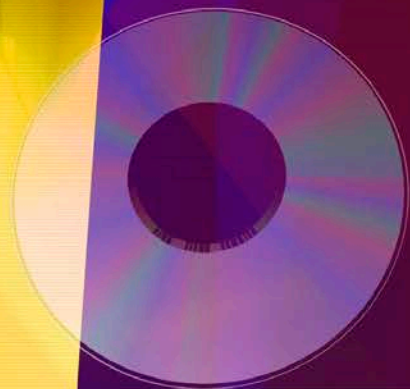# RICOH

D158/D159/D160/D161/D170

DETAILED DESCRIPTIONS

MANUAL

D158/D159/D160/D161/D170
DETAILED DESCRIPTIONS

TABLE OF CONTENTS

1. OVERVIEW

1.1 COMPONENT LAYOUT

d1582141

The above illustration is the D158/D159 model.

- D170: No duplex unit
- D158/D159: CCD scanner
- D160/D161/D170: CIS scanner

Component Layout

1. 2nd Mirror

2. Exposure Lamp

3. 1st Mirror

4. Exposure Glass

6. APS sensor (Length)

7. Lens Block

8. SBU

9. Exit Sensor

10. Scanner Motor

11. Inverter Roller

12. Duplex Inverter Sensor

13. Duplex Entrance Sensor

14. Hot Roller

15. Upper Transport Roller

16. Pressure Roller

17. OPC Drum

18. Middle Transport Roller

19. Duplex Exit Sensor

20. Image Density Sensor

21. Registration Roller

22. Registration Sensor

23. By-pass Tray

24. Lower Transport Roller

25. Upper Relay Roller

26. Relay Sensor

27. Lower Relay Roller

28. Vertical Transport Sensor

29. Paper Feed Roller

30. Paper End Sensor

31. Bottom Plate

32. PCU

33. Development Roller

34. WTL

35. Polygon Mirror Motor

36. Laser Unit

37. Toner Supply Bottle Holder

38. Exit Roller

39. 3rd Mirror

40. Scanner HP Sensor

1.1.1 D160/D161/D170: CIS SCANNER COMPONENT LAYOUT

d1582154
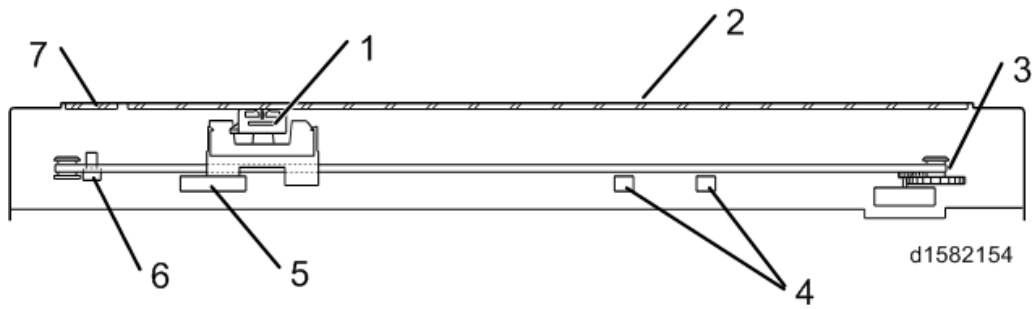
1.CIS Unit	5. APS Sensor (Width)
2. Exposure Glass	6. Scanner HP Sensor
3. Scanner Motor	7. DF Exposure Glass
4. APS Sensor (Length)	

