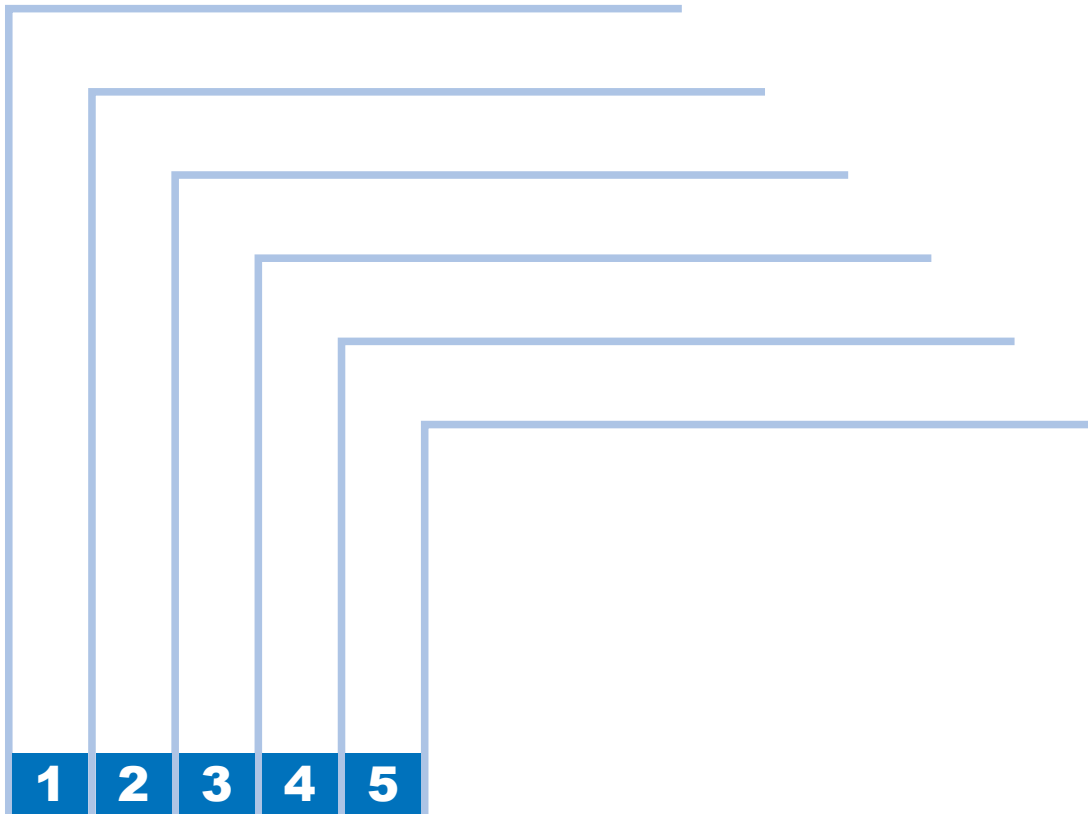


Paper Feeder PF-723A

Service Manual



Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

Corrections

This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

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Caution

Use of this manual should be strictly supervised to avoid disclosure of confidential information.



Explanation of Symbols

The following symbols are used throughout this Service Manual.

Symbols	Explanation
	Used to show permission.
	Used to show prohibition.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.

In the diagrams,  represents the path of mechanical drive; where a signal name accompanies the symbol, the arrow  indicates the direction of the electric signal.

The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low". (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.

In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

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Product Description

- Specifications
- Parts Name

Specifications

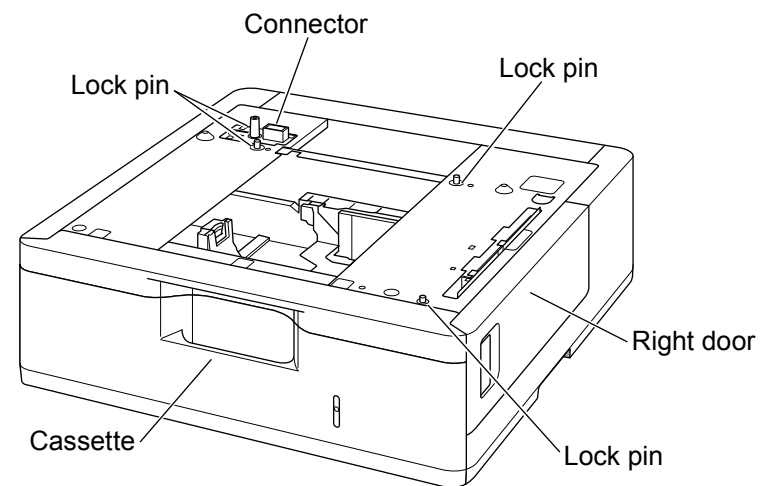
Specifications List

Item	Specifications
Paper type	Plain paper, Recycled paper, Colored paper, Thick paper, Coated paper
Paper size	A4 vertical, B5 vertical, A5 vertical, 11x17, Legal vertical, Letter vertical, Executive vertical, User setting size User setting size: Short side; 148.0 to 215.9mm, Long side; 210.0 to 355.6mm
Paper weight	Plain paper (60 to 105g/m ²), Thick paper (106 to 176g/m ²), Coated paper (120 to 220g/m ²)
Paper load capacity	Plain paper (80g/m ²): Approx. 500 sheets
Control panel	Not provided
Display	Not provided
Option	Not provided
Dimension	514 (W) x 489 (D) x 162 (H) [mm]
Weight	Approx. 9.0kg
Power supply	DC24V (Supplied from the host machine)

T-1-1

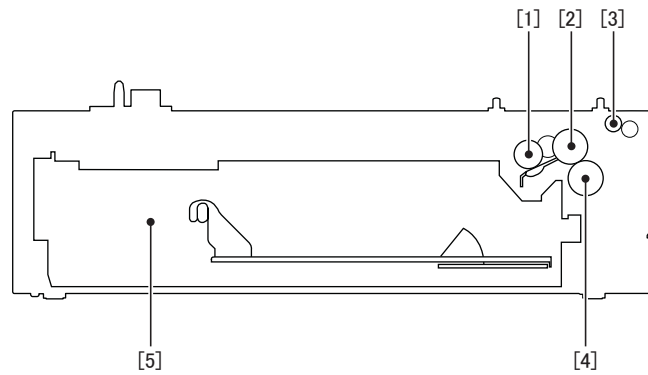
Parts Name

External View



F-1-1

Cross Section View



F-1-2

- [1] Paper feeder pickup roller
- [2] Paper feeder feed roller 1
- [3] Paper feeder feed roller 2
- [4] Paper feeder separation roller
- [5] Cassette



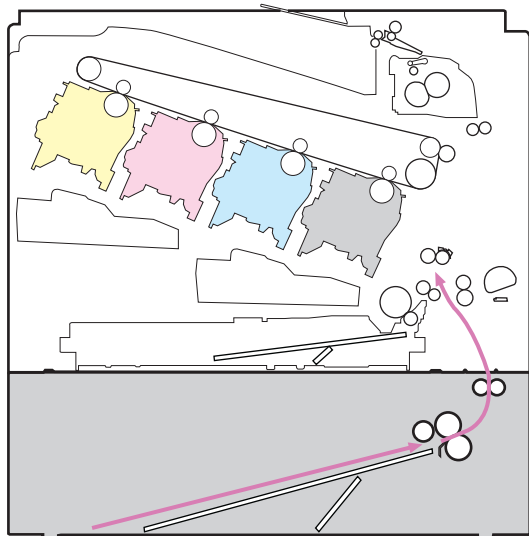
Technical Reference

- Basic Operation
- Jam Detection

Basic Operation

Overview

The paper feeder is attached to the bottom of the host machine as an option, and has function to feed/transport the paper to the printer.



F-2-1

Basic Sequence

The operation sequence of the paper feeder is controlled by the paper feeder driver. The paper feeder driver controls sequence of the paper feeder and serial communication with the DC controller of the printer, using a micro computer.

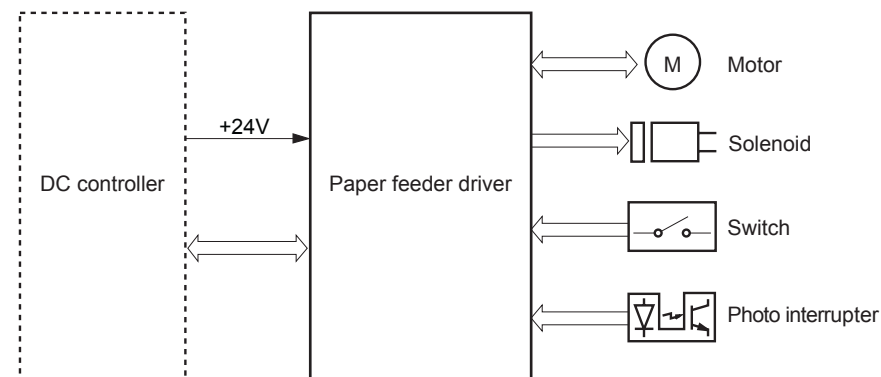
The DC controller outputs several commands to the paper feeder driver at a necessary timing. The paper feed driver drives each load (motor, solenoid) according to these command.

