

Bypass Tray

(Machine Code: B512)

1. INSTALLATION

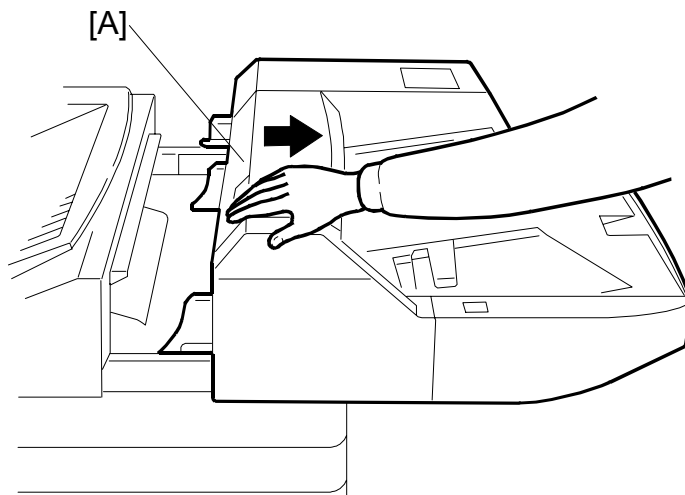
For a description of the installation procedure for the bypass tray, refer to “1. Installation” of the main machine service manual.

2. PREVENTIVE MAINTENANCE

For details about preventive maintenance for the Bypass Tray B512, please refer to Section “2. Preventive Maintenance” in the main service manual.

3. REPLACEMENT AND ADJUSTMENT

3.1 OPENING THE BYPASS TRAY



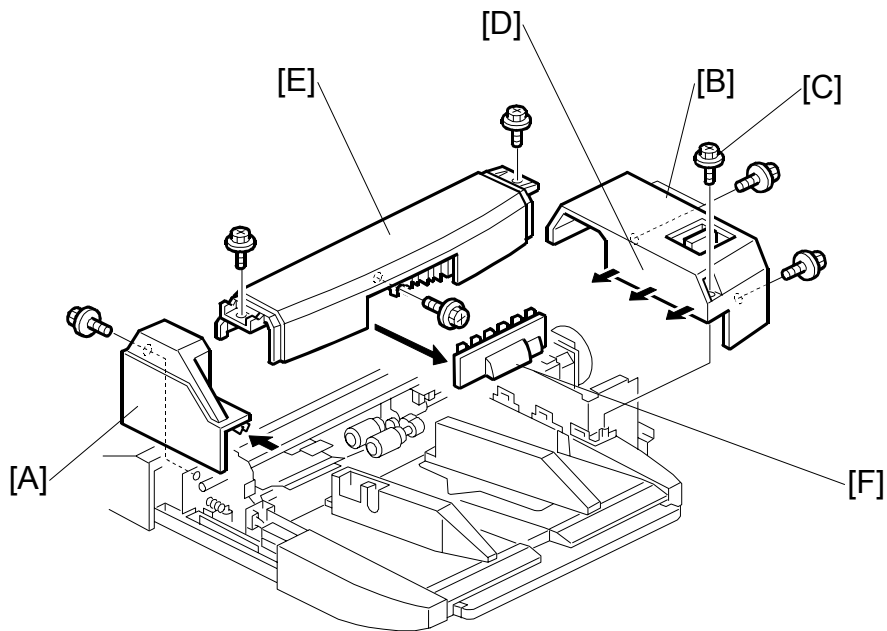
B512R010.WMF

1. Pull in the direction indicated by the arrow at the front left cover.

⚠ CAUTION

When moving the LCT with the bypass unit attached, grip and push the body of the LCT unit. To avoid damaging the bypass tray, never attempt to push or rotate the assembled units by pulling or pushing on the bypass tray.