1.1.2 D158/D159: CCD SCANNER COMPONENT LAYOUT

d1580102
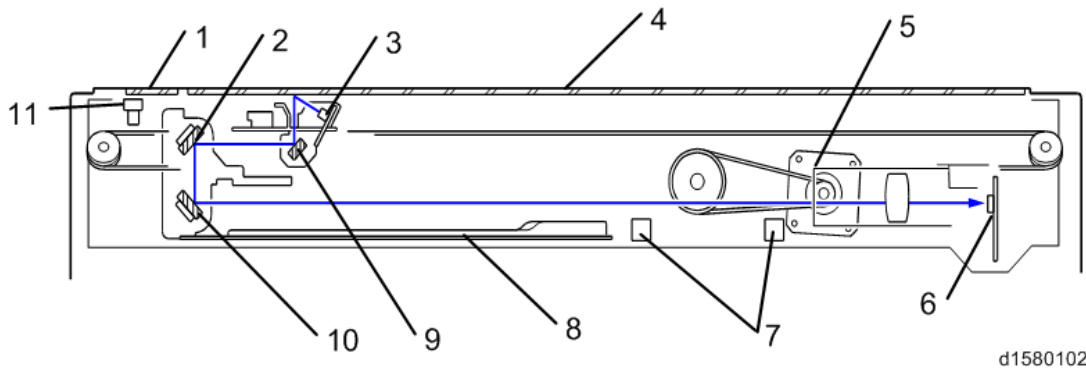
1. DF Exposure Glass	7. APS Sensors
2. 2nd Mirror	8. Scanner Heater
3. Exposure Lamp	9. 1st Mirror
4. Exposure Glass	10.3rd Mirror
5. Scanner Motor	11. Scanner HP Sensor
6. SBU	

1.2 PAPER PATH
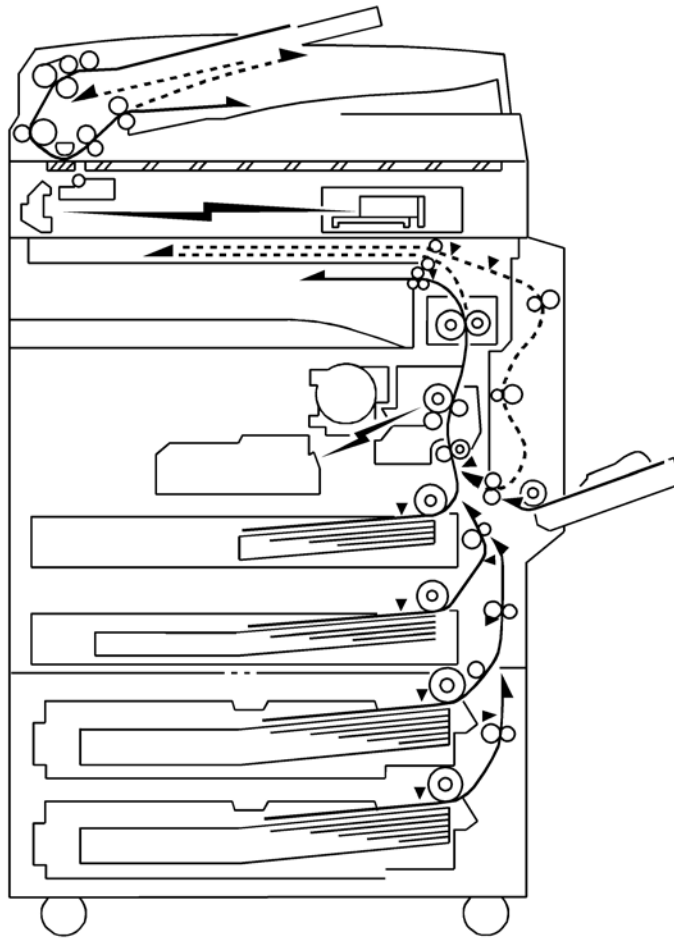
The D158, D159, D160, and D161 models have a duplex unit mounted on the right side of the machine.

All models have a by-pass tray.

