MODEL K3

RICOH FAX 5510L
SERVICE MANUAL

14 June, 2002
Subject to change

⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. The inside and the metal parts of the fusing unit become extremely hot while the printer is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

Toner is non-toxic, but if you get it in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. Do not incinerate toner cartridge. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner cassette in accordance with local regulations. (It is non-toxic supply.)
3. Dispose of replaced parts in accordance with local regulations.

LITHIUM BATTERIES (MEMORY BACK-UP)

The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacture's instructions.

SAFE AND ECOLOGICAL DISPOSAL

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly if exposed to an open flame.
2. Dispose of used toner, developer, and organic Photoconductor in accordance with local regulations. (These are nontoxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

⚠WARNING

Use of controls not specified in this manual, or performance of adjustments or procedures not specified in this manual, may result in hazardous radiation exposure.

⚠WARNING FOR LASER UNIT

WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can cause serious damage to eyes.

CAUTION MARKING:

H310DECAL.WMF

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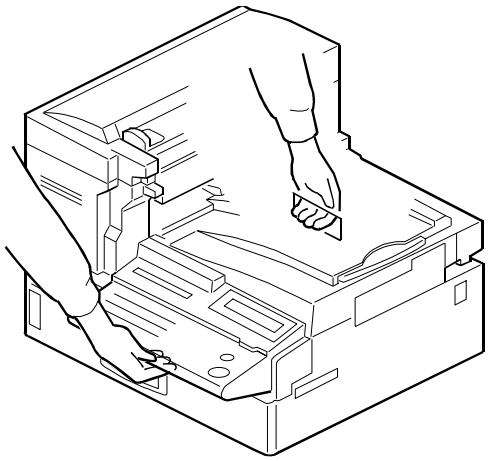
1. INSTALLATION

⚠CAUTION

Do the following before installing an optional unit:
1. Print out all messages stored in the memory.
2. Print out the lists of user-programmed items and the system parameter list.
3. Turn off the main switch, and disconnect the power plug.

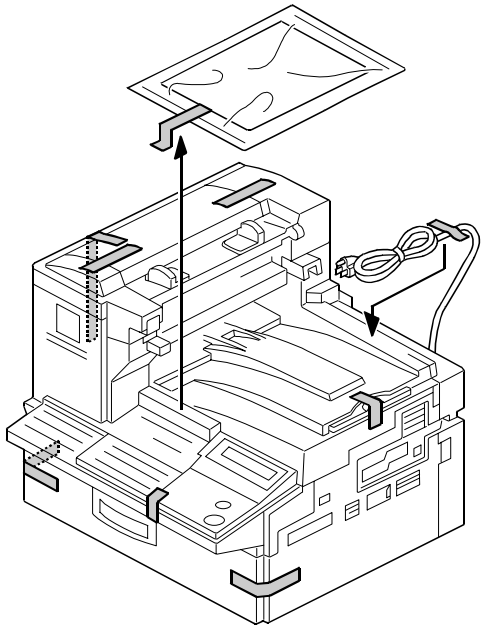
1.1 MAINFRAME

1. Remove the mainframe from the box.



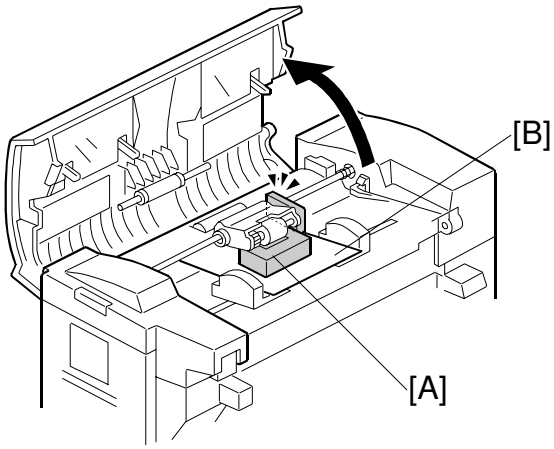
H310I939.WMF

2. Remove the shipping tape.



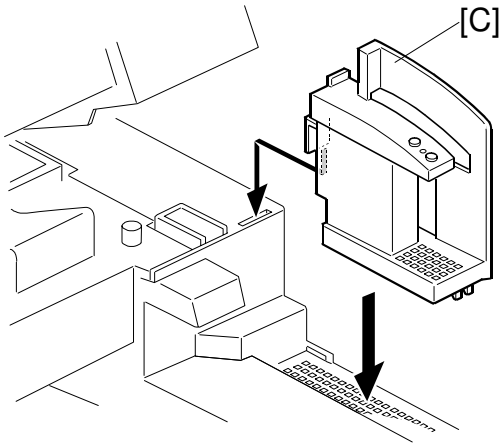
H310I001.WMF

3. Remove the shock absorber [A] and sheet [B].



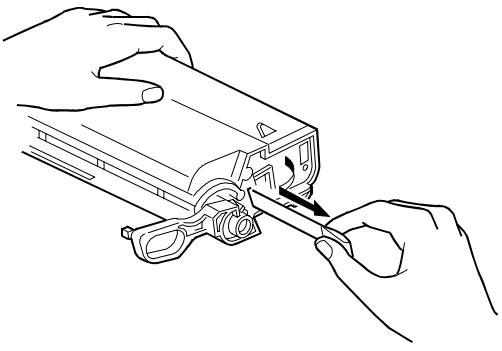
H310I002.WMF

4. Remove the shock absorbers and shipping tape from the paper trays.
5. Attach the document exit tray and document tray.
6. Open the ADF unit and attach the handset bracket [C].



H310I940.WMF

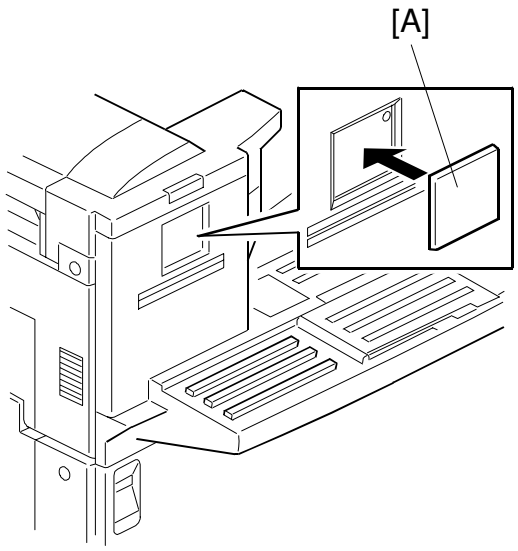
7. Open the left cover and remove the AIO cartridge.
8. Shake the AIO cartridge left to right then back and forth about 7-8 times (total). Then, remove the toner ribbon seal.
9. Reinstall the AIO cartridge.
10. Load the desired paper in the paper trays, and set up the paper size dials accordingly
11. Turn the machine ON, then follow the display to program the following items: Date/time, PSTN line type (tone/pulse dial), own name, fax header, fax number.



H310I991.WMF

12. Program the machine serial number in Service mode, then exit Service mode.

13. Remove the backing from the brand plaque [A] and avoid touching the adhesive surface. Place the brand plaque in the depression on the ADF front cover. Taking care that the brand plaque is orientated correctly and aligned straight. Once in place, apply even pressure beginning at the center of the brand plaque moving toward the outer edges. This will insure that it is well adhered to the surface.



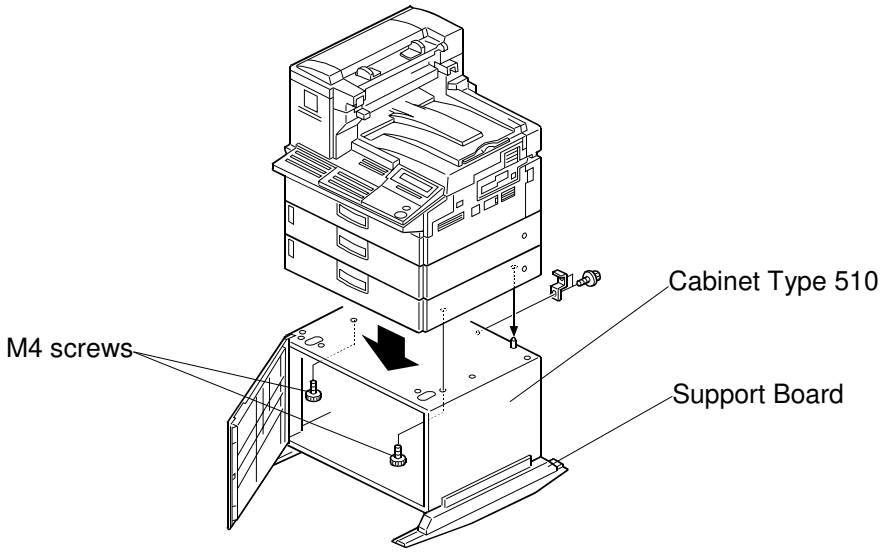
H310I059.WMF

1.2 INSTALLING BASE UNIT/CABINET/SPACER

To ensure proper machine stability, be sure to attach the Cabinet Type 510 when installing 2 PFUs/Spacer Type 510, or the Base Unit Type 510 when installing 3 or more PFUs/Spacer Type 510 (both of which have Support Boards attached).

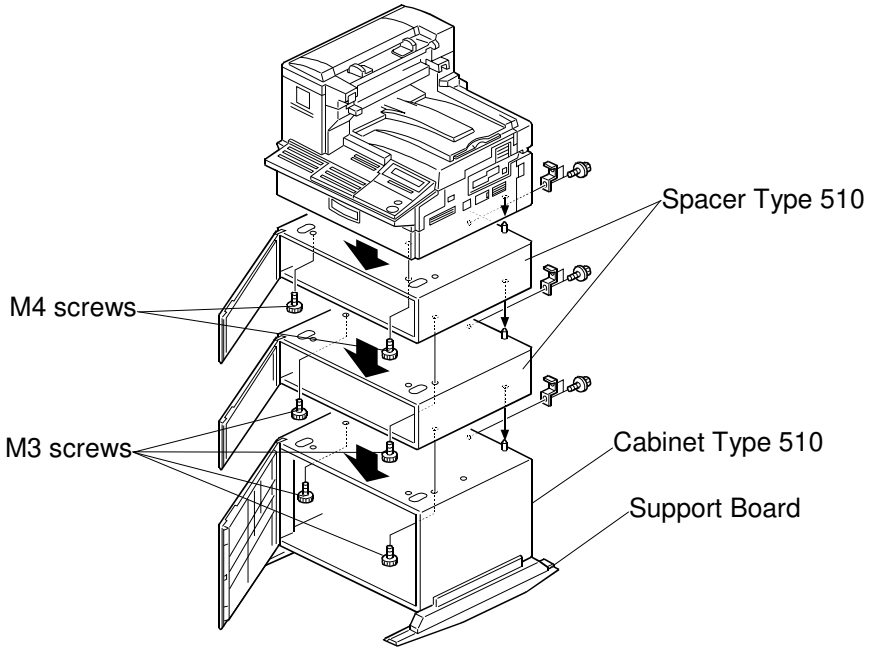
Please refer to the following examples:

Example 1: Mainframe, PFU X 2 and Cabinet Type 510



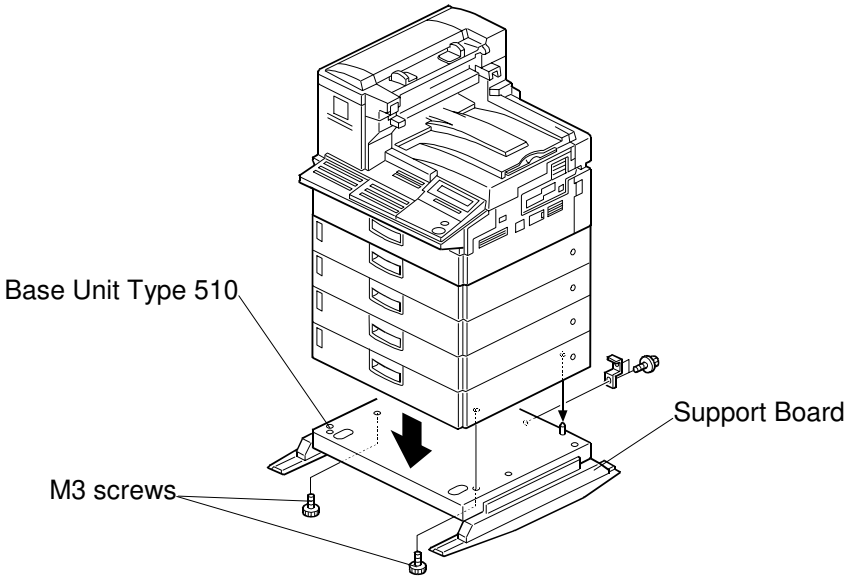
H310I056.WMF

Example 2: Mainframe, Spacer Type 510 X 2 and Cabinet Type 510



H310I057.WMF

Example 3: Mainframe, PFU X 4 and Base Unit Type 510



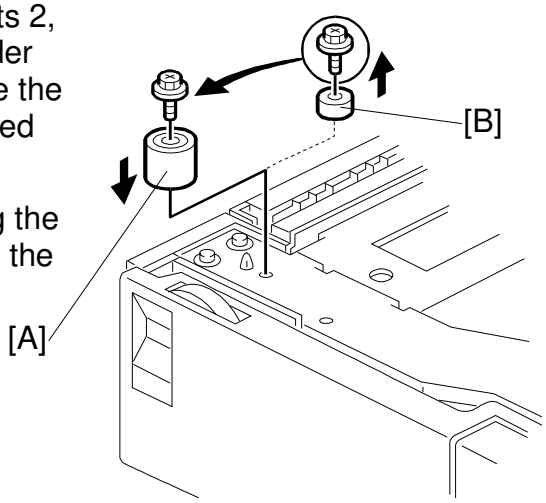
NOTE: As shown in the illustrations above, when attaching any of the units directly under the mainframe, use the two forward parallel screw-holes. For all other attachments, use the two diagonally positioned screw holes.

1.3 INSTALLING OPTIONAL UNITS

1.3.1 PAPER FEED UNIT TYPE 510

1. When installing optional Paper Feed Units 2, 3 or 4 (i.e. ones not attached directly under the mainframe), it is necessary to replace the large leg [A] with the small leg [B] enclosed with the unit.

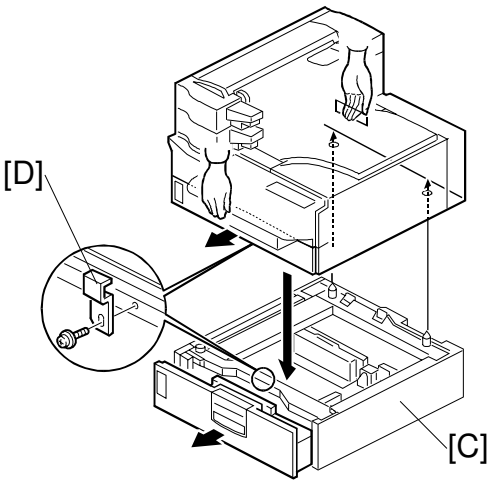
   NOTE: Remove the 2 tie-wraps securing the paper feed rollers (located under the red tag).



H206I601.WMF

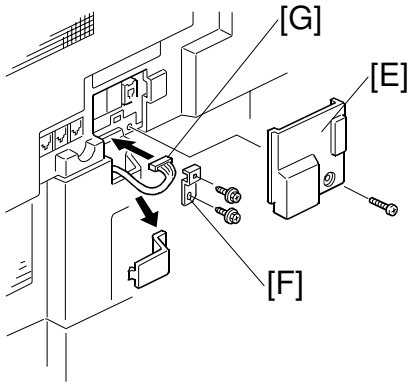
2. Place the mainframe and any attached PFUs on top of the Paper Feed Unit [C], then secure the two with the bracket [D] (1 screw) on the front of the machine

   NOTE: If the existing mainframe and PFU assembly is too heavy, disassemble them and install them one by one on top of the new optional PFU.



H206I602.WMF

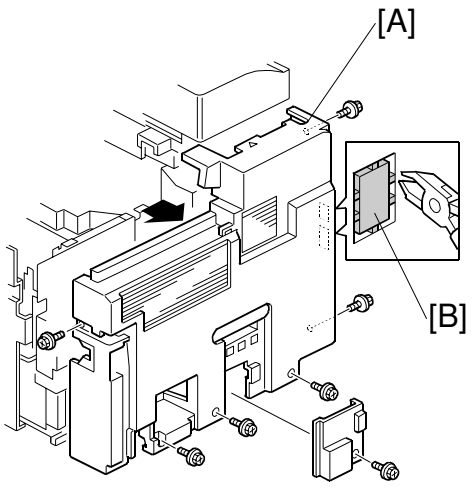
3. Remove the connector cover [E] (1 screw) and secure the new PFU to the mainframe (or PFU) above it with the bracket [F] (2 screws). Then, connect the harness [G] to the machine and reattach the connector cover.
4. Plug in the machine and turn on the main power switch.
5. Print the System Parameter List from inside Service mode, then make sure that "CASSETTE" is listed as an option. Then exit Service mode.
6. Add some paper and make some test prints using the newly installed PFU.



H206I603.WMF

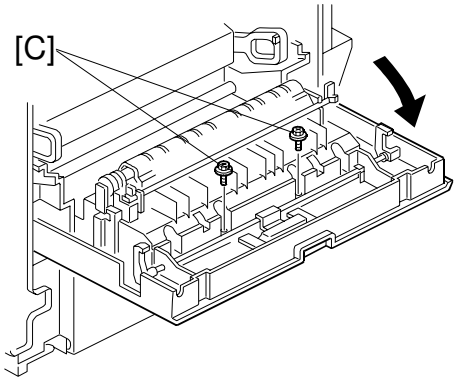
1.3.2 BYPASS FEEDER TYPE 510

1. Remove the rear cover [A] (7 screws) and small cut-out [B] as shown.



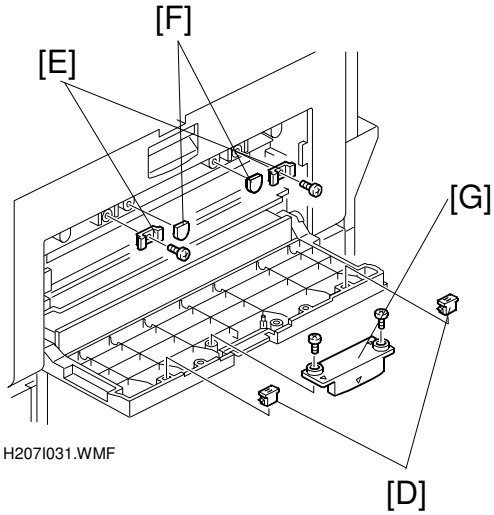
H207I029.WMF

2. Open the large cover. Then, remove the 2 screws [C] as shown to release the small cover.



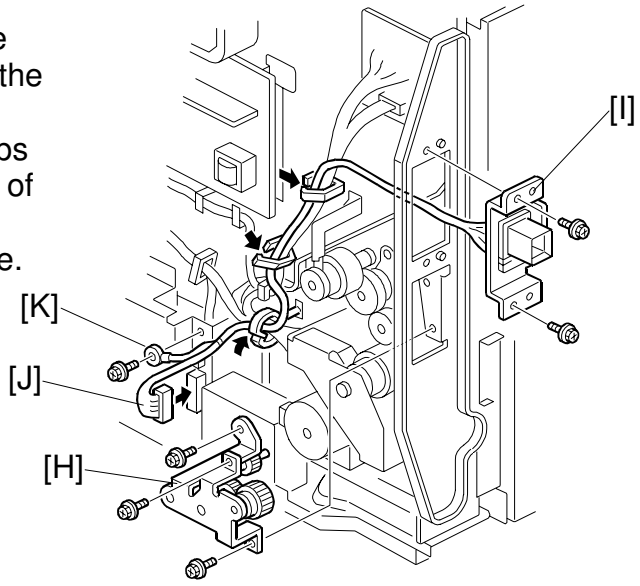
H207I030.WMF

3. Attach the 2 magnet catches [D], 2 small brackets [E] and 2 cushions [F]. Then attach the knob [G] (2 screws) to the small cover as shown.



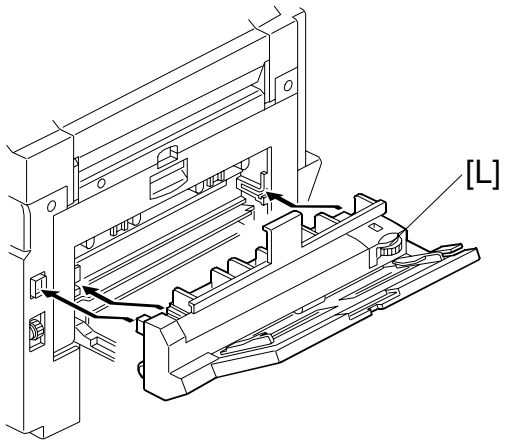
H207I031.WMF

4. Attach the gear assembly [H] to the back of the machine. Then, attach the connector [I] and lead the bypass feeder harness through the 3 clamps as shown. Finally, connect the end of the harness [J] and secure the grounding wire [K] to the mainframe.



H207I032.WMF

5. Reattach the rear cover.
6. Attach the bypass feeder [L] to the machine.

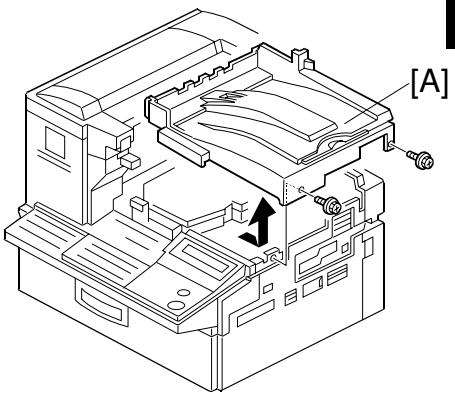


H207I033.WMF

7. Plug in the machine and turn on the main power switch.
8. Print the System Parameter List from inside Service mode, then make sure that “BY-PASS” is listed as an option. Then, exit Service mode.
9. Add some paper and make some test prints using the newly installed Bypass Feeder.

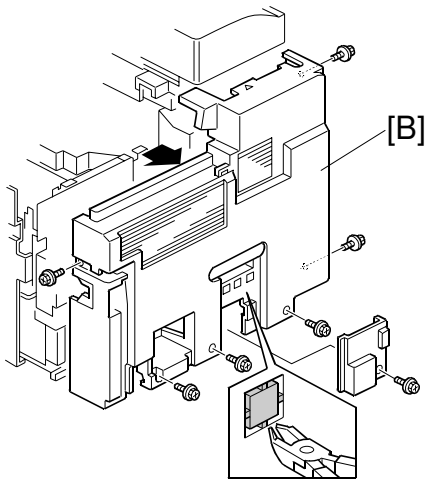
1.3.3 ISDN G4 INTERFACE UNIT TYPE 510

1. Remove the upper cover [A] (2 screws).



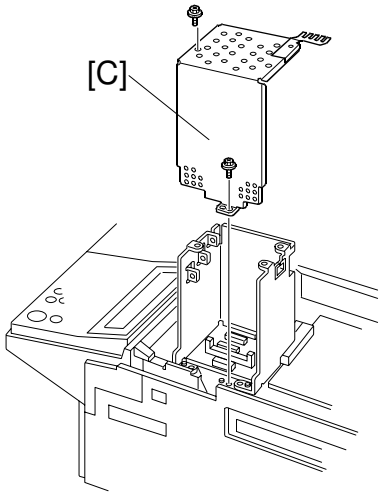
H208I006.WMF

2. Remove the rear cover (7 screws) [B] and cut away the ISDN small cover as shown.



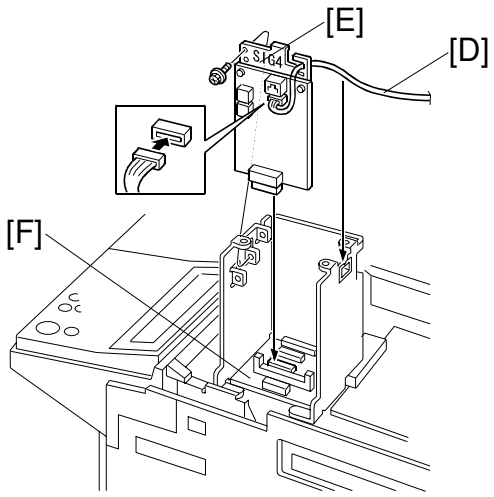
H208I013.WMF

3. Remove the bracket cover [C] (4 screws) as shown.



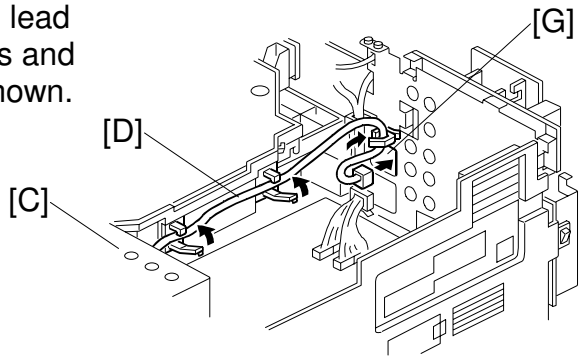
H208I523.WMF

4. Connect the harness [D] to the SiG4 board [E] and insert the board into the SiG4 connector on the OPIF board [F].



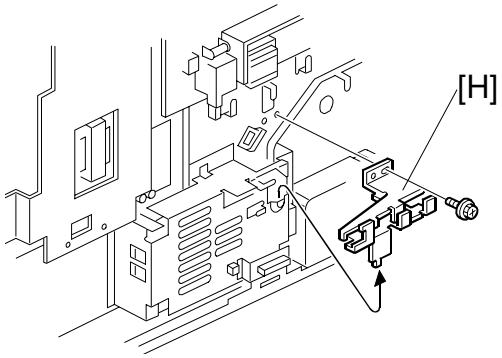
H208I019.WMF

5. Reattach the bracket cover [C], then lead the harness [D] through the 3 clamps and the hole [G] in the rear bracket as shown.



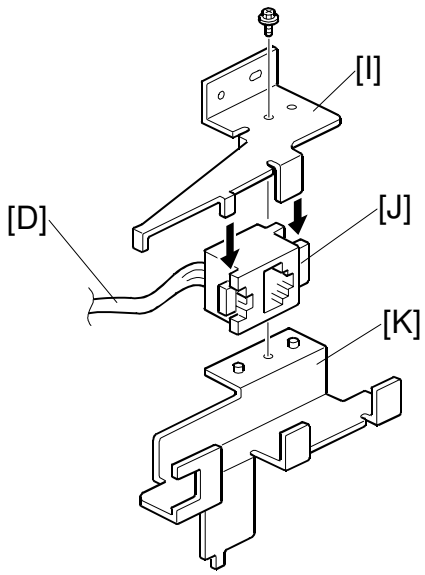
H208I020.WMF

6. Remove the bracket assembly [H] from rear side of the machine as shown.



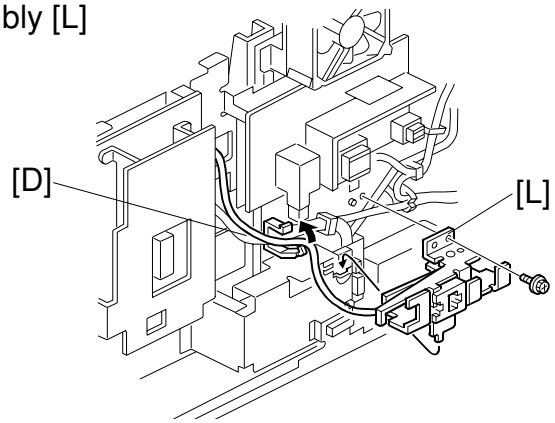
H208I040.WMF

7. Attach the bracket [I] to the connector [J] on the harness [D] from the unit kit. Then, attach them to bracket [K] as shown.



H208I021.WMF

8. Clamp the harness [D] from Step 7 as shown, then attach the bracket assembly [L] to the machine (1 screw).

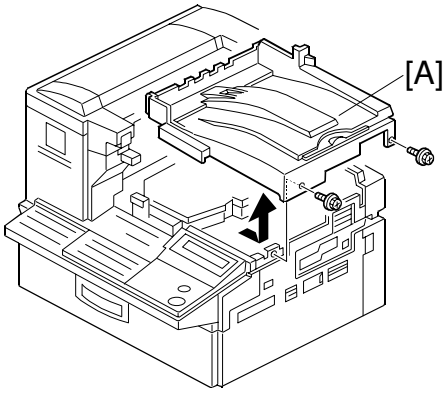


H208I022.WMF

9. Reattach the rear and upper covers.
14. Plug in the machine and turn on the main power switch.
15. Enter Service mode and set bit 2 of communication switch 16 to “1”.
16. Exit Service mode and turn off the machine, then turn the machine back on.
17. Print the System Parameter List from inside Service mode, and make sure that “G4” is listed as an option. Then exit Service mode.
10. Set up and program the items required for ISDN communications:
    To connect to the US National ISDN network, it is necessary to also input the SPID (Service Profile ID Number).

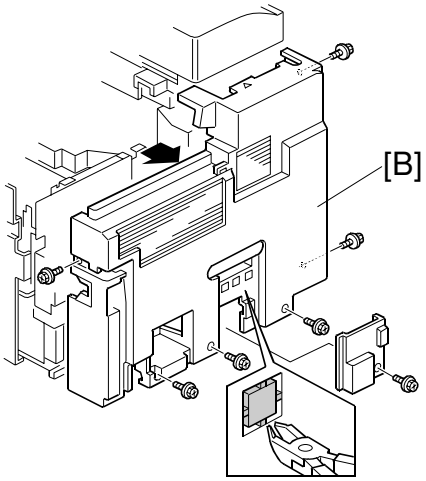
1.3.4 G3 INTERFACE UNIT TYPE510

1. Remove the upper cover [A] (2 screws).



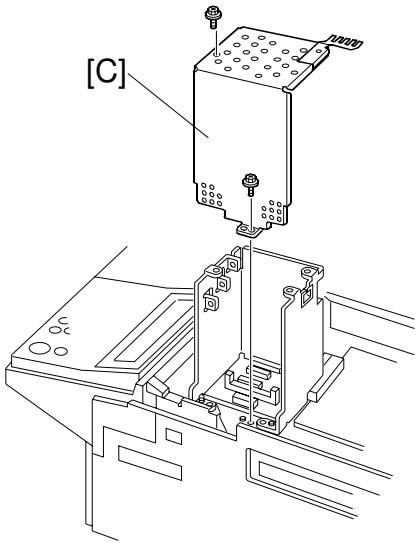
H209I006.WMF

2. Remove the rear cover (7 screws) [B] and cut away the LINE2 small cover as shown.



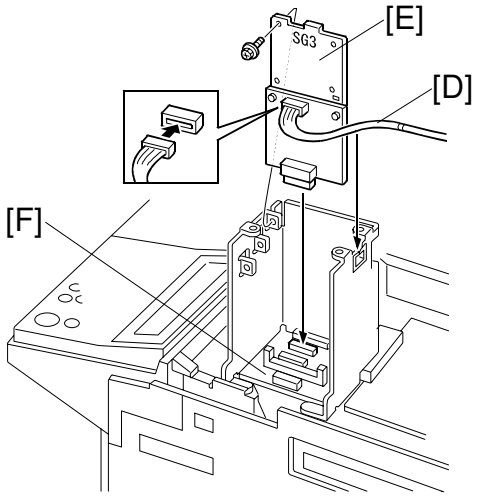
H209I013.WMF

3. Remove the bracket cover [C] (4 screws) as shown.



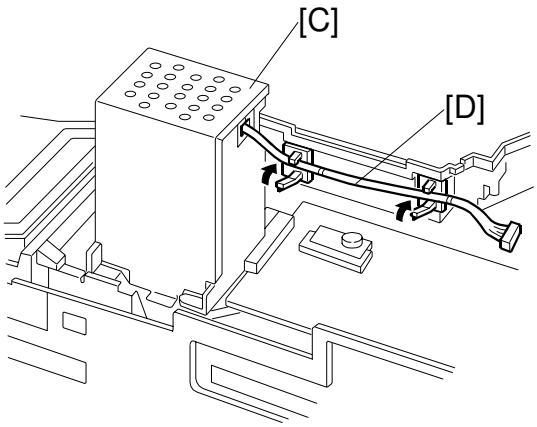
H209I523.WMF

4. Connect the harness [D] to the SG3 board [E] and insert the board into the SG3 connector on the OPIF board [F].



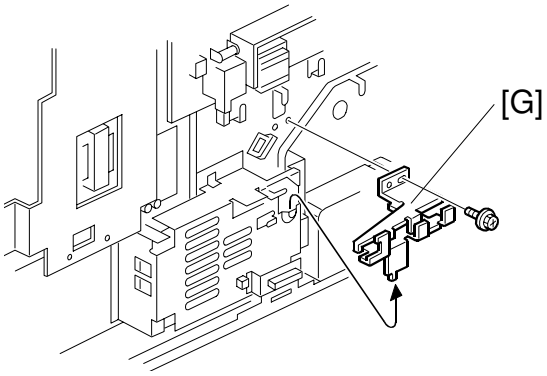
H209I014.WMF

5. Reattach the bracket cover [C], then lead the harness [D] through the 2 clamps as shown.



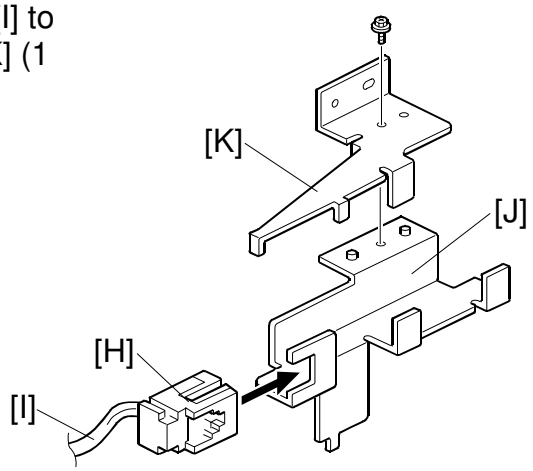
H209I015.WMF

6. Remove the bracket assembly [G] from rear side of the machine as shown.



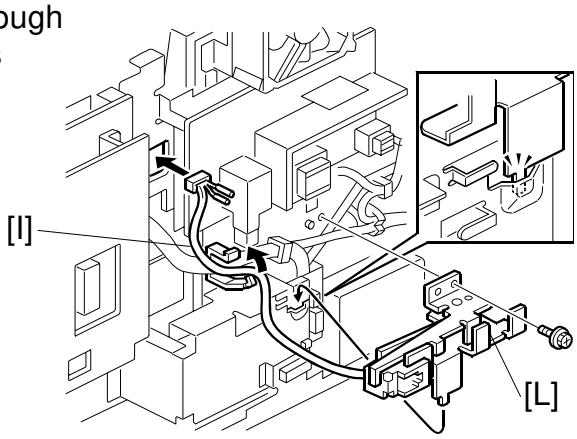
H209I040.WMF

7. Attach the connector [H] of the harness [I] to the bracket [J] and secure the bracket [K] (1 screw).



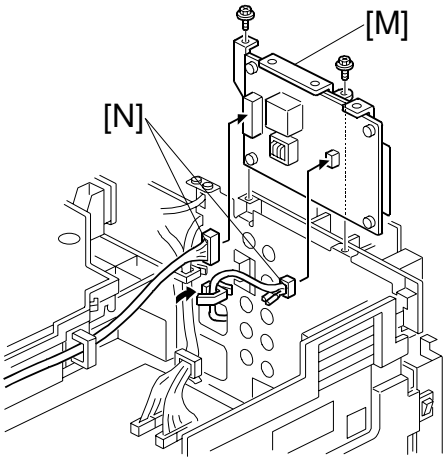
H209I016.WMF

8. Lead the harness [I] from Step 7 through the clamp and hole in the bracket as shown. Then, attach the bracket assembly [L] to the rear side of the machine (1 screw).



H209I017.WMF

9. Attach the NCU board [M] to the machine as shown (2 screws), then connect the 2 harnesses [N] to the NCU board.
10. Replace the rear and upper covers.
11. Plug in the machine and turn on the main power switch.
12. Enter Service mode and set bit 1 of communication switch 16 to “1”.
13. Exit Service mode and turn off the machine, then turn the machine back on.
14. Print the System Parameter List from inside Service mode, and make sure that “G3” is listed as an option. Then exit Service mode.

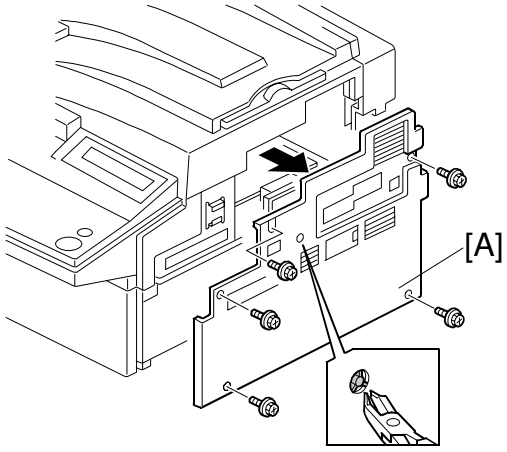


H209I018.WMF

15. Set up and program the items required for PSTN-2 communication.

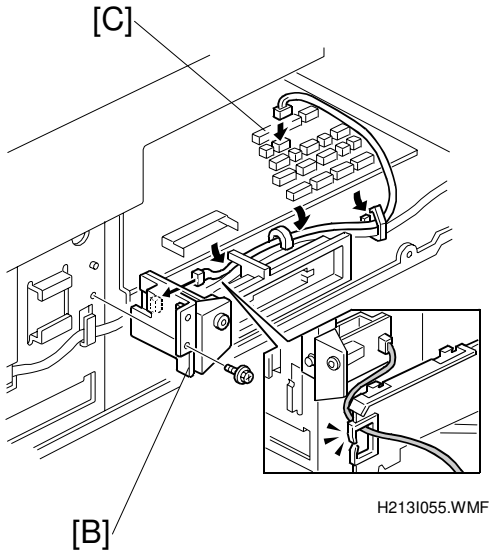
1.3.5 FAX ON DEMAND TYPE 510

1. Remove the right cover [A] (5 screws) and small cut-out as shown.



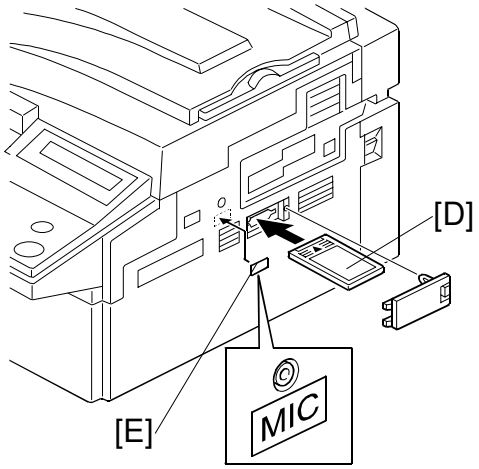
H213I026.WMF

2. Attach the FOD unit [B] (1 screw) to the right side of the machine. Then, lead the harness through the clamps and connect it to CN53 [C] on the FCU board.



H213I055.WMF

3. Reattach the right cover and insert the IC card [D] as shown. Then affix the “MIC” decal [E] on the right cover.

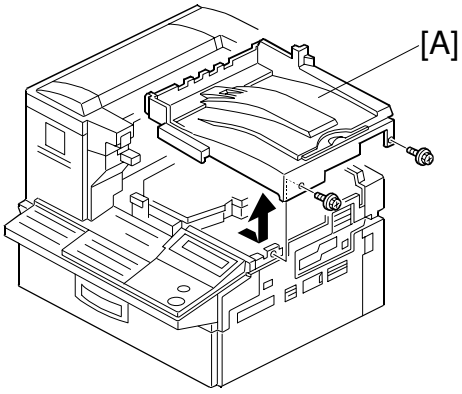


H213I028.WMF

4. Plug in the machine and turn on the main power switch.
5. Print the System Parameter List from inside Service mode, then make sure that “FOD” is listed as an option. Then exit Service mode.
6. Remind the user to connect the microphone from the FOD kit whenever using Fax On Demand.

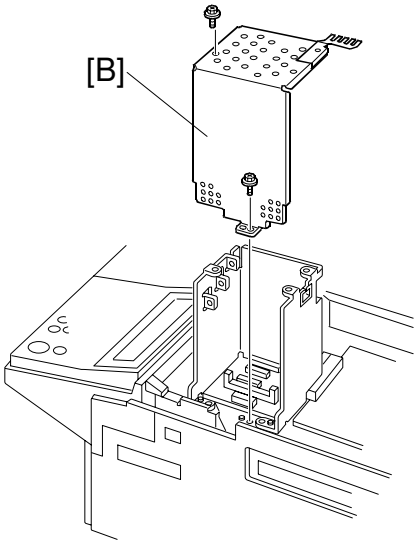
1.3.6 FUNCTION UPGRADE UNIT TYPE 510

1. Remove the upper cover [A] (2 screws).



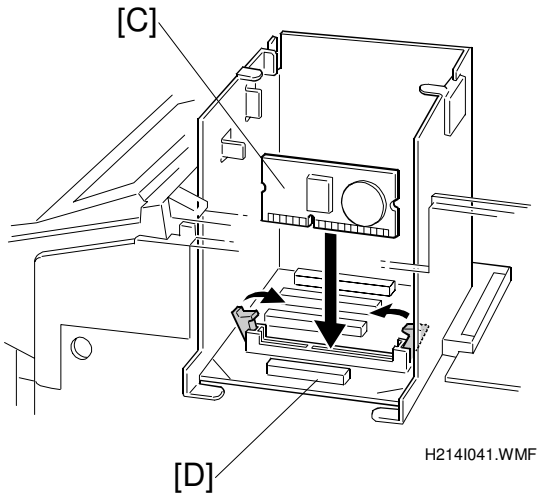
H214I006.WMF

2. Remove the bracket cover [B] (4 screws) as shown.



H214I523.WMF

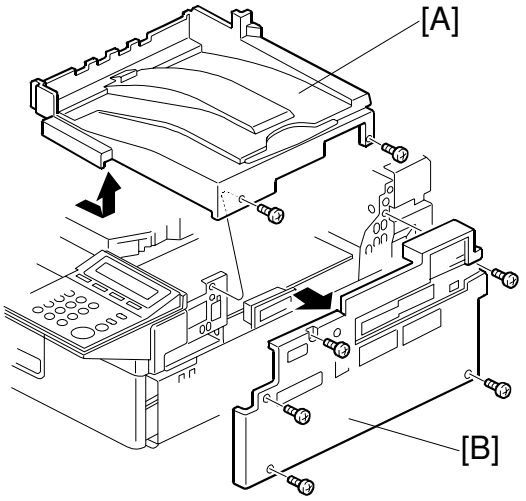
3. Insert the Function Upgrade Unit [C] into CN3 on the OPIF board [D].
4. Replace the bracket cover and upper cover.
5. Plug in the machine and turn on the main power switch.
6. Print the System Parameter List from inside Service mode, and make sure that “FUNCTION BOARD” is listed as an option. Then exit Service mode.



H214I041.WMF

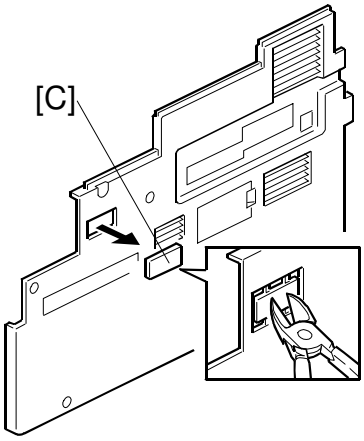
1.3.7 COUNTER TYPE 510

1. Remove the top cover [A] (2 screws) and right cover [B] (5 screws).



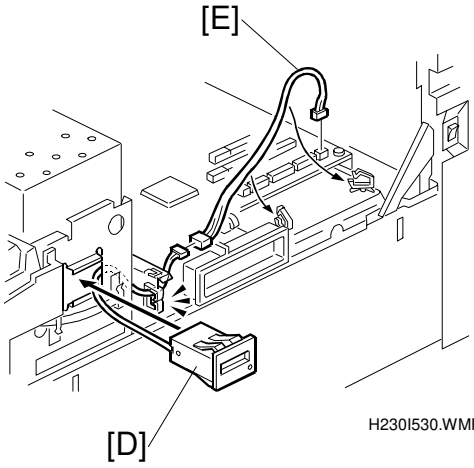
H230I003.WMF

2. Cut away the small cover [C].



H230I501.WMF

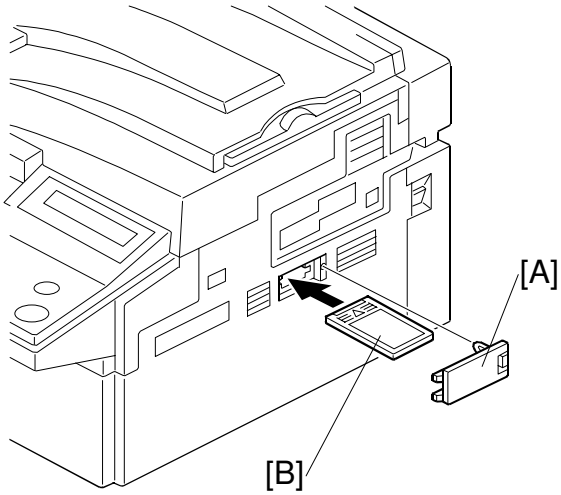
3. Attach the counter [D] on the machine, then connect relay harness [E] (contained in the kit) to the counter harness.
4. Connect the relay harness [E] to CN52 on the FCU board, then clamp the harness.
5. Replace the top and the right covers.
6. Make some copies and check whether or not the counter is working correctly. If it is not, check the connection of the FCU-counter harness.



H230I530.WMF

1.3.8 FEATURE EXPANDER TYPE 300 40M

1. Remove the small cover [A] on the right cover.
2. Insert the 40MB memory card [B] into the machine.



H215I003.WMF

3. Reattach the small cover.
4. Print the System Parameter List from inside Service mode, then make sure that “40MB” is listed as an option. Then exit Service mode.

2. PREVENTIVE MAINTENANCE

2.1 SPECIAL TOOLS AND LUBRICANTS

- Flash memory card -4M (P/N: N8036701)
- Flash/SRAM data copy tool (P/N: A1939353/H5159100)

2.2 PM TABLE

Scanner/ADF

Item	30K	60K	120K	180K	Notes
Pick-Up Roller Ass'y (Including Feed Roller)	R (user)	R (user)	R (user)	R (user)	ADF Maintenance Kit
Reverse Roller	R (user)	R (user)	R (user)	R (user)	ADF Maintenance Kit
Exposure Glass	C (user)	C (user)	C (user)	C (user)	Soft cloth and water
R0, R1 and R2 Rollers	C (user)	C (user)	C (user)	C (user)	Soft cloth and water
Pressure Roller	C (user)	C (user)	C (user)	C (user)	Soft cloth and water
White Shading Plate	C (user)	C (user)	C (user)	C (user)	Soft cloth and water

Printer

Item	30K	60K	120	180K	Notes
Fusing Unit	-	R (user)	R (user)	R (user)	Fusing Maintenance Kit
Transfer Roller	-	R (user)	R (user)	R (user)	Fusing Maintenance Kit
Paper Feed Roller	-	-	-	R (FST)	
Registration Roller	-	C (user)	C (user)	C (user)	Soft cloth and water

Paper Feed Unit (Optional)

Item	30K	60K	120K	180K	Notes
Feed Roller	-	-	-	R (FST)	

FST: Field Service Technician

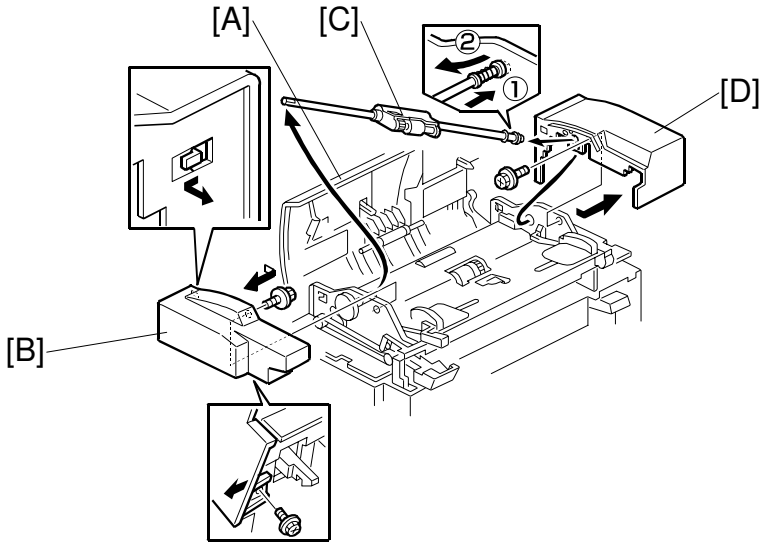
C: Clean, R: Replace

NOTE: After replacing a maintenance kit, make sure to reset the appropriate PM counter through the Key Operator Tools menu (User Tools – Key Operator Tools – System Settings – Reset PM Counter).

3. REPLACEMENT AND ADJUSTMENT

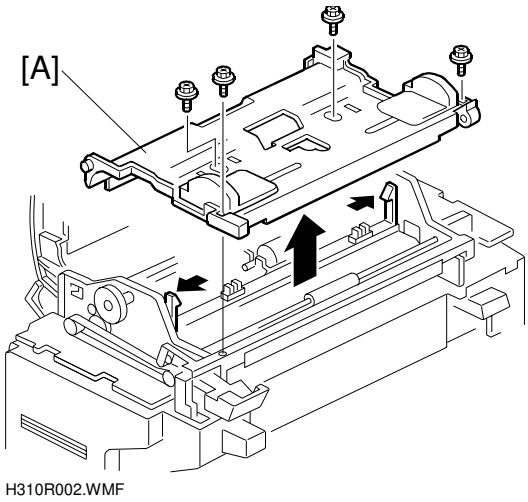
3.1 EXTERNAL COVERS

3.1.1 REMOVING THE ADF FRONT AND REAR COVERS



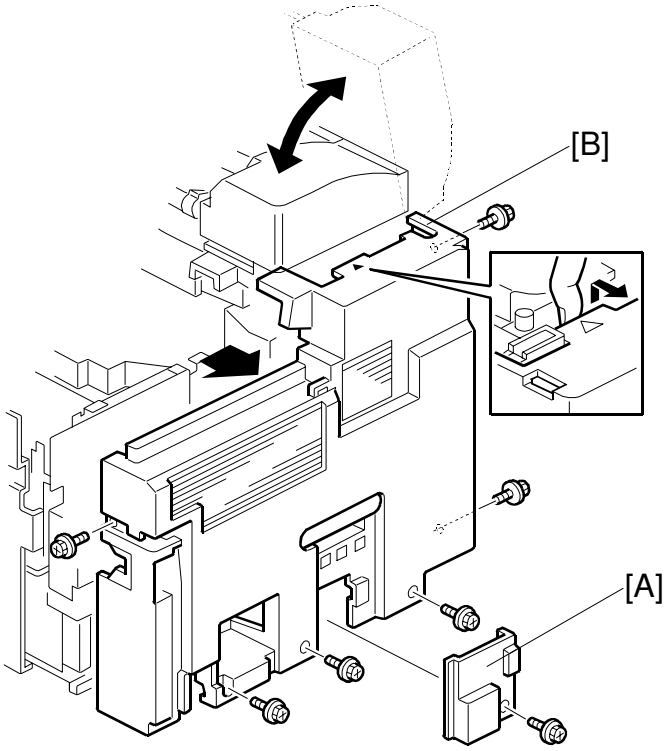
1. Open the ADF upper cover [A].
2. Remove the ADF front cover [B] (☞ x 2).
3. Remove the pick-up roller unit [C] by sliding the unit toward the back (toward the spring-loaded end).
4. Remove the ADF rear cover [D] (☞ x 1).

3.1.2 REMOVING THE UPPER GUIDE PLATE



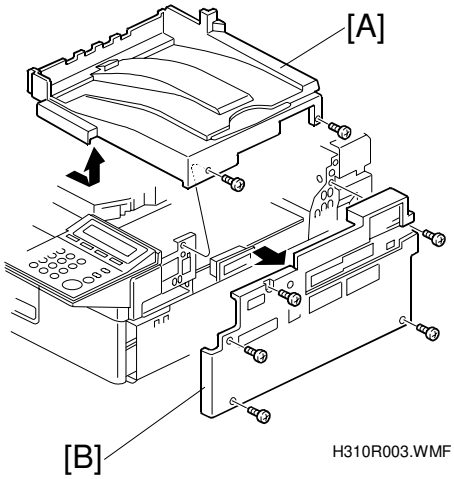
1. Remove the upper guide plate [A] (☞ x 4).

3.1.3 REMOVING THE REAR COVER

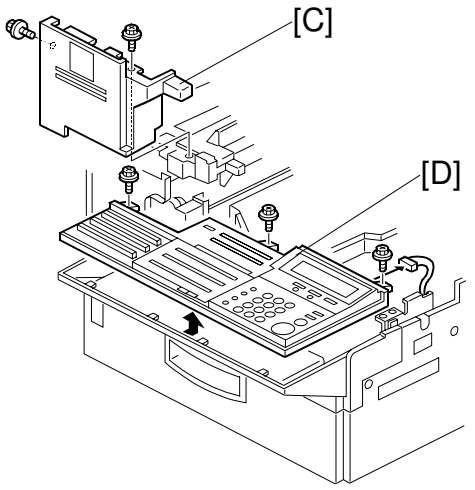


1. Remove the optional connector cover [A] (🔩 x 1).
2. Remove the rear cover [B] (🔩 x 6).

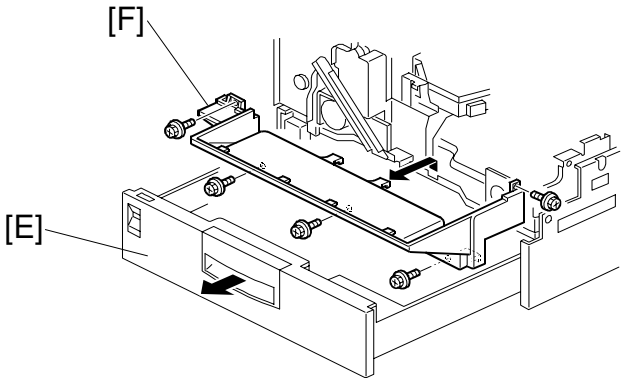
3.1.4 REMOVING THE OPERATION PANEL AND FRONT COVER



H310R003.WMF



H310R004.WMF

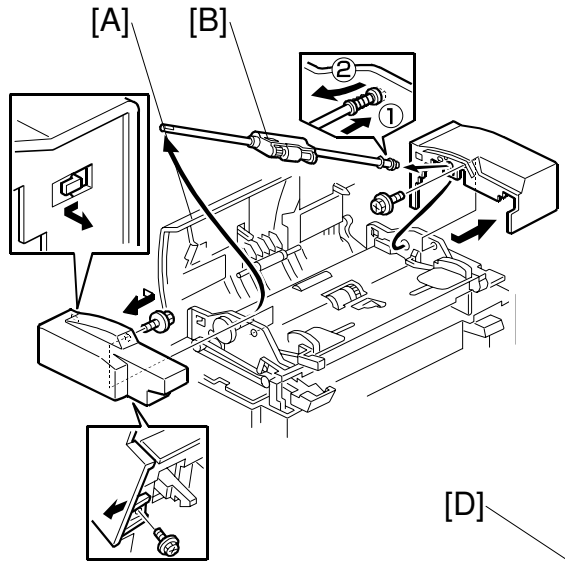


H310R005.WMF

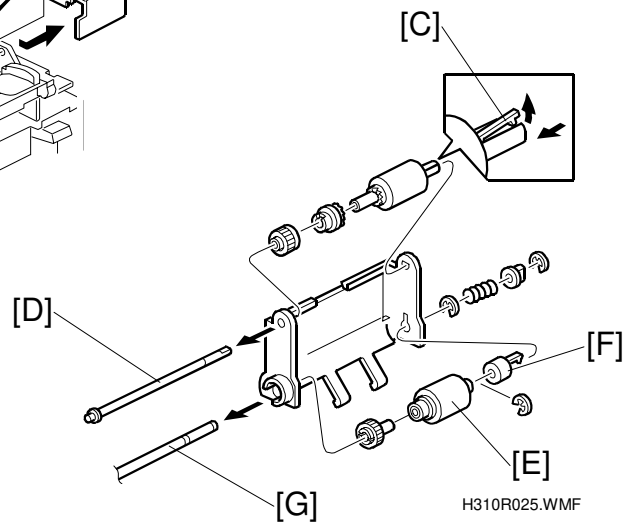
1. Remove the upper cover [A] (x 2).
2. Remove the right cover [B] (x 5).
3. Remove the front upper cover [C] (x 2).
4. Remove the operation panel [D] (x 3, x 1).
5. Pull out the cassette [E].
6. Remove the front lower cover [F] (x 5).

3.2 ADF/SCANNER SECTIONS

3.2.1 REPLACING THE PICK-UP ROLLER (PART OF THE ADF MAINTENANCE KIT)



H310R001.WMF



H310R025.WMF

1. Open the ADF upper cover [A].
2. Remove the pick-up roller unit [B].
   NOTE: Slide the unit toward the rear (toward the spring-loaded end). The front bushings will detach and the unit can then be removed.

NOTE: If you install all parts in the ADF maintenance kit at the same time, be sure to reset the PM counter (ADF).

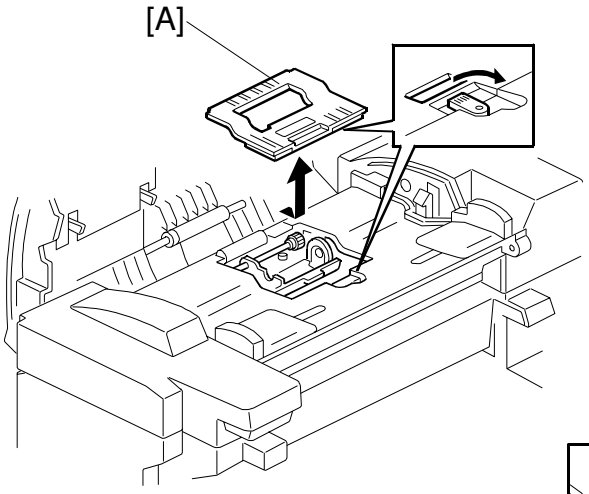
3.2.2 REPLACING THE FEED ROLLER (PART OF THE ADF MAINTENANCE KIT)

First, do the first two steps of the pick-up roller replacement procedure above.

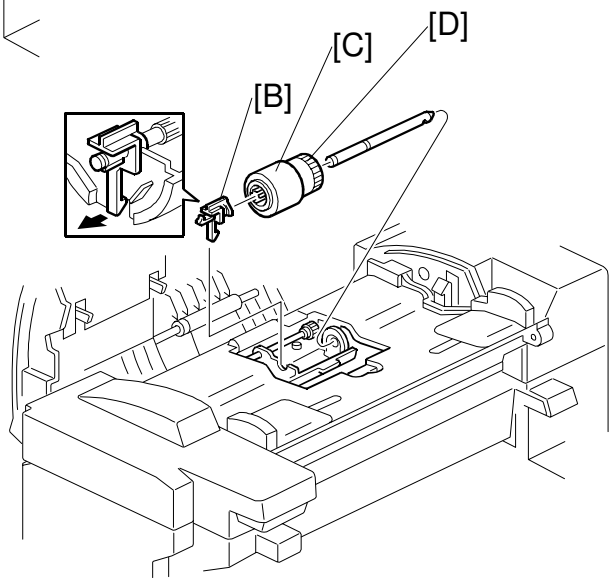
1. Release the pick-up roller stopper [C] and pull the shaft toward the end with the E-clip [D]. This will allow the pick-up roller to be removed.
2. Remove the three E-clips from the feed roller [E].
3. Release the roller clutch stoppers [F], pull out the shaft [G], and remove the feed roller.

NOTE: If you install all parts in the ADF maintenance kit at the same time, be sure to reset the PM counter (ADF).

3.2.3 REPLACING THE REVERSE ROLLER AND TORQUE LIMITER (PART OF THE ADF MAINTENANCE KIT)



H310R050.WMF

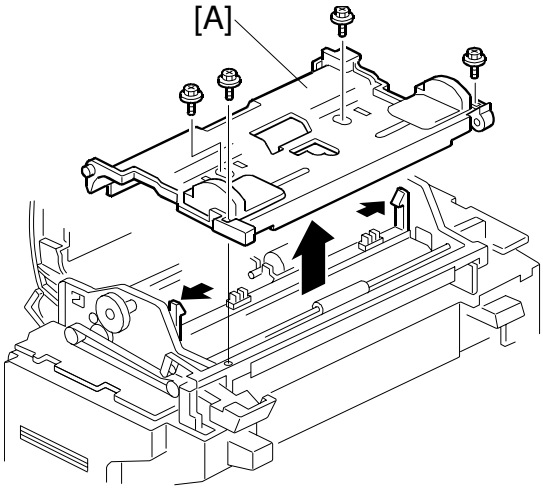


H310R051.WMF

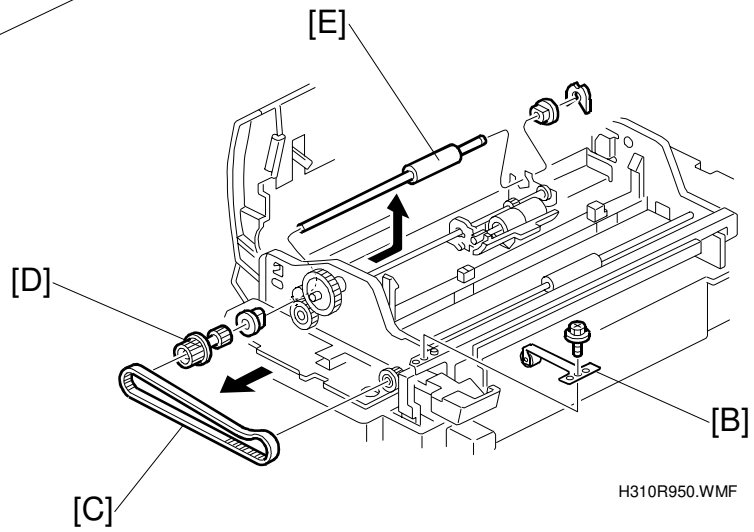
1. Remove the separation roller cover [A].
2. Remove the clip [B] and replace the reverse roller [C] and torque limiter [D].

NOTE: If you install all parts in the ADF maintenance kit at the same time, be sure to reset the PM counter (ADF).

3.2.4 REPLACING THE R0 ROLLER



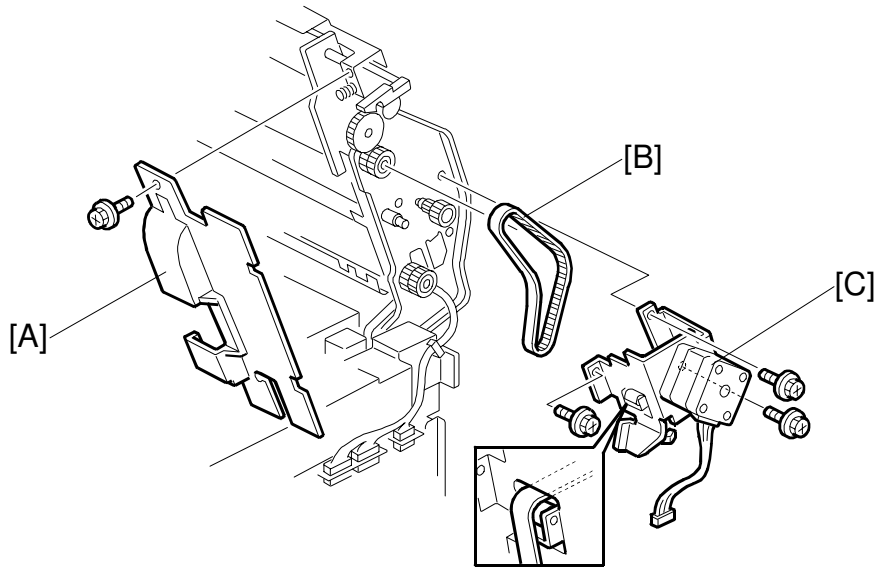
H310R002.WMF



H310R950.WMF

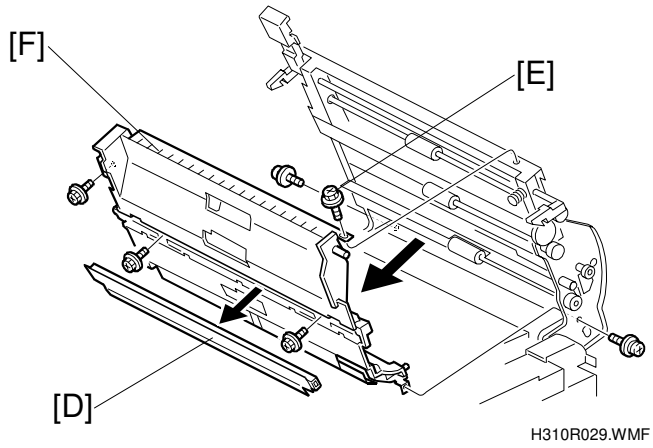
1. Remove the ADF rear cover (☛ 3.1.1).
2. Remove the ADF front cover (☛ 3.1.1).
3. Remove the upper guide plate [A] (☞ x 4).
4. Remove the belt tension roller with spring plate [B] (☞ x 1).
5. Remove the belt [C].
6. Release the pawl that holds the pulley [D], and remove the pulley.
7. Slide the R0 roller [E] toward the rear and lift the roller out.

3.2.5 REPLACING THE R1, R2 AND DOCUMENT EXIT ROLLERS

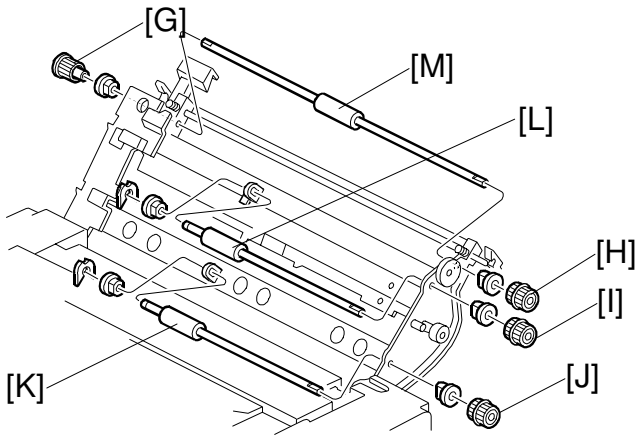


H310R959.WMF

1. Remove the ADF rear cover (☛ 3.1.1).
2. Remove the ADF front cover (☛ 3.1.1).
3. Remove the rear cover (☛ 3.1.3).
4. Remove the ADF lower cover [A] (🔩 x 1).
5. Remove the belt [B].
6. Remove the scanner motor bracket and scanner motor [C] (🔩 x 3).



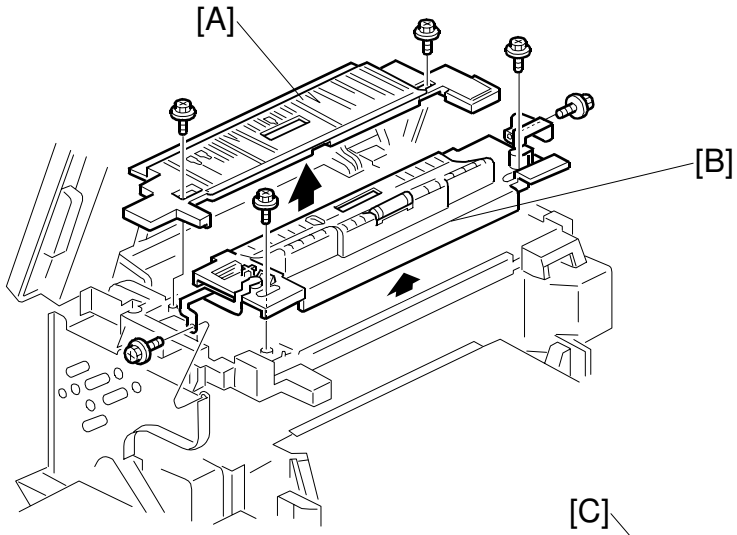
H310R029.WMF



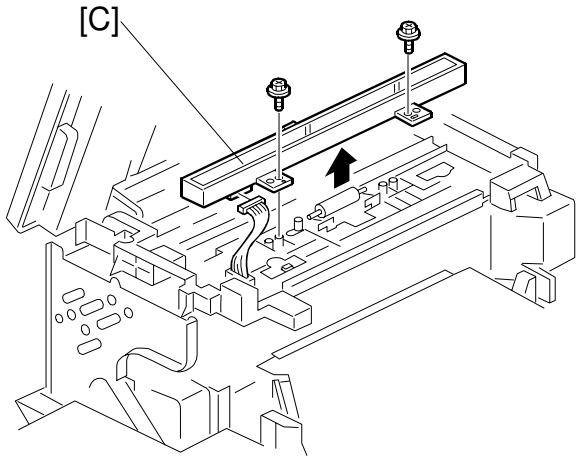
H310R953.WMF

7. Remove the white plate [D]. This is done by first sliding the plate toward the front of the machine, then releasing and removing the rear pawl.
8. Remove the screw [E] that fastens the grounding strip.
9. Remove the guide plate [F] (x 5).
10. Remove the gears [G], [H], [I], and [J] (first remove the gear pawls).
11. Remove the clips and bushings, followed by the R1 [K] and R2 [L] rollers, and the exit roller [M].