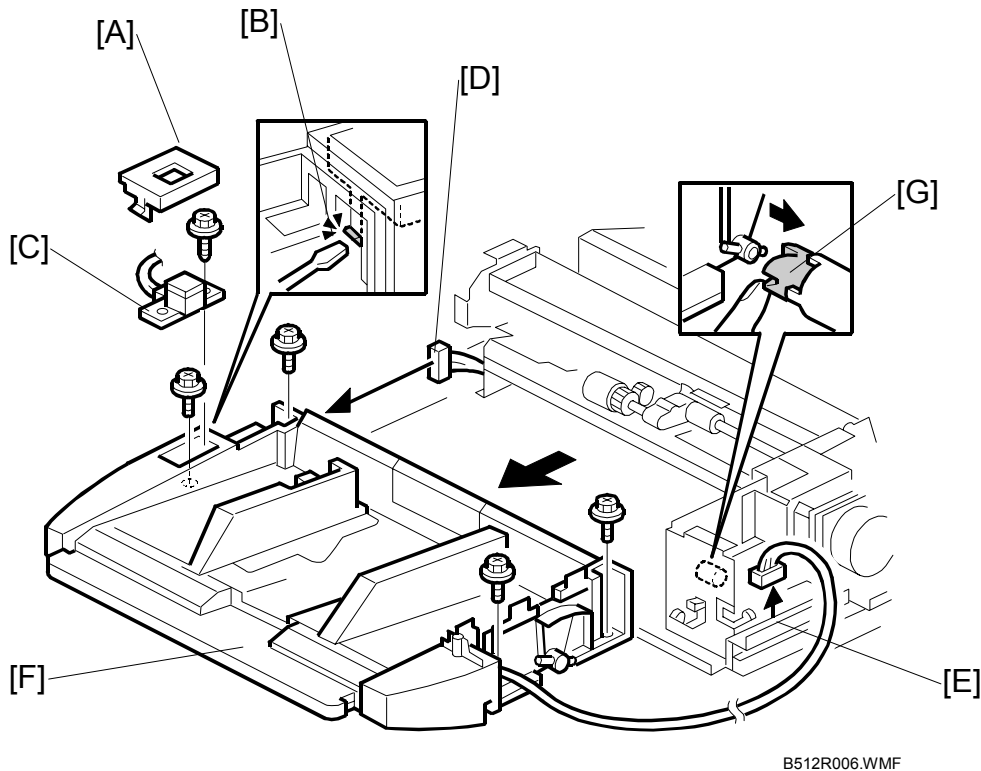
3.2 BYPASS TRAY COVERS



B512R004.WMF

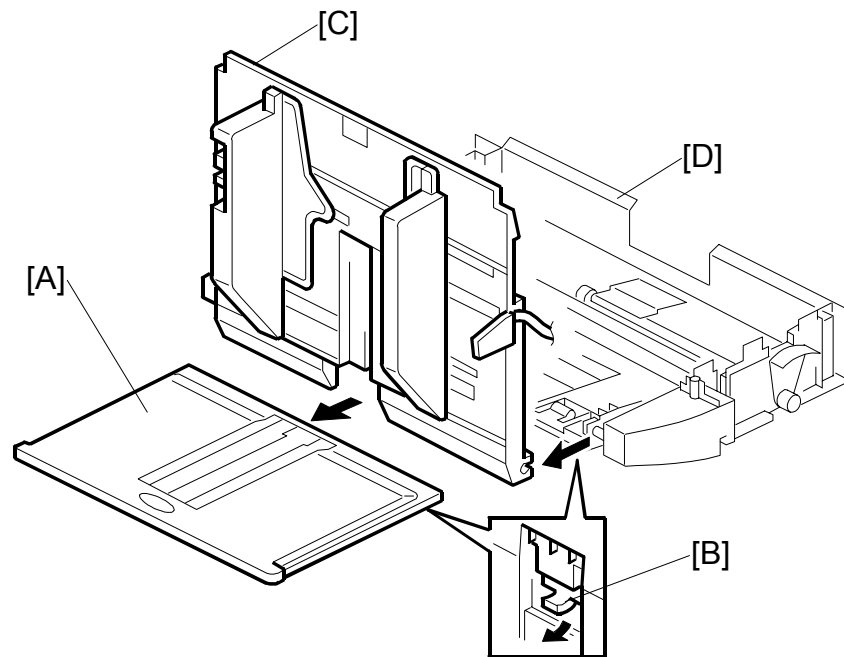
1. Open the bypass tray. (➡ 3.1)
2. Front cover [A] (⚙ x 1).
3. Rear cover [B] (⚙ x 3).
NOTE: Screw [C] is a wide thread screw. Be sure to fasten it here when re-attaching the rear cover.
4. Push in the cover [D] to release the hooks from the slots under this side of the cover.
5. Pull off the pick-up roller cover [F].
6. Top cover [E] (⚙ x 3).

3.3 TRAY LIFT SWITCH, FEED TRAY



B512R006.WMF

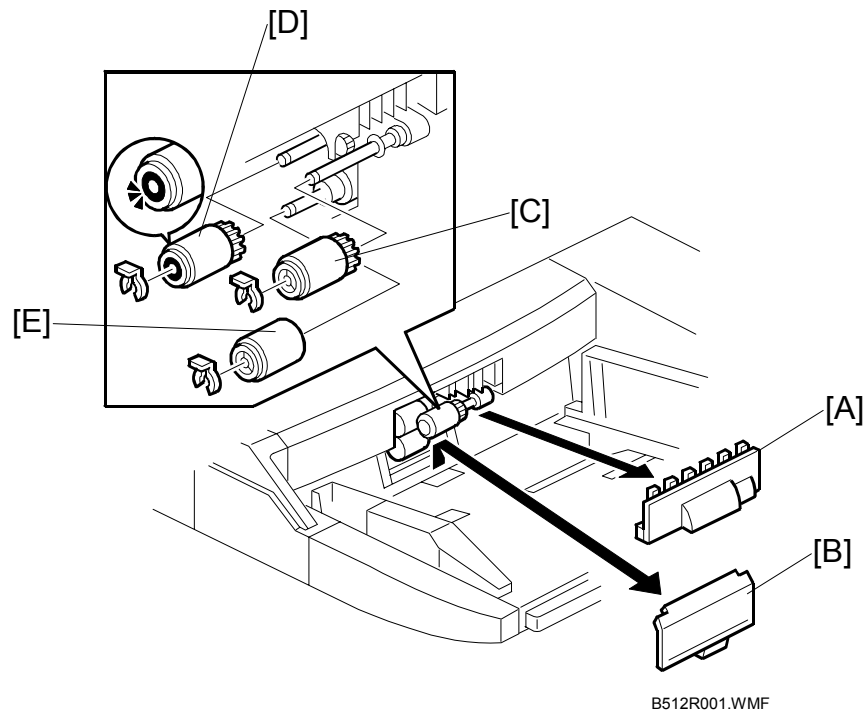
1. Open the bypass tray. (➡3.1)
2. Remove the covers. (➡3.2)
3. Remove the tray lift switch cover [A].
NOTE: Use the tip of a screwdriver to release the hook [B] holding the plate.
4. Remove the tray lift switch [C] (⚙ x 1, hooks x 2, standoff x 1, ⚙ x 1).
5. Disconnect the lower limit sensor connector [D].
6. Disconnect the paper width switch [E] (⚙ x 1, harness clamps x 2).
7. Remove the feed tray [F] (⚙ x 4).
NOTE: Under the tray, disengage the lift motor coupling [G]. Be sure to re-engage the coupling when re-attaching the feed tray.



B512R007.WMF

8. Pull out the extension tray [A], disengage the lock hooks [B] under the tray on both sides, then remove the extension tray.
NOTE: The extension tray must be removed to separate the top and bottom of the bypass feed tray.
9. Separate the top [C] and bottom [D] of the feed tray.