1.3 DRIVE LAYOUT

D158/D159 Scanner

D160/D161/D170 Scanner

d1582155
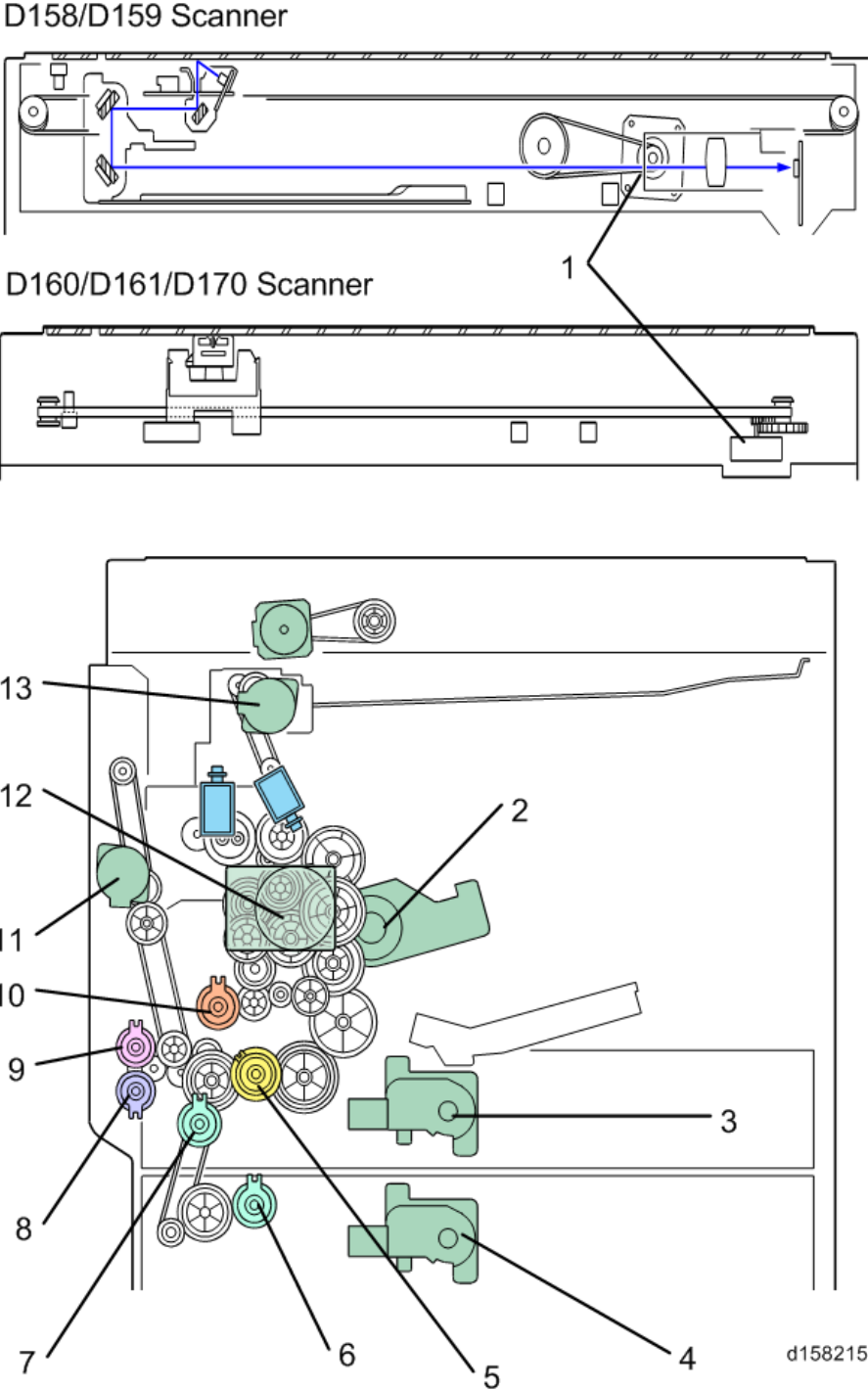
Drive Layout

1. Scanner Motor

2. Toner Supply Motor

3. Tray 1 Lift Motor

4. Tray 2Lift Motor

5. Upper Paper Feed Clutch

6. Lower Paper Feed Clutch