3.2.6 REPLACING THE CIS (CONTACT IMAGE SENSOR) (SCANNER)



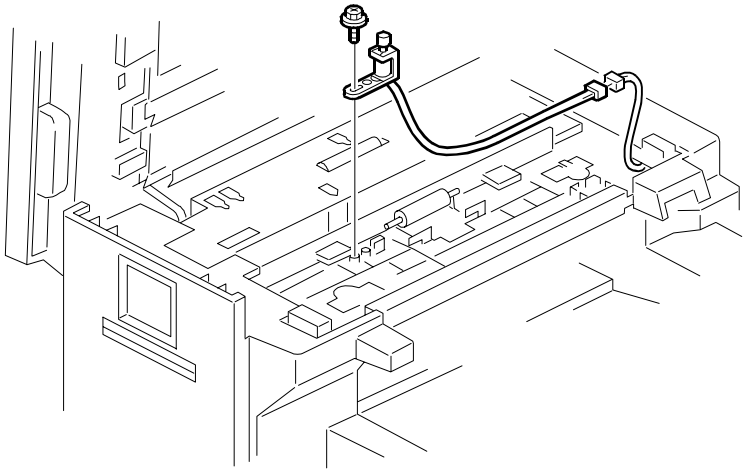
H310R007.WMF



H310R008.WMF

1. With the ADF open, remove the R1 roller guide [A] (☞ x 2) and exit guide [B] (☞ x 2).
2. Remove the CIS [C] (☞ x 2, ☞ x 1).

3.2.7 REMOVING THE STAMP UNIT



H310R009.WMF

1. With the ADF open, remove the exit guide (☞ x 2) (☛ 3.2.6).
2. Replace the stamp unit (☞ x 1).

NOTE: When removing the stamp unit, ensure that ink does not leak out of it.

3.2.8 ADJUSTING THE SCANNING TOP MARGIN

To adjust the scanner home position, change the following RAM data. When the value is increased (with respect to the default value), the image on the printed copy moves down the page.

ADF scanning:
Address: 4049C4 to 4049C5 default value: 004FH Unit: 0.1 mm
Adjustable range: 0000 to 009EH

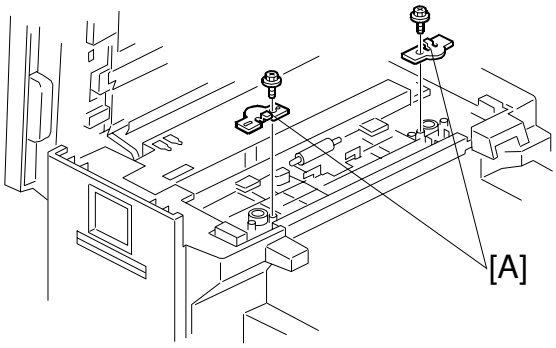
MDF scanning
Address: 4049C6 to 4049C7 default value: 004FH Unit: 0.1 mm
Adjustable range: 0000 to 009EH

3.3 LASER UNIT

⚠WARNING

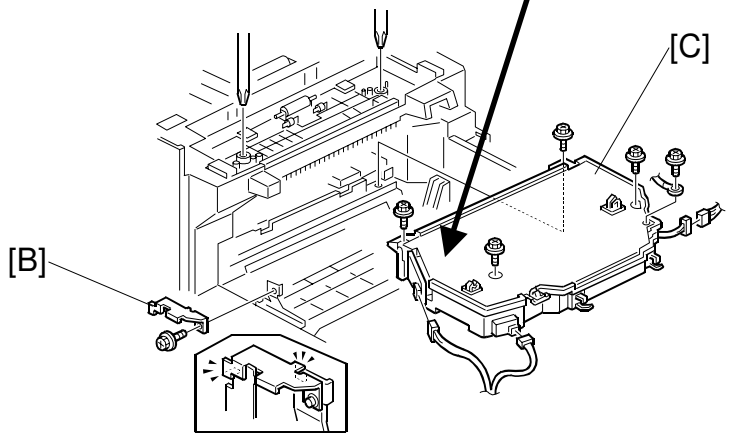
Before attempting any of the procedures in this section, turn off the main switch, unplug the machine, and remove the AIO cartridge. Laser beams can seriously damage your eyes.

3.3.1 REPLACING THE LASER SYNCHRONIZATION DETECTOR AND LD UNITS



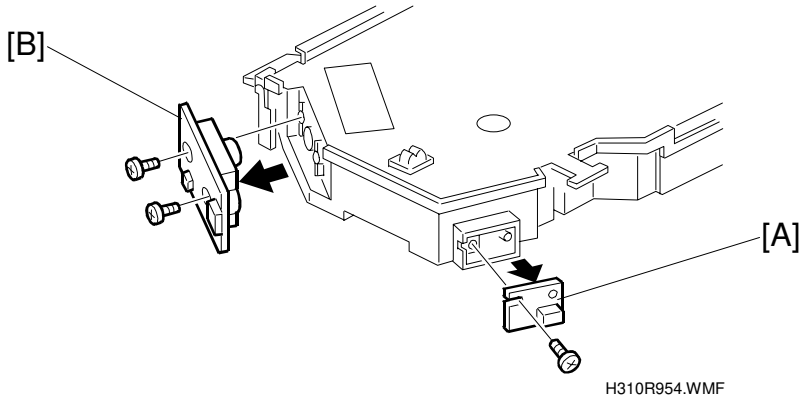
H310R010.WMF

DECAL6.WMF



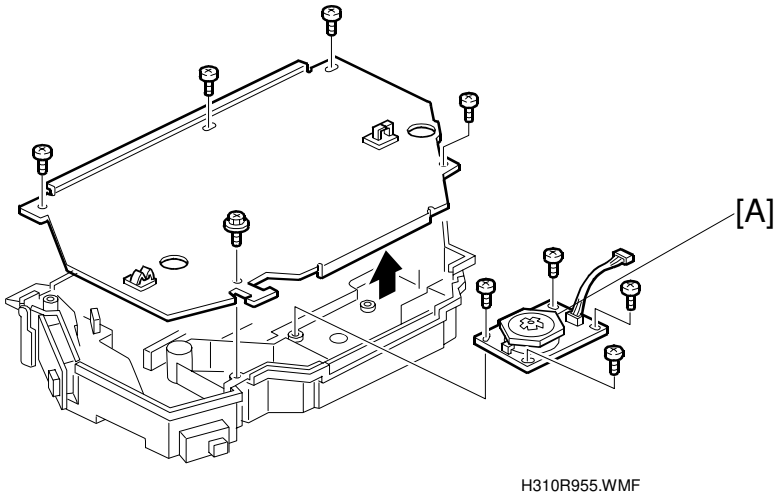
H310R011.WMF

1. Remove the exit guide (☛ 3.2.6).
2. Remove two brackets [A] (☞ x 1 each).
3. Remove the upper cover (☛ 3.1.4).
4. Remove the bracket [B] (☞ x 1).
5. Remove the LD unit [C] (☞ x 5, ☞ x 3).
   Loosen the two screws in the back of the machine by inserting a screwdriver through the two openings.



6. Remove the laser synchronization detector [A] (☞ x 1).
7. Remove the LD unit [B] (☞ x 1).

3.3.2 REPLACING THE POLYGON MOTOR



1. Remove the laser unit cover (☞ x 5).
2. Remove the polygon motor [A] (☞ x 4, ☞ x 1).

3.3.3 ADJUSTING THE PRINTING SIDE-TO-SIDE REGISTRATION

Adjust the laser beam main scan start position when the offset is large. The procedure is as follows:

1. Make copies using the mainframe cassette, bypass feeder, and optional paper feed units and check the amount that the image is shifted.
2. Adjust by changing the contents of the following addresses:

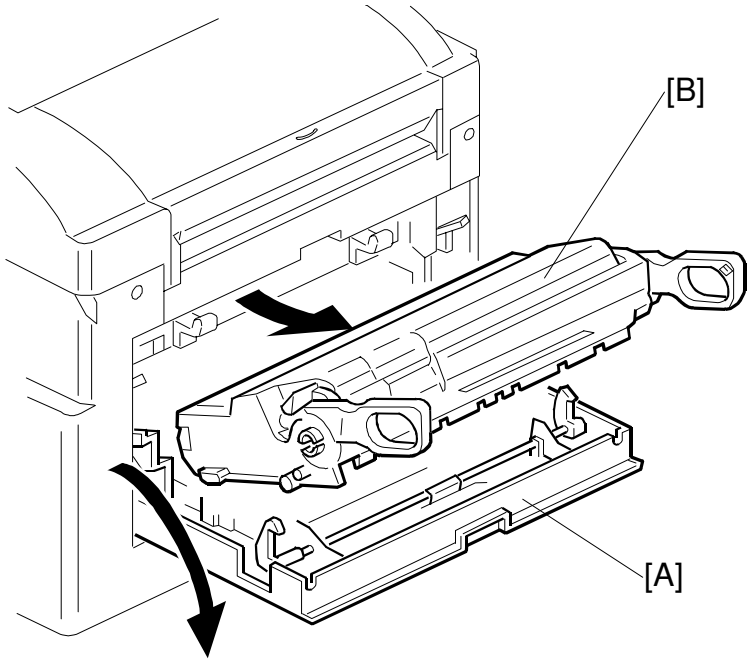
Source	Address	Default	Unit
Main Frame	402466	0002H	0.5 mm
1st Optional Unit	402468	0000H	0.5 mm
2nd Optional Unit	40246A	0000H	0.5 mm
3rd Optional Unit	40246C	0000H	0.5 mm
4th Optional Unit	40246E	0000H	0.5 mm
By-pass Feeder	402470	0004H	0.5 mm

3. To move the start position to the right, increase the value.
   To move the start position to the left, decrease the value.

   For example:
   - To move the start position to the right 2 mm (with respect to the default value):
     0002H + (2 / 0.5) H = 0006H
   - To move the start position to the left 1 mm (with respect to the default value):
     0002H - (1 / 0.5) H = 0000H

3.4 AIO CARTRIDGE

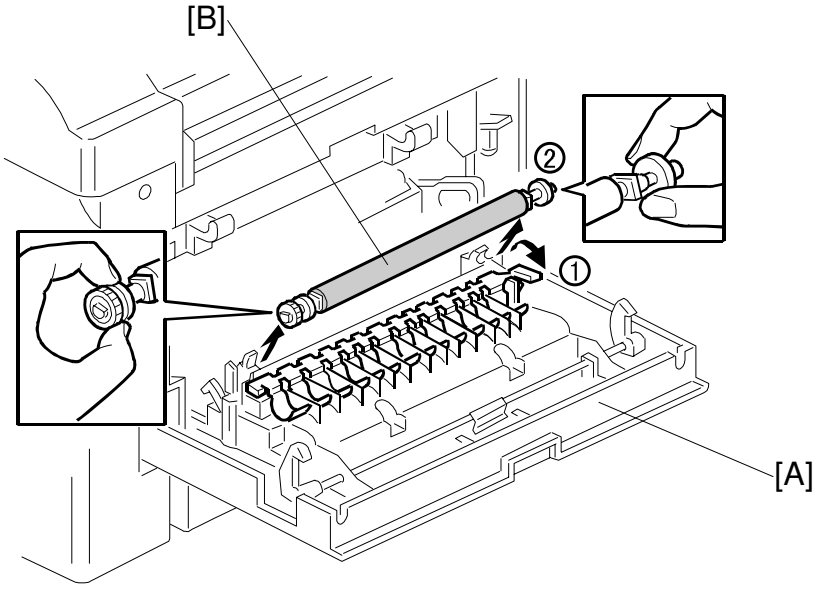
3.4.1 REPLACING THE AIO CARTRIDGE



H310R956.WMF

1. Open the (mainframe) left cover [A].
2. Tilt the AIO cartridge [B] upward slightly (to prevent it from touching other parts) and remove the unit from the machine.

3.4.2 REPLACING THE TRANSFER ROLLER (PART OF THE FUSING MAINTENANCE KIT)

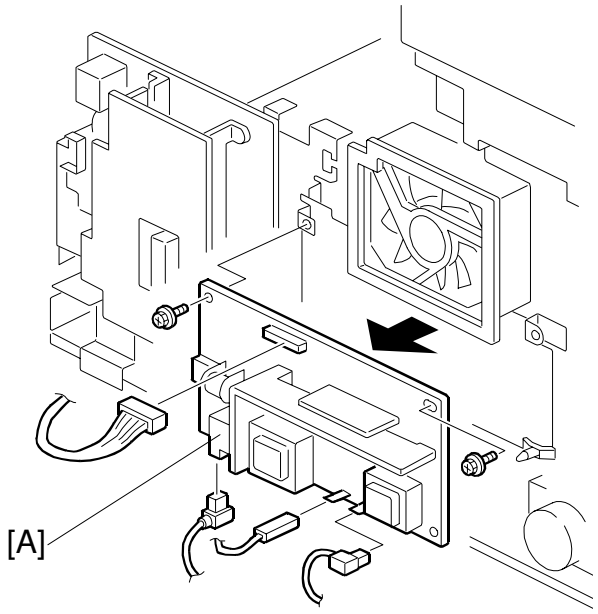


H310R966.WMF

1. Open the transfer roller cover [A] as shown in the illustration (note the direction of the arrow).
2. While holding both ends of the roller (by the green gears on each end), lift and remove the roller [B].

   NOTE: 1) Do not touch the surface of the roller. Oils from the skin stuck on the roller surface may result in roller failure.
   2) If you install all parts in the fusing maintenance kit at the same time, be sure to clear the PM counter (Fusing Unit).

3.4.3 REPLACING THE POWER PACK



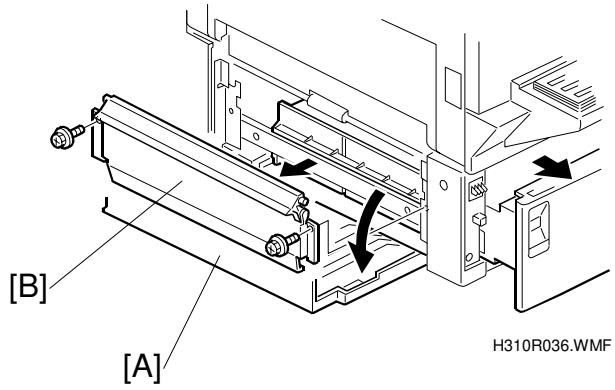
1. Remove the rear cover. (☛ 3.1.4)
2. Remove the power pack [A] (🔩 x 2, ✋ x 4).

⚠CAUTION

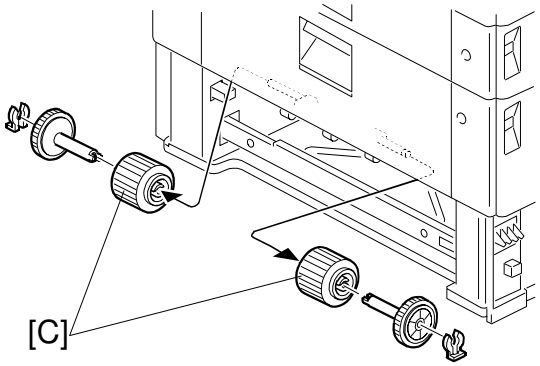
When removing the power pack, make sure to first turn off the main power and unplug the power cord. This is done to eliminate the risk of electrical shock.

3.5 PAPER FEED AND REGISTRATION

3.5.1 REPLACING THE PAPER FEED ROLLER



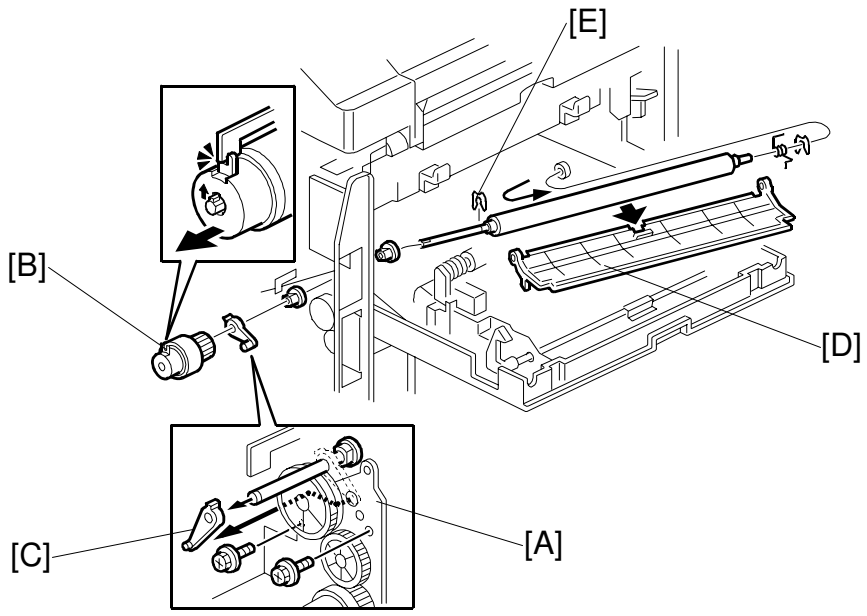
H310R036.WMF



H310R026.WMF

1. Open the left cover [A].
2. Remove the guide plate [B] (x 2).
3. Remove the paper feed rollers [C] (x 2).

3.5.2 REPLACING THE REGISTRATION ROLLER



H310R021.WMF

1. Remove the rear cover. (☛ 3.1.3.)
2. Loosen the screws for the paper feed drive bracket [A].
3. Release the small pawl on the tip of the clutch [B] and remove the clutch.
4. Release and rotate the collar [C], then remove it along with the bushing.
5. Open the left side cover.
6. Remove the registration guide plate [D].
7. Remove the clip [E] (rear side).
8. Slide the registration roller toward the rear (left in the illustration). Once the front side is freed, pull it up toward you and remove the roller.

3.5.3 ADJUSTING THE PRINTING TOP MARGIN

Adjust the start position at the top of the page when the offset is large. The procedure is as follows:

1. Make copies using the mainframe cassette, bypass feeder, and optional paper feed units and check the amount that the image is shifted.
2. Adjust by changing the contents of the following addresses:

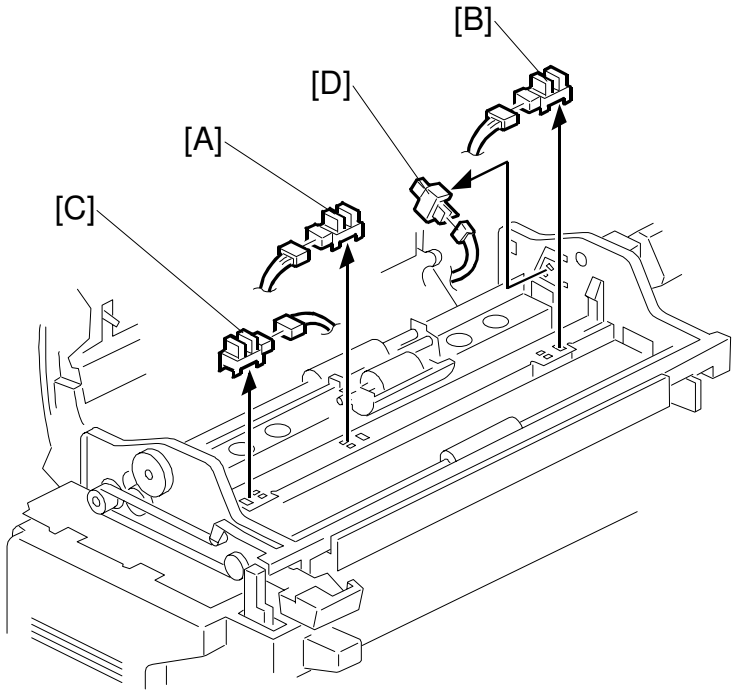
Source	Address	Default	Unit
Main Frame	40245A	FFFEH	0.5 mm
1st Optional Unit	40245C	FFFCH	0.5 mm
2nd Optional Unit	40245E	FFFCH	0.5 mm
3rd Optional Unit	402460	FFFCH	0.5 mm
4th Optional Unit	402462	FFFCH	0.5 mm
By-pass Feeder	402464	FFFCH	0.5 mm

3. To lower the start position, increase the default value.
   To raise the start position, reduce the default value.

   For example:
   - To lower the start position by 2 mm (with respect to the default value):
     0000H + (2 / 0.5) H = 0004H

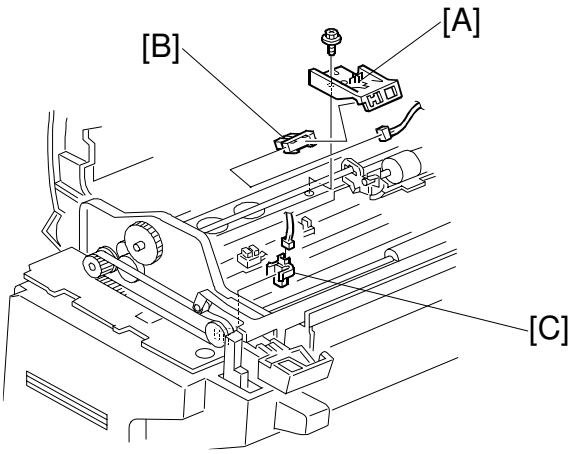
3.6 SENSORS

3.6.1 REPLACING THE ADF/MDF SENSORS AND SWITCHES

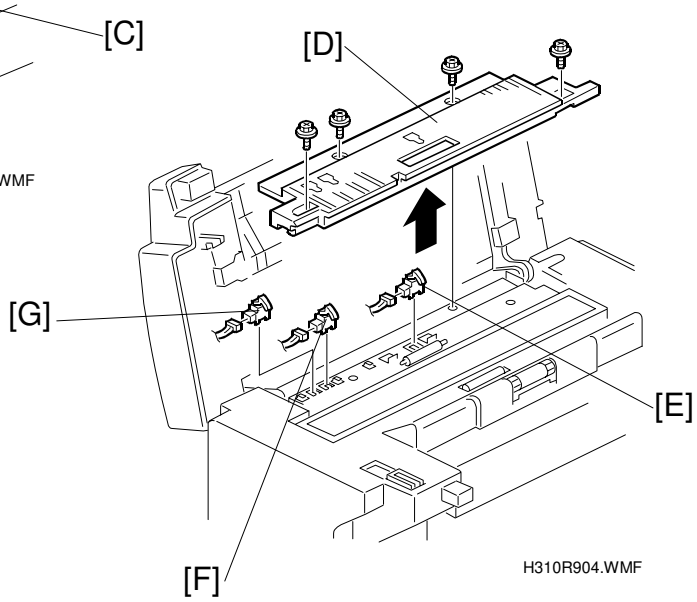


H310R903.WMF

1. Open the ADF upper cover. (☛ 3.1.1.)
2. Remove the ADF front cover (☞ x 2).
3. Remove the pickup-roller unit.
4. Remove the ADF rear cover (☞ x 1).
5. Remove the upper guide plate (☞ x 4). (☛ 3.1.2.)
6. Release the pawls of the S1 [A], B4 [B], A3 [C] sensors (at the connector sides) and remove the sensors (☜ x 1 each).
7. Release and remove the pawl located on the rear face of the ADF upper cover switch [D] (☜ x 1).



H310R022-2.WMF

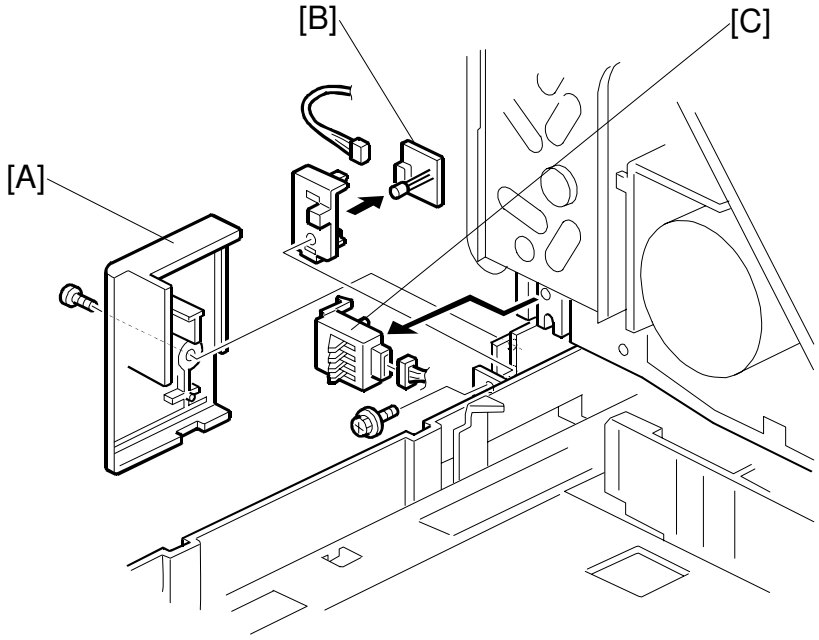


H310R904.WMF

8. Remove the sensor bracket [A] (🔩 x 1).
9. Remove the S2 sensor [B] (✋ x 1).
10. Remove the ADF lower cover (🔩 x 1). (☛ 3.2.5.)
11. Remove the ADF unit switch [C] (✋ x 1).
12. Remove the rear cover (☛ 3.1.3).
13. Open the ADF unit.
14. Remove the ADF lower guide plate [D] (🔩 x 4).
15. Release the MDF S1 [E], B4 [F], A3 [G] sensor pawls and remove the sensors (✋ x 1 each).

    NOTE: If the rear cover is not removed, damage will result when opening the ADF.

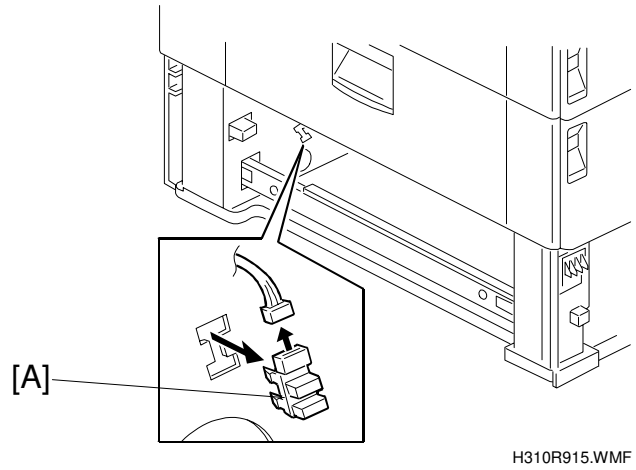
3.6.2 REPLACING THE PAPER-END LED BOARD AND PAPER SIZE SENSOR SWITCH



H310R911.WMF

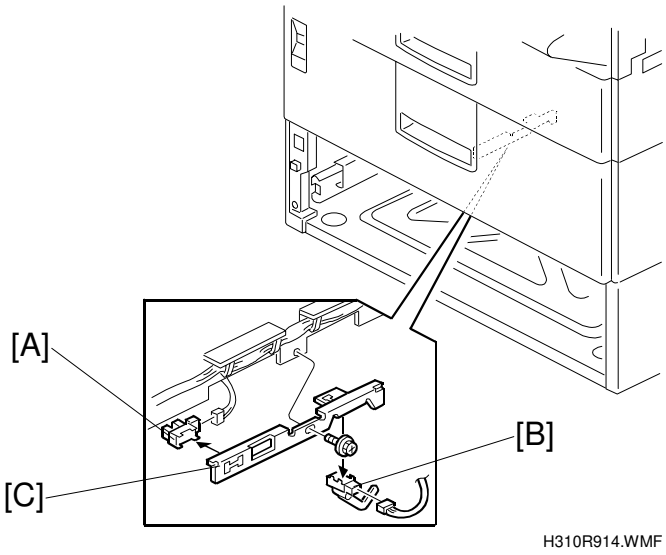
1. Pull the paper feed tray.
2. Remove the cover [A] (☞ x1).
3. Remove the paper end LED board [B] (☞ x 1).
4. Remove the paper size sensor switch [C] (☞ x 1).

3.6.3 REPLACING THE PAPER NEAR END SENSOR



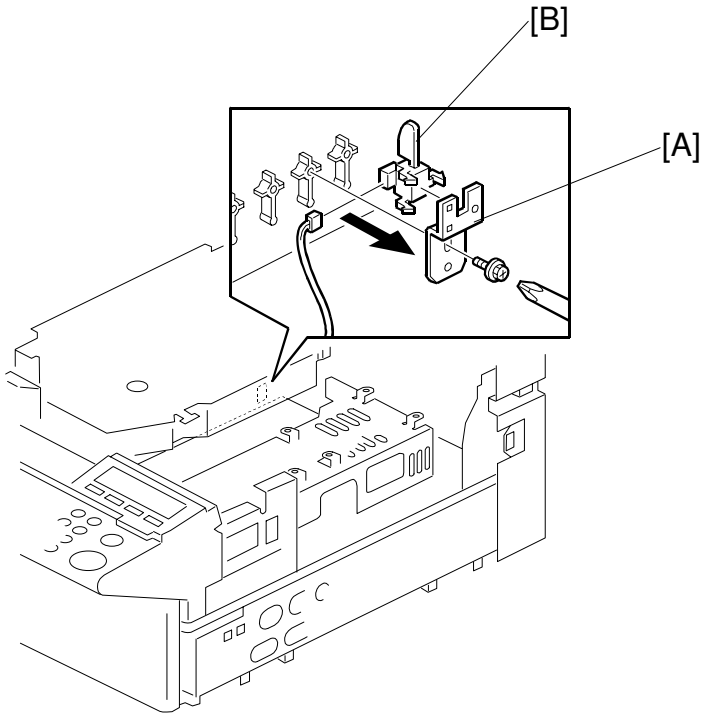
1. Remove the paper feed tray (☞ x 2).
2. Remove the guide plate (☞ x 2)
3. Remove the paper near end sensor [A] (✋ x 1)

3.6.4 REPLACING THE UPPER LIMIT AND PAPER END SENSORS



1. Remove the paper feed tray (☞ x 2).
2. Remove the connectors attached to the upper limit sensor [A] and paper end sensor [B].
3. Remove the screw that holds the sensor bracket [C] in place, and remove the bracket by pulling downward.
4. Remove the sensors from the bracket.

3.6.5 REPLACING THE AIO CARTRIDGE SENSOR

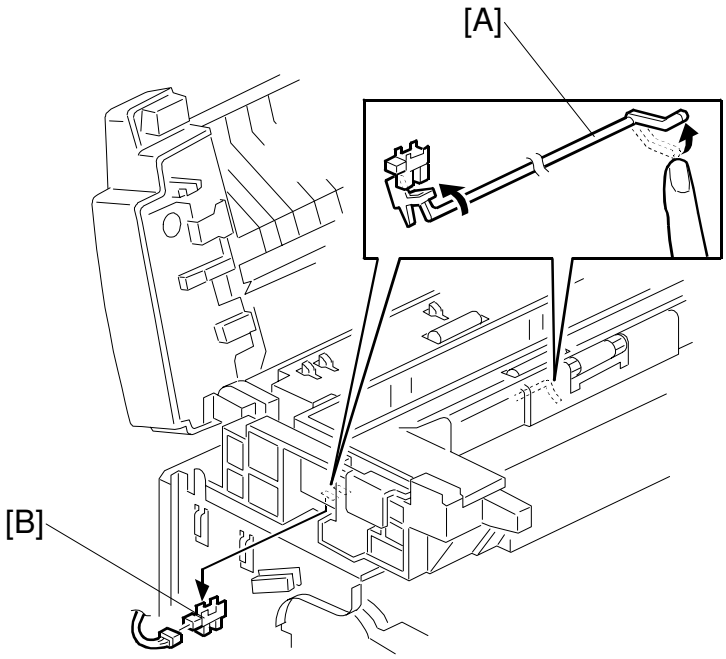


H310R907.WMF

1. Remove the upper cover (☞ x 2). (☛ 3.1.4)
2. Remove the right cover (☛ 3.1.4).
3. Remove the screw that fastens the AIO cartridge sensor bracket [A].
4. Remove the AIO cartridge sensor [B] from the bracket (☞ x 1).

NOTE: This procedure is easier to perform if the AIO cartridge is first removed. Be sure to put the AIO cartridge sensor back in the original position.

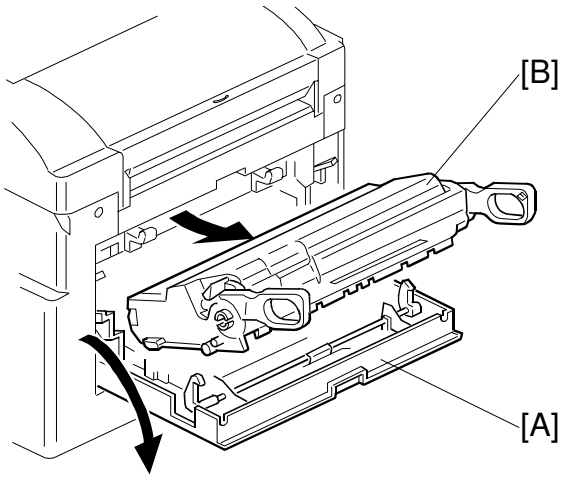
3.6.6 REPLACING THE PAPER EXIT SENSOR



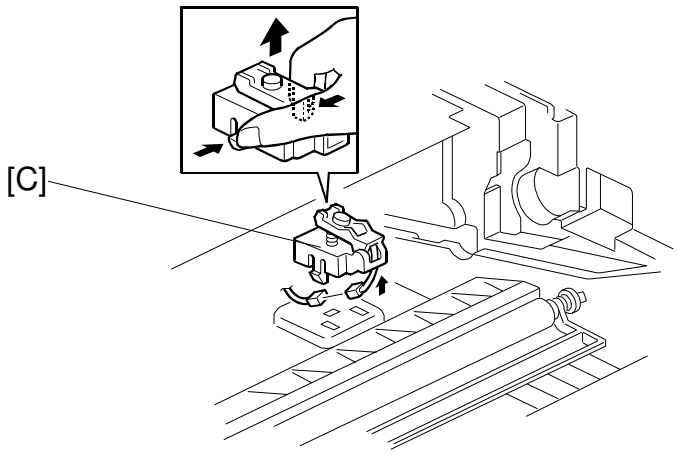
H310R905.WMF

1. Remove the upper cover (x 2). (☛ 3.1.4)
2. Remove the front upper cover (☛ 3.1.4)
3. Remove the connectors of the paper exit sensor.
4. While holding up the actuator [A] of the paper exit sensor, release the front pawl and remove the paper exit sensor [B].

3.6.7 REPLACING THE TONER END SENSOR



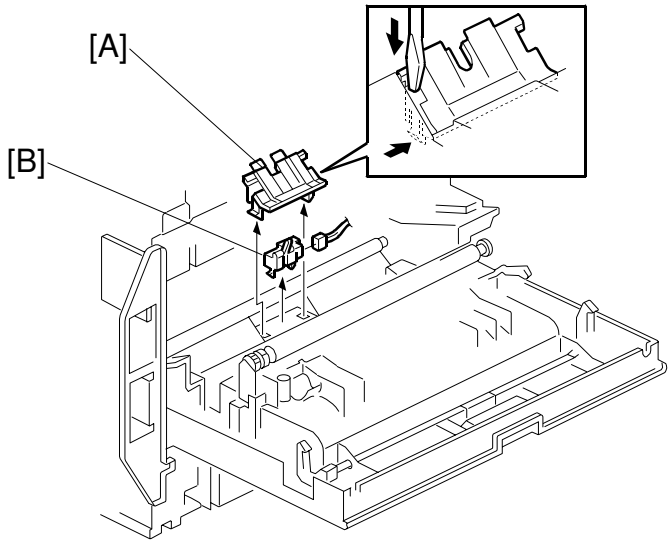
H310R956.WMF



H310R958.WMF

1. Open the left cover [A].
2. Remove the AIO cartridge [B].
3. Remove the pawls on both sides of the toner end sensor [C] and remove the sensor (☞ x 1).

3.6.8 REPLACING THE REGISTRATION SENSOR

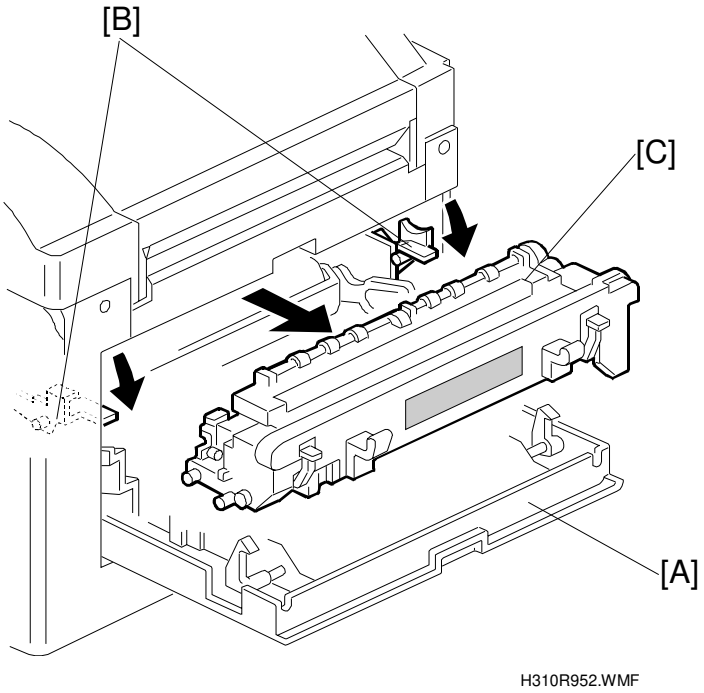


H310R022.WMF

1. Open the left cover.
2. Lift up the registration guide.
3. While the registration guide is held up, remove the sensor cover by releasing the pawl of the registration sensor cover [A].
4. Release the pawl of the registration sensor and remove the sensor [B] from the cover (☞ x 1).

3.7 FUSING UNIT

3.7.1 REPLACING THE FUSING UNIT (PART OF THE FUSING MAINTENANCE KIT)



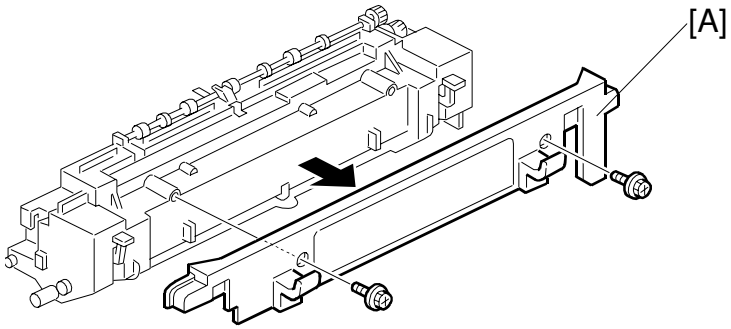
H310R952.WMF

1. Open the left cover [A].
2. Remove the stopper screw (green) located below the rear side lever [B] (brown).
3. Push down levers [B].
4. Remove the fusing unit [C].

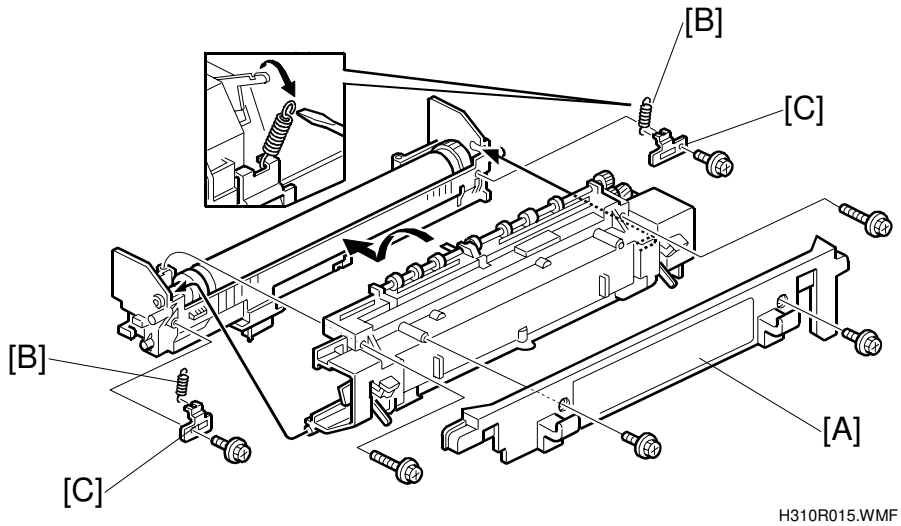
⚠CAUTION

1. **Since the temperature of the fusing unit is very high, exercise caution to avoid being burned.**
2. **If you install all parts in the fusing maintenance kit at the same time, be sure to clear the PM counter (Fusing Unit).**

3.7.2 DISASSEMBLING THE FUSING UNIT



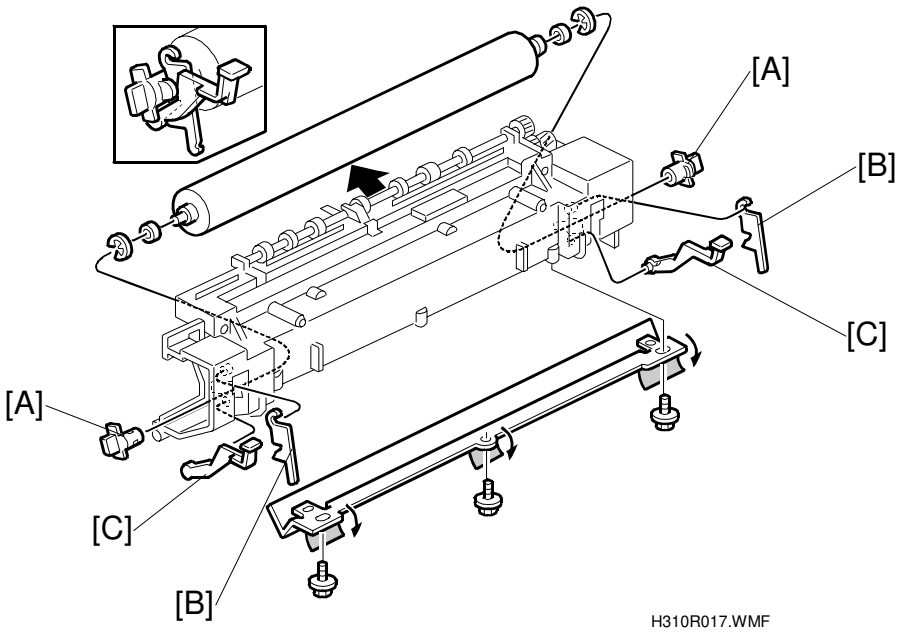
H310R013.WMF



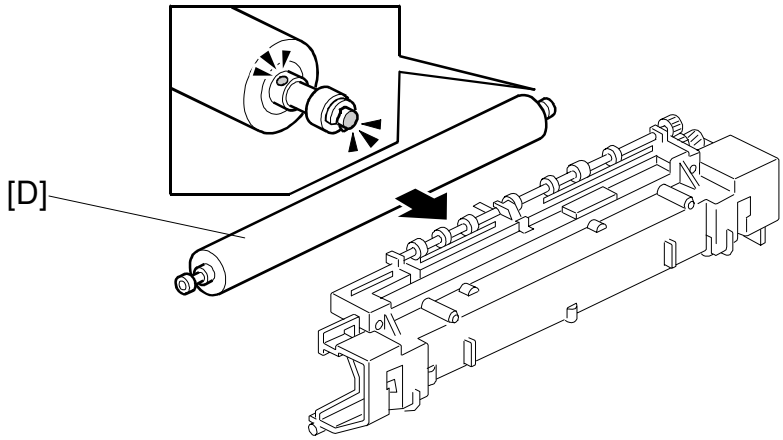
H310R015.WMF

1. Remove the fusing unit cover [A] (☞ x 2).
2. Remove two springs [B] and two support plates [C] (☞ x 2).
3. Disassemble the fusing unit (☞ x 2).

3.7.3 REPLACING THE PRESSURE ROLLER



H310R017.WMF

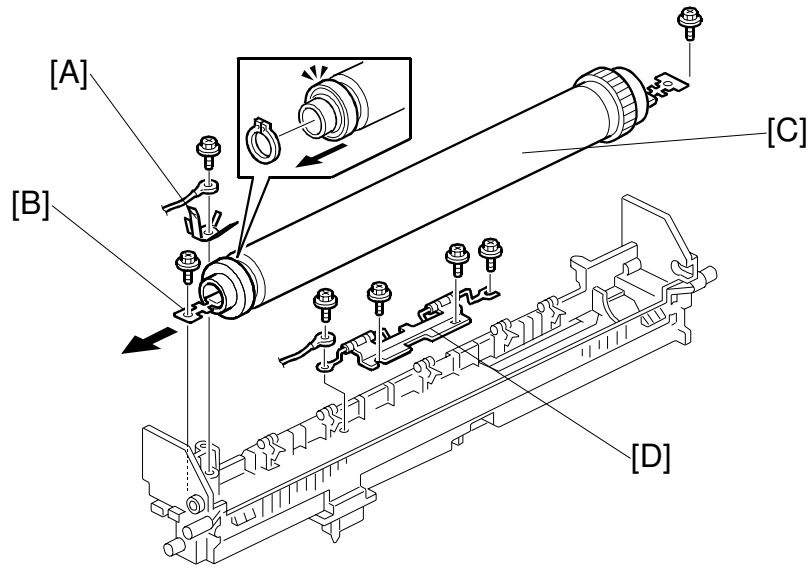


H310R018.WMF

1. Remove the two bushings [A], two metal levers [B] and the two levers [C].
2. Remove the pressure roller.

NOTE: The marked end of the roller [D] must be at the front side of the machine.

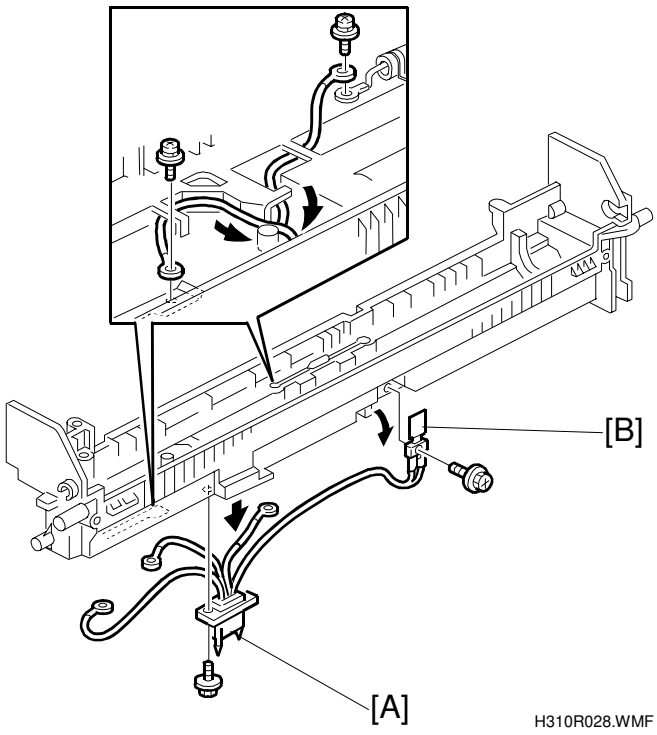
3.7.4 REPLACING THE HOT ROLLER, FUSING LAMP, AND THERMOFUSE



H310R019.WMF

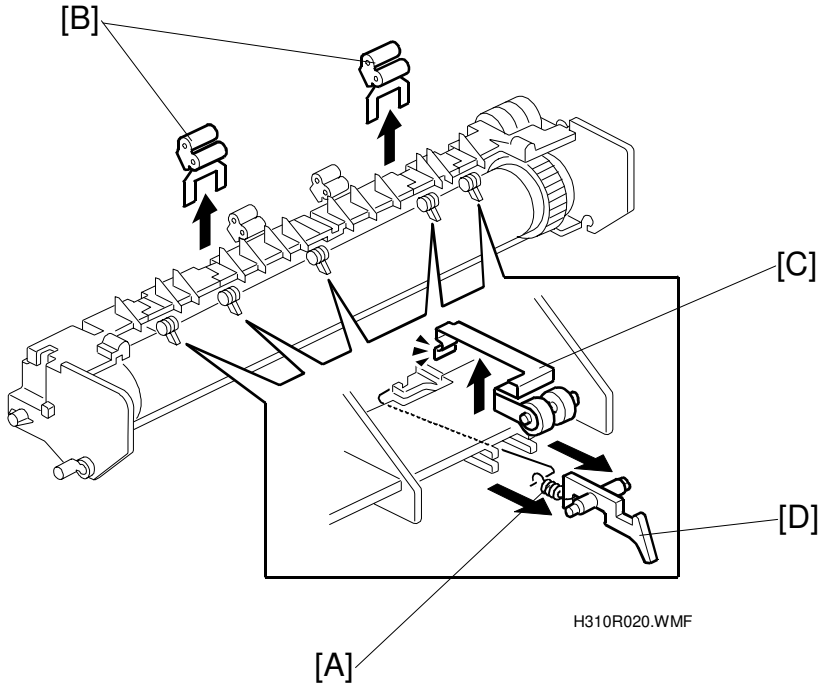
1. Remove the hot roller stripper springs and the grounding plate [A] (☞ x 1).
2. Remove the fusing lamp [B] (☞ x 2), bushings, and hot roller [C].
3. Remove the thermofuse [D] (☞ x 4).

3.7.5 REPLACING THE THERMISTOR



1. Remove the cable terminal [A] (☞ x 3).
2. Remove the thermistor [B] (☞ x 1).

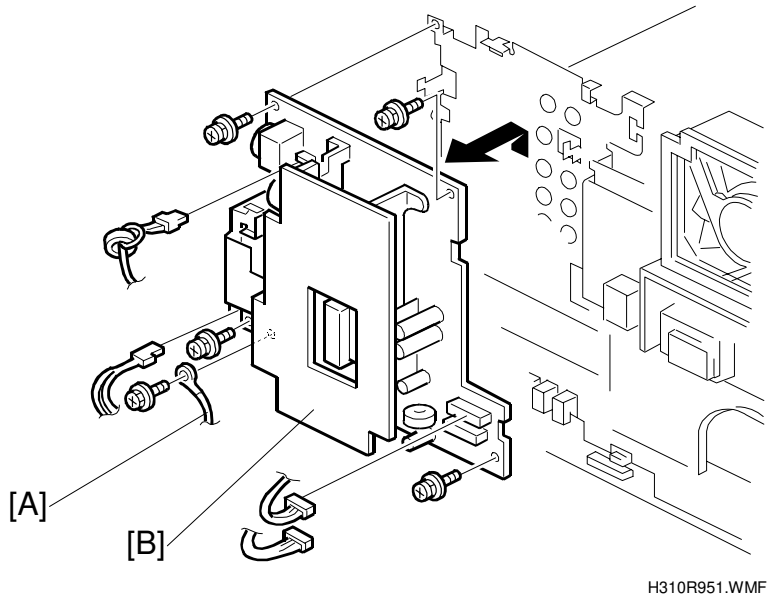
3.7.6 REPLACING THE HOT ROLLER STRIPPERS



1. Disconnect the springs [A].
2. Remove the two outer exit rollers [B].
3. Release the stoppers [C] and remove the hot roller strippers [D].

3.8 PCBS

3.8.1 REPLACING THE PSU



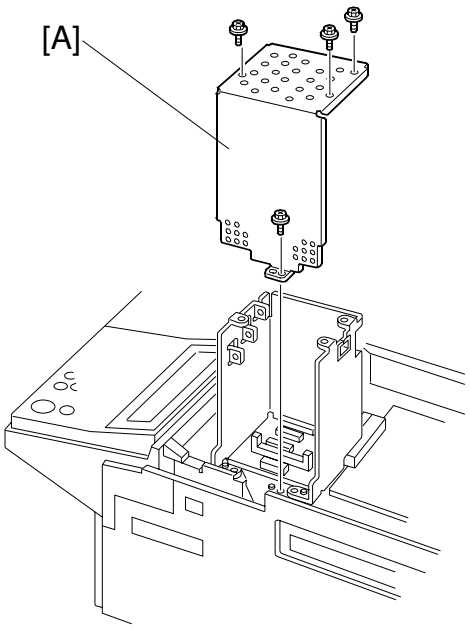
1. Remove the rear cover. (☛ 3.1.3)
2. Lift the PSU [B] out of the machine (🔩 x 5, ✋ x 4, 1 grounding wire [A]).

⚠CAUTION

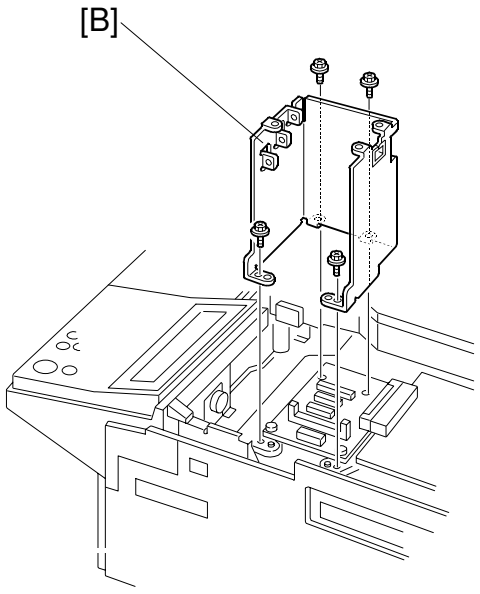
When removing the PSU, make sure to first turn off the main power and unplug the power cord. This is done to eliminate the risk of electrical shock.

3.8.2 REPLACING THE OPIF/NCU/FCU

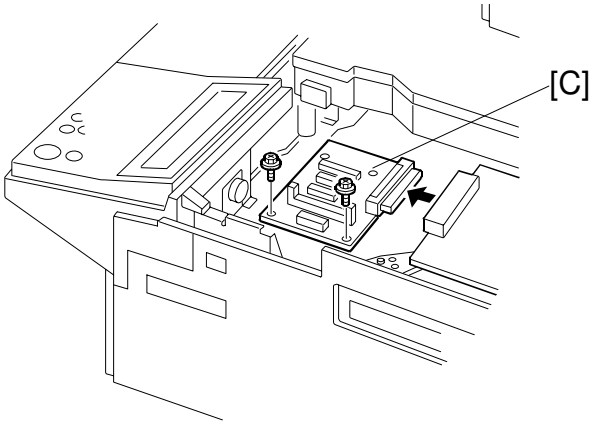
1. OPIF board



H310R960.WMF



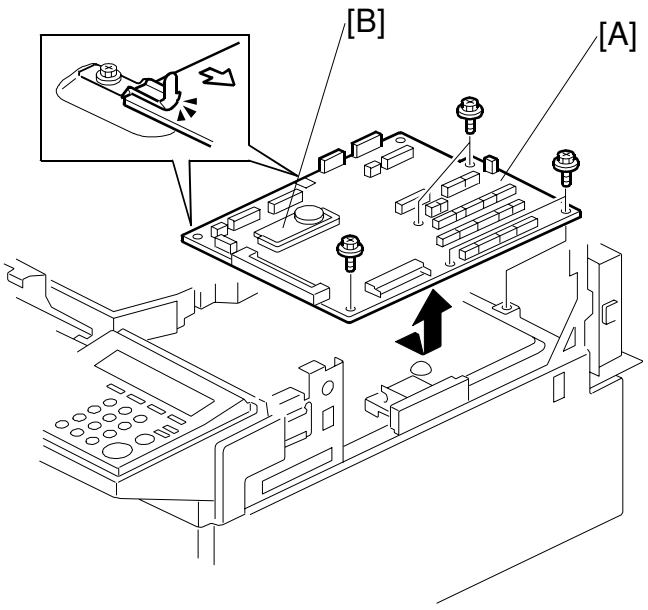
H310R961.WMF



H310R962.WMF

1. Remove the upper cover (☛ 3.1.4).
2. Remove the bracket cover [A] (☞ x 4).
3. Remove the bracket [B] (☞ x 4).
4. Remove the OPIF board [C] (☞ x 2).

2. FCU and MBU boards



H310R023.WMF

⚠CAUTION

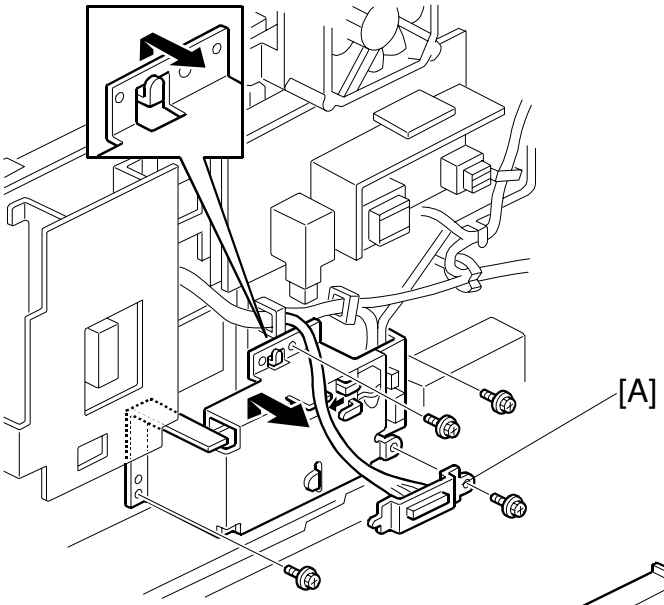
Make sure to first turn off the main power and unplug the power cord. This is done to eliminate the risk of electrical shock.

1. Remove the upper cover (☛ 3.1.4).
2. Disconnect the harnesses.
3. Remove the FCU board [A] (☞ x 4).
4. Remove the MBU board [B] from the old FCU and connect it to the new FCU.

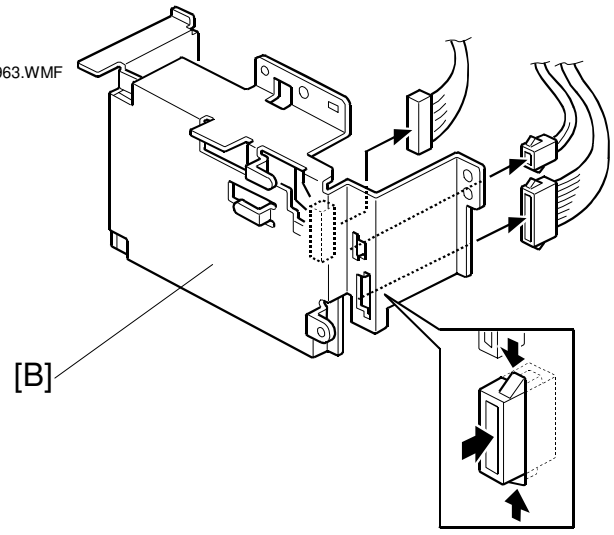
If you have to replace the MBU, first try to upload the RAM data from the MBU to an IC card, then try to download it to the new card after reassembling the machine.

Make sure that the battery switch on the MBU is at the ON position.

3. NCU board



H310R963.WMF



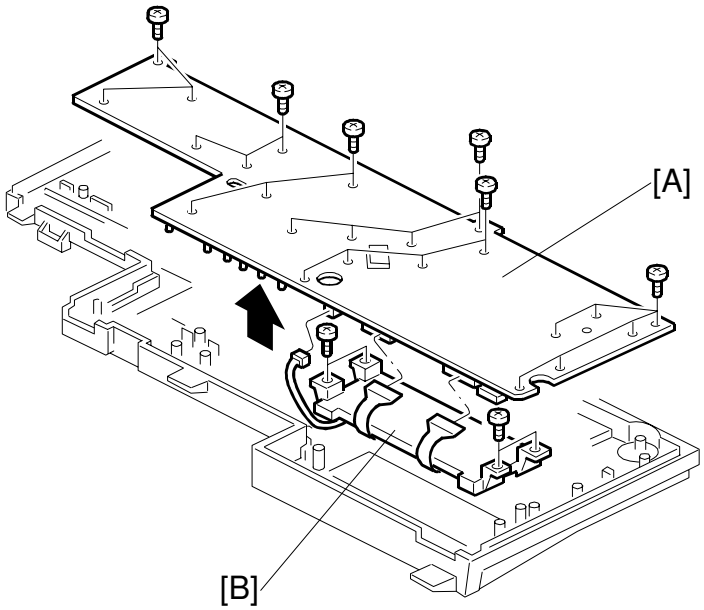
H310R964.WMF

⚠CAUTION

Make sure to first turn off the main power and unplug the power cord. This is done to eliminate the risk of electrical shock.

1. Remove the rear cover (☛ 3.1.3).
2. Remove the relay connector bracket [A] (🔩 x 1).
3. Remove the NCU board unit [B] (🔩 x 3, ✋ x 3).

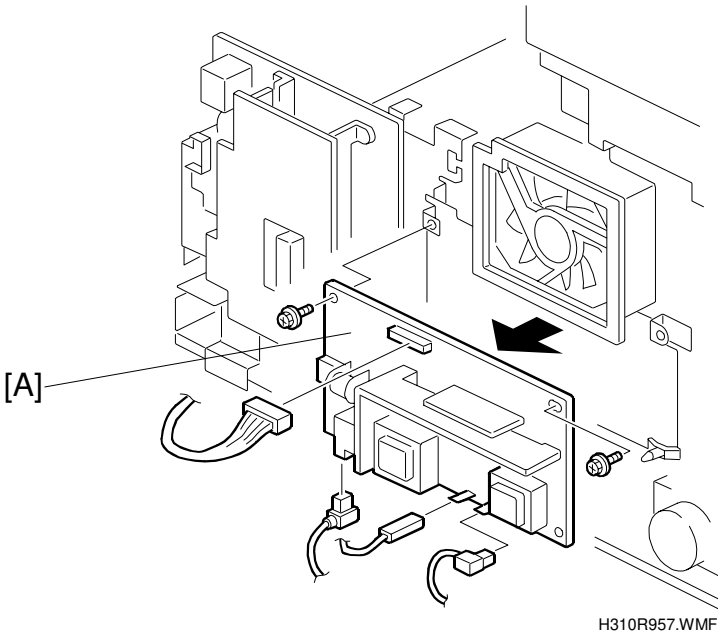
3.8.3 REPLACING THE LCD CONTROLLER AND LCD BOARD



H310R012.WMF

1. Remove the upper cover (☛ 3.1.4).
2. Remove the operation panel (☛ 3.1.4).
3. Remove the LCD controller board [A] (🔩 x 23).
4. Remove the LCD board [B] (🔩 x 4, ✋ x 2).

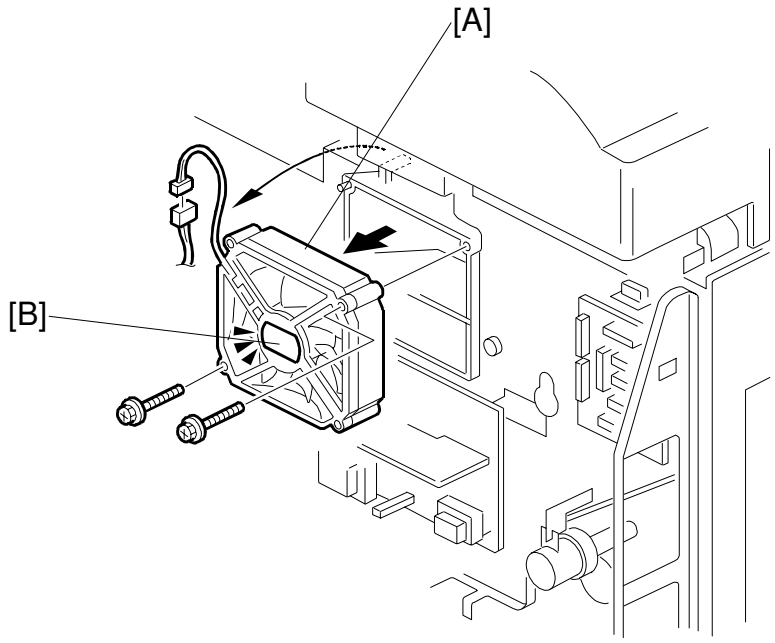
3.8.4 REPLACING THE POWER PACK



1 Remove the rear cover (☛ 3.1.3)

2 Remove the power pack [A] (x 2, x 4)

3.8.5 REPLACING THE COOLING FAN



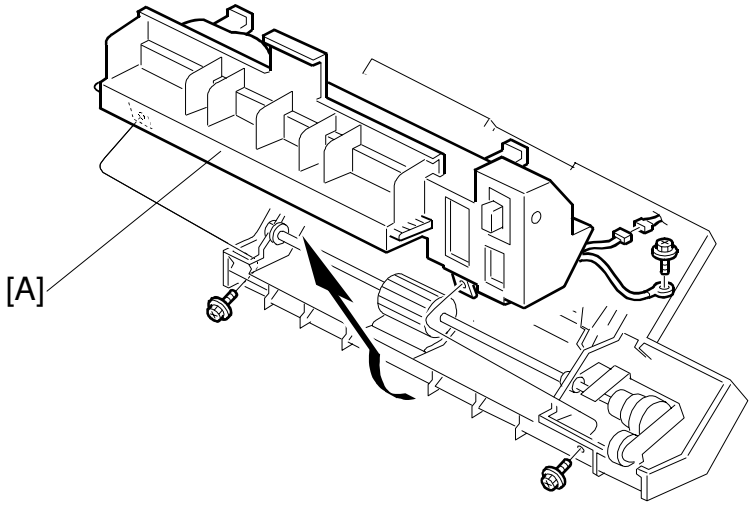
H310R024.WMF

1. Replace the rear cover (☛ 3.1.3)
2. Remove the cooling fan [A] (🔩 x 2, ✋ x 1)

NOTE: The decal on the surface of the fan [B] must be at the rear side of the machine.

