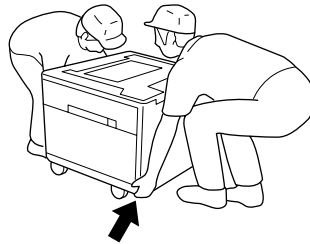


GENERAL PRECAUTIONS FOR INSTALLATION/SERVICING/ MAINTENANCE

1. When installing the Large Capacity Feeder KD-1010 to the Copier, be sure to follow the instructions described in the "Unpacking/Set-Up Procedure for the KD-1010" booklet which comes with each unit of the KD-1010.
2. The KD-1010 should be installed by an authorized/qualified person.
3. When transporting/installing the KD-1010, employ two persons and be sure to use the positions as indicated below. The KD-1010 is fairly heavy and weights approximately 23 kg (51 lb), therefore pay full attention when handling it.



4. Before starting installation, servicing or maintenance work, be sure to turn off and unplug the copier first.
5. The KD-1010 is supplied with power from the copier, requiring no additional power source.
6. The KD-1010 should be grounded to the specified positions on the machine frame.
7. When servicing or maintaining the KD-1010, be careful about the rotating or operating sections such as gears, pulleys, sprockets, cams, belts, etc.
8. When parts are disassembled, reassembly is basically the reverse of disassembly unless otherwise noted in this manual or other related documents. Be careful not to reassemble small parts such as screws, washers, pins, E-rings, toothed washers to the wrong places.
9. Basically, the machine should not be operated with any parts removed or disassembled.
10. Delicate parts for preventing safety hazard problems (such as thermofuses, door switches sensors, etc. if any) should be handled/installed/adjusted correctly.
11. During servicing or maintenance work, be sure to check the nameplate and other cautionary labels (if any) to see if they are clean and firmly stuck. If not, take appropriate actions.
12. Use suitable measuring instruments and tools.
13. 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.
Caution: Before using the wrist band, pull out the power cord plug of the copier and make sure that there is no uninsulated objects in the vicinity.
14. For the recovery and disposal of used KD-1010, consumable parts and packing materials, it is recommended that the relevant local regulations/rules should be followed.

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TOSHIBA TEC CORPORATION

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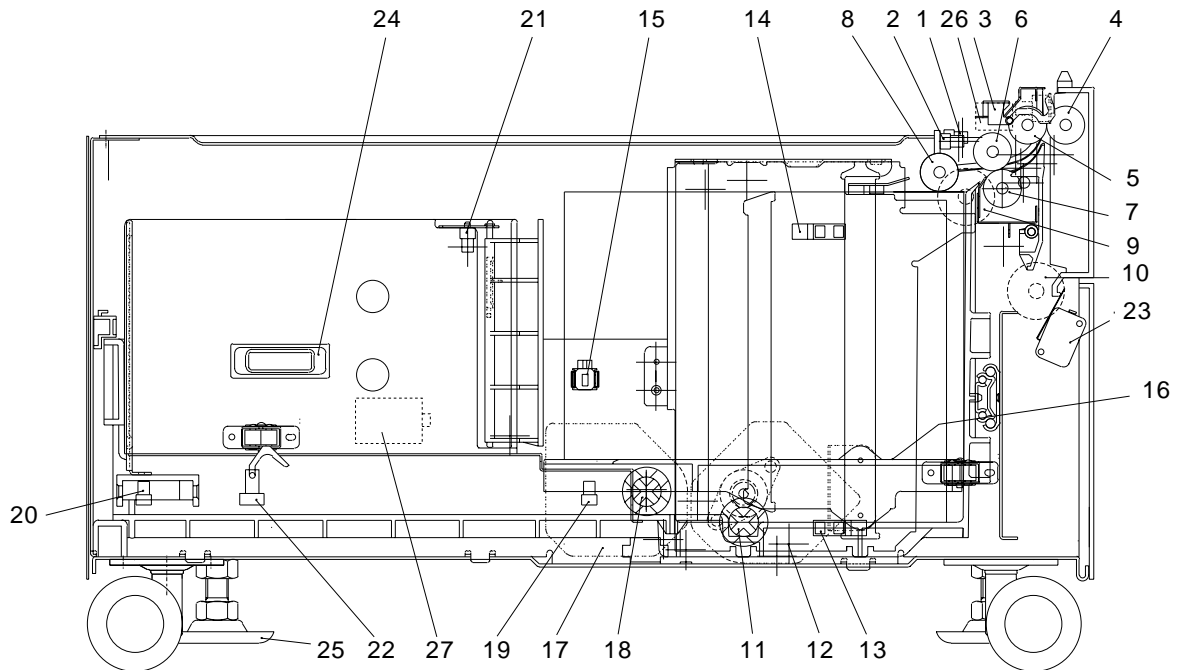
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1. SPECIFICATIONS

Feeding method	Tandem tray
Paper	Size: A4,LT Thickness: 64 - 80g/m ²
Transportation speed	Approx. 260mm/sec. (Model with a DP2500) Approx. 400mm/sec. (Models with a DP4500/3500)
Capacity of cassette	Stack height: 137.5mm
Dimensions	530 (W) X 536 (D) X 305 (H) mm (627 (W) X 618 (D) X 305 (H) mm : Including the stabilizer)
Weight	Approx. 23 kg
Power supply	5V , 24V (supplied from the copier)

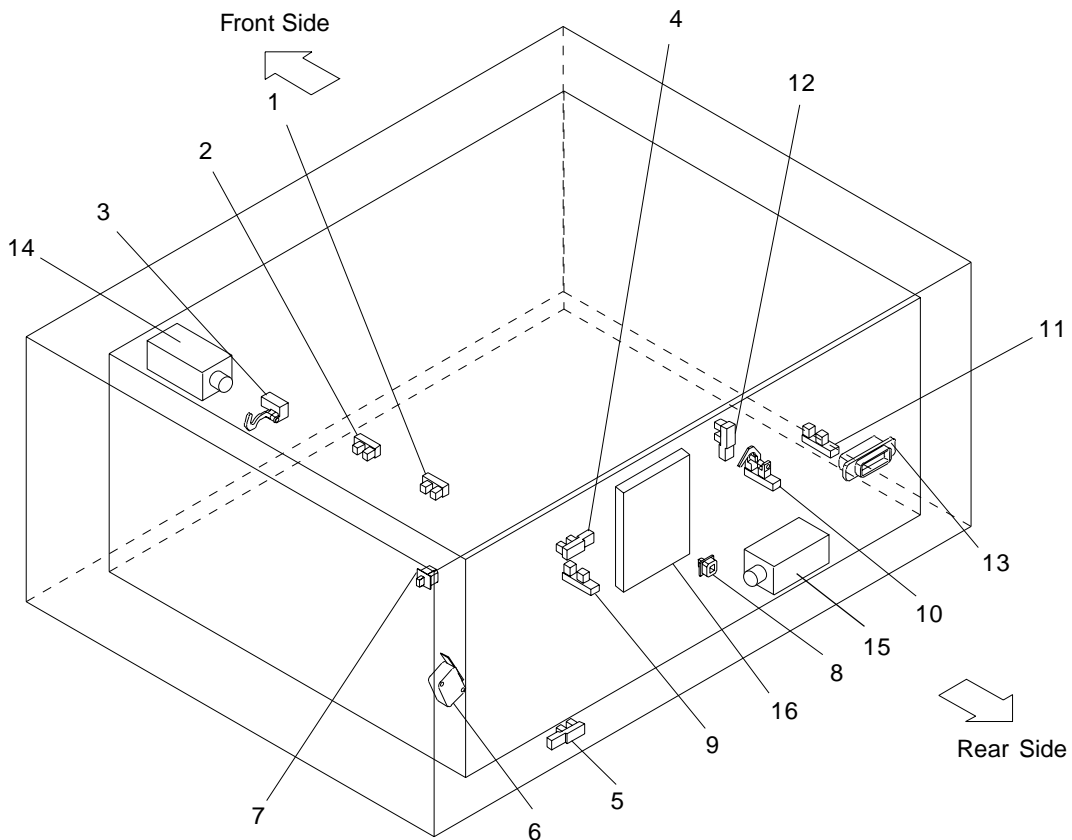
2. OVERVIEW

2.1 Front Sectional View

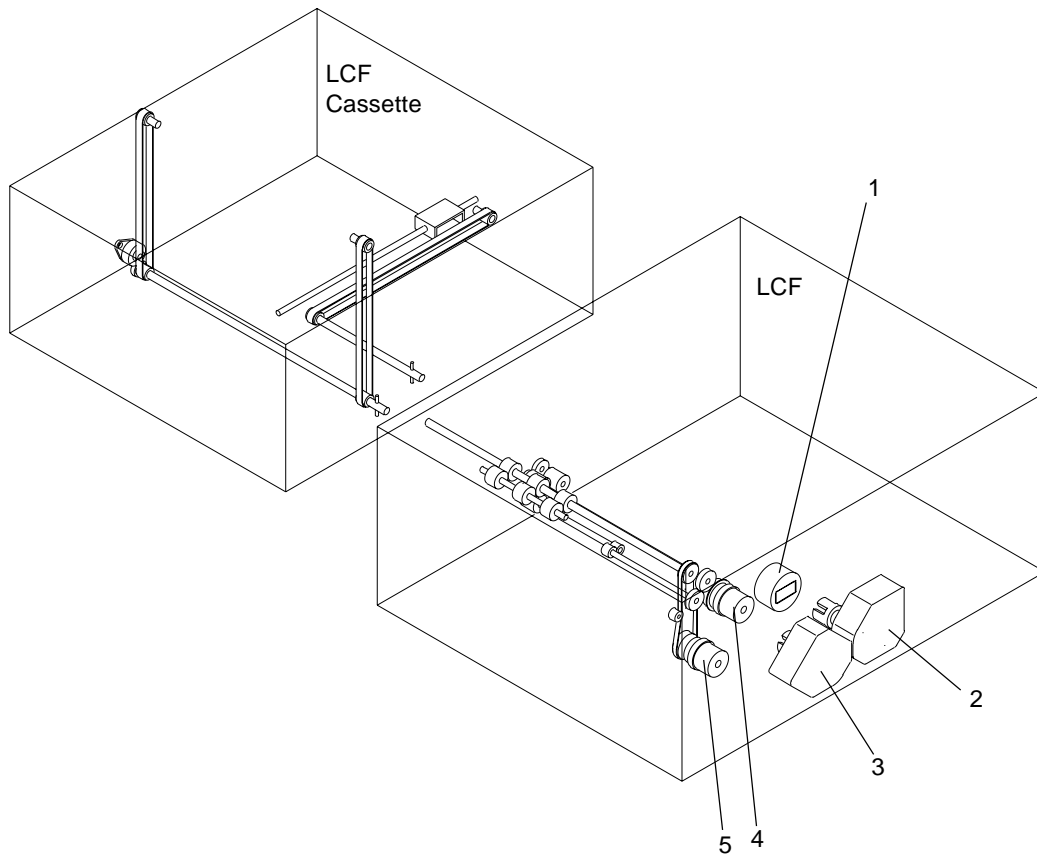


NO.	NAME	NO.	NAME
1	Tray-up sensor (S3)	15	Cassette detection switch (S10)
2	Feeding side paper empty sensor (S7)	16	Elevator tray
3	Feed sensor (S2)	17	End fence motor (M3)
4	Side cover roller	18	End fence coupling
5	Transport roller	19	End fence stop position sensor (S5)
6	Feed roller	20	End fence home position sensor (S6)
7	Separation roller	21	Standby side paper mis-stacking sensor (S11)
8	Pickup roller	22	Standby side empty sensor (S8)
9	Feed clutch (C2)	23	Side cover open/close switch (S1)
10	Transport clutch (C1)	24	Drawer connector
11	Tray-up coupling	25	Adjuster
12	Tray-up motor (M2)	26	Pickup solenoid (SOL1)
13	Tray bottom sensor (S4)	27	End fence solenoid (SOL2)
14	Feeding side paper stock sensor (S9)		