7. Relay Clutch

8. By-pass Paper Feed Clutch

9. By-pass Tray Lift Clutch

10. Registration Clutch

11. Duplex Motor

12. Main Motor

13. Inverter Motor

2. BOARD STRUCTURE

2.1 BLOCK DIAGRAM

d1582136
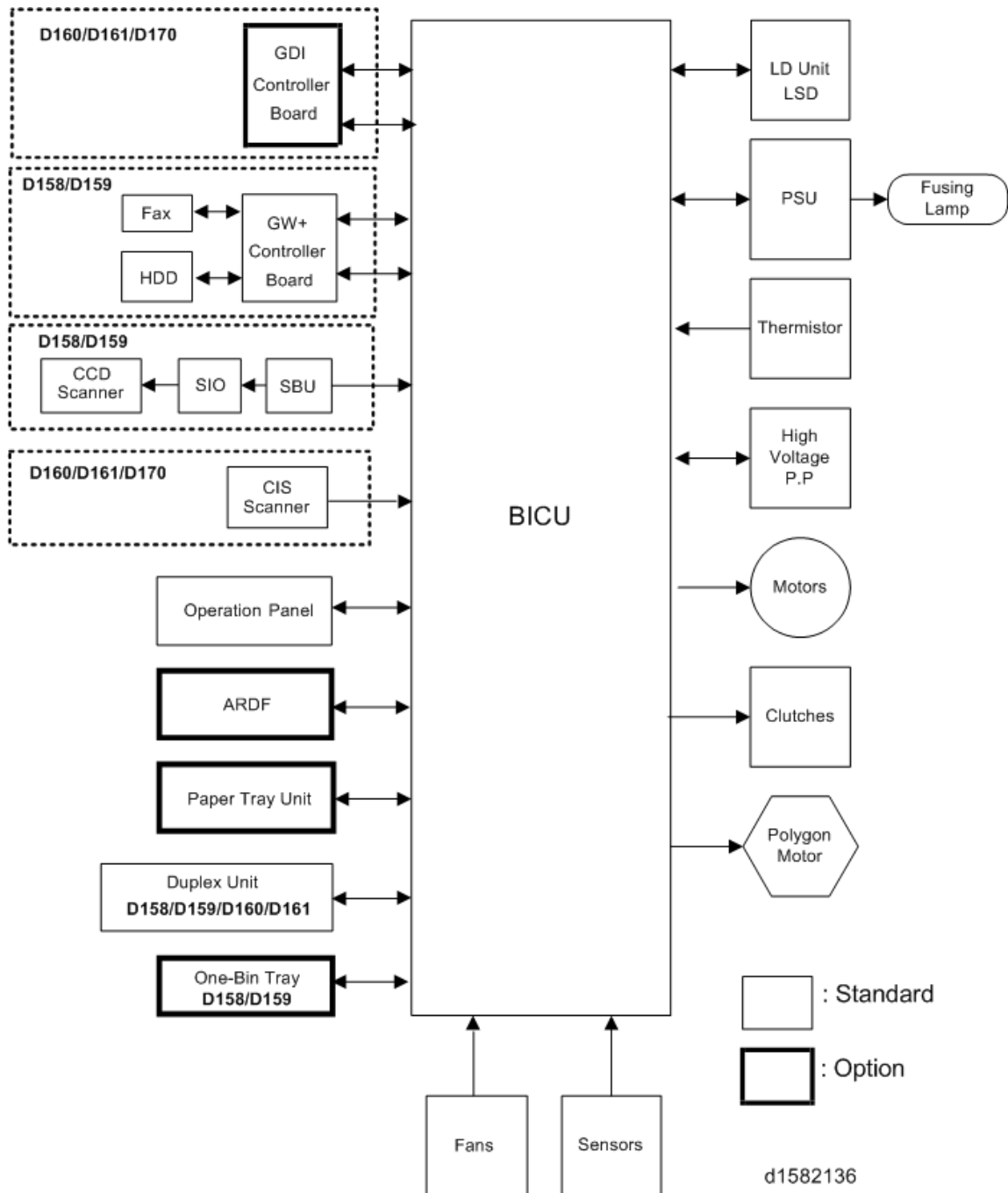
SBU (Sensor Board Unit)