3.9 BYPASS FEEDER UNIT

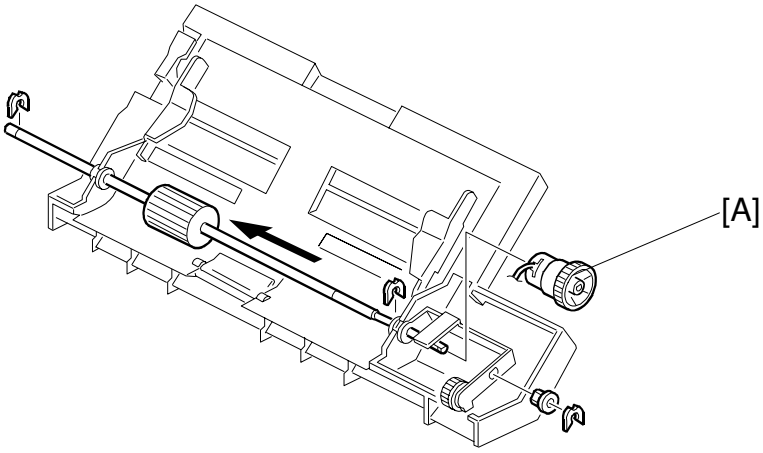
3.9.1 DISASSEMBLING THE BYPASS FEEDER UNITS



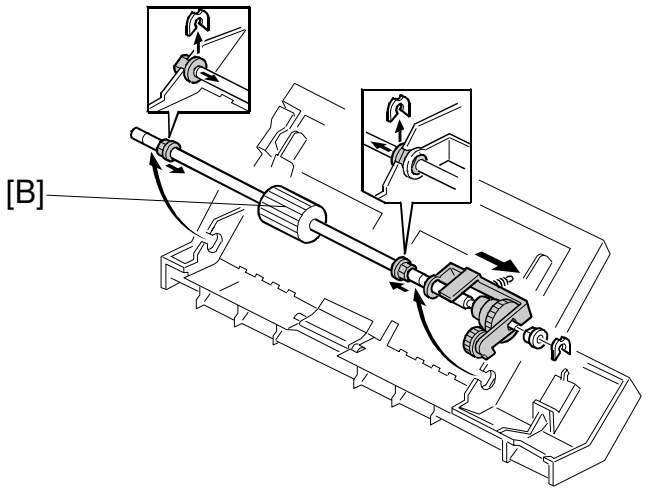
H310R030.WMF

1. Remove the unit [A] (x 2, x 1, 1 grounding wire)

3.9.2 REPLACING THE CLUTCH AND PAPER FEED ROLLER



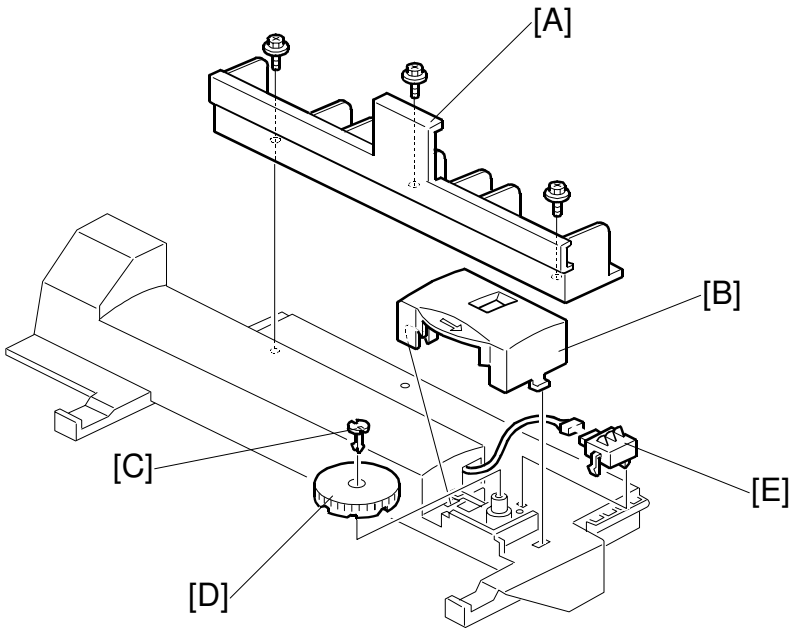
H310R035.WMF



H310R034.WMF

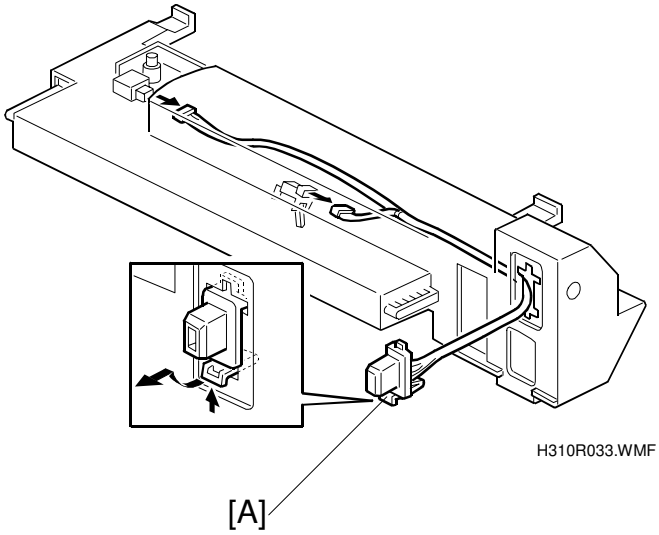
1 Remove the spring and three clips.
2 Remove the clutch [A].
3 Remove the paper feed roller [B].

3.9.3 REPLACING THE PAPER SIZE DETECTION SWITCH

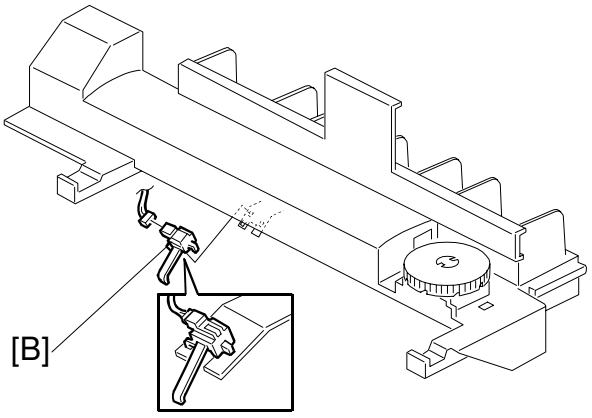


1 Remove the bypass cover [A] (☞ x 3)
2 Remove the dial cover [B].
3 Remove the pin [C] and dial [D].
4 Remove the switch [E] (☜ x 1).

3.9.4 REPLACING THE CONNECTOR AND PAPER END SENSOR



H310R033.WMF



H310R031.WMF

1 Disconnect the harness (☞ x 2).
2 Remove the connector [A].
3 Disconnect the harness (☞ x 1).
4 Remove the paper end sensor [B].

3.10 DATA OR FIRMWARE DOWNLOAD/UPLOAD

⚠CAUTION

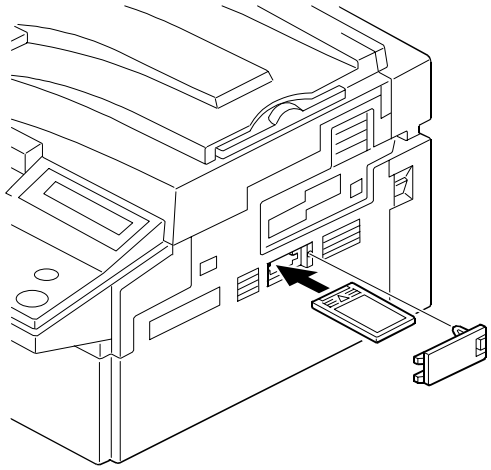
1. **Make sure to turn the power off before inserting the IC card.**
2. **If the optional 40MB memory card (feature expander or fax on demand) is installed, make sure to re-install it before turning the power on in Step 7 below. Otherwise, programmed data may be lost.**

If copying the firmware onto an IC card beforehand with MCE (Memory Card Explorer),.please confirm that the start address and firmware file are as follows:

Firmware	Start address	Firmware file type
MBU (FCU)	0H	*. bin
SG3	200000H	*. rdt / *. mdt
SiG4		
NIC-F		
JPEG		

3.10.1 DATA COPY BETWEEN THE IC CARD AND MACHINE

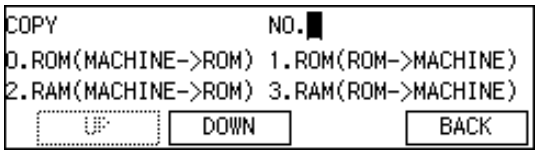
Use the following procedure to copy data between the IC card and mainframe.



H310R965.WMF

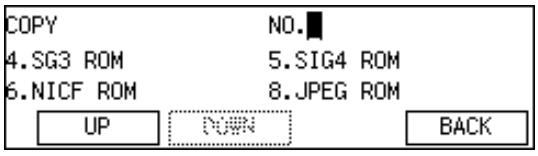
1. Turn the main power OFF. Then, insert the IC card into the IC card slot on right side of the machine.
   NOTE: The IC card should be oriented with the “A” side facing up, as shown.

2. Turn the main power ON.
   If the menu does not appear, enter service mode and use service function 12



H310R501.BMP

3. Select the appropriate item.
   NOTE: To copy optional firmware, scroll down using the “DOWN” key.



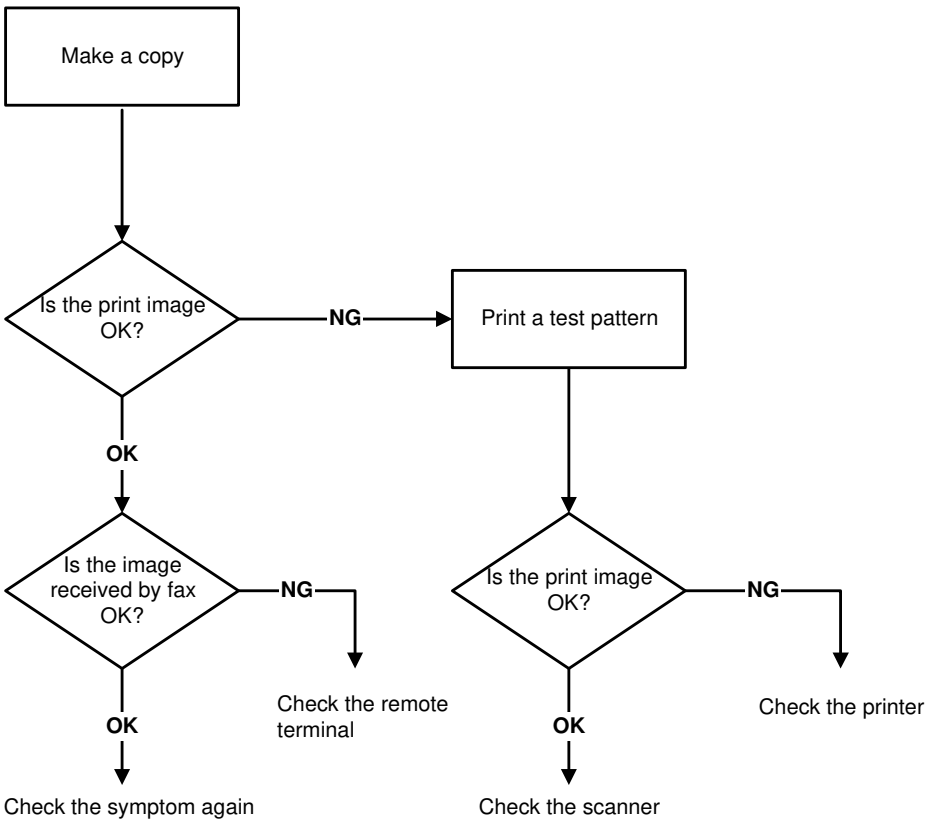
H310R502.BMP

4. Press Start.
5. If “OK” is displayed, exit the function and turn the power OFF.
   If “NG!!” is displayed, repeat from step 1.
6. Remove the IC card, re-insert the 40MB memory card (if present) and reattach the small cover.
7. After uploading firmware: Turn the main power back ON and check the ROM version in Service mode (Function 23).

4. TROUBLESHOOTING

4.1 COPY QUALITY TROUBLESHOOTING

If there is a copy quality problem that cannot be solved easily, try using the following troubleshooting procedures, while referring to the point-to-point diagram. The procedures may not be exhaustive, but they may help you to find the problem.



H310T501.WMF

First, distinguish whether the problem is caused by the remote terminal or by your machine. If your machine causes the problem, determine whether it is due to a scanner or printer problem.

4.1.1 BLANK COPIES

Possible Cause (Printer)

- Poor drum sensitivity.
- Laser optic components are out of position.
- The proper bias voltages are not applied to the development roller.
- The proper current is not applied to the transfer roller.

Action:

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if there is toner adhered to the drum surface.
   If there is, do the following. If not, go to step 3.
   - Check to see if the cartridge is correctly installed.
   - Check to see if the transfer roller is correctly positioned.
3. Check if there is toner on the surface of the development roller.
   If there is, do the following. If not, go to step 4.
   - Check to see if the laser optic components are properly positioned.
4. Check to see if the cartridge is empty. If it is, replace the cartridge.
   If not, do the following.
   - Check the connection between the FCU (CN15) and the toner end sensor
   - Replace the toner end sensor.

4.1.2 BLACK COPIES

Possible Cause (Scanner)

- The contact image sensor.

Action:

1. Check the connection between the FCU (CN21) and the contact image sensor.
2. Replace the contact image sensor.

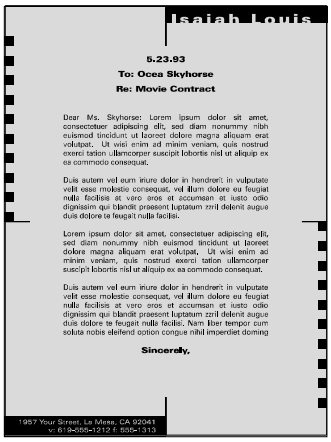
Possible Cause (Printer)

- The charge is incorrectly applied.

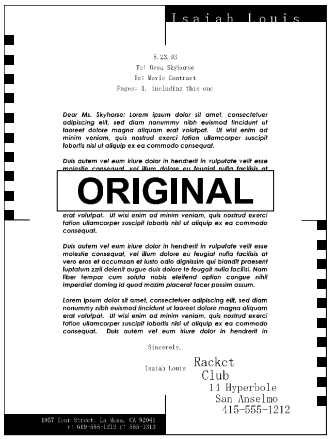
Action:

1. Check the connections between the power pack, the charge voltage terminals, and the cartridge.
   - If they are OK, go to step 2.
   - If not, fix the connections.
2. Check the connections behind the power pack.

4.1.3 DIRTY BACKGROUND



H310T502.WMF



H310T503.WMF

Possible Cause (Scanner)

- Scanner shading correction error

Action:

1. Clean the shading white plate.
2. Replace the contact image sensor if necessary.

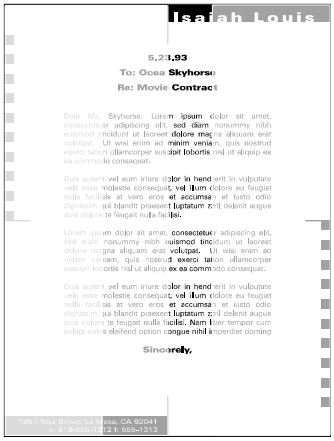
Possible Cause (Printer)

- Poor drum sensitivity.
- The charge is incorrectly applied.
- The hot roller is dirty.

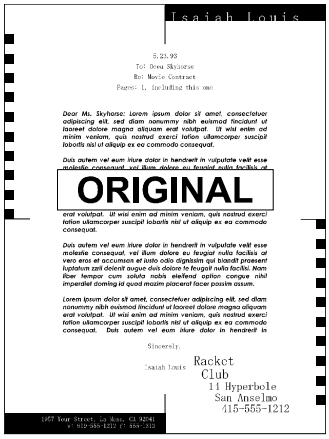
Action:

1. Try replacing the cartridge.
2. Check to see if the hot roller surface is dirty.
   - If it is, clean the roller.
   - If not, go to step 3.
3. Check to see if all the charge bias terminals and the cartridge.
   - If they are, check or replace the power pack.
   - If not, fix the connections.

4.1.4 UNEVEN IMAGE DENSITY



H310T504.WMF



H310T503.WMF

Possible Cause (Scanner)

- Dirty exposure glass
- Partial scanner lamp defect

Action

- Clean the exposure glass of the contact image sensor.
- Replace the contact image sensor.

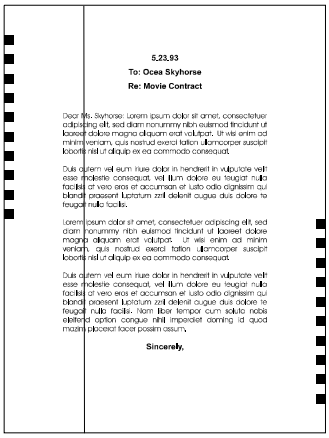
Possible Cause (Printer)

- Poor drum sensitivity.
- Dirty laser optic components.
- A deformed toner doctor blade.
- Uneven toner supply in the toner hopper.

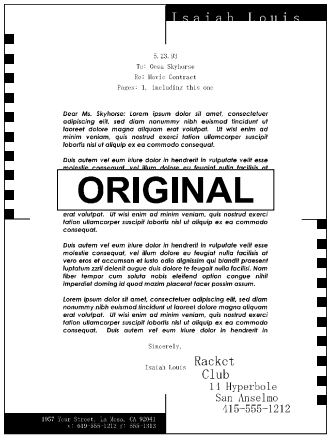
Action:

1. Print a solid black test pattern, and open the cover in the middle of printing.
2. If the image is lighter in the center of the image, the toner may be low. Replace the cartridge. If it is not, go to step 3.
3. Check to see if the toner is evenly distributed on the drum.
   - If it is not, check the cartridge and the laser optic components.
   - If it is, check if there is any dirt on the transfer roller surface.

4.1.5 VERTICAL BLACK LINES



H310T505.WMF



H310T503.WMF

Possible Cause (Scanner)

- Dirt or dust on the exposure glass and/or optical mirror(s).
- Dirty white plate in the ADF.
- Defective contact image sensor.

Action:

1. Clean the exposure glass and the shading white plate.
2. Replace the contact image sensor

Possible Cause (Printer)

- Damaged cleaning blade.
- Dirty hot roller stripper(s).

Action:

1. Replace the cartridge.
2. Clean the hot roller strippers.

4.1.6 HORIZONTAL BLACK LINES

H310T506.WMF

H310T507.WMF

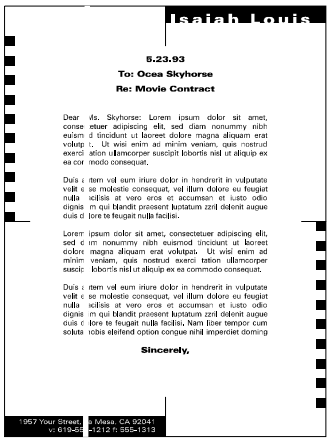
Possible Cause (Printer)

- The drum surface is scratched or damaged.

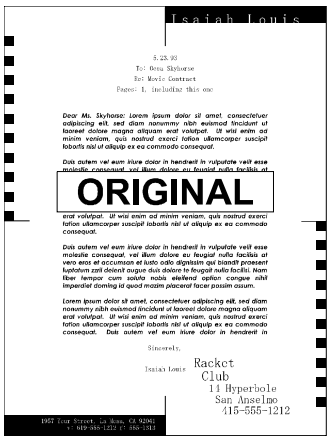
Action:

1. Check to see if the surface of the drum is damaged.
   - Change the cartridge if it is damaged.

4.1.7 VERTICAL WHITE LINES



H310T508.WMF



H310T503.WMF

Possible Cause (Scanner)

- Dirty white plate in the ADF.
- Defective contact image sensor.

Action:

1. Clean the exposure glass and the shading white plate.
2. Replace the contact image sensor.
-

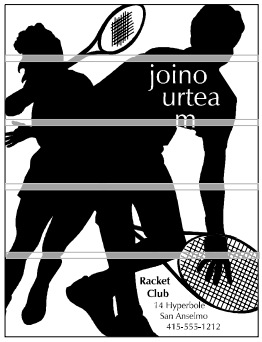
Possible Cause (Printer)

- The laser optic components are dirty.
- The hot roller stripper scrapes off toner from the print paper.
- Damaged cleaning blade.

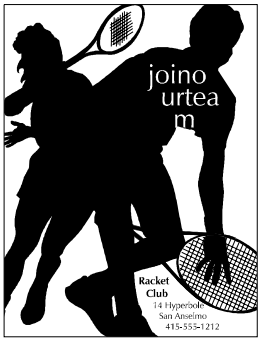
Action:

- Clean the laser optic components.
- Check the hot roller stripper mechanism. Clean the strippers and replace them if they are damaged.
- Replace the cartridge.

4.1.8 HORIZONTAL WHITE LINES



H310T509.WMF



H310T507.WMF

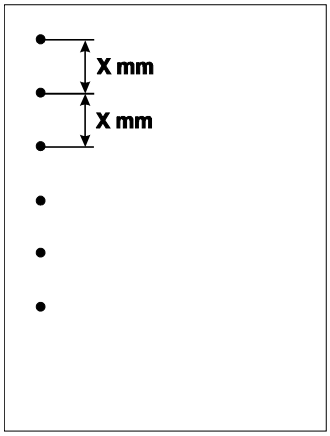
Possible Cause (Printer)

- A damaged or deformed development roller surface.
- The development bias is unstable.
- The transfer current is unstable.

Action:

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if horizontal white lines (where toner is not adhered) appear on the drum surface or not.
   - If not, check the transfer roller surface and the transfer bias terminal connections. If they are OK, check or replace the power pack.
   - Change the cartridge.

4.1.9 BLACK DOTS/SPOTS



H310T510.WMF

Rollers	Diameter (mm)	Circumference (mm)
Registration Roller	14.24	44.7
OPC Drum	30	94.2
Charge Roller	14	44.0
Development Roller	20	62.8
Transfer Roller	16.15	50.7
Hot Roller	30.8	96.9
Pressure Roller	25	78.5

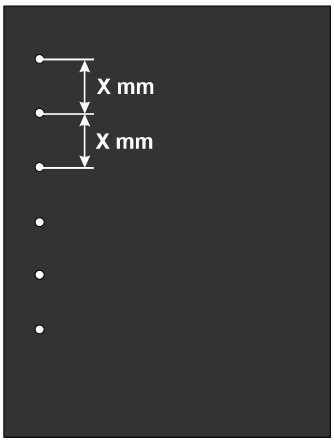
Possible Cause (Printer)

- The surface of a roller is damaged or dirty (see the table above)

Action:

- Clean the rollers
- Replace the rollers if necessary.

4.1.10 WHITE SPOTS IN BLACK IMAGE AREAS



H310T511.WMF

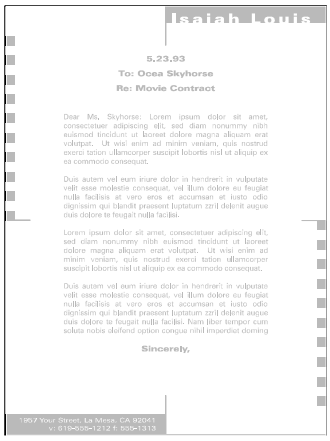
Possible Cause (Printer)

- The surface of a roller is damaged or dirty

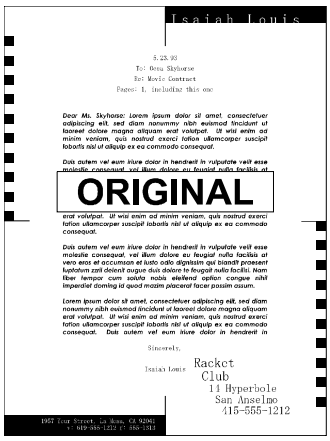
Action:

- Clean the rollers
- Replace the cartridge if necessary.

4.1.11 FAINT COPIES



H310T512.WMF



H310T503.WMF

Possible Causes (Scanner)

- Dirty shading plate and/or exposure glass
- Contact image sensor defective

Action:

- Clean the white roller in the ADF.
- Clean the optical mirrors
- Replace the contact image sensor.

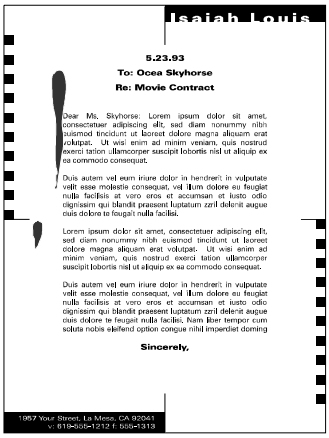
Possible Causes (Printer)

- Poor drum sensitivity.
- Dirty laser optic components.
- Incorrect development/ transfer bias
- Low toner
- Low fusing temperature

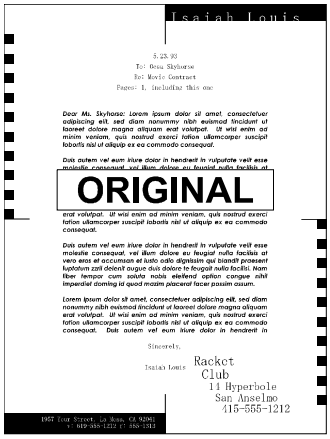
Action:

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if the toner on the paper at the entrance of the fusing unit appears faint.
   - If it does, check or replace the fusing lamp, thermistor, and PSU.
   - If it does not, go to step 3.
3. Check to see if the toner on the drum looks faint.
   - If it does, go to step 4.
   - If it does not, check the contacts between the transfer bias terminals and power pack.
4. Check all the contacts between the development bias terminals.
   - If it does not, try replacing the cartridge.

4.1.12 VERTICAL BLACK BAND



H310T513.WMF



H310T503.WMF

Possible Cause (Printer)

- A deformed, damaged, or incorrectly positioned doctor blade.

Action:

- Replace the cartridge.

4.1.13 UNFUSED COPIES

Possible Cause (Printer)

- The thermistor is defective.
- The spring mechanism for the fusing pressure roller is defective.
- Incorrect toner type.
- Non-recommended paper type.

Action:

1. Check to see if the correct type of paper and toner are in use.
   - If it is, go to step 2.
   - If not, use recommended types of paper and toner.
2. Try replacing the fusing unit.

4.1.14 GHOST IMAGE

Possible Cause (Printer)

- Poor drum sensitivity.
- The cleaning blade is deformed or incorrectly positioned.
- Dirty hot roller

Action:

- Replace the cartridge.
- Clean the hot roller surface and/or replace the cleaning pad.

4.1.15 TONER ON THE BACK OF THE PRINTER PAPER

Possible Cause (Printer)

- Dirty transfer roller
- Dirty fusing pressure roller

Action:

1. Check to see if the transfer roller is dirty with toner.
   - If it is, clean the roller surface by copying a sheet of white paper three times or more. (For better results, copy one sheet at a time)
   - If not, go to step 2.
2. Check to see if the fusing pressure roller is dirty with toner.
   - If it is, clean the fusing pressure roller.
   - If not, check for any other dirty rollers and clean them.

4.1.16 INCORRECTLY ALIGNED OUTPUT (DATA SHIFTED TO THE RIGHT OR LEFT)

Possible Cause (Scanner)

- Incorrect setting of the document guide.

Action:

- Align each side of the document with the document guides.

Possible Cause (Printer)

- Laser optics are aligned incorrectly.
- Improper print margin setting (main scan direction).

Action:

- Adjust the main scan print margin.
- Check that the laser optics are aligned correctly.

4.1.17 INCORRECTLY ALIGNED OUTPUT (IMAGE SHIFTED VERTICALLY)/REDUCED IMAGE

Possible Cause:

- Improper print margin (sub-scan direction).
- Dirty registration roller.

Action:

- Adjust the sub-scan print margin.
- Clean the registration roller.

4.2 MECHANICAL PROBLEMS

4.2.1 ADF/SCANNER

1. Non Feed

Possible Cause:

- Use of the incorrect document type or size.
- The operation panel is not closed properly.
- The pick-up rollers and feed belt are dirty or worn out.
- The mechanical clutch mechanism for document pick-up is defective.
- Incorrect positioning of the separation roller.
- The scanner motor is defective.

Action:

1. Check whether a correct document type is being used.
2. Check that the operation panel is closed securely.
3. If the problem remains, do the following:
   - Clean the pick-up rollers and feed belt with a soft cloth and water, and replace them if damaged.
   - Check the connection between the FCU (CN32) and the scanner motor.
   - Replace the scanner motor.

2. Jam

Possible Cause:

- Incorrect document type or size.
- The document is too long.
- The scanner rollers (pick-up, feed, R0, R1, and R2 rollers) are dirty.
- Obstruction in the document paper path.
- The scan line sensor is defective.
- Defective scanner motor

Action:

1. Check whether a correct document type is being used, and that the document length is within the maximum limit.
2. Check for obstructions in the paper path.
3. If the problem remains, do the following.
   - Clean the rollers with a soft cloth and water, and replace them if damaged.
   - Check that the S2 sensor is working correctly.
   - Replace the scanner motor.

3. Skew

Possible Cause:

- Incorrect document type or size.
- The document guide is set incorrectly.
- The operation panel is not closed properly.
- The scanner rollers (pick-up, feed, R0, R1, and R2 rollers) are dirty.
- Obstruction in the document paper path.
- The reverse roller is out of position.

Action:

1. Check whether a correct document type is being used.
2. Check that the operation panel is closed securely and that the document guide is set properly.
3. Check for obstructions in the paper path.
4. If the problem remains, do the following.
   - Check that the separation roller is set properly. Replace it if damaged.
   - Clean the rollers with a soft cloth and water, and replace them if damaged.

4. Multi-feed

Action:

- Clean or replace the reverse roller.

4.2.2 PRINTER

1. Non-feed

Possible Cause:

- Use of a non-recommended paper type.
- The paper cassette end fence is set incorrectly.
- The paper lift mechanism is not working properly.
- Malfunction in the paper feed clutch.
- The paper feed roller is set incorrectly.
- The paper feed motor is defective.
- The registration sensor is defective.

Action:

3. Check whether a correct paper type is being used.
4. Check that the paper cassette end fence is set correctly and check the paper lift mechanism.
5. Check that the feed clutch for the cassette is working properly.
6. Check that the paper feed roller is installed properly. Clean or replace if necessary.
7. Check the registration roller and its mechanism. Clean or replace if necessary.
8. Check that the sensor is working correctly.
9. If the problem remains, do the following:
   - Check the connections between the FCU (CN33) and the paper feed motor.
   - Replace the paper feed motor.

2. Jam - Inside and Exit

Possible Cause:

- Use of a non-recommended type of paper.
- Obstruction in the paper path.
- The exit sensor is defective.
- Malfunction in the AIO cartridge drive mechanism.
- Malfunction in the fusing drive mechanism.
- Malfunction in the hot roller stripper(s) mechanism.
- Malfunction in the pressure mechanism in the fusing unit.

Action:

1. Check whether a correct type of paper is being used.
2. Check for obstructions in the paper path.
3. Check that the exit sensor is working correctly.
4. Check all the gears in the fusing drive mechanism.
5. Check that the exit sensor is working correctly.
6. Check that the main motor is working correctly.
7. Check the hot roller strippers and the pressure mechanism in the fusing unit.

3. Skew

Possible Cause:

- Use of a non-recommended type of paper.
- Incorrect positioning of the paper guides in the paper cassette.
- The separation pad is out of position.
- The paper feed roller is worn out or damaged.
- Obstruction in the paper path.
- Malfunction in the registration mechanism.

Action:

1. Check whether a correct type of paper is being used.
2. Check that the paper guides and the end fence are set correctly.
3. Check if the paper feed roller is installed correctly and clean. Replace if necessary.
4. Check for obstructions in the paper path.
5. Check the registration mechanism and clean or replace the rollers if necessary.

4. Multi-feed

Possible Cause:

- Use of a non-recommended type of paper.
- Incorrect positioning of the paper guides and/or end fence in the paper cassette.
- The separation pad is out of position.

Action:

1. Check whether a correct type of paper is being used.
2. Check that the paper guides and the end fence are set correctly.

4.3 SERVICE CALL CONDITIONS

If the Call Service indicator is lit, one of the following conditions has occurred.

Symptom	Error Code	SC-code
The white plate scan data is below the target level.	1-04	0101
Charge leak current detected while the charge roller was activated.	9-17	0302
No polygonal motor synchronization signal detected.	9-20	0322
Development leak current detected while the develop roller was operating.	9-29	0391
For 200ms straight, the machine detects a PWM output duty ratio of ≤ 10% despite a feedback voltage of ≤1V, or a duty ratio of ≥ 50% despite a feedback voltage of ≥ 2.5V.	9-29	0401
For 200ms straight, the machine detects a PWM output duty ratio of ≤ 10% despite a feedback voltage of ≥ 4V, or a duty ratio of ≥ 50% despite a feedback voltage of ≥ 3.2V	9-29	0402
Main motor error	9-24	0500
Thermistor failure	9-22	0541
During fusing roller warmup, within a 1 minute period, the fusing temperature fails to 1) rise from 25°C or more below target to 20°C below target, 2) rise 3°C in the last 5 seconds or to a temperature above the first reading.	9-22	0542
During fusing roller warmup, the machine detects a fusing temperature of 230°C or higher for 1 second.	9-22	0543
During printing, the machine detects a fusing temperature of 130°C or lower for 1 minute.	9-22	0544
During printing, the machine detects a fusing temperature change of ±25°C two times consecutively.	9-22	0546
The destination code in the PSU and fusing unit do not match.	9-22	0547
During printing, the machine detects a fusing temperature above the allowable error detection maximum for 10 seconds.	9-22	0548
During printing, the machine detects a fusing temperature below the allowable error detection minimum of for 6 seconds.	9-22	0549
The fusing temperature fails to drop down to the standby temperature within a specified period of time.	9-22	0550
During high temperature standby, the machine detects a fusing temperature of 195°C or higher for 10 seconds.	9-22	0551
The machine detects a fusing temperature of 150°C or lower 6 seconds during high temperature standby mode, or 50°C or lower for 6 seconds during fax standby mode.	9-22	0552

To release an SC code indication relating to the fusing unit (9-22), check and replace the fusing unit first. Then set printer switch 01 bit 0 to 1 and turn the power off and on.

4.4 ERROR CODES

If an error code occurs, retry the communication. If the same problem occurs, try to fix the problem as suggested below. Note that error codes 4-00, 01, and 10 only appear in the error code display and on the service report.

Code	Meaning	Suggested Cause/Action
0-00	DIS/NSF not detected within 40 s of Start being pressed	Check the line connection. Check the NCU - FCU connectors. The machine at the other end may be incompatible. Replace the NCU or FCU. Check for DIS/NSF with an oscilloscope. If the rx signal is weak, there may be a bad line.
0-01	DCN received unexpectedly	The other party is out of paper or has a jammed printer. The other party pressed Stop during communication.
0-03	Incompatible modem at the other end	The other terminal is incompatible.
0-04	CFR or FTT not received after modem training	Check the line connection. Check the NCU - FCU connectors. Try changing the Tx level and/or cable equalizer settings. Replace the FCU or NCU. The other terminal may be faulty; try sending to another machine. If the rx signal is weak or defective, there may be a bad line.
0-05	Unsuccessful after modem training at 2400 bps	Check the line connection. Check the NCU - FCU connectors. Try adjusting the Tx level and/or cable equalizer. Replace the FCU or NCU. Check for line problems. **Cross reference** See error code 0-04.
0-06	The other terminal did not reply to DCS	Check the line connection. Check the FCU - NCU connectors. Try adjusting the Tx level and/or cable equalizer settings. Replace the NCU or FCU. The other end may be defective or incompatible; try sending to another machine. Check for line problems. **Cross reference** See error code 0-04.

Code	Meaning	Suggested Cause/Action
0-07	No post-message response from the other end after a page was sent	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. The other end may have jammed or run out of paper. The other end user may have disconnected the call. Check for a bad line. The other end may be defective; try sending to another machine.
0-08	The other end sent RTN or PIN after receiving a page, because there were too many errors	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. The other end may have jammed, or run out of paper or memory space. Try adjusting the Tx level and/or cable equalizer settings. The other end may have a defective modem/NCU/FCU; try sending to another machine. Check for line problems and noise.
0-14	Non-standard post message response code received	Check the FCU - NCU connectors. Incompatible or defective remote terminal; try sending to another machine. Noisy line: resend. Try adjusting the Tx level and/or cable equalizer settings. Replace the NCU or FCU. **Cross reference** See error code 0-08.
0-15	The other end does not have the confidential, transfer, or SEP/SUB/PWD function	The other terminal does not have the confidential rx or transfer function, or the other terminal does not have SEP/SUB/PWD function. The other terminal's memory is full.
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. Try adjusting the Tx level and/or cable equalizer settings. The other end may have disconnected, or it may be defective; try calling another machine. If the rx signal level is too low, there may be a line problem. **Cross reference** See error code 0-08.
0-17	Communication was interrupted by pressing the Stop key	If the Stop key was not pressed and this error keeps occurring, replace the operation panel or the operation panel drive board.

Code	Meaning	Suggested Cause/Action
0-20	Facsimile data not received within 6 s of retraining	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. Check for line problems. Try calling another fax machine. Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting. **Cross reference** Reconstruction time - G3 Switch 0A, bit 6 Rx cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX)
0-21	EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal	Check the connections between the FCU, NCU, & line. Check for line noise or other line problems. Replace the NCU or FCU. The remote machine may be defective or may have disconnected. **Cross reference** Maximum interval between EOLs and ECM frames - G3 Bit Switch 0A, bit 4
0-22	The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 0.2 s)	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. Defective remote terminal. Check for line noise or other line problems. Try adjusting the acceptable modem carrier drop time. **Cross reference** Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1
0-23	Too many errors during reception	Check the line connection. Check the FCU - NCU connectors. Replace the NCU, FCU or FCU. Defective remote terminal. Check for line noise or other line problems. Try asking the other end to adjust their Tx level. Try adjusting the rx cable equalizer setting and/or rx error criteria. **Cross reference** Rx cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX) Rx error criteria - Communication Switch 02, bits 0 and 1
0-24	Printer failure occurred while the memory was full during non-ECM reception; negative response returned	There is no memory space available, or substitute reception is disabled. Try asking the user to add optional extra memory.
0-25	The SAF memory has reached capacity after the machine has switched from immediate to substitute reception due to insufficient page memory.	Try asking the user to add optional extra memory.

Code	Meaning	Suggested Cause/Action
0-29	Data block format failure in ECM reception	Check for line noise or other line problems. Check the FCU - NCU connectors. Replace the NCU or FCU.
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	Check the line connection. Check the FCU - NCU connectors. Try adjusting the Tx level and/or cable equalizer settings. The other terminal may not be compatible. **Cross reference** Dedicated Tx parameters - Section 4-4
0-32	Incompatible capability command was received.	The machine at the other end could not detect DIS/NSF signal correctly.
0-33	DCR timer runs out without receiving certain amount of data.	Check the connections between the FCU, NCU, & line. Check for line noise or other line problems. Replace the NCU or FCU. The remote machine may be defective or may have disconnected.
0-52	Polarity changed during communication	Check the line connection. Retry communication.
0-54	SG3 board did not respond to disconnect command.	Check the connections between the FCU and optional SG3 board Replace the SG3 board or FCU
0-55	SG3 board did not respond to initializing command.	
0-56	SG3 board command error	
0-70	Communication mode specified in CM/JM was not available. V.8 sequence: Tx/Rx	The other terminal did not have a compatible communication mode. A polling Tx file was not ready at the other terminal when polling reception was initiated from the Tx terminal.
0-74	Fallback to T.30 protocol, after transmitting CI because ANSam was not detected V.8 sequence: Tx	The Tx terminal could not detect ANSam due to noise, poor line condition, etc. Check for line noise, or line connection.
0-75	Fallback to T.30 protocol, because CM was not detected. (ANSam timeout) V.8 sequence: Rx	
0-76	Fallback to T.30 protocol because JM was not detected. (CM timeout) V.8 sequence: Tx	The Tx terminal could not detect JM due to noise, poor line condition, etc. Check for line noise, or line connection.
0-77	Fallback to T.30 protocol because CJ was not detected. (JM timeout) V.8 sequence: Rx	The Tx terminal could not detect CJ due to noise, poor line condition, etc. Check for line noise, or line connection.

Code	Meaning	Suggested Cause/Action
0-79	CI signal is detected while waiting V21 signal	Check the connections between the FCU, NCU, & line. Check for line noise or other line problems. Replace the NCU or FCU. The remote machine may be defective.
0-80	Line was disconnected due to timeout during line probing. V.34: line probing	Check the line connection or line noise. Check the connection between the NCU and the FCU. Increase the Tx level or adjust the cable equalizer setting. Use the V.17 or slower modem (with the dedicated Tx parameter).
0-81	Line was disconnected due to timeout during equalizer training. V.34: equalizer training	
0-82	Line was disconnected due to timeout during control channel start-up sequence. V.34: phase 4	
0-83	Line was disconnected due to time out during control channel restart sequence.	
0-84	Line was disconnected because error detected in control channel start-up sequence. V.34: phase 4	Check the connection between the NCU and the FCU. Replace the SG3 board or the FCU.
0-85	Line was disconnected because error detected in control channel restart.	
0-86	Line was disconnected because the other terminal requested a data rate by MPh that was not available in the selected symbol rate.	The other terminal may be defective or incompatible.
0-87	Control channel started after unsuccessful primary channel.	The Rx terminal restarted the control channel because data reception in the primary channel was not successful.
0-88	Line was disconnected because PPR was transmitted or received 9 times (default) times within the same ECM frame.	Use a lower data rate at the start. Increase the Tx level or adjust the cable equalizer setting.
1-00	Document jam	Incorrectly inserted document or unsuitable document type. Check the ADF drive components and sensors.
1-01	Document length exceeded the maximum	Try changing the maximum acceptable document length. Divide the document into smaller pieces. Check the ADF drive components and sensors. **Cross reference** Max. document length - Scanner switch 00, bits 2 and 3

Code	Meaning	Suggested Cause/Action
1-02	Shading error (Interval of original documents is too short)	Check the ADF drive components and sensors.
1-04	The white plate scan data is below the target level.	Check the CIS connection Replace the CIS or FCU
1-08	Shading error (No LED turns on)	
1-10	Paper at the scan line when the power was turned on.	Remove the paper. Check the scan line sensor.
1-17	Document jam in the feed-out area	Clear any debris from the sensor actuator. Check the ADF drive components and sensors.
1-20	Paper did not reach the fusing exit at the end of printing	Remove the paper. Check the printer drive components and sensors.
1-21	Paper present at the fusing exit after printing	
1-30	Paper ran out during printing	Add paper in the cassette.
1-34	Paper ran out after printing	
1-35	No paper lift detected at 1st tray of optional paper feed unit	Paper lift motor defective, replace PFU defective, replace Upper limit sensor defective, replace
1-36	No paper lift detected at 2nd tray of optional paper feed unit	
1-37	No paper lift detected at 3rd tray of optional paper feed unit	
1-38	No paper lift detected at 4th tray of optional paper feed unit	
1-71	The cover was opened or the cassette was pulled out during printing	Close the cover or put back the cassette Cover switch defective, replace
2-10	The modem cannot enter Tx mode	Replace the FCU.
2-11	Only one V.21 connection flag was received	
2-12	Modem clock irregularity	
2-13	Modem initializing error	
2-20	DCR Error when Tx	
2-22	JBIG compression error	Check the connection between FCU, optional SG3 and optional NCU board. Replace the optional SG3 board or the FCU.
2-23	JBIG ASIC detects error	
2-24	JBIG ASIC error	
2-25	JBIG data reconstruction error (BIH error)	
2-26	JBIG data reconstruction error (Float marker error)	
2-27	JBIG end marker error	

Code	Meaning	Suggested Cause/Action
2-30	JPEG initializing error	Replace the JPEG unit. Replace the FCU.
2-31	JPEG compression error	
2-32	JPEG – FCU handshake error	
2-50	The machine reset itself	If this is frequent, replace the FCU.
2-51	Fail safe timer runs out while communication	Replace the FCU.
2-52	Memory resource releasing error after communication	Check the connection between FCU, optional SG3 and optional NCU board.
2-53	Soft reset occurred	Replace the FCU
3-00	G4 interface board reset	Replace the G4 interface board or FCU.
3-01	SG3 interrupt error	Replace the SG3 board or FCU
3-02	SG3 response error	
3-10	Disconnection during ISDN G3 communication	Check the other terminal and the ISDN line. The other terminal may dialed a wrong number.
3-11	Disconnection during ISDN G4 communication	Check the other terminal and the ISDN line.
3-20	A SAC signal was received during ISDN G4 communication	The operator at the other terminal may have interrupted the communication.
3-21	A CSA was sent during ISDN G4 communication, because the Stop key was pressed	The local operator has interrupted the communication.
3-30	Mismatched specifications (rx capability)	Check the receive capabilities requested from the other terminal.
4-00	One page took longer than 8 minutes to transmit	Check for a bad line. Try the communication at a lower resolution, or without halftone. Change the FCU.
4-01	Line current was cut	Check the line connector. Check the connection between FCU and NCU. Check for line problems. Replace the FCU or the NCU.
4-10	Communication failed because of ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections)	Get the ID Codes the same and/or the CSIs programmed correctly, then resend. The machine at the other end may be defective.
5-00	Data reconstruction not possible	Replace the FCU.
5-10	DCR timer expired	Replace the FCU.
5-20	Storage impossible because of a lack of memory	Temporary memory shortage. Test the SAF memory. Replace the FCU board
5-21	Memory overflow	
5-22	Mode table overflow after the second page of a scanned document	Wait for the messages which are currently in the memory to be sent or delete some files from memory.

Code	Meaning	Suggested Cause/Action
5-23	Print data error when printing a substitute rx or confidential rx message	Test the SAF memory. Ask the other end to re-send the message. Replace the FCU board.
5-24	Memory overflow after the second page of a scanned document	Try using a lower resolution setting. Wait for the messages which are currently in the memory to be sent or delete some files from memory.
5-25	SAF file access error	Replace the FCU, the IC memory card, or the hard disk.
5-30	Mode table for the first page to be printed was not effective	Replace the FCU, the IC memory card, the function upgrade card, or the hard disk.
5-40	No response from PC	Check the PC Network problem
5-41	Detect the disconnect from PC	
6-00	G3 ECM - Flag detection timer runs out while receiving image data	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. Defective remote terminal. Check for line noise or other line problems.
6-01	G3 ECM - no V.21 signal was received	Try adjusting the rx cable equalizer. Replace the FCU or NCU.
6-02	G3 ECM - EOR was received	
6-03	G3 ECM - detect abnormal V.21 signal	Check the line connection. Check connections from the NCU to the FCU. Check for a bad line or defective remote terminal. Replace the FCU, FCU or NCU.
6-04	G3 ECM - RTC not detected	
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	Check the line connection. Check connections from the NCU to the FCU. Check for a bad line or defective remote terminal. Replace the FCU, FCU or NCU. Try adjusting the rx cable equalizer **Cross reference** Rx cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX)
6-06	G3 ECM - coding/decoding error	Defective FCU. The other terminal may be defective.
6-08	G3 ECM - PIP/PIN received in reply to PPS.NULL	The other end pressed Stop during communication. The other terminal may be defective.
6-09	G3 ECM - ERR received	Check for a noisy line. Adjust the Tx levels of the communicating machines. See code 6-05.
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	Check for line noise. Adjust the Tx level (use NCU parameter 01 or the dedicated Tx parameter for that address). Check the line connection. Defective remote terminal.

Code	Meaning	Suggested Cause/Action
6-11	G3 ECM - printing impossible because of a missing first line in the MMR coding	Check for problems in the printer mechanism.
6-21	V.21 flag detected during high speed modem communication	The other terminal may be defective or incompatible.
6-99	V.21 signal not terminated within 6 s	Replace the FCU.
9-00	PIN code response because of printer SC error	Fix and release the SC error
9-02	DMA receiving error (PLU)	FCU defective, replace FCU.
9-03	Paper eject error at the last page (with image data)	Check the printer drive components and sensors
9-04	Paper eject error at the last page (without image data)	
9-05	Paper eject error	
9-06	Exceeded OBM counter	OBM defective, replace OBM.
9-07	Paper non-feed or jam at the cassette entrance	If the problem persists, replace the FCU.
9-08	Paper jam inside the development area	If the problem persists, replace the FCU.
9-09	Paper jam in the fusing exit area	If the problem persists, replace the FCU.
9-10	Toner end detected	Toner out, replace AIO toner cartridge. Toner end sensor defective, replace sensor. AIO cartridge defective, replace cartridge. AIO cartridge set incorrectly, check and re-set. FCU defective, replace FCU.
9-12	Cover open detected during printing	Close the cover, or check the cover sensors.
9-13	LD interlock error	Replace the polygon motor Replace the LD unit
9-14	PSU overheated	Check the machine's environment Replace the PSU
9-17	Charge corona unit failure	If the problem persists, replace the FCU.
9-20	Laser diode failure	If the problem persists, replace the FCU.
9-22	Fusing lamp failure	
9-23	Polygonal mirror motor error	
9-24	Main motor failure	
9-29	Power pack error	Check the connections Replace the power pack or FCU
9-30	40MB memory write error	Replace the 40MB memory
9-31	40MB memory control error	
9-32	40MB memory read error	
9-33	40MB fatal error	
9-36	40MB retry error	

Code	Meaning	Suggested Cause/Action
9-50	Paper non-feed or jam inside the 2nd paper feed unit.	Check if a recommended type of paper is used. Check for a blockage in the paper feed path. Check the paper feed mechanisms inside the unit. Check if the sensor is defective. Check if the paper guides are aligned to the paper correctly. Replace the FCU
9-51	Paper registration jam inside the 2nd paper feed unit.	
9-52	Paper non-feed or jam inside the 3rd paper feed unit	
9-53	Paper registration jam inside the 3rd paper feed unit.	
9-54	Jam at the paper from the 4th paper feed unit.	
9-56	Jam at the paper from the 5th paper feed unit.	
9-82	Paper feed Jam at the bypass feeder.	Check if a recommended type of paper is used. Check for a blockage in the paper feed path. Check the paper feed mechanisms inside the unit. Check if the sensor is defective. Check if the paper guides are aligned to the paper correctly. Replace the FCU
9-83	Registration Jam at the bypass feeder.	
9-84	Mainframe paper feed jam	

4.5 MODEM STATUS CODES IN V.34 PROTOCOL DUMP

The following sections explain the meaning of modem status codes which appear on the G3 protocol dump list after V.34 communications.

NOTE: The machine sometimes does not print all the status codes.
In polling communication, the signals are exchanged in the opposite direction after phase 2.

4.5.1 CALLING SIDE

Phase 1 (V.8)

FIF	Description
0010	Idle
0110	Idle
0111	ANSam reception
0011	CM transmission
0112	JM reception
0012	CJ transmission
0013	Phase 1 end

Phase 2 (Line Probing)

FIF	Description
0020	Idle
0021	75 ms interval
0121	Waiting for INFO0a
0022	INFO0c transmission
0122	INFO0a reception
0123	A reception
0023	INFO0c retransmission due to missing INFO0a
0024	INFO0c retransmission due to the second INFO0a reception
0031	B transmission
0032	B bar transmission
0033	L1 transmission
0034	L2 transmission
0041	B transmission during INFOh reception.
0127	INFOh reception
0042	Phase 2 end
0043	Waiting for A due to recovery from phase 3 (control channel)

Phase 3 (Equalizer Training)

FIF	Description
0050	Idle
0051	70 ms interval
0130	Phase 3
0052	S transmission
0053	S bar transmission
0054	PP transmission
0055	TRN transmission
0056	Phase 3 end

Phase 4 and 5 (Control Channel)

FIF	Description
0060	Idle
0141	Waiting for PPh
0061	70 ms interval
0062	PPh transmission
0142	PPh reception
0063	ALT transmission
0143	ALT reception
0064	MPh transmission
0144	MPh reception
0065	E transmission
0145	E reception
0066	T.30 control signal transmission (e.g., NSS or DCS)
0151	Flag reception
0152	T.30 control signal reception (e.g., NSF, DIS or CFR)
0067	Phase 5 end

Phase 6 (Primary Channel)

FIF	Description
00A0	Idle
00A1	70 ms interval
0160	Phase 6
00A2	S transmission
00A3	S bar transmission
00A4	PP transmission
00A5	B1 transmission
00A6	Image data transmission
00A7	Phase 6 end

Control Channel (Post Message - Sh)

FIF	Description
0070	Idle
0071	70 ms interval
0141	Waiting for Sh or PPh
0072	Sh transmission
0073	Sh bar transmission
0146	Sh/Sh bar reception
0074	ALT transmission
0143	ALT reception
0075	E transmission
0076	T.30 control signal transmission (e.g., PPS-EOP)
0151	Flag reception
0152	T.30 control signal reception (e.g., MCF)
0077	End

Control Channel (Post Message - PPh)

FIF	Description
0080	Idle
0081	PPh transmission
0142	PPh reception
0082	ALT transmission
0143	ALT reception
0083	MPh transmission
0144	MPh reception
0084	E transmission
0085	T.30 control signal transmission (e.g., PPS-MPS)
0151	Flag reception
0152	T.30 control signal reception (e.g., MCF)
0086	End

Control Channel Recovery (AC)

FIF	Description
0090	Idle
0091	AC transmission
0092	PPh transmission
0142	PPh reception
0093	ALT transmission
0143	ALT reception
0094	MPh transmission
0144	MPh reception
0095	E transmission
0096	T.30 control signal transmission (e.g., PPS-EOP)
0151	Flag reception
0152	T.30 control signal reception (e.g., MCF)
0097	End

V.34 End

FIF	Description
00B0	Modem idle

4.5.2 CALLED SIDE

Phase 1 (V.8)

FIF	Description
0010	Idle
0110	Idle
0111	CM reception
0012	JM transmission
0112	CI reception
0113	CJ reception
0013	Phase 1 end

Phase 2 (Line Probing)

FIF	Description
0020	Idle
0121	Waiting for INFO0c
0021	75 ms interval
0122	INFO0c reception
0022	INFO0a transmission
0023	INFO0a retransmission due to missing INFO0c
0024	INFO0a retransmission due to the second INFO0c reception
0123	B reception
0124	B bar reception
0031	A transmission
0032	A bar transmission
0033	No signal. Waiting for L1/L2
0125	L1/L2 reception
0126	B reception
0041	A transmission
0042	INFOh transmission
0043	Phase 2 end
0044	Waiting for B due to recovery from phase 3 (control channel)

Phase 3 (Equalizer Training)

FIF	Description
0050	Idle
0131	No signal
0051	70 ms interval
0052	Waiting for S
0132	S reception
0053	Waiting for S bar
0133	S bar reception
0054	Waiting for PP
0134	PP reception
0055	Waiting for TRN
0135	TRN reception
0056	Phase 3 end

Phase 4 and 5 (Control Channel)

FIF	Description
0060	Idle
0141	No signal
0061	70 ms interval
0142	PPh reception
0062	PPh transmission
0143	ALT reception
0063	ALT transmission
0144	MPh reception
0064	MPh transmission
0145	E reception
0065	E transmission
0066	T.30 control signal transmission (e.g., NSF and DIS)
0067	Phase 5 end

Phase 6 (Primary Channel)

FIF	Description
00A0	Idle
0161	No signal
00A1	70 ms interval
0162	S reception
00A2	Waiting for S
0163	S bar reception
00A3	Waiting for S bar
0164	PP reception
00A4	Waiting for PP
0165	B1 reception
00A5	Waiting for B1
0166	Flag reception
0167	Image data reception
00A6	Waiting for image data
0168	Turn off
00A7	Phase 6 end

Control Channel (Post Message - Sh)

FIF	Description
0070	Idle
0071	70 ms interval
0041	No signal
0072	Detecting Sh and Sh bar
0146	Sh/Sh bar reception
0073	Sh transmission
0074	Sh bar transmission
0143	ALT reception
0075	ALT transmission
0145	E reception
0076	E transmission
0151	Flag reception
0152	T.30 control signal reception (e.g., PPS-EOP)
0077	T.30 control signal transmission (e.g., MCF)
0078	End

Control Channel (Post Message – PPh)

FIF	Description
0080	Idle
0142	PPh reception
0081	PPh transmission
0143	ALT reception
0082	ALT transmission
0144	MPh reception
0083	MPh transmission
0145	E reception
0084	E transmission
0151	Flag reception
0152	T.30 control signal reception (e.g., PPS-MPS)
0085	T.30 control signal transmission (e.g., MCF)
0086	End

Control Channel Recovery (AC)

FIF	Description
0090	Idle
0091	AC transmission
0147	AC reception
0142	PPh reception
0092	PPh transmission
0143	ALT reception
0093	ALT transmission
0144	MPh reception
0094	MPh transmission
0145	E reception
0095	E transmission
0151	Flag reception
0152	T.30 control signal reception (e.g., PPS-MPS)
0096	T.30 control signal transmission (e.g., MCF)
0097	End

V.34 End

FIF	Description
00B0	Modem idle

4.6 ERROR CODES FOR THE ISDN OPTION

The tables on the following pages show the error codes for the ISDN option.

The meaning of the numbers in the Action column is as follows.

1. Check Layer 1 signaling with a protocol analyzer to determine the cause of the problem. This may require assistance from a G4 specialist.
2. Repeat the communication. If the problem does not repeat itself, the problem was a temporary one caused by the user connecting the machine to another interface. However, if the problem remains, there is a network problem.
3. There is a network problem.
4. There is a network problem. Do the following:
   - Check the error bit rate of the network. If it is high, contact the network and ask them to improve the line.
   - Check the network speed (is it 56 or 64 kbps), and make sure that the bit switch setting is correct. You may also use the dedicated transmission parameters if this problem only occurs when dialing certain numbers.
   - Check that the user dialed the correct number.
5. There is a network problem, or a problem in the machine at the other end.
6. There is a problem in the machine at the other end; ask a technician to check it.
7. The machine at the other end is not a Group 4 fax terminal.
8. The machine is not compatible with the machine at the other end. A compatibility test is needed.

4.6.1 D-CHANNEL LAYER MANAGEMENT

Code	Probable Cause	Action
7-00	Link reset	2
7-01	Link set-up failed because of time-out.	2
7-02	Link release failed because of time-out.	2
7-03	Link set-up parameter error	2

4.6.2 D-CHANNEL, LAYER 1

Code	Probable Cause	Action
7-10	T3 timeout (layer 1 activation error)	1
7-11	No connection on the S0 interface	1
7-12	Deactivated	1

4.6.3 D-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-20	At the start of link set-up, the machine received an unsolicited S (F=1).	2
7-21	At the start of link set-up, the machine received an unsolicited DM (F=1).	2
7-22	At TEI release, the machine received an unsolicited UA (F=1).	2
7-23	At the start of link set-up, the machine received an unsolicited DM (F=0).	2
7-24	At TEI release, the machine received an unsolicited UA (F=0).	2
7-25	SABME received at the start of network link set-up	No error
7-26	N200 retransmission error for SABME	2
7-27	N200 retransmission error for DISC	2
7-28	N200 retransmission error for situation enquiry (RR)	2
7-29	N(R) sequence number error	3
7-30	N(S) sequence number error	3
7-31	FRMR received	3
7-32	Non-standard frame received	3
7-33	Abnormal frame length	3
7-34	N201 error; information field N in the I frame exceeded N201	3
7-35	T201 timeout; timeout while waiting for checking	3
7-36	T202 timeout; timeout while waiting for ID assignment	3

4.6.4 D-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-40	Insufficient mandatory information elements	3
7-41	Abnormal LI for a mandatory information element	3
7-42	T301 timeout; timeout while waiting for R:CONN	3
7-43	T303 timeout; timeout while waiting for R: CALL-PROC etc.	3
7-44	T304 timeout; timeout while waiting for R: CALL-PROC etc.	3
7-45	T305 timeout; timeout while waiting for R:REL	3
7-46	T308 timeout; timeout while waiting for R:REL-COMP	3
7-47	T310 timeout; timeout while waiting for R: ALERT etc.	3
7-48	T313 timeout; timeout while waiting for R:CONN-ACK	3
7-49	Internal error	3
7-51	Release call reference during communication	3

4.6.5 B-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-60	T3 timeout; timeout while waiting for flag	4
7-61	T3 timeout; timeout while waiting for SABM during an incoming call	4
7-62	T1 timeout x N2; timeout while waiting for UA after sending SABM	5
7-63	T1 timeout x N2; timeout while waiting for a response to a transmitted S frame (P=1)	5
7-64	T1 timeout x N2; timeout while waiting for SABM or DISC after sending FRMR	5
7-65	T1 timeout x N2; timeout while waiting for a response to DISC	5
7-66	RNR x N2 (other end busy, RCB counter error)	5
7-67	Invalid (Ad) frame received	5
7-68	Invalid short frame received	5
7-69	Link reset error	5
7-70	FRMR received	5
7-71	Non-standard (Cn) frame received	5
7-72	An S or U frame having an information field was received	5
7-73	A frame longer than the maximum N1 length was received	5
7-74	An S or I frame having an N(R) error was received	5
7-75	CRC error	3

4.6.6 B-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-80	A packet having an abnormal GFI was received	6
7-81	A packet was received that had a logical channel number different from the logical channel being used for the communication	6
7-82	A packet containing a format error was received	6
7-83	A packet containing an LI error was received	7
7-84	A CN packet was received that had a PID different from 02	7
7-85	Unsupported packet type received	7
7-86	Abnormal or unsupported facility received	7
7-87	P(s) sequence number error	6
7-88	P(r) sequence number error	6
7-89	A reset using S:RQ or R:RI occurred	6
7-90	A restart using S:RQ or R:SI occurred	6
7-91	Call set-up error; in reply to S:CR, R:CI was received to indicate rejection of the call	7
7-92	T20 timeout; timeout while waiting for an SF packet	6
7-93	T21 timeout; timeout while waiting for a CC packet	6
7-94	T22 timeout; timeout while waiting for an RF packet	6
7-95	T23 timeout; timeout while waiting for a CF packet	6
7-96	T10 timeout; timeout while waiting for the first frame	6

4.6.7 TRANSPORT LAYER

Code	Probable Cause	Action
8-00	Invalid block received	8
8-01	TCC block received	8
8-02	TBR block received	8
8-05	TCR block; block format error	8
8-06	TCR block; block size parameter LI error	8
8-07	TCR block; extended addressing LI error	8
8-08	TCR block; block size length error	8
8-10	TCA block; block format error	8
8-11	TCA block; Tx origin reference data in TCR disagreed with the address reference data in TCA	8
8-12	TCA block; octet 7 did not equal 0	8
8-13	TCA block; extended addressing LI error	8
8-14	TCA block; block size exceeded that set by TCR	8
8-15	TCA block; block size parameter LI error	8
8-20	TDT block; block format error	8
8-21	TDT block; octet 3 did not equal either 00 or 80(H)	8
8-22	TDT block; the end indicator was “Continue” even though there was no field data	8
8-23	TDT block; an end block with no field data was received after an end indicator of “End”	8
8-26	Timeout during state 0.2	8
8-27	Timeout during state 1.1	8
8-28	Timeout during state 0.3	8

4.6.8 SESSION LAYER

Code	Probable Cause	Action
8-30	Invalid frame received	8
8-31	RSSN received	8
8-32	CSA received	8
8-34	Calling terminal identification error in CSS	8
8-35	Date and time error in CSS	8
8-36	Window size error in CSS	8
8-37	Service identification error in CSS	8
8-38	Session user data error in CSS	8
8-39	CSS rejected (new session rejected)	8
8-40	Called terminal identification error in RSSP	8
8-41	Date and time error in RSSP	8
8-42	Date and time in RSSP was not the same as that in CSS	8
8-43	Window size error in RSSP	8
8-44	Service identification error in RSSP	8
8-45	Session user data error in RSSP	8
8-47	Message synchronization error inside the CCU	8
8-48	Document task busy	8
8-50	Ti timeout; non-communication surveillance timer (T.62)	8
8-51	T2 timeout; timeout while waiting for a response (T.62)	8
8-52	T3 timeout; CSA timer timeout (T.62)	8
8-53	G4 board load timer timeout; calling side waited too long for a new session	8
8-54	G4 board load timer timeout; calling side waited too long for transport probability	8
8-55	G4 board load timer timeout; called side waited too long for S:RSSP	8
8-56	G4 board load timer timeout; document transmission surveillance timer timeout	8
8-57	G4 board load timer timeout; timeout while waiting for a user abort request after a provider fail	8

4.6.9 DOCUMENT LAYER

Code	Probable Cause	Action
8-60	T.62 coding format error (LI error)	8
8-61	A mandatory PI was absent, or the LI for a mandatory PI was 0	8
8-62	Calling/called terminal identification LI was different from that specified by F.184 (LI = 24)	8
8-63	The LI for session user data exceeded the maximum value (512)	8
8-64	The LI for CDUI was not 0	8
8-65	Checkpoint and document reference numbers LI error, or they were not in T.61 (ASCII) coding	8
8-66	The checkpoint reference number differed from the expected value	8
8-70	RDGR received	8
8-71	A non-standard PDU was received while in calling mode	8
8-72	A non-standard PDU was received while in called mode	8
8-73	Abnormal PDU received while in calling state ds1	8
8-74	15 consecutive CDCL signals received	8
8-75	Session window size control error (size not equal to 0)	8
8-76	Internal error	8

4.6.10 PRESENTATION LAYER

Code	Probable Cause	Action
8-80	X.209 coding error in session user data (LI error)	8
8-81	PV error in session user data	8
8-82	PI error in session user data	8
8-83	The capabilities in the session user data of CDS/CDC were not the same as those in RDCLP	8
8-84	X.209 coding error in the DP (LI error)	8
8-85	X.209 coding error in the SLD (document descriptor/page descriptor) (LI error)	8
8-86	SLD object type absent	8
8-87	PI error in the SLD (document descriptor/page descriptor)	8
8-88	The capabilities in the SLD (document descriptor/page descriptor) are duplicated or are not the same as those in RDCLP	8
8-89	No document descriptor at the start of the document	8
8-90	No page descriptor at the start of the page	8
8-91	Page descriptor PV error	8
8-92	X.209 coding error in the TU (LI error)	8
8-93	The TU was absent	8
8-94	PV error in the TU	8
8-95	TI error	8
8-96	X.209 coding nest level >> 8, or an LI form error	8
8-97	CDPB/CDE received while TU/TI not yet completed, or an unexpected PDU was received while analyzing an SLD	8

4.7 ISDN TEST FUNCTION

4.7.1 LEDS

There are four LEDs on the G4 board. These LEDs describe the status of the machine.

LED 1	LED 2	LED 3	LED 4

	O=ON, --=OFF			
Initial Settings				
Initial check (if the flash ROM is updated)	O	O	O	O
Handshaking with the FCU ready	O	O	--	--
Standby Mode				
Ready to communicate	--	--	--	--
Communication				
Layer 1 activated	--	--	--	O
Link setup	--	--	O	O
B channel 1 connected	--	O	O	O
B channel 2 connected	O	--	O	O

4.7.2 BACK-TO-BACK TEST

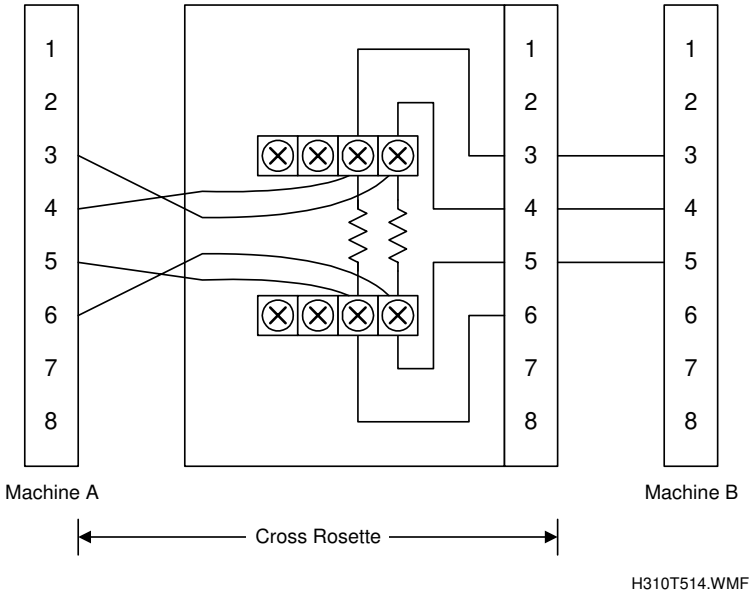
To make a back-to-back test, you need:

- Two machines, one with the CiG4 board (G4 board used in the FX4, FR4, ADAM, NAD, Stinger, and Russian) and the other with the SiG4 board (G4 board used with the Schmidt 3, S4, and Kaiser 1).
- Cross rosette

NOTE: You cannot make a back-to-back test using two SiG4 machines.

The procedure is as follows.

1. Switch off the machines
2. Connect two machines back-to-back using a cross rosette as follows.



3. Make the following bit switch adjustments:
   - In the machine acting in NT mode (CiG4 board), set bits 0 and 1 of G4 parameter switch 0D to 1.
   - In the machine acting in TE mode (SiG4 board) set bit 0 of G4 parameter switch 0D to 0 and bit 1 to 1.
4. Reset the machines by switching them off, waiting a few seconds, then switching back on.
5. Place a document in one of the machines, dial a number, then press Start.
6. After you have finished the test, set bits 0 and 1 of G4 parameter switch 0D back to 0, then reset the machine.

NOTE: The following cannot be tested using this procedure:

- ISDN G3 communication
- Point to Multi (Like a broadcasting test, from one point to many places.)

5. SERVICE TABLES AND PROCEDURES

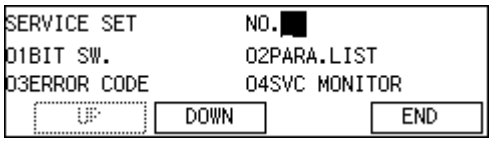
5.1 SERVICE LEVEL FUNCTIONS

In this section, frequently used keys are referred to with the following symbols.

Start key	Back - Back key	OK – OK Key
Stop key	Right arrow key	
User Tools – User Tools key	Left arrow key	
+ - + Key	Up - Up arrow key	
- - - Key	Down - Down arrow key	

How to enter the Service Mode

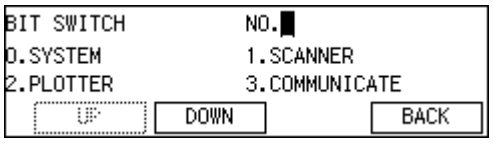
User Tools + # + 1 0 7 Start



H310S500.BMP

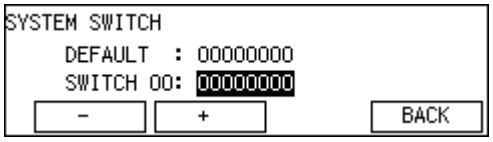
5.1.1 BIT SWITCH PROGRAMMING (FUNCTION 01)

1. Enter the Service Mode.
2. 0 1



H310S501.BMP

3. To see the system bit switches: 0
   To see the scanner switches: 1
   To see the printer switches: 2
   To see the communication switches: 3
   To see the G3 switches: 4
   Example: Press 0.

