TOSHIBA

SERVICE MANUAL

OFFSET TRAY

MJ-5002



File No. 31100015

General Precautions for Installation/Servicing/Maintenance for the MJ-5002

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

1. When installing the MJ-5002 to the Plain Paper Copier, be sure to follow the instructions described in the “Unpacking/Set-Up Procedure for the MJ-5002” booklet which comes with each unit of the MJ-5002.
2. The MJ-5002 should be installed by an authorized/qualified person.
3. Before starting installation, servicing or maintenance work, be sure to turn off and unplug the copier first.
4. When servcing or maintaining the MJ-5002, be careful about the rotating or operation sections such as gear, pulleys, sprockets, cams, belts, etc.
5. When parts are disassembled, reassembly is basically the reverse of disassembly unless otherwise noted in this manual or other related materials. Be careful not to reassemble small parts such as screws, washers, pins, E-rings, toothed washers to the wrong places.
6. Basically, the machine should not be operated with any parts removed or disassembled.
7. Delicate parts for preventing safety hazard problems (such as breakers, thermofuses, fuses, door switches, sensors, etc. if any) should be handled/installed/adjusted correctly.
8. Use suitable measuring instruments and tools.
9. 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.
10. 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 copier and make sure that there is no uninsulated charged objects in the vicinity.
11. For the recovery and disposal of used MJ-5002, consumable parts and packing materials, it is recommended that the relevant local regulations/rules should be followed.
12. After completing installation, servicing and maintenance of the MJ-5002, return the MJ-5002 to its original state, and check operation.

Copyright 2000

TOSHIBA TEC CORPORATION

CONTENTS

1. SPECIFICATIONS 1-1

2. OUTLINE 2-1

2.1 Names of Various Components 2-1

2.2 Layout of Electrical Parts 2-2

2.3 Harness Connection Diagram 2-3

2.4 Board Assembly 2-4

3. OPARATIONAL DESCRIPTION 3-1

3.1 General Operation 3-1

3.2 Block Diagram 3-1

3.3 Detection of Abnormal Status 3-2

3.3.1 Cover open/Close detection 3-2

3.3.2 Paper jam detection 3-2

3.3.3 Stacker full detection 3-2

3.4 Flow Charts 3-3

4. MECHANICAL DESCRIPTION 4-1

4.1 Paper Feed System 4-1

4.2 Paper Transport 4-1

4.3 Flap Function 4-1

4.4 Drive System 4-2

5. CIRCUIT DESCRIPTION 5-1

5.1 PWA Block Diagram 5-1

5.2 Meaning of Signals 5-2

5.3 Timing Charts 5-3

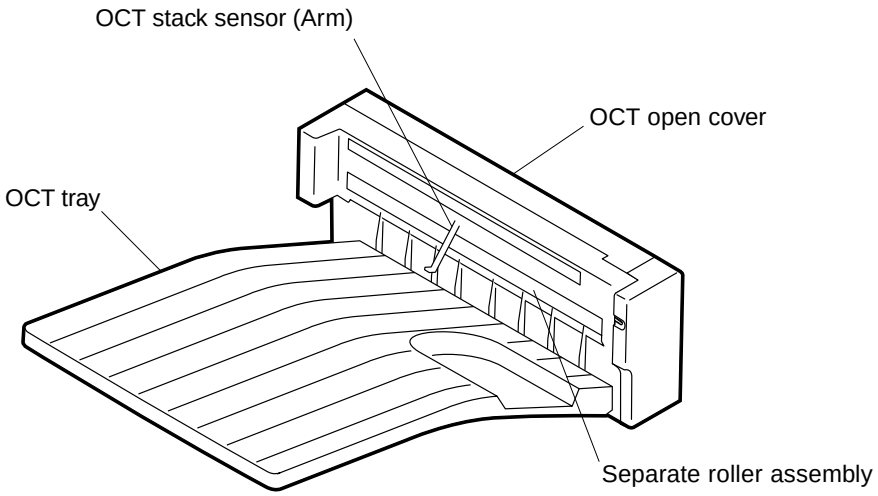
6. DISASSEMBLY AND REPLACEMENT 6-1

1. SPECIFICATIONS

Function	:	Exit roller moving type offset tray
Paper	:	Size A3 to A5-R/LD to ST-R
		(Offset possible size : A3, A4, A4-R/LD, LG, LT, LT-R)
	:	Thickness Normal paper 60 to 163g/m^2 (17 to 43 lbs)
Transfer speed	:	91.6 mm/sec. (DP1600)
(Driven by copier)	:	124.4 mm/sec. (DP2500)
Loading capacity	:	Paper height : 39 mm (Approx. 250 sheets)
Shift amount	:	Approx. 30 mm
Dimensions	:	500 (W) x 415 (D) x 169 (H) mm
Weight	:	Approx. 3.1 kg
Power supply	:	5VDC, 24VDC (Supplied from copier)