The paper feeder driver also returns the paper feeder condition to the DC controller.

When serial communication cannot be performed between the DC controller and the paper feeder driver at a time other than when the power is turned on or the machine is in the sleep status, it is judged that paper feeder illegal connection was performed, and the error details are reported to the main controller.

Power Supply

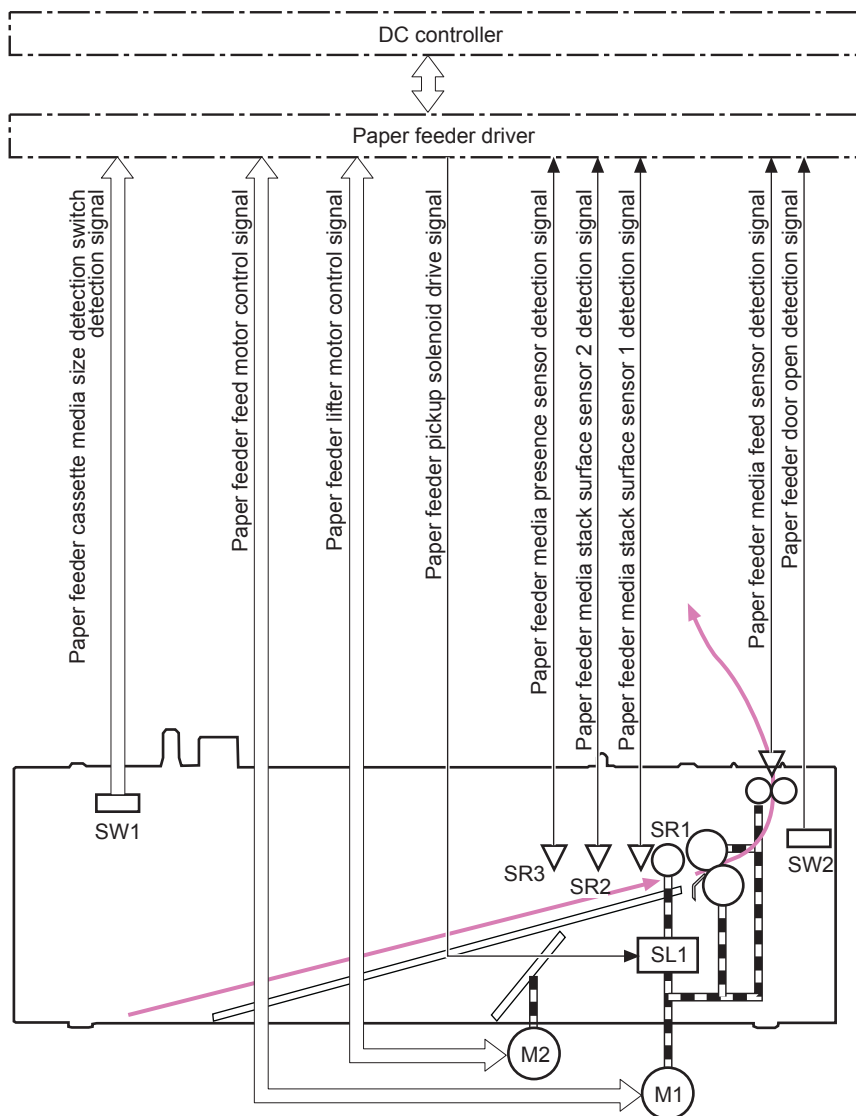
The DC24V power is supplied from the printer to the paper feeder, and the DC3.3V power is generated for sensors and driver IC from the DC24V power in the paper feeder driver.



F-2-2

Pickup Feeding Operation

In this mechanism, the paper in the cassette is picked up one by one and transported to the printer.



F-2-3

Electrical symbol		Name	Remarks	
Motor	M1	Paper feeder feed motor		
	M2	Paper feeder lifter motor		
Solenoid	SL1	Pickup solenoid		
	Photo interrupter	SR1	Paper feeder media stack surface sensor 1	
		SR2	Paper feeder media stack surface sensor 2	
	Switch	SR3	Paper feeder media presence sensor	
SR4		Paper feeder media feed sensor		
Switch	SW1	Paper feeder cassette media size detection switch		
	SW2	Paper feeder door switch		

T-2-1

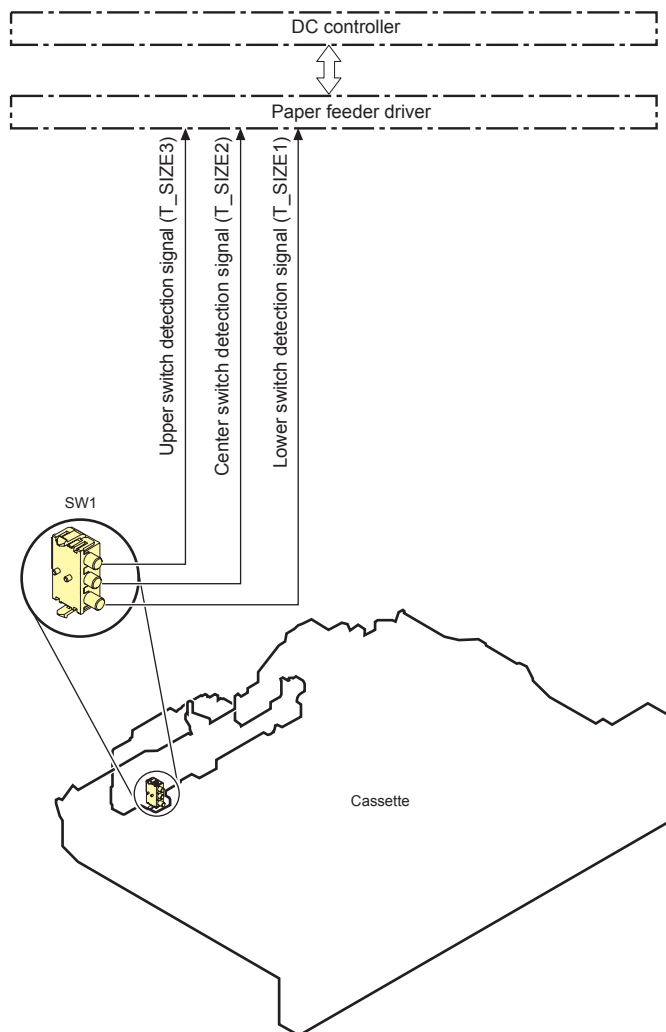
Pickup feeding operation performed by the paper feeder is explained below.

- 1) After the printer is turned on or after the cassette is inserted, the lifting plate is lifted up to the position where pickup can be performed driven by lift-up operation.
- 2) When receiving a print instruction from the main controller, the DC controller drives the paper feeder feed motor via the paper feeder driver, and rotates each roller.
- 3) The DC controller drives the paper feeder pickup solenoid at a specified timing via the paper feeder driver. This drive rotates the paper feeder pickup roller. When the pickup cam rotates and the pickup arm is lifted down, the paper in the paper feeder is transported into the paper feeder one by one and sent to the printer via each feeding roller.

Cassette Media Size Detection / Cassette Presence Detection

Cassette Media Size Detection

The cassette media size is detected by the paper feeder cassette media size detection switch (SW1). The paper feeder driver judges the paper size based on the condition of the switch.



F-2-4

Paper size	Paper feeder cassette media size detection switch (SW1)		
	Upper switch	Center switch	Lower switch
Universal	ON	ON	ON
A5	ON	OFF	OFF
B5	OFF	ON	ON
Executive	ON	OFF	ON
Letter	OFF	ON	OFF
A4	OFF	OFF	ON
Legal	ON	ON	OFF
No cassette	OFF	OFF	OFF

T-2-2

Cassette Presence Detection

The presence of the cassette is detected by the paper feeder cassette media size detection switch (SW1).

When no cassette is inserted into the printer, all the cassette media size detection switches are turned "OFF", and the paper feeder driver judges that no cassette is inserted.

When any of the cassette media size detection switches is turned "ON", the paper feeder driver judges that a cassette is inserted.