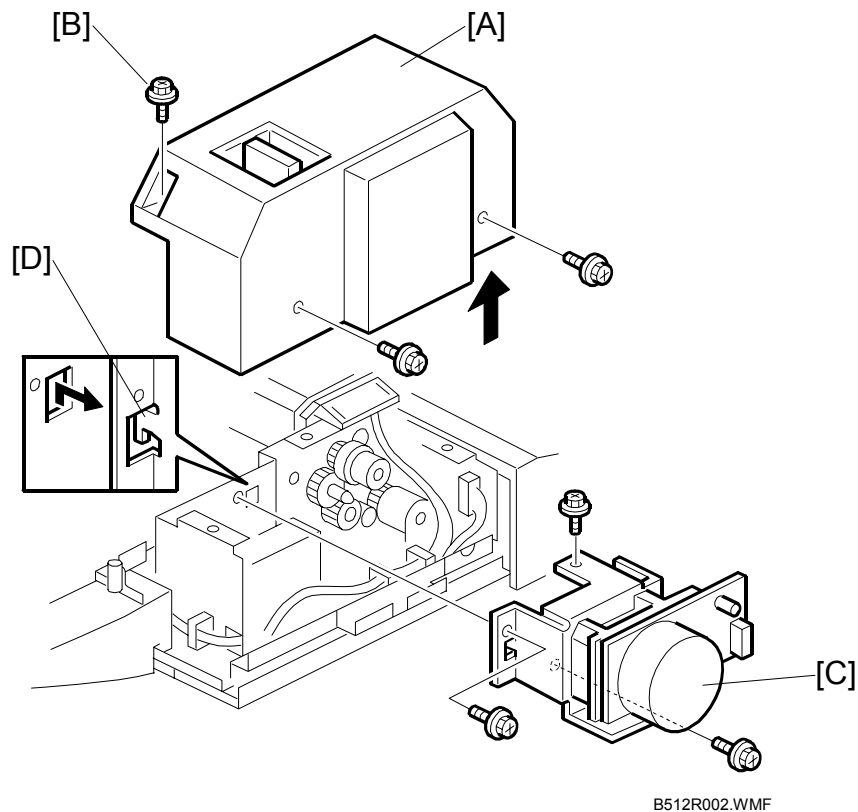
3.4 FEED ROLLERS



1. Pull off the pick-up roller cover [A].
2. Pull off the separation roller cover [B].
3. Remove the pick-up roller [C] (⌀ x 1).
4. Remove the feed roller [D] (⌀ x 1).
5. Remove the separation roller [E] (⌀ x 1).

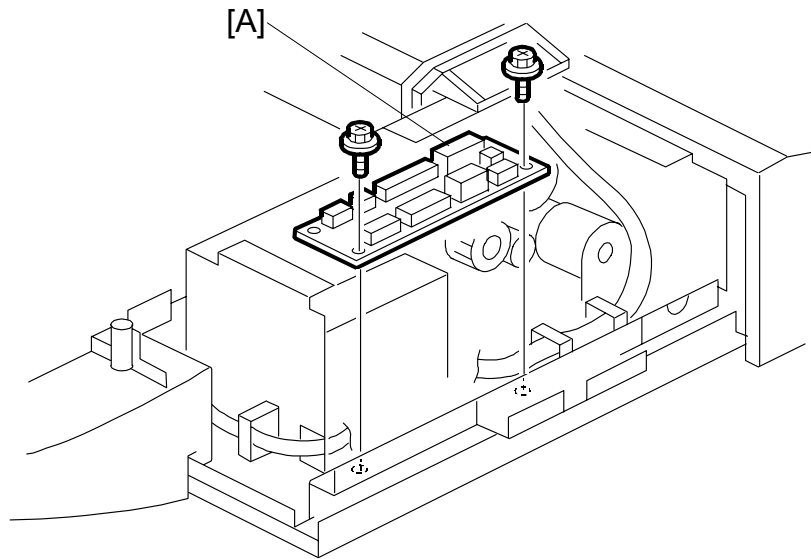
NOTE: After re-installing the feed roller, make sure that it rotates clockwise.

3.5 TRAY MOTOR



1. Remove the rear cover [A] (⌘ x 3).
NOTE: Screw [B] is a wide thread screw. Be sure to fasten it here when re-attaching the rear cover.
2. Remove the tray motor [C] (⌘ x 3, ⌘ x 1)
NOTE: To remove the motor, raise it slightly to disengage the hook [D] from the frame.

3.6 BYPASS TRAY PCB

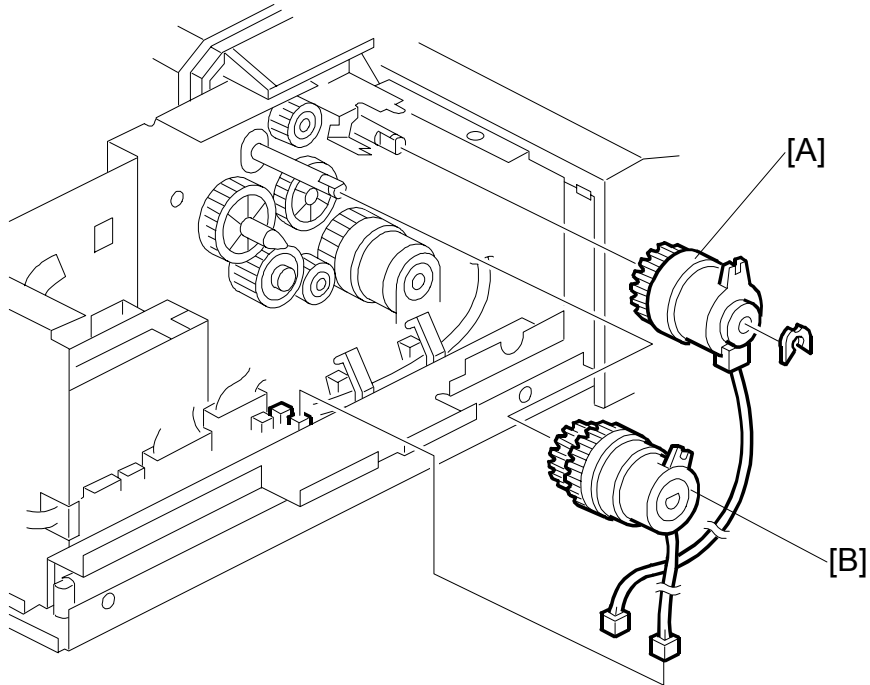


B512R011.WMF

1. Remove the tray motor. (●3.5)
2. Remove the bypass tray PCB [A] (□ x 11, ⚙ x 2, standoffs x 2).

NOTE: Before disconnecting CN704 and CN706, mark either connector with a marker to make sure that you re-connect them correctly. The shapes of these connectors are the same and the wires are the same color.

