY	I	0/5 V DC	Side registration sensor: On/Off
	6	GND	-	Ground	Signal ground
YC7 Connected to the cooling fan motor.	1	24VPB	O	24 V DC	24 V DC power supply for cooling fan motor
	2	FANDR	O	12/0 V DC	Cooling fan motor: Half/full speed
YC8 Connected to the branch solenoid.	1	24V	O	24 V DC	24 V DC power supply for branch solenoid
	2	SOLDR	O	0/24 V DC	Branch solenoid: On/Off

Connector	Pin No.	Signal	I/O	Voltage	Description
YC9	1	24V	O	24 V DC	24 V DC power output
Connected to the rear unit connector.	2	24VPB	I	24 V DC	24 V DC power input (via rear unit)
YC10	1	GND	-	Ground	Signal ground
Connected to the top cover switch.	2	TOPCOVER	I	0/5 V DC	Top cover switch: Close/Open

Timing chart No. 1 Paper size: A4

**Design data
have not
come to
hand yet.**

Connection diagram



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