2.2 Layout of Electrical Parts



NO.	NAME	NO.	NAME
1	Tray-up sensor (S3)	9	End fence stop position sensor (S5)
2	Feeding side paper empty sensor (S7)	10	Standby side empty sensor (S8)
3	Feed sensor (S2)	11	End fence home position sensor (S6)
4	Feeding side paper stock sensor (S9)	12	Standby side paper mis-stacking sensor (S11)
5	Tray bottom sensor (S4)	13	Drawer connector
6	Side cover open/close switch <24V> (S1)	14	Pickup solenoid (SOL1)
7	Side cover open/close switch <5V>	15	End fence solenoid (SOL2)
8	Cassette detection switch (S10)	16	PC board (PWA)



NO.	NAME	NO.	NAME
1	LCF transport motor (M1)	4	Feed clutch (C2)
2	End fence motor (M3)	5	Transport clutch (C1)
3	Tray-up motor (M2)		

2.3 Electrical Parts

(1) Motor

SYMBOL	NAME	FUNCTION	REMARKS
(M1)	LCF-MTR LCF transport motor	Drives feeding and transportation	Brushless motor
(M2)	T-UP-MTR Tray-up motor	Lifts up the elevator tray	Brush motor
(M3)	END-F-MTR End fence motor	Drives the movement of the end fence	Brush motor

(2) Electromagnetic clutch

SYMBOL	NAME	FUNCTION	REMARKS
(C1)	TR-CLT Transport clutch	Drives the transportation	
(C2)	FED-CLT Feed clutch	Drives the roller to pick up from the elevator tray	

(3) Switches or sensors

SYMBOL	NAME	FUNCTION	REMARKS
(S1)	SIDE-COV-SW Side cover open/close switch	Side cover open/close detection	Push switch
(S2)	FED-SNR Feed sensor	Detects paper from the elevator tray	Photo interrupter
(S3)	TOP-SNR Tray-up sensor	Detects if the elevator tray has been raised	Photo interrupter
(S4)	TRY-BTM-SNR Tray bottom sensor	Detects the home position of the elevator tray	Photo interrupter
(S5)	END-F-STP-SNR End fence stop position sensor	Detects the stop position of the end fence	Photo interrupter
(S6)	END-F-HP-SNR End fence home position sensor	Detects the home position of the end fence	Photo interrupter
(S7)	EMP-SNR-FS Feeding side paper empty sensor	Detects lack of paper of the feed side	Photo interrupter
(S8)	EMP-SNR-SS Standby side paper empty sensor	Detects lack of paper of the standby side	Photo interrupter
(S9)	PST-SNR-FS Feeding side paper stock sensor	Detects that the paper stock is going short	Photo interrupter
(S10)	CST-SW Cassette detection switch	Detects the availability of the cassette	Push switch
(S11)	PR-MST-SS Standby side paper mis-stacking sensor	Detects mis-stacking of paper in the standby side cassette	Photo interrupter

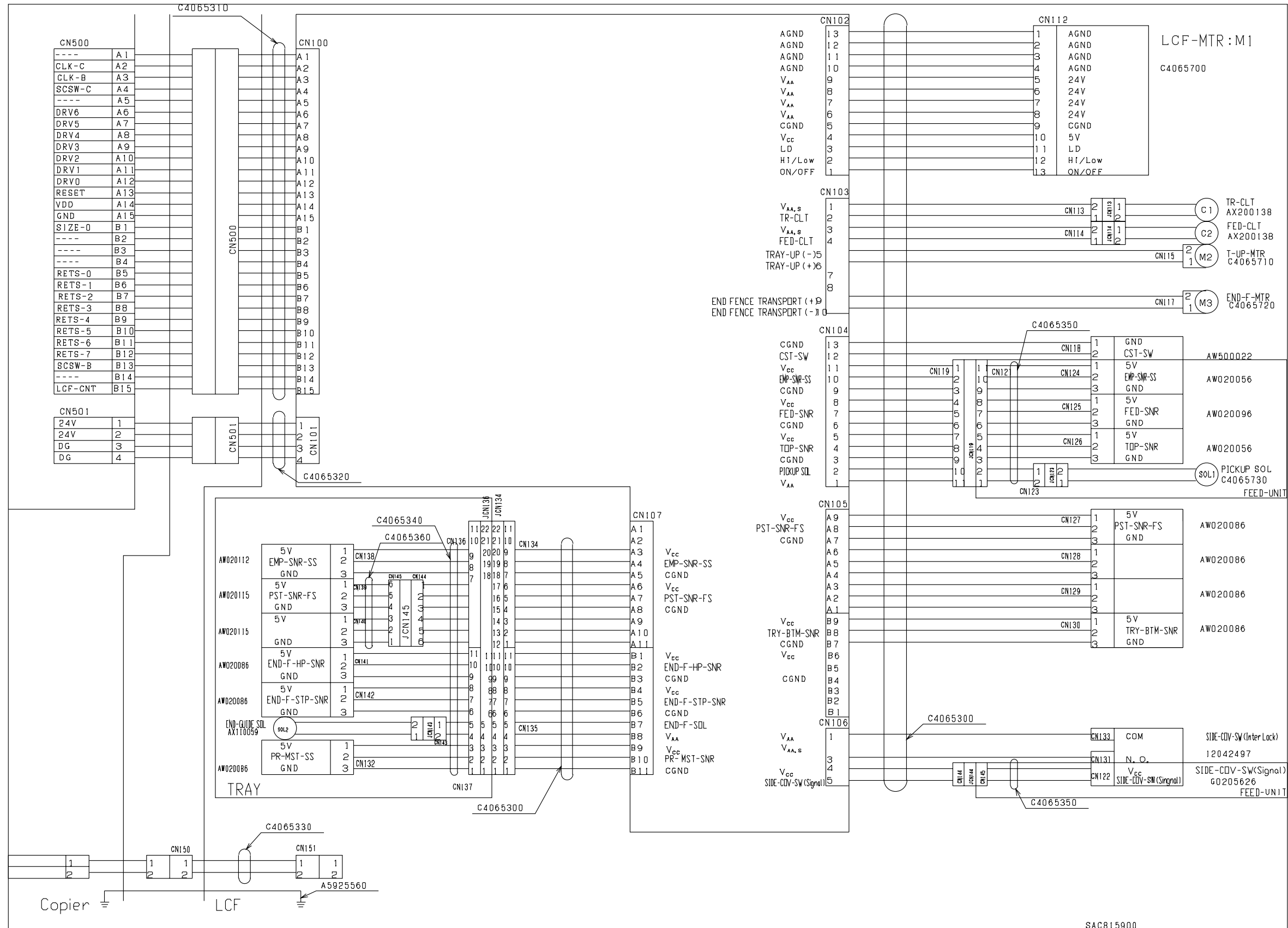
(4) PC Board

SYMBOL	NAME	FUNCTION	REMARKS
PWA	PWA-F-PFP-523 PC board	Drives the feeding and moves the tray	

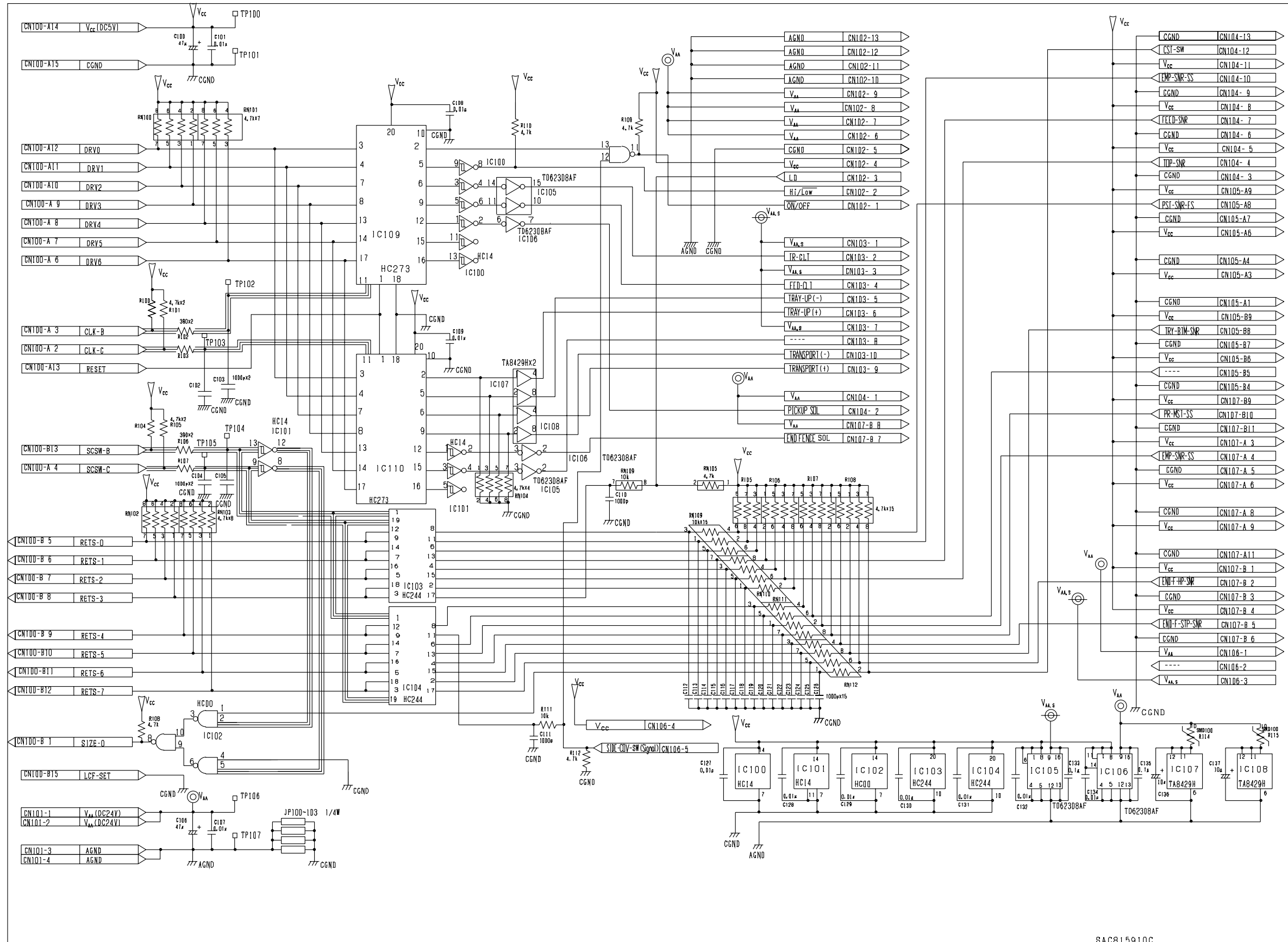
(5) Solenoids

SYMBOL	NAME	FUNCTION	REMARKS
(SOL1)	PICKUP-SOL Pickup solenoid	Lifts up the pickup roller	
(SOL2)	END-F-SOL End fence solenoid	Moves the lever to detect mis- stacking of paper in the standby side cassette	