3.7 GRIP AND PAPER FEED CLUTCHES

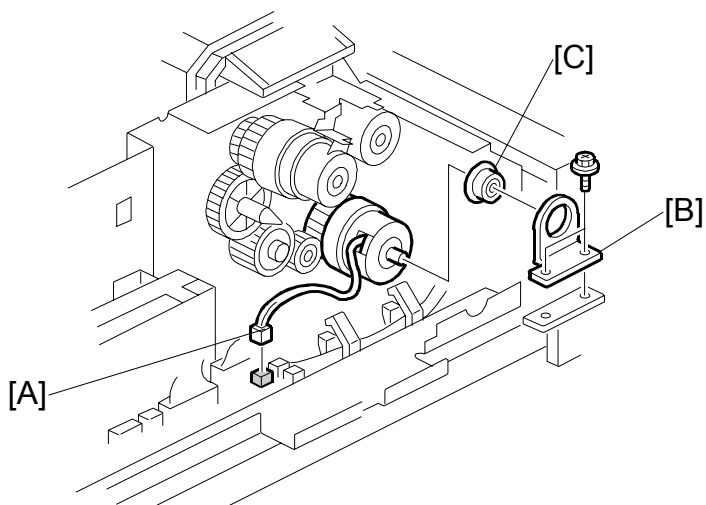


B512R003.WMF

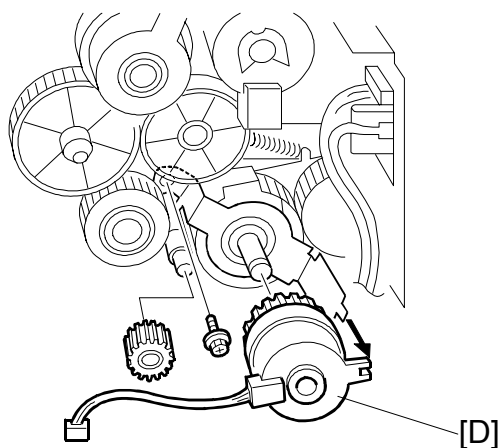
1. Remove the tray motor. (☛3.5)
2. Remove the grip clutch [A] (☛ x 1, ☛ x 1)
3. Release and remove the paper feed clutch [B] (☛ x 1).

NOTE: Use the sharp point of a tool to raise the spring release on the shaft to release the clutch from the shaft.

3.8 TRANSPORT CLUTCH



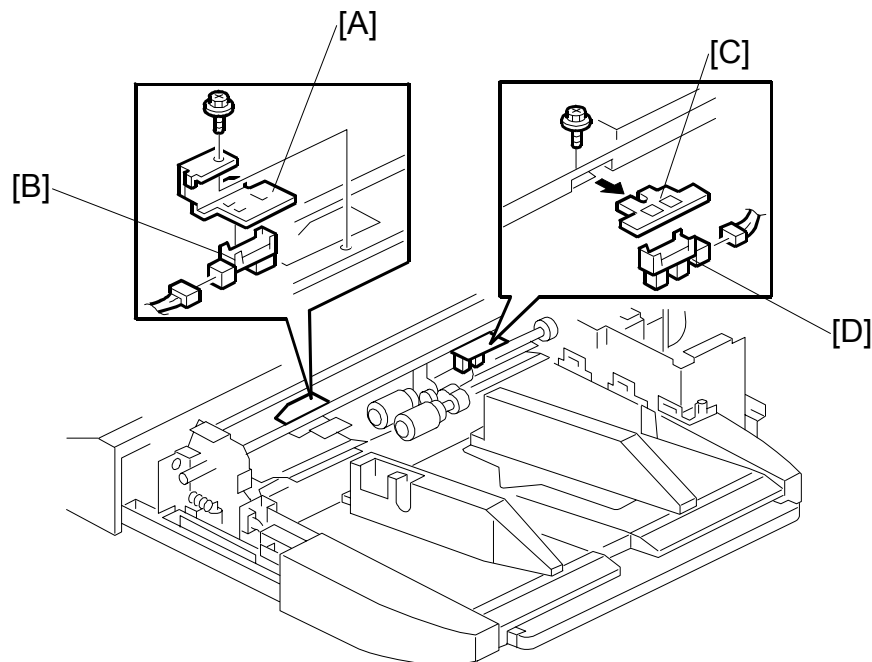
B512R014.WMF



B512R015.WMF

1. Remove the tray motor. (●3.5)
2. Disconnect the transport clutch connector [A] (🔌 x 1).
3. Remove the bracket [B] and bushing [C] (🔧 x 2).
4. Remove the paper feed unit. (🔧 x 4)
5. Remove the transport clutch [D].

3.9 PAPER FEED AND LIFT SENSORS



B512R005.WMF

Sensor Removal

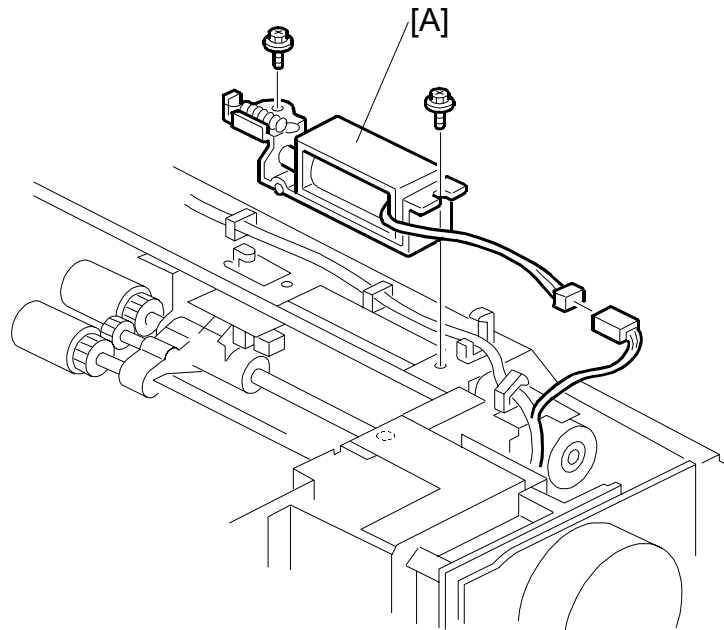
1. Remove the rear, front, and top covers. (☛3.2)
2. Remove the paper feed bracket [A] (⚙ x 1).
3. Remove the paper feed sensor [B] (hooks x 4, ⚙ x 1)
4. Mark the position of the lift sensor bracket [C] so you can re-attach it at its original position, then remove it (⚙ x 1).
5. Remove the lift sensor [D] (hooks x 4).

Lift Sensor Position Adjustment

The lift sensor bracket [C] has a slot that allows positioning the lift sensor forward or back. When positioning the bracket for re-installation, note the following points:

1. Position the bracket at the center position at re-installation.
2. If paper does not feed, move the bracket forward and tighten the screw. Moving the bracket forward positions the pick-up roller at a lower position for paper feed.
3. If paper is multiple feeding, move the bracket back and tighten the screw. Moving the bracket back positions the pick-up roller at a higher position for paper feed.