BICU (Base Engine and Image Control Unit)

The main board controls the following functions:

- Engine sequence

- Timing control for peripherals

- Image processing, video control

- Operation control, system control (Basic machine only)

- Machine control

- Drive control for the sensors, motors, and clutches of the printer and scanner

- High voltage supply board control

- Serial interfaces with peripherals

- Fusing control

2.2 SBU (SENSOR BOARD UNIT)

The SBU deals with the analog signals from the CCD and converts them into digital signals.

The SBU is attached to the CCD scanner (D158/D159).

3.   COPY PROCESS OVERVIEW
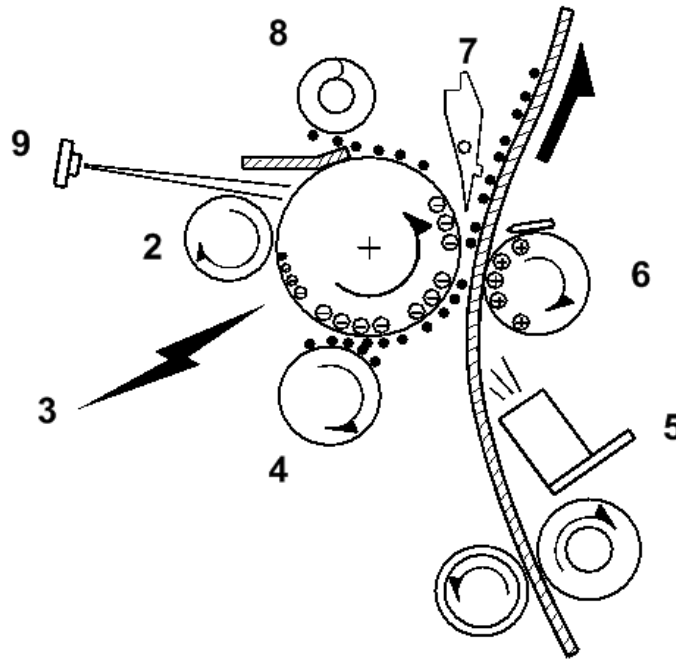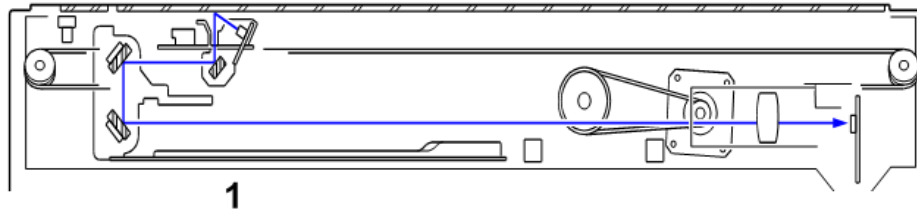
d1582142

1. Exposure

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode.

2. Drum Charge

In the dark, the charge roller gives a negative charge to the organic photo-conductive (OPC) drum. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

3. Laser Exposure

The processed data scanned from the original is retrieved from the memory and transferred to the drum by a laser beam, which forms an electrical latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, which is controlled by the BICU board.

4. Development

The magnetic developer brush on the development roller comes in contact with the latent image on the drum surface. Toner particles are electrostatically attached to the areas of the drum surface where the laser reduced the negative charge on the drum.

5. ID Sensor

The laser forms a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern. The output signal is one of the factors used for toner supply control. Also, the ID sensor measures the reflectivity of the drum surface. The output signal is used for charge roller voltage control.

6. Image Transfer

Paper is fed to the area between the drum surface and the transfer roller at the proper time for aligning the copy paper and the developed image on the drum surface. Then, the transfer roller applies a high positive charge to the reverse side of the paper. This positive charge pulls the toner particles from the drum surface onto the paper. At the same time, the paper is electrostatically attracted to the transfer roller.