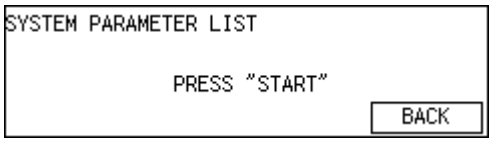


H310S502.BMP

Service Tables

5.1.2 SYSTEM PARAMETER LIST (FUNCTION 02)

1. Enter the Service Mode.
2. [0] [2]

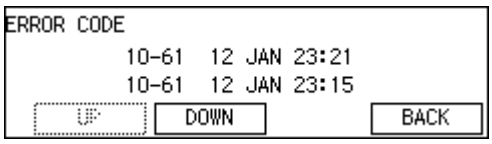


H310S503.BMP

3. [◇]

5.1.3 ERROR CODE DISPLAY (FUNCTION 03)

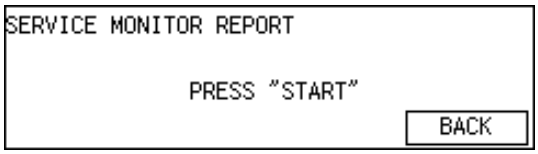
1. Enter the Service Mode.
2. [0] [3]



H310S504.BMP

5.1.4 SERVICE MONITOR REPORT (FUNCTION 04)

1. Enter the Service Mode.
2. [0] [4]



H310S505.BMP

3. [◇]

5.1.5 GROUP 3 PROTOCOL DUMP (FUNCTION 05)

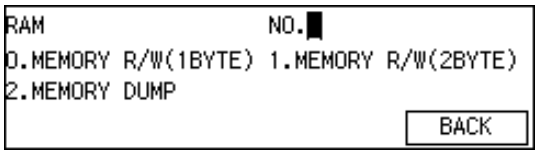
1. Enter the Service Mode.
2. [0] [5]

H310S506.BMP

3. Select the type of list: [◀] or [▶]
4. [◇]

5.1.6 RAM DISPLAY/REWRITE/MEMORY DUMP (FUNCTION 06)

1. Enter the Service Mode.
2. [0] [6]



H310S507.BMP

3.
   1) [0] 1 byte at a time:

H310S508.BMP

   2) [1] 2 bytes at a time:

H310S509.BMP

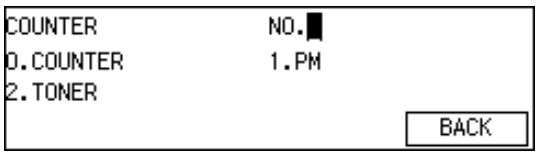
   3) [2]

H310S510.BMP

4. Enter the first four digits of start address and end address.
5. [◇]

5.1.7 COUNTER DISPLAY/REWRITE (FUNCTION 07)

1. Enter the Service Mode.
2. [0] [7]

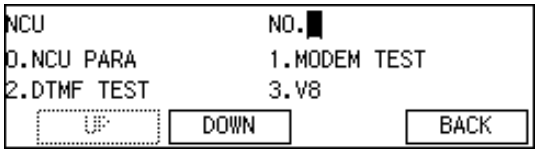


H310S511.BMP

3. [0]: Transmitted, received, scanned, printed, and printer and scanner jams.
   [1]: PM Counter
   [2]: Toner Counter (AIO counter)

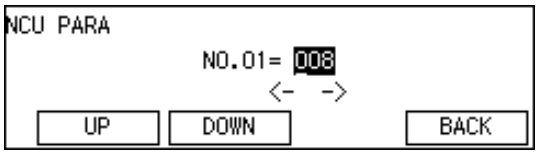
5.1.8 NCU PARAMETERS (FUNCTION 08)

1. Enter the Service Mode.
2. [0] [8]



H310S512.BMP

3. [0]
4. Scroll through the parameters using [Up] or [Down]. If you want to change a value, enter the new value at the keypad, then press [Back].



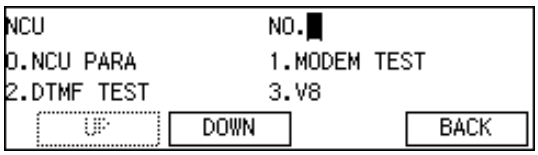
H310S513.BMP

5. To finish: [Back] [User Tools].

NOTE: 1) Parameter CC is the Country Code, Parameter 01 is the Tx level.
2) If you change the NCU country code and exit the service mode, the bit switch country code (System Bit Switch 0F) will automatically be changed to the code for the same country as the new NCU code. The bit switch settings also automatically return to the defaults for that country, including bit switches related to optional units. Therefore, for example, if 40MB memory is installed, any data remaining in the memory will be lost.

5.1.9 MODEM TEST (FUNCTION 08)

1. Enter the Service Mode.
2. [0] [8]



H310S512.BMP

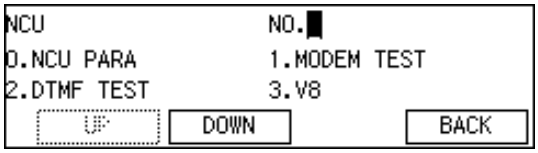
3. [1]

H310S514.BMP

4. Scroll through the available tests using [Up] or [Down] .
5. To start a test: [◇]
6. To stop the test: [▽]
7. To finish: [Back] [User Tools]

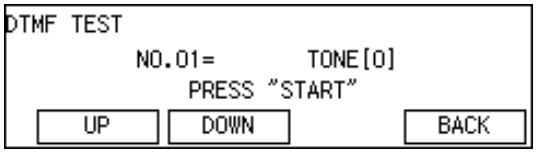
5.1.10 DTMF TONE TEST (FUNCTION 08)

1. Enter the Service Mode.
2. 0 8



H310S512.BMP

3. 2
4. Scroll through the available tests using Up or Down.

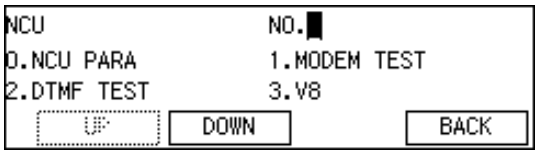


H310S515.BMP

5. To start a test: ◇
6. To stop the test: ▽
7. To finish: Back User Tools

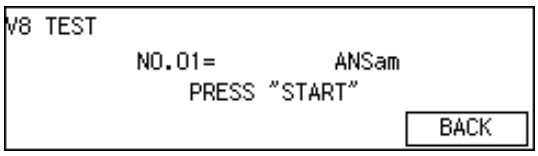
5.1.11 V.8 MODEM TEST (FUNCTION 08)

1. Enter the Service Mode.
2. 0 8



H310S512.BMP

3. 3

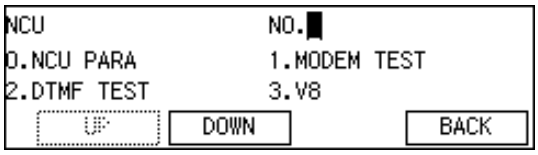


H310S516.BMP

4. Press ◇ to start the test
5. To stop : ▽
6. To finish: Back User Tools

5.1.12 V.34 MODEM TEST (FUNCTION 08)

1. Enter the Service Mode.
2. [0] [8]



H310S512.BMP

3. [4]

H310S517.BMP

4. Select the data rate using [Up] or [Down]
5. Press [◇]
6. To stop : [▽]
7. To finish: [Back] [User Tools]

5.1.13 OPERATION PANEL TEST (FUNCTION 09)

1. Enter the Service Mode.
2. [0] [9]

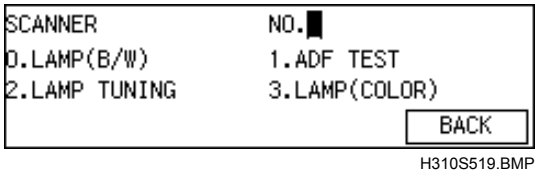
H310S518.BMP

3. To start the test, press [◇].
   The screen should turn black and all LEDs and indicators should light.
4. To stop the test, press [▽]
5. To finish: [Back] [User Tools]

5.1.14 LAMP TEST (B/W) (FUNCTION 10)

This tests the green LEDs in the CIS.

1. Enter the Service Mode.
2. [1] [0]



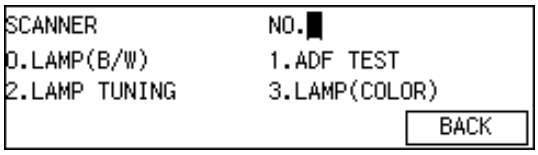
H310S519.BMP

3. [0]

H310S520.BMP

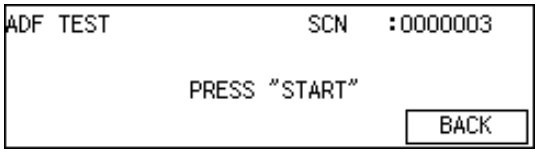
5.1.15 ADF TEST (FUNCTION 10)

1. Enter the Service Mode.
2. [1] [0]



H310S519.BMP

3. [1]



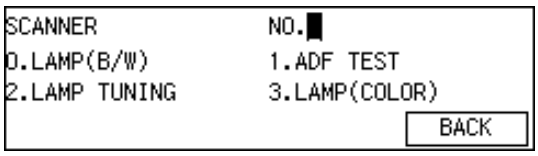
H310S521.BMP

4. Place a document in the feeder, then press ◇.
5. To stop the test, press ▽.

5.1.16 LAMP TUNING (FUNCTION 10)

Factory use only.

1. Enter the Service Mode.
2. [1] [0]



H310S519.BMP

3. [2]

H310S522.BMP

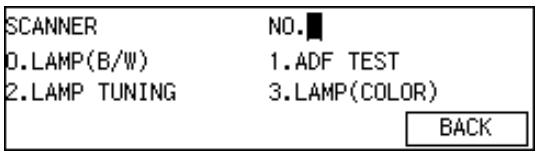
4. ◇

Service Tables

5.1.17 LAMP TEST (COLOR) (FUNCTION 10)

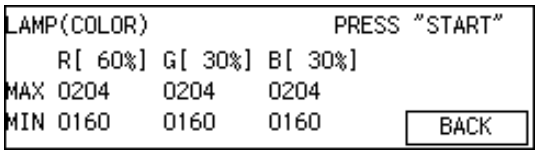
This tests all the LEDs in the CIS.

1. Enter the Service Mode.
2. 1 0



H310S519.BMP

3. 3

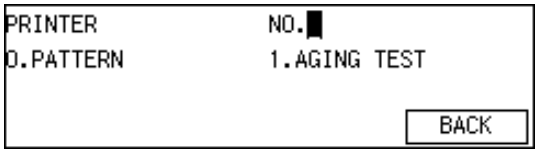


H310S523.BMP

4. Start
5. To stop the test, press Stop.

5.1.18 PRINTER TEST PATTERNS (FUNCTION 11)

1. Enter the Service Mode.
2. 1 1



H310S524.BMP

3. 0

H310S525.BMP

4. To select the pattern, press Up or Down.
5. Start

5.1.19 PRINTER FREE RUN (FUNCTION 11)

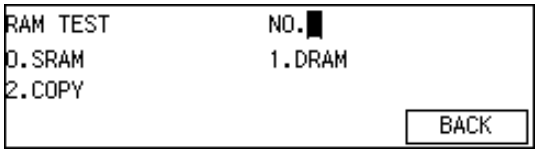
1. Enter the Service Mode.
2. 1 1

H310S526.BMP

3. 1

5.1.20 RAM TEST (FUNCTION 12)

1. Enter the Service Mode.
2. 1 2



H310S527.BMP

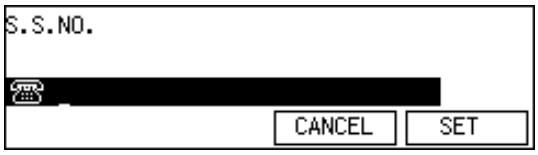
3. Test the SRAM: Press 0
   Test the DRAM: Press 1
   If test is successful, the display shows "OK!!".
   If test is unsuccessful, the display shows "ADDRESS=".

5.1.21 DATA COPY (FUNCTION 12)

This function allows ROM and SRAM data transfer between the FCU/SG3/SiG4/NICF/SPEG board inside the machine and external flash memory card. Normally, the upload/download menu is accessed automatically if the main switch is turned on with the IC card in the slot. If the menu does not appear, then use function 12. Refer to the following section for details. "3.10 DATA OR FIRMWARE DOWNLOAD/UPLOAD"

5.1.22 SERVICE STATION FAX NUMBER (FUNCTION 13)

1. Enter the Service Mode.
2. 1 3



H310S528.BMP

3. Input the telephone number of the service station that will receive Auto Service calls from this machine.
4. If the display is correct: Press (Set) then User Tools

Service Tables

5.1.23 SERIAL NUMBER (FUNCTION 14)

1. Enter the Service Mode.
2. 1 4

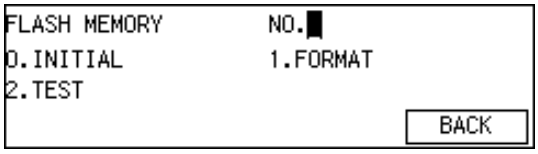
H310S529.BMP

3. Enter the machine's serial number at the keypad.
   To correct a mistake: ▽
4. If the display is correct: OK

5.1.24 40 MB FLASH MEMORY INITIALIZATION (FUNCTION 16)

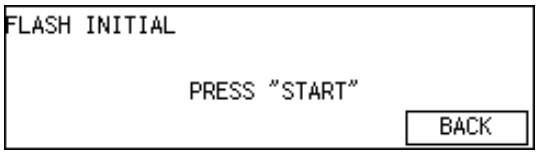
This deletes all files in the optional 40MB flash memory card.

1. Enter the Service Mode.
2. 1 6



H310S530.BMP

3. 0



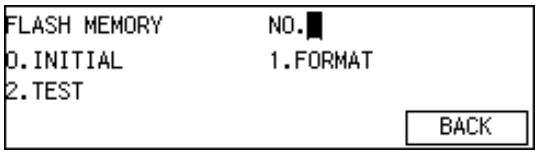
H310S531.BMP

4. ◇
   If the initialization was completed without error, **"OK!!"** will be displayed.
   If there was an error, **"NG!!"** will be displayed.

5.1.25 40 MB FLASH MEMORY FORMATTING (FUNCTION 16)

This formats the optional 40MB flash memory card, and deletes all data on the card.

1. Enter the Service Mode.
2. 1 6



H310S530.BMP

3. 1

H310S532.BMP

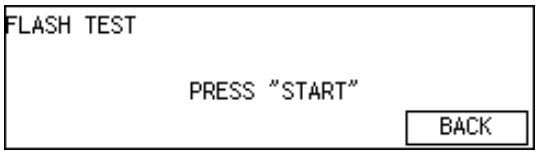
4. Start
   If the format was completed without error, **"OK!!"** will be displayed.
   If there was an error, **"NG!!"** will be displayed.

5.1.26 40 MB FLASH MEMORY TEST (FUNCTION 16)

1. Enter the Service Mode.
2. 1 6

H310S532.BMP

3. 2

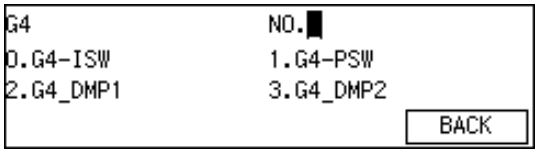


H310S533.BMP

4. Start
   If the test was completed without error, **"OK!!"** will be displayed.
   If there was an error, **"NG!! "** will be displayed.

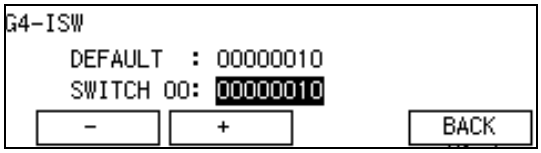
5.1.27 G4 INTERNAL SWITCH PROGRAMMING (FUNCTION 17)

1. Enter the Service Mode.
2. 1 7



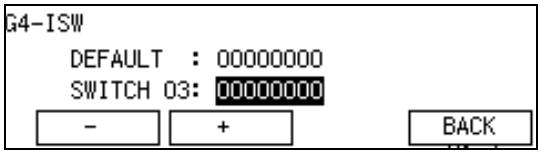
H310S534.BMP

3. 0
   The default settings are shown on the top line, and the current settings on the bottom.



H310S601.BMP

4. Increment bit switch: +
   Decrement bit switch: -
   Example:
   Display bit switch 3: : + 3 times



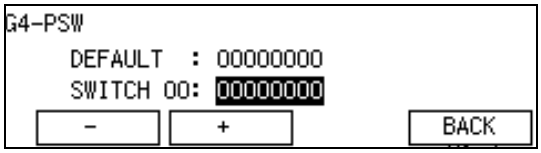
H310S602.BMP

5. Adjust the bit switch.
   To adjust more bit switches: go to step 4.
   To finish: Back User Tools

5.1.28 G4 PARAMETER SWITCH PROGRAMMING (FUNCTION 17)

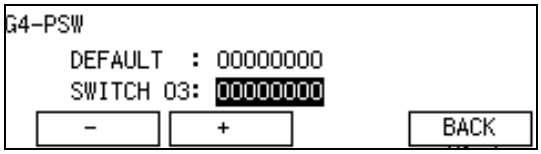
1. Enter the Service Mode
2. 1 7
3. 1

   The default settings are shown on the top line, and the current settings on the bottom.



H310S604.BMP

4. Increment bit switch: +
   Decrement bit switch: -
   Example:
   Display bit switch 3: + 3 times



H310S605.BMP

5. Adjust the bit switch.
   To adjust more bit switches: go to step 4.
   To finish: Back User Tools

5.1.29 PRINTING G4 MEMORY DUMP (FUNCTION 17)

Use this function to print the D-channel layer 1 dump list.

1. Enter the Service Mode
2. 1 7
3. 2

H310S607.BMP

4. Input the range of addresses that you wish to print.
   Example: Addresses 07EB00 to 07ECFF:
   Input 0 7 E B 0 7 E C .

Layer 1 memory dump information is stored in the following addresses: 07EB00(H) to 07ECFF(H).

5.1.30 PRINTING G4 PROTOCOL DUMP LIST (FUNCTION 17)

1. From the G4 service mode menu, press 3 .

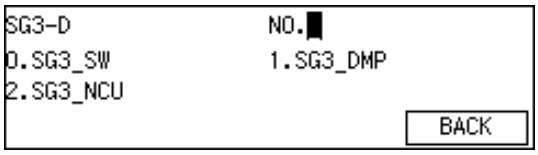
H310S608.BMP

2. Either:
   - To print a protocol dump list for the D channel and B channel 1: press
   - To print a protocol dump list for the D channel and B channel 2: Down
     Then press

     G4 Dump “D+BCH1”, “D+BCH2”:
     Up to 2 kbytes data is stored. When the data exceeds this limit, it is overwritten (The oldest data is overwritten first, also see G4 internal switch 03 bit 0).
     D+BCH2 data is logged only when there is dual communication.
   - To print a protocol dump list for the D channel: Down x 2
     Up to 2 kbytes data is stored.
   - To print a protocol dump list for the B channel 1 link layer: Down x 3
   - To print a protocol dump list for the B channel 2 link layer: Down x 4
   - To print a protocol dump list for the D channel link layer: Down x 5

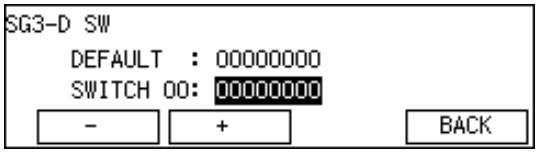
5.1.31 OPTIONAL G3 BIT SWITCHES (FUNCTION 18)

1. Enter the Service Mode.
2. 1 8



H310S535.BMP

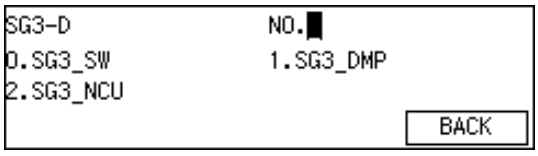
3. 0
4. Scroll through the bit switches using - or + and adjust the switches as needed.



H310S536.BMP

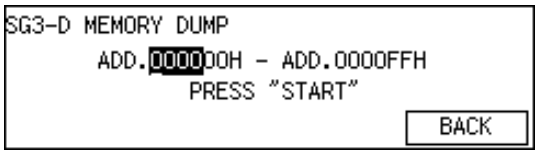
5.1.32 OPTIONAL SG3 BOARD RAM DUMP (FUNCTION 18)

1. Enter the Service Mode.
2. 1 8



H310S535.BMP

3. 1

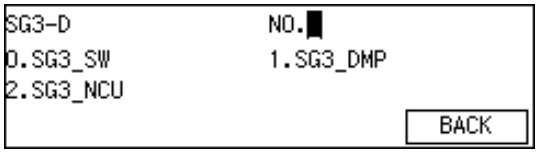


H310S537.BMP

4. Enter the first four digits of the start and end addresses.
5. ◇

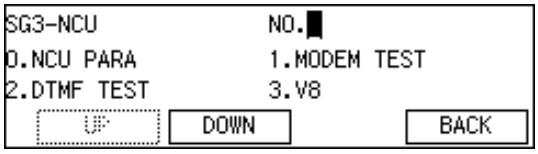
5.1.33 OPTIONAL SG3 BOARD NCU PARAMETERS (FUNCTION 18)

1. Enter the Service Mode.
2. 1 8



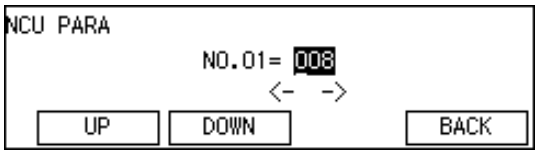
H310S535.BMP

3. 2



H310S538.BMP

4. 0

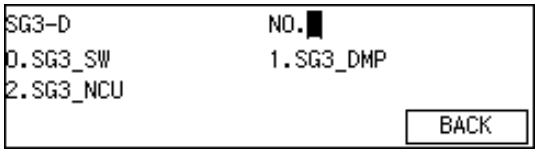


H310S539.BMP

5. Scroll through the parameters using ▲ or ▼ . If you want to change a value, enter the new value at the keypad, then press Back .
6. To finish Back User Tools.

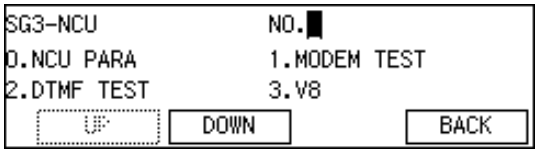
5.1.34 OPTIONAL SG3 BOARD MODEM TEST (FUNCTION 18)

1. Enter the Service Mode.
2. 1 8



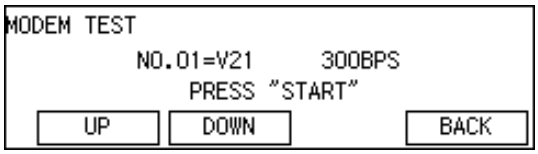
H310S535.BMP

3. 2



H310S538.BMP

4. 1



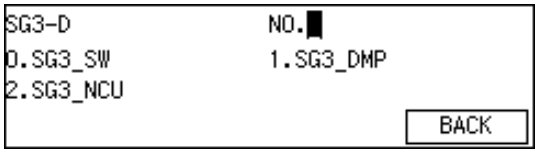
H310S540.BMP

Service Tables

5. Scroll through the available tests using Up or Down.
6. To start a test: ◇
7. To stop the test: ▽
8. To finish: Back User Tools

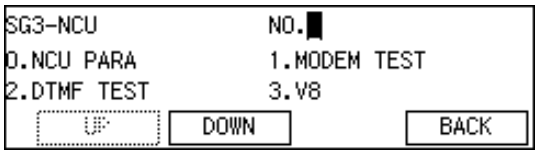
5.1.35 OPTIONAL SG3 BOARD DTMF TONE TEST (FUNCTION 18)

1. Enter the Service Mode.
2. 1 8



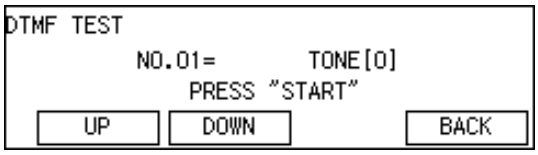
H310S535.BMP

3. 2



H310S538.BMP

4. 2

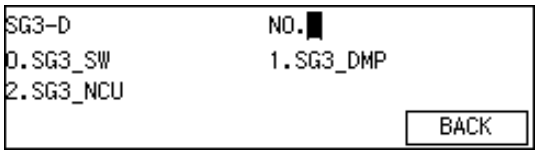


H310S541.BMP

5. Scroll through the available tests using Up or Down .
6. To start a test: ◇
7. To stop the test: ▽
8. To finish: Back User Tools

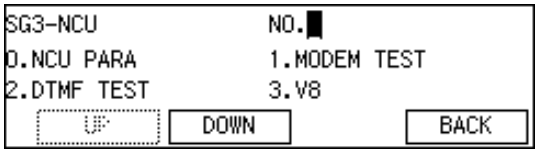
5.1.36 OPTIONAL SG3 BOARD V.8 MODEM TEST (FUNCTION 18)

1. Enter the Service Mode.
2. 1 8



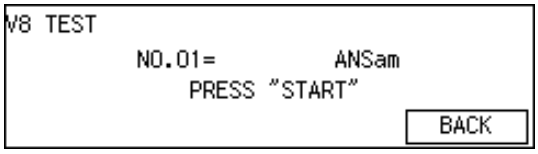
H310S535.BMP

3. 2



H310S538.BMP

4. 3

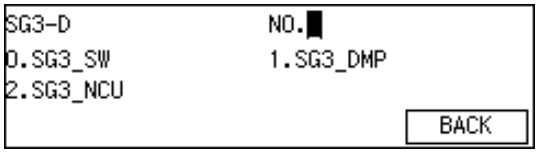


H310S542.BMP

5. Press ◇ to start the test
6. To stop : ▽
7. To finish: Back User Tools

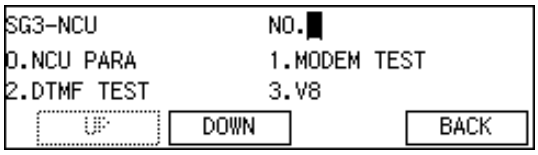
5.1.37 OPTIONAL SG3 BOARD V.34 MODEM TEST (FUNCTION 18)

1. Enter the Service Mode.
2. 1 8



H310S535.BMP

3. 2



H310S538.BMP

4. 4

H310S543.BMP

5. Select the data rate using Up or Down
6. Press ◇
7. To stop : ▽
8. To finish: Back User Tools

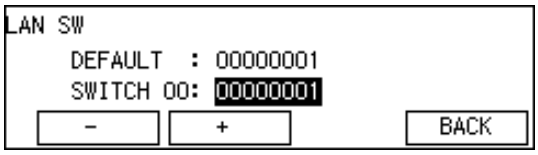
Service Tables

5.1.38 LAN SW SETTING (FUNCTION 20)

1. Enter the Service Mode.
2. 2 0

H310S544.BMP

3. 0



H310S545.BMP

4. Scroll through the bit switches using - or + and adjust the switches as needed.

5.1.39 LAN LINK CHECK (FUNCTION 20)

1. Enter the Service Mode.
2. 2 0

H310S544.BMP

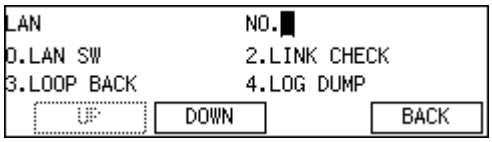
3. 2

H310S546.BMP

4. ◈
5. If the link test is completed, **"OK!! "** will displayed. If there was an error **"NG!! "** will be displayed.

5.1.40 LAN LOOP BACK TEST (FUNCTION 20)

1. Enter the Service Mode.
2. [2] [0]



H310S544.BMP

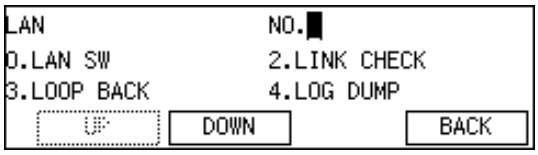
3. [3]

H310S547.BMP

4. [◇]

5.1.41 LAN LOG DUMP (FUNCTION 20)

1. Enter the Service Mode.
2. [2] [0]



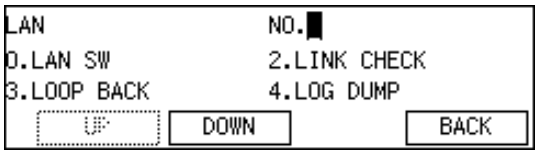
H310S544.BMP

3. [4]
4. [◇]

H310S548.BMP

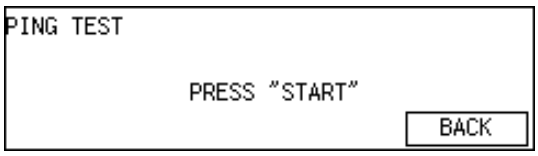
5.1.42 LAN PING TEST (FUNCTION 20)

1. Enter the Service Mode.
2. [2] [0]



H310S544.BMP

3. [5]



H310S549.BMP

4. [◇]

Service Tables

5.1.43 JPEG TEST (FUNCTION 21)

1. Enter the Service Mode.
2. 2 1

H310S550.BMP

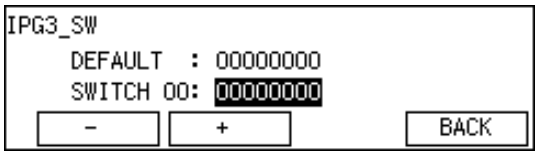
3. ◇
4. If the test is completed without error, **"OK!! "** will be displayed.
   If there was an error, **"NG!! "** will be displayed.

5.1.44 IP-FAX IPG3 BIT SWITCHES (FUNCTION 22)

1. Enter the Service Mode.
2. 2 2

H310S551.BMP

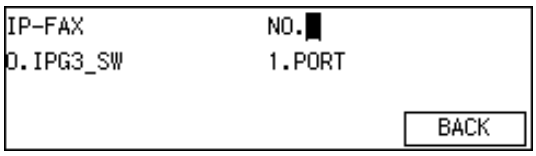
3. 0
4. Scroll through the bit switches using - or + and adjust the switches as needed.



H310S552.BMP

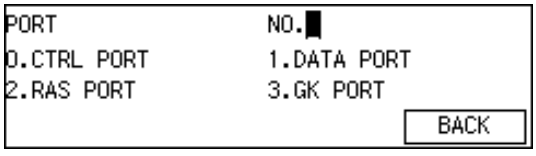
5.1.45 IP-FAX PORT SETTING (FUNCTION 22)

1. Enter the Service Mode.
2. 2 2



H310S551.BMP

3. 1
4. CTRL PORT: 0
   DATA PORT: 1
   RAS PORT: 2
   GK PORT: 3

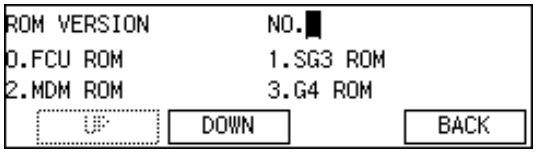


H310S553.BMP

These four items are set to industry standard settings by default. They have been tested with common office network environments and should not need changing.

5.1.46 ROM VERSION (FUNCTION 23)

1. Enter the Service Mode.
2. 2 3
3. Select the ROM Type using a number key.
   FCU ROM: 0
   SG3 ROM: 1
   MDM ROM: 2
   G4 ROM: 3
   NIC ROM: 4
   JPEG ROM : 6
   PIF ROM: 7

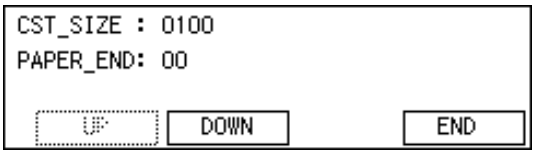


H310S554.BMP

5.1.47 SENSOR INPUT (FUNCTION 24)

1. Enter the Service Mode.
2. 2 4

- 1st Screen -



H310S555.BMP

- CST_SIZE: Paper Size (Mainframe)

DLT:	0000	LT LEF:	0111
A3:	0010	Folio:	1100
LT SEF:	0001	A4 SEF:	0100
LG SEF:	0101	No Tray:	1111
F:	0011		

- PAPER_END: Paper End/Paper Near End Sensor

X0:	No Paper
X1:	Paper Present
0X:	Not Near End
1X:	Near End

When the tray is opened, the value above is displayed temporarily, but “00” is displayed as a result of the bottom plate is lowering slightly.

Service Tables

3. Select an item from the menu with the Up or Down key.

- 2nd Screen -

H310S556.BMP

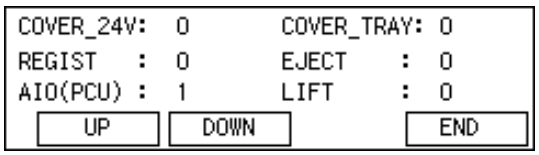
Item	Description	Status
COVER_1	ADF Upper Cover	0: Closed 1: Open
S1	S1 Sensor	0: No document 1: Document present
ADF_B4	B4 Width Sensor	
ADF_A3	A3 Width Sensor	

- 3rd Screen -

H310S557.BMP

Item	Description	Status
S2	S2 Sensor	0: No document 1: Document present
MDF_S1	MDF S1 Sensor	
MDF_B4	MDF B4 Width Sensor	
COVER_2	ADF Unit Cover	0: Closed, 1: Open
MDF_A3	MDF A3 Width Sensor	0: No Document 1: Document present

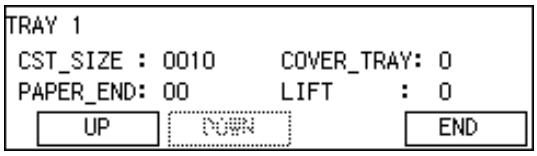
- 4th Screen -



H310S558.BMP

Item	Description	Status
COVER_24V	Left Cover	0: Closed 1: Open
COVER_TRAY	Left Tray Cover	
REGIST	Registration Sensor	0: No Paper 1: Paper Present
EJECT	Paper Exit Sensor	
AIO (PCU)	AIO Sensor	0: No AIO 1: AIO Present
LIFT	Upper Limit Sensor	0: Not Detected 1: Detect

- 5th Screen -



H310S559.BMP

- CST_SIZE: Paper Size (Optional PFU)

A3: 0010	A5 LEF: 1100
LT SEF: 0001	A4 SEF: 0100
LG SEF: 0101	A4 LEF: 0000
LT LEF: 0111	

- COVER TRAY: Left Cover
  0: Closed
  1: Open

- PAPER_END: Paper End/Paper Near End Sensor

X0:	No Paper
X1:	Paper Present
0X:	Not Near End
1X:	Near End

When the tray is opened, the value above is displayed temporarily, but “00” is displayed as a result of the bottom plate is lowering slightly.

- LIFT: Upper Limit Sensor
  0: Not Detected
  1: Detected

5.2 BIT SWITCHES

⚠WARNING
Do not adjust bit switches described as "Not used", as this may cause the machine to malfunction or to operate in a manner that is unacceptable under local regulations. Such bits are only for use in other areas, such as Japan.

NOTE: This manual does not list default settings for bit switches. Refer to the System Parameter List.
The switches that have been changed from the previous model (Kaiser1) are shaded.

5.2.1 SYSTEM SWITCHES

System Switch 00

No	FUNCTION	COMMENTS
0-1	**RAM Reset** **Bit 1 Bit 0 Reset Level** 0 0 No reset 0 1 Reset Level 2 1 0 Reset Level 3 1 1 Not used	**Reset Level 3:** Erases all image data files stored in the SAF memory and communication files (e.g. substitute RX files). This is the recommended setting when the SAF requires clearing. **Reset Level 2:** This level erases the following items in addition to those erased by Reset Level 3: own telephone number, bit switches (excluding country code), RTI/TTI/CSI, report data, programmed telephone numbers (Quick/Speed/Groups, service station, etc.), NCU parameters. The NCU country code is also set to the same as the bit switch country code (System Bit Switch 0F). After erasing, the machine automatically changes these two bits back to 0. **No reset:** Normal operation **Cross-reference** **RAM Reset Level 1 (Factory reset):** Change the RAM address data from 400005(H) to FF(H), then turn the machine off and on. In addition to those items erased by Reset Level 2, the clock, country code (the default country code is USA), scan margin settings, and print registration settings are erased.

System Switch 00		
No	**FUNCTION**	**COMMENTS**
2	Technical data printout on Journal **0:** Disabled **1:** Enabled	1: Instead of a personal code, the Journal lists the following data for each analog G3 communication. E.g. 32 V34 288 M 01 00 03 02 **First number:** Symbol rate (V.34 only) **Second number:** Final modem type used **Third number:** Final date rate (for example, 288 means 28.8 KBPS) **Fourth number:** M means modem EQM. L means RX level. **Fifth and sixth number:** Line quality data. This is either a measurement of the error rate or the RX level, depending on the bit 3 setting below. (An M on the report indicates that it is error rate, and an L indicates RX level.) The left-hand figure is the high byte and the right-hand figure is the low byte (refer to the note after this table for how to read the RX level). If it measures the error rate, a larger number means more errors. **Seventh number (RX mode only):** Total number of error lines that occurred during non-ECM reception. **Eighth number (RX mode only):** Total number of burst error lines that occurred during non-ECM reception. The seventh and eighth numbers are fixed at 00 for transmission records and ECM reception records.
3	Line quality data output method **0:** Error rate measurement during image data transmission **1:** Rx level	This bit determines the data type printed in the Journal when bit 2 (above) enables a technical data printout.
4	Line error marks **0:** Disabled **1:** Enabled	If this bit is 1, a mark will be printed on the left edge of the page at any place where a line error occurred in the data. A noisy line causes such errors, for example.
5	Communication parameter display **0:** Disabled **1:** Enabled	This is a faultfinding aid. The LCD shows the key parameters (see the next page). This is normally disabled because it cancels the CSI display for the user. Be sure to reset this bit to 0 after testing.
6	Protocol dump list output **0:** Disabled **1:** Enabled	This is used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after testing. The setting of system switch 09 bit 6 determines the types of communication that the list is printed after.

System Switch 00		
No	**FUNCTION**	**COMMENTS**
7	Amount of protocol dump data in one protocol dump list print operation **0:** Up to the limit of the memory area for protocol dumping **1:** Last communication only	Change this bit to 1 if you want to have a protocol dump list of the last communication only.

How to calculate the RX level listed on the Journal (when bit 2 of system switch 00 is set to 1)

Example: 32 V34 288 **L 01 00** 00 00

The four-digit hexadecimal value (N) after L indicates the RX level.
The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the RX level.

In this above example, the decimal value of N (=0100[H]) is 256.
So, the actual RX level is 256/-16 = -16 dB.

G3 Communication Parameters

Mode	DCS: ITU-T standard NSS: Non-standard G3
Modem rate	336: 33600 BPS 168: 16800 BPS 312: 31200 BPS 144: 14400 BPS 288: 28800 BPS 120: 12000 BPS 264: 26400 BPS 96: 9600 BPS 240: 24000 BPS 72: 7200 BPS 216: 21600 BPS 48: 4800 BPS 192: 19200 BPS 24: 2400 BPS
Communication mode	ECM: With ECM NML: With no ECM
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG optional compression JBB: JBIG standard compression
Resolution	F: Fine, transmitted at 8 x 15.4 dots per mm D: Detail, transmitted at 8 x 7.7 dots per mm S: Standard, transmitted at 8 x 3.85 dots per mm 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi)
I/O rate	0: 0 ms/line 10: 10 ms/line 25: 2.5 ms/line 20: 20 ms/line 5: 5 ms/line 40: 40 ms/line ”40” is displayed while receiving a fax message using AI short protocol.
Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1") no reduction A3: A3 (11.7"), no reduction

G4 Communication Parameters

Compression mode	MMR: MMR compression MR: MR compression MH: MH compression
Resolution	21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 24: Fine (200 x 400 dpi)
Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction (tx only) A3: A3 (11.7"), no reduction (tx only)
Transfer	T: Transfer - : Other
Confidential	C: Confidential - : Other
Other parameters	The following information is shown in 6-bit format. Bit 1 is the first bit from the left, and bit 6 is at the right end. Bit 1 - Smoothing 0: Enabled, 1: Disabled (Smoothing is disabled in halftone mode.) Bit 2 - CIL printing 0: Enabled, 1: Disabled Bit 3 - Not used Bit 4 - mm/inch conversion 0: Disabled, 1: Enabled Bit 5 - Engine type 0: mm, 1: inch Bit 6 - Resolution unit 0: mm, 1: inch

System Switch 01		
No	**FUNCTION**	**COMMENTS**
0	PM call **0:** Disabled **1:** Enabled	This bit switch determines whether the machine will send an Auto Service Call to the service station when it is time for PM.
1	Automatic Service Call function **0:** Disabled **1:** Enabled	Enables or disables the Automatic Service Call made to the service depot when an SC occurs.
2-6	Not used	Do not change these settings.
7	Forced Flash ROM boot **0:** Off **1:** On	When enabled, the machine will use the MBU (FCU) main firmware to boot up if booting up with an IC card fails. (e.g. in some cases, an IC card can contain a main firmware ID without the firmware itself).

System Switch 02		
No	**FUNCTION**	**COMMENTS**
0	Memory file transfer **0:** Disabled **1:** Enabled	**1:** All messages in the memory (including confidential RX messages) are sent to the fax number that is programmed as the service station. Always reset this bit to zero after transfer. **Cross-reference** Service station number programming: Function 13
1	Not used	Do not change these settings.

System Switch 02		
No	**FUNCTION**	**COMMENTS**
2	Scan Router connection 0: Disabled 1: Enabled	Set this bit to 1 when you wish to use this machine as a network scanner using Scan Router. The NIC Fax Unit must be installed before Scan Router can be used.
3	Substitute reception immediate printing if paper size does not match **0:** Disabled **1:** Enabled	1: If the paper in the trays is not the same size as the message, the machine will print the message. 0: The machine will not print the message unless the same size of paper is installed.
4	Automatic reset (during communication) **0:** Disabled **1:** Enabled	**1:** Standard G3 unit - The machine automatically returns to standby mode when a page takes more than a certain time to send (the default setting is 60 minutes). This timer can be adjusted with RAM addresses 4803AC and 4803AD. When the optional G3 or G4 unit is installed – While the machine is in standby mode, it resets the optional G3 or G4 unit at a certain interval (the default setting is 15 min). This timer can be adjusted with RAM addresses 4803AE and 4803AF. For communication, when this timer expires after the communication is finished, the machine resets the optional G3 or G4 unit. **Cross reference** Service RAM Addresses, section 4.5.
5	Not used	Do not change these settings.
6-7	**Memory read/write by RDS** **Bit 7 6 Setting** 0 0 Always disabled 0 1 User selectable 1 0 User selectable 1 1 Always enabled	**(0,0):** All RDS systems are always locked out. **(0,1), (1,0):** Normally, RDS systems are locked out, but the user can temporarily switch RDS on to allow RDS operations to take place. RDS will automatically be locked out again after a certain time, which is stored in System Switch 03 (see below). Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired. **(1,1):** At any time, an RDS system can access the machine.

System Switch 03		
No	**FUNCTION**	**COMMENTS**
0 to 7	Length of time that RDS is temporarily switched on when bits 6 and 7 of System Switch 02 are set to "User selectable"	00 - 99 hours (BCD). This data is only valid if bits 6 and 7 of System Switch 02 are set to "User selectable". The default setting is 24 hours.

System Switch 04		
No	**FUNCTION**	**COMMENTS**
0-2	LCD contrast **Bit2 1 0 Contrast** 0 0 0 Brightest 0 0 1 ↓ ↓ ↓ 1 1 0 ↓ 1 1 1 Darkest	Use these bit switches to adjust the contrast of the LCD on the operation panel.
3	Dedicated transmission parameter programming **0:** Disabled **1:** Enabled	Set this bit to 1 before changing any dedicated transmission parameters.
4	Not used	Do not change these settings.
5	Replacement level for the maintenance kits **0:** User **1:** Service	**0:** The machine asks the user to replace the ADF maintenance kit after 30,000 scans with the ADF, and the fusing unit maintenance kit at 60,000 print intervals. After the user replaces the kits, the machine asks the user if the kits have been replaced or not. After the user answers yes, the user has to reset the PM counters using the key operator tools. The replacement intervals are programmed at the following addresses: ADF kit interval: 400326 to 400329 (H) Fusing kit interval: 400382 to 400385 Refer to section 4.5 for more details. **1:** The machine will not ask the user to replace the maintenance kits.
6	CSI programming level **0:** User level **1:** Service level	**1:** Only a technician can program the CSI.
7	Telephone line type programming mode **0:** User level **1:** Service level	**1:** Only a technician can program the telephone line type selection.

System Switch 05 - Not used (do not change any of these settings)

System Switch 06		
No	**FUNCTION**	**COMMENTS**
0	Use of the Stop key during memory transmission **0:** Disabled **1:** Enabled	**1:** The Stop key can be used to halt memory transmissions. However, users might accidentally cancel another person's memory transmission in progress.
1-3	Not used	Do not change these settings.
4	Use of the Stop key during memory transmission **0:** Disabled **1:** Enabled	**1:** The Stop key can be used to halt memory transmissions. After pressing the Stop key, a message (STOP & CLR FILE?) appears on the LCD.
5-7	Not used	Do not change these settings.

System Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 7	Date of monthly Fax On Demand report printout	00 - 31 (BCD). [00 (BCD) - 1st day of the month (default setting)] [01 - 31 (BCD) - Programmed day of the month] This setting is only valid if bit 1 of User Parameter 04 is set to "1" (monthly FOD report printout enabled).

System Switch 08		
No	**FUNCTION**	**COMMENTS**
0 to 7	Time of monthly Fax On Demand report printout	00 - 23 hours (BCD). 00 (BCD) - 0 am (default setting) 01 (BCD) - 1 am ↓ 23 (BCD) - 11 pm This setting is only valid if bit 1 of User Parameter 04 is set to "1" (monthly FOD report printout enabled).

System Switch 09		
No	**FUNCTION**	**COMMENTS**
0	Addition of part of the image data from confidential transmissions on the transmission result report **0:** Disabled **1:** Enabled	If this feature is enabled, the top half of the first page of confidential messages will be printed on transmission result reports.
1	Inclusion of communications in the Journal when no image data was exchanged. **0:** Disabled **1:** Enabled	0: The Journal lists communications that reached phase C (message TX/RX) of the T.30 protocol. **1:** The Journal lists communications that reached phase A (call setup) of T.30 protocol. This includes telephone calls.
2	Automatic error report printout **0:** Disabled **1:** Enabled	**0:** Error reports are not printed. **1:** Error reports will print automatically after all failed communications, excluding polling reception and immediate transmissions.
3	Print error code on error report **0:** No **1:** Yes	**1:** Error codes are printed on the error reports.
4	Not used	Do not change these settings
5	Power failure report **0:** Disabled **1:** Enabled	**1:** A power failure report automatically prints after the power is switched on if a fax message disappears from memory when the power was turned off last.
6	Conditions for printing the protocol dump list **0:** Print for all communications **1:** Print only when there is a communication error	This switch becomes effective only when system switch 00 bit 6 is set to 1. **1:** Set this bit to 1 when you wish to print a protocol dump list only for communications with errors.
7	Not used	Do not change these settings

System Switch 0A		
No	**FUNCTION**	**COMMENTS**
0-1	Line type selection **Bit 1 Bit 0 Setting** 0 0 G3 0 1 PABX 1 0 G4 1 1 Not used	Determines the machine's default standby line for transmission.
2	Not used	Do not change these settings.
3	Continuous polling reception **0:** Disabled **1:** Enabled	This feature allows a series of stations to be polled in a continuous cycle.
4	Dialing on the ten-key pad when the handset is off-hook **0:** Disabled **1:** Enabled	**1:** The user can dial on the ten-key pad when the handset is off-hook.
5	On-hook dial **0:** Disabled **1:** Enabled	**0:** On-hook dial is disabled.
6	Line used for G3 transmission **0:** PSTN **1:** ISDN	If an ISDN kit has been installed, this bit determines whether G3 transmissions go out over the PSTN or the ISDN.
7	Line used when the machine falls back from G4 to G3if the other end is not a G4 machine **0:** PSTN **1:** ISDN	This bit switch has no effect if Communication Switch 07 bit 0 is set to 0.

System Switch 0B		
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change these settings.
2 **3**	Energy Saver mode timer **Bit 3 Bit 2 Time Limit** 0 0 1 minute 0 1 3 minutes 1 0 5 minutes 1 1 No limit	**(1, 1):** Automatic Energy Saver mode is disabled. **(Other):** The machine goes into Energy Saver mode when the timer expires after the last operation.
4	Not used	Do not change these settings.
5-6	LCD back light timer **Bit 6 Bit 5 Timer** 0 0 10 seconds 0 1 20 seconds 1 0 30 seconds 1 1 No limit	If set to 10 s, the back light will go out 10 s after the user finished using the operation panel. If set to 'no limit', the back light never goes out.
7	Key to be pressed to exit energy saver mode **0:** Only the energy saver key **1:** Any key	**1:** Any key can be pressed to exit energy saver mode

System Switch 0C		
No	**FUNCTION**	**COMMENTS**
0	A3/DLT original priority **0:** A3 **1:** DLT	Determines whether the machine will regard the original as A3 or DLT.
2	Not used	Do not change these settings.
3	A4/LT original priority **0:** A4 **1:** LT	Determines whether the machine will regard the original as A4 or LT.
4-7	Not used	Do not change these settings.

System Switch 0D - Not used (do not change any of these settings)

System Switch 0E		
No	**FUNCTION**	**COMMENTS**
0-6	Not used	Do not change these settings.
7	List/Report printing with sample image 0: Reduced image (LT/A4) 1: Full-size image	

System Switch 0F		
No	**FUNCTION**	**COMMENTS**
0 to 7	Country code for functional settings (Hex) 00: France 10: Not used 01: Germany 11: USA 02: UK 12: Asia 03: Italy 13: Not used 04: Austria 14: Hong Kong 05: Belgium 15: South Africa 06: Denmark 16: Australia 07: Finland 17: New Zealand 08: Ireland 18: Singapore 09: Norway 19: Malaysia 0A: Sweden 20: Turkey 0B: Switz. 21: Greece 0C: Portugal 0D: Holland 0E: Spain 0F: Israel	This country code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses. **Cross-reference** NCU country code: Function 08, parameter CC. If you change the NCU country code and exit service mode, the bit switch country code will automatically change to the code for the same country as the new NCU country code. This only happens for the standard NCU country code. Nothing happens if you change the country code for the optional SG3 unit's NCU. **If RAM reset level 1 is done, this bit switch resets as follows.** **Model for USA: 11 (USA)**

System Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level for parallel memory transmission	Threshold = N x 64 kbytes N can be between 00 - FF(H) Default setting: 08(H) = 512 kbytes

System Switch 11		
No	**FUNCTION**	**COMMENTS**
0	TTI printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TTI overprints information that the customer considers to be important (G3 transmissions).
1	CIL printing position **0:** Printed before the data leading edge **1:** Superimposed on the page data	Change this bit to 1 if the CIL overprints information that the customer considers to be important (G4 transmissions).
2	Position of label insertion **0:** Left **1:** Right	
3	Not used	Do not change these settings.
4	Rx time printing position **0:** Superimposed on the end of page data **1:** Printed after the data trailing edge	Change this bit to 1 to avoid image loss.
5	Quick/Speed Dial listing method 0: Name 1: Fax number	Determines which will appear on the journal for each Quick/Speed Dial, the registered name or registered fax number.
6	Memory reception if no RTI or CSI received **0:** Reception disabled **1:** Reception enabled only when there is no problem with the printer mechanism	This switch setting depends on user parameter switch 05 bit 1. This Sw U.P.05 bit 1 -- 0 : Reception always enabled 0 1 : Reception disabled 1 1 : Reception enabled only if there is no problem with the printer mechanism
7	Use of parallel memory transmission with G4 transmission **0:** Disabled **1:** Enabled	This bit determines whether parallel transmission can be used with G4 transmissions.

System Switch 12		
No	**FUNCTION**	**COMMENTS**
0 to 7	TTI printing position in the main scan direction	08 to 92 (BCD) mm. Only input even numbers. This setting determines the TTI print start position from the left edge of the paper. If the TTI is too far to the right, the file number, which is on the top right of the page, may obscure it.

System Switch 13		
No	**FUNCTION**	**COMMENTS**
0-1	Remaining memory threshold for activating the Tx/Rx File Save feature **Bit 1 Bit 0 Threshold** 0 0 25% 0 1 50% (default) 1 0 75% 1 1 Not used	If the remaining space in the 40MB memory is below the threshold value, the Tx/Rx File Save feature cannot be used. Adjust the threshold value to meet the customer's requirements.
2	Not used	Do not change this setting.
3-4	Files that can be stored in the Tx/Rx File Save feature **Bit 1 Bit 0 Files** 0 0 All files 0 1 Received files only 1 0 Transmitted files only 1 1 Not used	The default setting is (0 0). Change the settings to limit the file types that can be stored using the Tx/Rx File Save feature.
5-7	Not used	Do not change this setting.

System Switch 14		
No	**FUNCTION**	**COMMENTS**
0 to 7	Wait time between pages in printer mode (with an optional printer interface unit)	05 to 64 (H) (5 to 100s) During a printer job, a fax message could come in while a page from the computer is still being compiled. If the timer has not run out yet, the machine will continue to compile the page from the printer and the fax message will not be printed. However, if the timer runs out before the page has been compiled, all pages of the fax message will be printed, then the rest of the waiting print job will be output. Therefore, with a longer setting, the fax machine is more likely to wait until the end of print job output before printing any incoming fax message. A shorter setting allows the fax machine to interrupt a print job to print an incoming fax message. Default setting: 0A(H) = 10 s

System Switch 15		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change this setting.
1	Programming with European characters **0:** Disabled **1:** Enabled	**1:** The user can program with European characters (e.g. "**ä**", "**å**") for the TTI, Quick Dial labels, etc.
2-3	Not used	Do not change these settings.
4	Daylight saving 0: Can be input with the user tools 1: Can only be input with RAM addresses	Determines whether the user can program this feature or not.
5-7	Not used	Do not change these settings.

System Switch 16		
No	**FUNCTION**	**COMMENTS**
0	Feature Expander (40 MB memory) **0:** Not installed **1:** Installed	Change this bit to 1 after installing a feature expander in the machine's left IC card slot. **0:** When a feature expander is installed in the machine's left IC card slot before power-off, all the data in the card will be initialized if the machine does not detect the card at the next power-on. **1:** When a feature expander is installed in the machine's left IC card slot before power-off, the machine does not start up unless the machine detects the IC card or the data copy tool at the next power-on. This prevents the data inside the card from being initialized while replacing PCBs or downloading software. Note: The Fax on Demand option contains a feature expander memory card.
1-7	Not used.	Do not change the default setting.

System Switch 17		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change this setting.
1	Direct fax number entry **0:** Disabled **1:** Enabled	**0:** The user must place the original on the ADF or MDF before dialing.
2-3	Not used	Do not change these settings.
4	TTI selection when the destination is specified at the ten key pad. **0:** TTI 1st **1:** TTI 2nd	
5-7	Not used	Do not change these settings.

System Switch 18		
No	**FUNCTION**	**COMMENTS**
0-1	Default communication line for transmission when both lines are outside lines (neither line is connected to a PABX) **Bit 1 Bit 0 Setting** 0 0 Auto select 0 1 PSTN 1 (Standard G3) 1 0 PSTN 2 (Optional G3 unit) 1 1 ISDN (G4 unit required)	**(0,0):** If one line is already being used, the other line is selected. **Others:** The line is fixed in accordance with these switches. However, the user can select another line with the line selection key (or user function key if programmed with the line selection feature). The settings of communication switch 16 bit 5 and system switch 0A bit 6 over-ride these switches.
2	Not used	Do not change the setting
3-4	Default communication line for transmission when there is no G3 outside line (both lines connected to a PABX, or one line connected to a PABX and one line connected to an ISDN) **Bit 4 Bit 3 Setting** 0 0 Auto select 0 1 PSTN 1 (Standard G3) 1 0 PSTN 2 (Optional G3 unit) 1 1 ISDN (G4 unit required)	**(0,0):** If one line is already being used, the other line is selected. **Others:** The line is fixed in accordance with these switches. However, the user can select another line with the line selection key (or user function key if programmed with the line selection feature). The settings of communication switch 16 bit 5 and system switch 0A bit 6 over-ride these switches. User switch 13 (0DH) is used to connect a line to a PABX.
5-7	Not used	Do not change the settings.

System Switch 19		
0-1	Not used	Do not change the settings.
3	Handling LAN Fax Prefixed with # 0: Recognizes the #-prefixed number as a Quick Dial, Speed Dial, or Group Dial code. 1: Uses the #-prefixed number to access another line through a switching device.	This setting avoids problems with a system that recognizes the # symbol as a code to access a switching device. 0 (Off) Recognizes the # number as a normally registered destination and sends. If the number is not registered, nothing happens. 1 (On) Recognizes the # as the code to access another line via a switching device. However, if the input number is registered as a Quick Dial, Speed Dial, or Group Dial number, the machine sends the message to that number. If there is no match with a registered destination, or if the specified number code does not match the format for a Quick, Speed, or Group dial code, the machine dials the specified number.
4-7	Not used	Do not change the settings.

System Switch 1A		
No	**FUNCTION**	**COMMENTS**
0	Simultaneous broadcasting **0:** Disabled **1:** Enabled	This determines whether broadcasting is done by sending to each station consecutively, or simultaneously using more than one outgoing line (up to two outgoing lines can be used simultaneously).
1-7	Not used	Do not change the settings

System Switch 1B - Not used (do not change any of these settings)
System Switch 1C - Not used (do not change any of these settings)
System Switch 1D - Not used (do not change any of these settings)
System Switch 1E - Not used (do not change any of these settings)
System Switch 1F - Not used (do not change any of these settings)

5.2.2 SCANNER SWITCHES

Scanner Switch 00		
No	**FUNCTION**	**COMMENTS**
0	MTF **0:** Disabled **1:** Enabled	
1	Text/Photo separation in halftone mode **0:** Disabled **1:** Enabled	Normally keep this bit at 1 to get a good halftone quality.
2-3	Maximum transmittable document length **Bit 3 2 Setting** 0 0 600 mm 0 1 1200 mm 1 0 Not used 1 1 Not used	If the user wants to send very long documents such as well logs, select the higher setting.
4	OR processing in immediate TX and copying (Standard resolution) **0:** Disabled **1:** Enabled	**0:** The machine scans the document in 3.85 line/mm steps, then transmits or makes copies. **1:** The machine scans the document in 7.7 line/mm steps. Each pair of lines goes through OR processing before transmission or copy making. Toner may be used up earlier if OR processing is enabled.
5	Not used	Do not change these settings.
6	OR processing in Memory TX (Standard resolution) **0:** Disabled **1:** Enabled	
7	Not used	Do not change these settings.

Scanner Switch 01 - Not used (do not change any of these settings)
Scanner Switch 02 - Not used (do not change any of these settings)
Scanner Switch 03 - Not used (do not change any of these settings)
Scanner Switch 04 - Not used (do not change any of these settings)
Scanner Switch 05 - Not used (do not change any of these settings)
Scanner Switch 06 - Not used (do not change any of these settings)
Scanner Switch 07 - Not used (do not change any of these settings)
Scanner Switch 08 - Not used (do not change any of these settings)
Scanner Switch 09 - Not used (do not change any of these settings)
Scanner Switch 0A - Not used (do not change any of these settings)
Scanner Switch 0B - Not used (do not change any of these settings)
Scanner Switch 0C - Not used (do not change any of these settings)
Scanner Switch 0D - Not used (do not change any of these settings)
Scanner Switch 0E - Not used (do not change any of these settings)
Scanner Switch 0F - Not used (do not change any of these settings)

5.2.3 PRINTER SWITCHES

Printer Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Page separation mark **0:** Disabled **1:** Enabled	**0:** No marks printed. **1**: If an incoming fax requires two sheets to print, the machine prints an "∗" inside a small box at the bottom right hand corner of the first sheet. Then, it prints a "2" inside a small box at the top right hand corner of the second sheet. This helps the user identify pages that have been split up.
1	Repetition of data when the received page is longer than the printer paper **0:** Disabled **1:** Enabled	**0:** The next page continues from where the previous page left off. **1:** The final few mm of the previous page are printed at the top of the next page.
2-7	Not used	Do not change the settings.

Printer Switch 01		
No	**FUNCTION**	**COMMENTS**
0	Reset the fusing unit failure **0:** Off **1:** On (Clear)	When a fusing error occurs, set this bit to 1 after fixing the problem. The machine then resets the fusing error. Switch the machine off/on and this bit will reset itself to 0.
1-3	Not used	Do not change the settings.
4	Select fusing lamp control 0: Normal temperature control (default) 1: Low temperature	After a long continuous print on paper with a narrow main scan width, offset can occur in the next job if the next job is on paper with a wide main scan width, or due to differences in the length of the interval between sheets, the number of sheets, and the quality of the paper. The 1 setting is intended for users that run successive print jobs with a wide variety of paper sizes and types. Otherwise, do not change this setting.
5-7	Not used	Do not change the settings.

Printer Switch 02 - Not used (do not change any of these settings)

Printer Switch 03		
No	**FUNCTION**	**COMMENTS**
0	Reduce the length of received data **0:** Disabled **1:** Enabled	**0:** Incoming pages are printed without length reduction. **Cross-reference** Page separation threshold: Printer Switch 03, bits 4 to 7. **1:** Incoming pages are reduced in the lengthwise direction when printing. **Cross-reference** Reduction ratio: Printer Switches 04/05
1-3	Not used	Do not change these settings.
4-7	Page separation threshold (with reduction disabled in switch 03 bit 0 above) If the incoming page is up to x mm longer than the copy paper, the excess portion will not print. If the incoming page is more than x mm longer than the copy paper, the excess portion will print on the next page. These four bits determine the value of x. Hex value of bits 4 to 7 — x (mm) 0 — 0 1 — 1 and so on until F — 15 **Cross-reference** Length reduction On/Off: Printer Switch 03, Bit 0	

Printer Switches 04 and 05		
No	**FUNCTION**	**COMMENTS**
0-7	Reduction ratios used for different paper sizes (with reduction enabled in switch 03-bit 0 above) If reduction is enabled, the data will be reduced in the lengthwise direction before printing. These switches determine the maximum reduction ratio for each paper size. Switch 04/05 Paper used Bit 0 A5 sideways Bit 1 LT sideways Bit 2 LT Bit 3 A4 Bit 4 F, F4 Bit 5 LG Bit 6 Not used Bit 7 DTL SW04 SW05 Reduction Ratio 1 0 4/3 (When 600dpi is selected, cannot be applied for DLT) 0 1 8/7 (When 600dpi is selected, cannot be applied for DLT) 1 0 12/11	

Printer Switch 06 - Not used (do not change any of these settings)
Printer Switch 07 - Not used (do not change any of these settings)
Printer Switch 08 - Not used (do not change any of these settings)
Printer Switch 09 - Not used (do not change any of these settings)
Printer Switch 0A - Not used (do not change any of these settings)
Printer Switch 0B - Not used (do not change any of these settings)
Printer Switch 0C - Not used (do not change any of these settings)
Printer Switch 0D - Not used (do not change any of these settings)
Printer Switch 0E - Not used (do not change any of these settings)
Printer Switch 0F - Not used (do not change any of these settings)

5.2.4 COMMUNICATION SWITCHES

Communication Switch 00		
No	**FUNCTION**	**COMMENTS**
0-1	Compression modes available in receive mode **Bit 1 0 Modes** 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 MH/MR/MMR/JBIG	These bits determine the compression capabilities declared in phase B (handshaking) of T.30 protocol.
2-3	Compression modes available in transmit mode **Bit 3 2 Modes** 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 MH/MR/MMR/JBIG	These bits determine the compression capabilities used in the transmission and declared in phase B (handshaking) of T.30 protocol.
4	Not used	Do not change the setting.
5	JBIG reception mode **0:** Standard mode only **1:** Standard and optional mode (default)	If this bit is 0, JBIG optional mode is switched off for reception. Change the setting when communication problems occur using JBIG compression.
6	Priority for JBIG mode used for transmission **0:** Standard mode **1:** Optional mode (default)	This bit determines the priority for the compression mode used for JBIG transmission. Change the setting when communication problems occur using JBIG compression.
7	Closed network (reception) **0:** Disabled **1:** Enabled	**1:** Reception will not go ahead if the ID code of the other terminal does not match the ID code of this terminal. This function is only available in NSF/NSS mode.

Communication Switch 01		
No	**FUNCTION**	**COMMENTS**
0	ECM **0:** Disabled **1:** Enabled	If this bit is 0, ECM is switched off for all communications.
1	Not used	Do not change this setting.
2 **3**	Wrong connection prevention method Bit 3 Bit 2 Setting 0 0 None 0 1 8 digit CSI 1 0 4 digit CSI 1 1 CSI/RTI	(01) - The machine will not transmit if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work for manual dialing. (10) - The same as above, except that only the last 4 digits are compared. (11) - The machine will not transmit if the other end does not identify itself with an RTI or CSI. (00) - Nothing is checked; transmission will always go ahead. **Note:** When enabling wrong connection prevention, disable AI short protocol.
4	Operator call if no response is received in reply to NSF/DIS **0:** Disabled **1:** Enabled	Set this bit to 1 if the user expects to receive telephone calls at the same number that the machine is connected to. The machine will then alert the user if a phone call comes in.
5	Not used	Do not change the setting.
6-7	Maximum printable page length available **Bit 7 Bit 6 Setting** 0 0 No limit 0 1 B4 1 0 A4 1 1 Not used	The receiving terminal informs the transmitting terminal of the setting determined by these bits in the pre-message protocol exchange (in the DIS/NSF) frames.

Communication Switch 02		
No	**FUNCTION**	**COMMENTS**
0	Burst error threshold **0:** Low **1:** High	If the received page has more consecutive error lines than the threshold, the machine sends a negative response. The low and high threshold values depend on the sub-scan resolution, and are as follows. **Resolution Standard Detail** Low settings 6 12 High settings 12 24 This bit is ignored if ECM is in use.
1	Acceptable total error line ratio **0:** 5% **1:** 10%	If the error line ratio of a page exceeds the acceptable ratio, RTN will be sent to the other end. This bit is ignored if ECM is in use.
2	Treatment of pages received with errors during G3 reception **0:** Deleted from memory without printing **1:** Printed	**0:** Pages received with errors are not printed.

Communication Switch 02		
No	**FUNCTION**	**COMMENTS**
3	Hang-up decision after receiving a negative code (RTN or PIN) during G3 immediate transmission **0:** No hang-up **1:** Hang-up	**0:** Sends the next page even if RTN or PIN is received. **1:** The machine will send DCN and hang up if it receives RTN or PIN. This bit is ignored for memory transmissions or if ECM is being used.
4-5	Wrong connection prevention method for Service Call Bit 3 Bit 2 Setting 0 0 None 0 1 8 digit CSI 1 0 4 digit CSI 1 1 CSI/RTI	(01) - The machine will not transmit a service call if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. (10) - The same as above, except that only the last 4 digits are compared. (11) - The machine will not transmit a service call if the other end does not identify itself with an RTI or CSI. (00) - Nothing is checked; transmission will always go ahead.
6	Not used	Do not change the setting.
7	Burst error selection **0:** Not detected (total error only) **1:** Detected	1: Number of burst errors is also indicated, as well as total errors

Communication Switch 03		
No	**FUNCTION**	**COMMENTS**
0 to 7	Maximum number of page retransmission in a G3 memory transmission	00 - FF (Hex) times. This bit is ignored if ECM is in use.

Communication Switch 04 - Not used (do not change any of these settings)
Communication Switch 05 - Not used (do not change any of these settings)

Communication Switch 06		
No	**FUNCTION**	**COMMENTS**
0-5	Not used	Do not change these settings.
6	Dialing requirements: USA **0:** Disabled **1:** Enabled	
7	Not used	Do not change these setting.

Communication Switch 07		
No	**FUNCTION**	**COMMENTS**
0	Fallback from G4 to G3 if the other terminal is not a G4 terminal **0:** Disabled **1:** Enabled	Also see System Switch 0A bit 7. Refer to the ISDN G4 option service manual (G4 Internal Switches 17, 18, 1A, 1B, and 1C) for the CPS code set (Cause Value set) to determine G4 to G3 fallback.
1-2	Not used	Do not change the setting.
3	Fallback from G4 to G3 reflected in programmed Quick/Speed dials **0:** Fallback enabled (Default) **1:** Always start with G4	**0:** If a communication falls back from G4 to G3, the machine will always start with G3 from the next transmission to this number. **1:** The machine will always start to transmit with G4.
4	Fallback from G4 to G3 when G4 communication fails on the ISDN B-channel **0:** Fallback disabled (Default) **1:** Fallback enabled	**1:** Enable this switch only when G4 communication errors occur because the exchanger connects G4 calls to the PSTN. This problem only occurs with some types of exchanger.
5	Not used	Do not change the setting.
6	ISDN connection internal or external line **0:** External Line **1:** Internal Line	Set to 1 if there is a PABX between the machine and the ISDN.
7	Not used	Do not change the setting.