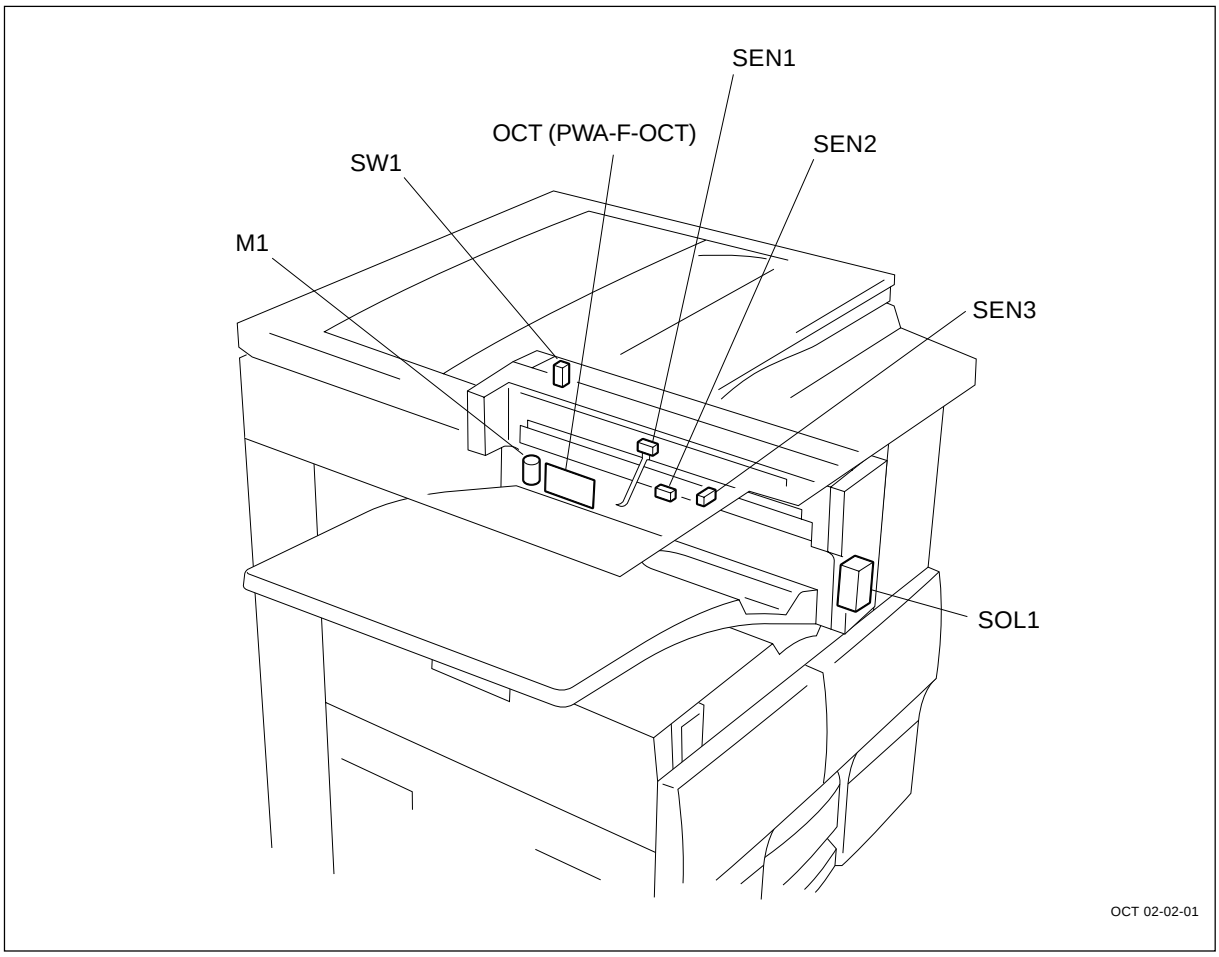
2. OUTLINE

2.1 Names of Various Components



OCT 02-01-01

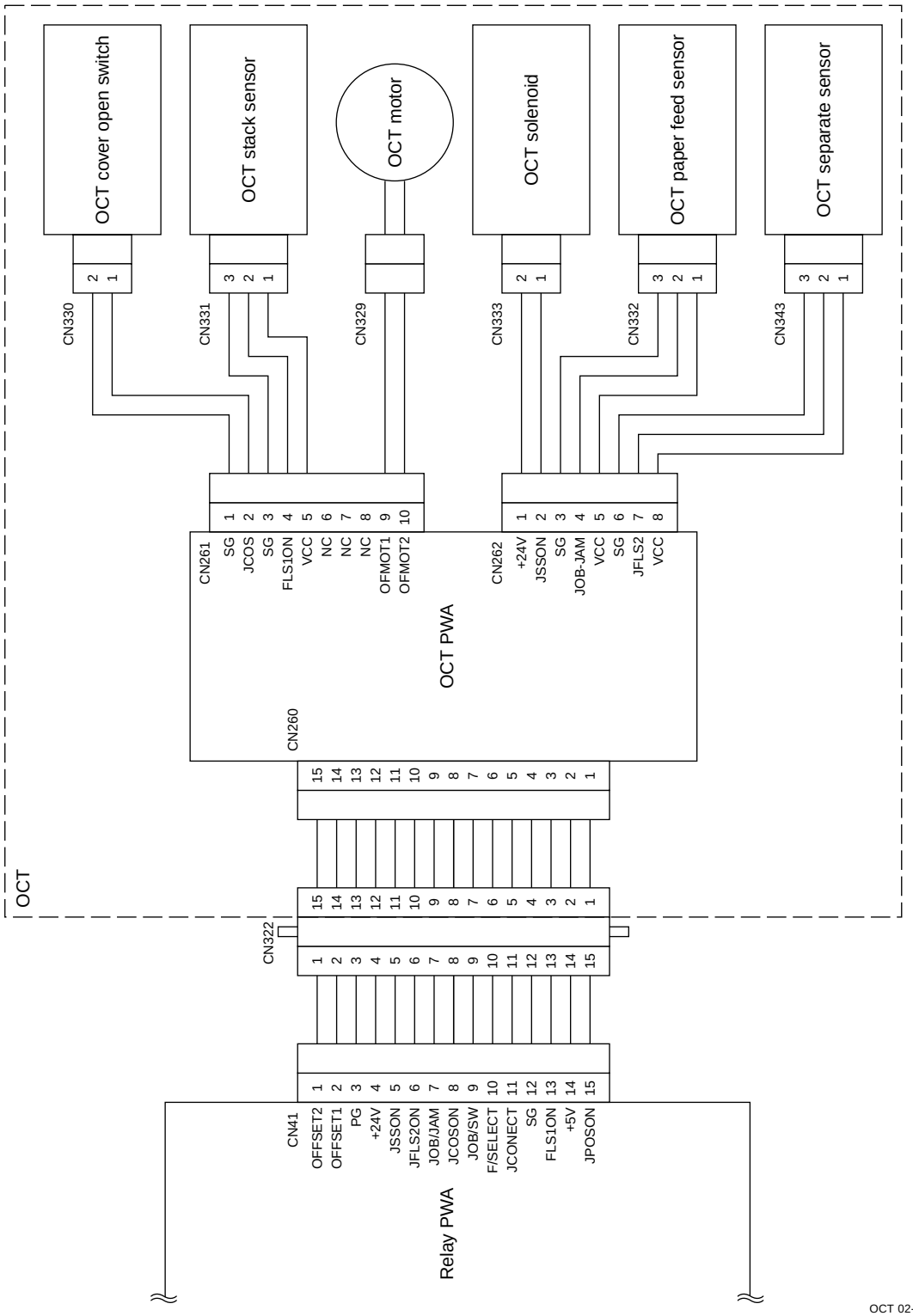
2.2 Layout of Electrical Parts



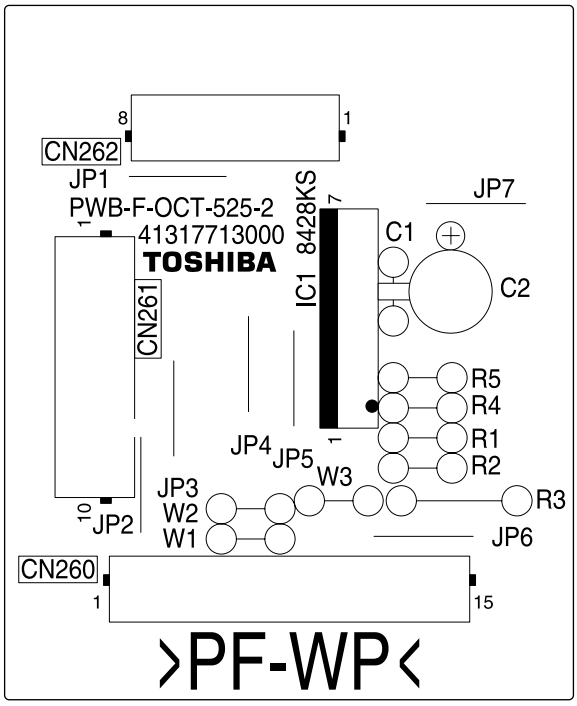
Symbols and functions of various devices

Symbol	Name	Function
SW1	OCTCOV-SW OCT cover open switch	Detects the open/close state of the cover during jam processing, etc.
SEN1	PF-SEN OCT stack sensor	Detects the limit number of sheets stacked.
SEN2	INP-SEN OCT separate sensor	Detects the home position of the separator.
SEN3	OCTFED-SEN OCT paper feed sensor	Detects the presence or absence of transport paper.
M1	OFS-MOT OCT motor	Moves the separate unit right-to-left.
SOL1	OCTGATE-SOL OCT solenoid	Switches the transport path (flap).
OCT	PWA-F-OCT OCT PWA	PWA which relays the sensor signals and solenoid drive signals and drives the motor.

2.3 Harness Connection Diagram



2.4 Board Assembly



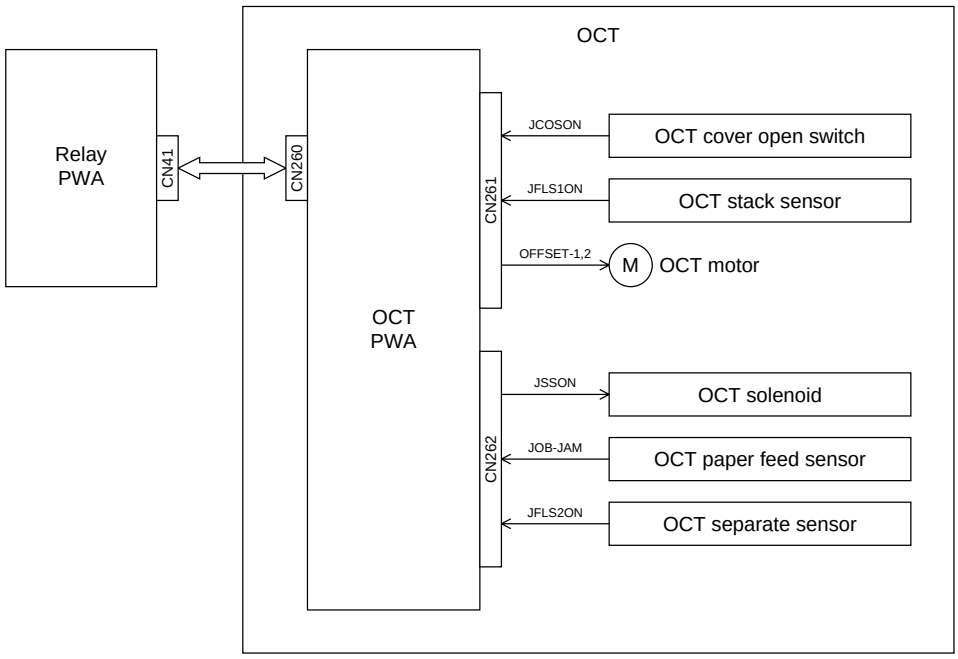
OCT 02-04-01 PPS2

3. OPARATIONAL DESCRIPTION

3.1 General Operation

The OCT has a function to stack printed sheets of paper by putting them in the right and left stackers. When fed to the OCT, printed paper can be stacked by putting it in the right or left stacker. The offsetting section is moved to the right or left by the motor.