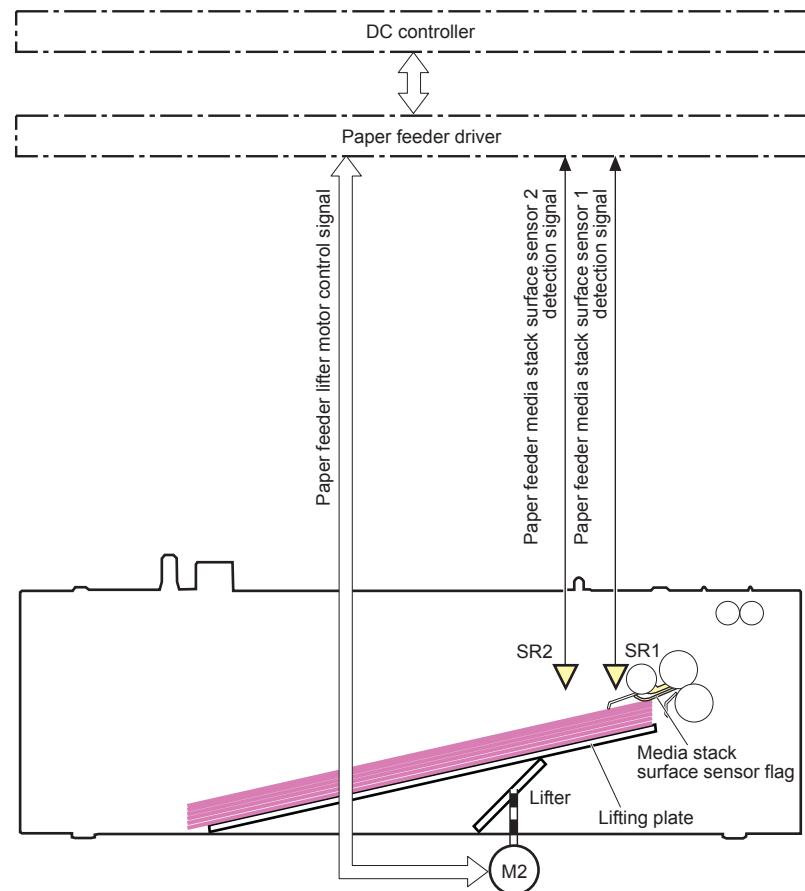
Paper Feeder Lift-up Operation

The lift-up operation is performed to place the paper surface to a correct pickup position so that stable pickup operation can be performed.

The paper feeder driver controls the paper feeder lifter motor and the paper feeder media stack surface sensors (1, 2) and performs lift-up operation when the power is turned on, the machine recovered from the sleep status, a cassette is inserted, or printing is being executed. This feeder has two media stack surface sensors. The paper feeder media stack surface sensor 1 detects whether the paper surface is at an appropriate height during printing. The paper feeder media stack surface sensor 2 detects whether the paper surface at an appropriate height when the power is turned on, the machine recovered from the sleep status, or a cassette is inserted.

The lift-up operation sequence is explained below.

- 1) The paper feeder driver drives the lifter motor (M2). This operation lifts up the lifter and the lifting plate.
- 2) When the paper surface was detected by the paper feeder media stack surface sensor 2, the paper feeder driver stops the paper feeder lifter motor.
- 3) When it was detected by the paper feeder media stack surface sensor 1 that the paper surface is out of the pickup position during printing, the paper feeder driver drives the lifter motor and performs lift-up operation.



F-2-5

When the paper surface cannot be detected by the paper feeder media stack surface sensors (1, 2) when a specified time elapsed after start of the lift-up operation, the paper feeder driver judges that a failure occurred in the lift-up mechanism, and reports it to the main controller.

MEMO :

Two paper feeder media stack surface sensors are used to prevent the pickup failure by the waviness paper.
If the stack surface touches the sensor flag, the surface is held on a paper pickup roller.

Paper Feeder Media Presence Detection

The presence of the paper in the cassette is detected by the paper feeder media presence sensor (SR3).

Paper Feeder Double Feeding Prevention Mechanism

The separation roller method is used to prevent double feeding.

In the separation roller method, opposite drive force is applied to the paper feeder separation roller equipped with a torque limiter and the paper feeder feed roller, and when the paper is double-fed, the second sheet is pushed back so that the first sheet is transported into the machine. The details are explained below.

When no load is applied

Drive force transferred to the paper feeder separation roller: The power to push back the paper.

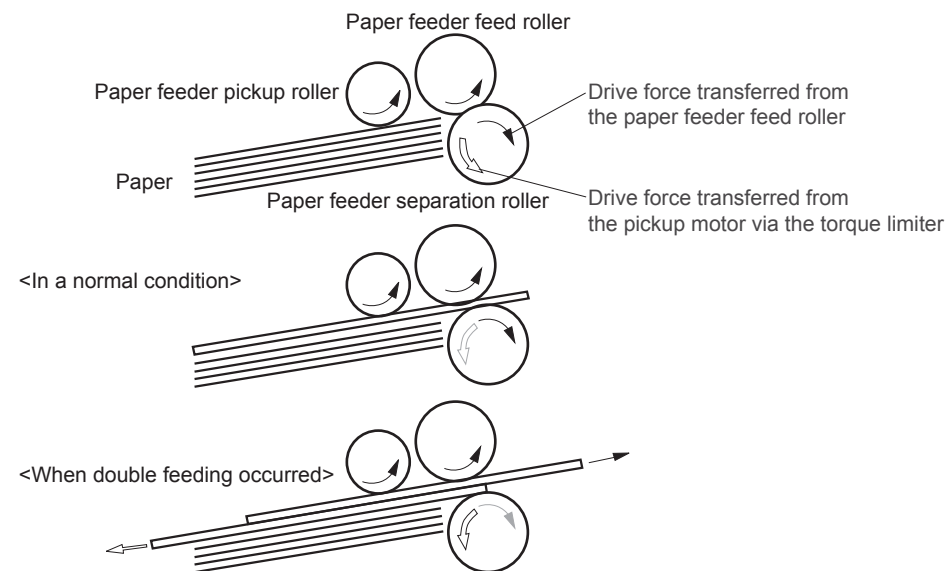
Drive force transferred to the paper feeder feed roller: The power to transport the paper into the machine.

In the condition where a sheet of the paper was picked up

Since the paper feeder separation roller is equipped with a torque limiter, the drive force of the paper feeder feed roller moves the paper feeder separation roller via the paper.

In the condition where double-fed paper was picked up

Because the frictional force between the two sheets is weak, the drive force of the paper feeder feed roller transferred to the paper feeder separation roller becomes significantly weak. Then, the double-fed paper is removed, driven by the paper feeder separation roller itself.



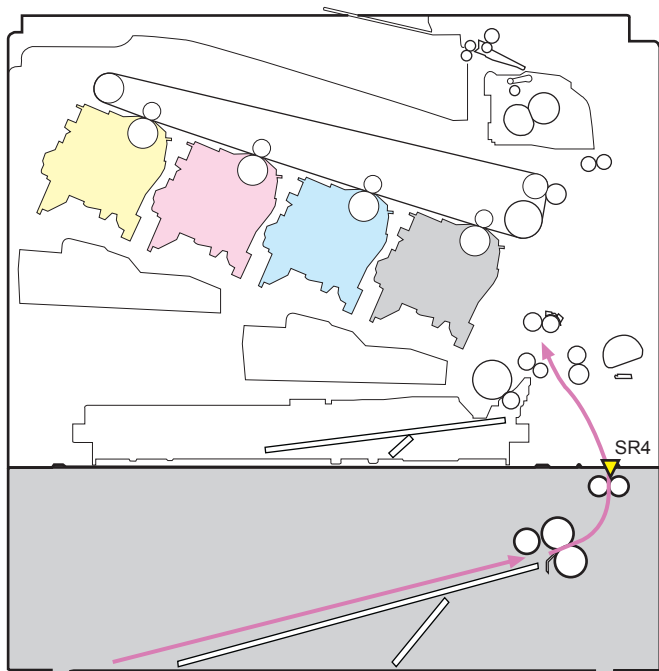
F-2-6

Jam Detection

Overview

A paper sensor shown below is provided to detect whether the paper is present or the paper is correctly transported or not.

- Paper feeder media feed sensor (SR4)



F-2-7

Whether a jam occurred or not is judged based on whether the paper is placed in the sensor assembly at the timing memorized by the paper feeder driver.

When the paper feeder driver judges that a jam occurred, printing operation stops, and it is reported to the main controller via the DC controller. The following types of jams are detected.

Pickup Delay Jam

The leading edge of the paper cannot be detected by the paper feeder media feed sensor (SR4) within a specified time after the paper feeder pickup solenoid was turned on.

Pickup Stationary Jam

The trailing edge of the paper cannot be detected by the paper feeder media feed sensor (SR4) even when a specified time elapsed after the leading edge of the paper was detected by the paper feeder media feed sensor (SR4).

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3

Disassembly and Assembly

- Introduction
- External-related Issues
- Main Units
- Main Parts
- PCB-related Issues

Introduction

Points to Note During Disassembly and Assembly

Be sure to pay attention to the below points in performing disassembly and assembly.

1. In performing disassembly and assembly, for safety precaution be sure to disconnect the power plug.
2. If there is no special instruction, perform the assembling work in the reverse way of disassembling procedure.
3. In the places where screws, etc. are used, be sure not to install them wrongly (length/diameter).
4. To ensure electric conduction, binding screw with washer is used for the mounting screws, e.g. for earth wire or varistor, etc. Be sure to use this screw in performing assembling-installing.
5. It is a basic rule that machine is not to be operated when parts is in the removed condition.
6. In disassembling, do not remove the paint-locked screw.