3.10 PICK-UP SOLENOID

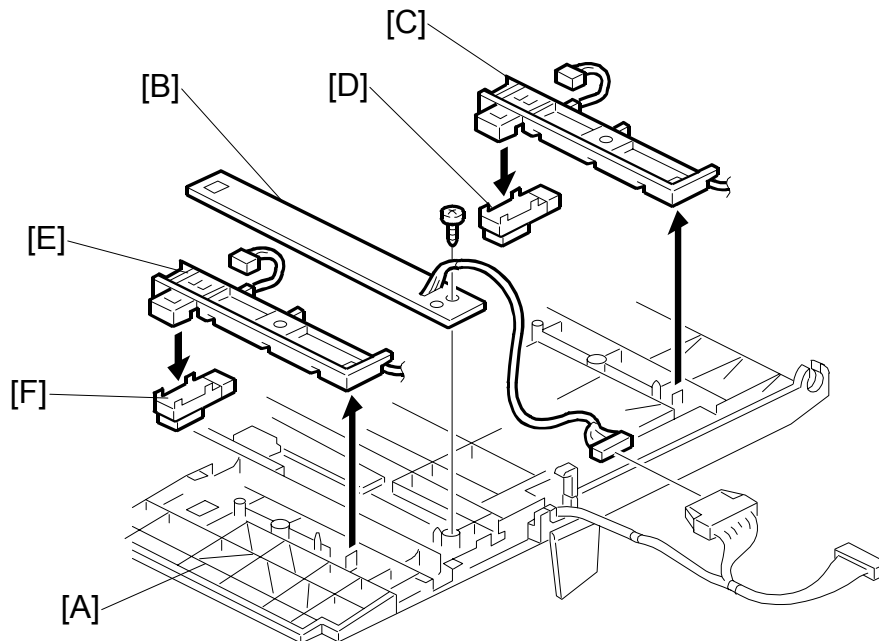


B512R013.WMF

1. Remove the rear, front, and top covers. (☛3.2)
2. Remove the pick-up solenoid [A] (⚙ x 2, 🛠 x 1, harness clamp x 1)

NOTE: When re-installing the solenoid, make sure that the arm of the solenoid is positioned above and in contact with the plate of the pick-up roller shaft below. To confirm correct installation, manually move the solenoid to the left and right. When the solenoid plunger is moved, the pick-up roller should move up and down smoothly.

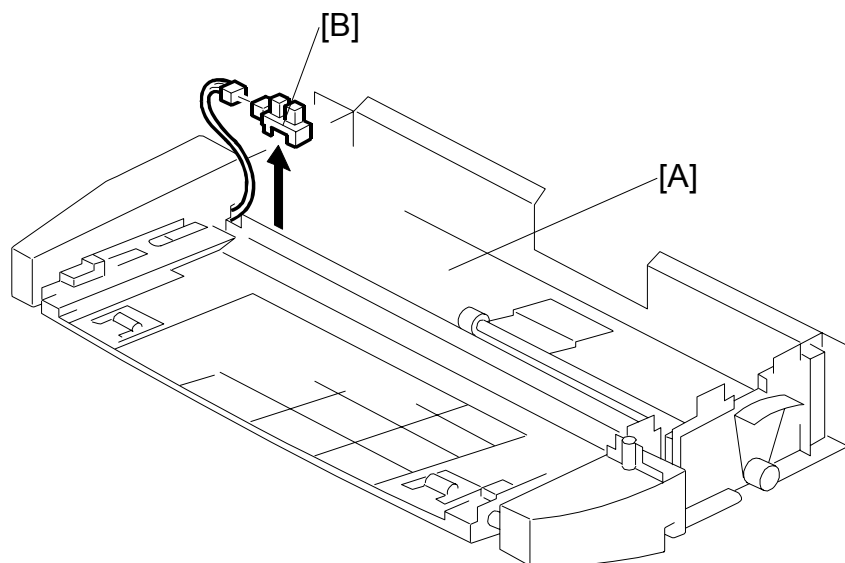
3.11 PAPER WIDTH SWITCH, PAPER END AND PAPER LENGTH SENSORS



B512R008.WMF

1. Remove the feed tray and separate the top and bottom. (➡3.3)
2. Turn over the top half of the feed tray [A] then lay it on a flat surface.
3. Paper width switch [B] (⚙ x 1, harness clamp x 1, 📌 x 1).
4. Paper end sensor bracket [C] (tab lock x 1).
5. Paper end sensor [D] (hooks x 4, 📌 x 1).
6. Paper length sensor bracket [E] (tab lock x 1).
7. Paper length sensor [F] (hooks x 4, 📌 x 1).

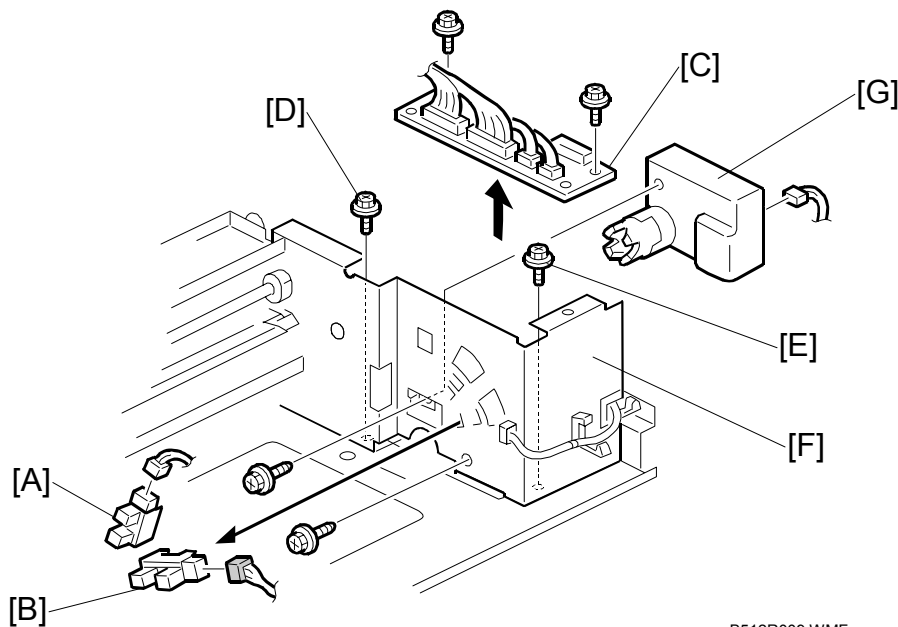
3.12 LOWER LIMIT SENSOR



B512R012.WMF

1. Remove the feed tray and separate the top and bottom. (➡ 3.3)
2. Lay the bottom of the feed tray [A] on a flat surface.
3. Remove the lower limit sensor [B] (⏏ x 1, hooks x 4)

3.13 PAPER HEIGHT SENSORS, LIFT MOTOR



B512R009.WMF

1. Open the bypass tray. (➡3.1)
2. Remove the bypass tray covers. (➡3.2)
3. Remove the tray motor. (➡3.5)
4. Remove the feed tray. (➡3.3)

Paper Height Sensors

1. Paper Height Sensor 1 [A] (hooks x 4, 𐀀 x 1)
2. Paper Height Sensor 2 [B] (hooks x 4, 𐀀 x 1)

Lift Motor

1. Remove the bypass tray PCB [C] (𐀀 x 11, 𐀀 x 2, standoffs x 2).
NOTE: Before disconnecting CN704 and CN706, mark either connector with a marker to make sure that you re-connect them correctly. The shapes of these connectors are the same and the wires are the same color.
2. Remove screws [D] and [E] to loosen the frame [F].
3. Raise the loosened frame slightly to remove the lift motor [G] (𐀀 x 2, 𐀀 x 1).