2.4 Harness Diagram

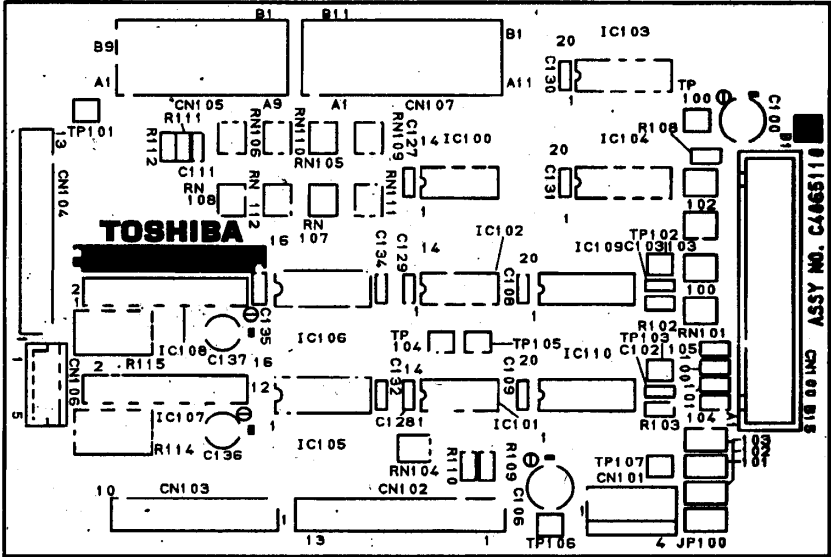


2.5 Circuit Diagram



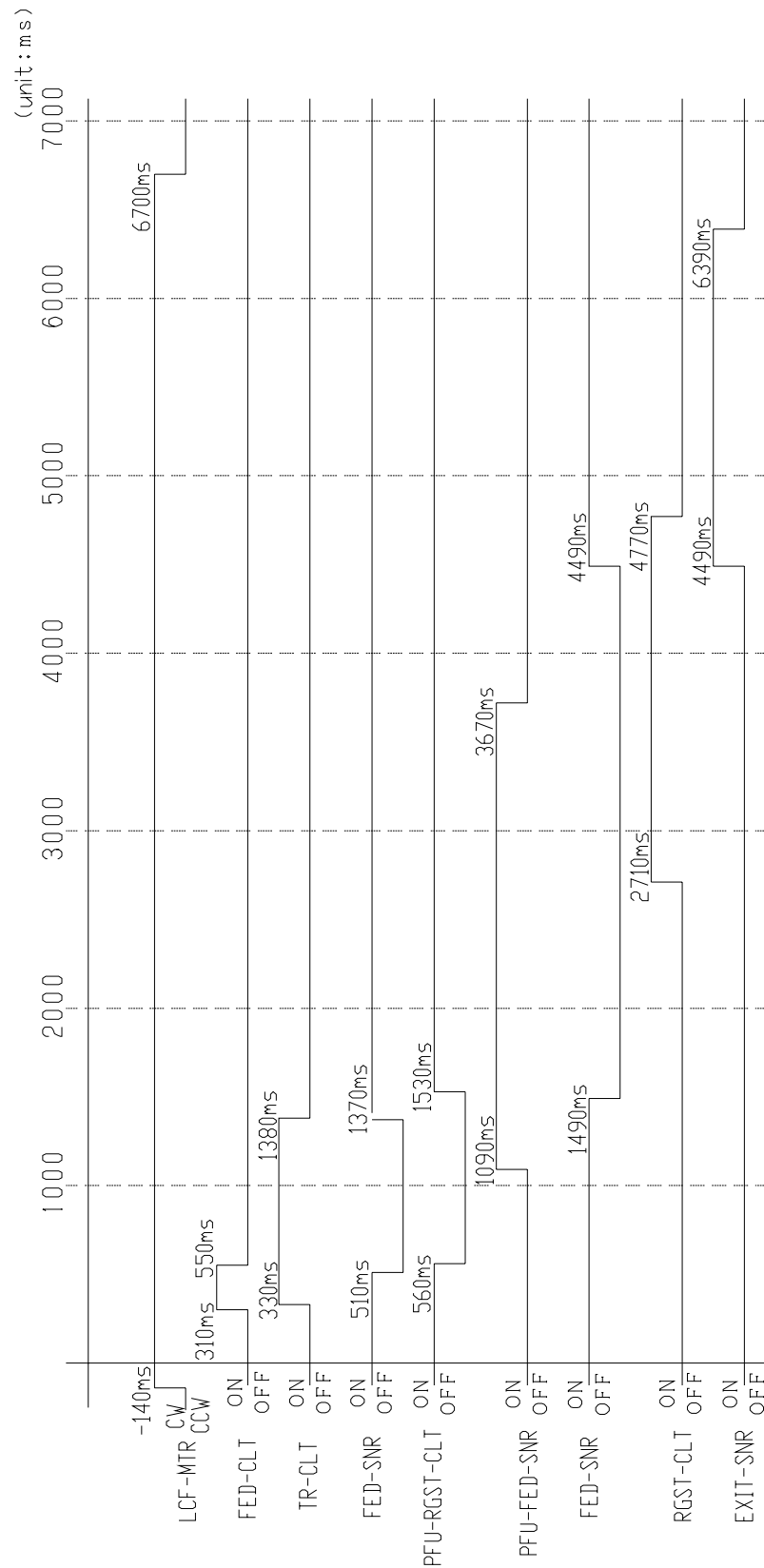
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2.6 Installation of PC Board

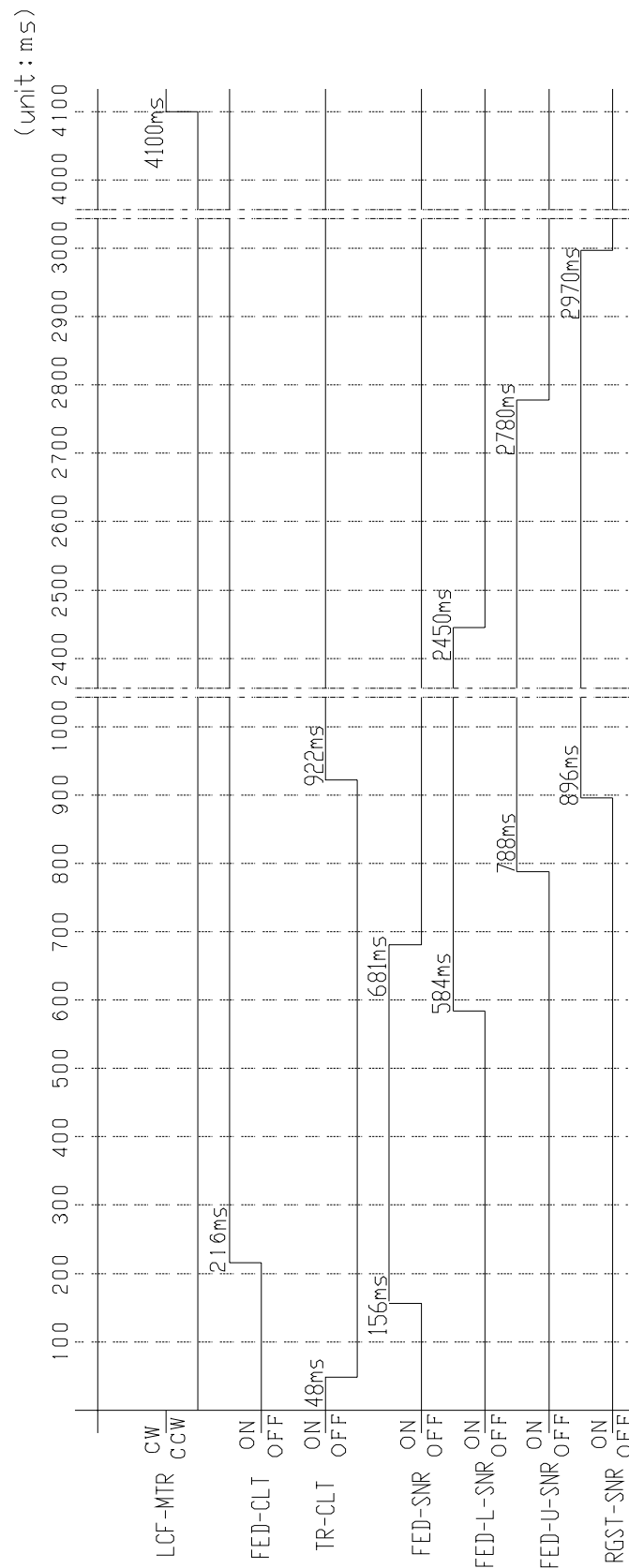


2.7 Timing Chart

(1) DP2500 (A4 sized sheet fed from the LCF)



(2) DP4500/3500 (A4 sized sheet fed from the LCF)



3. GENERAL OPERATION

3.1 Description of Operation

[A] From power ON to standby

- (1) When the copier is turned ON, power is also supplied to the feeding unit to start the pre-running operation. The tray-up motor (M2) starts to rotate forward and raises the tray. The tray-up motor (M2) is turned OFF when the tray turns ON the tray-up sensor (S3), then the tray is stopped. At this time, it is judged that there is paper in the feeding side cassette when the feeding side empty sensor (S7) is ON. On the other hand, the absence of paper in the feeding side cassette is assumed when the sensor (S7) is OFF, and the standby side empty sensor (S8) is subsequently checked. When the standby side empty sensor (S8) is OFF, that means that paper is absent in the standby side cassette, and it is therefore assumed that there is no paper in the LCF. When the standby side empty sensor (S8) is ON, the paper in the standby side cassette is moved to the feeding side cassette. The tray-up motor (M2) is rotated in reverse and lowers the tray of the feeding side. The lowered tray turns ON the tray bottom sensor (S4), and the tray-up motor (M2) is turned OFF to stop the tray. The end fence solenoid and pickup solenoid are then turned ON. The end fence motor (M3) rotates forward and the paper in the standby side cassette is moved onto the tray of the feeding side. The end fence motor (M3) is stopped for a second when the end fence stop position sensor (S5) is turned ON, and the motor (M3) immediately starts to rotate in reverse to return the end fence to the position where the home position sensor (S6) is turned ON. When the returning operation is started, the end fence solenoid and pickup solenoid are turned OFF, and the tray-up motor (M2) is rotated forward to raise the tray. The tray-up motor (M2) is turned OFF when the tray being raised turns ON the tray-up sensor (S3) and stops the tray. At this time, the presence of paper is judged when the feeding side empty sensor (S7) is ON.
- (2) If the power is turned ON when the cassette has been removed, the tray-up motor for that cassette is not turned ON. The tray is raised as soon as the cassette is installed, and it detects if there is paper in the cassette.
- (3) If either of the feed sensor (S2) is ON (there is paper in the transportation path) when the power is turned ON, that means a paper jam has occurred and the operation is disabled until the paper is removed.

[B] Standby status

- (1) Trays detect the paper as described above, and the copier goes into the standby status.
- (2) The tray goes down automatically when the cassette is removed and is raised as soon as the cassette is reinstalled it then checks if there is paper in the cassette.

[C] From the start to the end of copying

- (1) The main motor of the copier is turned ON when the START key is pressed. The LCF transport motor (M1) are turned ON to drive.
- (2) When the copier judges that the LCF is ready for feeding paper, it turns ON the feed clutch (C2) of the selected cassette. This clutch drives the pickup roller and feed roller to feed paper from the tray.
- (3) About 0.02 sec (DP4500/3500: 0.05 sec), after the feeding started transport clutch (C1) are turned ON to drive the transport roller.
- (4) The leading edge of the paper turns the feed sensor (S2) ON. These are located right next to the exit side of the selected cassette. The feed clutch (C2) is turned OFF and feeding from the cassette is completed.
- (5) The paper is transported to the copier by the LCF transport roller. If the trailing edge of the previously sent sheet still remains at the feed sensor when the leading edge of the paper reaches the feed sensor (S2), the transport clutch (C1) is turned OFF to stop the transport of the paper.
- (6) The trailing edge of the paper turns the feed sensor (S2) OFF. These are located right next to the exit side of the selected cassette. LCF then becomes ready for feeding the next sheet of paper, and the procedures (2) to (5) are repeated.
- (7) When the copying operation is completed, the main motor, LCF transport motor (M1) and transport clutch (C1) are turned OFF and the transport roller is stopped.