Communication Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 7	ISDN prefix number F0 to 99 (BCD) FF means not used.	This bit effective when bit 6 of Communication switch 07 is 1

Communication Switch 09 - Not used (do not change any of these settings)

Communication Switch 0A		
No	**FUNCTION**	**COMMENTS**
0	Memory transmission resumption point for redialing **0:** From the error page **1:** From page 1	**0:** The transmission begins from the page where transmission failed the previous time. **1:** Transmission begins from the first page.
1-7	Not used	Do not change these settings.

Communication Switch 0B		
No	**FUNCTION**	**COMMENTS**
0	Use of Economy Transmission during a Transfer operation to End Receivers **0:** Disabled **1:** Enabled	These bits determine whether the machine uses the Economy Transmission feature when it is carrying out a Transfer operation as a Transfer Station.
1	Use of Economy Transmission during a Transfer operation to the Next Transfer Stations **0:** Disabled **1:** Enabled	
2	Use of Label Insertion for the End Receivers in a Transfer operation **0:** Disabled **1:** Enabled	This bit determines whether the machine uses the Label Insertion feature when it is carrying out a Transfer operation as a Transfer Station.
3	Conditions required for Transfer Result Report transmission **0:** Always transmitted **1:** Only transmitted if there was an error	**0:** When acting as a Transfer Station, the machine will always send a Transfer Result Report back to the Requesting Station after completing the Transfer Request, even if there were no problems. **1:** The machine will only send back a Transfer Result Report if there were errors during communication so that one or more of the End Receivers could not be contacted.
4	Printout of the message when acting as a Transfer Station **0:** Disabled **1:** Enabled	When the machine is acting as a Transfer Station, this bit determines whether the machine prints the fax message coming in from the Requesting Terminal.
5	Action when there is no fax number in the programmed Quick/Speed dials which meets the requesting terminal's own fax number. **0:** Transfer is Disabled **1:** Transfer is Enabled	After the machine receives a transfer request, the machine compares the last N digits of the requesting terminal's own fax number with all the Quick/Speed dials programmed in the machine. (N is the number programmed in communication switch 0C.) **0:** If there is no matching number programmed in the machine, the machine rejects the transfer request. **1:** Even if there is no matching number programmed in the machine, the machine accepts the transfer request. The result report will be printed at the transfer terminal, but will not be sent back to the requesting terminal.
6-7	Not used	Do not change the settings.

Communication Switch 0C		
No	**FUNCTION**	**COMMENTS**
0 to 4	Number of digits compared to find the requester's fax number from the programmed Quick/Speed Dials when acting as a Transfer Station	00 - 1F (0 to 31 digits) After the machine receives a transfer request, the machine compares the own telephone number sent from the Requesting Terminal with all Quick/Speed Dials programmed in the machine, starting from Quick Dial 01 to the end of the Speed Dials. This number determines how many digits from the end of the telephone numbers the machine compares. If it is set to 00, the machine will send the report to the first Quick/Speed Dial that the machine compared. If Quick Dial 01 is programmed, the machine will send the report to Quick 01. If Quick Dial 01 through 04 are not programmed and Quick Dial 05 is programmed, the machine will send the report to Quick 05. Default setting - 05(H) = 5 digits
5-7	Not used	Do not change the settings.

Communication Switch 0D		
No	**FUNCTION**	**COMMENTS**
0 to 7	The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled	00 to FF (Hex), unit = 2 KB (e.g. 0C(H) = 24 KB) One page is about 24 KB. The machine refers to this setting before each fax reception. If the remaining memory is below this threshold, the machine cannot receive fax messages. If this setting remains at 0, the machine will detect ringing signals and enter receive mode even if there is no available memory. This will result in communication failure.

Communication Switch 0E		
No	**FUNCTION**	**COMMENTS**
0 to 7	Minimum interval between automatic dialing attempts	06 to FF (Hex), unit = 2 s (e.g., 06(H) = 12 s) This value is the minimum time that the machine waits before it dials the next destination.

Communication Switch 0F - Not used (do not change any of these settings)

Communication Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 7	Memory transmission: Maximum number of dialing attempts to the same destination	01 - FE (Hex) times

Communication Switch 11		
No	**FUNCTION**	**COMMENTS**
0 to 7	Immediate transmission: Maximum number of dialing attempts to the same destination	01 - FE (Hex) times

Communication Switch 12		
No	**FUNCTION**	**COMMENTS**
0 to 7	Memory transmission: Interval between dialing attempts to the same destination	00 - FF (Hex) minutes

Communication Switch 13		
No	**FUNCTION**	**COMMENTS**
0 to 7	Immediate transmission: Interval between dialing attempts to the same destination	00 - FF (Hex) minutes

Communication Switch 14		
No	**FUNCTION**	**COMMENTS**
0	Inch-to-mm conversion during transmission **0:** Disabled (default) **1:** Enabled	**0:** Transmitting is always done in inch format. **1:** If the other end only has mm-based resolution for printing, the machine converts the scanned data to mm-format before transmission.
1	Inch/mm format informed to the other terminal during transmission **0:** Always in inch format **1:** Dependent on the other terminal (default)	**0:** The machine always informs the other terminal that the resolution is in inch format and transmits with the inch format. **1:** The machine informs the other terminal that the resolution is in mm format and transmits with the inch format if the other end only has mm-based resolution. This setting is informed to the receiving terminal in the pre-message protocol exchange (in the DCS/NSS frames).
2-3	Not used	Do not change the factory setting.
4	Time for responding OK when substitute reception is disabled 0: After exit sensor detects paper 1: After data is stored into SAF memory	Determines when the machine will send the "OK" response to the sender, in cases where Substitute Reception is disabled (i.e. User SW05 bit 0 = 0).
5	A3 size reception **0:** Enabled **1:** Disabled (Max. B4 size)	**1:** The machine informs the other terminal that the maximum width is B4 size.
6 **7**	Available unit of resolution in which fax messages are received **Bit 7 Bit 6 Unit** 0 0 mm 0 1 inch 1 0 mm and inch (default) 1 1 Not used	For the best performance, do not change the factory settings. The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 15 - Not used (do not change any of these settings)

Communication Switch 16		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the factory settings.
1	Optional G3 unit **0:** Not installed **1:** Installed	**1:** Change this bit to 1 when installing the optional G3 unit.
2	Optional G4 unit **0:** Not installed **1:** Installed	**1:** Change this bit to 1 when installing the optional G4 unit.
3-4	Not used	Do not change the factory settings.
5	Use of PSTN-2 line **0:** Tx or Rx **1:** Rx only	Change this bit to 1 when the customer requires. Also see system switch 18.
6	ISDN-G3 reception **0:** Enabled **1:** Disabled	Change this setting when the customer requires.
7	ISDN dual communication **0:** Enabled **1:** Disabled	**1:** The machine uses only one B channel for communication. This enables a customer to occupy another B channel for other purposes such as an internet communication.

Communication Switch 17		
No	**FUNCTION**	**COMMENTS**
0	SEP (selective polling) reception **0:** Disabled **1:** Enabled	**0:** Disables features that require SEP (selective polling) signal reception.
1	SUB reception **0:** Disabled **1:** Enabled	**0:** Disables features (such as confidential reception to another maker's machine) that require SUB (Sub-address) signal reception.
2	PWD (Password) / SID (Sender ID) reception **0:** Disabled **1:** Enabled	**0:** Disables features that require PWD or SID signal reception.
3-6	Not used	Do not change the settings.
7	Action when there is no box with an F-code that matches the received SUB code **0:** Disconnect the line **1:** Receive the message (using normal reception mode)	Change this setting when the customer requires.

Communication Switch 18 - Not used (do not change any of these settings)
Communication Switch 19 - Not used (do not change any of these settings)
Communication Switch 1A - Not used (do not change any of these settings)

Communication Switch 1B		
No	**FUNCTION**	**COMMENTS**
0 to 7	Extension access code (0 to 7) to turn V.8 protocol On/Off **0:** On **1:** Off	If the PABX does not support V.8/V.34 protocol procedure, set the appropriate bit to "1" to disable V.8. **Example:** If "0" is the PSTN access code, set bit 0 to 1. When the machine detects "0" as the first dialed number, it automatically disables V.8 protocol. (Alternatively, if "3" is the PSTN access code, set bit 3 to 1.)

Communication Switch 1C		
No	**FUNCTION**	**COMMENTS**
0-1	Extension access code (8 and 9) to turn V.8 protocol On/Off **0:** On **1:** Off	Refer to communication switch 1B. **Example:** If "8" is the PSTN access code, set bit 0 to 1. When the machine detects "8" as the first dialed number, it automatically disables V.8 protocol. (If "9" is the PSTN access code, use bit 1.)
2-7	Not used	Do not change the settings.

Communication Switch 1D - Not used (do not change any of these settings)
Communication Switch 1E - Not used (do not change any of these settings)
Communication Switch 1F - Not used (do not change any of these settings)

5.2.5 G3 SWITCHES

G3 Switch 00		
No	**FUNCTION**	**COMMENTS**
0 **1**	Monitor speaker during communication (TX and RX) **Bit 1 Bit 0 Setting** 0 0 Disabled 0 1 Up to Phase B 1 0 All the time 1 1 Not used	**(0, 0):** The monitor speaker is not in use throughout communication. **(0, 1):** The monitor speaker is on up to phase B in the T.30 protocol. **(1, 0):** Used for testing. The monitor speaker is on throughout communication. Make sure that you reset these bits after testing.
2	Monitor speaker during memory transmission **0:** Disabled **1:** Enabled	**1:** The monitor speaker is in use during memory transmission.
3-7	Not used	Do not change these settings.

G3 Switch 01		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change these settings.
4	DIS frame length **0:** No limit **1:** 4 bytes	**1:** Only the first 4 bytes in the DIS frame will transmit (set to 1 if there are communication problems with PC-based faxes, which cannot receive extended DIS frames).
5	Not used	Do not change this setting.
6	CED/ANSam transmission **0:** Enabled **1:** Disabled	Do not change this setting, unless a communication problem is caused by sending CED/ANSam (V.34).
7	Not used	Do not change this setting.

G3 Switch 02		
No	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used **0:** Standard and non-standard **1:** Standard only	**1:** Disables NSF/NSS signals (these are in non-standard mode communication).
1-4	Not used	Do not change these settings.
5	Use of modem rate history when dialing using Quick/Speed dials **0:** Disabled **1:** Enabled	**0:** Communications using Quick/Speed dials always start with the highest modem rate. **1:** The machine uses the modem rate history for communications with the same machine when determining the most suitable rate for the current communication.
6	AI short protocol (transmission and reception) **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol.
7	Not used	Do not change these settings.

G3 Switch 03		
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **1:** Before sending DCS, the machine waits for the second DIS, caused by echo on the line.
1	Not used	Do not change this setting.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not change this setting unless the line condition is so poor the data rate slows to 14.4 kbps or lower.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	**1:** The machine transmits with a frame size of 64 bytes. Set this bit to 1 when the other terminal only has a 64 byte frame size.
4	CTC transmission conditions **0:** Ricoh mode (PPR x 1) **1:** ITU-T mode (PPR x 4)	When using ECM, the machine will choose a slower modem rate after receiving PPR once (Ricoh mode) or four times (ITU-T mode). This bit is ineffective in V.34 communications.
5	Modem rate for the next page after receiving a negative code (RTN or PIN) **0:** No change **1:** Fallback	**1:** The TX modem rate of the machine will fall back before sending the next page if it receives a negative code. This bit is ignored if ECM is in use.
6	Not used	Do not change this setting.
7	Polarity change after DIS/NSF detection **0:** Disabled **1:** Enabled	This bit should be set to ”1” only to deal with communication problems caused by certain types of exchanger.

G3 Switch 04		
	FUNCTION	**COMMENTS**
0 to 3	Training error detection threshold	0 - F (Hex): 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that the training was successful.
4-7	Not used	Do not change these settings.

G3 Switch 05		
	FUNCTION	**COMMENTS**
0 to 3	Initial TX modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.8 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers.
4 to 5	Initial modem type for 9.6 k or 7.2 kbps **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 Not used 1 1 Not used	These bits set the initial modem type for 9.6 k and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	Not used	Do not change these settings.

G3 Switch 06		
	FUNCTION	**COMMENTS**
0 to 3	Initial RX modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0k 0 1 1 0 14.4k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.8 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	The settings of these bits inform the transmitting terminal of the available modem rate for the receiving machine. Use a lower setting if high speeds pose problems during reception.

G3 Switch 06		
	FUNCTION	**COMMENTS**
4 to 7	Modem types available for reception **Bit 7 6 5 4 Setting** 0 0 0 1 V.27ter 0 0 1 0 V.27ter, V.29 0 0 1 1 V.27ter, V.29, V.33 0 1 0 0 V.27ter, V.29, V.33, V17 0 1 0 1 V.27ter, V.29, V.33, V.17, V.34 Other settings - Not used	The settings of these bits inform the transmitting terminal of the available modem type for the receiving machine. V.33 is an exclusive Ricoh mode (NSF).

G3 Switch 07		
	FUNCTION	**COMMENTS**
0-1	PSTN cable equalizer (TX mode) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters if you need to change this for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
2-3	PSTN cable equalizer (RX mode) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
4	PSTN external cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode) **0:** Disabled **1:** Enabled	Keep this bit at “1” in most cases.
5-7	Not used	Do not change these settings.

G3 Switch 08		
	FUNCTION	**COMMENTS**
0-1	PABX cable equalizer (TX mode) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters if you need to change this for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
2-3	PABX cable equalizer (RX mode) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
4	PABX external cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode) **0:** Disabled **1:** Enabled	Keep this bit at “1” in most cases.
5-7	Not used	Do not change these settings.

G3 Switch 09		
No	**FUNCTION**	**COMMENTS**
0-1	ISDN cable equalizer (tx mode) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently.
2-3	ISDN cable equalizer (rx mode) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently.
4	ISDN external equalizer for V.27ter, V.29, V.33/V.17, V.8 (Rx mode) **0:** Disabled **1:** Enabled	**1:** Keep this bit at “1” in most cases.
5-7	Not used	Do not change the settings.

G3 Switch 0A		
	FUNCTION	**COMMENTS**
0-1	Maximum allowable carrier drop during image data reception **Bit 1 Bit 0 Value (ms)** 0 0 200 0 1 400 1 0 800 1 1 Not used	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.
2	Non-ECM Carrier Drop 0: Maintain connection 1: Disconnect	Determines how the machine will respond when it detects a drop in the carrier signal during non-ECM communication.
3	Not used	Do not change this setting.
4	Maximum allowable frame interval during image data reception. **0:** 5 s **1:** 13 s	This bit determines the maximum interval between each EOL signal (end-of-line) or between each ECM frame from the other end. Try using a longer setting if error code 0-21 is frequent.
5	Not used	Do not change this setting.
6	Reconstruction time for the first line in receive mode **0:** 6 s **1:** 12 s	When a computer controls the sending terminal, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. If this occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20.
7	Not used	Do not change this setting.

G3 Switch 0B - Not used (do not change these settings)

G3 Switch 0C		
	FUNCTION	COMMENTS
0-1	Pulse dialing method **Bit 1 Bit 0 Setting** 0 0 Normal (P=N) 0 1 Oslo (P=10 - N) 1 0 Sweden (N+1) 1 1 Not used	P = Number of pulses sent out, N = Number dialed.
2-6	Not used	Do not change these settings.
7	FOD feature using PSTN-1 (standard NCU) **0:** Enabled **1:** Disabled	**1:** FOD will not be available on the PSTN-1 line.

G3 Switch 0D - Not used (do not change these settings)
G3 Switch 0E - Not used (do not change these settings)
G3 Switch 0F - Not used (do not change these settings)

5.2.6 G3-2 SWITCHES

These bit switches require an optional G3 interface unit.

G3-2 Switch 00 - Not used (do not change any of these settings)

G3-2 Switch 01		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change these settings.
4	DIS frame length **0:** No limit **1:** 4 bytes	**1:** Only the first 4 bytes in the DIS frame will transmit (set to 1 if there are communication problems with PC-based faxes, which cannot receive extended DIS frames).
5	Not used	Do not change this setting.
6	CED/ANSam transmission **0:** Enabled **1:** Disabled	Do not change this settings, unless a communication problem is caused by sending CED/ANSam (V.34).
7	Not used	Do not change this setting.

G3-2 Switch 02		
No	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used **0:** Standard and non-standard **1:** Standard only	**1:** Disables NSF/NSS signals (these are in non-standard mode communication).
1-4	Not used	Do not change these settings.
5	Use of modem rate history when dialing using Quick/Speed dials **0:** Disabled **1:** Enabled	**0:** Communications using Quick/Speed dials always start with the highest modem rate. **1:** The machine uses the modem rate history for communications with the same machine when determining the most suitable rate for the current communication.
6	AI short protocol (transmission and reception) **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol.
7	Not used	Do not change these settings.

G3-2 Switch 03		
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **1:** Before sending DCS, the machine waits for the second DIS, caused by echo on the line.
1	Not used	Do not change this setting.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not change this setting unless the line condition is so poor the data rate slows to 14.4 kbps or lower.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	**1:** The machine transmits with a frame size of 64 bytes. Set this bit to 1 when the other terminal only has a 64 byte frame size.
4	CTC transmission conditions **0:** Ricoh mode (PPR x 1) **1:** ITU-T mode (PPR x 4)	When using ECM, the machine will choose a slower modem rate after receiving PPR once (Ricoh mode) or four times (ITU-T mode). This bit is ineffective in V.34 communications.
5	Modem rate for the next page after receiving a negative code (RTN or PIN) **0:** No change **1:** Fallback	**1:** The TX modem rate of the machine will fall back before sending the next page if it receives a negative code. This bit is ignored if ECM is in use.
6	Not used	Do not change this setting.
7	Polarity change after DIS/NSF detection **0:** Disabled **1:** Enabled	This bit should be set to ”1” only to deal with communication problems caused by certain types of exchanger.

G3-2 Switch 04		
	FUNCTION	**COMMENTS**
0 to 3	Training error detection threshold	0 - F (Hex): 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that the training was successful.
4-7	Not used	Do not change these settings.

G3-2 Switch 05		
	FUNCTION	**COMMENTS**
0 to 3	Initial TX modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.8 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers.
4-5	Initial modem type for 9.6 k or 7.2 kbps **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 Not used 1 1 Not used	These bits set the initial modem type for 9.6 k and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	Not used	Do not change these settings.

G3-2 Switch 06		
	FUNCTION	**COMMENTS**
0 to 3	Initial RX modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0k 0 1 1 0 14.4k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.8 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	The settings of these bits inform the transmitting terminal of the available modem rate for the receiving machine. Use a lower setting if high speeds pose problems during reception.

G3-2 Switch 06		
	FUNCTION	**COMMENTS**
4-7	Modem types available for reception **Bit 7 6 5 4 Setting** 0 0 0 1 V.27ter 0 0 1 0 V.27ter, V.29 0 0 1 1 V.27ter, V.29, V.33 0 1 0 0 V.27ter, V.29, V.33, V17 0 1 0 1 V.27ter, V.29, V.33, V.17, V.34 Other settings - Not used	The settings of these bits inform the transmitting terminal of the available modem type for the receiving machine. V.33 is an exclusive Ricoh mode (NSF).

G3-2 Switch 07		
	FUNCTION	**COMMENTS**
0-1	PSTN cable equalizer (TX mode) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters if you need to change this for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
2-3	PSTN cable equalizer (RX mode) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
4	PSTN external cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode) **0:** Disabled **1:** Enabled	Keep this bit at “1” in most cases.
6-7	Not used	Do not change these settings.

G3-2 Switch 08 - Not used (do not change any of these settings)
G3-2 Switch 09 - Not used (do not change any of these settings)

G3-2 Switch 0A

	FUNCTION	COMMENTS
0 **1**	Maximum allowable carrier drop during image data reception **Bit 1 Bit 0 Value (ms)** 0 0 200 0 1 400 1 0 800 1 1 Not used	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.
2	Non-ECM Carrier Drop 0: Maintain connection 1: Disconnect	Determines how the machine will respond when it detects a drop in the carrier signal during non-ECM communication.
3	Not used	Do not change this setting.
4	Maximum allowable frame interval during image data reception. **0:** 5 s **1:** 13 s	This bit determines the maximum interval between each EOL signal (end-of-line) or between each ECM frame from the other end. Try using a longer setting if error code 0-21 is frequent.
5	Not used	Do not change this setting.
6	Reconstruction time for the first line in receive mode **0:** 6 s **1:** 12 s	When a computer controls the sending terminal, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. If this occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20.
7	Not used	Do not change this setting.

G3-2 Switch 0B - Not used (do not change these settings)

G3-2 Switch 0C		
	FUNCTION	COMMENTS
0 **1**	Pulse dialing method **Bit 1 Bit 0 Setting** 0 0 Normal (P=N) 0 1 Oslo (P=10 - N) 1 0 Sweden (N+1) 1 1 Not used	P = Number of pulses sent out, N = Number dialed.
2-6	Not used	Do not change these settings.
7	FOD feature using PSTN-2 (optional SG3) **0:** Enabled **1:** Disabled	**1:** FOD will not be available on the PSTN-2 line.

G3-2 Switch 0D - Not used (do not change these settings)
G3-2 Switch 0E - Not used (do not change these settings)
G3-2 Switch 0F - Not used (do not change these settings)

5.2.7 G4 INTERNAL SWITCHES

These bit switches require an optional ISDN G4 interface unit.

G4 Internal Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-7	Country code Bit 4 3 2 1 0 Country 0 0 0 0 1 Germany (1TR6 mode) 0 0 0 1 0 Universal (Europe Euro ISDN) 1 0 0 0 1 USA **Note:** In Germany, use the Universal setting for the Euro ISDN lines.	

G4 Internal Switch 01 - Not used (do not change these settings)
G4 Internal Switch 02 - Not used (do not change these settings)

G4 Internal Switch 03		
No.	**FUNCTION**	**COMMENTS**
0	Amount of protocol dump data in one protocol dump list **0:** Last communication only **1:** Up to the limit of the memory area for protocol dumping	Change this bit to 0 if you want to have a protocol dump list of the last communication only. This bit is only effective for the dump list D + Bch1.
1-7	Not used	Do not change these settings.

G4 Internal Switch 04		
No.	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change these settings.
3	Auto data rate change for transmission (64 kbps to 56 kbps) **0:** On **1:** Off	**0:** The machine automatically changes the transmission data rate from 64 kbps to 56 kbps after 3 s if the other end did not accept the call. This is to cope with 56 kbps networks in the USA. Normally, keep this bit at 0.
4	Auto data rate change for reception (64 kbps to 56 kbps) **0:** Off **1:** On	**1:** The machine automatically changes the reception data after 6 s. Change this bit to 1 only when there is a communication error where the other terminal informs 64 kbps in the SETUP signal although it is actually 56 kbps.
5-7	Not used	Do not change these settings.

G4 Internal Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change these settings.
2	Protocol ID check **0:** Yes **1:** No	The Protocol ID is in the CR packet.
3-7	Not used	Do not change these settings.

G4 Internal Switch 06 - Not used (do not change these settings)
G4 Internal Switch 07 - Not used (do not change these settings)
G4 Internal Switch 08 - Not used (do not change these settings)
G4 Internal Switch 09 - Not used (do not change these settings)
G4 Internal Switch 0A - Not used (do not change these settings)
G4 Internal Switch 0B - Not used (do not change these settings)
G4 Internal Switch 0C - Not used (do not change these settings)
G4 Internal Switch 0D - Not used (do not change these settings)
G4 Internal Switch 0E - Not used (do not change these settings)
G4 Internal Switch 0F - Not used (do not change these settings)

G4 Internal Switch 10 (Dch. Layer 1)		
No.	**FUNCTION**	**COMMENTS**
0-5	Not used	Do not change these settings.
6	INFO1 signal resend **0:** Resend **1:** No resend	**0:** Some DSUs may not reply to the INFO1 signal with INFO2, if there is noise in the INFO1 signal accidentally. Try changing this bit to 0, to resend INFO1 before the machine displays “CHECK INTERFACE”.
7	Not used	Do not change these settings.

G4 Internal Switch 11 (Dch. Layer 2)		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
1	Type of TEI used **0:** Dynamic TEI **1:** Static TEI	This is normally fixed at 0. However, some networks may require this bit to be set at 1 (see below). In this case, you may have to change the values of bits 2 to 7.
2-7	Static TEI value	Store the lowest bit of the TEI at bit 7 and the highest bit of the TEI at bit 2. **Example:** If the static TEI is 011000, set bits 3 and 4 to 1 and bits 2, 5, 6, and 7 to 0.

G4 Internal Switch 12 - Not used (do not change these settings)

G4 Internal Switch 13: D channel layer 3 (Attachment IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
1	Information transfer capability shift down to retry transmission **0:** Shift down procedure disabled (Default) **1:** Shift down and retry the call	**1:** The machine changes the ISDN G3 information transfer capability informed in the [SETUP] signal to “Speech” from “3.1 kHz audio” or to “3.1 kHz audio” from “Speech” automatically and retries the transmission. The information transfer capability used in the first try is determined by the setting of G4 internal bit switch 14 bit 0. This switch is effective with some types of exchangers and T/As where they only accept calls with information transfer capability “Speech”.
2	Attachment of calling ID and subaddress **0:** No **1:** Yes	Normally, this bit should be at 0, because most networks add the calling ID and subaddress to the SETUP signal to the receiver. However, some networks may require the machine to add this ID (and/or subaddress). Only in this case should this bit be at 1.
3	Attachment of the Lower Layer Capabilities **0:** No **1:** Yes	This bit determines whether Lower Layer Capabilities are informed in the [SETUP] signal. Keep this bit at 0 in most cases.
4	Attachment of the Higher Layer Capabilities **0:** Yes **1:** No	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal or not. Keep this bit at 0 in most cases.
5	Attachment of the channel information element (CONN) **0:** No **1:** Yes	Keep this bit at 0 in most cases.
6	Attachment of the Higher Layer Capabilities for ISDN G3 transmission **0:** Same as the bit 4 setting **1:** Not attached	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal for ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBX that do not respond to Higher Layer Capability “G3”. When this bit is set to 0, the setting depends on the setting of bit 4. Keep this bit at 1 in most cases.

G4 Internal Switch 13: D channel layer 3 (Attachment IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
7	Condition for fallback from G4 to G3 **0:** Refer to the CPS code setting **1:** Fallback in response to any CPS code	**0:** Fallback occurs when a CPS code is the same as the CPS code settings specified by G4 internal switches 17, 18, 1A, 1B, and 1C. If you wish to enable fallback when any CPS code is detected, set this bit to "1". This switch is effective in coping with fallback problems where the CPS code does not match those specified in the ITU-T recommendation.

G4 Internal Switch 14: D channel layer 3 (Selection IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0	ISDN G3 information transfer capability **0:** 3.1 kHz audio **1:** Speech	In tx mode, this determines the information transfer capability informed in the [SETUP] message. In rx mode, this determines the information transfer capability that the machine can use to receive a call. Set this bit to 1 if the ISDN does not support 3.1 kHz audio.
1-2	Not used	Do not change these settings.
3-4	Channel selection in [SETUP] in tx mode Bit 4 3 Setting 0 0 Any channel 0 1 B1 channel 1 0 B2 channel 1 1 Not used	**Any channel:** When this is informed to the exchanger, the exchanger will select either B1 or B2.
5	Called ID mapping **0:** Called party number **1:** Keypad facility	**0:** Called ID is mapped to the called party number. **1:** Called ID is mapped to the keypad facility. Note that the subaddress in not mapped. On the 5ESS network (USA), set it to 1.
6	Numbering plan for the called party number **0:** Unknown **1:** E.164	**E.164:** This may be used in Sweden if an AXE10 exchanger is fitted with old software, and in Australia. **Unknown:** This is the normal setting.
7	Subaddress coding type **0:** IA5 (NSAP) **1:** BCD (ISO8348)	This is normally kept at 0. However, some networks require this bit to be at 1.

G4 Internal Switch 15: D channel layer 3 (Judgement R: MSG)		
No.	**FUNCTION**	**COMMENTS**
0	Action when receiving [SETUP] signal containing no called subaddress **0:** A reply is sent **1:** No reply is sent	This bit depends on user requirements. If it is at 1, communication will be halted if the other terminal has not input the subaddress.
1-4	Not used	Do not change the settings
5	Global call reference **0:** Ignored **1:** Global call number is used	Global call reference means 'call reference value = 0'. This bit determines how to deal with such an incoming call if received from the network. Keep this bit at 1 in Germany 1TR6.
6-7	Not used	Do not change these settings.

G4 Internal Switch 16: D channel layer 3 (Approval)		
No.	**FUNCTION**	**COMMENTS**
0-1	Answer delay time Bit 1 0 Setting 0 0 No delay 0 1 1.0 s delayed (1TR6) 1 0 0.5 s delayed 1 1 Not used	In some countries, a time delay to answer a call is required. Otherwise, use this switch as follows: If the machine is connected to the same bus from the DSU as a model K200 is connected, the machine receives most of the calls because the response time to a call is faster than the K200. If the customer wants the K200 to receive most of the calls, adjust the response time using these bits. If the customer does not want one machine to receive most of the calls, use subaddresses to identify each terminal.
2	Action when receiving [SETUP] signal containing user-specific called party subaddress **0:** Ignores the call **1:** Receives the call	Normally, the 3rd octet of called party subaddress information in the [SETUP] signal is set to NSAP. However, some networks may add “user-specific” subaddress to the [SETUP] signal, and the result of this is that the machine won't answer the call if a subaddress is specified. So, change this bit to 1 to let the machine receive the call if the machine is connected to such a network.
3-4	Not used	Do not change these settings.
5	Indicated bearer capabilities **0:** 56 kbps **1:** 64 kbps	**1:** 64 kbps calling is indicated in the Bearer Capabilities, but communication is at 56 k. Use this bit if the machine is connected to a network which does not accept a 56 kbps data transfer rate as a bearer capability.
6	Not used	Do not change these settings.

G4 Internal Switch 16: D channel layer 3 (Approval)		
No.	**FUNCTION**	**COMMENTS**
7	Transfer capabilities (SI) informed in 1TR6 ISDN G3 transmission **0:** G3 Fax **1:** Analog	This bit determines whether transfer capabilities informed in the Service Indicator for 1TR6 ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBXs. Normally keep this bit at 1 in Germany 1TR6.

G4 Internal Switch 17: CPS Code Used for G4 to G3 Fallback - 1		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 Bits 0 to 6 of bit switch 17 contain a CPS code, and bits 0 to 6 of bit switch 18 contain another CPS code. If a CPS code is received which is the same as either of these, communication will fall back from ISDN G4 mode to ISDN G3 mode. The CPS codes must be the same as those specified in table 4-13 of ITU-T recommendation Q.931. Examples: Bit 6 5 4 3 2 1 0 1 0 0 0 0 0 1 CPS code 65 1 0 1 1 0 0 0 CPS code 88 For the codes in bits 0 to 6 of bit switches 17 and 18 to be recognized, bit 7 of bit switch 17 must be 1. Also, bit 0 of the Communication Switch 07 must be at 0, or Fallback from G4 to G3 will be disabled.	
7	This bit determines whether fallback from G4 to G3 occurs on receipt of one of the CPS codes programmed in bit switch 17 or 18, or on receipt of a certain standard code. **0:** Fallback occurs on receipt of any of the following CPS codes: Universal (Euro ISDN) - #3, #18, #57, #58, # 63, # 65, #79, #88, and #127 Germany 1TR6 mode - #3, #53, #58, and #90 Others - #3, #65, and #88 **1:** Fallback from G4 to G3 occurs on receipt any of above CPS codes or one of the CPS codes programmed in bit switch 17, 18, 1A, 1B, or 1C	

G4 Internal Switch 18: CPS Code Used for G4 to G3 Fallback - 2		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17	
7	This bit helps to choose the CPS code set for G4 to G3 fallback. **0:** Fallback occurs on receipt of the CPS code set, which is specified by the country code setting. **1:** Fallback occurs on receipt of the Universal CPS code set (#3, #18, #57, #58, # 63, # 65, #79, #88, and #127) even if another country code is programmed. If bit switch 17 bit 7 is “1”, fallback occurs on receipt of the Universal CPS code set or one of the CPS codes programmed in bit switches 17, 18, 1A, 1B, or 1C.	

G4 to G3 fallback

Bit 0 of Communication Switch 07 must be at 0, or fallback from G4 to G3 will be disabled.

The CPS codes for which fallback occurs are decided as follows.

- G4 bit switch 17, bit 7 - If set to “0”, fallback occurs on receipt of a code from a set that depends on the country code. If set to ”1”, fallback occurs for the 5 CPS codes programmed in bits 0 to 6 of G4 bit switches 17, 18, 1A, 1B, and 1C, in addition to the country code set.
  Note that if G4 bit switch 18, bit 7 is set to “1”, the CPS code set that is used is always the Universal set, regardless of the country code setting.

G4 Internal Switch 19		
No.	**FUNCTION**	**COMMENTS**
0	Permanence of the link **0:** Set/released each LAPD call **1:** Permanent	Keep this at 1 in the USA. In other areas, this bit is normally 0, depending on network requirements.
1	Channel used in ISDN L2 (64k) mode **0:** B1 **1:** B2	When making an IDSN L2 back-to-back test, you can select either the B1 or B2 channel with this bit switch.
2-7	Not used	Do not change the factory settings.

G4 Internal Switch 1A: CPS Code Used for G4 to G3 Fallback - 3		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1B: CPS Code Used for G4 to G3 Fallback - 4		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1C: CPS Code Used for G4 to G3 Fallback - 5		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1D - Not used (do not change these settings)
G4 Internal Switch 1E - Not used (do not change these settings)
G4 Internal Switch 1F - Not used (do not change these settings)

5.2.8 G4 PARAMETER SWITCHES

These bit switches require an optional ISDN G4 interface unit.

G4 Parameter Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-2	Network type Bit 2 1 0 Type x 0 0 Circuit switched ISDN Other settings: Not used	Do not change the default setting.
3-7	Not used	Do not change the default settings.

G4 Parameter Switch 01		
No.	**FUNCTION**	**COMMENTS**
0	Voice coding **0:** μ law **1:** A law	**0:** This setting is used in USA. **1:** This setting is used in Europe and Asia.
1	Action when [SETUP] signal without HLC is received **0:** Respond to the call **1:** Not respond to the call	If there are several TEs on the same bus and the machine responds to calls for another TE, the call may be without HLC information. Identify the type of calling terminal and change this bit to 1 if the caller is not a fax machine.
2-6	Not used	Do not change these settings.
7	Signal attenuation for G3 fax signals received from ISDN line (-6dB) **0:** Off **1:** On	**0:** If an analog signal comes over digital line, the signal level after decoding by the TE is theoretically the same as the level at the entrance to the digital line. However, this sometimes causes the received signal level to be too high at the received end. In this case, set this bit to 1 to adjust the attenuation level.

G4 Parameter Switch 02		
No.	**FUNCTION**	**COMMENTS**
0-1	Data rate (kbps) Bit 1 0 Setting 0 0 64 kbps 0 1 56 kbps	Other settings: Not used
2-7	Not used	Do not change these settings.

G4 Parameter Switch 03 - Not used (do not change these settings)
G4 Parameter Switch 04 - Not used (do not change these settings)

G4 Parameter Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change these settings.
4	B-channel T3 timer **0:** 30s **1:** 57s	**1:** This switch is useful when used in combination with the Communication Bit SW 07 bit 4. This is to cope with communication problems where G4 communication fails on the ISDN B-channel. Normally keep this bit at 1.
5-7	Not used	Do not change these settings.

G4 Parameter Switch 06		
No.	**FUNCTION**	**COMMENTS**
0	Layer 3 protocol **0:** ISO8208 **1:** T.70NULL	Set this bit to match the type of layer 3 signaling used by the ISDN. The dedicated parameters have the same setting for specific destinations. Normally keep this bit at 0.
1-7	Not used	Do not change these settings.

G4 Parameter Switch 07		
No.	**FUNCTION**	**COMMENTS**
0-3	Packet size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value is sent in the CR packet. This value must match the value stored in the other terminal, or communication will stop (CI will be returned). If the other end returns CI, check the value of the packet window size with the other party. Note that this value must be the same as the value programmed for the transport block size (G4 Parameter Switch 0B, bits 0 to 3). Normally, do not change the default setting.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 08		
No.	**FUNCTION**	**COMMENTS**
0-3	Packet window size Bit 3 2 1 0 Value 0 0 0 1 1 0 0 1 0 2 and so on until 1 1 1 1 15	This is the maximum number of unacknowledged packets that the machine can send out before having to pause and wait for an acknowledgement from the other end. Normally this should be kept at 7.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 09 - Not used (do not change these settings)
G4 Parameter Switch 0A - Not used (do not change these settings)

G4 Parameter Switch 0B		
No.	**FUNCTION**	**COMMENTS**
0-3	Transport block size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value must match the value set in the other terminal. Note that this value must be the same as the value programmed for the packet size (G4 Parameter Switch 7, bits 0 to 3). Also, the transport block size is limited by the amount of memory in the remote terminal. Normally, do not change the default setting.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 0C - Not used (do not change these settings)

G4 Parameter Switch 0D		
No.	**FUNCTION**	**COMMENTS**
0-1	Back-to-back test mode Bit 1 0 Setting 0 0 Off 1 0 ISDN L2 test mode (TE mode) Other settings - Not used	When doing a back-to-back test or doing a demonstration without a line simulator, use these bits to set up one of the machines in TE mode, and the other in NT mode Please note that this machine can only be set to TE mode. After the test, return both bits to 0. See "Back-to-back Testing" in the Troubleshooting section for full details.
2-7	Not used	Do not change these settings.

G4 Parameter Switch 0E - Not used (do not change these settings)
G4 Parameter Switch 0F - Not used (do not change these settings)

5.3 NCU PARAMETERS

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. The RAM read/write (Function 06) must change most of these, but NCU Parameter programming (Function 08) can change some others; if Function 08 can be used, the Remarks column indicates it. The RAM is in hex code unless (BCD) is included in the Unit column.

NOTE: The following addresses describe settings for the standard NCU. Change the start address 401F00H to 402000H for the settings for PSTN-2 (optional G3 unit) and 401F00H to 402100H for the settings for IP-FAX (optional NIC unit).

Address	Function	Unit	Remarks
401F00	Country code for NCU parameters	Use the Hex value to program the country code directly into this address, or use the decimal value to program it using Function 08 (parameter C.C.). **Country** **Decimal** **Hex** USA 17 11	
401F01	Line current detection time	20 ms	Line current is not detected if 401F01 contains FF.
401F02	Line current wait time		
401F03	Line current drop detect time		
401F04	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F05	PSTN dial tone frequency upper limit (low byte)		
401F06	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F07	PSTN dial tone frequency lower limit (low byte)		
401F08	PSTN dial tone detection time	20 ms	If 401F08 contains FF(H), the machine pauses for the pause time (address 401F0D / 401F0E).
401F09	PSTN dial tone reset time (low)		
401F0A	PSTN dial tone reset time (high)		
401F0B	PSTN dial tone continuous tone time		
401F0C	PSTN dial tone permissible drop time		
401F0D	PSTN wait interval (low)		
401F0E	PSTN wait interval (high)		
401F0F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF(H).
401F10	PSTN ring-back tone off detection time	20 ms	
401F11	PSTN detection time for the silent period after ring-back tone detected (low)	20 ms	

Service Tables

Address	Function	Unit	Remarks
401F12	PSTN detection time for the silent period after ring-back tone detected (high)	20 ms	
401F13	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F14	PSTN busy tone frequency upper limit (low byte)		
401F15	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F16	PSTN busy tone frequency lower limit (low byte)		
401F17	PABX dial tone frequency range (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F18	PABX dial tone frequency range (low byte)		
401F19	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F1A	PABX dial tone frequency lower limit (low byte)		
401F1B	PABX dial tone detection time	20 ms	If 401F1B contains FF, the machine pauses for the pause time (401F20 / 401F21).
401F1C	PABX dial tone reset time (low)		
401F1D	PABX dial tone reset time (high)		
401F1E	PABX dial tone continuous tone time		
401F1F	PABX dial tone permissible drop time		
401F20	PABX wait interval (high)		
401F21	PABX wait interval (low)		
401F22	PABX ring-back tone detection time	20 ms	If both addresses contain FF(H), tone detection is disabled.
401F23	PABX ring-back tone off detection time	20 ms	
401F24	PABX detection time for the silent period after ring-back tone detected (low)	20 ms	If both addresses contain FF(H), tone detection is disabled.
401F25	PABX detection time for the silent period after ring-back tone detected (high)	20 ms	If both addresses contain FF(H), tone detection is disabled.
401F26	PABX busy tone frequency upper (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F27	PABX busy tone frequency lower (low byte)		
401F28	PABX busy tone frequency lower (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F29	PABX busy tone frequency lower (low byte)		
401F2A	Busy tone ON time: range 1	20 ms	
401F2B	Busy tone OFF time: range 1		
401F2C	Busy tone ON time: range 2		
401F2D	Busy tone OFF time: range 2		
401F2E	Busy tone ON time: range 3		
401F2F	Busy tone OFF time: range 3		
401F30	Busy tone ON time: range 4		

Address	Function	Unit	Remarks
401F31	Busy tone OFF time: range 4		
401F32	Busy tone-continuous tone detection time		
401F33	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Tolerance (±) Bit 1 0 0 0 75% Bits 2 and 3 must always 0 1 50% be kept at 0. 1 0 25% 1 1 12.5% Bits 7, 6, 5, 4 - number of cycles required for cadence detection		
401F34	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F35	International dial tone frequency upper limit (low byte)		
401F36	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F37	International dial tone frequency lower limit (low byte)		
401F38	International dial tone detection time	20 ms	If 401F38 contains FF, the machine pauses for the pause time (401F 3D / 401F3E).
401F39	International dial tone reset time (low)		
401F3A	International dial tone reset time (high)		
401F3B	International dial tone continuous tone time		
401F3C	International dial tone permissible drop time		
401F3D	International dial wait interval (low)		
401F3E	International dial wait interval (high)		
401F3F	Country dial tone upper frequency limit (high)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
401F40	Country dial tone upper frequency limit (low)		
401F41	Country dial tone lower frequency limit (high)		If both addresses contain FF(H), tone detection is disabled.
401F42	Country dial tone lower frequency limit (low)		
401F43	Country dial tone detection time	20 ms	If 401F43 contains FF, the machine pauses for the pause time (401F48 / 401F49).
401F44	Country dial tone reset time (low)		
401F45	Country dial tone reset time (high)		
401F46	Country dial tone continuous tone time		
401F47	Country dial tone permissible drop time		

Address	Function	Unit	Remarks
401F48	Country dial wait interval (low)		
401F49	Country dial wait interval (high)		
401F4A	Time between opening or closing the Ds relay and opening the Di relay	1 ms	See Notes 2 and 5. Function 08 (parameter 11).
401F4B	Break time for pulse dialing	1 ms	Function 08 (parameter 12).
401F4C	Make time for pulse dialing	1 ms	Function 08 (parameter 13).
401F4D	Time between final Di relay closure and Ds relay opening or closing	1 ms	See Notes 2 and 5. Function 08 (parameter 14).
401F4E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 2 and 5. Function 08 (parameter 15).
401F4F	Time waited when a pause is entered at the operation panel		Function 08 (parameter 16). See Note 2.
401F50	DTMF tone on time	1 ms	Function 08 (parameter 17).
401F51	DTMF tone off time		Function 08 (parameter 18).
401F52	Tone attenuation level of DTMF signals while dialing (high frequency group)	- N x 0.5 - 3.5 (dBm)	Function 08 (parameter 19). See Note 4.
401F53	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	- N x 0.5 (dBm)	Function 08 (parameter 20). See Note 4.
401F54	PSTN: DTMF tone attenuation level after dialing (high frequency group)	- N x 0.5 - 3.5 (dBm)	Function 08 (parameter 21). See Note 4.
401F55	ISDN: DTMF tone attenuation level after dialing (high frequency group)	- N x 0.5 (dBm)	Function 08 (parameter 21). See Note 4.
401F56 to 401F58	Not used		Do not change these settings.
401F59	Grounding time (ground start mode)	20 ms	The Gs relay remains closed for this interval.
401F5A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
401F5B	International dial access code	BCD	For a code of 100: 401F5B - F1 401F5C - 00
401F5C			
401F5D	PSTN access pause time	20 ms	It waits this amount of time for each pause input after the PSTN access code. Up to 7 of these can be input. If this address contains FF[H], the pause time stored in address 401F4F is used.

Address	Function	Unit	Remarks
401F5E	Progress tone detection level, and cadence detection enable flags	Bit 7 Bit 6 Bit 5 dBm 0 0 0 -25.0 0 0 1 -35.0 0 1 0 -30.0 1 0 0 -40.0 1 1 0 -49.0 Bits 2, 0 - See Note 4.	
401F5F	Bit 7 and Bit 6 – Not used Bit5 1: Polarity detection enabled for Rx (detection time = 500ms) Bit4 1: Polarity detection enabled for Tx (detection time = 500ms) Bit 3 to 0 – Not used		
401F60 to 401F64	Not used		Do not change these settings.
401F65	Inter-city dial prefix (high)	BCD	For a code of 0:
401F66	Inter-city dial prefix (low)	BCD	401F65 - FF 401F66 - F0
401F67 to 401F68	Not used		Do not change these settings.
401F72	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz)	Function 08 (parameter 02).
401F73	Acceptable ringing signal frequency: range 1, lower limit		Function 08 (parameter 03).
401F74	Acceptable ringing signal frequency: range 2, upper limit		Function 08 (parameter 04).
401F75	Acceptable ringing signal frequency: range 2, lower limit		Function 08 (parameter 05).
401F76	Number or rings until a call is detected	1	Function 08 (parameter 06).
401F77	Minimum required length of the first ring	20 ms	See Note 3. Function 09 (parameter 07).
401F78	Minimum required length of the second and subsequent rings	20 ms	Function 08 (parameter 08).
401F79	Ringing signal detection reset time (low)	20 ms	Function 08 (parameter 09).
401F7A	Ringing signal detection reset time (high)		Function 08 (parameter 10).
401F7B to 401F80	Not used		Do not change these settings.
401F81	Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode.	20 ms	Factory setting: 500 ms

Address	Function	Unit	Remarks
401F82	Bits 0 and 1 - Handset off-hook detection time **Bit 1 0 Setting** 0 0 200 ms 0 1 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time **Bit 3 2 Setting** 0 0 200 ms 0 1 800 ms Other Not used Bits 4 to 7 - Not used		
401F83	Bits 7 to 5 – Not used Bit 4 – DTMF detection 0: Disabled 1: Enabled Bits 3 to 0 – Not used		Do not change the setting. If bit 4 is set to 0, Fax On Demand and Transfer operation using DTMF are disabled.
401F84	Bits 7 to 5 – DTMF minimum on detection time Bit 7 Bit 6 Bit 5 Setting 0 0 0 30 ms 0 0 1 40 ms 0 1 0 80 ms 0 1 1 140 ms Bits 4 to 2 – DTMF minimum off detection time Bit 4 Bit 3 Bit 2 Setting 0 0 0 30 ms 0 0 1 40 ms 0 1 0 80 ms 0 1 1 140 ms Bits 1 and 0 – Not used		Fax On Demand and Transfer operations: Incoming DTMF tones shorter than the setting will not be detected.
401FA1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
401FA2	Acceptable CED detection upper frequency upper limit (low byte)		
401FA3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
401FA4	Acceptable CED detection upper frequency lower limit (low byte)		
401FA5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
401FA6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
401FA7	Acceptable CNG detection upper frequency upper limit (low byte)		
401FA8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
401FA9	Acceptable CNG detection upper frequency lower limit (low byte)		
401FAA	Not used		Do not change these settings.

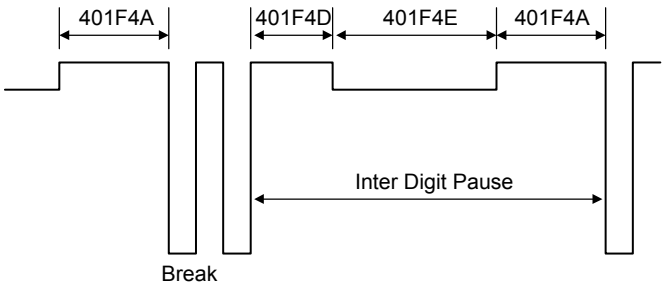
Address	Function	Unit	Remarks
401FAB	CNG on time	20 ms	Factory setting: 500 ms
401FAC	CNG off time	20 ms	Factory setting: 200 ms
401FAD	Number of CNG cycles required for detection		The data is coded in the same way as address 401F33. Factory setting: 23(H)
401FAE	Not used		Do not change this setting.
401FAF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
401FB0	Acceptable AI short protocol tone (800Hz) detection upper frequency upper limit (low byte)		
401FB1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
401FB2	Acceptable AI short protocol tone (800Hz) detection upper frequency lower limit (low byte)		
401FB3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
401FB4	PSTN: Tx level from the modem	- N - 3 (dBm)	Function 08 (parameter 01).
401FB5	PSTN: 1100 Hz tone transmission level	- N 401FB4 - 0.5N 401FB5 - 3.5 (dBm)	
401FB6	PSTN: 2100 Hz tone transmission level	- N 401FB4 - 0.5N 401FB6 - 3 (dBm)	
401FB7	PABX: Tx level from the modem	- dBm	
401FB8	PABX: 1100 Hz tone transmission level	- N 401FB7 - 0.5N 401FB8 (dB)	
401FB9	PABX: 2100 Hz tone transmission level	- N 401FB7 - 0.5N 401FB9 (dB)	
401FBA	ISDN: Tx level from the modem	- dBm	The setting must be between -12dBm and -15dBm.
401FBB	ISDN: 1100 Hz tone transmission level	-N 401FBA -0.5N 401FBB (dB)	
401FBC	ISDN: 2100 Hz tone transmission level	-N 401FBA -0.5N 401FBC (dB)	
401FBD	Modem turn-on level (incoming signal detection level) Standard NCU (Panasonic) Turn on level: -37-0.5N (dBm) Turn off level: "Turn on level" – 3 dBm Optional G3 unit (Ricoh) 00 (Hex) : -33 (dBm) 01 – 0A (Hex) : -38 (dBm) 0B – 14 (Hex) : -43 (dBm) 15 – 1F (Hex) : -48 (dBm)		

Service Tables

Address	Function	Unit	Remarks
401FD2	V.8 procedure in manual reception **Bit 3** **0:** Disabled **1:** Enabled ANSam transmission timer **Bit 5 4 Setting** 0 0 3.2 s 0 1 3.7 s 1 0 5.0 s 1 1 Not used		Do not change bits 0 to 2, 6 and 7.
401FDA	T.30 T1 timer	1 s	
401FE0 bit 3	Maximum wait time for post message signal	**0:** 12 s **1:** 30 s	**1:** Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. Change this bit to "1" if communication errors occur frequently during V.17 reception.

NOTES:

1. If a setting is unnecessary, store FF in the address.
2. Pulse dial parameters (addresses 48094A to 48094F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
3. The first ring may remain undetected until 1 to 2.5 wavelengths after the time specified by this parameter.
4. The calculated level must be between 0 and 10.
   The attenuation levels calculated from RAM data are:
   High frequency tone: - 0.5 x $N_{401F52/401F54}$ -3.5 dBm (PSTN)
   - 0.5 x N_{401F55} dBm (ISDN)
   Low frequency tone: - 0.5 x ($N_{401F52/401F54}$ + N_{401F53}) –3.5 dBm (PSTN)
   - 0.5 x (N_{401F55} + N_{401F53}) dBm (ISDN)
   Note: N_{480952}, for example, means the value stored in address 480952(H)
5. The actual inter-digit pause (pulse dial mode) is the sum of the periods specified by the RAM addresses 401F4A, 401F4D, and 401F4E.



H310S900.WMF

5.4 DEDICATED TRANSMISSION PARAMETERS

Each Quick Dial Key and Speed Dial Code has some bytes of programmable parameters allocated to it. If transmissions to a particular machine often experience problems, store that terminal's fax number as a Quick Dial or Speed Dial, and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the parameter bytes will be described.

5.4.1 PROGRAMMING PROCEDURE

1. Set bit 3 of System Bit Switch 04 to 1.
2. Access the required user tool (for a Quick Dial number or a Speed Dial number) and select the required number.

   Example: Change the Parameters in Quick Dial 10.

   a) User Tools - 1. Fax Features – 1. Program/Delete – 01. Prog. Quick Dial.
   b) Press the Quick Dial key 10.
   c) Press ◈ .
3. The settings for switch 01 are now displayed. Press a number from 0 to 7 corresponding to the bit that you wish to change.

   Example: Change bit 7 to 1: Press 7
4. To scroll through the parameter bytes, either:
   Select the next byte: **"↓ switch"**
   or
   Select the previous byte: **"↑ switch"**
   until the correct byte is displayed. Then go back to step 3.
5. After the setting is changed, press OK .
6. To finish, press User Tools.
7. After finishing, reset bit 3 of System Bit Switch 04 to 0.

5.4.2 PARAMETERS

The initial settings of the following parameters are all FF(H) - all the parameters are disabled. 'Disabled' means that the appropriate bit switch or other setting is used.

Switch 01
FUNCTION AND COMMENTS
ITU-T T1 time If the connection time to a particular terminal is longer than the NCU parameter setting, adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1 second. **Range:**1 to 127 s (01h to 7Fh) 00h or FFh - The local NCU parameter factory setting is used. Do not program a value between 80h and FEh.

Switch 02		
No.	**FUNCTION**	**COMMENTS**
0 to 3	TX level **Bit 3 2 1 0 Setting (dBm)** 0 0 0 0 0 0 0 0 1 -1 : 1 1 1 1 -15	If communication with a particular remote terminal often contains errors, the signal level may be inappropriate. Adjust the TX level for communications with that terminal until the results are better.
4	TX level setting **0:** Enabled **1:** Disabled (bits 0 to 4 must all be at 1 to disable)	**0:** When enabling the TX level setting, change this bit to 0, then change the settings of bits 0 through 3 above. **1:** When disabling the TX level setting, change all of the bits 0 through 4 to 1.
5-6	Cable equalizer **Bit 6 Bit 5 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently.
7	Cable equalizer setting **0:** Enabled **1:** Disabled (bits 5 to 7 must all be at 1 to disable)	**0:** When enabling the cable equalizer setting, change this bit to 0, then change the settings of bits 5 and 6 above. **1:** When disabling the cable equalizer setting, change all of the bits 5, 6 and 7 to 1.

Switch 03		
No.	**FUNCTION**	**COMMENTS**
0 to 3	Initial TX modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 0 Not used 0 0 0 1 2,400 0 0 1 0 4,800 0 0 1 1 7,200 0 1 0 0 9,600 0 1 0 1 12 000 0 1 1 0 14,400 : 1 1 0 1 31,200 1 1 1 0 33,600 1 1 1 1 Setting disabled	If training with a particular remote terminal always takes too long, the initial modem rate may be too high. Reduce the initial TX modem rate using these bits.
4-5	Not used	Do not change these settings.
6	AI short protocol **0:** Disabled **1:** Enabled	**0:** AI short protocol is disabled for transmission
7	Not used	Do not change these settings.

Switch 04		
No.	**FUNCTION**	**COMMENTS**
0-1	mm-inch conversion before tx **Bit 1 Bit 0 Setting** 0 0 mm-inch conversion available 0 1 mm only 1 0 Not used 1 1 Disabled	The machine uses inch-based resolutions for scanning. If ”mm only” is selected, the printed copy may be slightly distorted at the other end if that machine uses inch-based resolutions.
2-3	DIS/NSF detection method **Bit 3 Bit 2 Setting** 0 0 First DIS or NSF 0 1 Second DIS or NSF 1 0 First DIS or NSF 1 1 Setting disabled	**(0, 1):** Use this setting if echoes on the line are interfering with the set-up protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS.
4	V.8 protocol **0:** Disabled **1:** Enabled	If transmissions to a specific destination always end at a low modem rate (14,400 bps or lower), disable V.8 protocol so that V.34 protocol will not be used. **0:** V.34 communication will not be possible.
5	Compression modes available in transmit mode **0:** MH only **1:** All available compression modes	This bit determines the capabilities that are informed to the other terminal during transmission.
6-7	ECM during transmission **Bit 7 Bit 6 Setting** 0 0 Disabled 0 1 Enabled 1 0 Disabled 1 1 Setting disabled	For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the (0, 0) setting.

Switches 05 to 08 - Not used (do not change the settings)

Switch 09 (Optional ISDN G4 unit required)		
No.	**FUNCTION**	**COMMENTS**
0 to 3	Layer 3 protocol **Bits 3 2 1 0 Setting** 0 0 0 0 ISO 8208 0 0 0 1 T.70 NULL 1 1 1 1 Disabled Other settings: Not used	When disabled, the setting of G4 parameter switch 6 (bit 0) setting is used.
4-7	Not used	Do not change the settings.

Switch 10 (Optional ISDN G4 unit required)		
No.	**FUNCTION**	**COMMENTS**
0-1	Attachment of the Higher Layer Capabilities Bit 1 Bit 0 Setting 0 0 Attached 0 1 Not attached 1 0 Not used 1 1 Same as G4ISW 13 bit 4	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal or not.
2-3	ISDN G3 information transfer capability for transmission Bit 3 Bit 2 Setting 0 0 Speech 0 1 3.1KHz Audio 1 0 Not used 1 1 Same as G4ISW 14 bit 0	This determines the information transfer capability informed in the [SETUP] message. Set this bit to “Speech” if the ISDN does not support 3.1 kHz audio. **Note:** The setting of this switch has a higher priority than the G4 internal switch 13 bit 1 setting (Information transfer capability shift down on/off): Shift down procedure is disabled if this switch is set to either “Speech” or “3.1 kHz audio.”
4-7	Not used	Do not change the settings.

5.5 SERVICE RAM ADDRESSES

⚠CAUTION
Do not change settings marked as "Not used" or "Read only."

400001 to 480004(H) - ROM version (Read only)

400001(H) - Revision number (BCD)
400002(H) - Year (BCD)
400003(H) - Month (BCD)
400004(H) - Day (BCD)

400005(H) - RAM Reset Level 1

Change the data at this address to FF (H), then switch the machine off and on to reset all the system settings.
Caution: Before using this RAM, print the settings of all the system parameters (System Parameter List).

NOTE: The country code will be reset to UK when RAM reset level 1 is done.

400006 to 400015(H) - Machine's serial number (17 digits - ASCII)

400018(H) - Total program checksum (low)
400019(H) - Total program checksum (high)

40001A(H) - Boot program checksum (low)
40001B(H) - Boot program checksum (high)

40001C(H) - Main program checksum (low)
40001D(H) - Main program checksum (high)

40001E(H) - RDS program update counter (hex)

400020 to 40003F(H) - System bit switches
400040 to 40004F(H) - Scanner bit switches
400050 to 40005F(H) - Printer bit switches
400060 to 40007F(H) - Communication bit switches
400080 to 40008F(H) - G3 bit switches
400090 to 40009F(H) - SG3 bit switches (for optional G3 interface unit)
4000A0 to 4000AF(H) – IP-FAX G3 bit switches (for optional NIC interface unit)
4800B0 to 4800CF(H) - LAN bit switches (for optional NIC interface unit)
400120 to 40012F(H) – G4P switches (for optional G4 unit)
400130 to 40014F(H) – G4I switches (for optional G4 unit)

4000F0(H) - User parameter switch 00

Bit 0: Stamp home position 0: Disabled, 1: Enabled
Bits 1 and 2: Scanning contrast home position

Bit 2	1	Setting
0	0	Normal
0	1	Lighten
1	0	Darken

Bit 3: Do not adjust
Bits 4 and 5: Scanning resolution home position

Bit 5	4	Setting
0	0	Standard
0	1	Detail
1	0	Super Fine
1	1	Ex. Super Fine

Bit 6: Transmission mode home position 0: Memory TX, 1: Immediate TX
Bit 7: Half tone mode home position 0: OFF, 1: ON

4000F1(H) - User parameter switch 01

Bits 0 to 5: Not used
Bit 6: The alarm after communication is finished 0: OFF, 1: ON
Bit 7: Settings return to home position after transmission 0: Disabled, 1: Enabled

4000F2(H) - User parameter switch 02

Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies 0: Disabled, 1: Enabled
Bit 2: Reception time printing 0: Disabled, 1: Enabled
Bit 3: TSI included in transmitted messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing 0: Disabled, 1: Enabled
Bit 5: CIL printing (G4) 0: Disabled, 1: Enabled
Bit 6: TID printing (G4) 0: Disabled, 1: Enabled
Bit 7: Not used

4000F3(H) - User parameter switch 03 (Automatic report printout)

Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: Polling reserve report (polling reception) 0: Off, 1: On
Bit 4: Polling result report (polling reception) 0: Off, 1: On
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Polling clear report 0: Off, 1: On
Bit 7: Journal 0: Off, 1: On

4000F4(H) - User parameter switch 04

Bit 0: Confidential reception report 0: Off, 1: On
Bit 1: Fax On Demand report output 0: Off, 1: On
Bit 2: Not used
Bit 3: Print failed transmission result in the journal 0: Off, 1: On
Bit 4: The way of printing other terminal information on the list/report
0: Print destination names programmed in Quick/Speed Dials
1: Print RTI or CSI
Bit 5: Reduce the size of the journal when printing it 0: Off, 1: On
Bit 6: Print File Reserve Report when memory is full or paper jam occurred
0: Off, 1: On
Bit 7: Includes a sample image on reports 0: Off, 1: On

4000F5(H) - User parameter switch 05

Bit 0: Substitute reception 0: Off, 1: On
Bit 1: Memory reception if no RTI or CSI received 0: Possible, 1: Impossible
(also see system switch 11 bit 6)
Bit 2: Not used
Bit 3:High temperature standby mode 0: Off, 1: On
The machine maintains the operating temperature for 15 min after printing.
Bits 4 and 5: Restricted Access

Bit 5	4	Setting
0	0	Disabled
0	1	Enabled at all times
1	0	Enabled during Night Timer periods only
1	1	Not used

Bit 6: Fusing lamp control during energy saver mode
0: Lamp off (Level 2, Low Power Standby),
1: Standby temperature (Level 1, Fax Standby)
Bit 7: Not used (keep this bit at 0.)

4000F6(H) - User parameter switch 06

Bit 0: TTI 0: Off, 1: On
Bit 1: Not used
Bit 2: Closed network for transmission 0: Off, 1: On
Bit 3: Send the Fax Header with G4 Transmission 0: Off, 1: On
Bit 4: Batch transmission 0: Off, 1: On
Bit 5: Not used
Bit 6: ISDN SPID programming (used only in the USA)
0: Off (G4 directory No.1 and No.2 can be programmed)
1: On (G4 SPID and G4 directory no. can be programmed)
Bit 7: Not used

4000F7(H) - User parameter switch 07

Bits 0 to 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bit 3: Reduction before transmission 0: Off, 1: On
Bit 4: Not used
Bits 5 to 7: Not used

4000F8(H) - User parameter switch 08

Bits 0 and 1: Multi-copy reception

Bit 1	0	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are multicopied.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are multicopied.

Bits 2 and 3: Authorized reception

Bit 3	2	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are accepted.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.

Bits 4 and 5: Specified cassette selection (optional cassette required)

Bit 5	4	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are printed to the paper in a specified cassette.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are printed to the paper in a specified cassette.

Bits 6 and 7: Forwarding (optional memory card required)

Bit 7	6	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are forwarded.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are forwarded.

4000F9(H) - User parameter switch 09

Bits 0 and 1: Memory lock

Bit 1	0	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are kept in the memory until a memory lock ID is entered.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are kept in the memory until a memory lock ID is entered.

Bits 2 and 3: Tx/Rx file save
(optional 40M Memory and the function upgrade card required)

Bit 3	2	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature kept in the hard disk for filing.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are kept in the hard disk for filing.

Bit 4: Store fax documents for the Memory Transmission while using the manual dial function 0: Disabled, 1: Enabled
Bit 5:
Bit 6: Requires the user to press the “Add” key when specifying destination with Quick Dial. 0: Off, 1: On
Bit 7: Output method for multiple sets 0: Stack, 1: Sort

4000FA(H) - User parameter switch 10 (SWusr_0A)

Bit 0: Not used
Bit 1: 2 in 1 0: Disabled, 1: Enabled
Bit 2: Image Rotation 0: Disabled, 1: Enabled
Bit 3: Page Reduction 0: Disabled, 1: Enabled
Bit 4: Rotate Sort 0: Disabled, 1: Enabled
Bit 5: Usage the optional Bypass Feeder 0: Multi purpose, 1: Printer only
Bit 6: Not used
Bit 7: Halftone type 0: Error diffusion, 1: Dither

4000FB(H) - User parameter switch 11 (SWusr_0B)

Bit 0: Transfer request using DTMF tone signals 0: Not accepted, 1: Accepted
Bit 1: Method of transmitting numbers after the "Tone" mark over an ISDN line 0: UUI, 1: Tone
Bit 2: Alarm for the Blank Sheet Detect function 0: Off, 1: On
Bits 3 to 5: Not used
Bit 6: Printout of messages received while acting as a forwarding station 0: Off, 1: On
Bit 7: Polling Standby duration 0: Once, 1: No limit

4000FC(H) - User parameter switch 12 (SWusr_0C)

Bits 0 to 2: Not used

Bits 3 and 4: Printout image density (Fax mode)

Bit 4	3	Setting
0	0	Normal
0	1	Lighten
1	0	Darken
1	1	Not used

Bits 5 to 6: Not used

Bit 7: Copy operation 0: Possible, 1: Prohibited

4000FD(H) - User parameter switch 13 (SWusr_0D)

Bits 0 and 1: PSTN-1 access method from behind a PABX

Bit 1	0	Setting
0	0	PSTN
0	1	Extension (Loop start)
1	0	Extension (Ground start)
1	1	Extension (Flash start)

Bits 2 and 3: PSTN-2 access method from behind a PABX

Bit 1	0	Setting
0	0	PSTN
0	1	Extension (Loop start)
1	0	Extension (Ground start)
1	1	Extension (Flash start)

Bits 4 and 5: Not used

Bit 6: Action when the received Higher Layer Capabilities is Tel or Bearer Capabilities is Speech
(This switch is not listed on the User Parameter List.)
0: Do not respond to the call
1: Respond to the call

Bit 7: Not used

4000FE(H) – User parameter switch 14 (SWusr_0E)

Bits 0 to 7: Not used

4000FF(H) – User parameter switch 15 (SWusr_0F)

Bits 0 to 7: Not used.