4. TROUBLESHOOTING

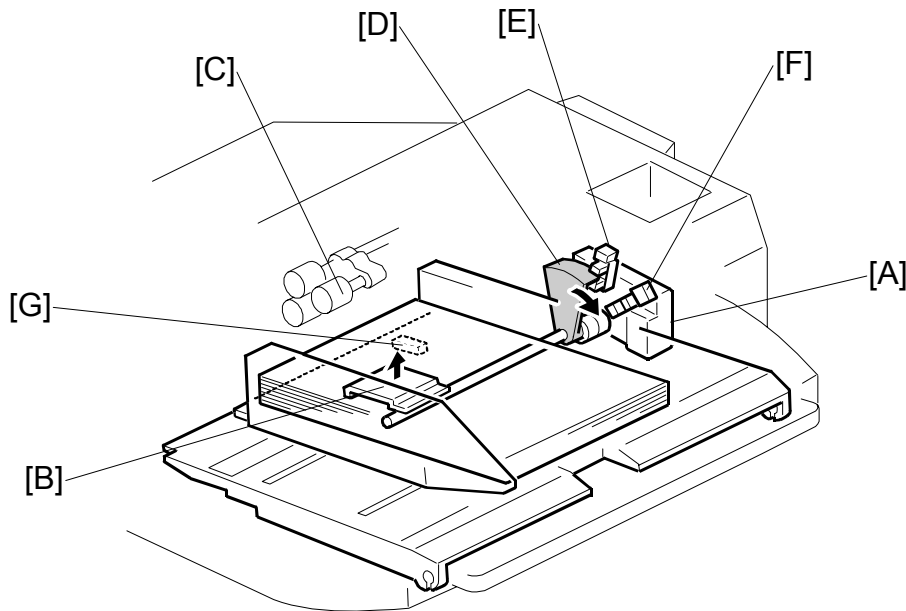
For details about bypass tray related SC codes, please refer to “4. Troubleshooting” in the main machine service manual.

5. SERVICE TABLES

For details about bypass tray-related SP codes, please refer to “5. Service Tables” in the main machine service manual.

6. DETAILS

6.1 TRAY LIFT



B512D004.WMF

When the tray lift switch is pressed, the lift motor [A] switches on and pushes the lift plate [B] against the bottom of the feed tray until the top of the stack is at the correct feed position.

NOTE: If there is paper in the bypass tray when the main machine has just been switched on, the lift motor will turn on and lift the stack to the feed position.

As paper is fed, the pick-up roller [C] lowers until it activates the lift sensor which switches on the lift motor again to raise the stack to the feed level again. (➡6.2)

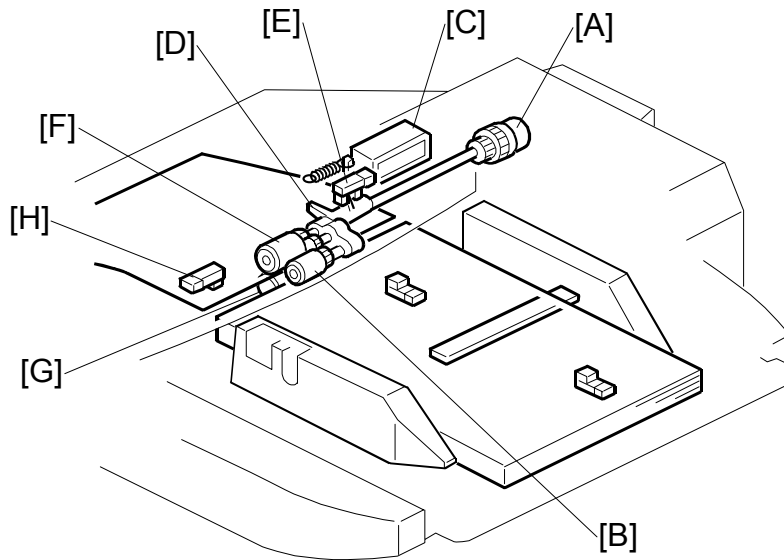
As the bottom plate shaft rotates and raises the bottom plate, the actuator [D] lowers and activates paper height sensor 1 [E] and then paper height sensor 2 [F] as the bottom plate continues to rise. With the tray full, the actuator remains upright and deactivates neither paper height sensor. During continuous feed, the actuator rotates downward through three positions, deactivating the first sensor, then both sensors, then only the second sensor. These states are used to report the amount of paper on the operation panel.

SN1	SN2	Paper Remaining Status
OFF	OFF	100% (Full)
ON	OFF	90%
ON	ON	50%
OFF	ON	25%

After the last sheet feeds, the paper end sensor [G] below the feed tray detects that the tray is empty.


NOTE: When you re-load the tray with paper, be sure to press the tray lift button to raise the bottom of the tray so the stack is at the correct feed position.

6.2 PAPER FEED



B512D005.WMF

The bypass tray can hold 500 sheets of standard weight paper.