3.2 Error Detection

[A] Jam detection

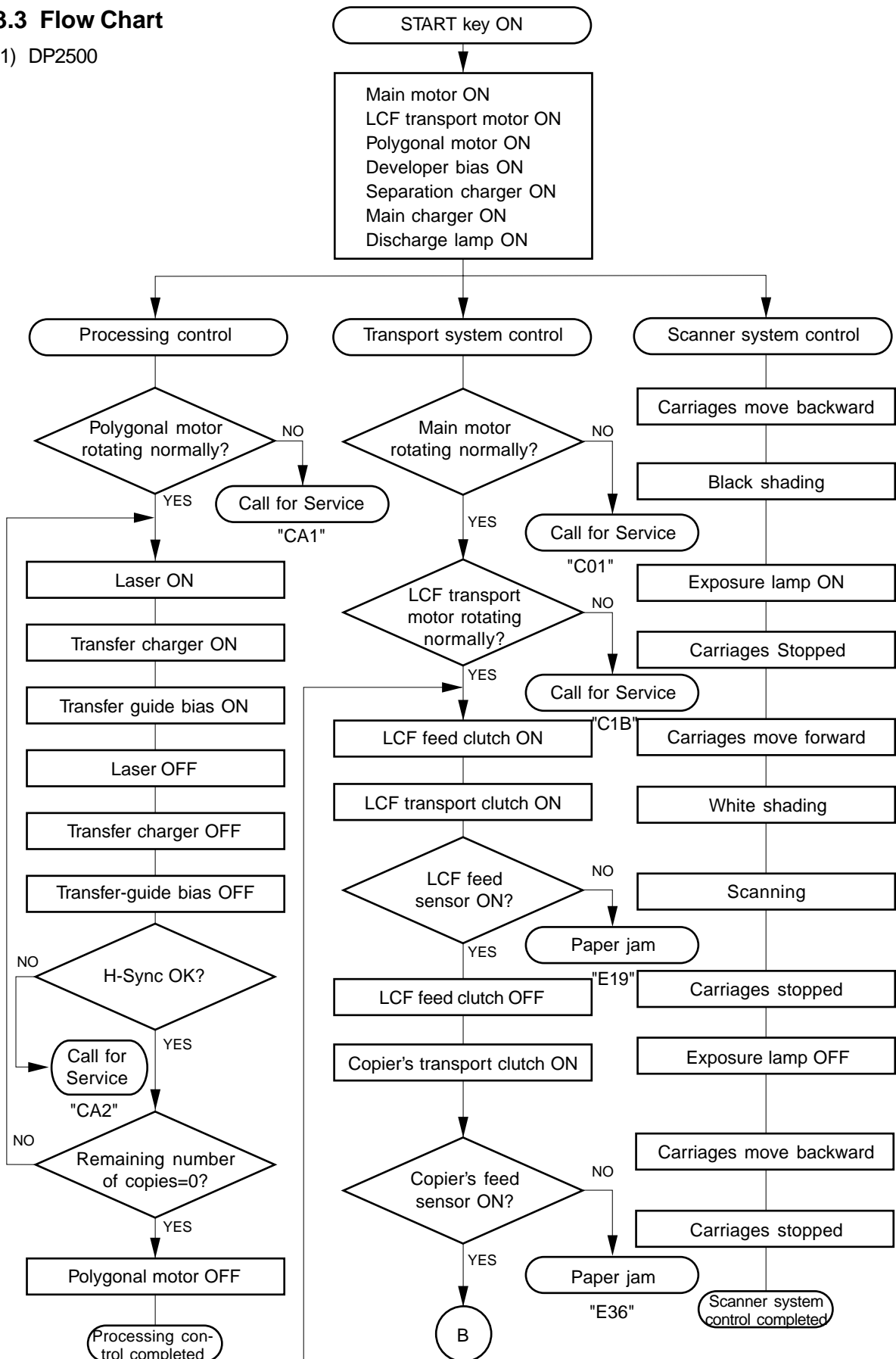
- (1) A paper jam (E19, E33, E36) [DP4500/3500: (E19, E3C, E3D, E3E)] occurs in the following cases.
 - a. Feed sensor (S2) is not turned ON within 0.5 seconds after the feeding is started.
 - b. The leading edge of the paper does not pass the feed sensor (S2) in the transport path within a fixed time.
- (2) Open the side cover of the paper feeder and remove all the paper remaining on the transport path and close the side cover to clear the jammed paper. If either of the feed sensors (S2) is still ON when the side cover is closed, it is determined that there is still paper on the transport path and the paper jam status is not canceled.
- (3) When a paper jam occurs in the paper feeder during multiple copying, the sheet that was fed before the jam is copied normally.

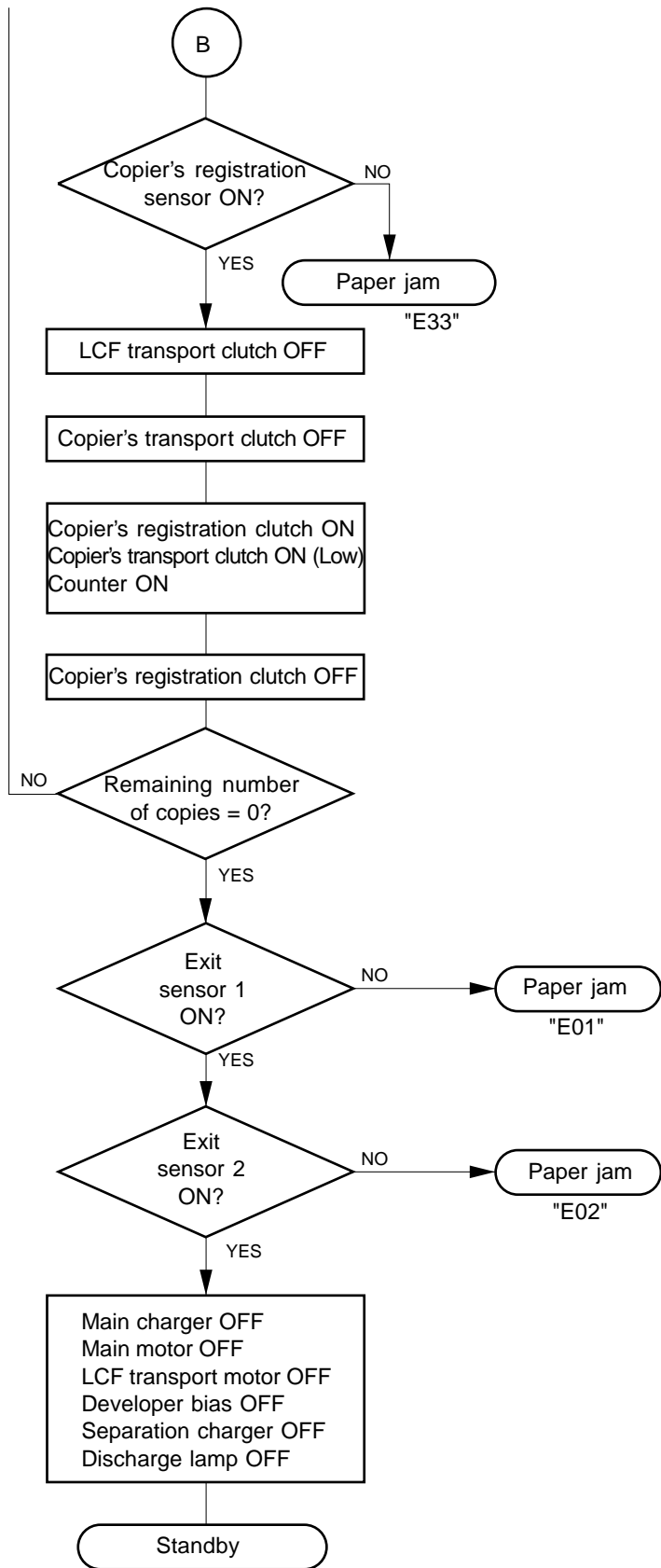
[B] Call Service

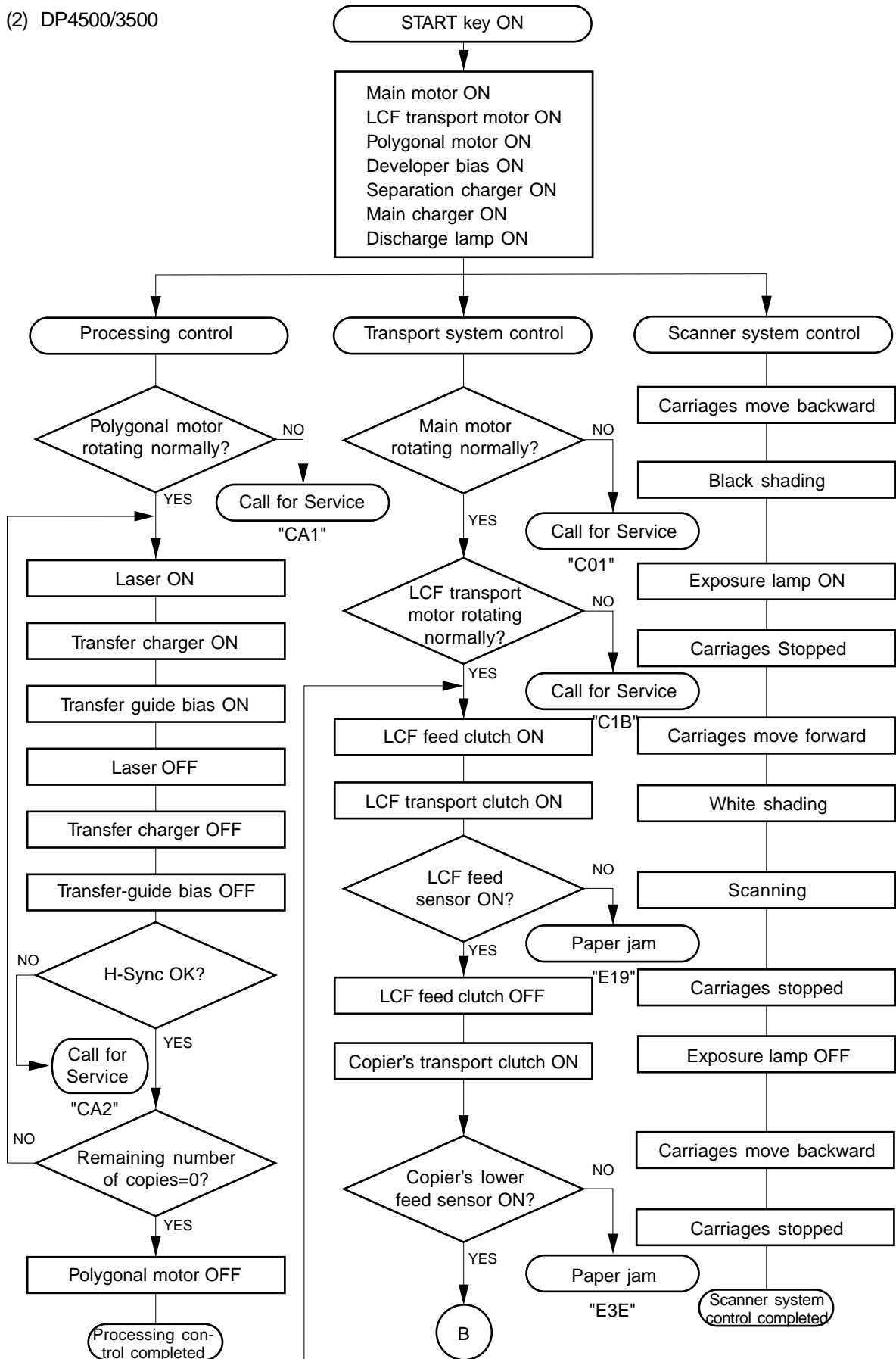
- (1) When the tray-up sensor (S3) is not turned ON even through 8 seconds (DP4500/3500: 10 seconds) have passed since the tray started to be raised, it is assumed that the cassette cannot be used (there is no paper) and the corresponding message is displayed on the control panel.
- (2) When the tray bottom sensor (S4) is not turned ON even through 8 seconds (DP4500/3500: 10 seconds) have passed since the tray started to be lowered, it is assumed that the cassette cannot be used (there is no paper) and the corresponding message is displayed on the control panel.
- (3) When the end fence stop position sensor (S5) is not turned ON even through 8 (DP4500/3500: 5 seconds) seconds have passed since the end fence started to move the paper in the standby side cassette, it is assumed that the cassette cannot be used (there is no paper) and the corresponding message is displayed on the control panel.
- (4) When the end fence home position sensor (S6) is not turned ON even through 8 seconds (DP4500/3500: 5 seconds) have passed since the end fence started to move the paper in the standby side, it is assumed that the cassette cannot be used (there is no paper) and the corresponding message is displayed on the control panel.
- (5) The states (1) to (4) are cleared by removing the cassette.