Removing Host Machine

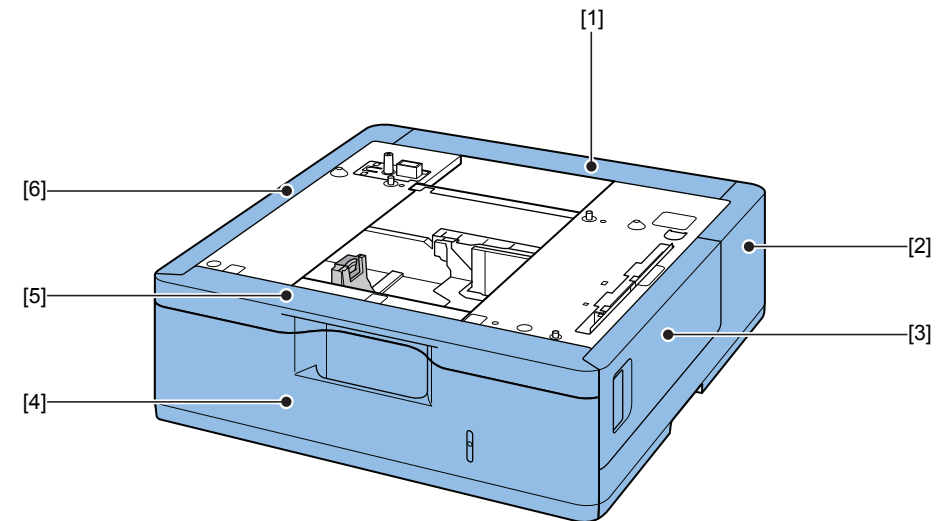
- 1) Hold the handle, remove it by lifting it up.

Note :

Be sure to perform the work by at least 2 persons.

Lay Out Drawing

External-related Issues

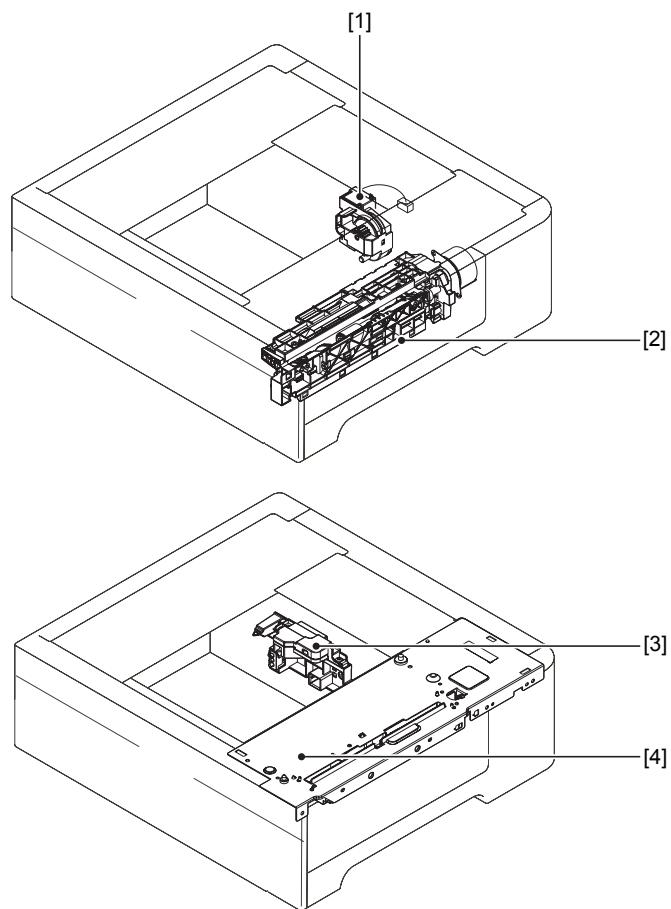


F-3-1

Number	Name	Reference
[1]	Rear cover	p. 3-7
[2]	Right cover	p. 3-5
[3]	Right door	p. 3-5
[4]	Cassette	-
[5]	Front cover	p. 3-6
[6]	Left cover	p. 3-6

T-3-1

Main Units

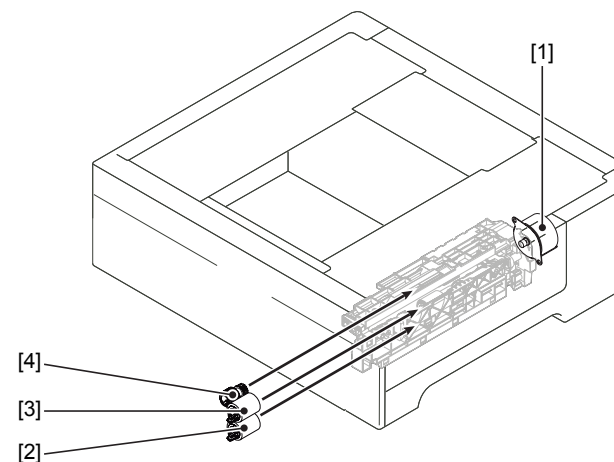


F-3-2

Number	Name	Reference
[1]	Lifter drive unit	p. 3-8
[2]	Paper feeder pickup unit	p. 3-9
[3]	Lifter unit	p. 3-9
[4]	Paper feeder feed unit	p. 3-11

T-3-2

Main Parts

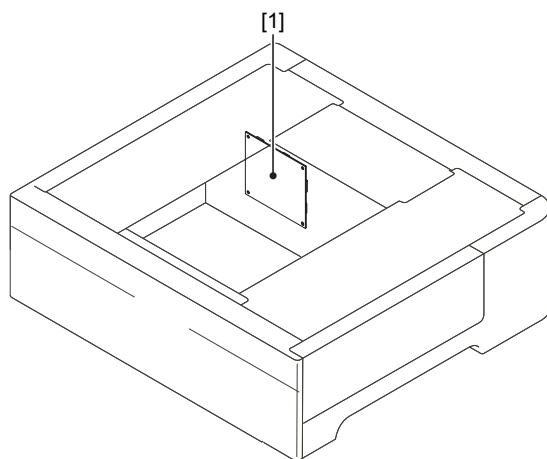


F-3-3

Number	Name	Reference
[1]	Paper feeder pickup motor	p. 3-12
[2]	Paper feeder separation roller	p. 3-12
[3]	Paper feeder feed roller	p. 3-13
[4]	Paper feeder pickup roller	p. 3-13

T-3-3

■ Main PCB



F-3-4

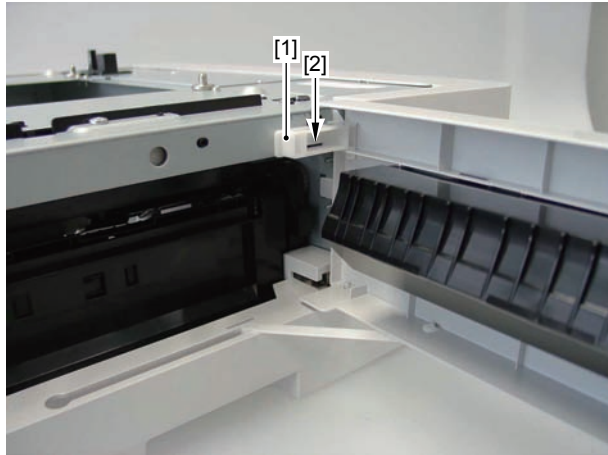
Number	Name	Reference
[1]	Paper feeder driver PCB	p. 3-14

T-3-4

External-related Issues

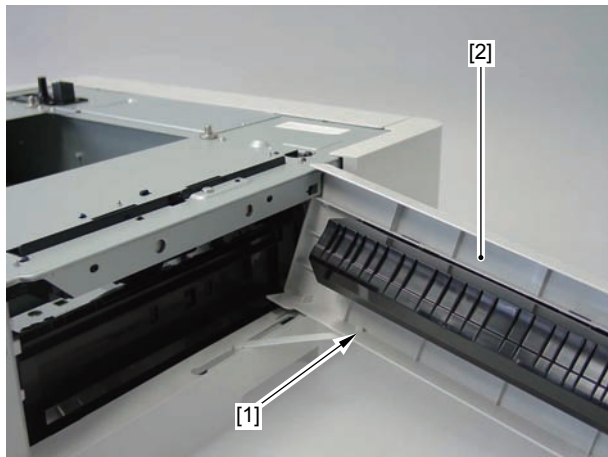
Removing Right Door

- 1) Open the right door.
- 2) Remove the stopper [1] by sliding it to the right.
 - Claw [2] in 1 place



F-3-5

- 3) Remove the arm [1], and remove the right door [2].