400100(H) – User parameter switch 16 (SWusr_10)

Bits 0 and 1: Leave messages on the POP server after receiving them

Bit 1	Bit 0	Setting
0	0	Do not save
0	1	Save all
1	0	Save error only
1	1	Not used

Bit 2: Network delivery scanning using Scan Router V2 Lite
0: Disabled, 1: Enabled

Bit 3: If an error occurs during mail reception, whether to mail a notification to the sender.
0: Yes
1: No

Bit 4: Whether to receive e-mail automatically when Night Timer is enabled
0: Yes, but only during the day
1: Never

Bit 5: Condition for forwarding received documents to the Scan Router V2 Professional server
0: Forward all documents
1: Only forward documents with Fax delivering IDs

Bit 6 to 7: Not used

400101(H) – User parameter switch 17 (SWusr_11)

Bit 0: SMTP reception 0: Off, 1: On
Bit 1: Route documents received with SMTP 0: Off, 1: On
Bit 2: Respond to request for receipt confirmation 0: Off, 1: On
Bit 3: Not used
Bit 4: Make a request for confirming reception when sending e-mail 0: Off, 1: On
Bit 5: PDF file type selection when scanning
0: Disabled (TIFF-F/JPEG)
1: Enabled (PDF)
Bit 6: Mail reception protocol selection 0: POP, 1: IMAP4
Bit 7: Not used

400102(H) – User parameter switch 18 (SWusr_12)

Bit 0: PC-Fax error report 0: Off, 1: On
Bits 1 to 5: Not used
Bit 6: POP before SMTP (check for received mail before sending mail)
0: Off, 1: On
Bit 7:Print result of sending Reception Notice Request messages
0: Disabled, 1: Enabled

400103(H) – User parameter switch 19 (SWusr_13)

Bits 0 to 2: Paper tray used for printing reports

Bit 2	1	0	Setting
0	0	0	Disabled
0	0	1	Tray 1
0	1	0	Tray 2
0	1	1	Tray 3
1	0	0	Tray 4
1	0	1	Tray 5
1	1	1	Bypass tray

Bits 3 and 4: Not used

Bits 5 to 7: Paper tray used for copy mode

Bit 7	6	5	Setting
0	0	0	Not used
0	0	1	Tray 1
0	1	0	Tray 2
0	1	1	Tray 3
1	0	0	Tray 4
1	0	1	Tray 5
1	1	1	Bypass tray

400104(H) – User parameter switch 20 (SWusr_14)

Bit 0: Not used
Bit 1: Ex. Super fine mode in copy mode 0: Off, 1: On
Bit 2: Ex. Super fine mode in transmission 0: Off, 1: On
Bit 3: Ex. Super fine mode in reception 0: Off, 1: On
Bit 4: Vertical Blank Line Correction 0: Off, 1: On
Bit 5: Use name of the Personal Box as the fax header 0: Off, 1: On
Bit 6: Not used
Bit 7:Scanner Cleaning Message 0: Off, 1: On

400105(H) – User parameter switch 21 (SWusr_15)

Bit 0: On Hook Line selection 0: PSTN, 1: ISDN
Bits 2 to 7: Not used

400106(H) – User parameter switch 22 (SWusr_16)

Bits 0 to 7: Not used

400107(H) – User parameter switch 23 (SWusr_17)

Bits 0 to 7: Not used

400108(H) – User parameter switch 24 (SWusr_18)

Bits 0 to 7: Not used

400109(H) – User parameter switch 25 (SWusr_19)
Bits 0 to 7: Not used

40010A(H) – User parameter switch 26 (SWusr_1A)
Bits 0 to 7: Not used

40010B(H) – User parameter switch 27 (SWusr_1B)
Bits 0 to 7: Not used

40010C(H) – User parameter switch 28 (SWusr_1C)
Bits 0 to 7: Not used

40010D(H) – User parameter switch 29 (SWusr_1D)
Bits 0 to 7: Not used

40010E(H) – User parameter switch 30 (SWusr_1E)
Bits 0 to 7: Not used

40010F(H) – User parameter switch 31 (SWusr_1F)
Bits 0 to 5: Not used
Bits 6 and 7: High temperature mode timer (energy saver mode)

Bit 7	6	Setting
0	0	15 min.
0	1	30 min.
1	0	60 min.
1	1	120 min.

400110(H) – User parameter switch 32 (SWusr_20)
Bit 0: IP-Fax Gate Keeper usage 0: No, 1: Yes
Bit 1: Email Fax Transmission Auto Detection:
When enabled, the machine can automatically detect whether or not the destination entered is an email address (i.e. no need to prompt the user for an email vs. IP confirmation, saving time). When disabled, the machine will first ask whether the destination is an email or IP address, then prompt the user to input the address.

0: Disabled 1: Enabled

Bits 2 to 5: Not used
400111(H) – User parameter switch 33 (SWusr_21)
Bits 0 and 1: Color transmission/reception time saver:

This switch allows the user to reduce the amount of time required to receive and transmit color images (as e-mail attachments). The setting 0,0 takes the least time, but the images appear slightly lighter than usual. The setting 1,1 requires more time, but the image quality is closer to the original.

Bit 1	0	Setting
0	0	4:1:1 (shorter)
0	1	2:1:1
1	0	Not used.
1	1	1:1:1 (longer)

Bits 2 to 7: Not used

400120 to 40012F(H) - G4 parameter switches
400130 to 40014F(H) - G4 internal switches

400150 to 400163(H) - RTI (Max. 20 characters - ASCII) - **See the following note**
400189 to 4001A8(H) - TTI (Max. 32 characters - ASCII) - **See the following note**
4001A9 to 4001C8(H) – 2nd TTI (Max. 32 characters - ASCII) - **See the following note**
4001C9 to 4001DC(H) - CSI (Max. 20 characters - ASCII)
4001DD to 4001F0(H) - CSI for PSTN-2 (Max. 20 characters - ASCII)
4001F1 to 400204(H) - ISDN G3 CSI (Max. 20 characters - ASCII)
400205(H) - Number of CSI characters (Hex)
400206(H) - Number of CSI for PSTN-2 characters (Hex)
400207(H) - Number of ISDN G3 CSI characters (Hex)

Note: If the number of characters are less than the maximum (20 for RTI, 32 for TTI), add a stop code (FF[H]) after the last character.

400208 to 400216(H) - Service station's fax number (Service function 13)

400217 to 400225(H) - Own fax number (PABX)
400226 to 400234(H) - Own fax number (PSTN)
400235 to 400243(H) - Own fax number (ISDN G4)
400244 to 400252(H) - ISDN G3 Subscriber Number 1
400253 to 400261(H) - ISDN G3 Subscriber Number 2
400262 to 400270(H) - G4 Subscriber Number 1
400271 to 40027F(H) - G4 Subscriber Number 2

4002AE(H) - ID code (low - BCD)
4002AF(H) - ID code (high - BCD)

4002B0(H) - Confidential ID (low - BCD)
4002B1(H) - Confidential ID (high - BCD)

4002B2(H) - Memory lock ID (low - BCD)
4002B3(H) - Memory lock ID (high - BCD)

4002BA(H) - Network type used for the service station number
00(H) - G3 (PSTN)
01(H) - G4 (ISDN)

4002D1(H) – Daylight Saving: Number of hours shifted (60: HEX)
4002D2(H) – Daylight Saving: Spring start month (04: BCD)
4002D3(H) – Daylight Saving: Spring start week in month above (01: HEX)
4002D4(H) – Daylight Saving: Spring start day (01: Mon – 06: Sun)
4002D5(H) – Daylight Saving: Spring start time (00 – 24: BCD/ default: 02)
4002D6(H) – Daylight Saving: Spring start date (01 - 31: BCD)
If this address is set to 00, the day of the week set in 4002D4(H) is given priority.

4002D7(H) – Daylight Saving: Fall start month (10: BCD)
4002D8(H) – Daylight Saving: Fall start week in month above (01: HEX)
4002D9(H) – Daylight Saving: Fall start day (01: Mon – 06: Sun)
4002DA(H) – Daylight Saving: Fall start time (00 – 24: BCD/ default: 02)
4002DB(H) – Daylight Saving: Fall start date (01 – 31 BCD)
If this address is set to 00, the day of the week set in 4002D9(H) is given priority.

4002DC to 4002E3(H) - Last power off time (Read only)
4002DC(H) - Clock
00(H) - 12-hour clock (AM)
01(H) - 24-hour clock
02(H) - 12-hour clock (PM)
4002DD(H) - Year (BCD)
4002DE(H) - Month (BCD)
4002DF(H) - Day (BCD)
4002E0(H) - Hour
4002E1(H) - Minute
4002E2(H) - Second
4002E3(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

4002F0 to 4002F2(H) - Optional equipment (Read only)
4002F0(H)
Bit 1: 40MB memory
Bit 2: Function upgrade unit
Bit 4: Bypass feeder
Bit 7: 1st PFU
4002F1(H)
Bit 0: 2nd PFU
Bit 1: 3rd PFU
Bit 2: 4th PFU
Bit 4: Printer unit
Bit 6: ISDN unit
4002F2(H)
Bit 0: FOD
Bit 2: JBIG
Bit 4: Optional G3
Bit 7: NIC FAX

For the following counters, the wording in brackets indicates how these counters appear on the system parameter list.

4002FE to 400301(H) – LAN tx counter (Mail TX)

400302 to 400305(H) – LAN rx counter (Mail RX)

400306 to 400309(H) – LAN PC fax counter (LAN PC-FAX)

40030A to 40030D(H) - TX counter (TX)

40030E to 400311(H) - RX counter (RX)

400312 to 400315(H) - Scan counter (SCN)

400316 to 400319(H) – Printer counter

40031A to 40031D(H) - Printer counter (PRT)

40031E to 400321(H) - ADF counter (ADF)

400322 to 400325(H) - ADF PM counter

400326 to 400329(H) - ADF PM interval (Default: 30,000)

40032A to 40032D(H) - ADF roller counter (ADF (ROLL))

40032E to 400331(H) - ADF roller interval (Default: 30,000)

400332 to 400335(H) - MDF counter (MDF)

400336 to 400339(H) - Paper feed counter (Standard cassette)

40033A to 40033D(H) - Paper feed counter (1st PFU)

40033E to 400341(H) - Paper feed counter (2nd PFU)

400342 to 400345(H) - Paper feed counter (3rd PFU)

400346 to 400349(H) - Paper feed counter (4th PFU)

40034A to 434D(H) - Bypass feed counter

400352 to 400355(H) - Scanner total jam counter

400356 to 400359(H) - Printer total jam counter

40035A to 40035D(H) - Paper jam counter (Standard cassette)

40035E to 400361(H) - Paper jam counter (1st PFU)

400362 to 400365(H) - Paper jam counter (2nd PFU)

400366 to 400369(H) - Paper jam counter (3rd PFU)

40036A to 40036D(H) - Paper jam counter (4th PFU)

40036E to 400371(H) – Bypass jam counter

480376 to 480379(H) - Fusing exit jam counter

40037A to 40037D(H) - Transfer jam counter

40037E to 400381(H) - Printer PM counter

400382 to 400385(H) - Printer PM interval (Default: 60,000)

400386 to 400389(H) - Copy counter

40038A to 40038D(H) - OPC counter

40038E to 400391(H) - OPC PM interval (Default: 30,000)

400392 to 400395(H) - AIO counter

400396 to 400399(H) – Previous AIO counter, before replacing (TONER (PRE))

40039E to 4003AD(H) - Excessive jam call parameters

Parameters		Address (H)		Initial Setting	Sys. Para. List
		ADF	Printer		
DEC (1 - 255; 0 = Disabled)		4003A6	4003AA	10 (H)	X
CALL (3 – 15; 0 = Disabled)		4003A7	4003AB	06(H)	Y
CLR	(Low)	4003A8	4003AC	30(H)	-
	(High)	4003A9	4003AD	00(H)	

Counters	Address (H)		Sys. Para. List
	ADF	Printer	
JAM: Jam counter used to place a service call	40039F	4003A3	Z
NO-JAM1: Counter used for JAM counter decrement	40039E	4003A2	-
NO-JAM2: Counter used for clearing the JAM counter	4003A0 (Low)	4003A4 (Low)	-
	4003A1 (High)	4003A5 (High)	

4003AE to 4003B1(H) - PC tx counter (PC TX)
4003B2 to 4003B5(H) - PC rx counter (PC RX)
4003B6 to 4003B9(H) - PC scan counter (PC SCN)
4003BA to 4003BD(H) - PC print counter (PC PRT)

4004E0 to 4004EB(H) - G4 NSC code
4004EC to 400503(H) - G4 terminal ID (ASCII - Max. 24 characters)
400504 to 400507(H) - ISDN IP
400508 to 40050B(H) - ISDN G3 sub-address
40050C to 40050F(H) - ISDN G4 sub-address

400510(H) - SiG4 board ROM suffix
400511(H) - SiG4 ROM version
400512 to 400514(H) - SiG4 ROM Information
400512(H) - Year (BCD)
400513(H) - Month (BCD)
400514(H) - Day (BCD)

40051A to 40051B(H) - Modem ROM version (FCU)
40051C to 40051D(H) - Modem ROM version (Optional G3 unit)

40051E to 40051F(H)
Timer adjustment for FCU automatic reset (system switch 02 bit 4)
0000 to 04FF(H): 1 hour
0500 to FFFF(H): N x 500 ms (10.7 minutes to 9.1 hours)

400520 to 400521(H)
Timer adjustment for SG3/G4 automatic reset (system switch 02 bit 4)
0000 to 04FF(H): 15 minutes
0500 to FFFF(H): N x 500 ms (10.7 minutes to 9.1 hours)

400534(H) - Number of copies for multi-sort document reception

400536 to 40055F(H) - Night timer period
400536 to 400538(H) - Setting #1 for Monday
400539 to 40053B(H) - Setting #2 for Monday
40053C to 40053E(H) - Setting #1 for Tuesday
40053F to 400541(H) - Setting #2 for Tuesday
400542 to 400544(H) - Setting #1 for Wednesday
400545 to 400547(H) - Setting #2 for Wednesday
400548 to 40054A(H) - Setting #1 for Thursday
40054B to 40054D(H) - Setting #2 for Thursday
40054E to 400550(H) - Setting #1 for Friday
400551 to 400553(H) - Setting #2 for Friday
400554 to 400556(H) - Setting #1 for Saturday
400557 to 400559(H) - Setting #2 for Saturday
40055A to 40055C(H) - Setting #1 for Sunday
40055D to 40055F(H) - Setting #2 for Sunday

Program format
First byte - Hour (BCD)
Second byte - Minute (BCD)
Third byte - 00(H): Timer start time, 01(H): Timer end time

40058A(H) - Time for economy transmission (hour in 24h clock format - BCD)
40058B(H) - Time for economy transmission (minute - BCD)

400598 to 40059F(H) - Last Fax On Demand report printout (Read only)
400598(H) - 01(H): 24-hour clock, 00(H): 12-hour clock (AM), 02(H): 12-hour clock (PM)
400599(H) - Year (BCD)
40059A(H) - Month (BCD)
40059B(H) - Day (BCD)
40059C(H) - Hour
40059D(H) - Minute
40059E(H) - Second
40059F(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

4005A6(H) - Transmission monitor volume	00 - 07(H)
4005A7(H) - Reception monitor volume	00 - 07(H)
4005A8(H) - On-hook monitor volume	00 - 07(H)
4005A9(H) - Dial monitor volume	00 - 07(H)
4005AA(H) - Buzzer volume	00 - 07(H)
4005AB(H) - Key acknowledgment tone volume	00 - 07(H)

4005AD to 4005B1(H) - Periodic service call parameters
4005AD(H) - Call interval: 01 through 15 month(s) (BCD)
(00: Periodic service call disabled.)
4005AE(H) - Year: Last two digits of the year (BCD)
4005AF(H) - Month: 01 to 12 (BCD)
4005B0(H) - Day: 01 to 31 (BCD)
4005B1(H) - Hour: 00 to 23 (BCD)

4005B7 to 4005B9(H) - Effective term of automatic service call
4005B7(H) - Year: Last two digits of the year (BCD)
4005B8(H) - Month: 01 to 12 (BCD)
4005B9(H) - Day: 01 to 31 (BCD)

40245A(H) - Print top margin (standard tray)
40245C(H) - Print top margin (1st optional tray)
40245E(H) - Print top margin (2nd optional tray)
402460(H) - Print top margin (3rd optional tray)
402462(H) - Print top margin (4th optional tray)
402464(H) - Print top margin (bypass feed)

402466(H) - Print left margin (standard tray)
402468(H) - Print left margin (1st optional tray)
40246A(H) - Print left margin (2nd optional tray)
40246C(H) - Print left margin (3rd optional tray)
40246E(H) - Print left margin (4th optional tray)
402470(H) - Print left margin (bypass feed)

4025F0(H) - Excessive jam alarm
Bit 3: Scanner excessive jam alarm 1: An alarm has occurred
Bit 4: Printer excessive jam alarm 1: An alarm has occurred
Either or both of these bits will change to 1 when an excessive jam alarm occurs. Reset each bit to 0 when you have solved the problem. The machine will not be able to detect excessive jams in future if you do not reset these bits.

4025DA(H) - Fusing unit failure	05XX(H)
4025DE(H) – LD failure	03XX(H)
4025E0(H) - Polygonal mirror motor failure	03XX(H)
4025E2(H) - Main motor failure	05XX(H)
4025E4(H) - Power pack failure	05XX/04XX(H)
4025E6(H) – Scanner failure	01XX(H)

When a service call was caused by a fusing lamp failure (codes 054X/055X):
After fixing the problem, set printer switch 01 bit 0 to 1 and turn the power off/on. The machine resets this bit to 0, and restarts the machine to clear the service call.

When a service call occurred because of a different hardware failure:
If the problem remains after restarting the machine (power off/on), fix the hardware problem. The service call condition clears after power up.

43B7CA to 43D649(H) - Dedicated tx parameters for Quick Dial 01 - 144 and Speed Dial #00 - #99.
Each set of destination data consists of 32 bytes. Last 10 bytes (23rd to 32nd bytes) are used.

43B7CA to 43B7E9(H) - Dedicated tx parameters for Quick 01
43B7EA to 43B809(H) - Dedicated tx parameters for Quick 02
43B80A to 43B829(H) - Dedicated tx parameters for Quick 03
:
43C9AA to 43C9C9(H) - Dedicated tx parameters for Quick 144
43C9CA to 43C9E9(H) - Dedicated tx parameters for Speed #00
43C9EA to 43CA09(H) - Dedicated tx parameters for Speed #01
:
43D62A to 43D649(H) - Dedicated tx parameters for Speed #99

43D64A to 4446C9(H) – Dedicated tx parameters for Speed Dial #100 - #999 (optional Function Upgrade Unit required)

43D64A to 43D669 - Dedicated tx parameters for Speed #100
43D66A to 43D689 - Dedicated tx parameters for Speed #101
:
44468A to 4446A9 - Dedicated tx parameters for Speed #899
4446A9 to 4446C9 - Dedicated tx parameters for Speed #900

4B6D16 to 4B6D17(H) - Line type change
44BCB0(H) - Current line type setting
44BCB1(H) - Line type to be used after the procedure

45F06E to 45F26D(H) - Latest 64 error codes (Read only)

One error record consists of 8 bytes of data.

First error record start address – 45F06E(H)
Second error record start address – 45F076(H)
Third error record start address – 4F07E(H)
: : :
64th error record start address – 45F266(H)

The format is as follows:
1st byte - Minute (BCD)
2nd byte - Hour (BCD)
3rd byte - Day (BCD)
4th byte - Month (BCD)
5th byte - Error code (low) [If the error code is 1-23, 23 is stored here.
6th byte - Error code (high) [If the error code is 1-23, 01 is stored here.
7th byte - Communication line used
00(H): PSTN, 0C(H): ISDN G3, 0D(H): ISDN G4

451D88 to 4524DF(H) - Latest 20 error communication records

One error communication record consists of 94 bytes. The format is as follows:

1st byte - Header

Bit 0: Communication result	0: OK, 1: NG
Bit 1: Document jam	1: Occurred
Bit 2: Power down	1: Occurred
Bit 3: Not used	
Bit 4: Technical data printout instead of personal codes	0: No, 1: Yes
Bit 5: Type of technical data	0: Rx level, 1: Measure of error rate
Bit 6: Error report	0: Not printed, 1: Printed
Bit 7: Data validity	0: Not valid, 1: Valid

2nd byte - Not used

3rd to 7th bytes - Date and time when the communication started
3rd byte - Year (BCD)
4th byte - Month (BCD)
5th byte - Day (BCD)
6th byte - Hour (BCD)
7th byte - Minute (BCD)
8th and 9th bytes - Communication time
8th byte - Minutes (BCD)
9th byte - Seconds (BCD)

10th byte - Not used

11th and 12th bytes - Number of pages transmitted or received
11th byte - Low byte (Hex)
12th byte - High byte (Hex)

13th and 14th bytes - Personal code or number of total/burst error lines
If bit 4 of the 1st byte is 0: 13th byte - Personal code (low - BCD)
14th byte - Personal code (high - BCD)
If bit 4 of the 1st byte is 1: 13th byte - Number of total error lines (Hex)
14th byte - Number of burst error lines (Hex)

15th byte - File number (low - Hex)
16th byte - File number (high - Hex)

17th and 18th bytes – Destination File ID number (for system area)

19th byte – Communication result

20th to 21st byte – Rx level or measure of error rate
If bit 5 of the 1st byte is 0: 20th byte – Rx level (low - Hex)
21st byte – Rx level (high - Hex)
If bit 4 of the 1st byte is 1: 20th byte – Measure of error rate (low - Hex)
21st byte - Measure of error rate (high - Hex)

22nd byte – Final modem rate
Bits 0 to 3: Final modem speed

Bit 3	2	1	0	Setting
0	0	0	1	2.4k
0	0	1	0	4.8k
0	0	1	1	7.2k
0	1	0	0	9.6k
0	1	0	1	12.0k
0	1	1	0	14.4k
0	1	1	1	16.8k
1	0	0	0	19.2k
1	0	0	1	21.6k
1	0	1	0	24.0k
1	0	1	1	26.4k
1	1	0	0	28.8k
1	1	0	1	31.2k
1	1	1	0	33.6k

Other settings - Not used

Bits 4 to 7: Final modem type

Bit 7	6	5	4	Setting
0	0	0	1	V.27ter
0	0	1	0	V.27ter, V.29
0	0	1	1	Not used
0	1	0	0	V.27ter, V.29, V.17
0	1	0	1	V.27ter, V.29, V.17, V.34

Other settings - Not used

23rd to 25th byte – Not used

26th to 49th byte – Remote terminal's ID (RTI, TSI or CSI) (ASCII)

50th byte - Communication mode #1
Bits 0 - 1: Resolution used

Bit 1	0	Setting
0	0	Standard
1	0	Detail
1	1	Fine

Bit 2: Communication Protocol 0: G3, 1: G4
Bit 3: ECM 0: Off, 1: On
Bits 4 to 7: Communication mode used

Bit 7	6	5	4	Setting
0	0	0	0	Normal
0	0	0	1	Confidential
0	0	1	0	Polling
0	0	1	1	Transfer
0	1	0	0	Forwarding
0	1	0	1	Automatic Service Call
0	1	1	1	Transfer using DTMF/UUI
1	0	0	0	Fax On Demand

51st byte - Communication mode #2

Bit 0: Tx or Rx 0: Tx, 1: Rx
Bit 1: Reduction in Tx 0: Not reduced, 1: Reduced
Bit 2: Batch transmission 0: Not used, 1: Used
Bit 3: Send later transmission 0: Not used, 1: Used
Bit 4: Transmission from 0: ADF, 1: Memory
Bit 5: Not used
Bits 6 and 7: Network type used

52nd and 53rd bytes - Not used

54th byte – Number of errors during communication (Hex)

55th to 58th byte - 1st error code and page number where the error occurred
- 55th byte - Page number where the error occurred (low - Hex)
- 56th byte - Page number where the error occurred (high - Hex)
- 57th byte - Error code (low - BCD)
- 58th byte - Error code (high - BCD)

59th to 62nd byte – 2nd error code and page number where the error occurred
63rd to 66th byte – 3rd error code and page number where the error occurred
67th to 70th byte - 4th error code and page number where the error occurred
71st to 74th byte - 5th error code and page number where the error occurred
75th to 78th byte - 6th error code and page number where the error occurred
79th to 82nd byte - 7th error code and page number where the error occurred
83rd to 86th byte – 8th error code and page number where the error occurred
87th to 90th byte - 9th error code and page number where the error occurred
91st to 94th byte – 10th error code and page number where the error occurred

5.6 SERVICE RAM ADDRESSES: ADF AND SCANNER

Address	Default	Function
401CAE	1EH	Time Interval Setting for Shading Correction, Peak Level Sampling, and Black Line Detection Units: 1 s If set to ff, shading correction is executed for only the first page of the job.
404590 ~ 404591	03H	Continuous Count of Abnormally Wide Pixels – Uncorrectable The continuous occurrence of abnormally wide pixels that cannot be corrected electronically. When the number of occurrences is so large that the SRAM capacity is exceeded, a warning is issued.
404594 ~404595	14H	Continuous Count of Abnormally Wide Pixels – Correctable The continuous occurrence of abnormally wide pixels that can be corrected electronically. When the number of occurrences is so large that the value of this SRAM is exceeded, a warning is issued.
404960	01H	Blank Page Detection Level Setting Sets the frequency of blank page detection. This feature ensures that the original was loaded correctly for scanning. 01h: If the first page of the original is blank (white), the machine judges there is a blank page. 02h: If any one page of the original is blank (white), the machine judges there is a blank page. 03h: If all pages of the original are blank (white), the machine judges there is a blank page.
4049C4 ~ 4049C5	4FH	Adjustment of Sub Scan Start Position for ADF Scanning Units: 01.mm Entering a larger value in the range 0000h ~ 009Eh lowers the start position for scanning in the sub scan direction.
4049C6 ~ 4040C7	4FH	Adjustment of Registration for MDF Sub Scan Start Position Units: 01. mm Entering a larger value in the range 0000h ~ 009Eh lowers the start position for scanning in the sub scan direction.
4049CC ~ 4049CD	0EH	Adjustment of Registration for ADF Main Scan Start Position Units: 01. mm Entering a larger value in the range 0000h ~ 001Ch shifts the ADF main scanning area to the right (away from the operation panel).
4049CE ~ 4049CF	0EH	Adjustment of Registration for MDF Main Scan Start Position Entering a larger value in the range 0000h ~ 001Ch shifts the MDF main scanning area to the right (away from the operation panel).
45EE3C ~ 45EE3D	— —	Vertical Black Line Detections Number of jobs in which an abnormal pixel was detected before page 1 of the original was scanned. Increments only by 1 per job.
45EE3E ~ 45EE3F	— —	Pixels of Abnormal Width – Correctable Increments by 1 for every abnormally wide pixel that can be corrected electronically. The electronically correctable width depends on a special setting made at the factory before shipping. (Currently this width is set for 1 pixel.) Also, if alternating pixels ❍ ● ❍ ● are detected, the counter is incremented.
45EE40 ~ 45EE41	— —	Pixels of Abnormal Width – Not Correctable Increments by 1 for every abnormally wide pixel that cannot be corrected electronically. The electronically correctable width depends on a special setting made at the factory. (Currently this width is set for 1 pixel.)

Address	Default	Function
45EE42 ~ 45EE43	— —	Abnormal Pixels – Consecutive occurrence at the same place (1 time) Increments by 1 if an abnormal pixel occurred, but had disappeared from that place by the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1
45EE44 ~ 45EE45	— —	Abnormal Pixels – Consecutive occurrence at the same place (2~9 times) Increments by 1 if an abnormal pixel occurred at the same place on the scan line 2 to 9 consecutive times, but was not there at the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1
45EE46 ~ 45EE47	— —	Abnormal Pixels – Consecutive occurrence at the same place (10 or more times) Increments by 1 if an abnormal pixel occurred at the same place on the scan line 10 or more consecutive times, but was not there at the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1
45EE48 ~ 45EE49	— —	Abnormal Pixel Width Counter: 1~3 Pixels Wide Increments by 1 every time an abnormal pixel 2~3 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE4A ~ 45EE4B	— —	Abnormal Pixel Width Counter: 4~6 Pixels Wide Increments by 1 every time an abnormal pixel 4~6 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE4C ~ 45EED	— —	Abnormal Pixel Width Counter: 7~12 Pixels Wide Increments by 1 every time an abnormal pixel 7~12 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE4E ~ 45EE4F	— —	Abnormal Pixel Width Counter: 13 or More Pixels Wide Increments by 1 every time an abnormal pixel 13 times or more wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE50 ~ 45EE51	— —	Abnormal Pixels in CIS Block 1 Increments by 1 if abnormal pixels are detected in Block 1*2 of the CIS.
45EE52 ~ 45EE53	— —	Abnormal Pixels in CIS Block 2 Increments by 1 if abnormal pixels are detected in Block 2*2 of the CIS.
45EE54 ~ 45EE55	— —	Abnormal Pixels in CIS Block 3 Increments by 1 if abnormal pixels are detected in Block 3*2 of the CIS.
45EE56 ~ 45EE57	— —	Abnormal Pixels in CIS Block 4 Increments by 1 if abnormal pixels are detected in Block 4*2 of the CIS.

*1: This counter increments by one only when an abnormal pixel that was previously detected at a certain position has now disappeared.

*2: The length of the CIS (Contact Image Sensor) is divided into four blocks: Block 1, Block 2, Block 3, and Block 4. The count is incremented only once even if abnormal pixels are detected at more than one location in the same block.

5.7 SERVICE RAM ADDRESSES: PRINTER ENGINE (PLOTTER)

5.7.1 ADJUSTING THE PRINTING SIDE-TO-SIDE REGISTRATION

Adjust the laser beam main scan start position when the offset is large.

1. Make copies using the mainframe cassette, bypass feeder, and optional paper feed units and check the amount that the image is shifted.
2. Adjust by changing the contents of the following addresses:

Source	Address	Default	Unit
Main Frame	402466	0002H	0.5 mm
1st Optional Unit	402468	0000H	0.5 mm
2nd Optional Unit	40246A	0000H	0.5 mm
3rd Optional Unit	40246C	0000H	0.5 mm
4th Optional Unit	40246E	0000H	0.5 mm
By-pass Feeder	402470	0004H	0.5 mm

3. To move the start position to the right, increase the value.
   To move the start position to the left, decrease the value.

   For example:
   - To move the start position to the right 2 mm (with respect to the default value):
     0002H + (2 / 0.5) H = 0006H
   - To move the start position to the left 1 mm (with respect to the default value):
     0002H - (1 / 0.5) H = 0000H

5.7.2 ADJUSTING THE PRINTING TOP MARGIN

Adjust the start position at the top of the page when the offset is large.

1. Make copies using the mainframe cassette, bypass feeder, and optional paper feed units and check the amount that the image is shifted.
2. Adjust by changing the contents of the following addresses:

Source	Address	Default	Unit
Main Frame	40245A	FFFEH	0.5 mm
1st Optional Unit	40245C	FFFCH	0.5 mm
2nd Optional Unit	40245E	FFFCH	0.5 mm
3rd Optional Unit	402460	FFFCH	0.5 mm
4th Optional Unit	402462	FFFCH	0.5 mm
By-pass Feeder	402464	FFFCH	0.5 mm

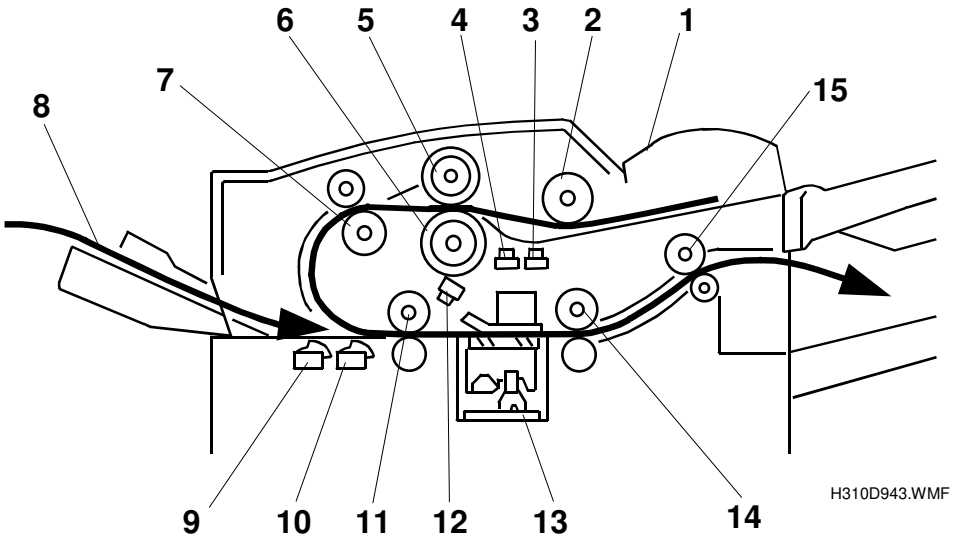
3. To lower the start position, increase the default value.
   To raise the start position, reduce the default value.

   For example:
   - To lower the start position by 2 mm (with respect to the default value):
     0000H + (2 / 0.5) H = 0004H

6. DETAILED SECTION DESCRIPTIONS

6.1 ADF/SCANNER

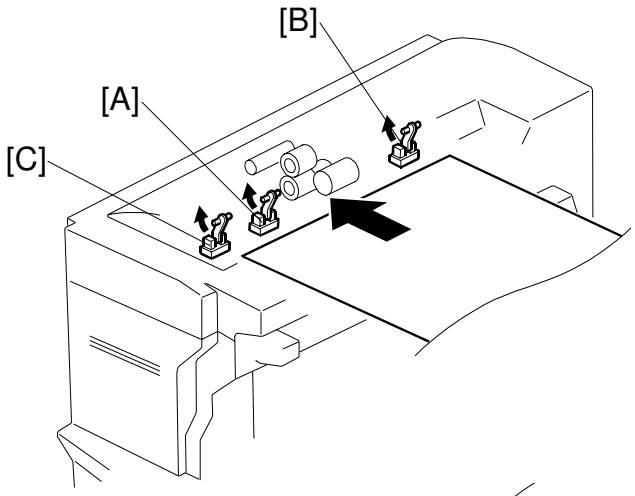
6.1.1 OVERVIEW



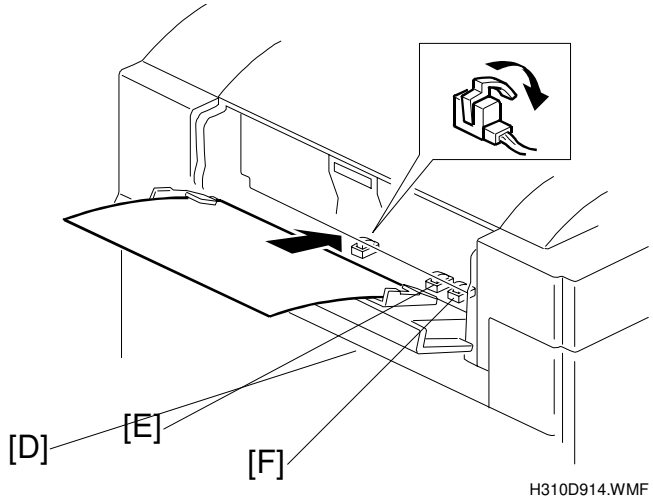
1. ADF Document Table
2. Pick-up Roller
3. ADF Document Width Sensors 1, 2
4. ADF Document Set Sensor
5. Feed Roller
6. Reverse Roller
7. R0 (Transport Roller 1)
8. MDF Document Table
9. MDF Document Width Sensors 1, 2
10. MDF Document Set-Sensor
11. R1 (Transport Roller)
12. Scan Line Sensor
13. CIS Unit
14. R3 (Transport Roller 3)
15. Exit Roller

6.1.2 DETAILED DESCRIPTIONS

Document Detection



H310D913.WMF



H310D914.WMF

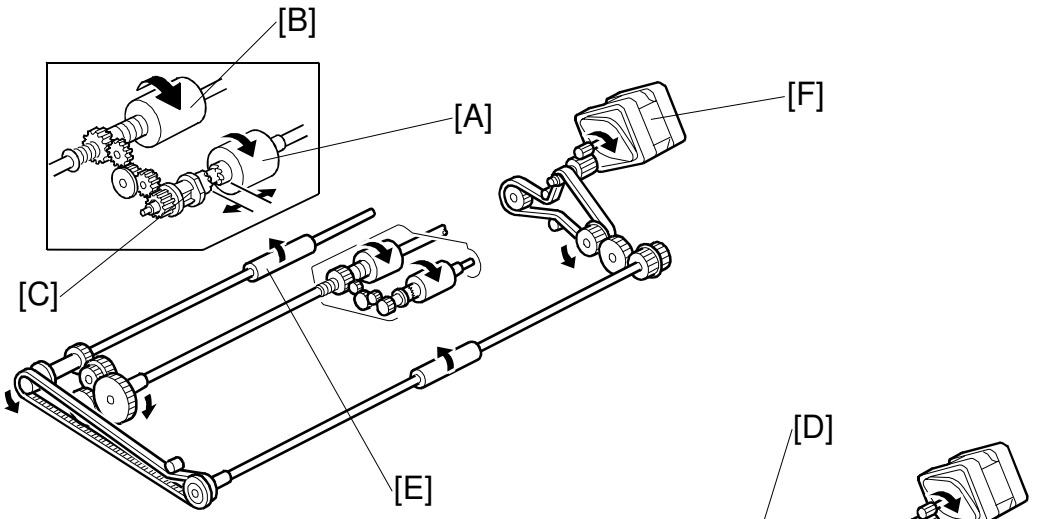
When a document is inserted, the document sensor (S1 sensor) [A] turns on and detects the document. The width of the document is then detected from the combined output of the S1, B4 width [B], and A3 width [C] sensors.

If a document is set on the MDF table, the MDF sensor [D] turns on and detects it. The width is then detected based on the combined output of the MDF-A3 [F] and MDF-B4 [E] sensors.

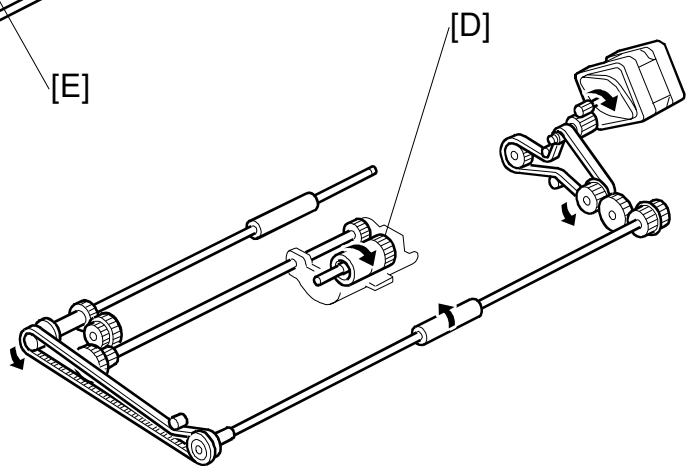
In both cases, the machine can detect three possible widths: A4, B4, and A3.

- Paper size detection parameters:
  A3: 274 mm or greater
  B4: 242 to 262 mm
  A4: 230 mm or less

Document Pick-up



H310D915.WMF



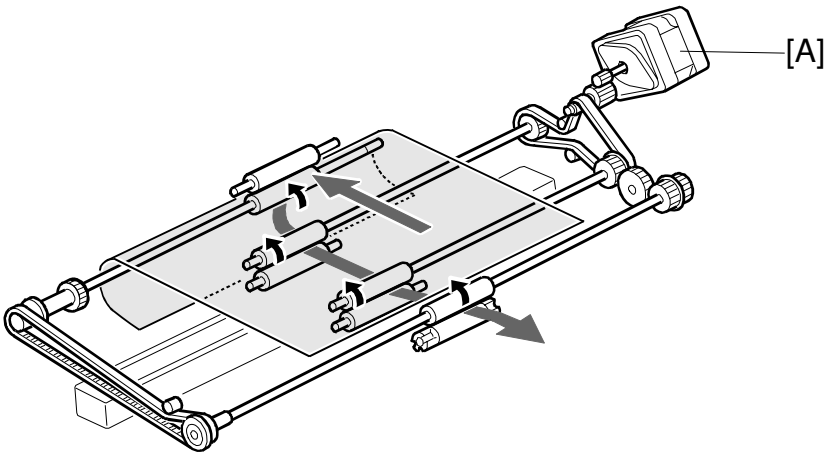
H310D916.WMF

When the scanner motor [F] starts rotating clockwise, the pick-up roller [A] lowers to feed the top sheet of the document. The paper is then separated by the reverse roller [D] and fed to the R0 [E] roller.

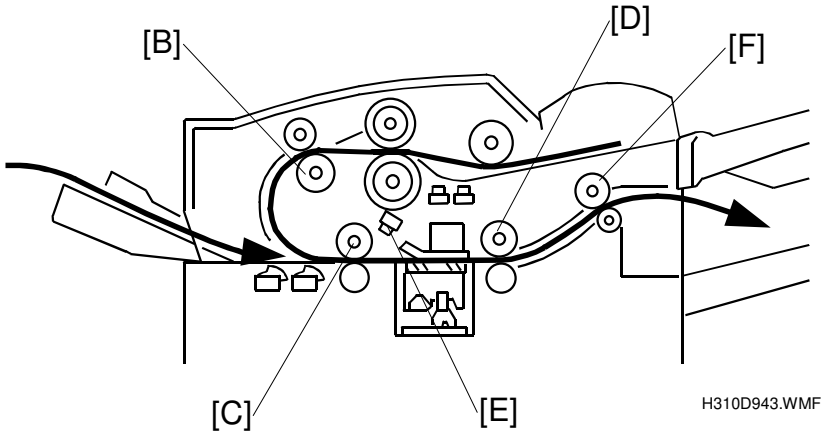
Since the R0 roller rotates faster than the feed roller [B], the pick-up roller and feed roller add to the load on the scanner motor while the R0 roller feeds the document. To prevent overloading, a spring clutch is attached to the feed roller. Also, the pick-up roller gear [C] attached to the pick-up roller disengages from the driving gear train in the case of overload.

The motor is slower during MDF so that the operator can insert the document easily.

Document Feed



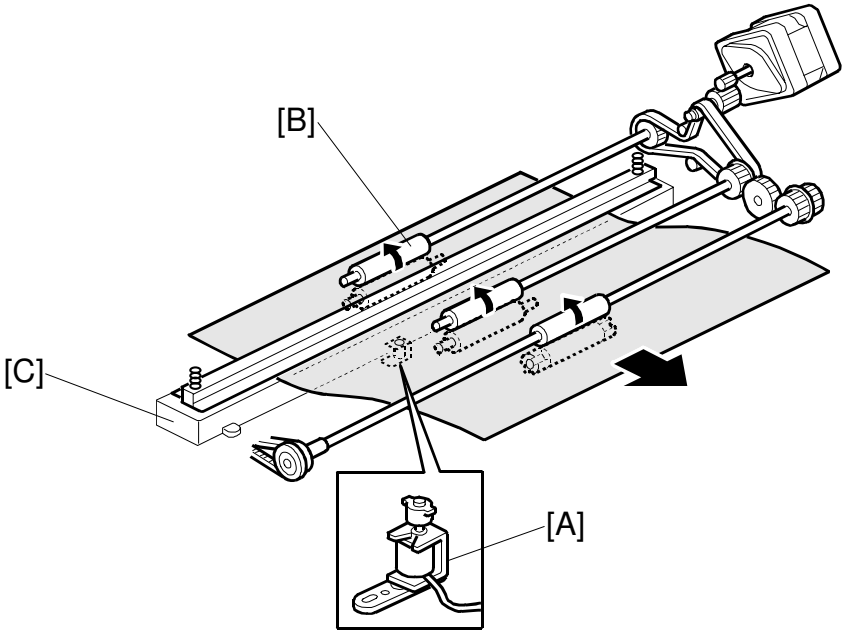
H310D917.WMFF



H310D943.WMF

The scanner motor [A] drives R0 [B], R1 [C], R2 [D] and the document exit rollers [F], all responsible for feeding the document. The scan line lies between the R1 and R2 rollers. The scan line sensor (S2) [E] is between the R1 and R2 rollers, and detects when the leading and trailing edges of the document are at the scan line.

Stamping



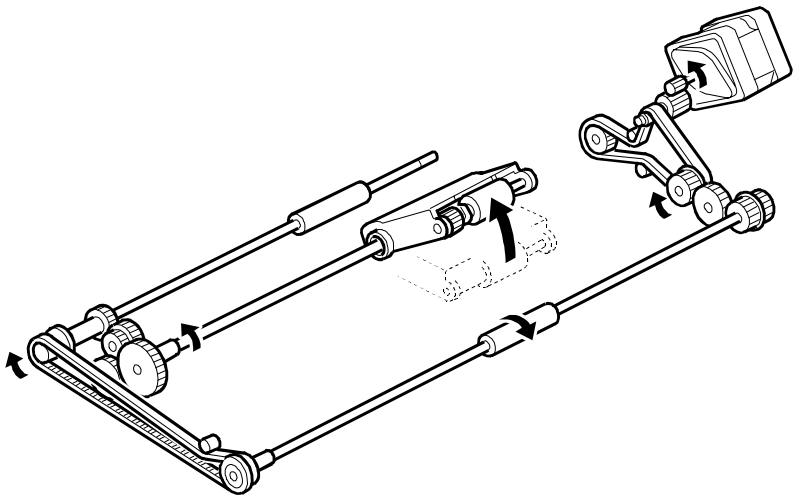
H310D007.WMF

The stamp unit [A] is located below the R1 roller [B] and CIS unit [C].

The timing of stamping the documents after scanning depends on the method of transmission (immediate or memory transmission).

The front side of each page of the document is stamped 12 mm from the bottom edge.

Returning to Ready Status

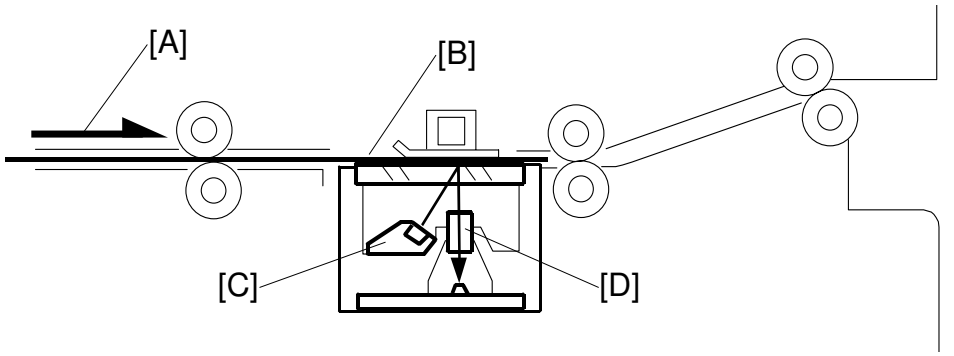


H310D919.WMF

When the last page of the document has been fed out, the scanner motor turns clockwise, then counterclockwise, and clockwise again. This lifts the pick-up roller to its ready position. This is also done at the following times:

- Just after the power is turned on
- Following jam removal
- When the scanner cover is opened and closed
- When a document is removed from the ADF.

Image Scanning



H310D006.WMF

When the document [A] sent from R1 (transport roller 2) passes the scanning glass [B], the LED [C] inside the CIS shines light onto the image side of the document above and this light with the image is reflected down into the CIS [D].

After the Start key is pressed, the machine stabilizes the LED light for one second. If the light is not stabilized after 3 seconds, scanning continues but the machine returns error code 1-08.

Shading correction is executed only for the first page. However, by default the white plate is scanned every 30 seconds to determine the white level for shading correction, and the document must be stopped momentarily for peak level sampling.

With Address 401CAE, the time between peak level samples can be adjusted and peak level sampling can be set for the first page only.

ADDRESS	INITIAL	DESCRIPTION
401CAE	0x1e	Execution of white peak level correction can be adjusted with these settings: 00h: Every page (same as FAX 5000L). 1Eh: Every 30 s (default) FFh: Full non-stop. Peak level correction done for only the first page.

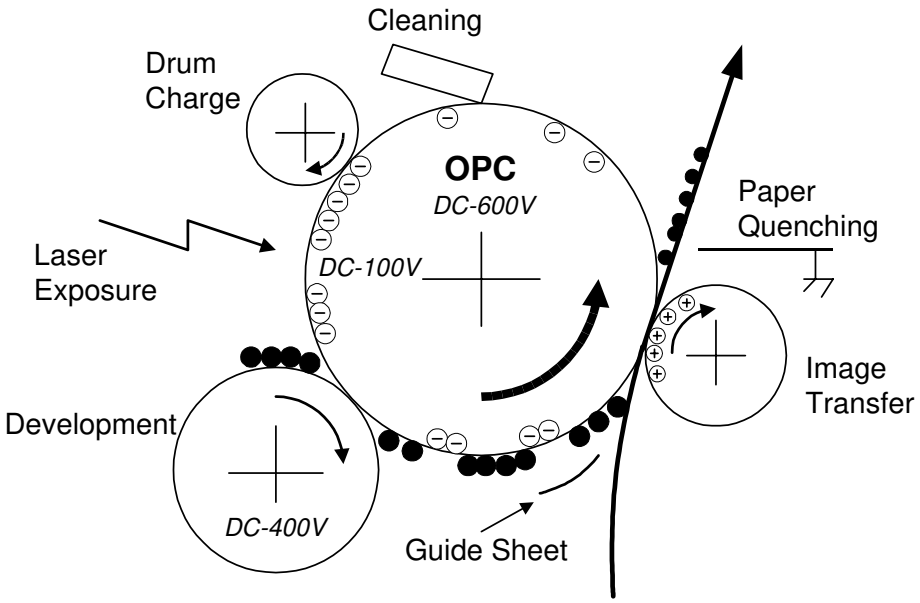
NOTE: If scanning is set for full non-stop scanning, then the following data cannot be acquired: shading data, white level peak value, black line detection and control data. Not detecting this data could increase the possibility of image problems, such as vertical black lines caused by dirt on the exposure glass or on the white plate or changes in halftone density caused by changes in temperature. Be sure to consult with the customer before changing this setting.

Jam Detection

1. Non-feed (error code 1–00):
   The S2 sensor does not activate even after the machine tries to feed the document to the scan line three times.
2. MDF Non-feed (no error code):
   The S2 sensor does not activate after manual document feed to the scan line.
3. Maximum document length exceeded (error code 1–01):
   If the S2 sensor does not turn off when a document exceeds the maximum length allowed.
4. Initialization jam (no error code):
   If any of the document sensors in the ADF and/or scanner turn on during pick-up roller unit initialization.
5. Skip scanning error (no error code):
   If the S2 sensor turns off during skip transmission (partial image scanning) while the specified image area is supposed to be at the scan line
6. Document inserted into the MDF while the ADF is running (no error code):
   If any one of the three MDF sensors turns on during ADF operation.
7. Document inserted into the ADF while the MDF is running (no error code):
   If any one of the ADF sensors turns on during MDF operation.
8. Jam detected by the S2 sensor while in ready status:
   If the S2 sensor is activated while the scanner is in ready status, or just after power is switched on.
   On starting the document feed, the S2 sensor is already activated.

6.2 PRINTER

6.2.1 OVERVIEW



H310D920.WMF

Process	Description
Charge	Charges the drum with –600 Vdc plus 1.05 mA 1 kHz ac bias. The ac bias quenches the remaining charge on the OPC.
Laser Exposure	Writes the black parts of the image. The surface voltage of the exposed areas of the drum drops to about –100 V.
Development	Negatively charged toner is transferred to the exposed surface of the drum. The development roller does not contact the drum. To prevent the toner from being attracted to a non-image area, the development bias is changed for non-image areas. Bias voltage : –400 Vdc plus 1.6 kVp-p 2 kHz ac
Image Transfer	A transfer roller transfers toner from the drum to the paper. The value of the transfer bias depends on the paper size. To clean the transfer roller, negative bias is applied periodically.
Separation	The paper discharge brush separates the paper from the drum.
Cleaning	The cleaning blade removes any toner remaining on the drum surface after image transfer.

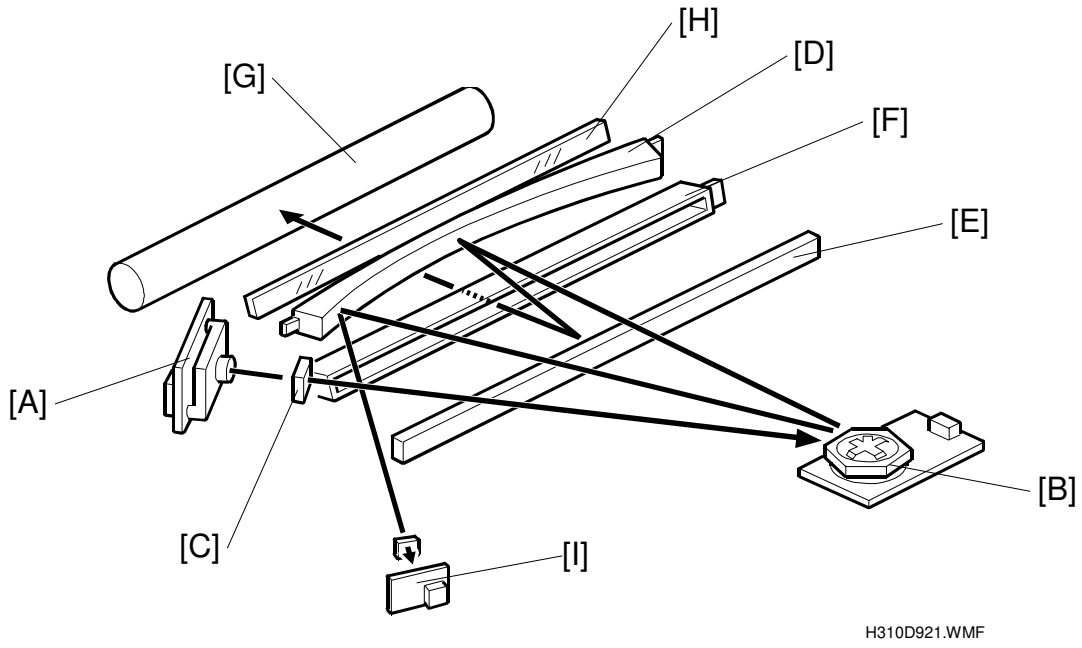
6.2.2 LASER EXPOSURE

Overview

This machine uses a laser diode to produce electrostatic images on an OPC drum. The laser diode unit converts image data from the FCU into laser pulses, and the optical components direct these pulses to the drum.

Exposure of the drum by the laser beam creates the latent image. The laser beam makes the main scan while drum rotation controls the sub scan.

Optical Path



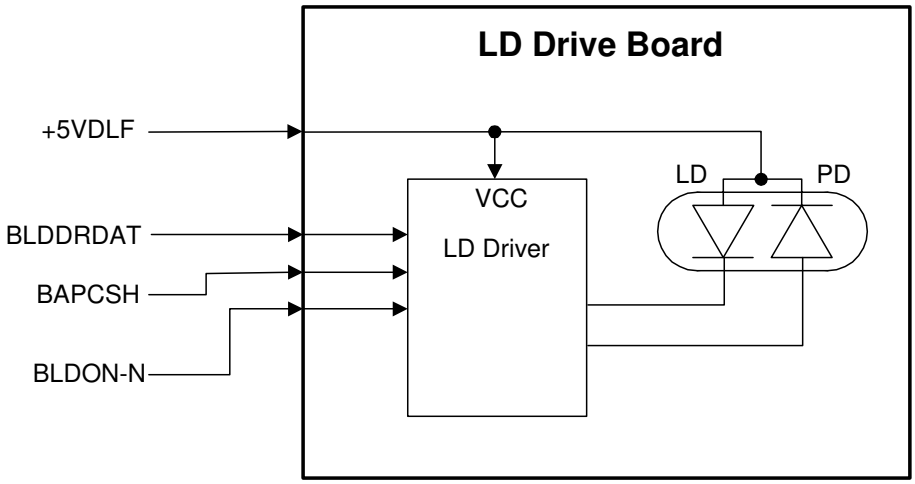
The LD unit [A] outputs the laser beam to the polygonal mirror [B] through the cylindrical lens [C], which focuses the laser beam.

The laser beam goes to the F-theta mirror [D], 1st mirror [E] and BTL [F]. Then, the beam reaches the drum [G] through the shield glass [H].

The beam reflected by the polygonal mirror writes the pixels of the latent image on the drum. The F-theta mirror ensures constant intervals between the pixels. The BTL corrects for irregularities in the polygonal mirror faces.

The laser synchronization detector [I] synchronizes the start of the main scan.

Auto Power Control (APC)

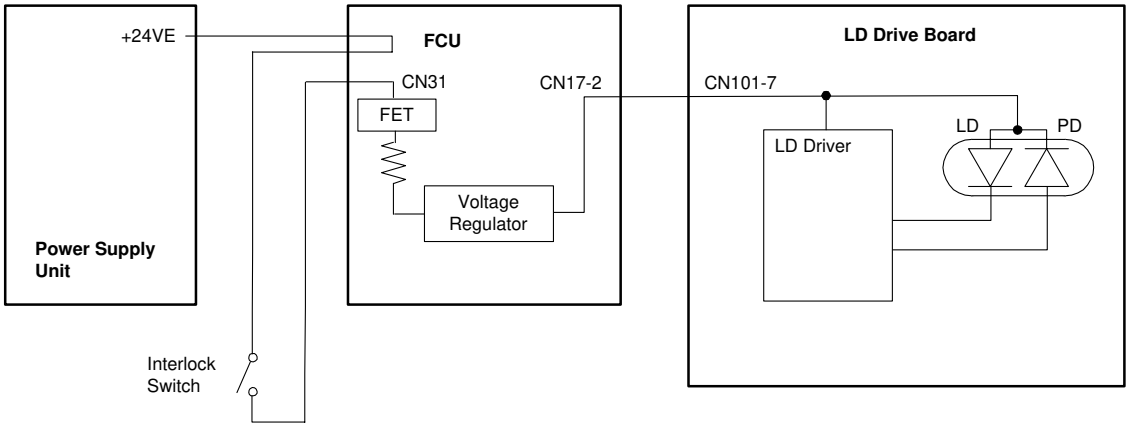


H310D901.WMF

To prevent the intensity of the laser beam from changing because of temperature, the machine monitors the laser beam with a photodiode (PD). The PD is enclosed in the laser diode. The PD passes an electrical current to the LD driver IC and this IC adjusts its output level to keep the laser diode output constant.

The laser diode power level is adjusted on the production line. Do not touch the variable resistors on the LD unit in the field.

LD Safety



H310D900.WMF

Interlock Switch

To ensure that the laser beam does not inadvertently switch on during servicing, there is a safety switch located at the left cover. The switch is on the LD 24 V line.

Mechanical Laser Shutter

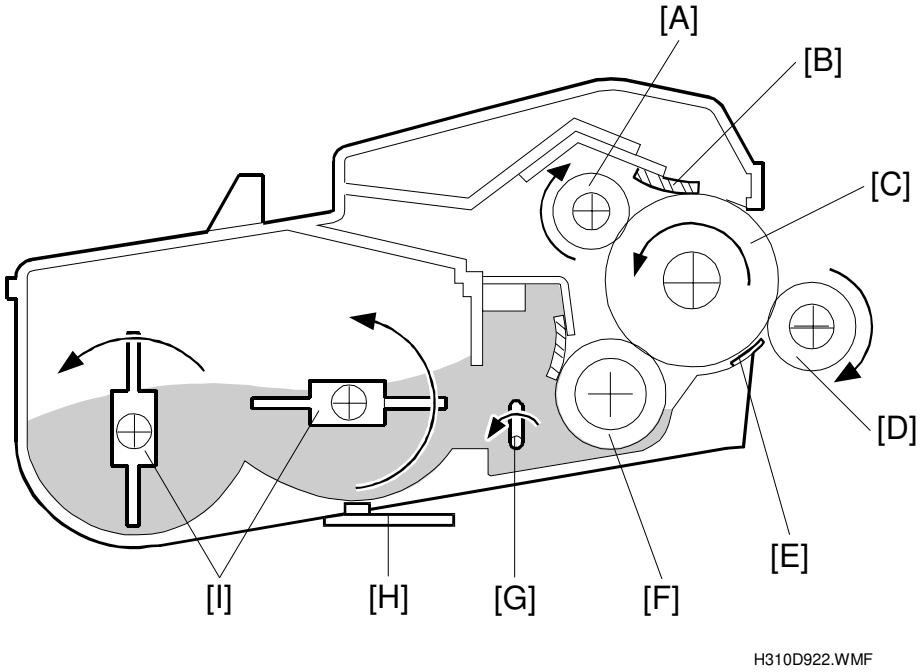
When the AIO cartridge is removed, the laser shutter is released and this interrupts the laser beam.

LD Unit Service Call Condition

Sub-Code	Error Code	Description
0322	9-20	No polygonal motor synchronization signal detected.

6.2.3 AIO CARTRIDGE

Overview

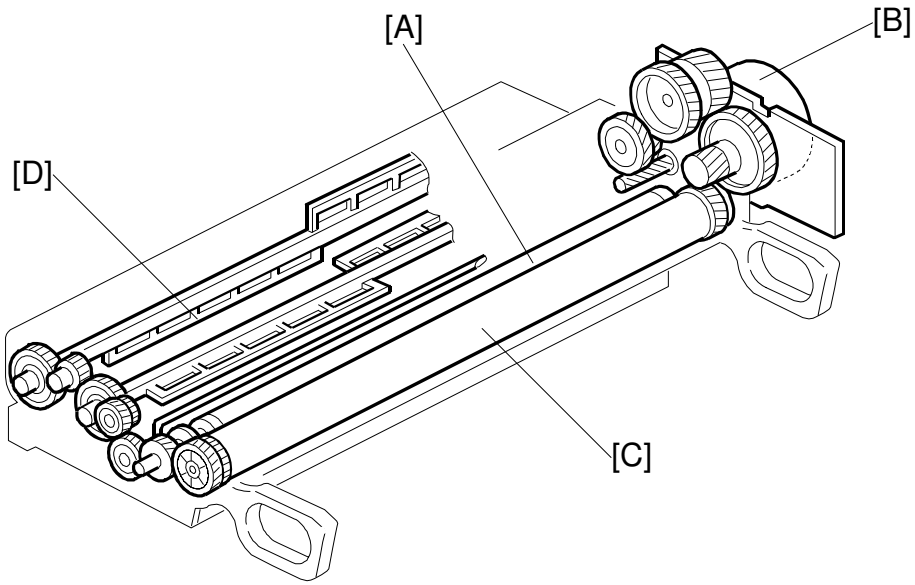


The toner cartridge consists of the components shown above. The toner cartridge contains the OPC drum and the toner cassette, and includes the mechanisms for drum charge, development, and cleaning. The drum is 30 mm in diameter.

[A]: Charge Roller
[B]: Cleaning Blade
[C]: OPC Drum
[D]: Transfer Roller
[E]: Guide Plate
[F]: Development Roller
[G]: Mixing Blade
[H]: Toner Near-end Sensor
[I]: Agitators

The main motor drives the rollers in the toner cartridge. The charge roller [A] charges the drum [C]. Mono-component toner is used. The cleaning blade [B] cleans the drum surface.

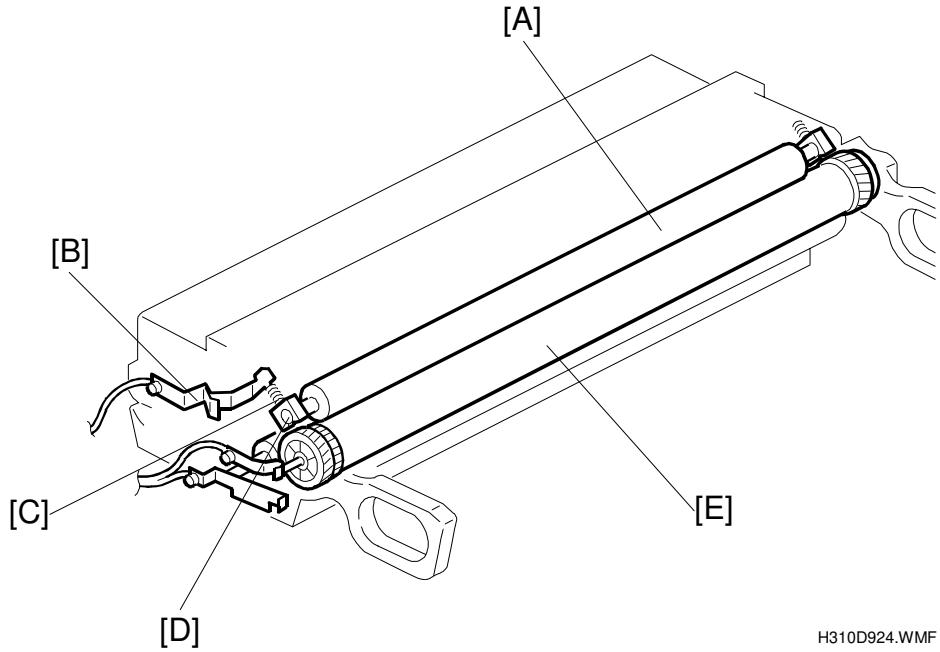
Drive



H310D923.WMF

The main motor [B] drives the drum [C], the development roller [A], and agitators [D] through a series of gears. The main motor speed is controlled by the FCU.

Drum Charge



This machine uses a drum charge roller system instead of a scorotron corona wire system to charge the drum. The drum charge roller [A] always contacts the surface of the drum [E] because of the charge roller pressure springs [C], and gives a negative charge to the drum surface. While the drum is rotating, the drum charge roller also turns because of friction between the roller and the drum.

The drum charge roller system generates less ozone than a scorotron corona wire charge system. Due to this, there is no ozone filter in the machine.

The high voltage supply board applies voltage to the drum charge roller through the charge roller terminal [B], charge roller pressure spring [C], and the charge roller bushing [D]. Both ac and dc are applied.

Before the laser starts to write to the drum, the charge roller receives –600Vdc and 1.05 kV peak-to-peak 1 kHz ac from the high voltage supply board. This gives the drum surface a uniform negative charge of –600 V.

The dc and ac are continually supplied during the printing job. This gives the drum surface a uniform –600 V charge wherever it passes the charge roller.

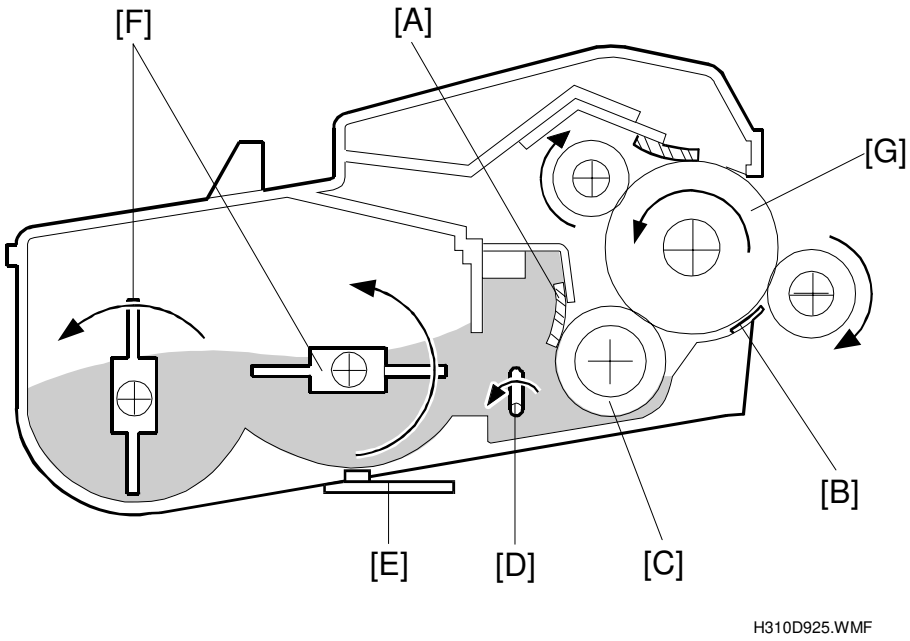
At the end of the job, the dc is set to 0 V, but the ac stays on. While the drum rotates past the charge roller, the ac brings the charge on the drum surface to a uniform 0 V.

The toner cartridge has no cleaning pad, temperature control, or contact mechanism for the drum charge roller (the material of the drum charge roller allows a simple mechanism). The drum charge roller is part of the toner cartridge, so when the toner runs out, the drum charge roller is changed at the same time. This happens before the drum charge roller gets dirty.

To discharge the OPC drum surface, the LD is switched on after every 10 sheets printed (if the 10-page interval expired during a job, the machine waits until the end of the job). There is no quenching lamp in this machine.

Development

Overview



This machine uses mono-component toner. The AIO cartridge contains two agitators [F].

The agitators [F] and the mixing blade [D] mix the toner in the toner cartridge and transport it to the development roller [C]. Friction between the transported toner and the doctor blade [A] gives the toner a negative charge.

Internal permanent magnets in the development roller attract the toner to the development roller sleeve. The doctor blade trims the toner to the desired thickness on the development roller sleeve. The development roller does not contact the drum [G]. There is a small gap between the toner on the surface of the development roller sleeve and the drum. Toner jumps across this gap to develop the latent image.

The development bias consists of ac and dc components. The ac component improves the transfer of toner.

The guide plate [B] is charged to the same voltage as the development bias. This helps to keep the toner on the drum.

The toner near-end sensor [E] is under the toner cartridge.

Toner Near-End Sensor

The toner near-end sensor monitors the toner concentration by checking the magnetic field strength.

When the reading goes down to a threshold value, the machine enters the near-end condition. The threshold value cannot be changed.

A hundred pages can be printed after detecting the near-end condition, then the machine stops printing and toner end is detected.

When a new cartridge is installed, the machine clears the near-end condition if the toner near-end sensor detects that there is sufficient toner.

No adjustment is required after the sensor is replaced.