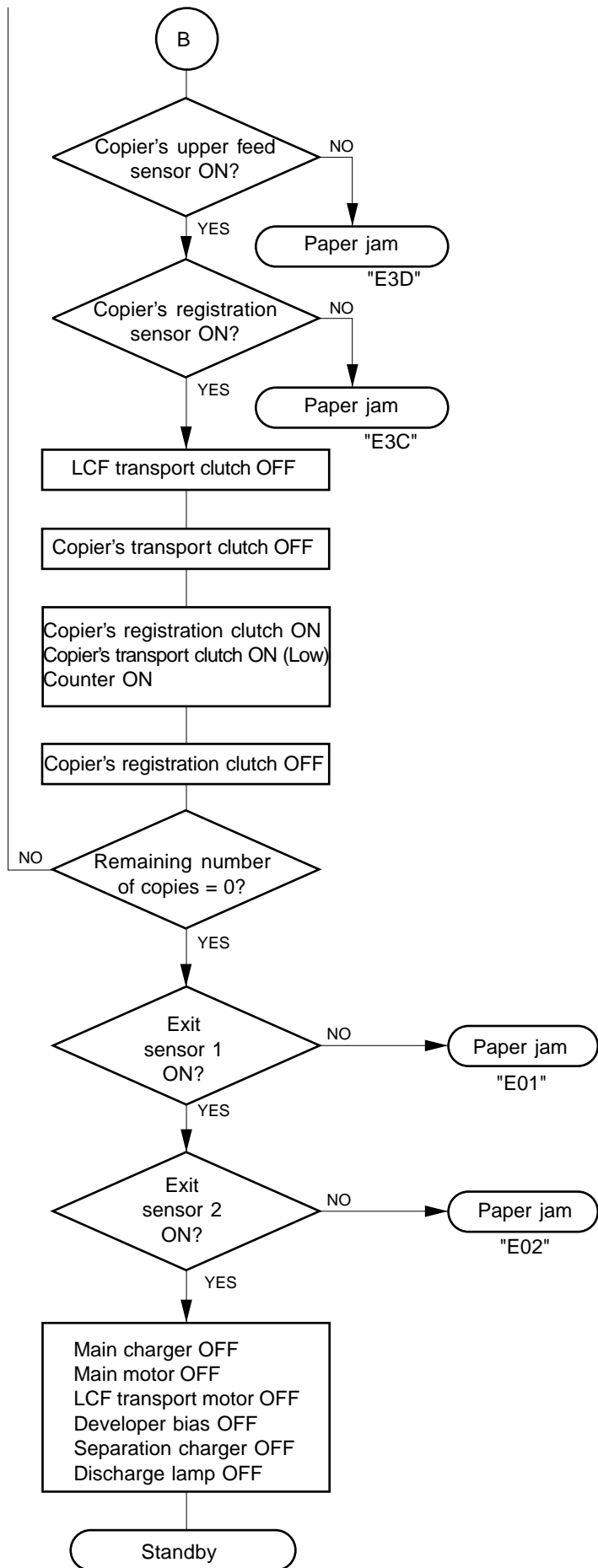
3.3 Flow Chart

(1) DP2500









4. DRIVE SYSTEM AND FEEDING OPERATION

4.1 Configuration and Drive System

The Large Capacity Feeder (LCF) mainly consists of the LCF cassette, pickup roller, feed roller, separation roller, transport roller and drive system for these components.

- Feeding/Transport system

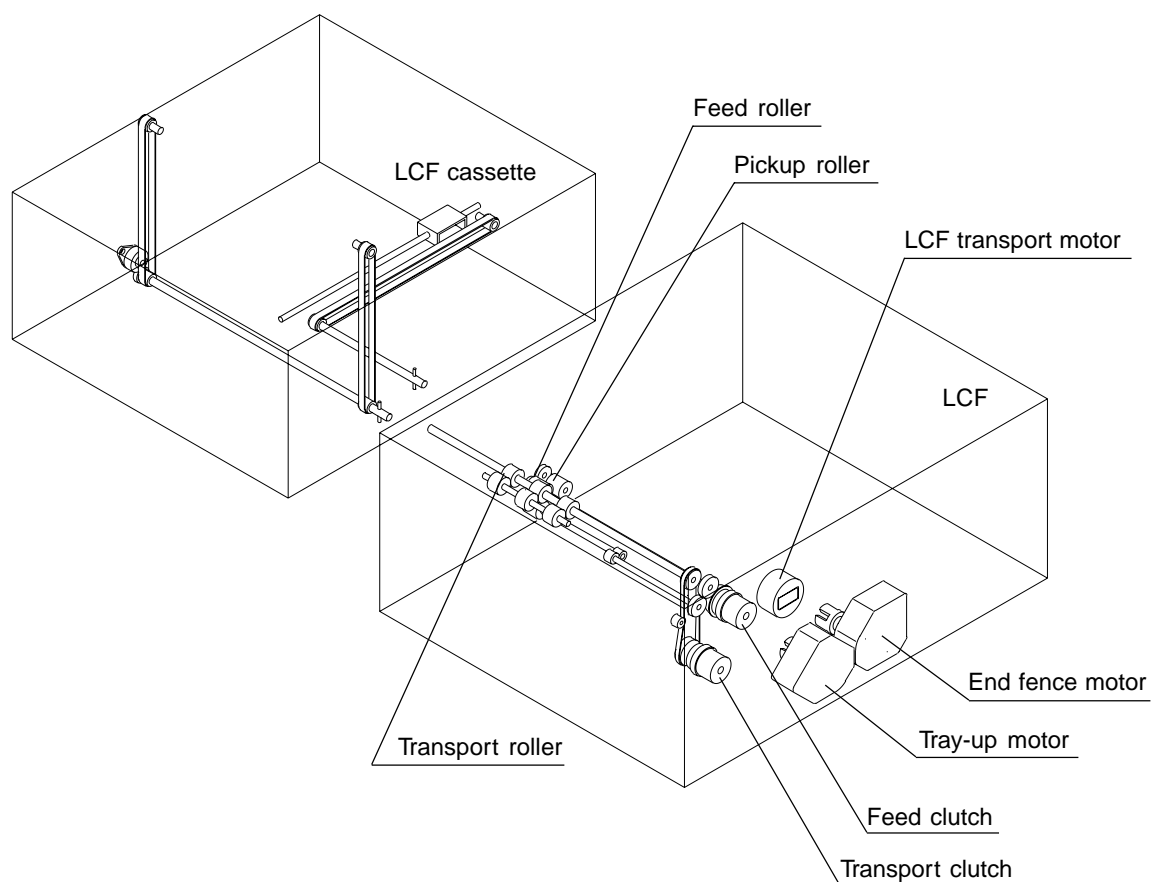
The LCF transport motor drives the pickup roller, feed roller, separation roller and transport roller which are located in the feeding area.

- Cassette tray system

This system raises and lowers the tray.

- End fence system

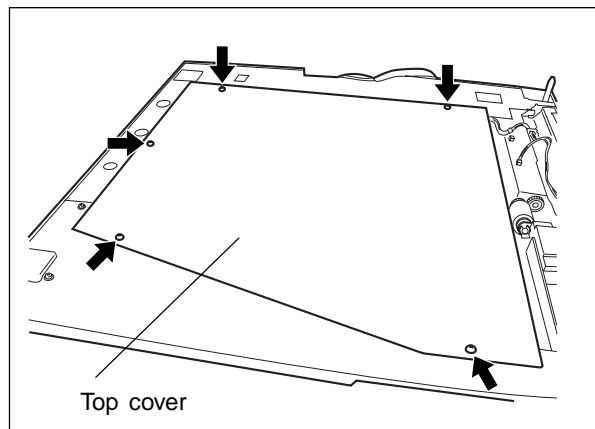
This system movement of the end fence.



5. Disassembly and Replacement

5.1 Top cover

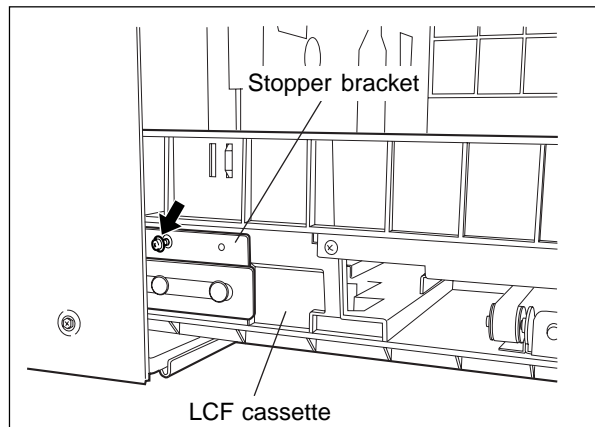
Remove 5 screws and take off the top cover.



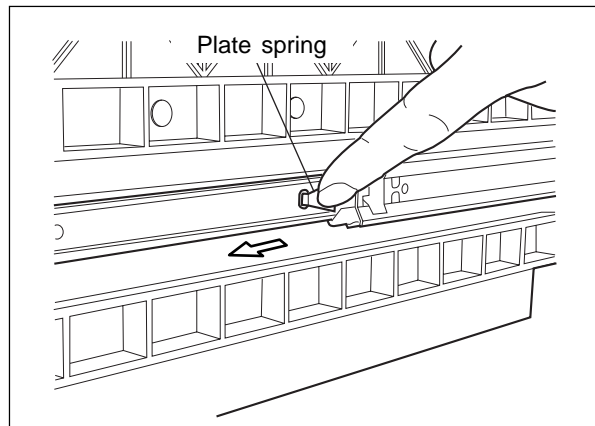
5.2 Installation and Removal of the LCF Cassette and Covers

[A] LCF cassette

- (1) Draw out the LCF cassette toward you.
- (2) Remove one screw and take off the stopper bracket at the left side of the LCF cassette.

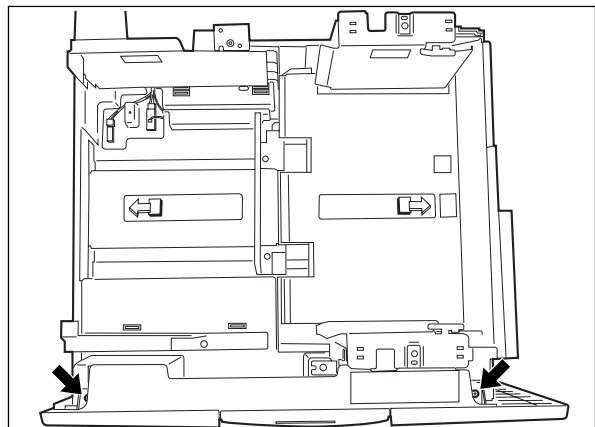


- (3) Pull out the LCF cassette while pressing the plate spring at the right side of the LCF cassette.



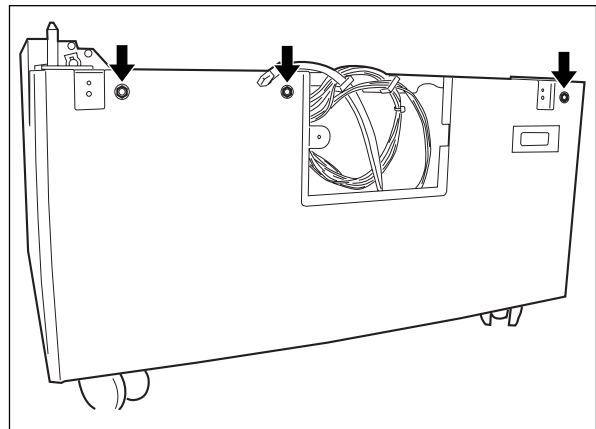
[B] Front cover

Remove 2 screws and take off the front cover.