F-3-6

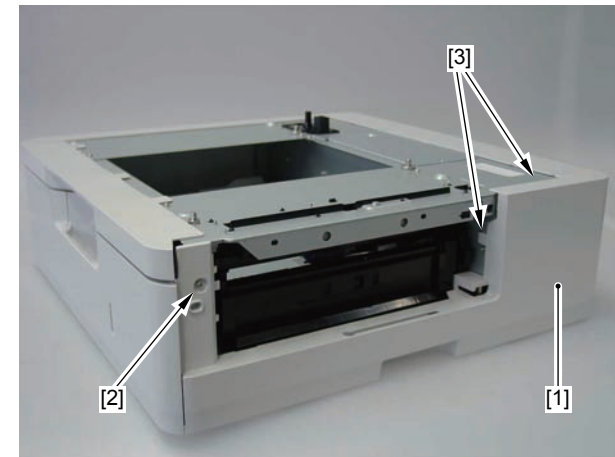
Removing the Right Cover

Before Removing the Right Cover

- 1) Remove the right door. (Refer to page 3-5)

Removing the Right Cover

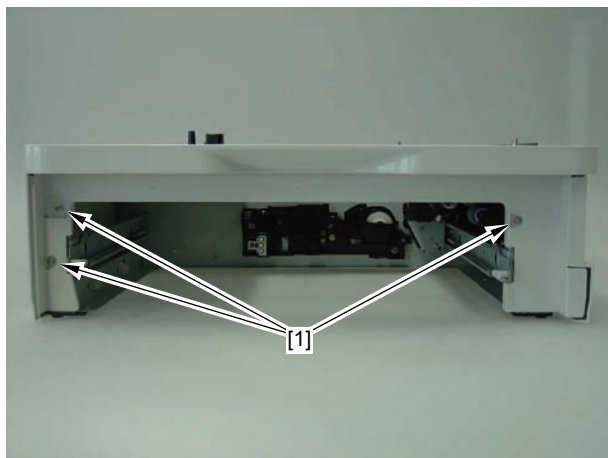
- 1) Remove the right cover [1].
 - 1 screw [2]
 - Claw [3] in 2 places



F-3-7

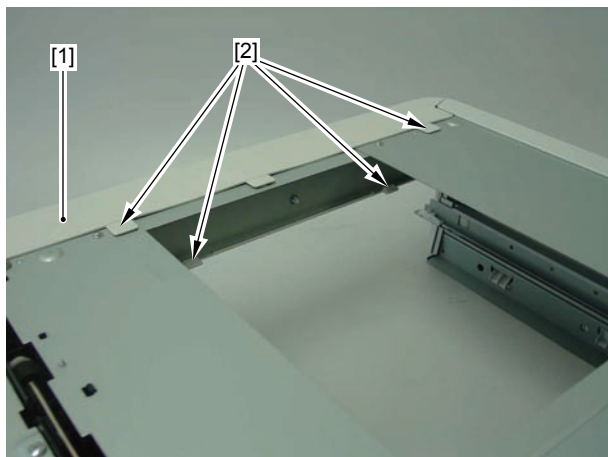
Removing Front Cover

- 1) Remove the cassette.
- 2) Remove the 3 screws [1]



F-3-8

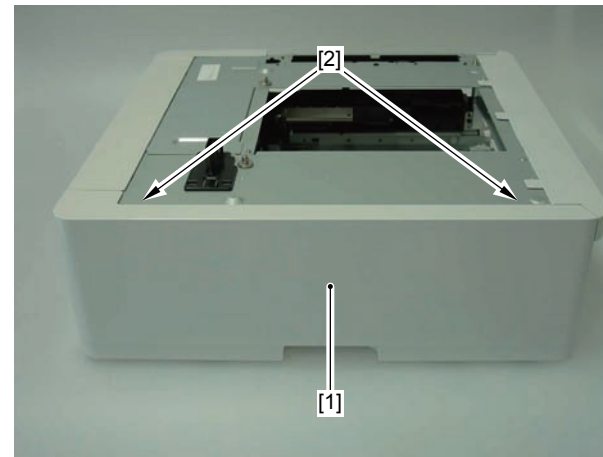
- 3) Remove the front cover [1]
- Claw [2] in 4 places.



F-3-9

Removing the Left Cover

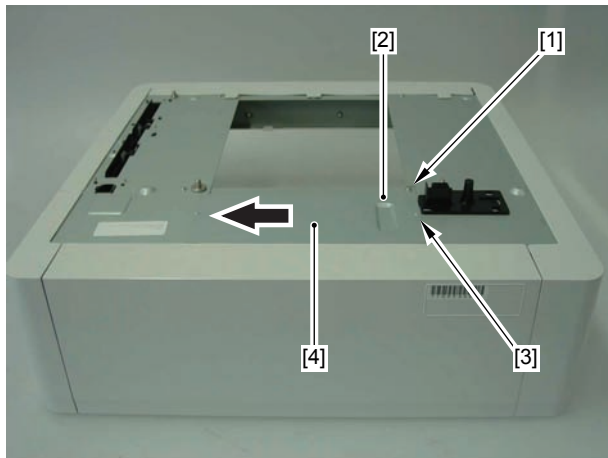
- 1) Remove the cassette.
 - 2) Remove the left cover [1].
- Claw [2] in 2 places



F-3-10

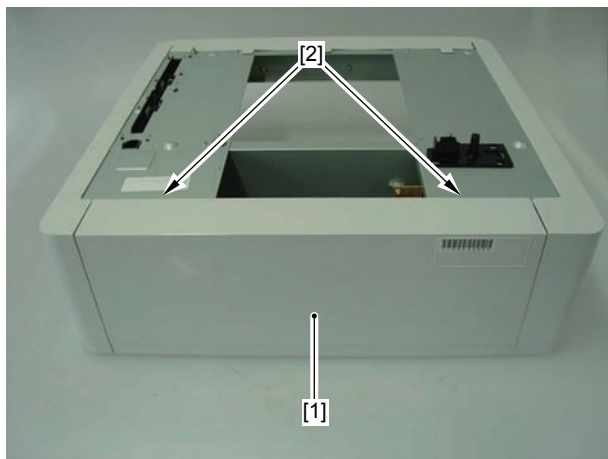
Removing Rear Cover

- 1) Remove the screw [1].
- 2) Lift the [2] part, remove the boss [3], and remove the plate [4] by sliding it in direction of the arrow.



F-3-11

- 3) Remove the rear cover [1].
 - Claw [2] in 2 places



F-3-12

Main Units

Removing Lifter Drive Unit

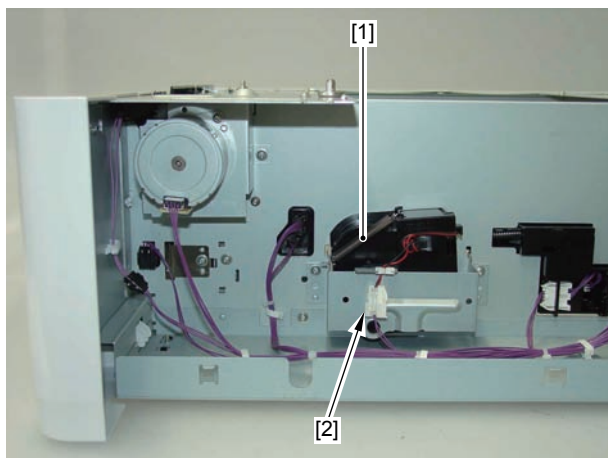
Before Removing Lifter Drive Unit

1) Remove the rear cover. (Refer to page 3-7)

Removing Lifter Drive Unit

1) Remove the cassette.

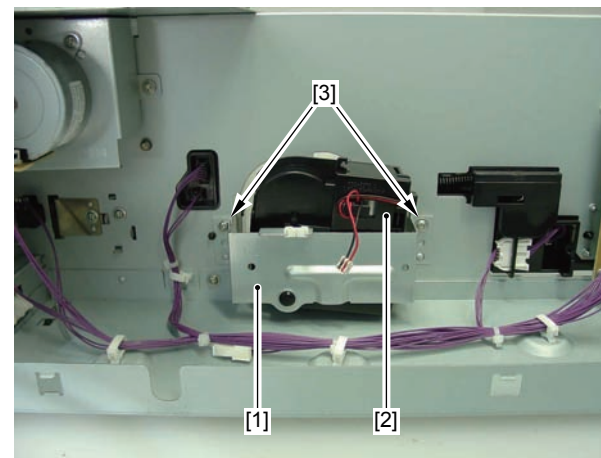
2) Remove the spring [1] and connector [2].



F-3-13

3) Remove the lifter drive unit [2] after removing the plate [1].