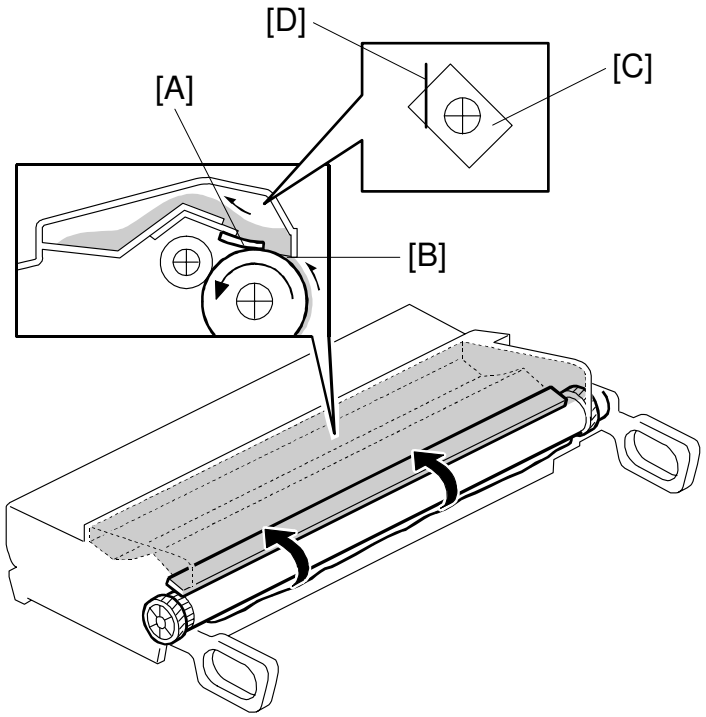
Toner Supply

The toner in the toner cartridge is mixed by the agitators and mixing blade. The toner near-end sensor is not used to control toner supply. When the machine is turned on or the left cover is closed, the agitators and the mixing blade rotate to mix the toner for a brief period.

Development Bias

The high voltage supply unit gives the development roller a charge of –400 V dc, and an ac component of 1.6 kVp-p 2 kHz ac is also used. To prevent toner from transferring to non-image areas on the drum, the development bias is different for image areas and non-image areas.

Drum Cleaning



H310D926.WMF

The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. The toner remaining on the drum is scraped off by the cleaning blade and transferred to the collection area. The mylar sheet [B] prevents the toner from dropping out of the cleaning unit.

The toner collection coil [C] and scraper [D] improve the collection of waste toner.

There is no toner recycling mechanism.

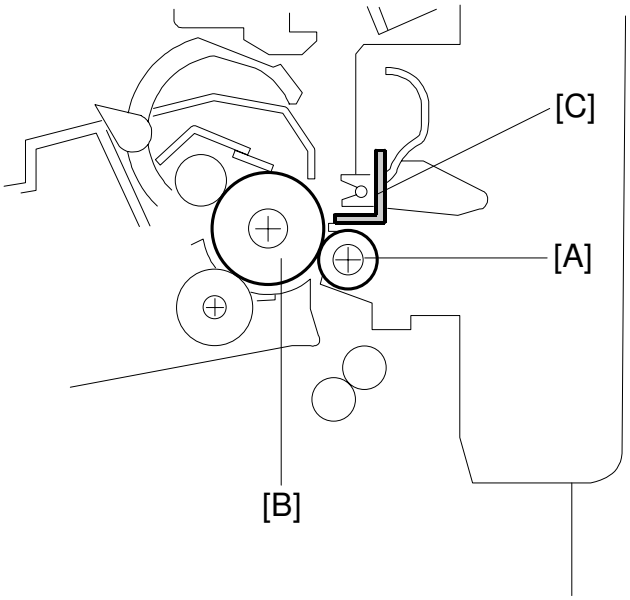
To discharge the OPC drum surface, the LD is switched on after every 10 sheets printed (if the 10-page interval expired during a job, the machine waits until the end of the job).

Service Call Conditions for the Development Section

Sub-Code	Error Code	Description
0391	9-29	Development leak current detected while the development roller was operating.

6.2.4 TRANSFER AND PAPER SEPARATION

Overview



H310D927.WMF

The machine uses a transfer roller [A] which touches the surface of the drum [B].

The high voltage supply unit supplies a positive current to the transfer roller. A feedback circuit inside the machine automatically keeps the transfer current constant. The current depends on the paper size.

The transfer roller attracts the toner from the drum onto the paper.

Drive from the drum through a gear drives the transfer roller.

The discharge brush [C] and the curvature of the drum helps the paper to separate from the drum. The discharge brush is connected to ground.

Transfer Roller Cleaning

If the paper size is smaller than the printed image, or if a paper jam occurs during printing, toner may be transferred to the roller surface. To prevent this toner from transferring to the back side of the printouts, the transfer roller has to be cleaned before the next printing run.

During transfer roller cleaning, the high voltage supply unit supplies a negative cleaning bias to the transfer roller. The negatively charged toner on the transfer roller is then transferred back to the drum. Then a positive cleaning bias is applied to the transfer roller to push back to the drum any toner which was positively charged by the transfer roller.

The machine goes through the cleaning mode in the following conditions:

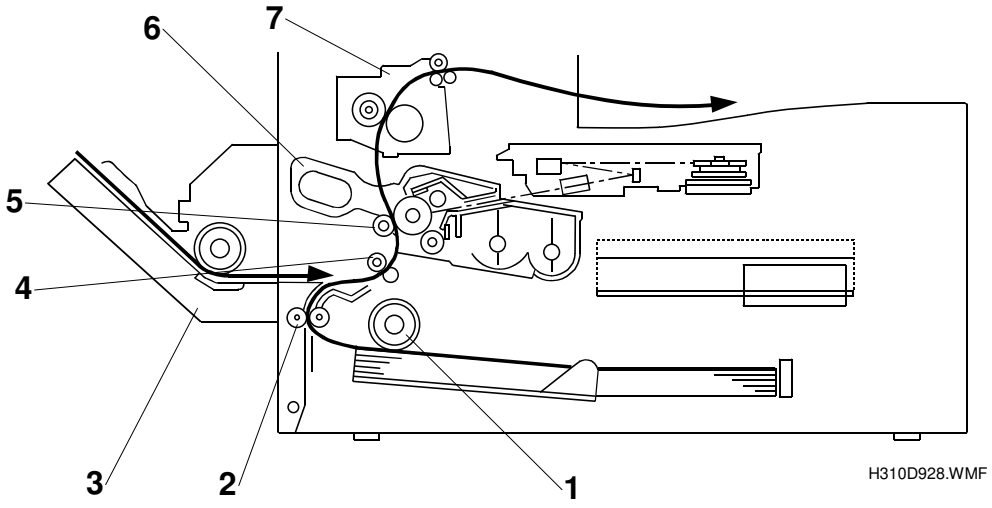
- After a printer jam has been cleared.
- Just after the power is switched on.
- After every 5 sheets printed (if the 5-page interval expired during a job, the machine waits until the end of the job).

Service Call Conditions for the Transfer Section

Sub-Code	Error Code	Description
0401	9-29	For 200 ms the machine detects a PWM output duty ratio of ≤ 10% despite a feedback voltage of 1V or 4V. For details, see “4.3 Service Call Conditions”.
0402	9-29	

6.2.5 PAPER FEED

Overview



1. Feed Roller
2. Transport Roller
3. By-pass Tray (100 sheets)
4. Registration Roller
5. Transfer Roller
6. AIO (All-In-One Toner Cartridge)
7. Fusing Unit

Paper Tray. The paper tray holds approximately 500 sheets and can accept the following paper sizes: A4, A3, 11”x13” (Government Legal), LT, 8”x13”, LG, 11”x17 (Ledger).

Bottom Plate. A coil spring below the bottom plate pushes the bottom plate and paper stack up to maintain the correct paper height for feeding.

Paper end sensor. A photosensor below the plate that detects when paper in the paper tray has run out.

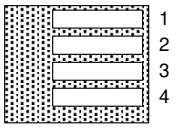
Paper size switches. Four paper size switches (push switches) detect the size of the paper loaded in the tray.

Paper near end sensor. Actuates when about 50 sheets of paper remain in the tray and lights the paper end LED green. After the last sheet feeds, the paper end LED lights red to indicate paper out.

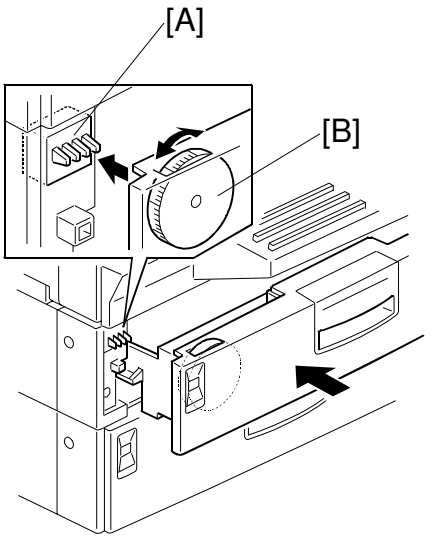
Paper feed. The pick-up roller and feed roller feed the copy paper from the paper tray, but only the bottom sheet is fed because the separation pawls prevent any other sheets from feeding.

Skew correction. The registration sensor detects the leading edge of the paper and slows the feed motor (a stepper motor) long enough to buckle the edge of the paper against the registration roller and correct skew.

Paper Size Detection



H310D931.WMF



H310D942.WMF

Paper Size Detection (Standard tray)

Paper Size	SW1	SW2	SW3	SW4
No Tray	OFF	OFF	OFF	OFF
Folio	ON	ON	OFF	OFF
LT LEF	OFF	OFF	OFF	ON
LG SEF	OFF	ON	OFF	ON
A4 SEF	ON	ON	OFF	ON
F	OFF	OFF	ON	ON
A3	ON	OFF	ON	ON
LT SEF	OFF	ON	ON	ON
DLT	ON	ON	ON	ON

LEF: Long Edge Feed

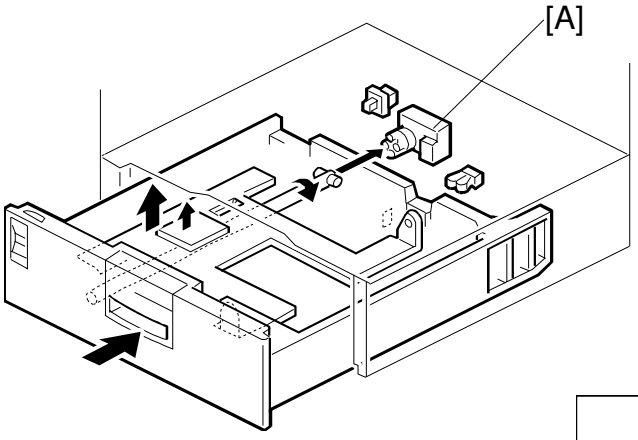
SEF: Short Edge Feed

NOTE: LEF and SEF in this table are with relation to the direction of paper feed ("long edge feed" means that the long edge is going into the machine first). They do not refer to the decals on the trays.

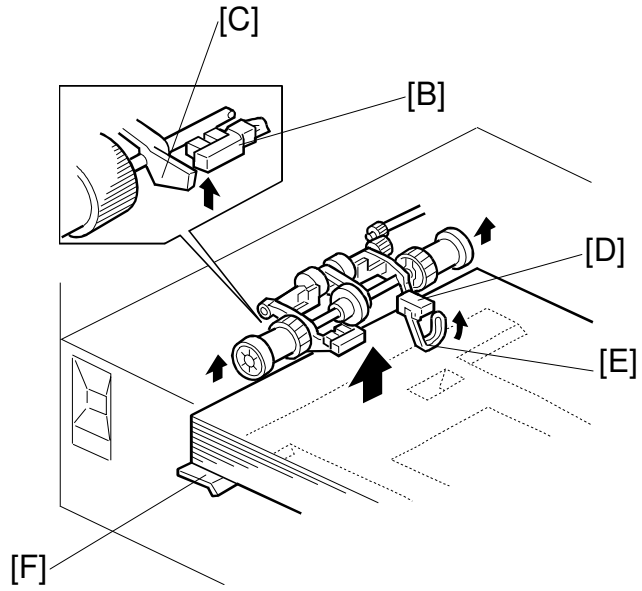
Paper size detection is based on the four paper size switches [A] on the main unit, which detect the setting of the paper size dial [B] on the paper tray.

The paper size dial has grooves and ridges on the side facing the paper size switches. Each switch turns off when it falls into a groove, and turns on when a ridge presses it.

Bottom Plate Lift, Upper Limit Detection and Paper End Detection



H310D937.WMF

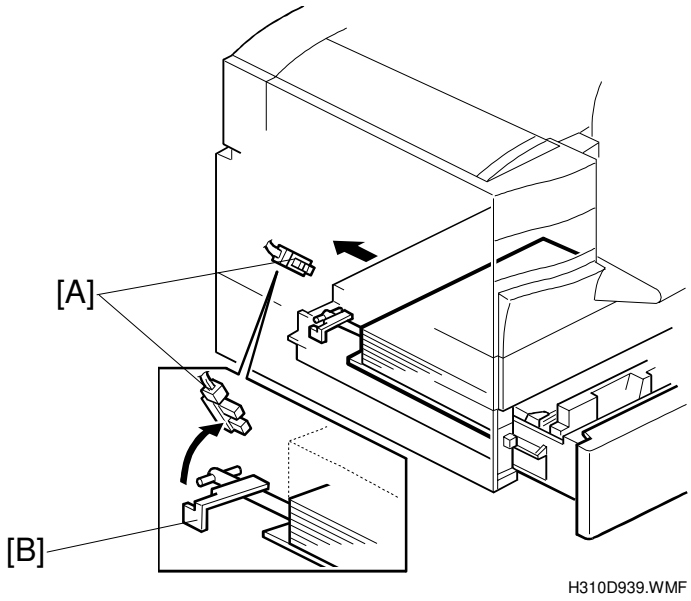


H310D938.WMF

When the tray is placed in the machine, the paper size detection sensor turns on and the lift motor [A] is activated, lifting the bottom plate. The plate rises until the upper limit sensor [B] detects the actuator [C] and stops the motor.

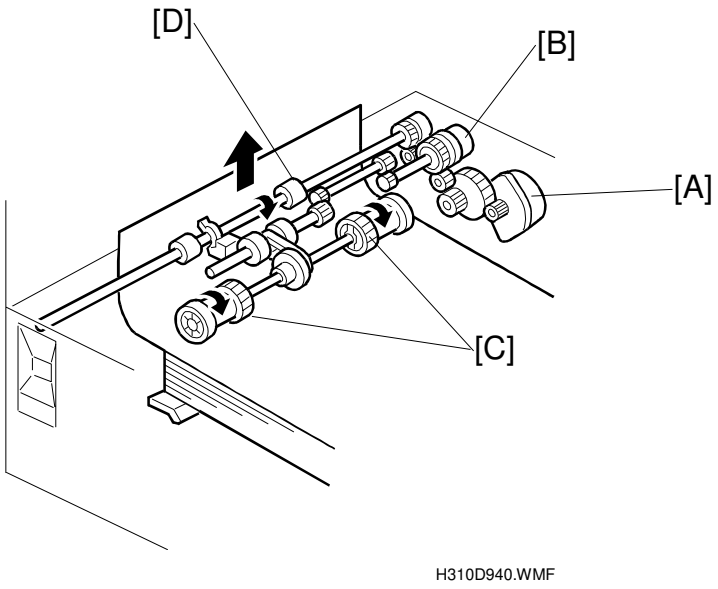
The paper end sensor [D] contains a photosensor. When there is no paper remaining in the tray, the actuator [E] drops through the opening in the bottom plate [F], causing the sensor to detect the paper end condition.

Paper Near-end Detection



When the paper supply in the tray becomes low, the actuator [B] on the paper lift shaft enters the near-end sensor [A]. This occurs when about 50 sheets are remaining in the tray. At the same time, the paper end LED is lit green.

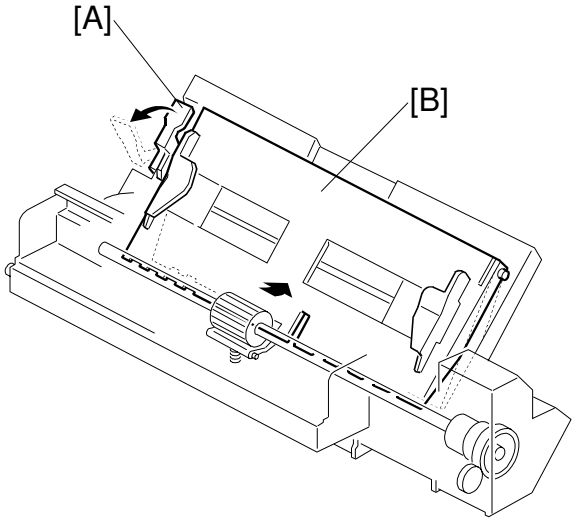
Paper Feed



The paper feed motor [A] and the feed clutch [B] turn on, causing the pick-up roller [C] to turn. The paper is then guided by the paper feed roller [D], which is driven by the paper feed motor.

By-pass Tray

By-pass Tray Guide Plate

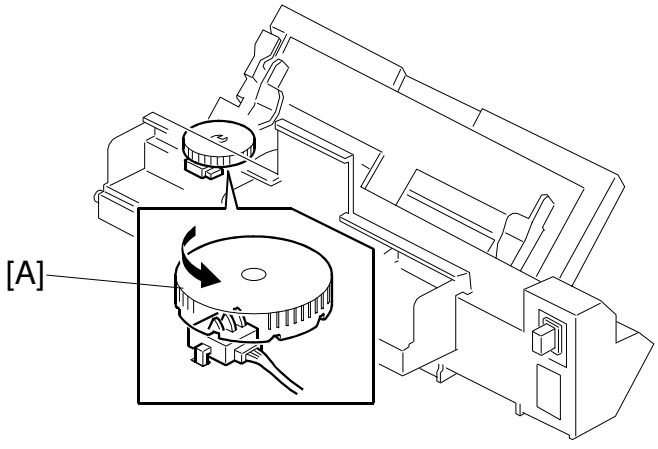


H310D010.WMF

Raise the gray lever [A] to lower the by-pass guide plate [B] and release it.

Press down the lever to raise the guide plate so it presses against the bottom of the stack.

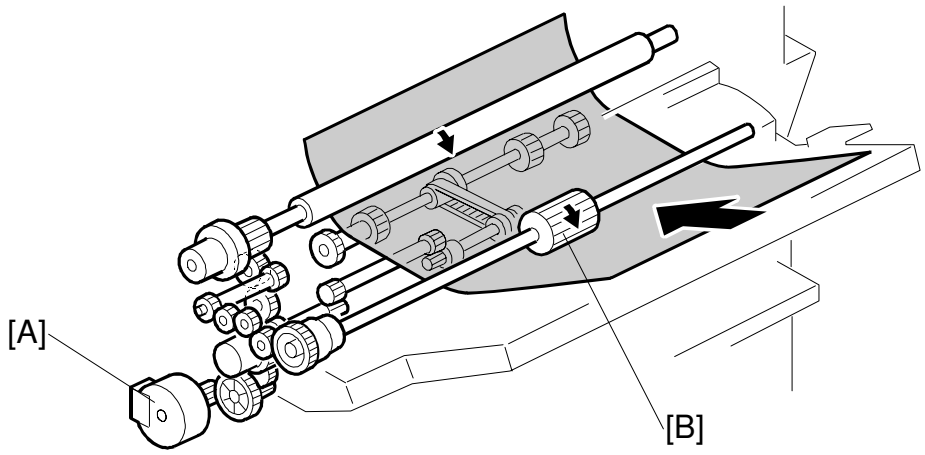
By-pass Tray Paper Size Detection



H310D011.WMFF

Paper size detection for the by-pass tray is set manually. The operator simply rotates the dial [A] to the correct setting for the size of the paper loaded in the by-pass tray.

By-pass Paper Feed



H310D944.WMF

A paper feed signal switches on the paper feed motor [A] which rotates the feed roller [B] and feeds the paper from the by-pass feeder.

The feed motor switches off and on briefly to ensure that the paper feed timing is correct for positioning the image on the paper before it is fed to the transfer unit.

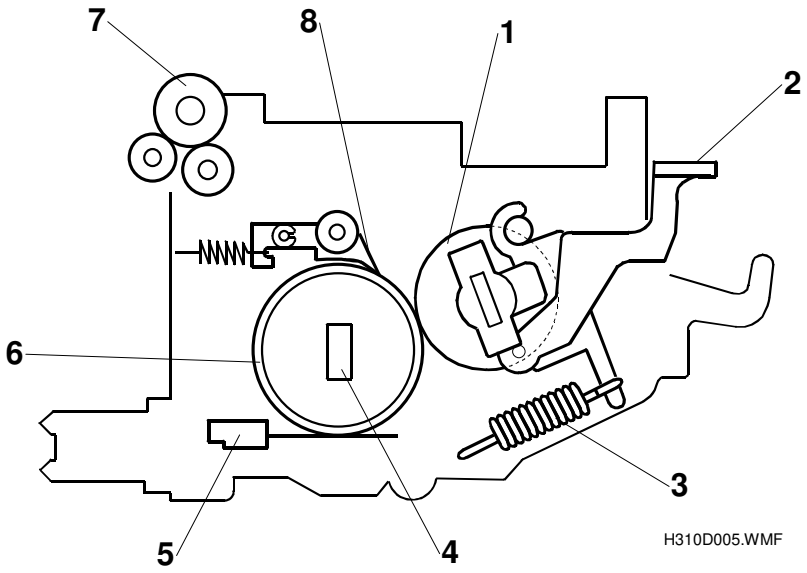
By-pass Feeder Jam Detection

1. No Feed Jam (error code: 9-82)
   - After the start of paper feed, the registration sensor does not switch on after 2 seconds.

By-pass Tray		
Capacity	A4 and smaller	Less than 100 sheets
	Larger than A4	Less than 10 sheets
Paper Size (standard)	A3, B4, A4 SEF, LT LEF, LT SEF, LG SEF, DLT SEF,	
Paper Size (non-standard)	Non-standard sizes can be used, but only in copy or printer mode, not fax mode.	
Operation Modes	Employed in all modes: Fax, Printer, Copy modes	

6.2.6 FUSING

Overview



1. Pressure Roller
2. Pressure Roller Release Lever
3. Pressure Spring
4. Fusing Lamp
5. Fusing Thermistor
6. Hot Roller
7. Exit Roller
8. Hot Roller Strippers

Fusing system. Fusing lamp and hot roller with a thermistor and fuse controlling the temperature of the fusing lamp to maintain correct temperature of the hot roller for fusing and to prevent overheating.

Fusing Pressure and Separation. The sheets pass between the hot roller and a pressure roller pressed against the hot roller by a large spring to maintain the correct pressure for fusing. Hot roller strippers remove paper that sticks to the hot roller.

Fusing unit drive. The fusing unit is driven by the main motor.

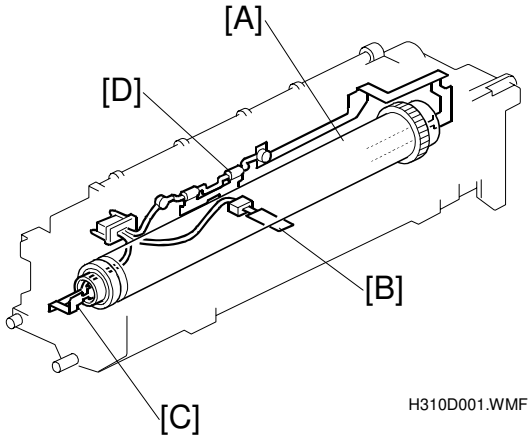
Fusing temperature control. The temperature of the hot roller is controlled by switching the fusing lamp off and on at precise intervals prescribed by the paper size. When the machine is switched on, or when it returns from the energy save mode, the temperature is controlled briefly (about 200 ms) with phase control and thereafter controlled with on/off timing.

Fusing

The paper from the transfer unit feeds into the fusing unit between the hot roller [A] and pressure roller where the prescribed combination of heat and pressure fuses the image into the paper.

The thermistor [B], in contact with the center of the hot roller, constantly monitors the temperature of the hot roller for the CPU. The CPU uses these temperature readings to determine when to switch the fusing lamp [C] off and on in order to maintain the optimum temperature of the hot roller.

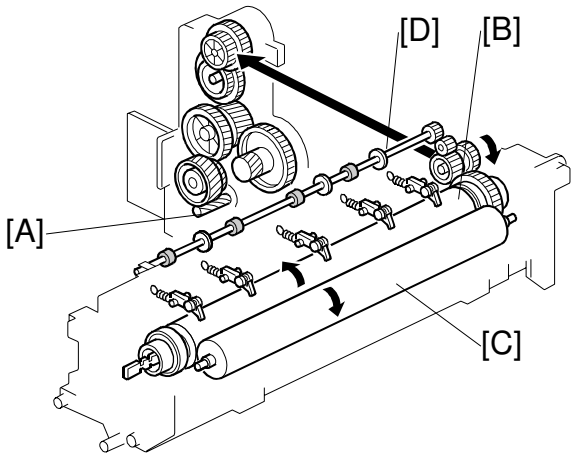
The thermofuse [D] also constantly monitors the temperature of the hot roller and protects the fusing unit from overheating.



H310D001.WMF

Fusing Unit Drive

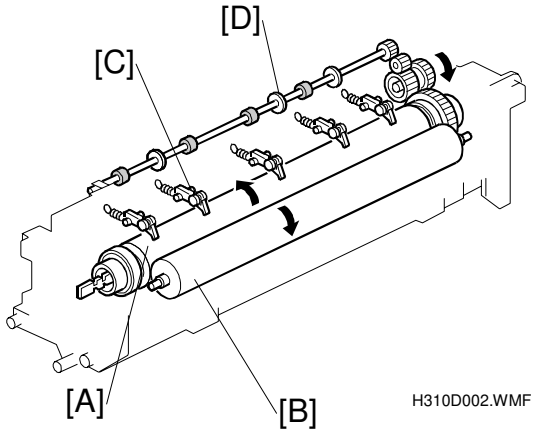
The main motor [A] drives the hot roller [B] through several gears. The rotation of the hot roller drives the pressure roller [C] and exit roller [D].



H310D003.WMF

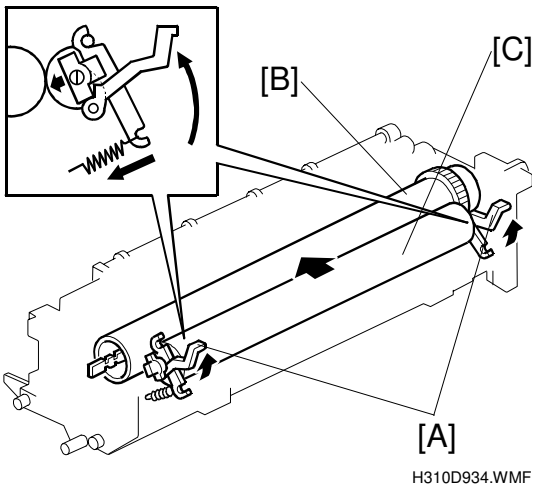
Fusing Pressure Roller, Separation, Exit

Large springs on either end of the fusing unit keep the hot roller [A] and pressure roller [B] pressed together. The hot roller strippers [C] separate the paper from the hot roller and direct the paper to the exit roller [D].



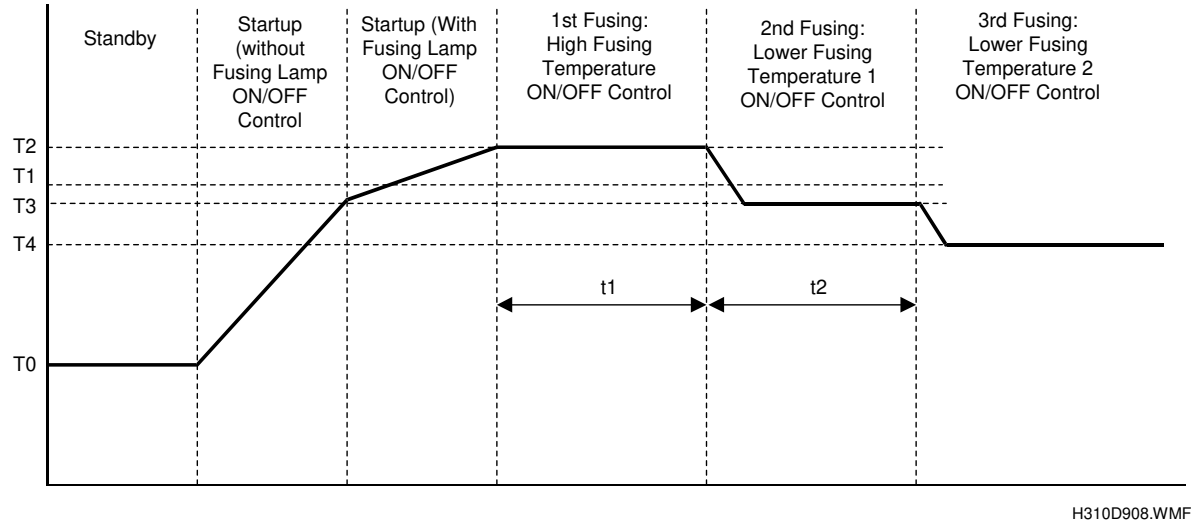
Fusing Drive Release

Pressing down the pressure roller release levers [A] rotates a cam that releases the pressure between the hot roller [B] and pressure roller [C]. Releasing the pressure between the hot roller and pressure roller allows easy removal of jammed paper.



Fusing Temperature Control

Overview



T0:	Room temperature
T1:	Heater on full power until 170°C (No ON/OFF Temp. Control)
T2:	Fusing Temperature 1*1
T3:	Fusing Temperature 2*1
T4:	Fusing Temperature 3*1
t1:	Time to shift from High to Lower Temperature 1
t2:	Time for Lower Temperature 2 (ON/OFF shift time)
*1: Differs according to paper size	

At power on, the fusing lamp switches on and remains on until the thermistor in contact with the hot roller detects the standby temperature (80°C).

When a print job starts, the fusing lamp remains on until the hot roller reaches the print start temperature (T1). The print job starts at this temperature but the paper stays at the registration roller until the thermistor detects the 1st fusing temperature.

As shown in the illustration above, the fusing temperature is highest for the first part of the job (t1). Then the temperature is gradually stepped down to prevent both ends of the hot roller from overheating.

> Example: For A4 paper, the heat at both ends of the hot roller does not dissipate because these areas are not being used, allowing the ends to reach a very high temperature. If the temperature was not corrected and if the next job was on A3, the ends of the hot roller would be much hotter than the center, and this could cause hot offset (double images).

When the fusing temperature reaches 170°C, the 1st fusing temperature is used as the target temperature for fusing temperature control.

When t1 has elapsed after reaching the start temperature for printing, the 2nd fusing temperature becomes the target temperature. Next, after t2 has elapsed, the 3rd fusing temperature becomes the target temperature. The 1st, 2nd, and 3rd fusing temperatures, and the amount of time to maintain the 1st and 2nd fusing temperatures, are determined by the paper size.

SIZE	DLT	LT LEF	LG	LT SEF	A4 LEF	A4 SEF	A3
T2 (Control Temp.)	195°C	185°C	185°C	185°C	180°C	185°C	195°C
T3 (Control Temp.)	190°C	185°C	180°C	185°C	180°C	175°C	190°C
T4 (Control Temp.)	180°C	170°C	170°C	170°C	170°C	160°C	170°C
t1[*1]	30 s	80 s	40 s	80 s	80 s	40 s	80 s
t2[*2]	130 s	80 s	40 s	80 s	80 s	40 s	80 s

Cooling Fan Control

The cooling fan has three operation modes controlled by the temperature of the fusing unit. The threshold temperature for control of the fan differs depending on whether the temperature is rising or falling.

When the temperature is rising:

- At 110°C the fan switches on and starts rotating at low speed. (At low speed the fan continues to rotate non-stop for at least 5 minutes.)
- At 170°C the fan starts rotating at high speed. (The fan always runs at high speed while the machine is operating.)

When the temperature is falling:

- At 160°C the fan, rotating at high speed, starts rotating at low speed.
- At 100°C the fan, rotating at low speed, switches off.

Fusing Unit Service Call Conditions

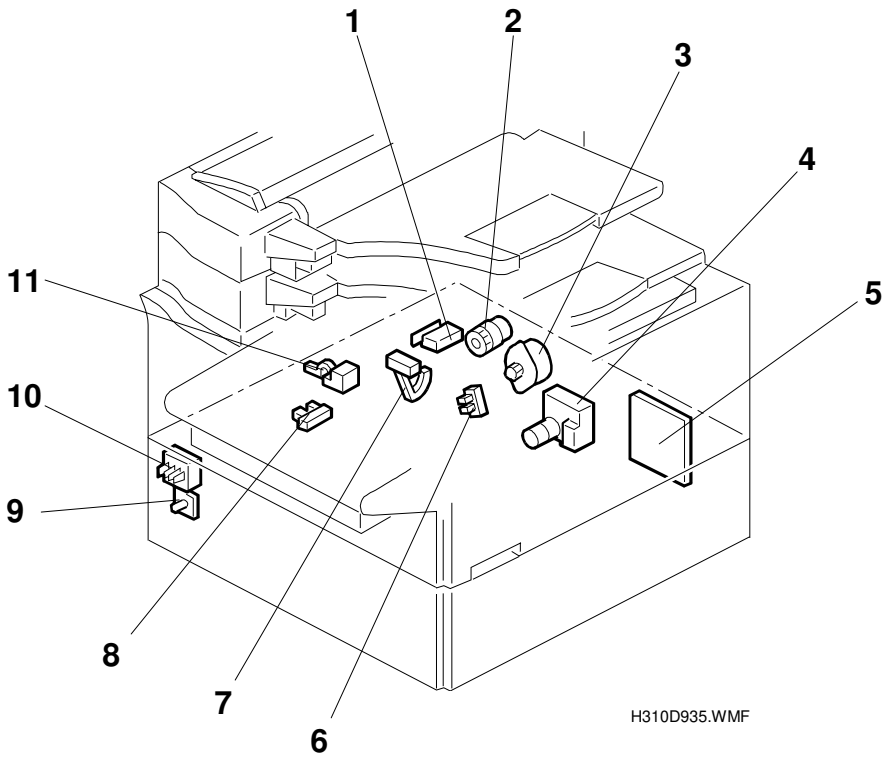
If the Call Service indicator lights due to an error in the fusing unit, one of the following conditions exists.

ERROR	SC CODE	ERROR NAME	DESCRIPTION
9-22	0541	Thermistor Failure	Thermistor damaged or disconnected.
9-22	0542	Reload Error	The hot roller did not attain correct temperature after warmup completed.
9-22	0543	Abnormal High Temperature	During warmup, fusing temperature of 230°C or higher for 1 s detected.
9-22	0544	Abnormal Low Temperature	During printing, a fusing temperature of 130°C (or lower) detected for 60 s.
9-22	0546	Fusing Temperature Unstable	During printing, a fusing temperature fluctuation of ±25°C detected twice.
9-22	0547	Wrong, No Unit	Unit not installed or wrong fusing unit installed. (Destination code in PSU and fusing unit do not match.)
9-22	0548	High Fusing Temperature	During printing, a fusing temperature above the allowed error level detected for 10 s.
9-22	0549	Low Fusing Temperature	During printing, fusing temperature below the allowed level detected for 6 s.
9-22	0550	High Standby Temperature	Fusing temperature failed to drop to the standby temperature within the prescribed time.
9-22	0551	Repeat High Standby Temperature	During high temperature standby, a fusing temperature of 195°C or higher detected for 10 s.
9-22	0552	Low Standby Temperature	During high temperature standby, a fusing temperature of 150°C or lower detected for 6 s, or in fax mode a fusing temperature of 50°C or lower for 6 s detected.

NOTE: To recover from an error generated by the fusing unit, set bit 0 of printer switch 01 to 1, then power the machine off and on.

6.3 OPTIONAL PAPER FEED UNITS

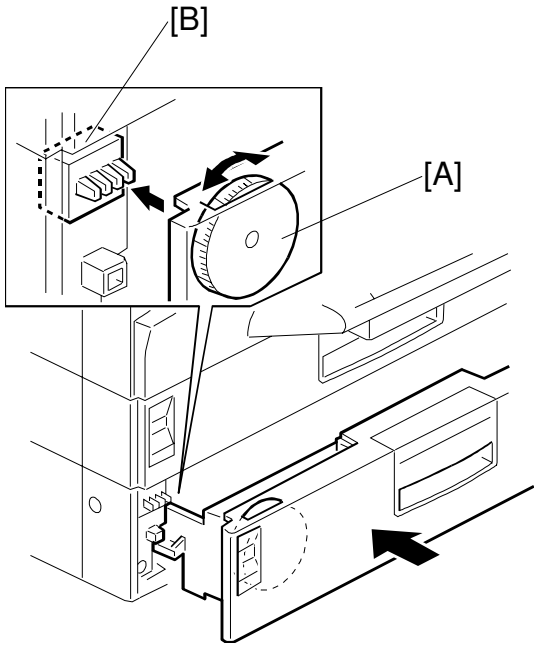
6.3.1 OVERVIEW



1. Cover Switch
2. Paper Feed Clutch
3. Paper Feed Motor
4. Lift Motor
5. PFU Board
6. Paper Near-end Sensor
7. Paper End Sensor
8. Upper Limit Sensor
9. Paper End LED
10. Paper Size Switch
11. Paper Feed Sensor

6.3.2 MECHANISMS

Paper Size Detection



H310D936.WMF

The machine detects paper size based on the setting that the operator chooses on the paper size dial [A]. The paper sizes are detected by the paper size detection switches [B] through their contact with small projections on the paper size dial. It is therefore necessary to adjust the setting on the dial when a different sized paper is used. If this is not done, images meant for paper sizes larger than the size selected on the dial will be partially cut off.

In addition to paper size detection, this dial setting also provides the basis for jam detection timing. The sensor also detects whether the tray has been inserted or not.

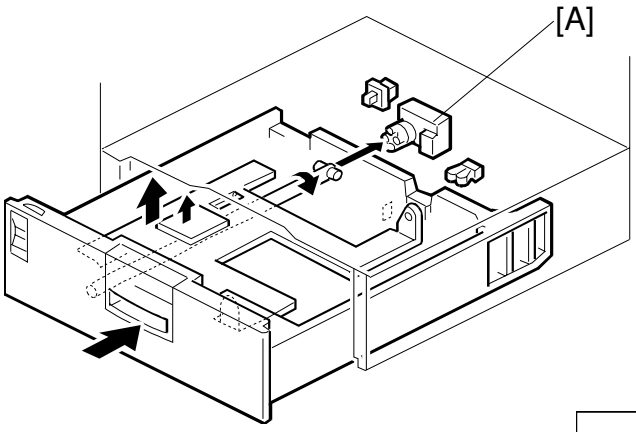
Paper Size Detection (Optional PFU)

Paper Size	SW1	SW2	SW3	SW4
No Tray	OFF	OFF	OFF	OFF
A5 LEF	ON	ON	OFF	OFF
LT LEF	OFF	OFF	OFF	ON
LG	OFF	ON	OFF	ON
A4 SEF	ON	ON	OFF	ON
A3	ON	OFF	ON	ON
LT SEF	OFF	ON	ON	ON
A4 LEF	ON	ON	ON	ON

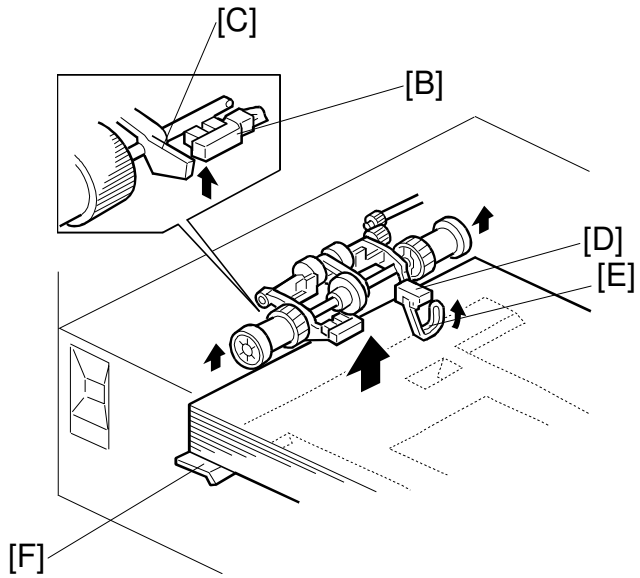
LEF: Long Edge Feed

SEF: Short Edge Feed

Bottom Plate Lift, Upper Limit Detection and Paper End Detection



H310D937.WMF

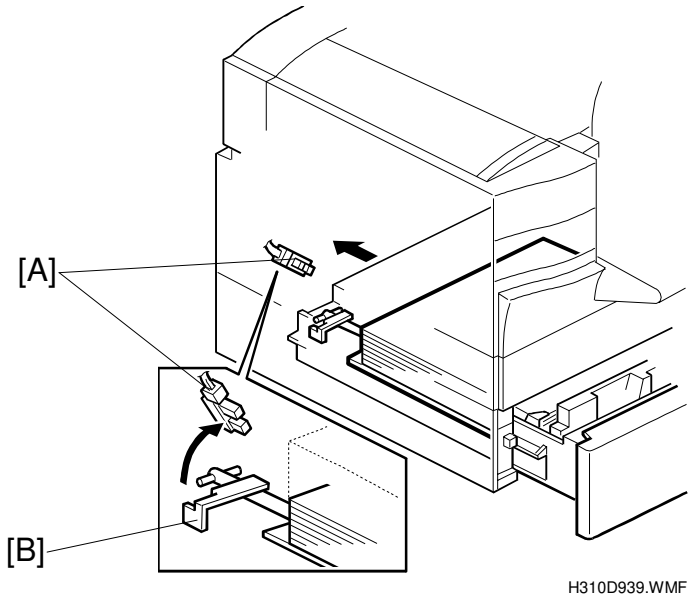


H310D938.WMF

When the tray is placed in the machine, the paper size detection sensor turns on and the lift motor [A] is activated, lifting the bottom plate. The plate rises until the upper limit sensor [B] detects the actuator [C] and stops the motor.

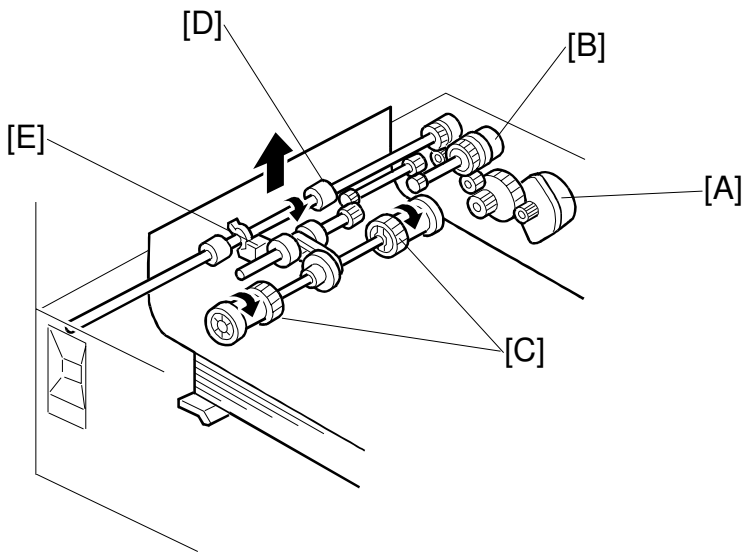
The paper end sensor [D] contains a photosensor. When there is no paper remaining in the tray, the actuator [E] drops through the opening in the bottom plate [F], causing the sensor to detect the paper end condition.

Paper Near-end Detection



When the paper supply in the tray becomes low, the actuator [B] on the paper lift shaft enters the near-end sensor [A]. This occurs when about 50 sheets are remaining in the tray. At the same time, the paper end LED is lit green.

Paper Feed



H310D940.WMF

The paper feed motor [A] and the feed clutch [B] turn on, causing the pick-up roller [C] to turn. The paper is then guided by the paper feed roller [D], which is driven by the paper feed motor. The motor stops when the paper feed sensor [E] turns off.

If the tray immediately above is another optional paper feed unit, the paper feed motor in that unit activates when the paper feed sensor in that unit turns on, and the paper is fed upwards by the upper optional paper feed unit.

When the paper activates the mainframe registration sensor, the motor of the optional paper feed unit will turn off even if the paper feed sensor is still on. The machine's paper feed motor feeds the paper towards the drum. The motor of the optional paper feed unit rotates at a high speed to feed the paper from the paper feed area to the registration roller. After the paper has reached the registration roller and the registration sensor has turned on, the main motor in the base machine turns slowly to match the speed of the OPC drum.

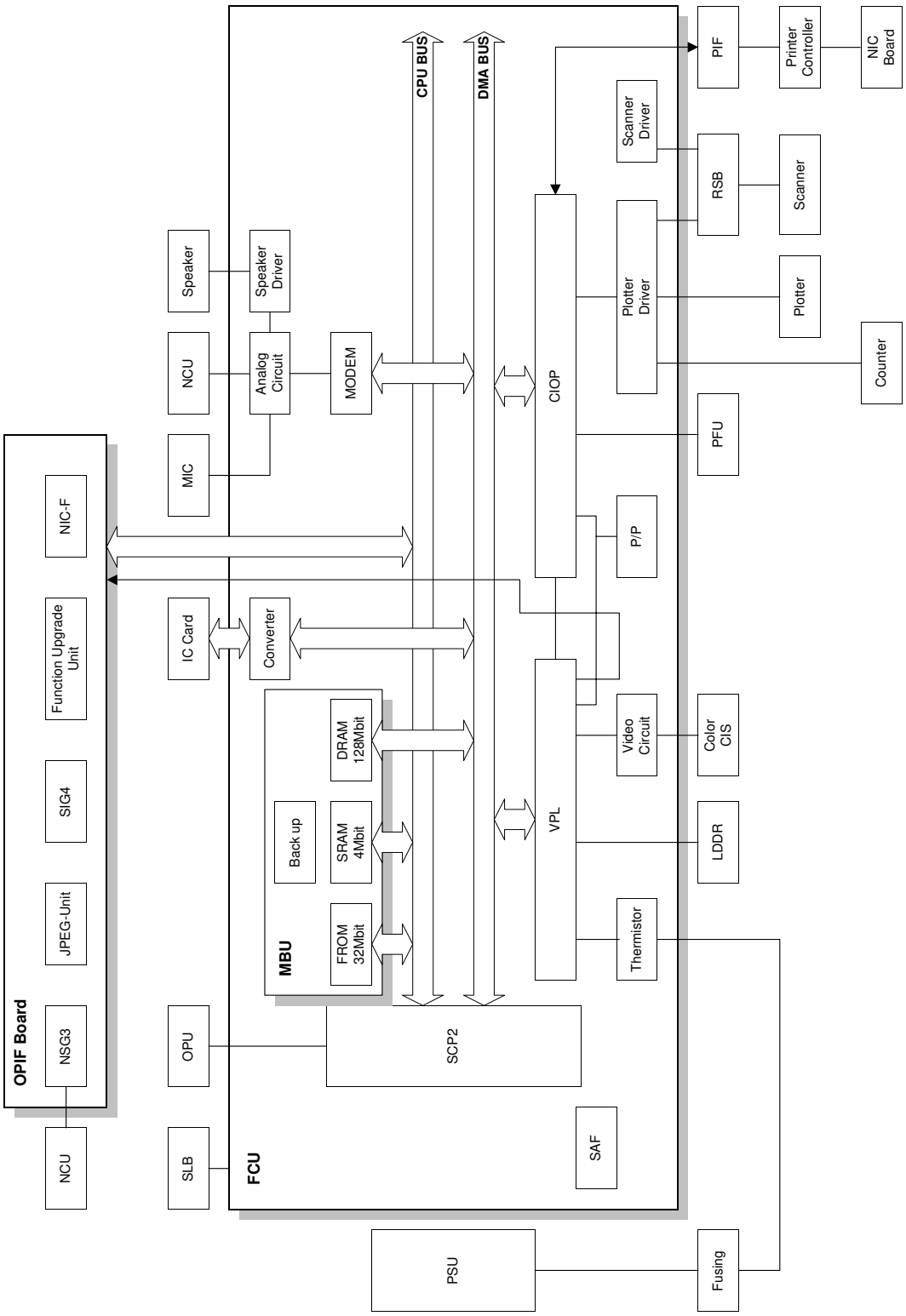
Jam Detection

- If the paper feed sensor does not turn on within two seconds after the optional paper feed clutch starts.

  Error codes: 9-50 (2nd optional tray), 9-52 (3rd optional tray), 9-54 (4th optional tray), 9-56 (5th optional tray)

6.4 PCBS

6.4.1 FCU



H310D906.WMF

The FCU is the machine's main controller. It controls scanning, printing, fax operation, image processing, power mode switching, and it interfaces with the user and all standard and optional peripherals. It holds the FROM. SRAM, and DRAM, and provides the slot for the optional memory card.

NCU (Network Control Unit). Controls the network functions.

OPIF Board (Option Interface Board). Provides multiple ports for interface between the FCU and the optional boards. The OPIF contains the NCU, NSG3, JPU (JPEG Unit), SIG4, Expansion board and NICF.

- **NSG3 (G3 Unit)**. G3 Interface Unit Type 510
- **JPEG Unit.** Included with the NICF (NIC Fax Unit Type 510).
- **SIG4 (ISDN Unit)**. ISDN G4 Interface Unit Type 510
- **Function Upgrade Kit (40 MB Memory)**. Feature Expander Type 300 40M
- **Function Upgrade Kit**. Function Upgrade Kit Type 510
- **NIC-F (Network Interface Card for Facsimile).** Provides a standard fax IEEE802.3/IEEE802.u LAN interface and uses a CPU to effect protocol processing.

FCU (Facsimile Control Unit). The main board contains the following main components:

- SPCP2 (Ru30 CPU)
- VPL
- CIOP
- Energy Save Circuits
- Modem (V34)
- Communication Analog Circuits
- MBU
- Backup Circuits
- Interfaces for each electrical component
- Drivers

The FCU controls the following vital functions:

- Scanning
- Printing (plotter)
- Fusing temperature
- Image processing
- Data compression and reconstruction
- Analog signal processing
- Memory
- Operation panel and operation panel interface
- Dual access (CPU/DMA buses)
- Communication and data transfer
- Energy save mode
- DRAM backup
- All options

PSU (Power Supply Unit). Controls the DC power supply the machine.

SAF (Store and Forward) Backup. Backs up DRAM for up to 12 hours if a power failure occurs while data are being stored in the SAF.

SLB. Displays the ADF status. Monitors the status of the ADF unit. Lights red when the ADF unit is open.

OPU (Operation Panel Unit). Interfaces with the CPU and runs the operation panel for the user interface.

SCP2. The machine CPU, an Ru30 facsimile engine chip. Utilizes a dual bus structure with a CPU bus and a DMA bus. The SCP2 controls the following circuits and functions:

- DMA (Direct Memory Access).
- DCR (Data Compressor and Reconstructor). Compresses data before it is sent, and then de-compresses it after it is received.
- JBIG Compression
- Energy Save Mode

MBU (Mother Board Unit). Contains the following components:

- FROM. Flash ROM memory that contains the program.
- DRAM. The standard operating RAM.
- SRAM. Stores user data and other non-perishable data.
- Reset/Backup Circuit Battery. Supplies power to SRAM to maintain its data storage. Data can be uploaded from SRAM to a flash memory card before the MBU is replaced, and data can be downloaded from the card to SRAM.
- **FROM (Flash ROM).** The program memory. The memory content can be overwritten with data downloaded from a flash memory card.
- **SRAM (Static RAM).** Stores user settings and other non-perishable data required for processing. An on-board backup battery maintains the SRAM content while the machine is powered off.
- **DRAM (Dynamic RAM).** The standard operating RAM of the machine. The SAF backup circuit will maintain the DRAM content for up to about 12 hours if a power failure occurs while data are being stored in the SAF.

Converter (3V/5V Converter). Interfaces between the 3V output of the FCU and the 5V required for operation of the service flash memory card.

IC Card (Flash Memory Card Slot). Allows connection of the flash memory card that contains the data to update the program stored in the FROM. Data can be downloaded from the card to the FROM (program memory), and data can be uploaded from FROM to the card.

Modem. Implements a V34 modem (with CODEC) and code and includes a 24.6 MHz modem clock.

Analog Circuit (Analog Processing Circuit). Implements modem filtering, 2/4 line switching, and RITONE switching.

MIC (Microphone). Used to record messages for the Fax On Demand Unit Type 510 (fax information service).

NCU. (Network Control Circuit) Implements the interface between the fax system and the telephone network. An NCU is standard on models equipped with faxes.

Speaker. Plays the dial tone and dialing during off-hook dialing, warning buzzers, etc.

Speaker Driver. Drives the speaker for buzzer alert and monitor sounds.

VPL (Video Processing LSI). A sub-chip of the fax engine that implements video processing with these internal blocks:

- VPM (Video Processing Module). Scanning control and image processing.
- LIF (Laser Interface). Printing control and image processing.
- Analog/Digital Convert. Modem operation.

Thermistor (Thermistor Control Circuit). Receives and processes the data from the contact thermistor on the hot roller. This data is used to control the temperature of the fusing unit.

Fusing (Fusing Lamp). Located inside the hot roller, the fusing lamp heats the hot roller. The temperature of the fusing lamp is monitored by a contact thermistor and the temperature of the hot roller is controlled by switching the lamp off and on.

LDDR (Laser Diode Driver). The interface for the laser diode driver. The driver switches between the 1200 dpi and 600 dpi modes.

Video Circuit (Video Processing Circuit). Interfaces the VPL (Video Processing LSI) and CIS (Contact Image Sensor).

Color CIS (Color Contact Image Sensor). Consists of a strip of photo diodes to illuminate the original, and a strip of phototransistors covered by a row of self-focusing lenses. The CIS contacts the original directly, so the size of the scanner unit can be reduced.

CIOP (Communications and I/O Processing). The sub-chip of the fax engine that controls communication and the I/O circuits.

P/P (Power Pack and Power Pack Control Circuit. Interfaces the VPL (Video Processing LSI) and the high-voltage power supply unit (power pack). Also receives feedback and implements PWM (Pulse Width Modulation) control that determines the duration width (duration) of the laser diode pulse that creates the latent image on the drum. This is the high-voltage power supply unit.

PFU (500-sheet Paper Feed Unit). Provides the interface for the optional Paper Feed Unit Type 510.

Plotter Driver. Performs the following functions:

- Drives the main motor and the polygonal motor
- Processes output from the laser synchronization detector, exit sensor, paper near end sensor, paper end sensor, registration sensor, and interlock switch
- Controls the by-pass feeder, paper feed and registration clutch, cooling fan, lift motor drive circuits, and all sensors related to printing

Plotter. The print engine of the machine.

RSB (Relay Sensor Board). Provides harness connection points for the following sensors: LED board sensor, paper end and paper near end LEDs, paper near end sensor, cassette size sensor, paper end sensor, copy out sensor, all ADF sensors, all manual feed sensors, upper limit sensor, and the left cover open sensor.

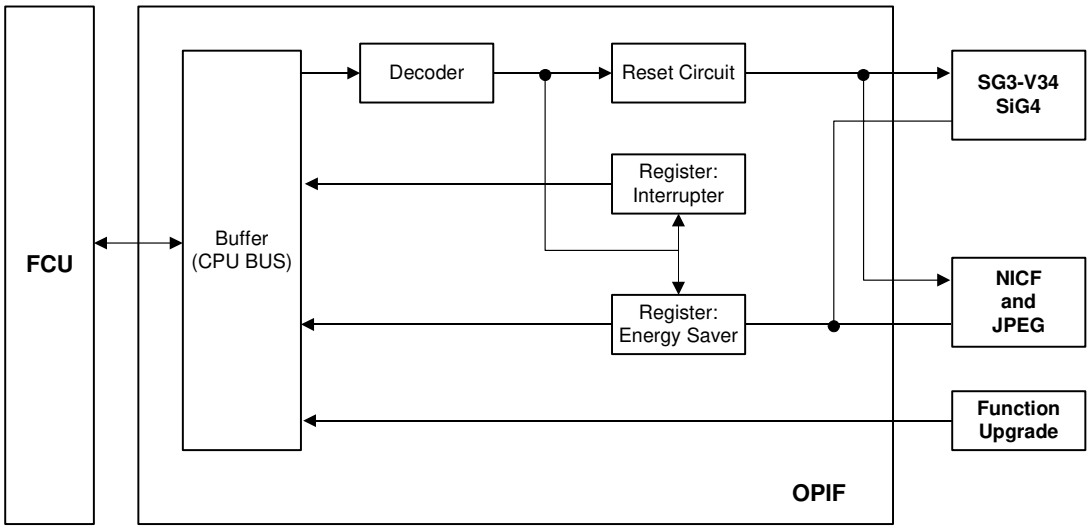
Scanner (Scanner Driver). Drives the scanner, ADF motors, and interfaces with the scanner HP and other sensors.

PIF (Printer Interface Board). Interfaces the printer controller and the main machine. This is the Printer Interface Unit Type 510.

Printer Controller. The printer controller board that provides the optional printer features.

NIC Board. The network interface card.

6.4.2 OPIF (OPTION INTERFACE BOARD)



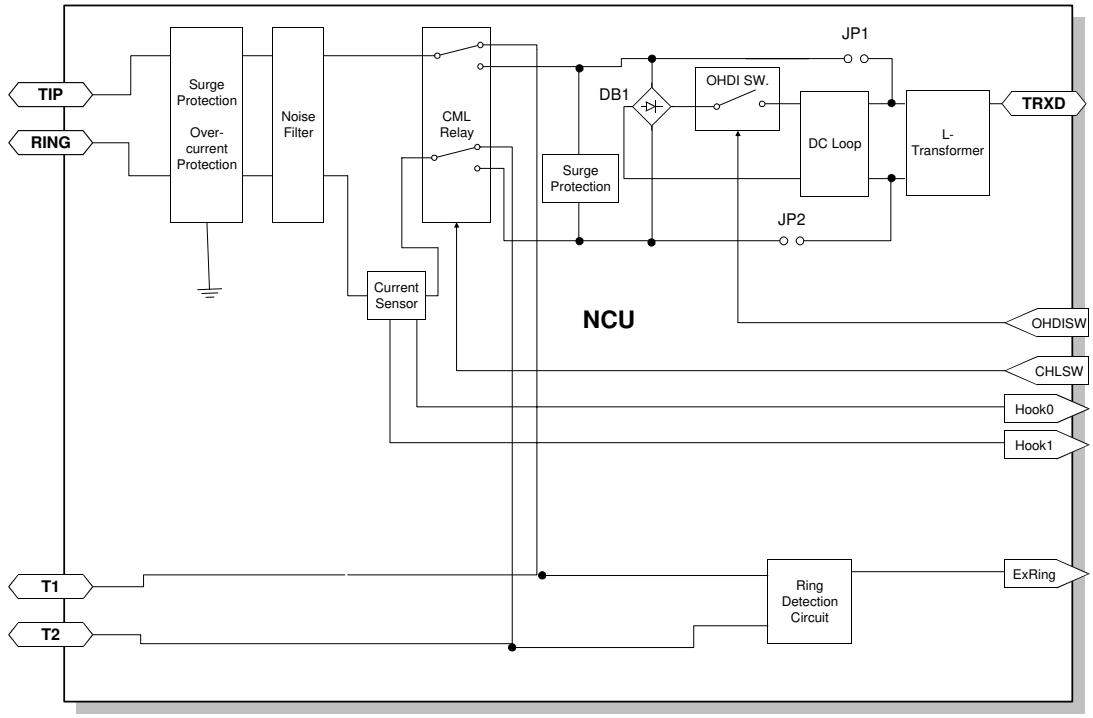
H310D912.WMF

The OPIF is an interface between the FCU and optional boards.

- SG3 board
- SiG4 board
- NICF board
- JPEG board
- Function Upgrade

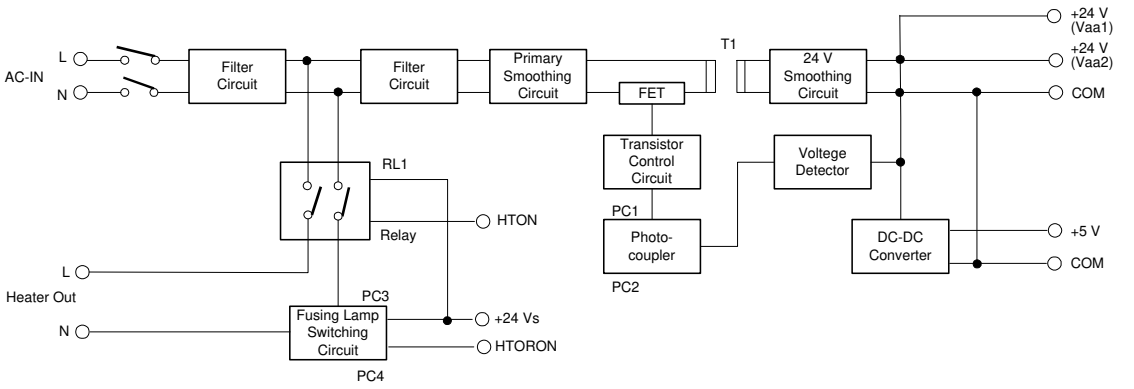
Detailed Descriptions

6.4.3 NCU



H310D902.WMF

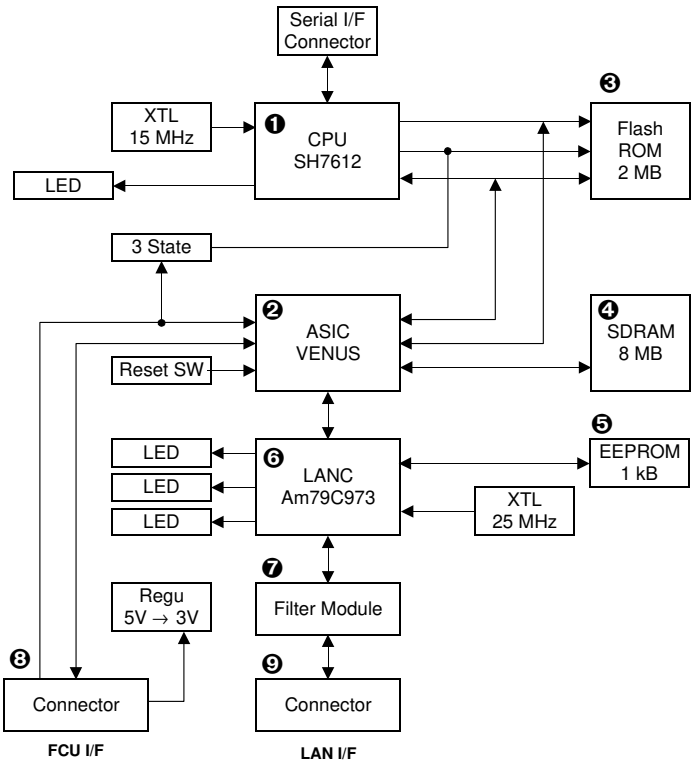
6.4.4 PSU



H310D904.WMF

- +24Vdc, +5Vdc, –12Vdc generation.
- Fusing lamp AC power supply controlled by the FCU.

6.4.5 NICF (NETWORK INTERFACE CARD FOR FACSIMILE)



The NICF provides a standard fax IEEE802.3/IEEE802.u LAN interface and uses a CPU to effect protocol processing.

❶ **CPU**. An RISC CPU, high performance DSP, and peripheral functions are combined on one CPU chip (SH7612). The SH7612 receives the requests from the LANC and option bus and releases the external bus.

❷ **ASIC (VENUS)**. The ASIC provides the central point for the control of bus arbitration for CPU access, for option bus and SDRAM access, for SDRAM refresh, and for management of the internal bus gate.

❸ **Flash ROM**. The 16 Mbit Flash ROM stores the program code.

❹ **SDRAM**. The 64 Mbit SDRAM provides shared memory for the option bus and CPU, the TX/RX buffer for the LAN, the work area for the CPU, and program area for the CPU.

❺ **EEPROM**. The EEPROM is a 1 Kbit serial ROM (93C46 compatible). It stores the MAC addresses and the initial parameters for the LANC register. The MAC (Medial Access Control) settings are addressed by the wireless LAN to limit access to the LAN. Immediately after a system reset, the LANC settings are read out to maintain the settings of the LANC register.

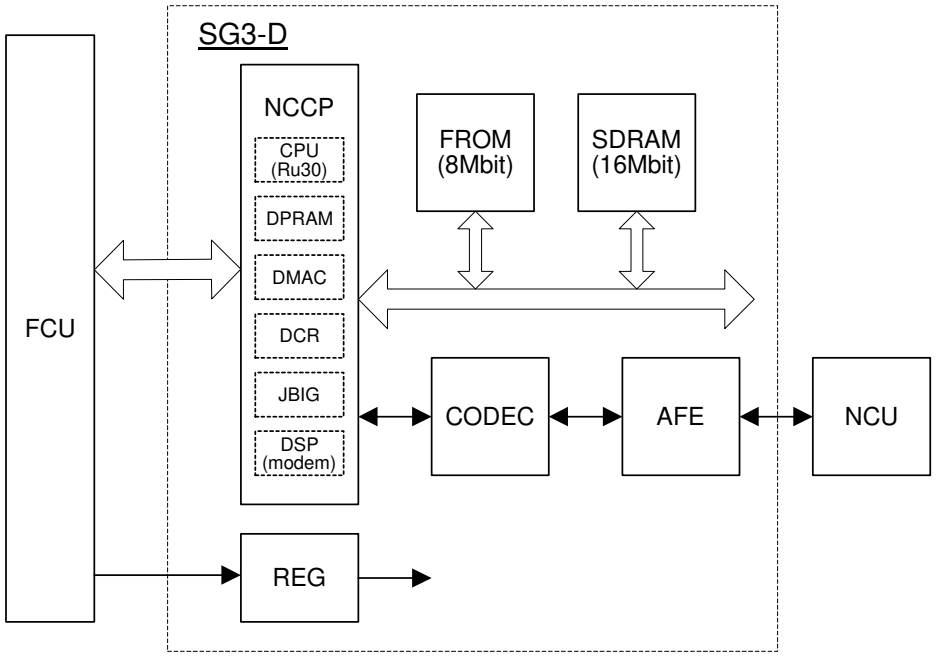
❻ **LANC**. The LANC is the LAN controller that controls communication with the sublayers below the MAC in the OSI model. MAC, or the media access control, is sublayer 2 of the OSI model. The OSI (Open System Interconnection) reference model, is a 7-layer fruitcake framework upon which network standards are hung.

❼ **Filter Module**. The filter module consists of an insulated transformer and choke coil.

❽ **FCU I/U**. Interfaces the NICF with the FCU of the machine.

❾ **LAN I/F**. Consists of an RJ-45 module jack and an 8-pin connector.

6.4.6 SG3-D BOARD



H310D945.WMF

The SG3 board allows up to two simultaneous communications when used in combination with the FCU.

NCCP (New Communication Control Processor)

- Controls the SG3 board.
- CPU (RU30)
- DPRAM (Dual Port RAM): Handshaking with the FCU is done through this block.
- DMA controller
- JBIG
- DSP V34 modem (RL5T892): Includes the DTMF Receiver function
- DCR for MH, MR, MMR, and JBIG compression and decompression

FROM

- 8M flash ROM for SG3 software storage and modem software storage

SDRAM

- 16M DRAM shared between ECM buffer, line buffer, and working memory

AFE (Analog Front End)

- Analog processing

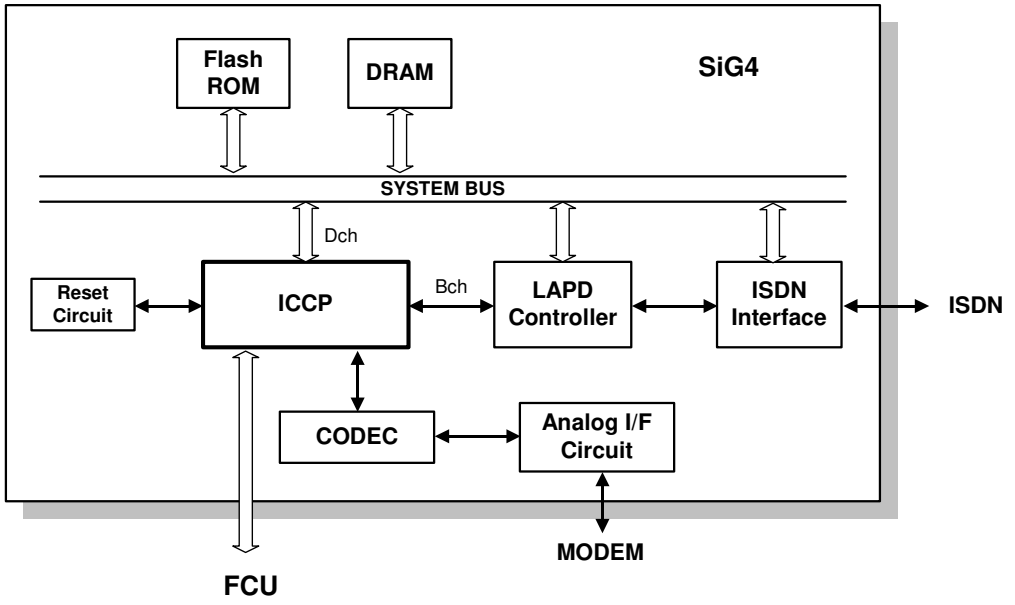
CODEC (COder-DECoder)

- AD & DA conversions for modem

REG

- Supplies +3.3 V from +5V of the FCU

6.4.7 SIG4 BOARD



H310D941.WMF

The SiG4 (Standard ISDN G4) board contains the ICCP (ISDN Communication Control Processor), Flash ROM, DRAM, LAPD controller, CODEC, ISDN interface and analog interface.