The bypass tray uses the standard FRR (Feed and Reverse Roller) feed system with a pick-up roller, feed roller, and separation (reverse) roller.  Handling Paper> Paper Feed Methods> **Forward and Reverse Roller (FRR)**

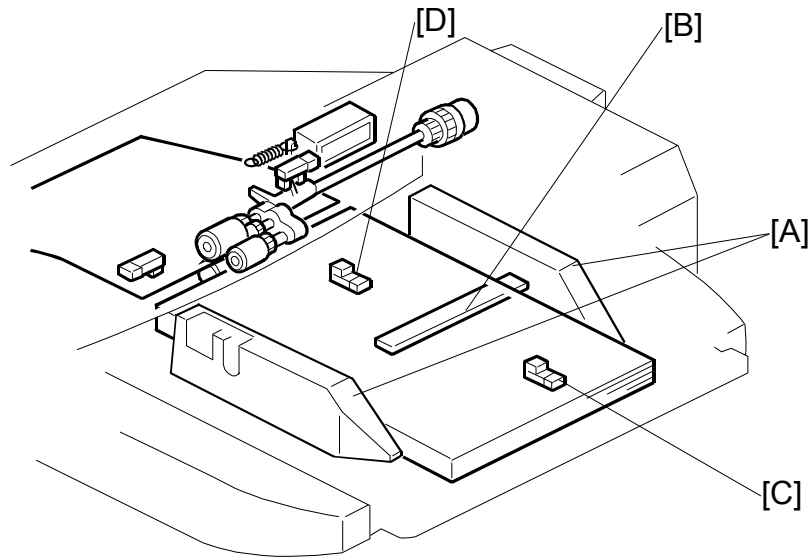
When the job starts, the feed clutch [A] switches on and rotates the pick-up roller [B]. At the same time, the pick-up solenoid [C] switches on and lowers the pick-up roller. The lift motor switches on to raise the stack until the top of the stack reaches the correct feed level and the paper pushes the pick-up roller and actuator [D] down, deactivating the lift sensor [E], which stops the lift motor.

The rotating pick-up roller picks up and feeds the first sheet to the feed roller [F] and separation roller [G]. When the feed sensor [H] detects the leading edge of the sheet, the pick-up solenoid raises the pick-up roller and the feed roller feeds the sheet.

NOTE: Unlike the separation rollers in the LCT, the separation roller [G] always remains in contact with the feed roller above.

When the pick-up roller [B] lowers far enough to deactivate the lift sensor [E], the lift motor switches on to raise the bottom plate until the actuator moves out of the slot of the lift sensor again and switches off the lift motor. This movement is repeated to maintain the correct height of the stack for paper feed.

6.3 PAPER SIZE DETECTION



B512D005.WMF

The side fences [A] can be adjusted to standard and non-standard paper sizes.

Paper size is measured with the paper width switch [B] and the paper length sensor [C].

When the side fences are moved to match the paper width, four feelers inside the paper width switch [B] slide along the wiring patterns on the paper width switch terminal plate. The status of each feeler is read to determine whether it is High (in contact with a pattern wire) or Low (not in contact with a wire).

The paper length sensor [C] reading (ON or OFF) is used with the paper width reading to determine the paper size. For more details about how the paper size is determined, see the paper size detection table on the next page.

The paper end sensor [D] de-activates when the last sheet is fed, reports that the paper tray is empty, and halts the job.

Paper Size Detection Table

Paper Size			Paper Size SN				Length Sensor	Area	
			1	2	3	4		NA	Europe /Asia
A3	SEF	297 x 420 mm	H	H	H	L	L	●	●
A4	LEF	297 x 210 mm					H	●	●
DLT	SEF	11" x 17"	H	H	L	L	L	●	●
LT	LEF	11" x 8 1/2"					H	●	●
B4	SEF	257 x 364 mm	H	H	L	H	L	●	●
B5	LEF	257 x 182 mm					H	●	●
A4	SEF	210 x 297 mm	H	L	L	H	L	○	●
LT	SEF	8 1/2" x 11"					H	●	○
A5	LEF	210 x 148 mm						○	●
HLT	LEF	8 1/2" x 5 1/2"						●	○
B5	SEF	182 x 257 mm	H	L	H	H	L	○	○
F	SEF	8" x 13"					H	●	●
A5	SEF	148 x 210 mm	L	L	H	H		●	●
HLT	SEF	5 1/2" x 8 1/2"	L	H	H	H		●	●

Table Key

1, 2, 3, 4	The paper size switch consists of 4 feelers that slide along the wiring patterns of the paper width switch terminal plate when the side fences are manually adjusted to fit the size of the paper loaded in the tray. The H, L status of each feeler is determined by whether the feeler is in contact with the wire of a pattern.
H	High (5 V) (Inactive)
L	Low (0 V) (Active)
●	The machine determines the paper size automatically by reading the output of the paper size switch and the paper length sensor.
○	The machine cannot detect the paper size automatically. The user must select the paper size manually before starting the job. See below.

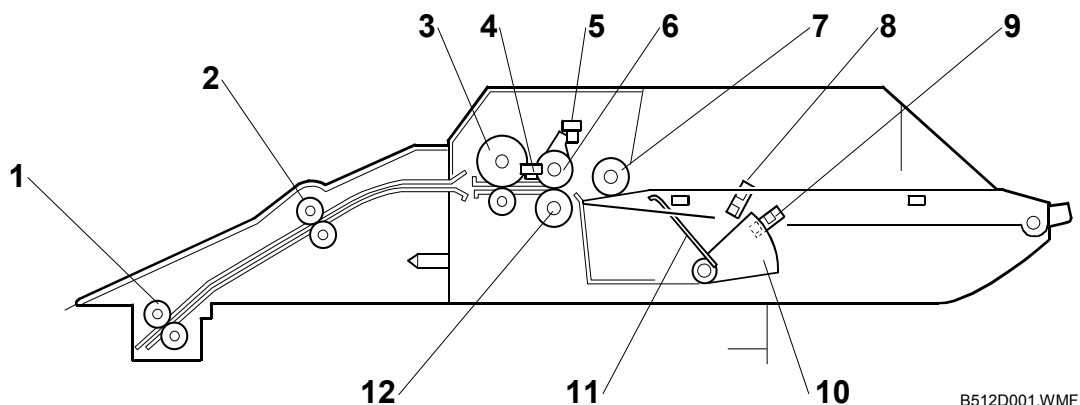
Selecting the Paper Size for Undetectable Sizes

Press the Tray Paper Settings button on the operation panel to select paper sizes that are not detected automatically by the combination of paper size and paper length sensor readings (marked "○" in the table above and any other paper size not listed that requires pulling out the paper tray extension).

NOTE: Mixed paper sizes cannot be loaded into the bypass tray. Loading paper of different sizes will cause a paper jam.