3.2 Block Diagram



OCT 03-02-01

Four detection switches, one solenoid, and one motor are connected to the OCT PWA. The motor drive signals only go through the driver IC (IC1) and the other signals connect to the RELAY PWA as they are. Those signals go through the RELAY PWA and connect to the MAIN PWA for control.

- At power-on time

  At power-on time, the OCT checks the home position of the separate roller assembly through control from the copier. If the sensor has not detected the home position at this time, the OCT motor is driven to move the separate roller assembly to the home position.

- During offset operation

  For offset stacking, the combination of the OFFSET1 and OFFSET2 signals allows the OCT motor to operate and move the separate roller assembly to the right or left. If specified for a size of paper which cannot be offset, offset stacking will be ignored on the copier side.

3.3 Detection of Abnormal Status

3.3.1 Cover open/Close detection

When the OCT cover open switch detects the open state of the cover, the copier detects it and stops the transport of paper.

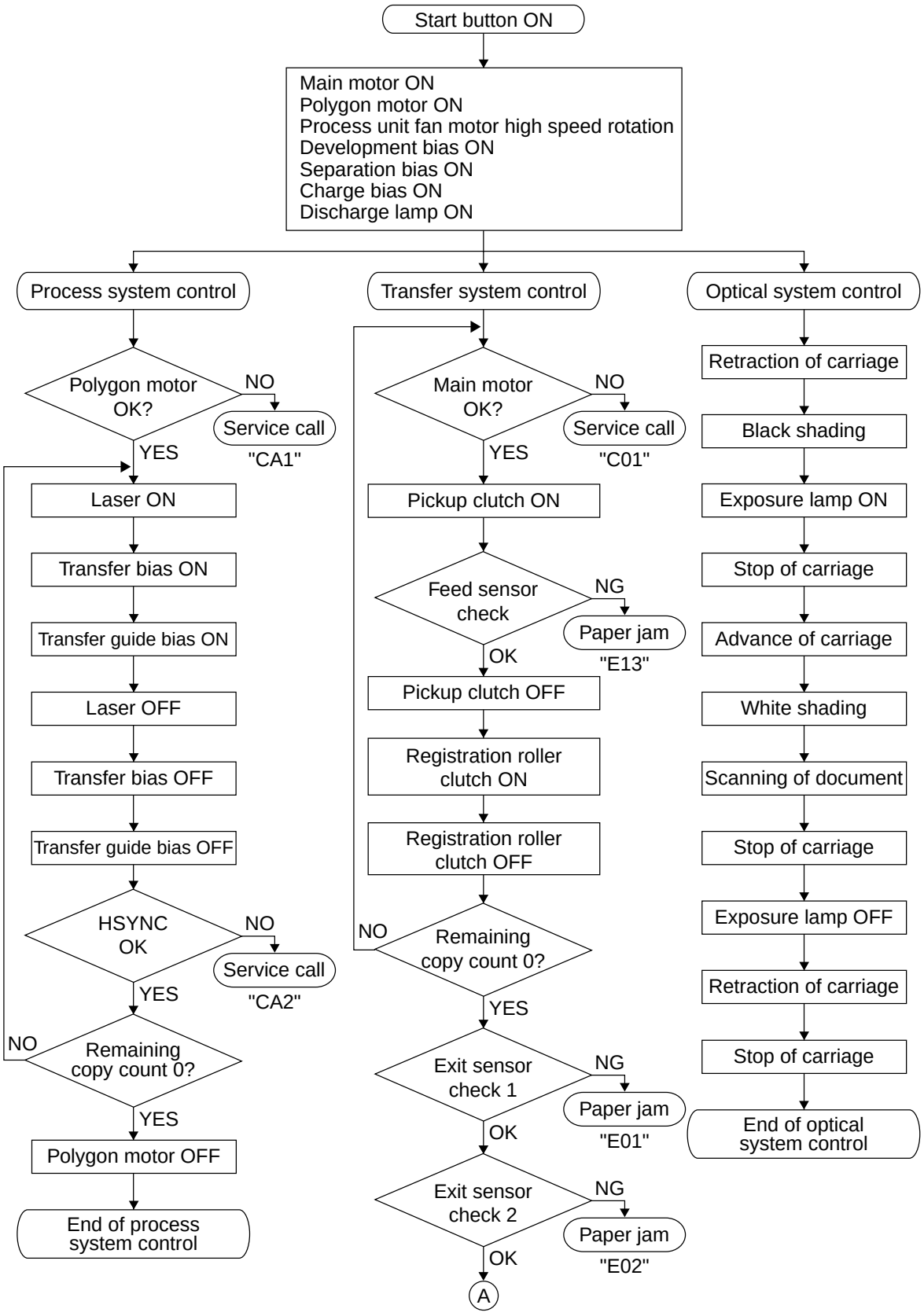
3.3.2 Paper jam detection

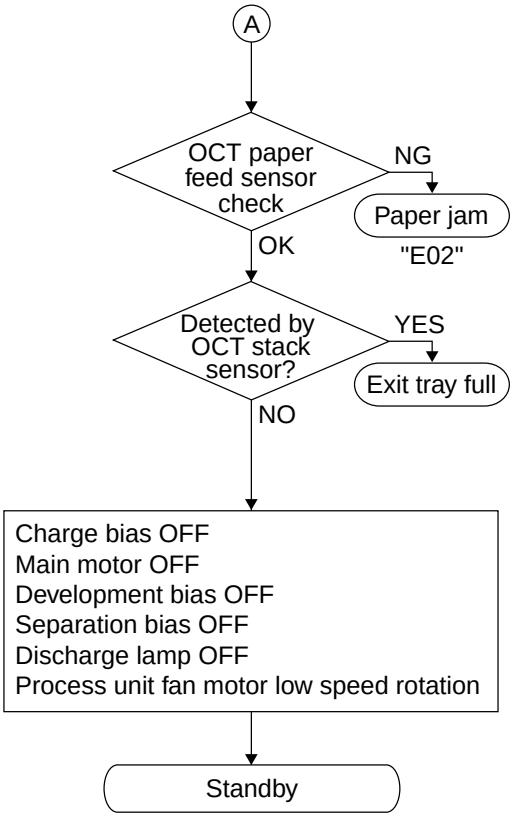
If the paper fed from the copier is jammed in the transport path, the OCT paper feed sensor detects paper jamming. The signal is at “High” level while the paper is passing. If the “High” level time is too long, the copier will judge it to be paper jamming.

3.3.3 Stacker full detection

When the stacker is full of paper, a stacker full state is detected by the OCT stack sensor. The stacker full state can be cleared by removing the paper from the stacker. This detection is effective only when the OCT is operating so that no stacker full state occurs when the sensor is turned on while taking out the paper from the stacker.