ICCP (ISDN Communication Control Processor)

- 16 bit CPU, which controls the entire board
- HDLC control
- Channel select for B channel interface control

CODEC

- A/D, D/A converter for ISDN G3 communication

LAPD Controller

- ISDN layer 1 and LAPD control

ROM

- 512 kB (4 Mbit) Flash ROM for system software storage

DRAM

- 2MB (16 Mbit) DRAM

6.5 SYSTEM FEATURES

6.5.1 VERTICAL BLACK LINE CORRECTION

Overview

Vertical black line correction is a new software feature for this machine. It prevents black lines in image data caused by dirt, paper dust, correction fluid, ink, etc. at the scan line.

Before scanning the first page of the original, the machine scans the white plate to check for dust at the scan line or a defect in the CIS; these are detected as abnormal pixels in the scan line. If something is detected, a warning is displayed in the operation panel LCD. If possible, the machine corrects the scanned image for the effects of this dust or defect (if uncorrected, these could cause vertical black lines in the image).

The number of occurrences for various categories of black line is recorded in the vertical black line counters in the table shown below. This table is part of the System Parameters list printed from the operation panel. (☛ 5.2.2 Function No., "02. Parameter List")

For details about how to read the table, see the table on the next page ("Count Detection Parameters List").

NOTE: The outlined numbers in the table below are added for emphasis here only to show where the counters are. These squares do not appear on the actual System Parameter list printout.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
45EE00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EE10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EE20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EE30	00	00	08	00	00	00	00	00	00	00	00	00	4B	00	0F	00
45EE40	00	00	08	00	01	00	00	00	0F	00	00	00	00	00	00	00
45EE50	02	00	06	00	07	00	00	00	00	00	00	00	00	00	00	00
45EE60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EE70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EE80	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EE90	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EEA0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EEB0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EEC0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EED0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EEE0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
45EEF0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Count Detection Parameters List

Please refer to the sample on the previous page as you read the table descriptions below.

Address	Count	Detection Conditions
45EE3C ~ D	Vertical Black Line Detections	Number of jobs in which an abnormal pixel was detected before page 1 of the original was scanned. Increments only by 1 per job.
45EE3E ~ F	Pixels of Abnormal Width – Correctable	Increments by 1 for every abnormally wide pixel that can be corrected electronically. The electronically correctable width depends on a special setting made at the factory before shipping. (Currently this width is set for 1 pixel.) Also, if alternating pixels ❍ ● ❍ ● are detected, the counter is incremented.
45EE40 ~1	Pixels of Abnormal Width – Not Correctable	Increments by 1 for every abnormally wide pixel that cannot be corrected electronically. The electronically correctable width depends on a special setting made at the factory. (Currently this width is set for 1 pixel.)
45EE42 ~ 3	Abnormal Pixels – Consecutive occurrence at the same place (1 time)	Increments by 1 if an abnormal pixel occurred, but had disappeared from that place by the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1
45EE44 ~ 5	Abnormal Pixels – Consecutive occurrence at the same place (2~9 times)	Increments by 1 if an abnormal pixel occurred at the same place on the scan line 2 to 9 consecutive times, but was not there at the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1
45EE46 ~ 7	Abnormal Pixels – Consecutive occurrence at the same place (10 or more times)	Increments by 1 if an abnormal pixel occurred at the same place on the scan line 10 or more consecutive times, but was not there at the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1
45EE48 ~ 9	Abnormal Pixel Width Counter: 2~3 Pixels Wide	Increments by 1 every time an abnormal pixel 2~3 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE4A ~ B	Abnormal Pixel Width Counter: 4~6 Pixels Wide	Increments by 1 every time an abnormal pixel 4~6 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE4C ~ D	Abnormal Pixel Width Counter: 7~12 Pixels Wide	Increments by 1 every time an abnormal pixel 7~12 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE4E ~ F	Abnormal Pixel Width Counter: 13 or More Pixels Wide	Increments by 1 every time an abnormal pixel 13 times or more wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected.
45EE50 ~ 1	Abnormal Pixels in CIS Block 1	Increments by 1 if abnormal pixels are detected in Block 1*2 of the CIS.
45EE52 ~ 3	Abnormal Pixels in CIS Block 2	Increments by 1 if abnormal pixels are detected in Block 2*2 of the CIS.
45EE54 ~ 5	Abnormal Pixels in CIS Block 3	Increments by 1 if abnormal pixels are detected in Block 3*2 of the CIS.
45EE56 ~ 7	Abnormal Pixels in CIS Block 4	Increments by 1 if abnormal pixels are detected in Block 4*2 of the CIS.

*1: This counter increments by one only when an abnormal pixel that was previously detected at a certain position has now disappeared.

*2: The length of the CIS (Contact Image Sensor) is divided into four blocks: Block 1, Block 2, Block 3, and Block 4. The count is incremented only once even if abnormal pixels are detected at more than one location in the same block.

Settings for Vertical Black Line Detection

User Parameter settings performed by the customer or customer engineer determine whether 1) vertical black lines are corrected, and whether 2) a warning is issued every time a vertical black line (abnormal pixel in the scan line) is detected before scanning an original.

The machine defaults are set to 1) correct vertical black lines and 2) issue a warning when a vertical black line (abnormal pixel in the scan line) is detected. These settings depend on User Parameter Switch 20 bit 4 to enable or disable the detection, and User Parameter Switch 20 bit 7 to enable or disable the warning message. The default settings for both vertical line correction and the issue of the warning are both “1” (On).

For details about how to change this setting, refer to the “Key Operator Settings - User Parameters” section in the *Operating Instructions - Advanced Features* manual for the machine.

Vertical Black Line Warning Message

When a vertical black line occurs, a message appears on the operation panel and warns you to clean the scanner when:

- Pixels of abnormal width that cannot be corrected are detected three times consecutively.
- Pixels of abnormal width that can be corrected are detected 10 times consecutively.

The scanning job is not interrupted when this message is displayed. If paper dust is the cause of the problem, for example, the following sheets of the original could remove it from the scanning area.

To release the error, just press the OK button.

The exposure glass and area around the scanning line should be inspected and cleaned as soon as possible after the “Scanner Needs Cleaning” warning appears.

In regard to the operation of vertical black line correction:

- Scanning originals is slightly slower with vertical black line detection switched on.
- Vertical line detection is executed only once, immediately before scanning the first page of the stack.
- The vertical line correction warning is displayed in the LCD only. No lamp indicator or sound warning is issued.
- After the original is set, vertical line detection is done by the CIS reading the surface of the white plate above the scan line. The white plate is not read immediately due to the slight delay required for the CIS to illuminate fully.

6.5.2 BLANK PAGE DETECTION

Blank Page Detection Operation

The blank page detection feature sounds an alarm and displays a message when the machine scans a sheet of paper that is almost completely white.

```
Some pages are blank.
To stop, press Stop key.
```

NOTE: This feature does not operate when copying or scanning color.

The table below describes how blank page detection operates in different modes.

Mode	Operation	Alarm Display Time
Immediate TX	Document transmission continues, even after a blank page is detected.	5 s
Memory TX	Document storage into memory continues, even after a blank page is detected without interrupting the operation. The message displays, then the transmission continues. However, the operation can be stopped and the file deleted while the file is being stored in memory and the message is being displayed; to do this, press the Stop key.	5 s
Parallel Memory TX	The transmission continues, even after a blank page is detected. However, the operation can be stopped and the file deleted while the file is being stored in memory and the message is being displayed; to do this, press the Stop key.	5 s
Auto Document	Name registration continues, even after a blank page is detected. However, the operation can be stopped and the file deleted while the file is being stored in memory and the message is being displayed; to do this, press the Stop key.	5 s

Blank Page Detection Switch Settings

User Parameter Switch 11 bit 02 is set to 1 for the buzzer to sound and the message to display when a blank page is detected. Setting this switch to 0 turns this feature off.

Blank page detection can be set for three levels with a RAM R/W setting. The default setting is 01.

Ram Address 404960	01	First page blank.
	02	Issue warning and message if even one page is blank.
	03	Issue warning and message only if all pages blank.

6.5.3 ENERGY SAVER MODE

Overview

When the machine enters the energy saver mode, it displays a message:

```
Currently the machine is
in Energy Saver Mode.
Press [Clear Modes/Energy Saver]
key to use functions.
```

In the Energy Saver Mode, the temperature of the fusing lamp drops, the main power switch goes off, and the operation panel indicators are turned off except for the energy saver display message.

The machine enters the energy saver mode when one of the following occurs:

- The user presses the Clear Modes/Energy Saver key for 2 seconds.
- The machine remains idle until the energy saver timer runs out. (5 minutes is the default setting; system switch 0B, bits 2 and 3.)

The Night Timer, which operates independently from the energy save mode, allows the user to set the times to switch the machine on at the start of business and off at the close of business every day.

During energy saver mode, the machine can be in one of the following four states, depending on various user parameter settings, and on how much time has passed. These four states are mentioned again at several points in this section; refer back to this table if necessary, to understand what happens in each of these states.

Energy Save Mode	Display	Fusing Lamp	Main CPU	Warmup*1	Power*2
Copy Standby (High Temperature)	Energy Saver Message and Power Lamp On	170°C	ON	10 s	30 W
Fax Standby		80°C	ON	35 s	30 W
Partial Energy Save Standby		OFF	ON	52 s	15 W
Full Energy Save Standby	Energy Saver message only	OFF	OFF	52 s	2 W

*1 The Warmup time is the time required for the machine to return to full operation with room temperature at 23°C (73°F) to print one A3 page at a print ready temperature of 100°C.

*2 The Power values in the table above are the averaged power consumption without any mechanical peripherals installed. The Power value for the Energy Saver mode with peripherals installed is slightly different:

Option	Description	Power
SIG4	ISDN Unit	2.1 W
SG3	G3 Unit	2.7 W
NICF	Network Interface Card for Facsimile	6.2 W
NIC and PIF	Network interface Card + Printer Interface Board	12 W

In full energy save standby mode, the CPU switches off. But when any of the following conditions exist, the CPU does not switch off:

- Scanning or printing in progress
- An original is in the ADF
- Off hook key is pressed
- Handset is off hook
- Paper in the by-pass feed tray
- Machine is in the service mode
- During an alarm (abnormal file transmission or print operation due to a paper jam, paper near end, paper end, toner near end, toner end, toner cartridge not installed, abnormally high fusing lamp temperature)
- Memory area is not 100% (other than when 40 M memory card is installed)
- A condition exists when memory receiving is not possible (such as when the machine refuses memory reception when there is no RTI/CSI)

Setting the Energy Saver Mode Timer

The Energy Saver Mode timer determines how long the machine remains idle before it enters the Energy Saver Mode.

SYS SW0B Bit 3, 2	00	1 min.
	01	3 min.
	10	**5 min.**
	11	OFF

How the Energy Saver Mode Operates

The operation of the energy saver mode depends on whether Copy Standby Mode (High Temperature) is enabled or disabled. With this mode enabled, the fusing lamp is kept at a higher temperature for longer.

Copy Standby Mode (High Temperature) Switch Setting

The user can use User Parameter Settings to enable or disable the high temperature mode and set the time the machine remains in the high temperature mode when this setting is enabled.

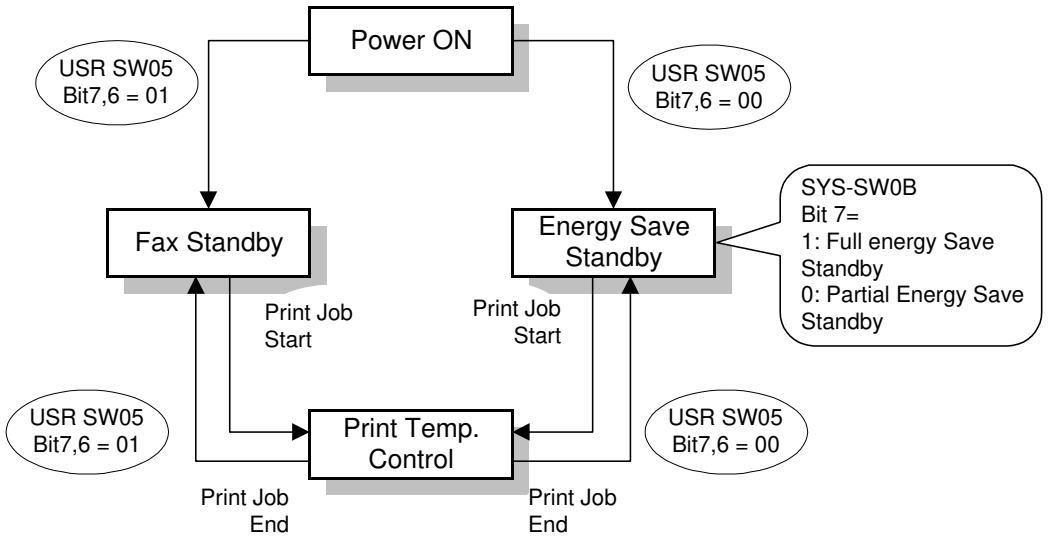
Copy standby mode is enabled/disabled with User Parameter SW05 Bit 3.

Switch	Bit3	Selection
SW05	**0**	Disabled.
	1	Enabled. The temperature of the fusing lamp remains at 170°C while the machine is in the Copy Standby (High Temperature) mode.

The length of time the machine remains in the Copy Standby (High Temperature) Mode is set with User Parameter SW31(1F) Bit 7 to 6.

Switch	Bit7	Bit6	Selection
SW31(1F)	**0**	**0**	15 min.
	0	1	30 min.
	1	0	60 min.
	1	1	120 min.

Copy Standby Mode Disabled (User Parameter SW05 Bit3=0)



H310D910.WMF

After the machine is powered on and has remained idle for the amount of time prescribed by the energy saver mode timer (System Switch SW0B Bits 3 and 2), the machine shifts to either Energy Save Standby or Fax Standby, depending on the setting of User Parameter SW05 Bit 7 and Bit 6.

Switch	Bit7	Bit6	Selection
SW05	0	0	Energy Save Standby. Fusing lamp off
	0	1	Fax Standby. Fusing lamp remains on at 80°C.
	1	0	Not used
	1	1	Not used

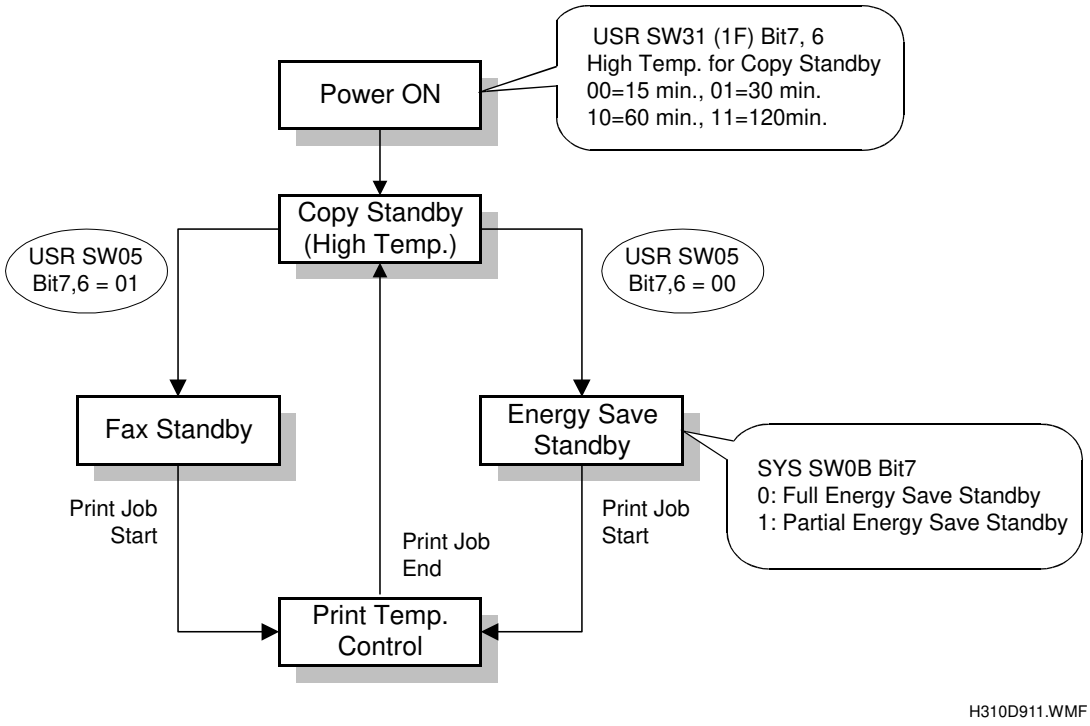
If the user has selected Energy Save Standby, then the machine enters either Full or Partial Energy Save standby, depending on the setting of System Switch SW0B Bit 7.

Switch	Bit7	Selection
SYS0B	**0**	Full Energy Save Mode. The CPU is powered off when the machine enters energy save mode.
	1	Partial Energy Save Mode. The CPU is not powered off when the machine enters the energy save mode.

When a print job starts, print temperature control readies the machine for printing.

After the print job ends and the machine has been idle for the energy saver mode timer duration, the machine returns to either Energy Save Standby or Fax Standby.

Copy Standby Mode Enabled (User Parameter SW05 Bit3=1)



After the machine is powered on and has remained idle for the amount of time prescribed by the energy saver mode timer (System Switch SW0B Bits 3 and 2), the machine shifts to Copy Standby (High Temperature) Mode. In this mode, the fusing lamp temperature drops to 170°C. The machine stays in this mode for the amount of time determined by User Parameter SW31(1F) Bits 7 and 6.

After this time has elapsed, the machine shifts to either Energy Save Standby or Fax Standby, depending on the setting of User Parameter SW05 Bit 7 and Bit 6. See the previous page for details.

If the user has selected Energy Save Standby, then the machine enters either Full or Partial Energy Save standby, depending on the setting of System Switch SW0B Bit 7. See the previous page for details.

When a print job starts, print temperature control readies the machine for printing.

After the print job ends and the machine has been idle for the energy saver mode timer duration, the machine returns to Copy Standby Mode.

Important Points About Energy Saver and Standby

1. While the machine is in the Energy Saver Mode, it can continue to send documents standing by in memory for transmission.
2. If the machine receives a document while it is in the Energy Saver mode, the Receive File indicator lights and the machine prints the received document. If the machine receives a confidential document, the Confidential Reception/Memory Lock indicator lights, and the machine returns to the selected standby mode. If the machine receives a message while in the memory lock mode, the Confidential Reception/Memory Lock indicator flashes, and the machine returns to the selected standby mode.
3. While the night timer is on (the fusing lamp is off), if the machine is released from the energy saver mode by pressing the Clear Modes/Energy Saver key, setting and original for sending or copying, or using off hook dialing, the machine is released from the energy save mode temporarily and any documents received in memory are printed.
4. When the amount of memory remaining does not meet the requirements for memory reception, the machine shifts to the fax standby mode (energy save standby mode is disabled regardless of user parameter settings). The machine cannot receive documents in memory when:
   - The amount of memory remaining is below the threshold setting of Communication Switch 0D that allows memory reception only if sufficient memory exists.
   - Memory reception has been disabled with User Parameter SW05 Bit 0.
   - Memory reception is disabled with System Switch SW11 Bit 6 (no reception unless RTI or CSI received).

6.5.4 ERASE ALL REGISTERED SETTINGS

This feature clears selected registered IDs, quick dial, speed dial, group dial and other settings. After deleting, a report prints automatically to list the settings that could not be deleted with this feature.

1. Press the User Tools key.
2. Select 2 Key Op. Tools > # >1 System Settings > 17 Delete Entries.
3. Enter the number for the item to delete, or press 1 then # for "1 All IDs".
4. When the message asks you to confirm the deletion, select "Yes".

Item	Deleted	Not Deleted
All IDs	Deletes all items for the Registered ID codes, except user switch settings printed in the parameter list. RTI, CSI, TTI, and LAN settings are deleted.	Parameter list
All Quick Dials	All quick dial settings that are not used by group, program, box, auto document box, and standby files.	Quick dial registration list
All Speed Dials	All speed dial settings that are not used by group, program, box, auto box, and standby files.	Speed dial registration list
All Group Dials	All group dial settings that are not used by program, box, auto box, and standby files.	Group dial registration list
All Boxes	All boxes that do not contain received documents.	Box list
All key Programs	All programs that are not in use.	Keystroke Program List
All Image Data	All image memory that is not in use.	Tx File List

6.5.5 RECEIVING FROM A FAX INFORMATION SERVICE

This feature allows the user to program a Quick Dial key with codes to receive selected information offered by a fax information service. The recorded voice instructions of the fax information service that instruct the operator to press a key to receive a particular category of information are ignored, and information is received without further operator intervention.

The fax information service number and other information must be registered under a Quick Dial key with the appropriate information for contacting the service, then the operator can receive the information at the touch of one key.

Follow the procedure below to switch this feature on.

1. Press the User Tools key.
2. Select 1 Fax Features > 1 Program/Delete > 01 Prog. Quick Dial.
3. Press a Quick Dial key and enter the required information. For details, refer to the operating instructions.
4. Select “Others”.
5. Select “3 Fax Info. Service”, press the right arrow key to select “On”, then press the OK key.

NOTE: When this feature is switched on, the machine cannot detect a busy signal. This is because the machine dials all the information registered for the Quick Dial button then shifts immediately to the reception mode.

6.5.6 DUAL ACCESS

This feature allows several jobs to execute at the same time. However, the number of jobs that can execute together is limited because there are limits on the availability of resources.

Dual Access Jobs and Resources

This table shows the resources required for each type of job.

The shaded items in the first line of the table are options.

Jobs	G3	SG3	G4	LAN	Scan.	Print	Op. Panel	LAN PC fax	600 dpi	Non-ECM RX	JBIG
Save doc. in memory					❍		❍		❑		
SAF output						❍			❑		
Printing						❍			❑		
Copying					❍	❍	❍		❑		
Auto journal print						❍			❑		
G3 Immediate send	▲	▲			❍		❍		❑		❑
G3 Memory send	▲	▲							❑		❑
G3 Immediate receive	▲	▲				❍			❑	❑	❑
G3 Memory receive	▲	▲								❑	❑
G4 Immediate send			❍		❍		❍		❑		❑
G4 Immediate send			❍						❑		❑
G4 Immediate receive			❍			❍			❑		❑
G4 Immediate receive			❍								❑
Report send	▲	▲	▲						❑		❑
Mail send				❍					❑		
Mail receive				❍					❑		
LAN PC Fax								❍	❑		

❍ Required
❑ Can be acquired
▲ Choice available (machine selects automatically)

Example: For “G3 Immediate Send”, the machine uses either the standard G3 line, or the optional SG3 line if the SG3 option is installed, depending on which line is available. The scanning resources and the operation panel are required. 600 dpi can be selected, and JBIG can be used if the remote fax supports this feature.

With dual access, more than one job can be in progress at the same time. However, some types of job take up more machine resources, and this limits the jobs that can be done at the same time. Each type of job takes up a certain number of resource 'points'. The table below lists the 'points' for each type of job.

Job Types	POINTS
Save doc. in memory	0
SAF output	0
SAF output (JBIG)	4
Printing	0
Copying	0
Auto journal print	0
Auto journal print (JBIG)	4
Immediate send	1
Memory send	4
Immediate receive	2
Memory receive	0
Report send	4
Mail send	4
Mail receive	2
IP FAX send	4
IP FAX receive	2
JBIG	1
Non-ECM RX	1
LAN PC Fax	0
Off Hook	6

The number of points taken by a job depends on the resolution:
200 dpi: Points x 1
400 dpi: Points x 2
600 dpi: Points x 3

- The maximum number of points that can be taken up by jobs in progress at the same time is 24.
  For example, the following two jobs cannot be done at the same time, because the total number of points comes to 27:

  Memory Tx (600 dpi, JBIG) (4+1) x 3 = 15 points
  Memory Tx (600 dpi, MMR) (4) x 3 = 12 points
  Total: 27 points

Additional Dual Access Limitations

Here is a list of other restrictions on resources and job count management:

- Up to two transmissions can be done at the same time (including mail sending)
- There can be up to two G4 jobs at the same time
- There can be up to 5 LAN PC Fax jobs at the same time
- Mail send and IP fax (also called 'real time internet fax') send are limited to 1 job each
- JBIG is possible with Main G3 + Option G3.
  (However, it is not possible with Main G3 + G4 (IG3).
- ISDN G3 requires either the Main G3 or Optional G3 modem, so other ISDN kit resources can be used for G4 TX/RX.
- When selection of the G3 line is automatic, the priority is IG3 > PSTN2 > PSTN1.

Simultaneous Broadcasting

When one or more of the optional interfaces (G3, G4, LAN) are installed, the same message can be sent simultaneously to different destinations on up to two outgoing lines, if the outgoing lines are open. Note that quick parallel memory transmission transmits the identical information only to the first destination.

This feature can be enabled by setting System Switch 1A Bit 0 to 1.

	Bit 0	
SYS SW1A	**1**	Simultaneous
	0	Consecutive

6.5.7 OPERATION LOG

The operation log records user operations and lists this information in a memory dump list. This information is listed in the address range 471BEE to 4723ED.

NOTE: The lines and shading in the sample below do not actually print in the operation log. They are provided for your reference.

Memory Dump List

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
471B00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471B10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471B20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471B30	00	00	00	00	00	00	00	00	00	00	00	00	4B	00	0F	00
471B40	00	00	08	00	01	00	00	00	0F	00	00	00	00	00	00	00
471B50	02	00	06	00	07	00	00	00	00	00	00	00	00	00	00	00
471B60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471B70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471B80	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471B90	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471BA0	00	00	00	00	00	4B	00	0F	00	00	00	00	08	00	01	00
471BB0	00	00	0F	00	00	00	00	00	00	00	02	00	06	00	07	00
471BC0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471BD0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
471BE0	00	CB	07	00	00	D3	07	00	00	DB	07	00	28	05	03	10
471BF0	40	2D	2D	2D	4B	31	03	14	40	2D	2D	2D	4B	23	03	14
471C00	40	2D	2D	2D	4B	15	03	14	40	2D	2D	2D	4B	15	03	14
471C10	40	2D	2D	2D	4B	15	03	14	40	2D	2D	2D	4B	15	03	14
471C20	40	2D	2D	2D	4B	15	03	14	40	2D	2D	2D	4B	15	03	14
471C30	40	2D	2D	2D	4B	37	03	14	40	2D	2D	2D	4B	23	03	14
471C40	40	2D	2D	2D	4B	15	03	14	40	2D	2D	2D	4B	15	03	14
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4723E0	40	2D	2D	2D	4B	37	03	14	40	2D	2D	2D	4B	23	03	14
4723F0	40	2D	2D	2D	4B	15	03	14	40	2D	2D	2D	4B	15	03	14

The memory log is displayed in the memory dump list. The logged data are recorded in 8-byte segments. Refer to the shaded portion in the illustration above.

The first segment reads 03 10 40 2D 2D 2D 4B 31, and this means, “the ① key was pressed on the third day of the month at 10:40 a.m.” Refer to the tables on the next page.

The meaning of the entries are described below.

Byte	Information	Meaning
03	Day	Record the day and time. Here 03 10 40 means, the third day of the month (30) at 10:40 a.m. (10 40).
10	Hour	
40	Minutes	
2D	Free – Not Used	These three bytes are not used. They record no information about the operation log.
2D	Free – Not Used	
2D	Free – Not Used	
4B	Operation	Records the operation. To identify the operation, see the "Operation Breakdown Table" below.
31	Key Press	If "4B" followed by a 2-digit number is recorded, refer to the "Key Press" table to identify the key

Operation Break Down	HEX
Hard Key	4B**
On Hook	48 4F
Off Hook	48 46
Set original	44 4F
Removed original manually	44 46
Auto reset timer activates	54 4F
Power On	4F 4E
Simultaneous Press	53 49

**	KEY PRESS	**	KEY PRESS
01	Start	30	⓪
02	Stop	31	①
03	Copy Mode	↓	↓
04	Initial Setting	39	⑨
09	Left Scroll	41	Quick Dial 001
0A	Right Scroll	42	Quick Dial 002
0B	Speed Dial	↓	↓
0D	Off Hook	CF	Quick Dial 143
0E	Clear	D0	Quick Dial 144
0F	Group	E0	F1 (User Function)
10	Reset	E1	F2 (User Function)
14	Select 1	↓	↓
15	Select 2	E8	F9 (User Function)
16	Select 3	E9	F10 (User Function)
17	Select 4	F0	Immediate Send/Memory Send
18	Network Address	F3	Color Original/Photo Original
1D	Clear Modes/Energy Saver	F4	Darker/Normal/Lighter
1E	⑯⑭(press and hold)	F6	Standard/ Detail/ Super Fine/ Ex. Super Fine
1F	Scan address	F7	Internal Line/ G3/ G4
23	⑯		
2A	⑭		
2D	Pause/Redial		

NOTE: 1) In some cases, only one key press is logged for two or more presses. For example, when the User Function (UF) key is pressed, first the UF code is entered, then the code after the change (network address, etc.) is entered. In other cases, even when the same UF key is pressed, the key press registers once.
2) When the keyboard layout on the operation panel screen is used to enter Quick Dial and other settings for registration, only the entries from the ABCDE keyboard are recorded accurately. For example, if the user selected the QWERTY keyboard layout to make the settings, then a “Q” is recorded as an “A” because the “Q” is at the “A” position. This is an important restriction to keep in mind when you use this feature.

6.5.8 SENDING COLOR DOCUMENTS

You can use the scan-to-email function to send color documents.

NOTE: In order to use this function, the NIC Fax Unit Type 510 must be installed in the machine, and the machine must be connected to a LAN. This function sends a color document as an attachment; the machine does not function as a color fax.

The scanned data is stored in the memory on the JPEG board, not in the SAF. For this reason, only immediate sending to one destination is possible.

When color scanning is selected, Standard text, usually scanned at 200 x 200 dpi, is scanned at 100 x 100 dpi. The following selections are available for resolution.

Standard	100 x 100 dpi
Detail	200 x 200 dpi
Detail + Super Fine	300 x 300 dpi
Super Fine	400 x 400 dpi
Ex. Super Fine	600 x 600 dpi[*1]

[*1] When 600 dpi is selected, User Parameter SW20 Bit 2 must be set to 1 for Ex. Super Fine (the default is 0).

The TX mail size limitation is disabled because the SAF is disabled.

The size of the document to be scanned is selected on the machine. All settings are done on this machine, not on the screen of the TWAIN compliant PC driver.

The file of the scanned color document can be in either JPEG or PDF format. User Parameter SW17 Bit 5 is set to 0 for TIFF (black & white) and JPEG color or set to 1 for PDF format.

A mail destination or delivery server destination can be selected for the transmission.

Two color correction functions can be used.

- Scanner RGB Density Correction > User Tools > Fax Features – Setup – Scanner RGB: Select the color to adjust, then use the left and right arrow key to adjust (there are 5 possible levels for each colour)
- Sampling Rate Correction > User Parameter SW33 Bit 0, 1 (Sub Sampling).

NOTE: The sample rate switch adjusts the amount of time required to receive and transmit color images. The setting 0,0 requires the least amount of time, but the images appear slightly lighter than usual. The setting 1,1 requires more time, but the image quality is closer to the original. The extra time is needed because the processed data does not compress so efficiently.

The following table lists the sizes of originals that can be scanned and sent as color attachments.

Original Width	Original Size										
	DLT	A3	LG LEF	A4 LEF	B4 SEF	B5 LEF	LG SEF	LT SEF	A4 SEF	HLT SEF	A5 LEF
A3, DLT	❍	❍	❍	❍							
B4					❍	❍					
A4, LG, LT							❍	❍	❍	❍	❍

6.5.9 SCAN RESOLUTION

The scan resolution depends on the operation mode selected before the scanning job is executed. The table below describes the differences in scan resolution for each operation mode.

LED	in. (dpi)	mm. (line/mm)	Fax TX	Internet Fax	IP Fax	Scan		Copy	PC Fax
						B&W	Color		
Standard	100x100	Nego					❍		
Standard	200x100	8x3.85	❍	❍	❍	❍		❍	❍*4
Detail	200x200	8x7.7	❍	❍	❍	❍	❍	❍	❍*4
Detail + Super Fine	300x300	Nego				❍	❍		
Super Fine	400x400	16x15.4	❍	❍*2	❍	❍	❍	❍	❍*4
Ex. Super Fine	600x600	24x23.1	❍*1	❍*2	❍*1	❍*1	❍*1	❍*3	❍*4

***1:** User Parameter SW20 Bit 2 requires setting.
***2:** User Parameter SW20 Bit 2 and LAN SW07 Bit 3, 2 require setting.
***3:** User Parameter SW20 Bit 1 requires setting and 40 MB of memory is required.
***4:** Selected with the driver.

To use Ex. Super Fine user parameter SW20 Bit 3, 2, 1 must be set to 1. In extra super fine mode, you may not be able to carry out more than one job at the same time. These are limitations imposed by the dual access feature. (☛6.5.6)

Nego: Depends on the other terminal's resolution capabilities (**nego**tiated during the protocol)

SPECIFICATIONS

1.1 SPECIFICATIONS

Type
Desktop type transceiver

Circuit
PSTN, PABX, ISDN (optional)

Connection
Direct couple

Document Size
Length:
105 - 420 mm [4.1 - 16.5 ins]
Up to 1.2 m [47.2 ins], manually assisted
Width:
148 - 304 mm [5.8 - 12.0 ins]
Thickness:
0.05 to 0.2 mm [2 to 8 mils]
(equivalent to 50 - 80 g/m^2)

Document Feed
Automatic feed, face up

ADF Capacity
75 sheets (using A4 size 75g/m^2 paper)
40 sheets (using B4 size 75g/m^2 paper)
30 sheets (using A3 size 75g/m^2 paper)

Scanning Method
Flat bed, with CIS

Scan Width
219.5 mm [8.64 ins] ± 1% (A4/Letter)
260.1 mm [10.2 ins] ± 1% (B4)
308.9 mm [12.2 ins] ± 1% (A3/Double Letter)

Scan Resolutions
Standard: 200x100dpi
Detail: 200x200dpi
Super fine: 400x400dpi
Ex. Super fine: 600x600

Memory Capacity
ECM: 128 kbytes

SAF:
Standard: 7 Mbytes: 560 pages
With 40 Mbyte option plus Function Upgrade Unit: 3000 pages
Measured using ITU-T #1 test document (Slerexe letter)

Compression
MH, MR, MMR, JBIG
SAF storage for memory tx: MMR and raw data

Protocol
Group 3 with ECM
Group 4 (ISDN G4 option required)

Modulation
V.34 (TCM), V.33/V.17(TCM), V.29 (QAM), V.27ter (PHM), V.21 (FM), V.8 (FM)

Data Rate (bps)
G3:
33600/31200/28800/26400/24000/21600/19200/16800/14400/12000/9600/7200/4800/2400
G4 (option): 64 kbps/56 kbps

I/O Rate
With ECM: 0 ms/line
Without ECM: 2.5, 5, 10, 20, or 40 ms/line

Transmission Time
G3: 2 s at 33600 bps, with JBIG;
Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution
G4 (option): 3 s at 64 kbps;
Measured with an ITU-T #1 test document (Slerexe letter) at standard resolution

Printing System
Laser printing, plain paper, dry toner

Toner Supply
AIO (All-in-One) cartridge

Paper Size and Capacity
Standard Cassette: 500 sheets
Folio, LT, LG, A4, F, A3, DLT

Paper Feed Unit (Optional): 500 sheets
A5, LT, LG, A4, DLT
Note: Up to four PFUs can be installed.

Bypass Tray (Optional):
A4 and smaller: Less than 100 sheets
Larger than A4: Less than 10 sheets

Maximum Printing Width
208 mm [8.2 ins] (Letter)
202 mm [8.0 ins] (A4)
248 mm [9.8] (B4)
288 mm [11.3] (A3, DLT)

Print Resolutions
Fax and Copy Mode:
Main scan: 600 dpi
Sub scan: 600 dpi
Printer Mode: 1200 dpi

Power Supply
USA: 115 ± 20 Vac, 50 ± 1 Hz

Power Consumption (Base Machine Only)
Standby:
Minimum 2 W (see Note)
Normal 30 W
Transmitting: 45 W
Receiving: 450 W (Maximum: 1000 W)
Copying: 400 W (Maximum: 850 W)

Note: 2W mode is not available if one of the following options is installed.
- Printer interface unit
- G4
- G3 interface
- NIC (Internet Fax option)

Operating Environment
Temperature: 10°C - 32°C [50 - 90°F]
Humidity: 15 - 80 %Rh

Dimensions (W x D x H)
505 x 609 x 480 mm (19.9” x 24.0” x 18.9”)
Excluding handset, trays, and optional units

Weight
Approx. 28.5 kg [70.6 lbs]
Excluding AIO, maintenance kit, handset, trays, and optional units

1.2 FEATURES

1.2.1 FEATURES LIST

KEY:

O = Used, X = Not Used,
A = With optional memory 40M only
B = With optional function upgrade unit only
C = With optional Fax On Demand kit only
D = With optional paper feed unit only
E = With optional counter only
F = With optional handset only
G = With optional printer interface unit only
H = With optional G4 kit only
I = With optional NICF only
J = With optional Bypass only

Equipment	
ADF	O
Book scan	X
Built-in handset	X
Bypass feed: 1 sheet	X
Cabinet	O
Counter	E
Cutter	X
Handset	F
Hard disk	X
Manual feed mechanism (ADF)	O
Marker (Stamp)	O
Monitor speaker	O
Optional cassette: 100 sheets	J
Optional Fax On Demand kit	C
Optional paper feed unit (up to 4 units)	D
Optional printer interface	G

Video Processing Features	
Contrast	O
Halftone (Basic & Error Diffusion)	O
MTF	O
Reduction before tx (B4 -> A4)	O
Reduction before tx (A3 -> B4)	O
Reduction before tx (A3 -> A4)	O
Scanning Resolution - Standard	O
Scanning Resolution - Detail	O

Video Processing Features	
Scanning Resolution - Superfine	O
Scanning Resolution – Ex. Superfine	O

Communication Features - Auto	
Automatic fallback	O
Automatic redialing	O
Confidential reception	O
Dual Access	O
Substitute reception	O

Communication Features - User Selectable	
Action as a transfer broadcaster	O
AI Redial (last ten numbers)	O
Answering machine interface	X
Authorized Reception	O
Auto-answer delay time	X
Auto dialing (pulse or DTMF)	O
Auto Document	O
Auto image density selection	X
Auto paper size selection	X
Automatic Voice Message	X
Batch Transmission	O
Broadcasting	O
Chain Dialing	O
Communication Result Display	O
Confidential ID Override	O
Confidential Reception	O
Confidential Transmission	O
Direct Fax Number Entry	O
Economy Transmission	O
Fax on demand	C
F code Box	O
Forwarding	O
Free Polling	O
Groups (9 groups)	O
Group Transfer Station	O
Hold	X
ID Transmission	O
Immediate Redialing	O
Immediate transmission	O
Keystroke Programs	O
Length Reduction	X
Memory transmission	O
Multi-step Transfer	O

Communication Features - User Selectable	
OMR	X
On Hook Dial	O
Ordering Toner	X
Page Count	O
Page separation mark	O
Parallel memory transmission	O
Personal Codes	X
Personal Codes with Conf. ID	X
Partial Image Area Scanning	B
Polling Reception	O
Polling Transmission	O
Polling tx file lifetime in the SAF	O
Quick Dial (Standard: 144 stations)	O
Reception modes (Fax, Tel)	O
Remote control features	X
Remote Transfer	O
Restricted Access	O
Secured Polling	O
Secured Polling with Stored ID Override	O
Secure Transmission	X
Send Later	O
Silent ringing detection	X
Speed Dial (Standard: 100 stations)	O
Telephone Directory	O
Tonal Signal Transmission	O
Transfer Request	O
Transmission Deadline (TRD)	X
Turnaround Polling	X
Two-step Transfer	X
Two in one	O
Voice Request (immed. tx only)	X

Communication Features - Service Selectable	
AI Short Protocol	O
Auto-reduction override option	O
Busy tone detection	O
Cable Equalizer PSTN ISDN	 O H
Closed Network (tx and rx)	O
Continuous Polling Reception	O
Dedicated tx parameters	O
ECM	O

Communication Features - Service Selectable	
EFC	X
Inch-mm conversion before transmission	O
mm-inch conversion when printing	O
Page retransmission times	O
Protection against wrong conn.	O
Resolutions available for reception 200 x 200 dpi 200 x 400 dpi 400 x 400 dpi 600 x 600 dpi	 O O O O
Resolution stepdown override option	X
Short Preamble	X

Other User Features	
Area code prefix	X
Automatic service call	Service
Blank Sheet Detect	O
Center mark	O
Checkered mark	O
Clearing a memory file	O
Clearing a polling file	O
Clock	O
Confidential ID	O
Copy editing (Erase Center/Margin)	X
Copy mode	O
Copy Mode Restriction	O
Counters	O
Daylight Saving Time	O
Destination Check	O
Direct entry of names	O
File Retention Time	O
File Retransmission	O
Function Programs	O
ID Code	O
IP-FAX	I
Label Insertion (“From xxx”)	O
Language Selection	O
LCD contrast control	O
Memory Lock	O
Memory Lock ID	O
Multicopy mode	O
Own telephone number	O

Other User Features	
Energy Saver (Night Timer and standby mode)	O
Printing a memory file	O
RDS on/off	O
Reception time printing	O
Reduction/Enlargement	X
Remaining memory indicator	O
Remote ID	O
Reverse Order Printing	X
RTI, TTI, CSI	O
Scanner Cleaning Message	O
Service Report Transmission	O
Speaker volume control	O
Specified Tray Selection	D
Substitute reception on/off	O
Telephone line type	O
Toner Saving Mode	O
TTI/CIL on/off	O
User Function Keys (10 keys)	O
User Parameters	O
Vertical Blank Line Correction	O
Wild Cards	O

Reports - Automatic	
Communication Failure Report	O
Confidential File Report	O
Fax On Demand Report	C
Memory Storage Report	O
Polling Clear Report	O
Polling Reserve Report	O
Polling Result Report	X
Power Failure Report	O
TCR (Journal)	O
Toner Cassette Order Form	X
Transfer Result Report	O
Transmission Result Report	O

Reports - User-initiated	
Auto Document	O
Box List	O
Charge Control Report	X
File List	O
Group List	O
Personal Code List	X
Program List	O
Quick Dial List	O
Specified Sender List	O
Speed Dial List	O

Reports - User-initiated	
Journal	O
Transmission Status Report	X
User Function List	X
User Parameter List	O

Service Mode Features	
Auto Paper Select test	X
Back-to-back test	X
Bit switch programming	O
Book mode test	X
Buzzer test	O
Cable equalizer	O
Comm. parameter display	O
Counter check	O
Country code	O
DTMF tone test	O
Echo countermeasure	O
Effective term of service calls	O
Error code display	O
Excessive jam alarm	O
File Transfer	O
Line error mark	O
Memory file printout (all files)	O
Modem test	O
NCU parameters	O
Operation panel test	O
Periodic service call	O
PM Call	O
Printer mechanism test	O
Printer test patterns	O
Protocol dump list	O
RAM display/rewrite	O
RAM dump	O
RAM test	O
Ringer test	X
Scanner lamp test	O
Scanner mechanism test	O
Sensor initialization	X
Serial number	O
Service monitor report	O
Service station number	O
Software upload/download	O
SRAM data download	O
System parameter list	O
Technical data on the Journal	O
User data transfer	O

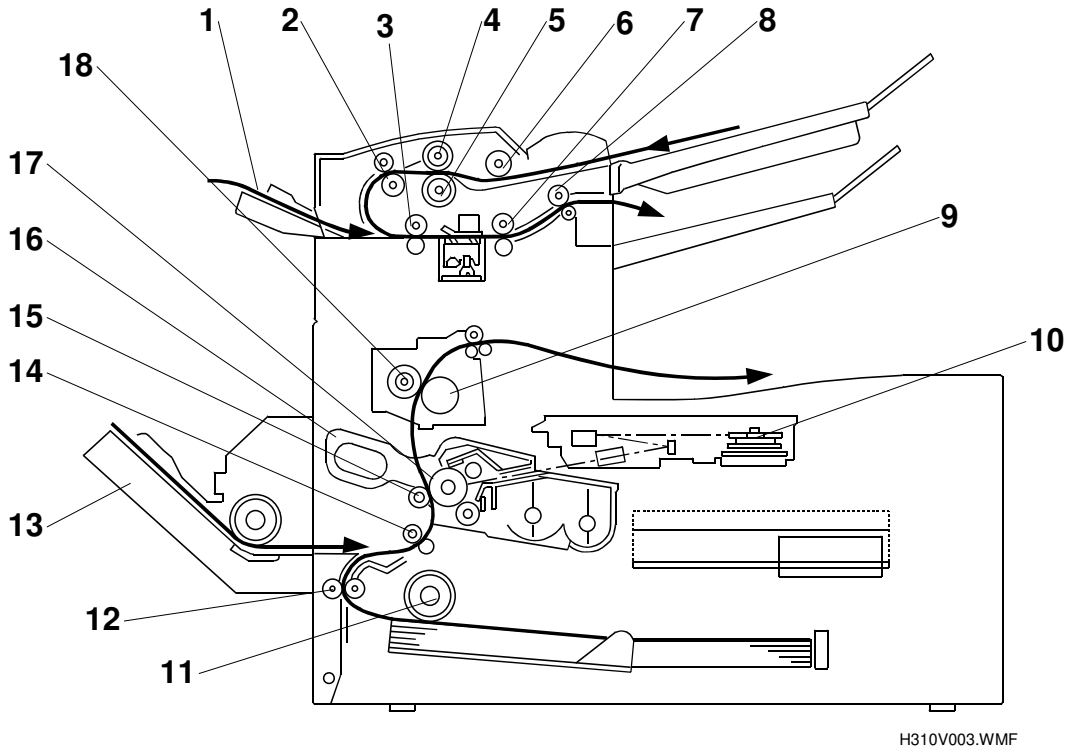
1.2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capability of each programmable item changes after the optional function upgrade unit is installed.

Maximum number of	Standard	With function upgrade unit
Memory files plus polling RX files	500	500
Destinations per file	250	250
Destinations overall	500	2000
Pages overall	1200	3000
Quick Dials	144	144
Speed Dials	100	1000
Group Dials	9	30
Destinations per Group	250	250
Boxes (Information/Personal/Transfer)	150	400
Destinations dialed from the ten-key pad overall	100	1000
Programs	144 (programmed in 144 Quick Dial keys)	244 (programmed in 144 Quick Dial keys plus 100 Speed Dial codes)
Destinations per program	250	250
Auto Documents	144 (programmed in 144 Quick Dial keys)	244 (programmed in 144 Quick Dial keys plus 100 Speed Dial codes)
Communication records for the Journal stored in the memory	250	1000
Addresses specified for features such as Authorized Reception and Specified Cassette Selection	50	50

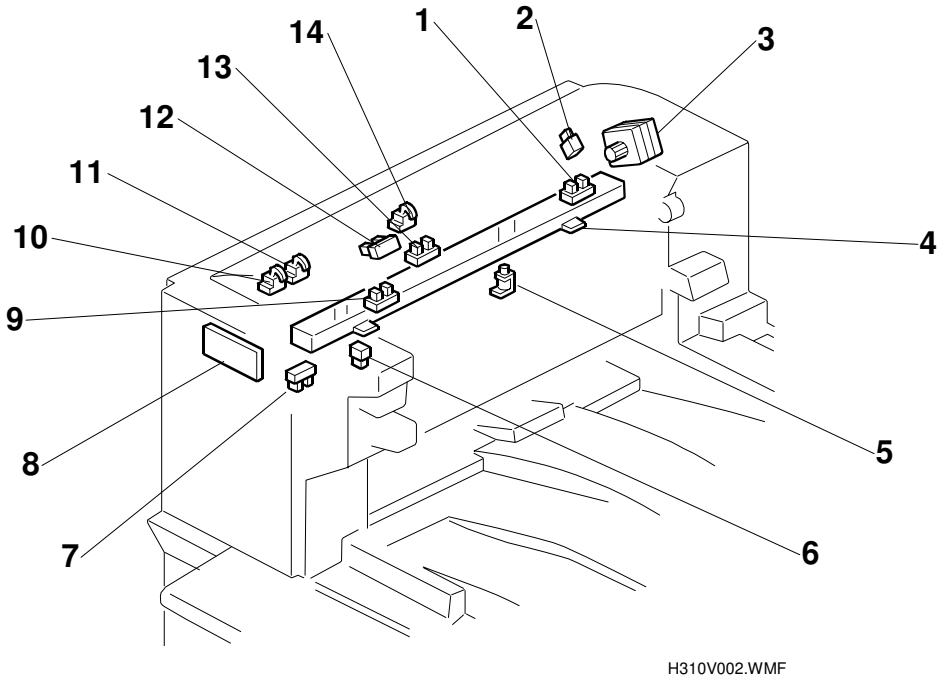
1.3 COMPONENT LAYOUT

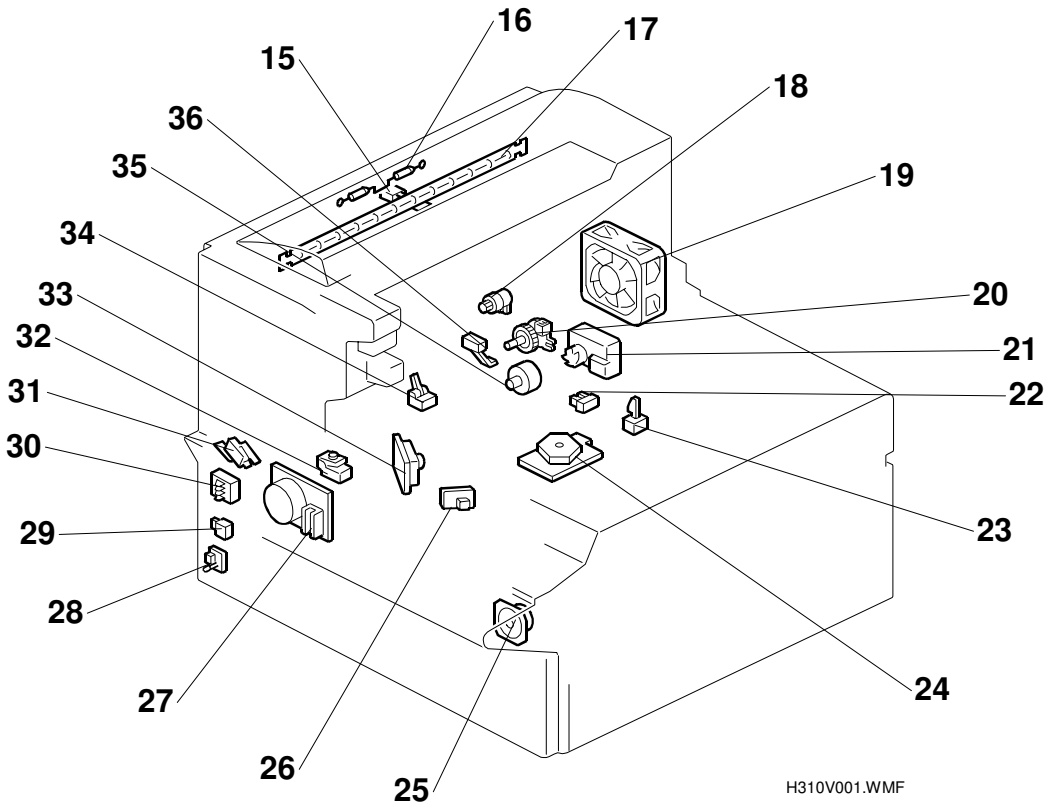
1.3.1 MECHANICAL COMPONENTS

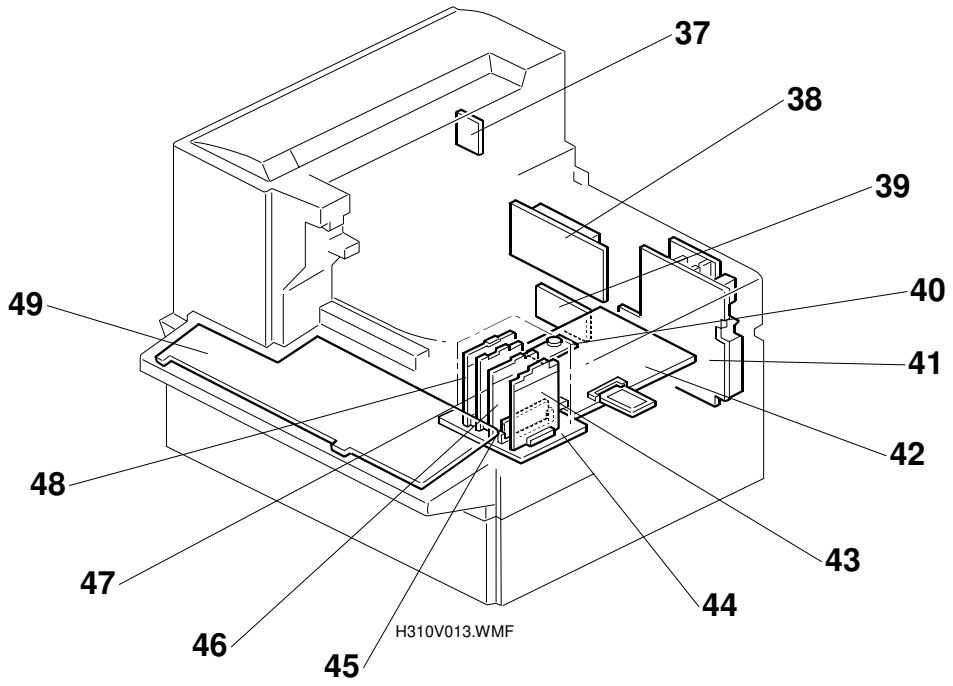


No	Name	Description
1	MDF (Manual Document Feeder)	Feeds non-standard size documents.
2	R0 Roller	Feeds the document through the scanner.
3	R1 Roller	Feeds the document through the scanner.
4	Document Feed Roller	Feeds the document into the scanner.
5	Reverse Roller	Allows one page into the scanner.
6	Pick-up Roller	Picks up pages of the document from the document table one at a time.
7	R2 Roller	Feeds the document through the stamp to the exit
8	Exit Roller	Feeds the document out to the document tray.
9	Fusing Pressure Roller	Applies pressure to the paper during the fusing process.
10	Laser Unit	Consists of the LDDR (Laser Diode Driver), focusing lens, hexagonal mirror motor, and other laser optic components.
11	Paper Pick-up Roller	Picks up the top sheet of paper from the stack in the tray, and feeds it into the printer.
12	Paper Feed Roller	Feeds the paper towards the registration roller.
13	Bypass Unit	100-sheet optional paper feed unit.
14	Registration Roller	Carries out the registration process.
15	Transfer Roller	Transfers toner from the drum to the paper.
16	AIO (All-in-One) Cartridge	Consists of the toner cartridge, cleaning unit, used toner tank, charge brush roller, development roller and OPC drum.
17	OPC Drum	The latent image is written to this organic photoconductor drum.
18	Hot Roller	Heat from this roller fuses the toner to the copy paper.

1.3.2 ELECTRICAL COMPONENTS







PCBs

No	Name	Description
8	Status Indicator	It shows machine condition with green and red LEDs.
28	Paper End/Near-end Indicator Board	Lights an LED when the paper in the tray has run out.
33	LDDR (Laser Diode Driver)	This board drives the laser diode.
37	Relay Board	Provides harness connection points for sensors.
38	Power Pack	Supplies high voltage to the charge brush roller, transfer roller, and development rollers.
39	NCU (Network Control Unit)	This board contains relays and switches for interfacing the machine with the network.
40	MBU (Mother Board Unit)	This contains Flash ROM for firmware, SRAM for user setting and DRAM.
41	PSU (Power Supply Unit)	This board supplies power to the machine, and switches the fusing lamp on/off.
42	FCU (Facsimile Control Unit)	This board controls the machine.
43	NIC (Internet Fax)	This allows the machine to be connected to a LAN as an Internet fax.
44	OPIF (Option Interface)	Interfaces the optional interface boards with the FCU
45	Function Upgrade Unit	Expands some of the functions, such as the number of speed dial.
46	SiG4	This is an interface to connect to an ISDN network.
47	SG3	This is an interface to connect to an extra PSTN line.
48	JPEG	Compresses and decompresses color images. Part of the NIC fax kit.
49	OPU (Operation Panel Unit)	This board controls the operation panel.

Motors

No	Name	Description
3	Scanner Motor	This stepper motor drives the scanner.
19	Cooling Fan Motor	Cools the interior of the machine.
21	Lift Motor	Lift the bottom plate of the paper tray.
24	Polygon Mirror Motor	This high-speed DC motor drives the hexagonal mirror in the laser printer optics.
27	Main Motor	This stepper motor drives the AIO cartridge and the fusing unit.
35	Paper Feed Motor	This stepper motor drives the registration roller and the paper feed mechanisms in the main body and the bypass tray.

Sensors

No	Name	Description
1	B4-width Sensor	This detects the presence of a B4-width (256 mm, 10.1") document in the feeder.
2	ADF Upper Cover Switch	This detects whether the ADF upper cover is opened or closed.
4	CIS (Contact Image Sensor)	This sensor converts the light reflected from the document into an analog video signal.
6	ADF Unit Switch	This detects whether the ADF unit is opened or closed.
7	Paper Exit Sensor	Detects when the paper feeds out of the printer.
9	A3-width Sensor	This detects the presence of an A3-width (297 mm, 11.7")document in the feeder.
10	MDF A3-width Sensor	This detects the presence of an A3-width (297 mm, 11.7")document in the MDF.
11	MDF B4-width Sensor	This detects the presence of a B4-width (256 mm, 10.1")document in the MDF.
12	Scan Line Sensor	This detects when a page is approaching the auto shading position.
13	Document Sensor	This detects the presence of a document in the feeder.
14	MDF Sensor	This detects the presence of a document in the MDF.
15	Thermistor	This monitors the temperature at the hot roller surface.
16	Thermofuse	This interrupts the AC power to the fusing lamp if the temperature of the thermistor exceeds 470°C.
22	Paper End Sensor	Detects when the paper in the tray has run out.
23	AIO Cartridge Sensor	This detects whether the AIO cartridge is installed or not.
26	Laser Synchronization Detector	Detects the laser beam at the start of the main scan.
29	Paper Tray Side Cover Switch	Detects whether the paper tray side cover is opened or closed.
30	Paper Size Detector	This detects the paper size installed in the tray. The user must set the dial to the correct size.
32	Toner End Sensor	Detects when the toner has run out.
34	Registration Sensor	Detects when paper reaches the registration roller.
36	Paper Near End Sensor	Detects when the paper has almost run out.

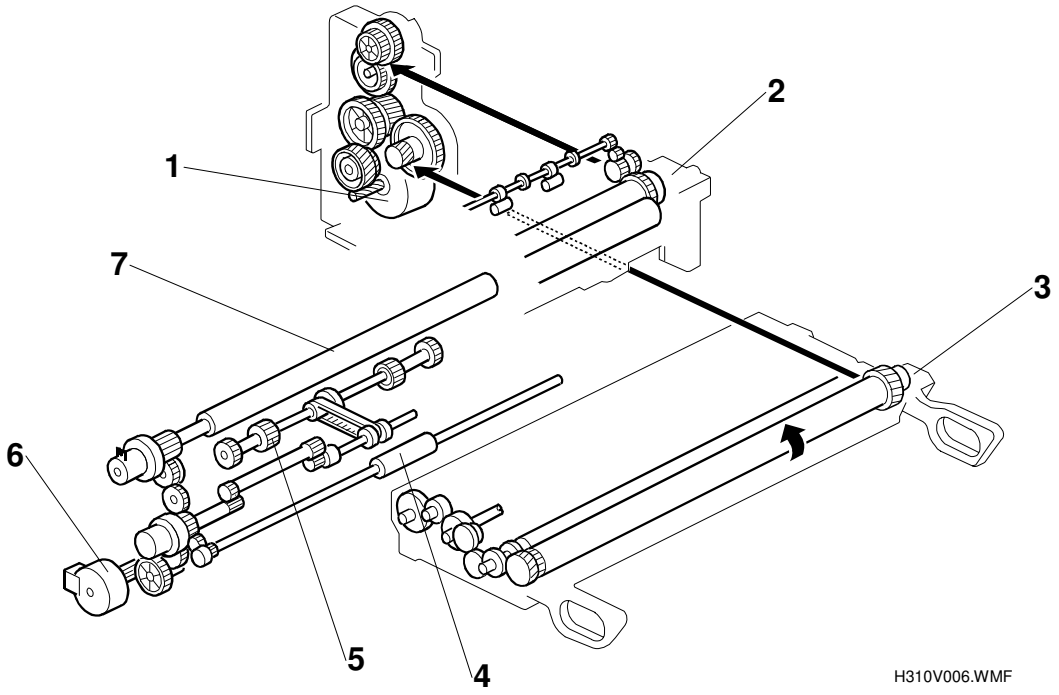
Interlock Switch

No	Name	Description
31	Interlock Switch	If the left cover is opened, this switch interrupts the +5VLDL power supply for the laser diode and the +24VM power supply for the fusing lamp.

Others

No	Name	Description
5	Stamper Ass'y	This stamps a red circle on each page that is successfully fed through the scanner (for memory transmission) or transmitted (for immediate transmission).
17	Fusing Lamp	Located inside the hot roller, heats the hot roller to the correct temperature for fusing.
18	Registration Clutch	Transfers drive from the paper feed motor to the registration roller.
20	Paper Feed Clutch	Transfers drive from the paper feed motor to the paper feed roller.
25	Monitor Speaker	Allows the user to hear the telephone line condition.

1.3.3 DRIVE LAYOUT

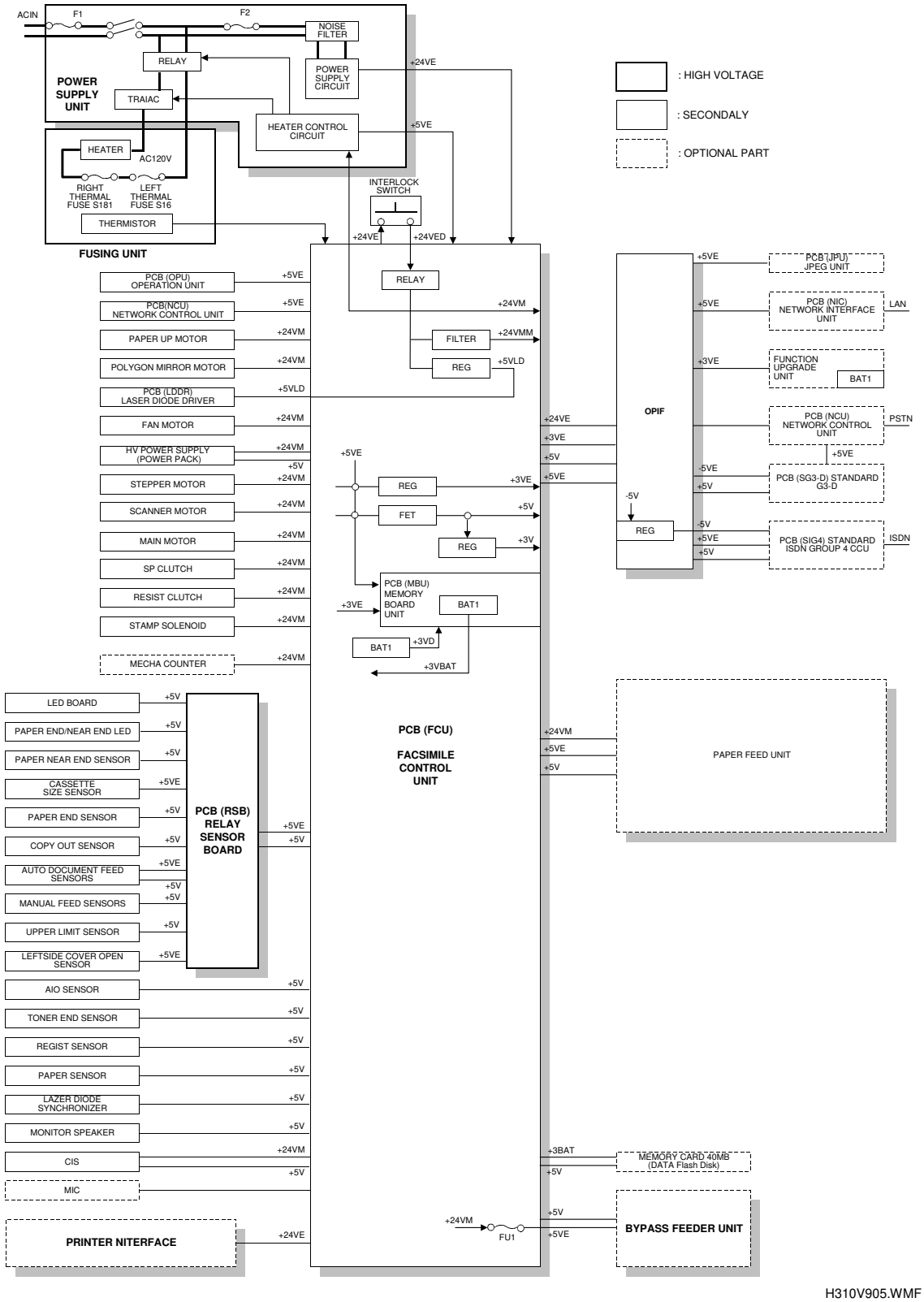


Components

No	Name	Description
1	Main Motor	This stepper motor drives the AIO cartridge and the fusing unit.
2	Fusing Unit	This fuses the toner to the paper.
3	All-in-One Cartridge	Consists of the toner cartridge, cleaning unit, used toner tank, charge brush roller, development roller, and OPC drum.
4	Paper Feed Roller	Feeds the paper towards the registration roller.
5	Paper Pick-up Roller	Picks up the top sheet of paper from the stack in the tray, and feeds it into the printer.
6	Paper Feed Motor	This stepper motor drives the registration roller and the paper feed mechanisms in the main body and the bypass tray.
7	Registration Roller	Carries out the registration process.

1.4 POWER DISTRIBUTION

1.4.1 DISTRIBUTION DIAGRAM

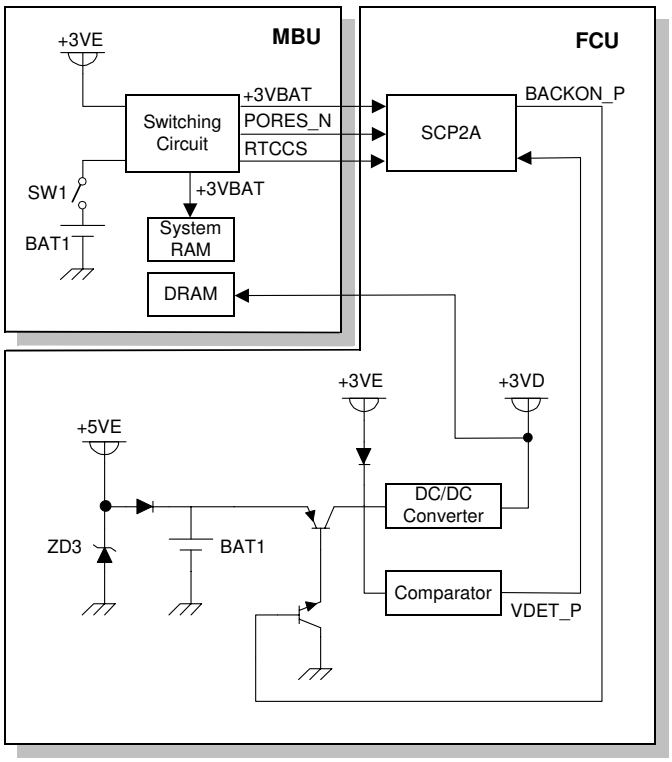


H310V905.WMF

Spec.

Item	Supplied By:	Description
+24VE	PSU	Normally supplied when the main switch is on. Activated when the CPU detects an activation when the machine is in energy saver mode.
+24VED	FCU	
+24VM	FCU	For power pack, main motor and so on.
+24VMM	FCU	For paper feed motor, scanner, motor and so on.
+5VE	PSU	For circuits and sensors.
+5VLD	FCU	Mainly for LD unit.
+5VP	PIFP	For optional printer unit.
+5V	FCU	For circuits and sensors.
-5V	OPIF	Mainly for SiG4.
+3VE	FCU	For circuits.
+3V	FCU	For circuits.

1.4.2 MEMORY BACK-UP CIRCUIT



H310V907.WMF

The MBU battery backs up the SRAM on the MBU, which contains user settings. Make sure the battery switch is kept in the ON position.
The FCU battery backs up the DRAM on the MBU for up to 12 hours. This DRAM contains the basic work areas and SAF memory. There is no battery switch.