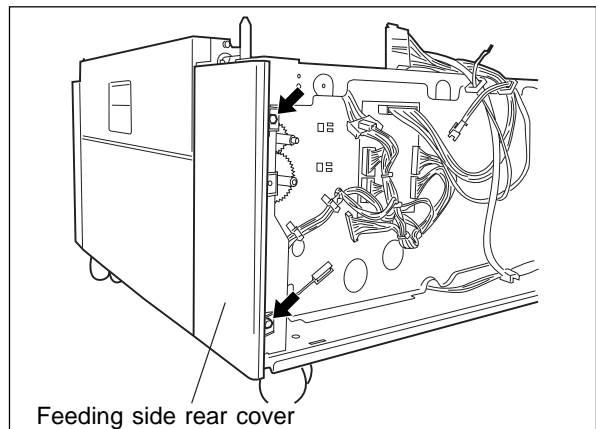
[C] Rear cover

Remove 3 screws and take off the rear cover.



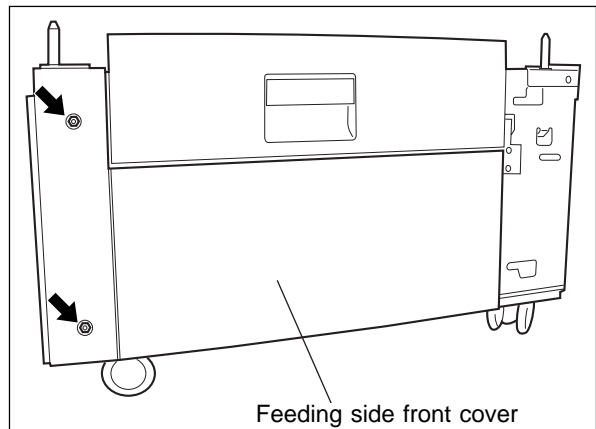
[D] Feeding side rear cover

Remove 2 screws and take off the feeding side rear cover.



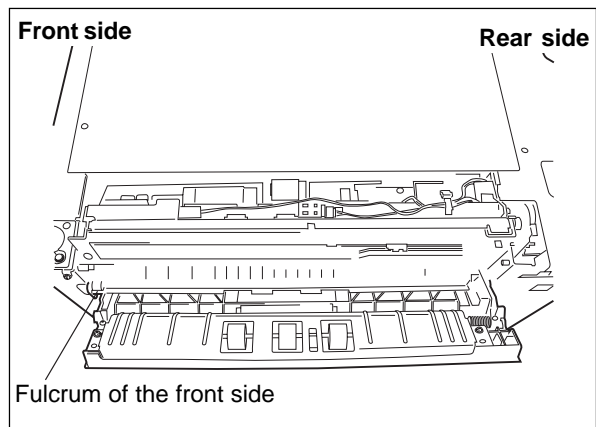
[E] Feeding side front cover

Remove 2 screws and take off the feeding side front cover.



[F] Side cover

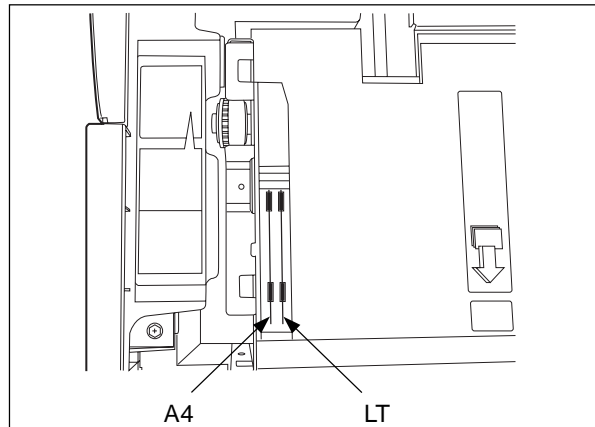
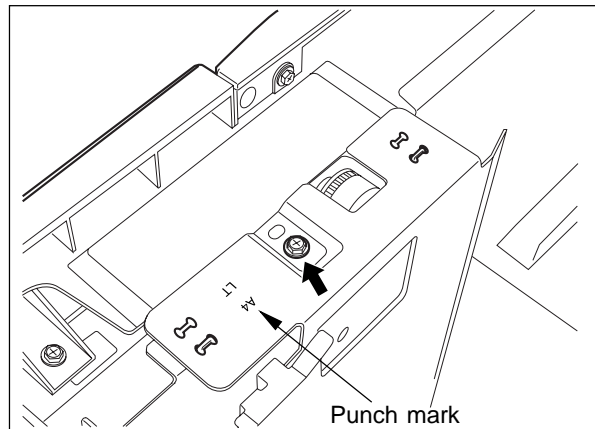
- (1) Open the side cover and take the protrusion at the front side of the side cover out of the hole of the frame while pushing the cover to the rear side.
- (2) Remove the side cover.



5.3 Paper Guides

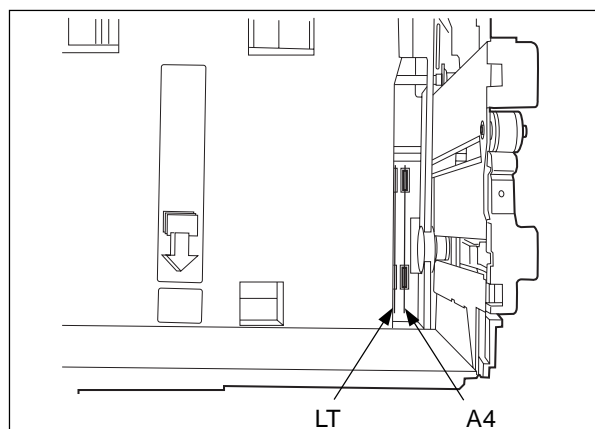
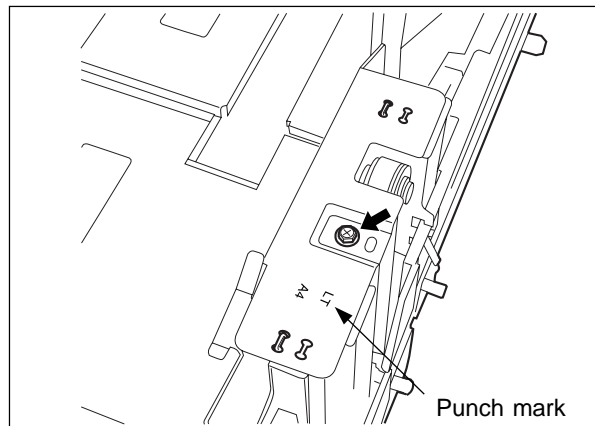
[A] Feeding side front guide

- (1) Remove one screw fixing the feeding side front guide.
- (2) Lift up the paper guide slightly and place it into the slots for the appropriate size. Confirm the position of the screwhole and insert a screw into it.



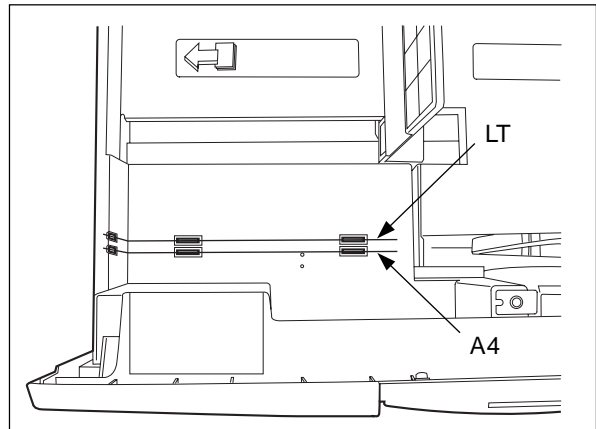
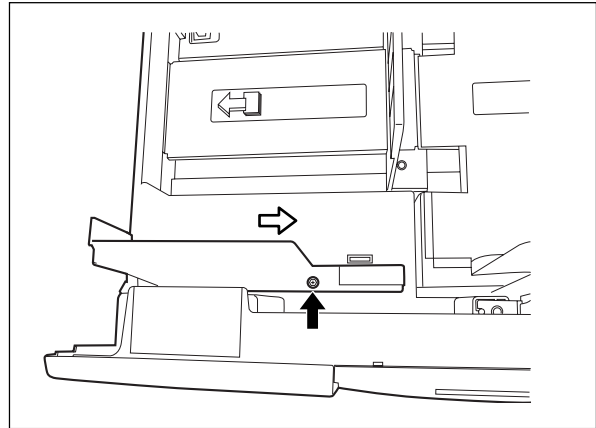
[B] Feeding side rear guide

- (1) Remove one screw fixing the feeding side rear guide.
- (2) Lift up the paper guide slightly and place it into the slots for the appropriate size. Confirm the position of the screwhole, and insert a screw into it.



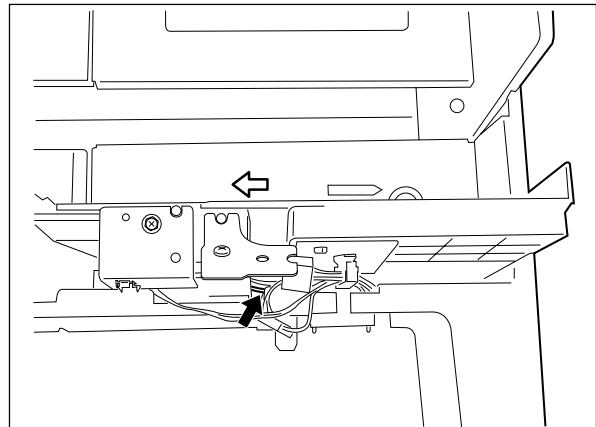
[C] Standby side front guide

- (1) Remove one screw fixing the standby side front guide and slide the guide in the direction of the arrow.
- (2) Lift up the paper guide slightly and place it into the slots for the appropriate size. Confirm the position of the screw hole, and insert a screw into it.

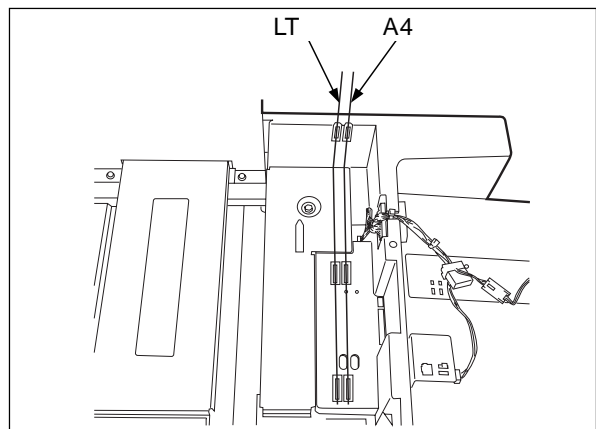
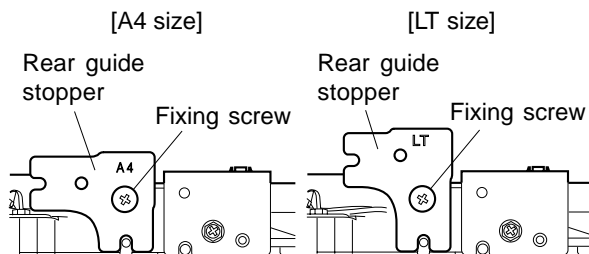


[D] Standby side rear guide

- (1) Remove one screw fixing the standby side rear guide and slide the guide in the direction of the arrow.
- (2) Lift up the paper guide slightly and place it into the slots for the appropriate size. Confirm the position of the screw hole, and insert a screw into it.

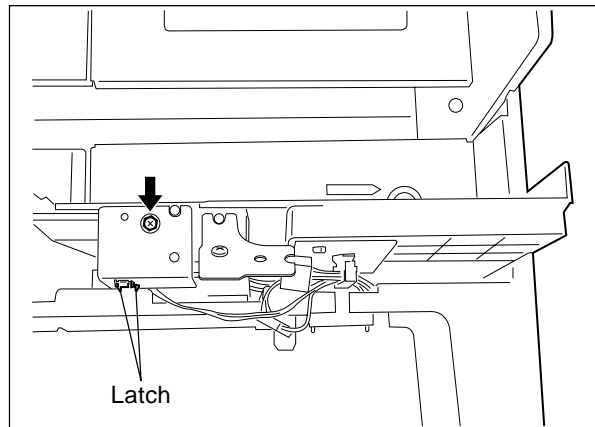


Note: When the position of the standby side rear guide is changed (A4→LT or LT→A4), remember that the direction of the rear guide stopper to be assembled is also changed (See the following figure).