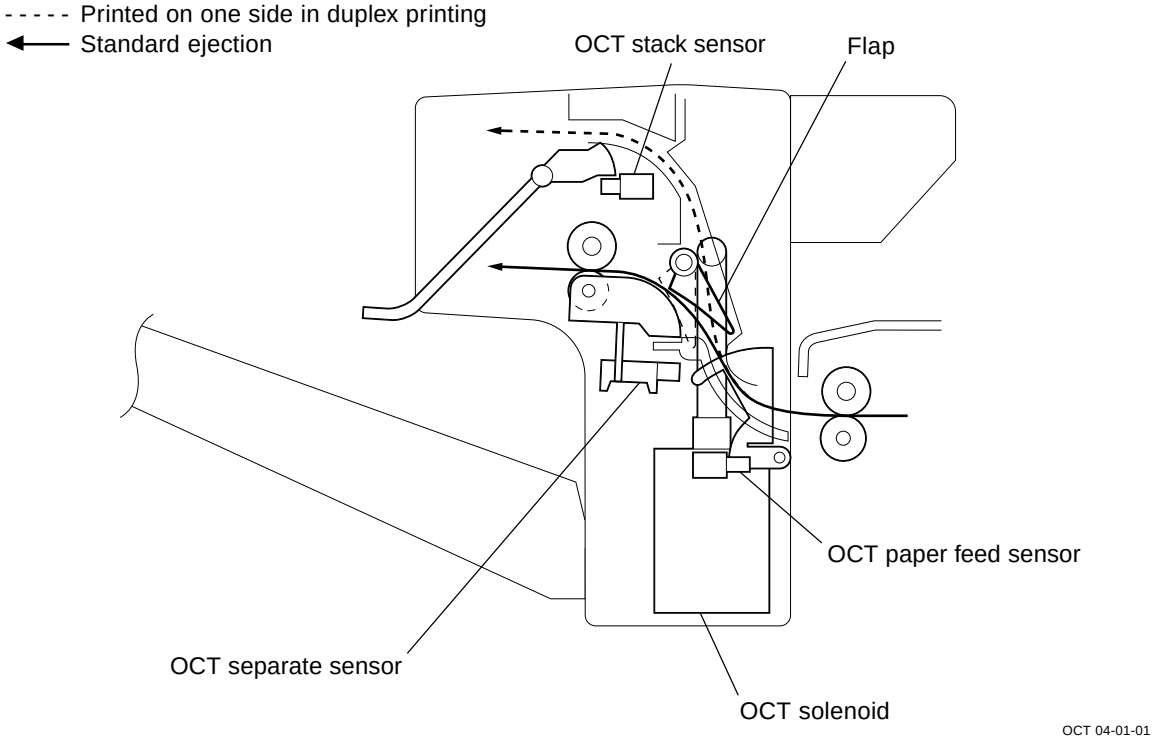
3.4 Flow Charts




A
OCT paper feed sensor check
NG
Paper jam
"E02"
OK
Detected by OCT stack sensor?
YES
Exit tray full
NO
Charge bias OFF
Main motor OFF
Development bias OFF
Separation bias OFF
Discharge lamp OFF
Process unit fan motor low speed rotation
Standby

4. MECHANICAL DESCRIPTION

4.1 Paper Feed System



4.2 Paper Transport

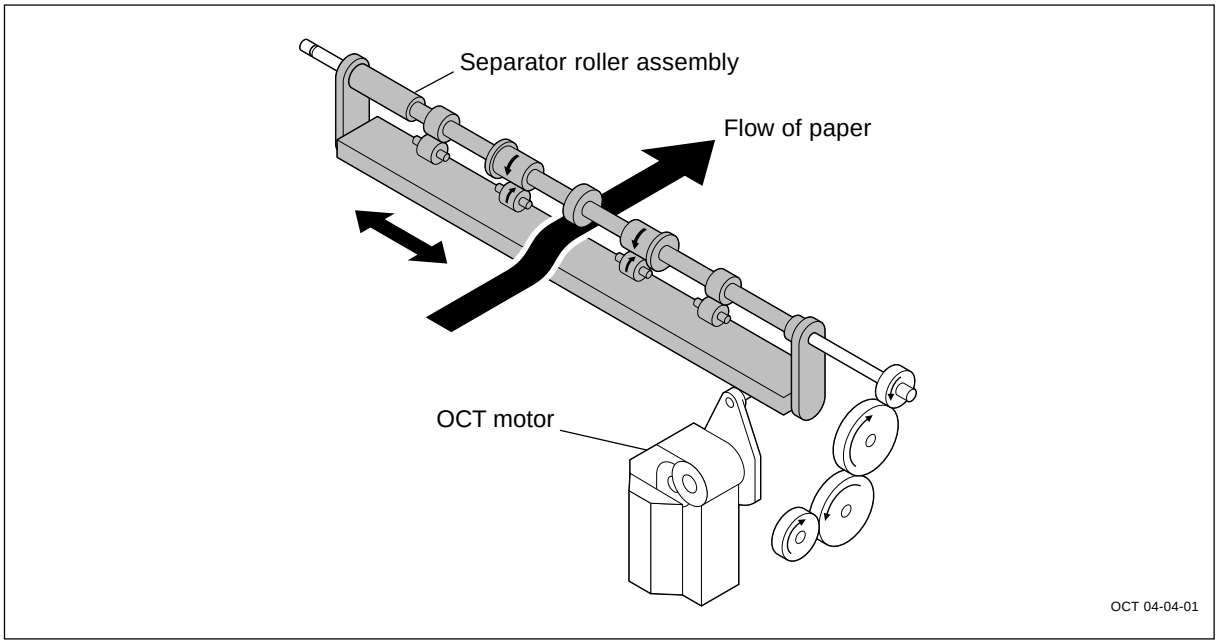
For the transport path for paper, the paper coming out from the exit roller of the copier enters the OCT and runs over the sensor, flap and separate roller assembly to the stacker in this order as indicated by the arrow as shown in the figure above (solid line).

4.3 Flap Function

The flap is driven by the OCT solenoid. In duplex printing, the flap is lowered when one-side-printed paper is fed. This allows the paper to be loaded into the copier again without catching on the roller (dotted line).

The OCT exit sensor is located at the exit, which detects the limit number of sheets stacked. It detects the stacker full state (approx. 39 mm, min. 250 sheets) when the number of sheets stacked increases to raise the sensor arm.

4.4 Drive System



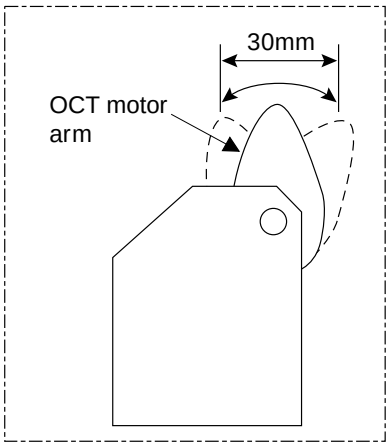
To transport paper, driving force is delivered from the copier through gears. Driving input from the copier is transmitted through the four gears to turn the roller shaft and transport the paper.

The separator roller assembly is slid about 30 mm right-to-left by the OCT motor. When using the off-set stacking function, the separator roller is moved right-to-left for every sheet or every set of sheets.

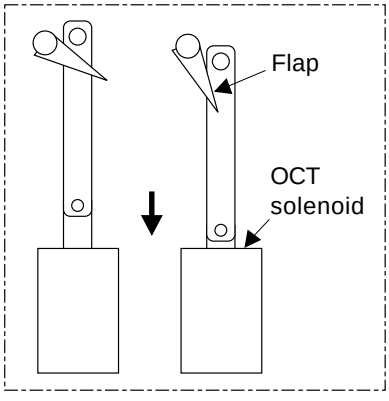
The OCT motor contains a brush motor and drives the OCT motor arm right-to-left through the combination of gears, etc. The OCT motor arm is moved right-to-left by the operation of the motor. The internal mechanism cuts the driving of the motor when the arm moves 30 mm so that the arm will not move beyond there or the motor will not be overloaded.

The flap is controlled by moving the arm connected to the OCT solenoid. When the OCT solenoid turns ON, the arm lowers to push down the flap.