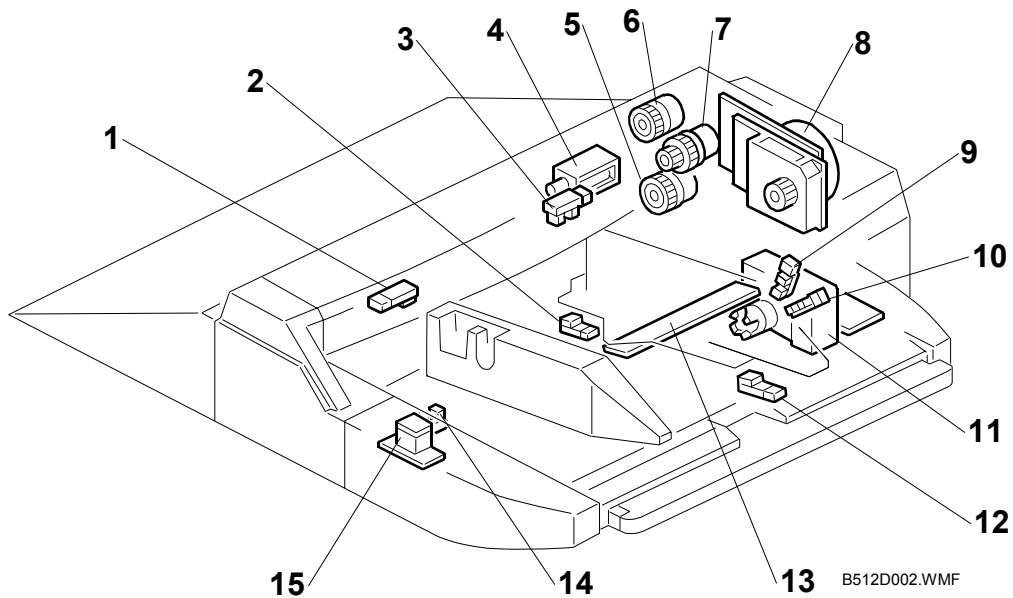
7. OVERALL MACHINE INFORMATION

7.1 MECHANICAL COMPONENT LAYOUT



1. Transport Roller 2
2. Transport Roller 1
3. Grip Roller
4. Paper Feed Sensor
5. Lift Sensor
6. Feed Roller
7. Pick-up Roller
8. Paper Height Sensor 1
9. Paper Height Sensor 2
10. Lift Plate Actuator
11. Lift Plate
12. Separation Roller

7.2 ELECTRICAL COMPONENT LAYOUT



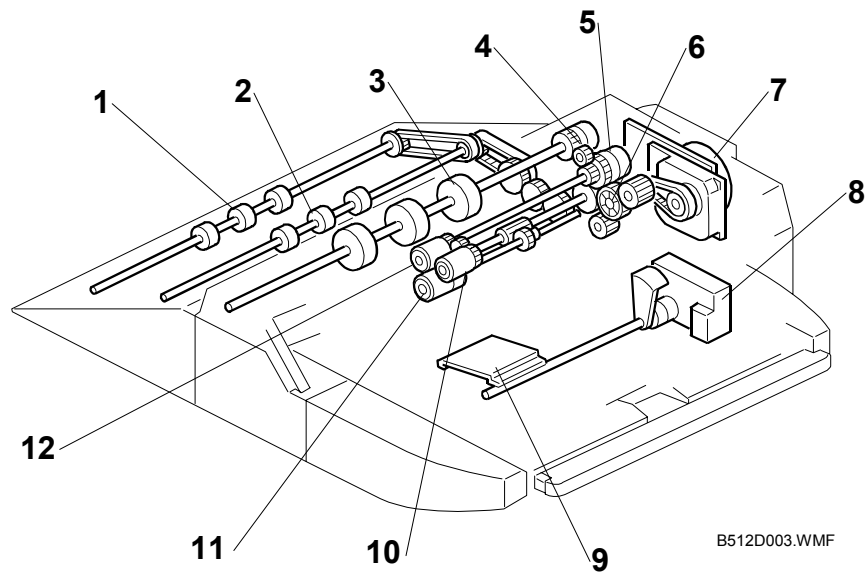
1. Paper Feed Sensor
2. Paper End Sensor
3. Lift Sensor
4. Pick-up Solenoid
5. Transport Clutch
6. Grip Clutch
7. Feed Clutch
8. Tray Motor
9. Paper Height Sensor 1
10. Paper Height Sensor 2
11. Lift Motor
12. Paper Length Sensor
13. Paper Width Switch
14. Lower Limit Sensor
15. Tray Lift Switch

7.2.1 ELECTRICAL COMPONENT DESCRIPTIONS

Symbol	Name	Function
Clutches		
MC8	Transport	Drives the transport rollers in the bypass tray.
MC9	Paper Feed	Drives the paper feed roller in the bypass tray.
MC10	Grip	Drives the grip clutch in the bypass tray.
Motors		
M5	Tray	Drives all rollers in the bypass tray.
M6	Tray Lift	Lifts and lowers the tray.
Sensors		
S23	Paper Feed	Detects the copy paper coming to the paper feed roller and checks for misfeeds.
S24	Lift	Detects when the paper in the bypass tray is at the correct paper feed height.
S25	Lower Limit	Detects when the tray is at its lowest possible position.
S26	Paper End	Informs the copier when the paper in the bypass tray has run out.
S27	Paper Length	Used with the paper width switch to determine paper size. This sensor is activated when paper is set for short edge feed. For example, when the paper width switch detects A4 width and this sensor is off, the machine determines A4 is set for long edge feed. When A4 width is detected and the paper length sensor is on, then the machine determines that A3 is loaded for short edge feed.
S28	Paper Height 1	Detects the paper height in the bypass tray.
S29	Paper Height 2	Detects the paper height in the bypass tray.
Solenoids		
SOL7	Pick-up	Controls up-down movement of the pick-up roller in the bypass tray.
Switches		
SW5	Tray Lift	Switches the tray lift motor on and off to lift and lower the bottom plate of the tray. This switch must be pressed to start paper feed.
SW6	Paper Width	A slide switch connected to the side fences. When the side fences are moved to match the paper width, four feelers inside the paper size switch slide along wiring patterns of a terminal plate. The wire pattern detected determines the paper width.

The numbering for the components does not start at 1 because the point-to-point diagram for the bypass tray is included on the diagram for the LCT. For the purpose of component numbering, they are considered together as one unit.

7.3 DRIVE LAYOUT



1. Transport Roller 2
2. Transport Roller 1
3. Grip Roller
4. Grip Clutch
5. Paper Feed Clutch
6. Transport Clutch
7. Tray Motor
8. Lift Motor
9. Lift Plate
10. Pick-up Roller
11. Separation Roller
12. Feed Roller