- 2 screws [3]



F-3-14

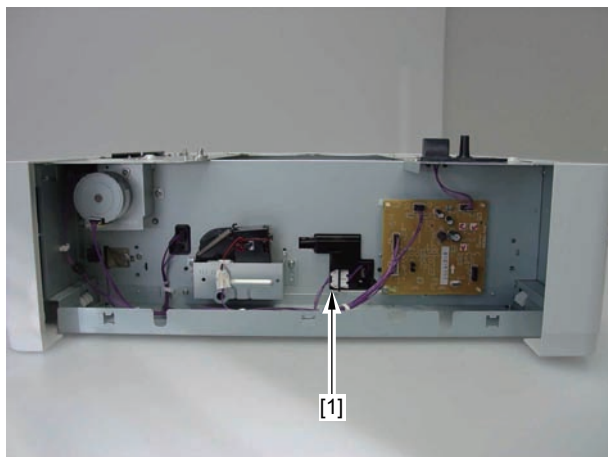
Removing the Lifter Unit

Before Removing the Lifter Unit

- 1) Remove the rear cover. (Refer to page 3-7)

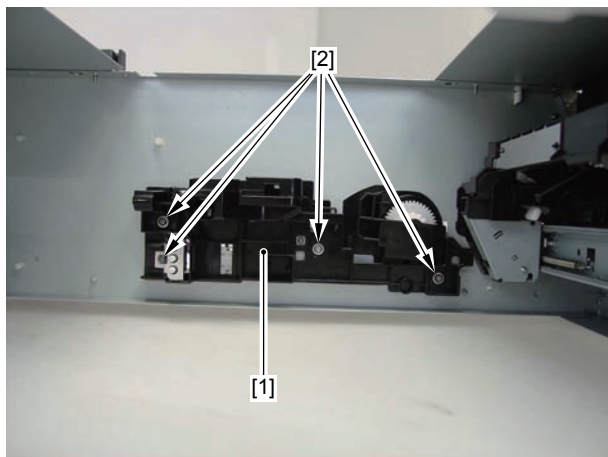
Removing the Lifter Unit

- 1) Remove the cassette.
- 2) Remove the connector [1].



F-3-15

- 3) Remove the lifter unit [1].
 - 4 screws [2]



F-3-16

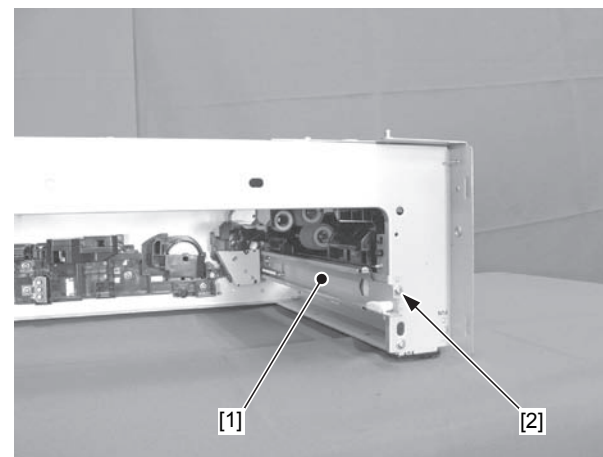
Removing Paper Feeder Pickup Unit

Before Removing Paper Feeder Pickup Unit

- 1) Remove the right door. (Refer to page 3-5)
- 2) Remove the right cover. (Refer to page 3-5)
- 3) Remove the rear cover. (Refer to page 3-7)
- 4) Remove the front cover. (Refer to page 3-6)

Removing Paper Feeder Pickup Unit

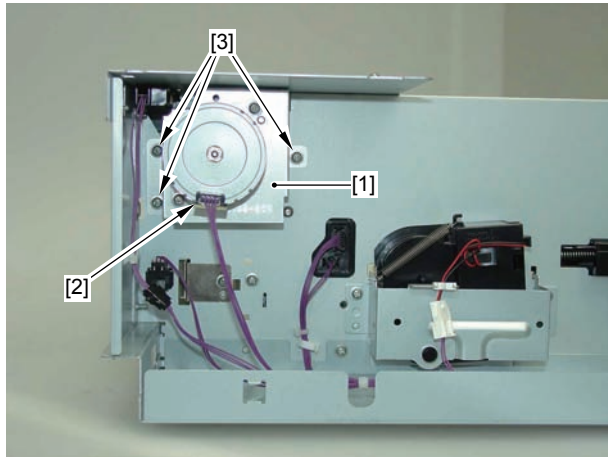
- 1) Remove the cassette rail [1].
 - 1 screw [2]



F-3-17

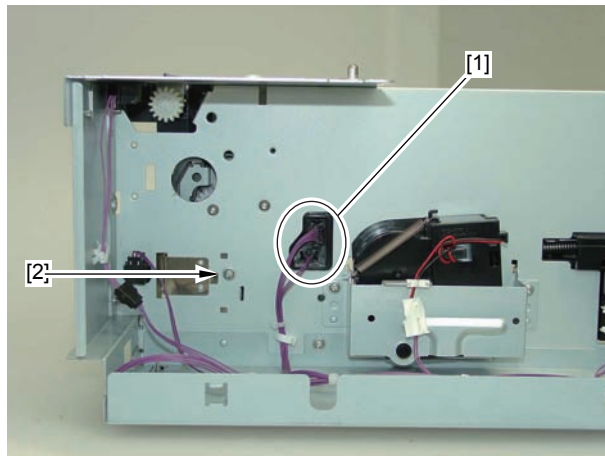
2) Remove the paper feeder pickup motor unit [1].

- 1 connector [2]
- 3 screws [3]



F-3-18

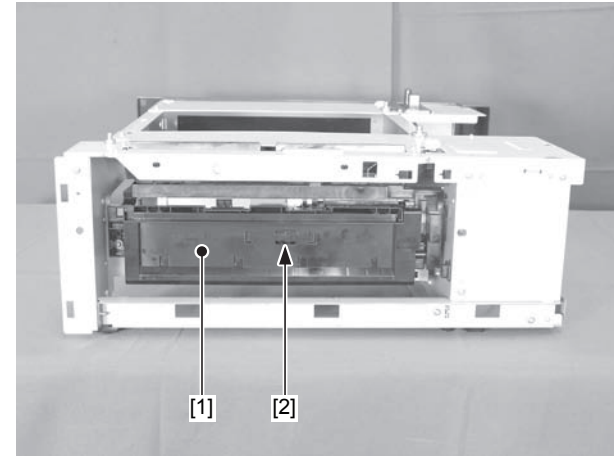
3) Remove the 2 connectors [1] and the screw [2].



F-3-19

4) Remove the cover [1] by sliding it to the left.

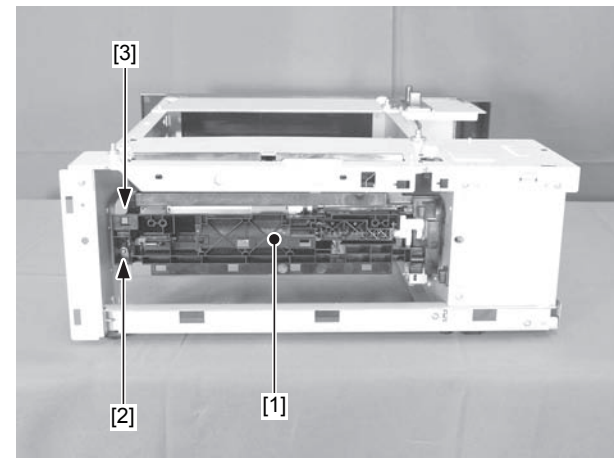
- Claw [2] in 1 place



F-3-20

5) Remove the paper feeder pickup unit [1].

- 1 screw [2]
- Claw [3] in 1 place



F-3-21

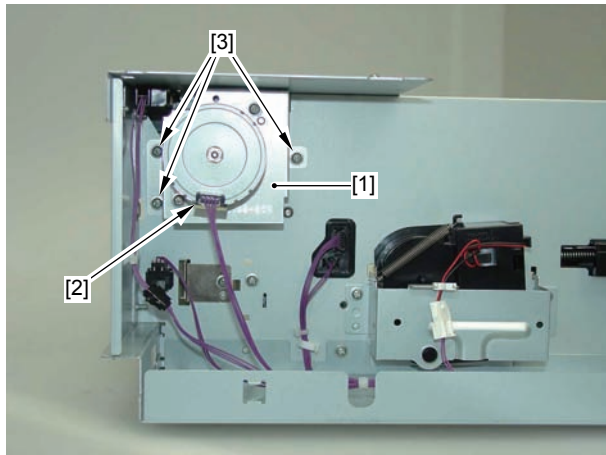
Removing Paper Feeder Feed Unit

Before Removing Paper Feeder Feed Unit

- 1) Remove the right door. (Refer to page 3-5)
- 2) Remove the right cover. (Refer to page 3-5)
- 3) Remove the rear cover. (Refer to page 3-7)
- 4) Remove the front cover. (Refer to page 3-6)