OCT motor

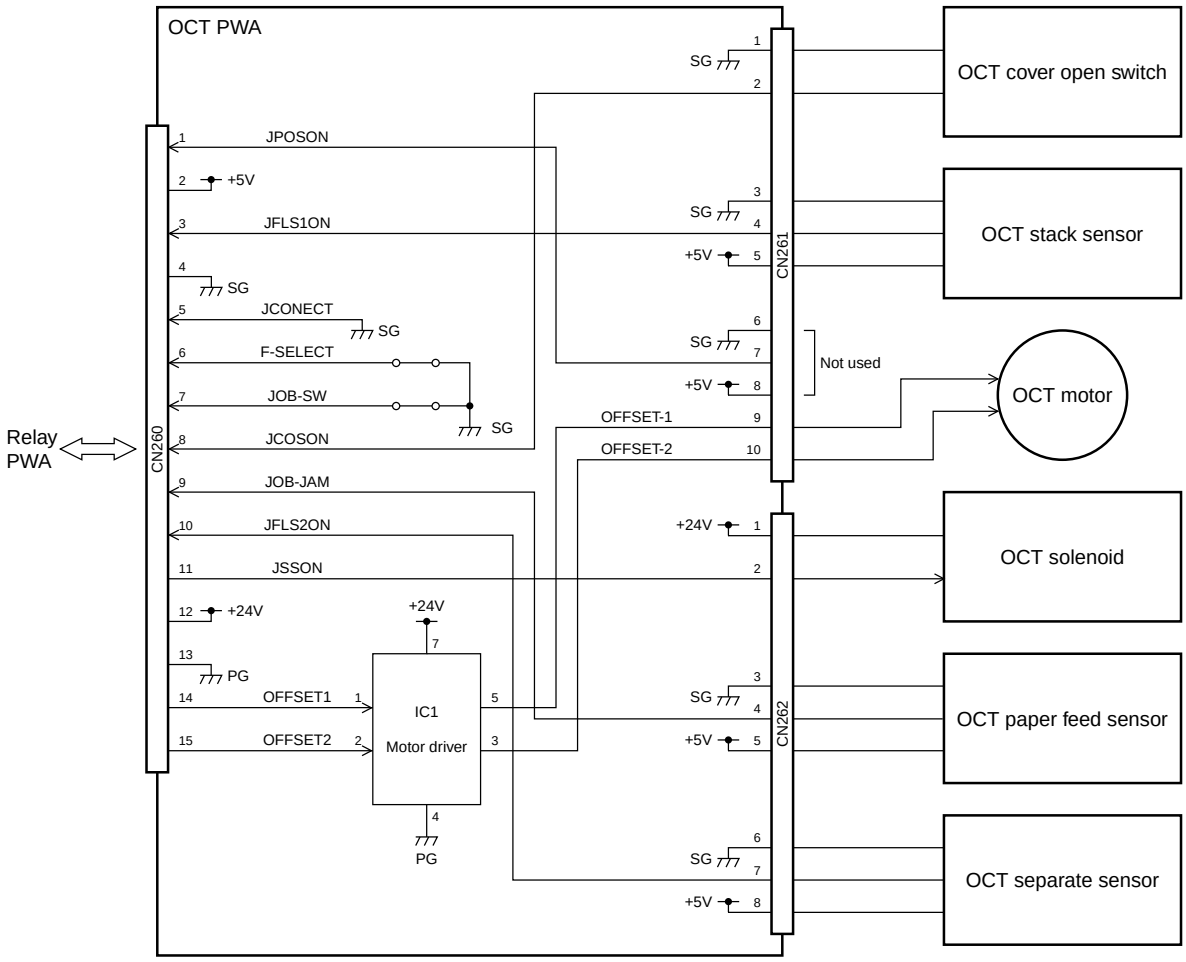


Flap Operation



5. CIRCUIT DESCRIPTION

5.1 PWA Block Diagram



OCT 05-01-01

The OCT PWA has the motor driver IC only and the other signals pass through the PWA.

IC1 is the motor driver IC and supplies 24V to the output side when the input signal turns ON. It outputs 24V at OFFSET-1 when OFFSET1 turns ON, and at OFFSET-2 when OFFSET2 turns ON. This changes the rotational direction of the OCT motor to move the offset unit right-to-left.

JCONECT, F-SERECT, and JOB-SW each connect to GND. The JSP can be connected to the copier in addition to the OCT. Those signals are used to identify the option connected. A combination of the signals indicates the type of an option connected to the copier.

5.2 Meaning of Signals

Signal Name	Part Name	Functional Description	Status	Note
JCOVON	OCT cover open switch	Detects the open/close state of the cover during jam processing, etc.	High: Open	Push switch
FLS1ON	OCT stack sensor	Detects the limit number of sheets stacked.		Photo sensor
JFLS2	OCT separate sensor	Detects the home position of the separator.		Photo sensor
JOB-JAM	OCT paper feed sensor	Detects the presence or absence of transport paper.	High: Paper present	Photo sensor
OFMOT1, 2	OCT motor	Moves the separate roller assembly right-to-left	-	Brush motor
JSSON	OCT solenoid	Switches the transport path (flap)		Plunger solenoid

The OCT cover open switch detects the open or close state of the cover. A push switch is used for the switch. The signal goes LOW when the cover is closed, and HIGH when it is open.

The OCT stack sensor detects the limit number of sheets stacked. A photo sensor is used for the sensor. When the stacked number of sheets increases, the detection arm rises to turn on the sensor.

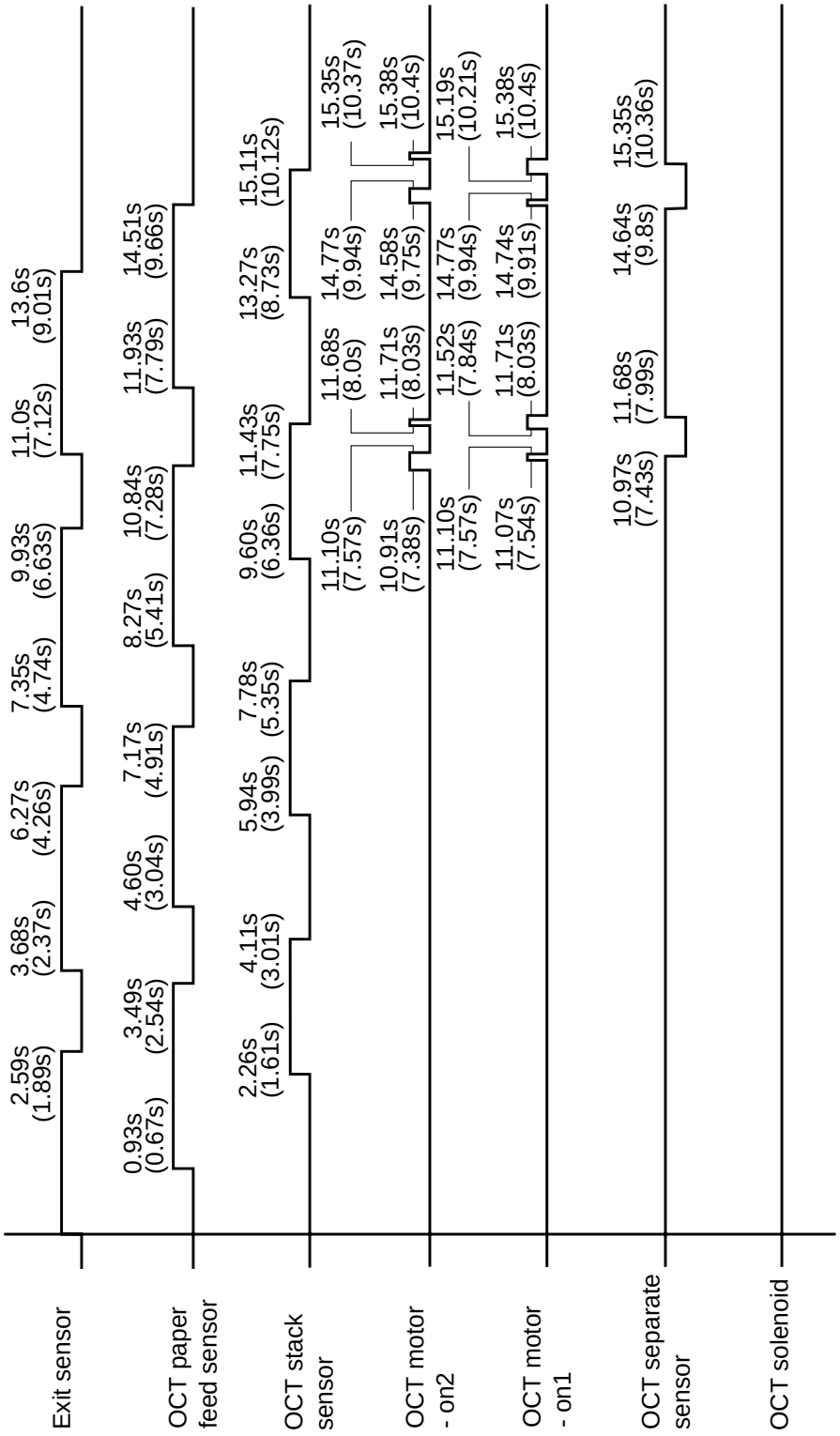
The OCT separate sensor detects the home position of the offsetting section. A photo sensor is used for the sensor. A certain position is detected when the offsetting section is moved by driving the OCT motor. The position becomes the home position (inner side).