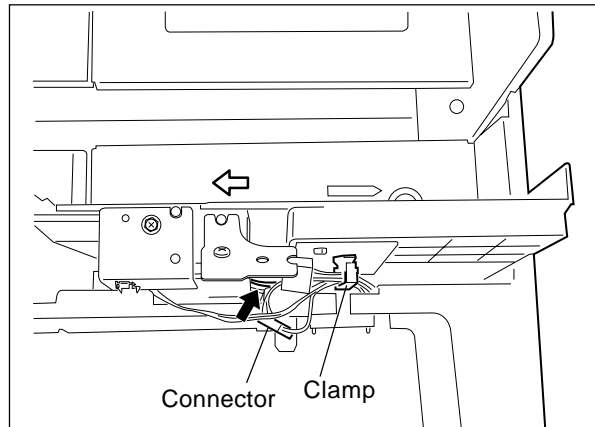
5.4 Standby side Paper Mis-stacking Sensor

- (1) Remove one screw and take off the sensor bracket.
- (2) Disconnect one connector.
- (3) Release the latch and remove the sensor.

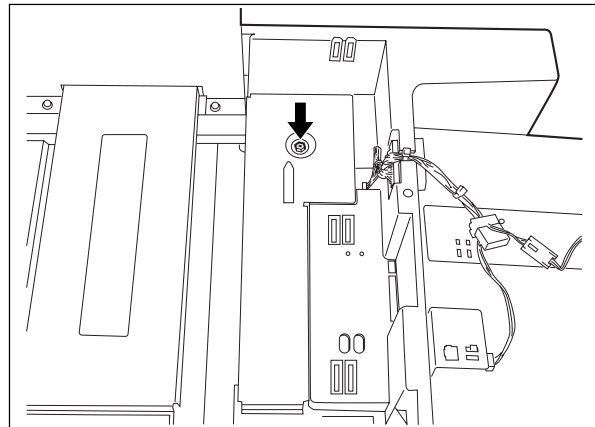


5.5 End Fence Home Position Sensor / Standby Side Empty Sensor

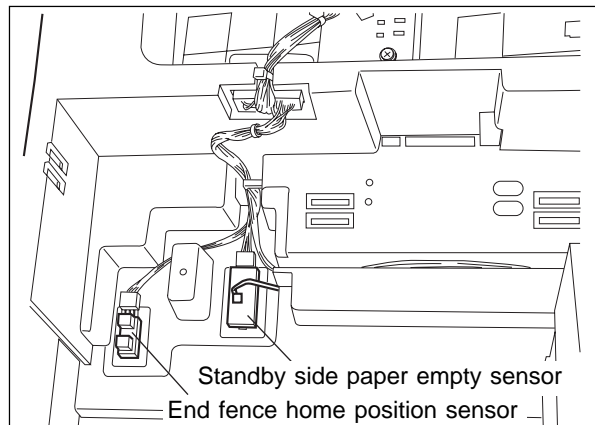
- (1) Disconnect one connector, and release the harness from the clamp.
- (2) Remove one screw fixing the standby side rear guide, then slide the guide in the direction of the arrow to take it out.



- (3) Remove one screw and take off the bracket.

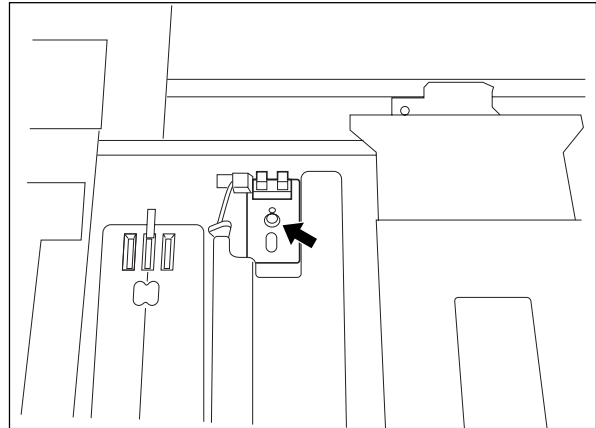


- (4) Disconnect the connector.
- (5) Release the latch to remove the end-fence home position sensor and the standby side paper empty sensor from the backside of the LCF cassette.

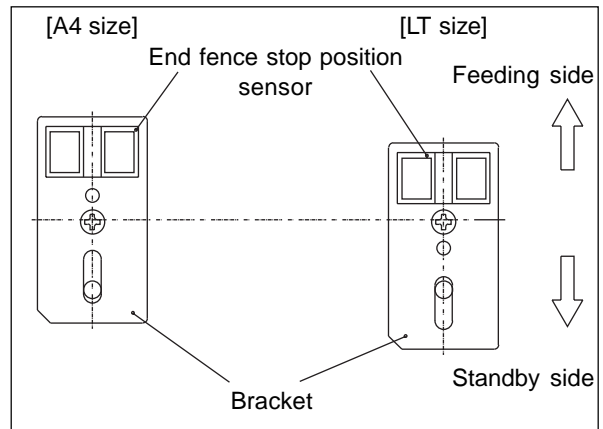


5.6 End Fence Stop Position Sensor

- (1) Disconnect one connector, remove one screw and take off the bracket.
- (2) Release the latch to remove the sensor.

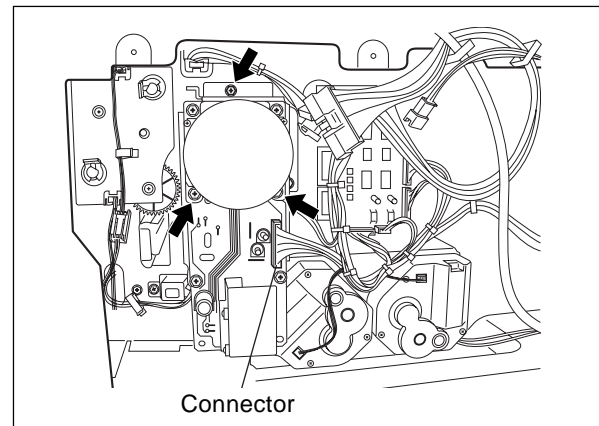


Note: The positions to attach the end fence stop position sensor differ according to each paper size.

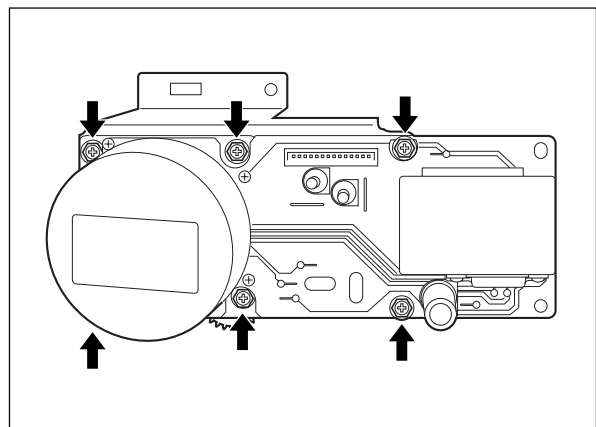


5.7 LCF Transport Motor Unit

- (1) Disconnect one connector.
- (2) Remove 3 screws and take off the LCF transport motor along with the bracket.

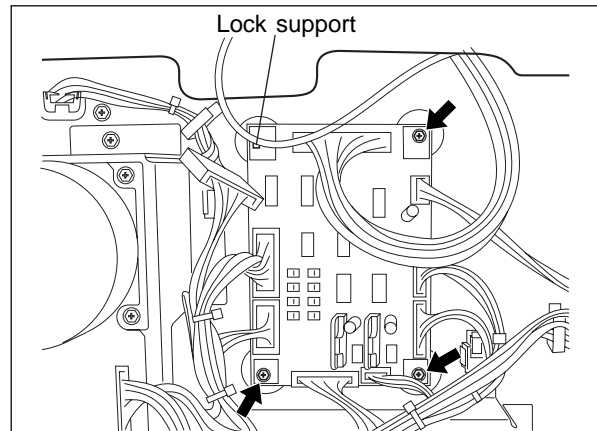


- (3) Remove 6 screws and take off the motor from the bracket.



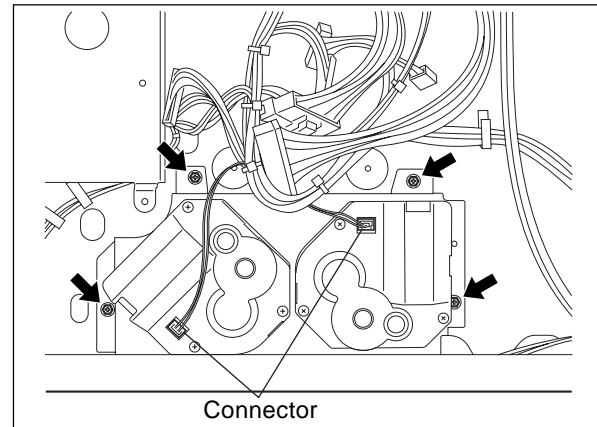
5.8 PC Board

- (1) Disconnect 8 connectors.
- (2) Remove one lock support and 3 screws. Take off the PC board.

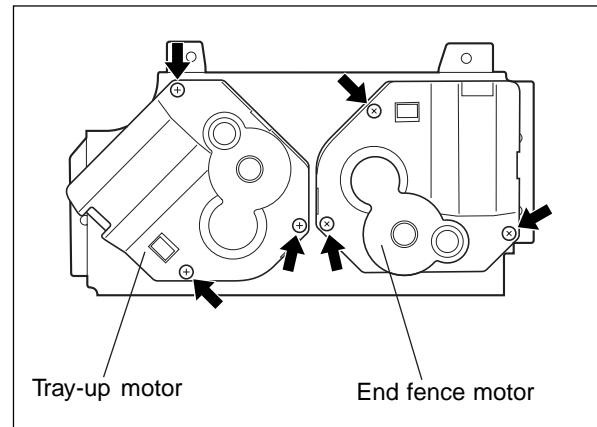


5.9 Tray-up Motor / End Fence Motor

- (1) Disconnect 2 connectors.
- (2) Remove 4 screws and take out the tray-up motor / end fence motor along with the bracket.

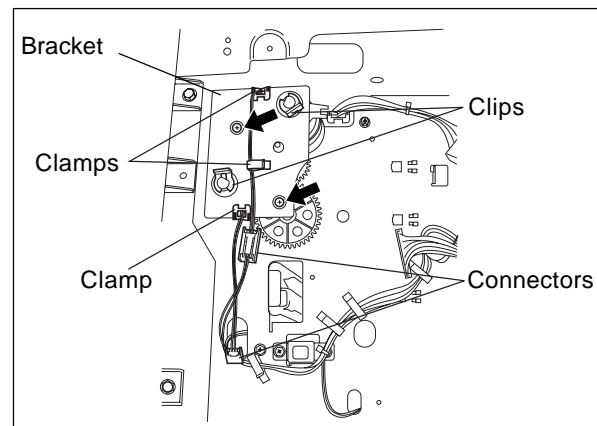


- (3) Remove 6 screws and take off the tray-up motor and the end-fence motor to detach the motors from the bracket.

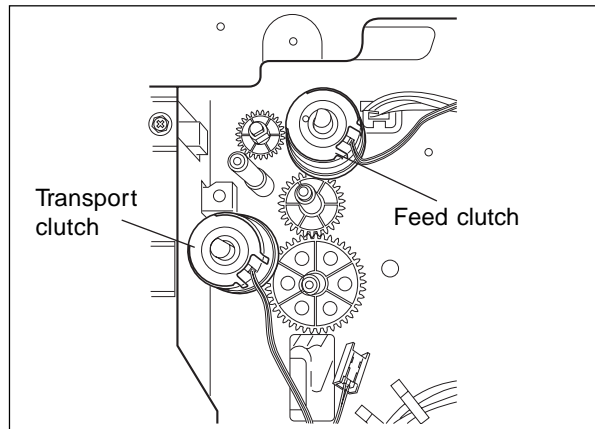


5.10 Feed Clutch / Transport Clutch

- (1) Release the harness from 3 clamps and disconnect 2 connectors.
- (2) Remove 2 clips and 2 screws. Take off the bracket.