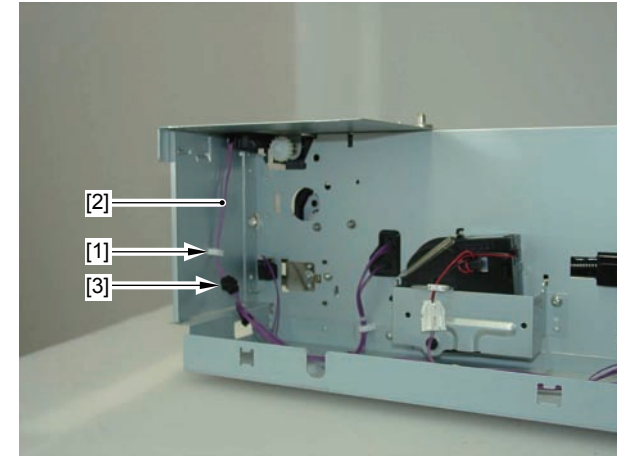
Removing Paper Feeder Feed Unit

- 1) Remove the paper feeder pickup motor unit [1].
 - 1 connector [2]
 - 3 screws [3]



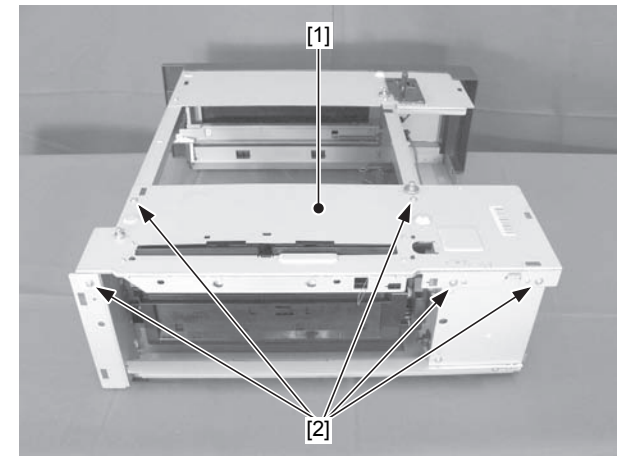
F-3-22

- 2) Remove the harness [2] from the harness retainer [1].
 - 1 connector [3]



F-3-23

- 3) Remove the paper feeder feed unit [1].
 - 5 screws [2]



F-3-24

Main Parts

Removing Paper Feeder Pickup Motor

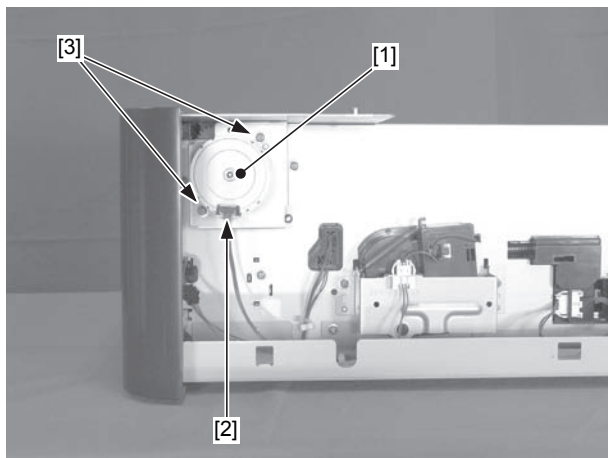
Before Removing Paper Feeder Pickup Motor

1) Remove the rear cover. (Refer to page 3-7)

Removing Paper Feeder Pickup Motor

1) Remove the paper feeder pickup motor [1].

- 1 connector [2]
- 2 screws [3]

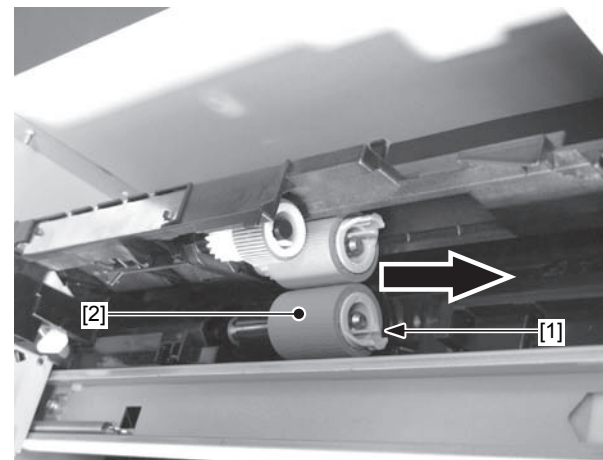


F-3-25

Removing Paper Feeder Separation Roller

1) Remove the cassette.

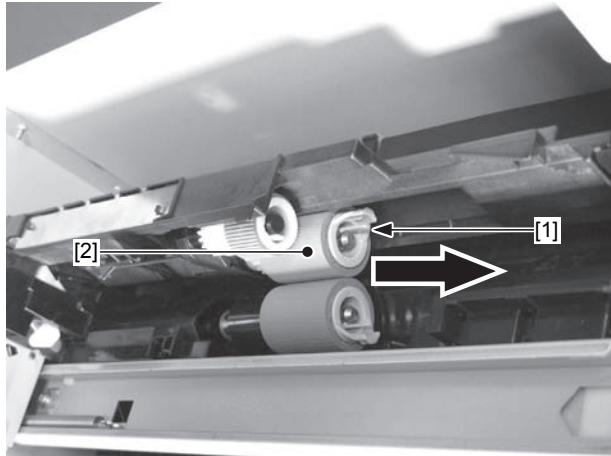
2) Pinch the claw [1] in 1 place while sliding it, and remove the paper feeder separation roller [2].



F-3-26

Removing Paper Feeder Feed Roller

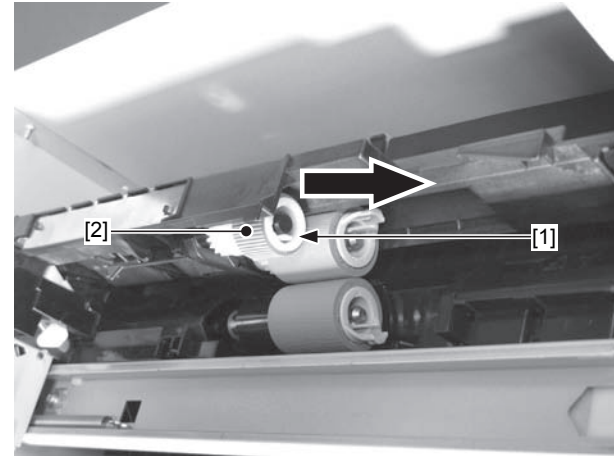
- 1) Remove the cassette.
- 2) Pinch the claw in [1] in 1 place while sliding it, and remove the paper feeder feed roller [2].



F-3-27

Removing Paper Feeder Pickup Roller

- 1) Remove the cassette.
- 2) Pinch the claw in [1] in 1 place while sliding it, and remove the paper feeder pickup roller [2].



F-3-28

PCB-related Issues

Removing Paper Feeder Driver PCB

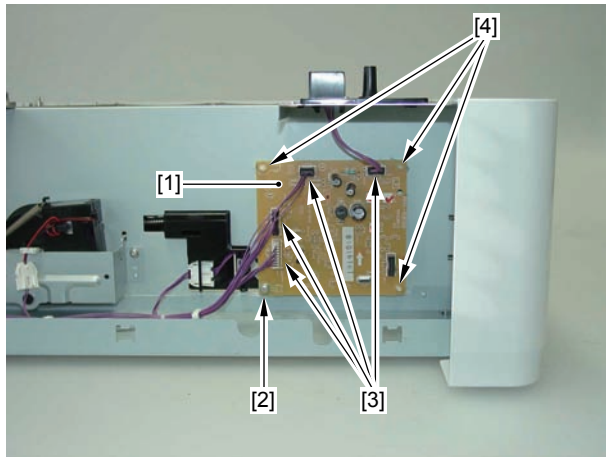
Before Removing Paper Feeder Driver PCB

1) Remove the rear cover. (Refer to page 3-7)

Removing Paper Feeder Driver PCB

1) Remove the paper feeder driver PCB [1].

- 1 screw [2]
- 4 connectors [3]
- PCB support [4] in 3 places



F-3-29

4

Maintenance and Inspection

- Periodically Replaced Parts
- Consumable Parts
- Periodical Service
- Cleaning

Periodically Replaced Parts

No periodically replaced parts exist in this machine.

Consumable Parts

There is no consumable on this machine.

Periodical Service

No periodical service is needed for this machine.

Cleaning

There is no place to be cleaned on this machine.