The OCT paper feed sensor detects the presence or absence of paper in the transport path. A photo sensor is used for the sensor. The signal goes HIGH while paper is passing over the sensor (paper present), and LOW when no paper is present. If the paper present time (“High” level) does not change even after a fixed time, paper jamming will be assumed.

The OCT motor moves the offsetting section right-to-left. A brush motor is used for the motor. The motor is driven according to the signals input to IC1. When either OFFSET1 or 2 input to IC1 turns ON, the rotational direction of the motor changes to move the separate roller assembly to the right or left.

The OCT solenoid switches the transfer path to control the flap. The solenoid is usually OFF where the paper passes the separate roller assembly before being stacked. In duplex printing, the flat lowers when the OCT solenoid turns ON to prevent the one-side-printed paper from entering the separate roller assembly so that the paper once stops at the upper transport path and is reversed and fed to the ADU. After duplex printing, the paper is stacked as usual.

5.3 Timing Charts



The values are data (reference values) when the A4 size paper is used.

The value in brackets is for the DP-2500 machine.

OCT 05-03-01

6. DISASSEMBLY AND REPLACEMENT

[A] OCT tray

1. Release 5 hooks and remove OCT tray.

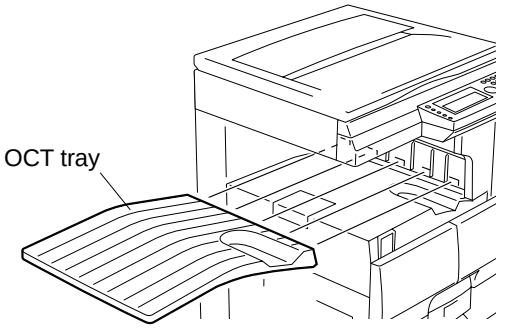


Fig. 6-1

[B] OCT right cover

1. Remove one screw, release 2 hooks, and detach OCT right cover.

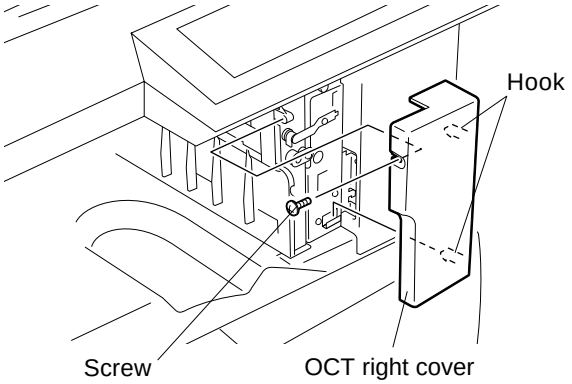


Fig. 6-2

[C] Connector cover

1. Remove 2 screws and detach connector cover.

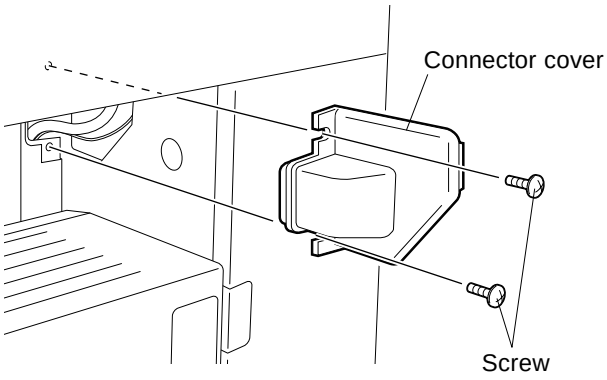


Fig. 6-3

[D] OCT PWA

1. Remove OCT tray. (See Fig. 6-1)
2. Detach OCT right cover. (See Fig. 6-2)
3. Detach OCT connector cover. (See Fig. 6-3)
4. Detach the ground wire and the connector.

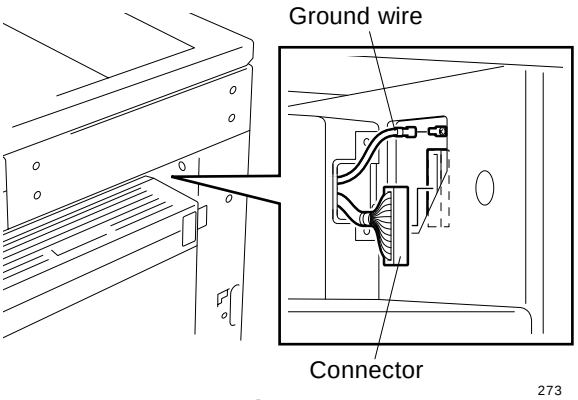


Fig. 6-4

5. Remove one screw, release one hook, and remove OCT.

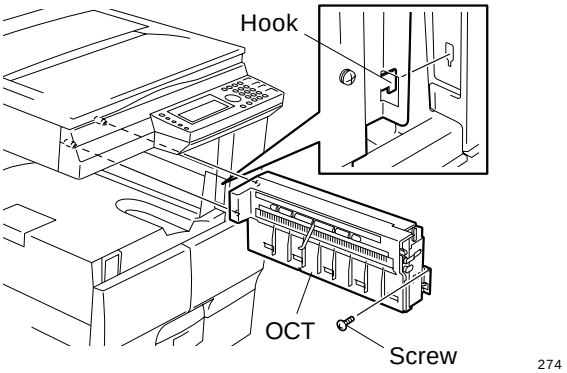


Fig. 6-5

6. Remove 4 screws, release 4 tabs, and remove OCT rear frame.

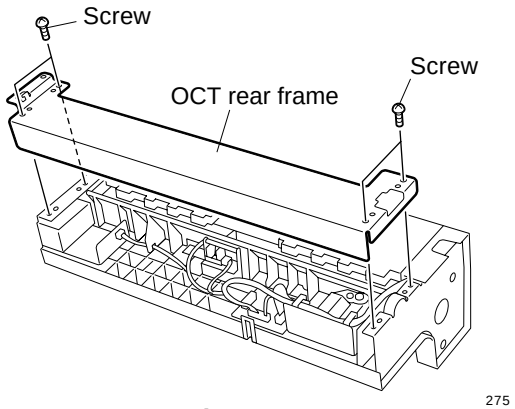


Fig. 6-6

7. Detach all the connectors, release one hook, and remove OCT PWA.

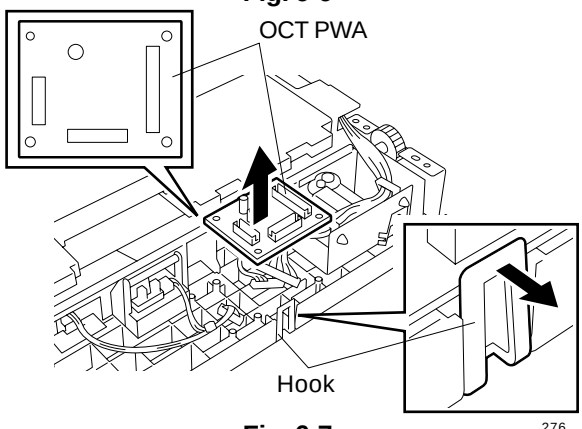


Fig. 6-7

[E] OCT paper guide assembly

1. Remove OCT. (See Fig. 6-1 to 6-5)
2. Remove OCT rear frame. (See Fig. 6-6)
3. Open OCT open cover.

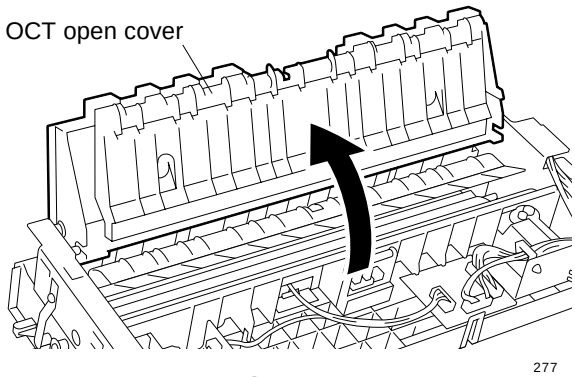


Fig. 6-8

4. Remove 2 screws, detach one connector, and remove OCT paper guide assembly.

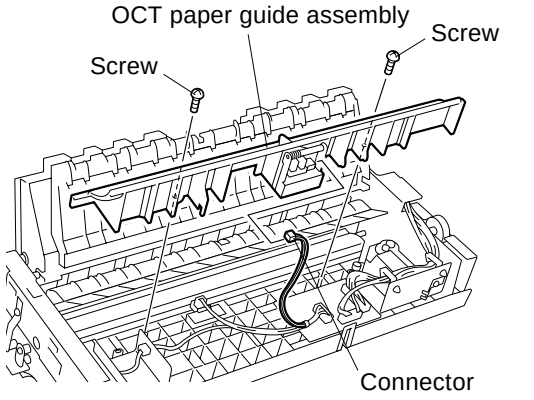


Fig. 6-9

[F] OCT Motor

1. Remove OCT. (See Fig. 6-1 to 6-5)
2. Remove OCT rear frame. (See Fig. 6-6)
3. Remove OCT paper guide assembly. (See Fig. 6-8 and 6-9)
4. Release 2 clamps and detach one connector.