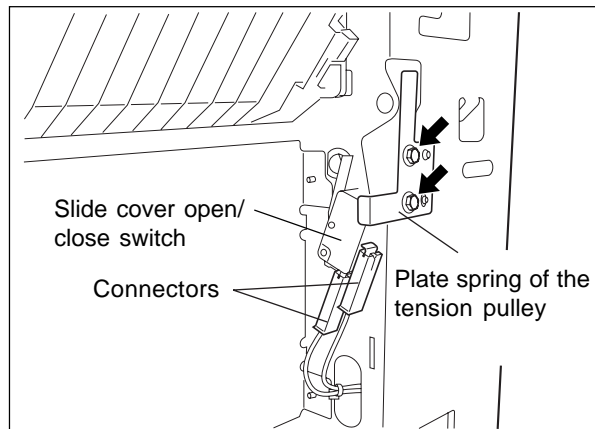


- (3) Remove the feed clutch and transport clutch.



5.11 Side Cover Open/Close Switch

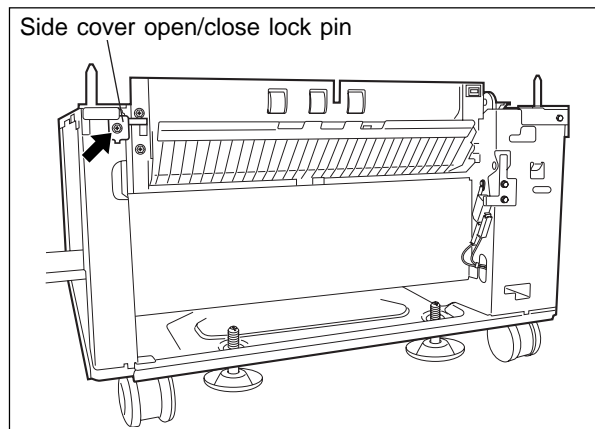
- (1) Disconnect 2 connectors.
- (2) Remove 2 screws and the plate spring for the tension pulley.
- (3) Remove the side cover open/close switch.



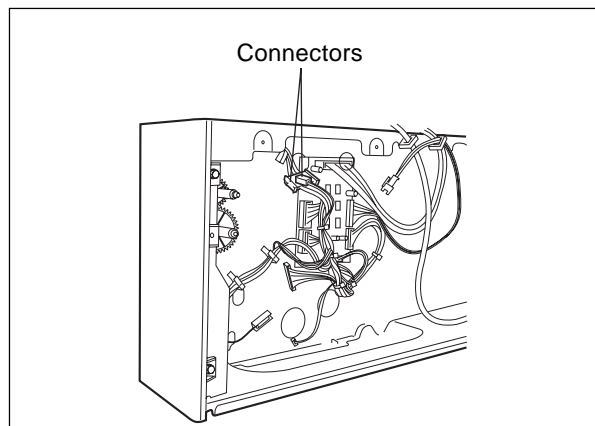
5.12 Feeding Unit

[A] Feeding unit

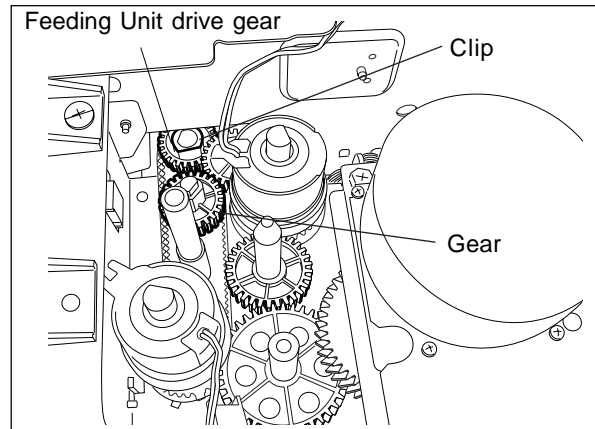
- (1) Remove one screw and pull out the side cover open/close lock pin for the feeding unit.



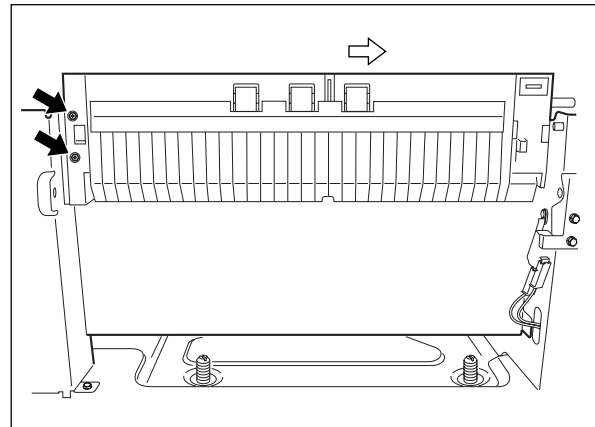
- (2) Disconnect 2 connectors.



- (3) Release the latch from the groove on the shaft, and take off the gear.
- (4) Remove the clip and take off the belt to remove the feeding unit drive gear.

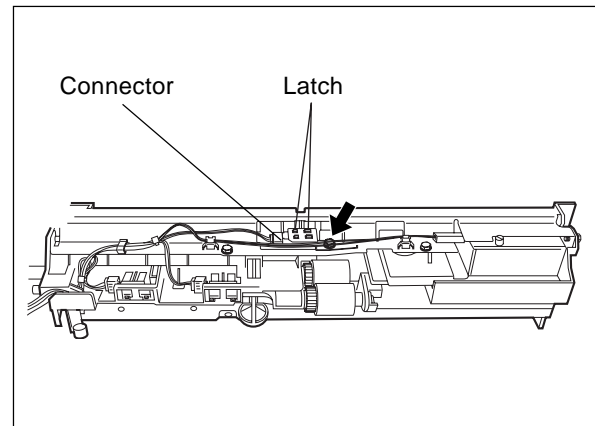


- (5) Remove 2 screws fixing the feeding unit, and take off the unit upward while pushing it in the direction of the arrow.



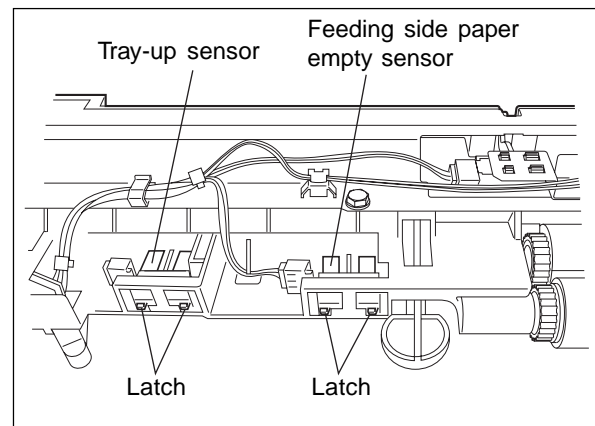
[B] Feed sensor

- (1) Remove one screw and take off the sensor bracket.
- (2) Disconnect one connector and release the latch to remove the sensor.



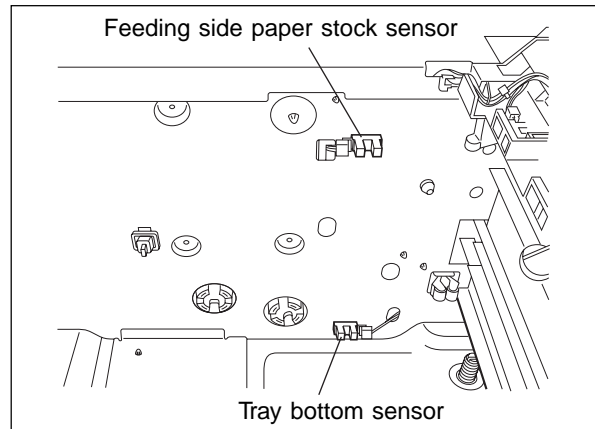
[C] Feeding side paper empty sensor /Tray-up sensor

- (1) Disconnect the connectors of the sensor (one each).
- (2) Release the latches and remove the feeding side paper empty sensor and the tray-up sensor.



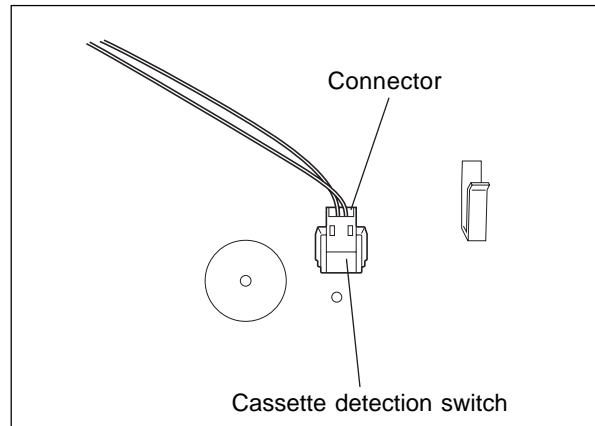
5.13 Feeding Side Paper Stock Sensor / Tray bottom sensor

- (1) Disconnect the connectors of the sensor.
- (2) Release the latch from the rear side and remove the sensors toward the front side.



5.14 Cassette Detection Switch

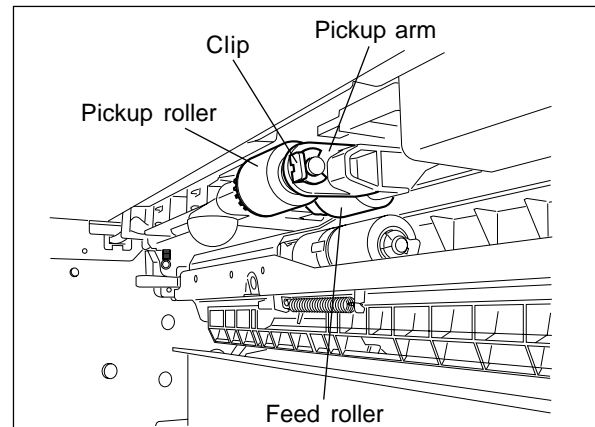
- (1) Disconnect one connector.
- (2) Release the latch and remove the switch toward the front side.



5.15 Disassembly for Supplies

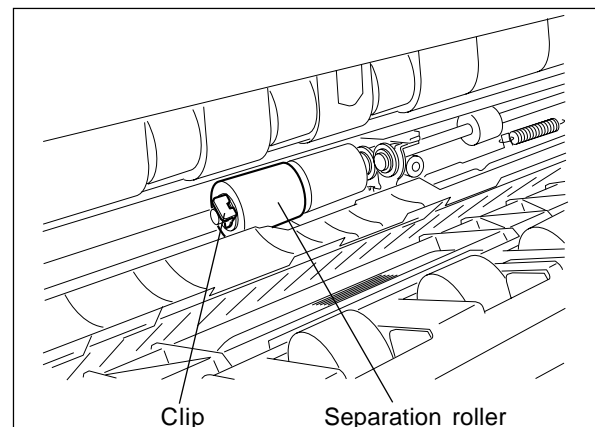
[A] Pickup roller/Feed roller

- (1) Pull out the LCF cassette.
- (2) Remove the clip and take off the pickup arm.
- (3) Remove the pickup roller and feed roller from the shaft.



[B] Separation roller

- (4) Open the side cover.
- (5) Remove the clip and take off the separation roller.



6. PERIODIC MAINTENANCE

Symbols used in the checklist

Cleaning	Coating	Replacing	Date
A Cleaning with alcohol	W: White grease (Molycoat) AV: Alvania No. 2	80 Every 80K copies △ Replace if deformed or damaged	User's name
			Serial No
			Inspector's name
			Remarks

General Maintenance Checklist

Item to inspect	Cleaning	Coating	Replace every 1K copies	Remarks
Pickup roller(Upper/Lower)	A		160△	
Feed roller(Upper/Lower)	A		160△	
Separation roller(Upper/Lower)	A		160△	
Drive gears(tooth face)		W		

*The above parts are to be replaced depending on the number of the sheets of paper used in each cassette.

MEMO

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MEMO