7. Paper Separation

Paper separates from the drum as a result of the electrostatic attraction between the paper and the transfer roller. The discharge plate (grounded) helps separate the paper from the drum.

8. Cleaning

The cleaning blade removes any toner remaining on the drum surface after the image transfers to the paper.

9. Quenching

The light from the quenching lamp electrically neutralizes the charge on the drum surface.

4. SCANNING D158/D159

4.1 OVERVIEW
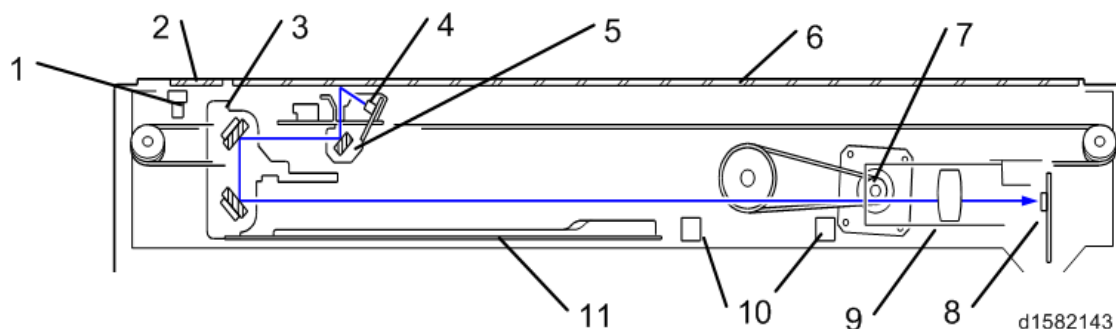
1.	Scanner HP sensor	7.	Scanner motor
2.	DF exposure glass	8.	Sensor board unit (SBU)
3.	2nd scanner (2nd carriage)	9.	Lens Block
4.	Scanner lamp	10.	APS sensor
5.	1st scanner (1st carriage)	11.	Scanner Heater
6.	Exposure glass		

The original on the exposure glass or ARDF exposure glass reflects the light emitted from the scanner lamp. The reflected light goes to the CCD on the sensor board by way of the 1st and 2nd scanners. The sensor board converts the CCD analog signals into digital signals.

When the original is manually placed on the exposure glass, the scanner motor pulls the 1st and 2nd scanners via mechanical linkage. The original is scanned from left to right.

When the original is fed from the optional ARDF, it is automatically transported onto the ARDF exposure glass, and to the original exit. The original does not stay on the glass; but goes to the exit. The 1st and 2nd scanners stay at their home positions.

4.2 SCANNER DRIVE

d1582179
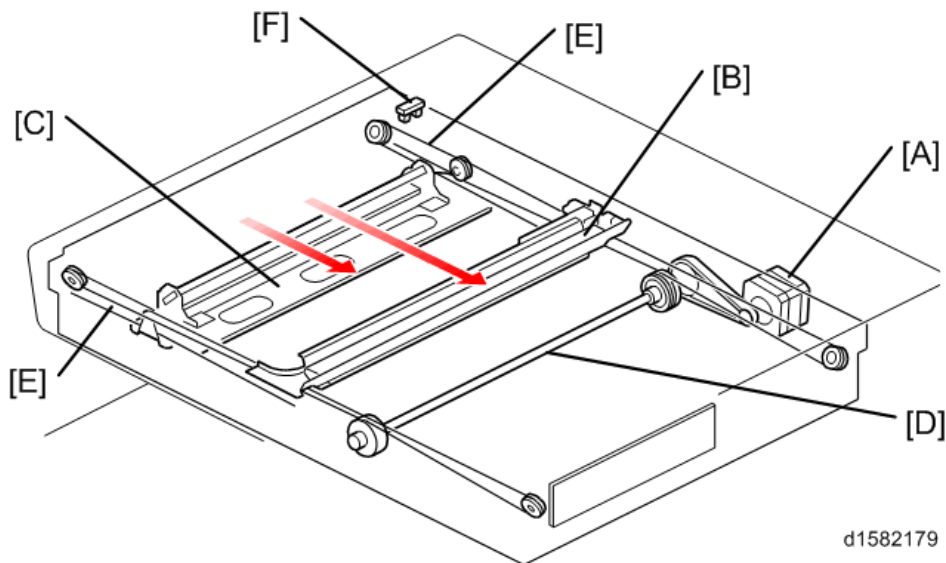
The scanner motor [A] drives the 1st scanner [B] and the 2nd scanner [C] through the scanner drive pulley, scanner drive shaft [D], and two scanner wires [E].