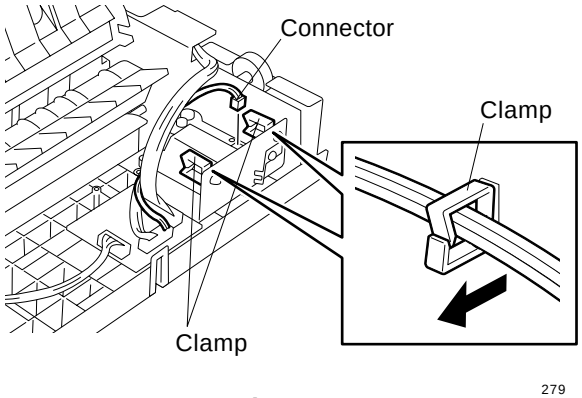


Fig. 6-10

5. Remove one screw and remove earth plate.
6. Remove one screw and remove ground wire.
7. Remove 2 screws and detach the OCT motor.

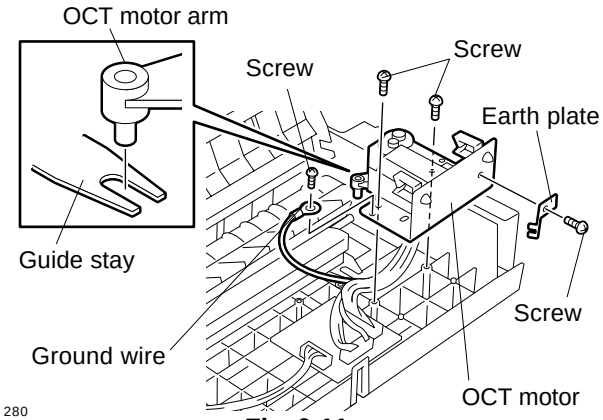


Fig. 6-11

[G] Solenoid/solenoid arm

1. Remove OCT. (See Fig. 6-1 to 6-5)
2. Remove OCT rear frame. (See Fig. 6-6)
3. Remove OCT paper guide assembly. (See Fig. 6-8 and 6-9)
4. Detach one connector, release one clamp remove 2 screws, and remove solenoid.

Note: For adjustment when installing solenoid, the edge of solenoid must be in the center of the marking.

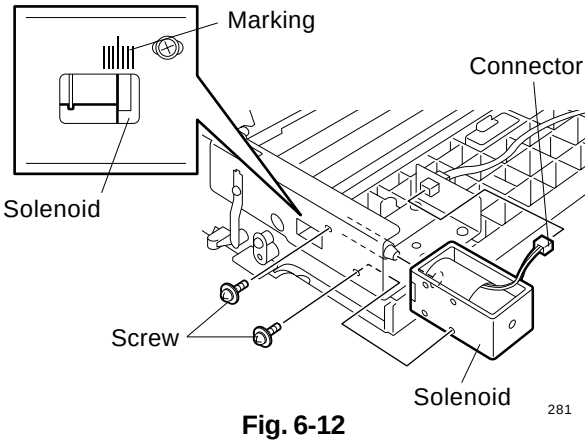


Fig. 6-12

5. Remove solenoid arm from stud, release the hook, and remove plunger.

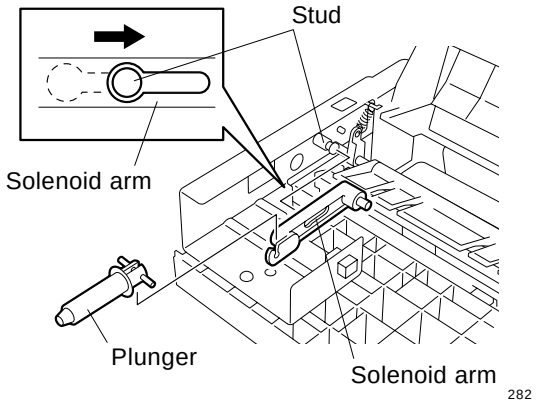


Fig. 6-13

[H] OCT open cover

1. Remove OCT. (See Fig. 6-1 to 6-5)
2. Open OCT open cover. (See Fig. 6-8)
3. Remove 2 screws and detach the OCT separator guide.

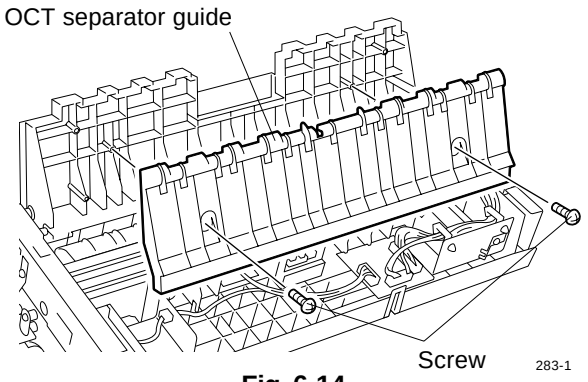


Fig. 6-14

4. Remove one screw and remove hinge.
5. Release the hook and remove OCT open cover.

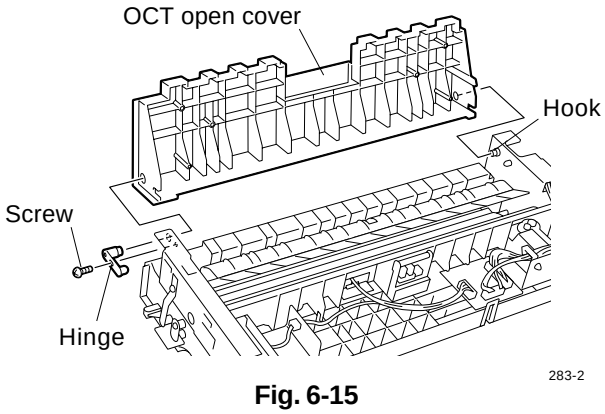


Fig. 6-15

[I] OCT gear frame assembly

1. Remove OCT. (See Fig. 6-1 to 6-5)
2. Remove OCT rear frame. (See Fig. 6-6)
3. Remove 4 screws, release 2 tabs, and remove OCT gear frame assembly.

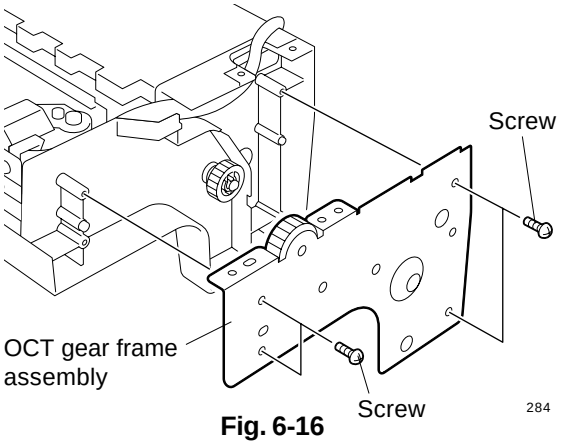


Fig. 6-16

[J] OCT separator guide lower assembly/ OCT separator

1. Remove OCT. (See Fig. 6-1 to 6-5)
2. Remove OCT rear frame. (See Fig. 6-6)
3. Remove OCT gear frame assembly. (See Fig. 6-16)
4. Remove one screw and remove hinge.
5. Release one hook and remove OCT open cover assembly.