5

Troubleshooting

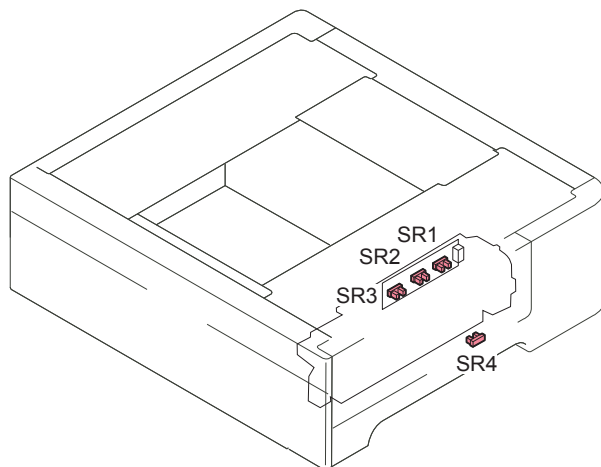
- Service Tools
- Outline of Electrical Components
- Connector Layout Drawing

Service Tools

List of Special Tools

To perform servicing for this machine, no special tools are available other than the set of necessary standard tools.

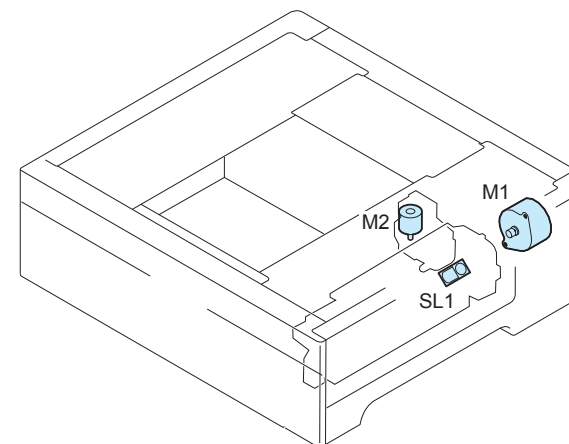
Outline of Electrical Components



F-5-1

Symbol	Parts name
SR1	Paper feeder media stack surface sensor 1
SR2	Paper feeder media stack surface sensor 2
SR3	Paper feeder media presence sensor
SR4	Paper feeder media feed sensor

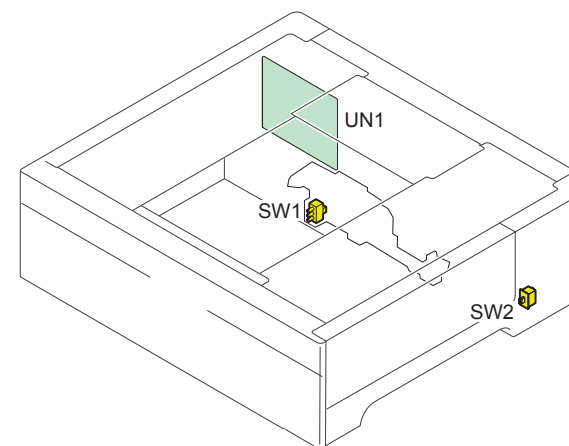
T-5-1



F-5-2

Symbol	Parts name
M1	Paper feeder feed moter
M2	Paper feeder lifter moter
SL1	Pickup solenoid

T-5-2



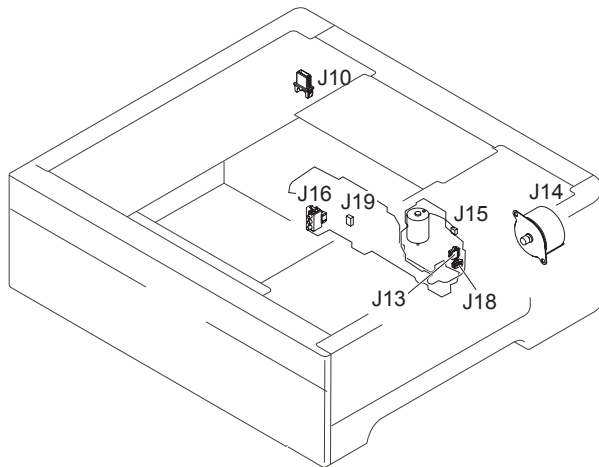
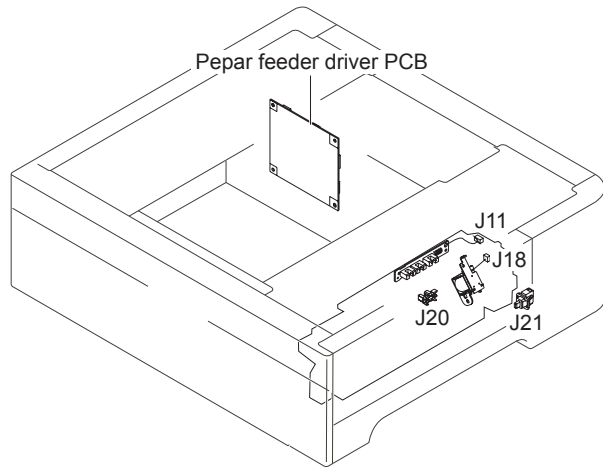
F-5-3

Symbol	Parts name
SW1	Paper feeder cassette media size detection swich
SW2	Paper feeder door swich
UN1	Paper feeder driver PCB

T-5-3

Connector Layout Drawing

List of Connectors

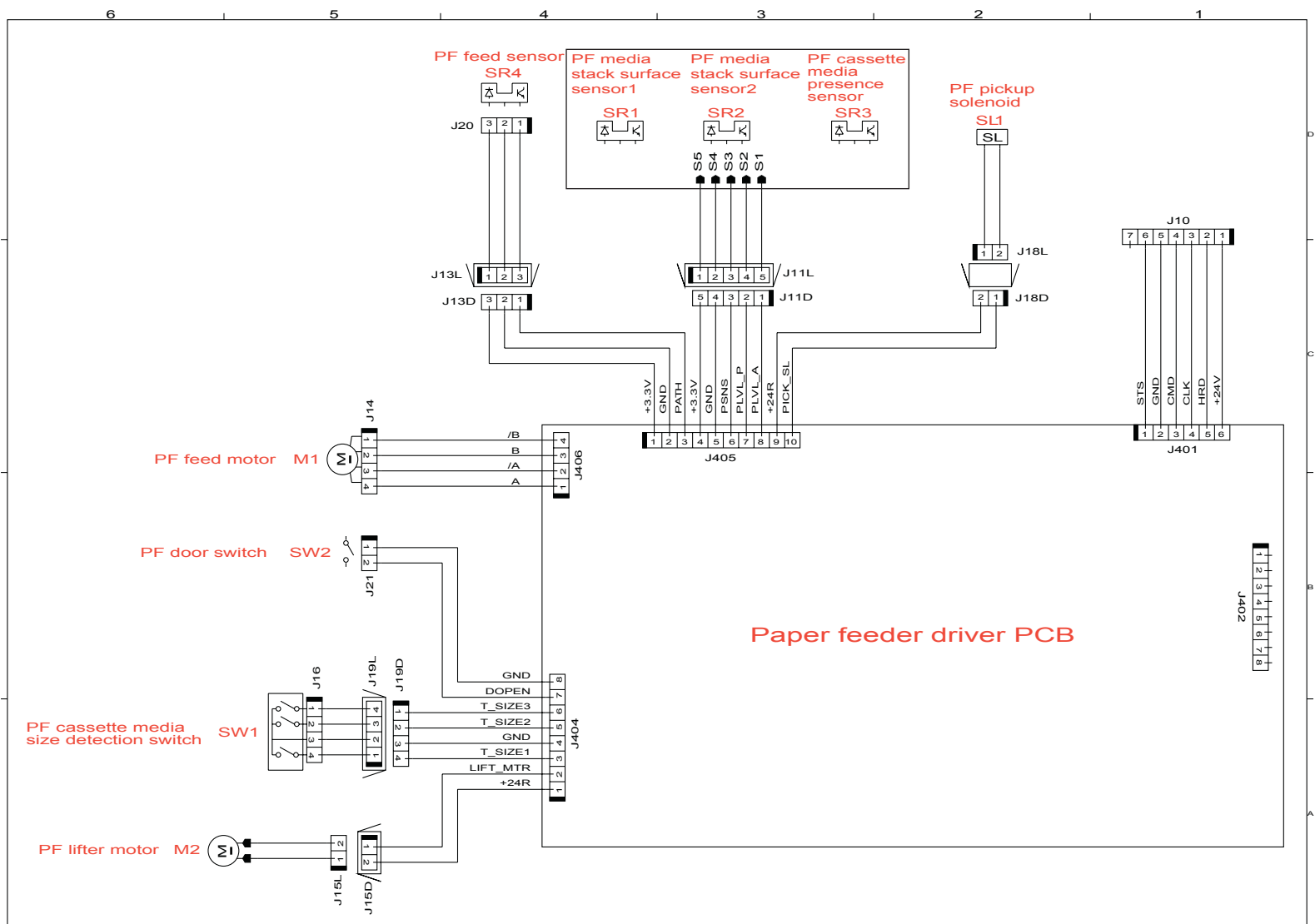


F-5-4

Appendix

■ General Circuit Diagram

General Circuit Diagram



F-6-1