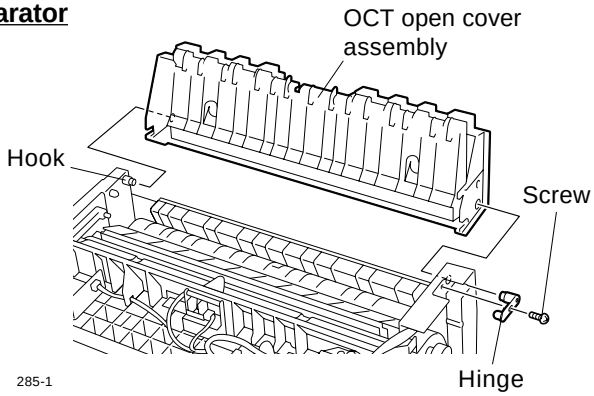


Fig. 6-17

6. Remove the stop ring to detach the bushing.

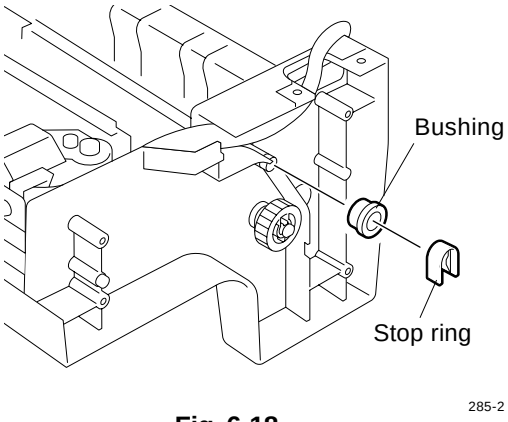


Fig. 6-18

7. Remove the spring and the E-ring.
8. Remove the bushing to detach the OCT separator.

Note: Be careful about the solenoid arm during the removal.

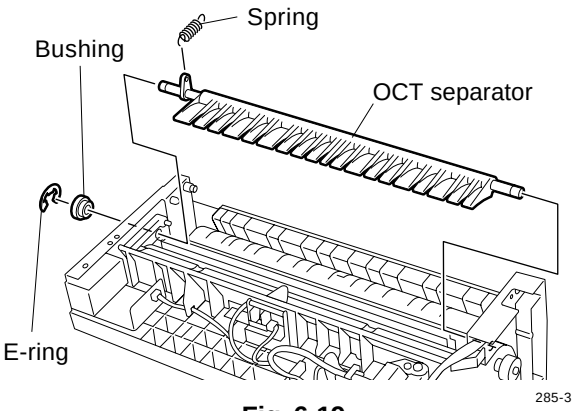


Fig. 6-19

9. Remove 2 connectors from the OCT PWA (CN261) and the OCT motor and release 2 clamps.

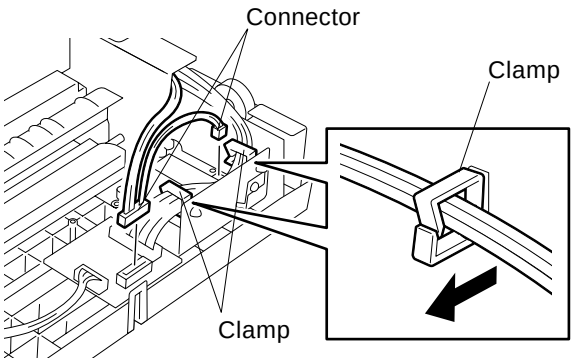


Fig. 6-20

10. Remove 3 screws.
11. Detach the OCT separator guide lower assembly while releasing the harness.

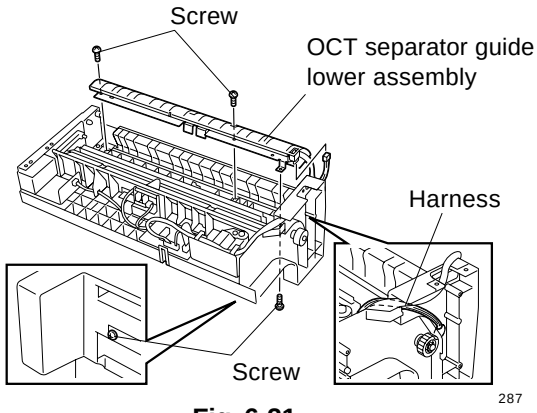


Fig. 6-21

[K] Separator roller assembly

1. Remove OCT. (See Fig. 6-1 to 6-5)
2. Remove OCT rear frame. (See Fig. 6-6)
3. Remove OCT paper guide assembly. (See Fig. 6-8 and 6-9)
4. Remove OCT gear frame assembly. (See Fig. 6-16)
5. Remove OCT separator guide lower assembly. (See Fig. 6-17 to 6-21)
6. Remove 2 screws and detach the separator roller guide assembly.

Note: To mount the separator roller guide assembly, fix it securely in place with the screws while holding it to the bushing.

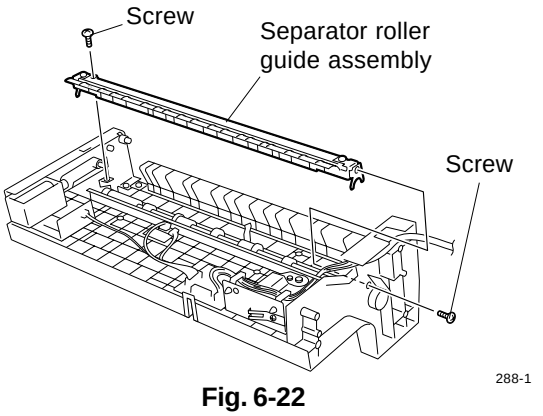


Fig. 6-22

7. Release one hook and remove gear 10S018-06.
8. Detach stop ring and remove bushing.

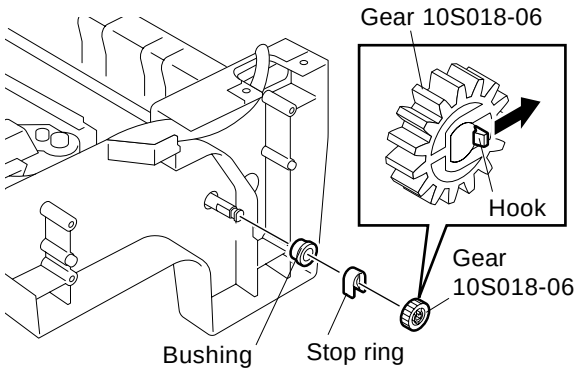


Fig. 6-23

9. Remove one screw and remove stopper shaft.
10. Remove one screw and remove earth plate.
11. Detach stop ring and remove bushing.

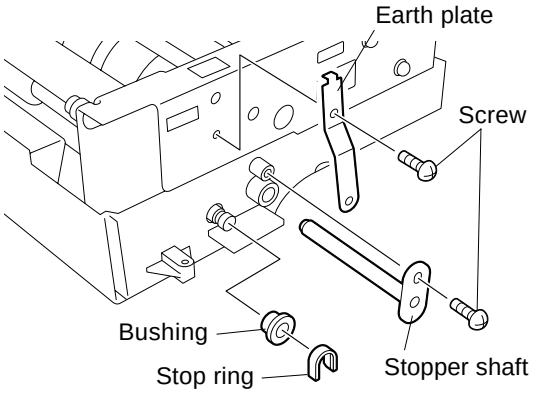


Fig. 6-24

12. Release OCT motor arm and remove separator roller assembly.

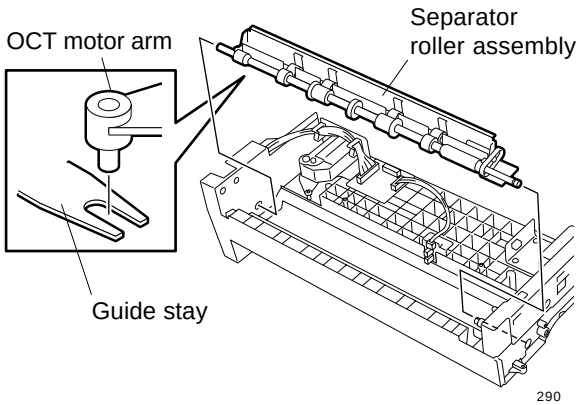


Fig. 6-25

TOSHIBA

TOSHIBA TEC CORPORATION
1-1, KANDA NISHIKI-CHO, CHIYODA-KU, TOKYO, 101-8842 JAPAN