Book mode -

The SBU board controls the scanner drive motor. The 2nd scanner speed is half that of the 1st scanner.

In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length change in the sub scan direction is done by changing the scanner motor speed. In the main scan direction it is done by image processing on the BICU board.

You can adjust the magnification in the sub-scan direction by changing the scanner motor speed with SP4-008.

ARDF mode -

The scanners always stay in their home position (the scanner HP sensor [F] detects the 1st scanner) to scan the original. The ARDF motor feeds the original through the ARDF. In reduction/enlargement mode, the image length change in the sub-scan direction is done by changing the ARDF motor speed. Magnification in the main scan direction is done in the BICU board. This is the same as for book mode.

You can adjust magnification in the sub-scan direction by changing the ARDF motor speed with SP6-017.

4.3 ORIGINAL SIZE DETECTION IN PLATEN MODE
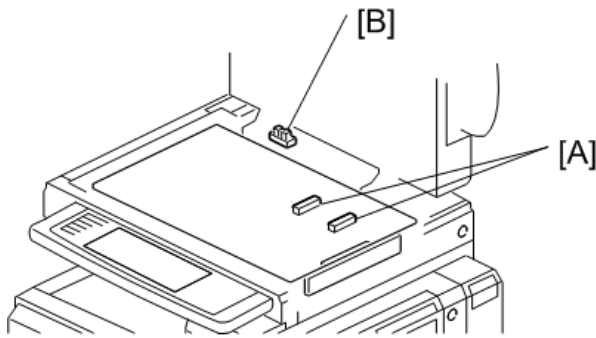
d088d103a

- There are no APS sensor (width) in the scanner unit. However, the original width can be detected by CCD. The APS sensor (length) [A] detects the original length.

- The BICU board checks each sensor status when the platen cover sensor [B] is activated as it is closed. It detects the original size by the on/off signals it gets from each sensor.

- If the copy is made with the platen cover fully open, the CPU determines the original size from the sensor outputs after the Start key is pressed.
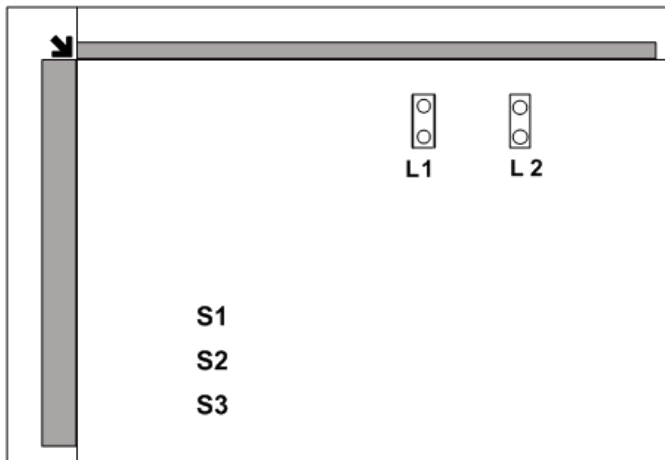
d088d514a

4.4 ANTI-CONDENSATION HEATER

The anti-condensation heater is available as an optional unit. The anti-condensation heater prevents condensation on the mirrors. Condensation can occur when the scanner unit is, for example, moved from a cold room to a warm room. Condensation can cause abnormal images.

5. SCANNING D160/D161/D170

5.1 OVERVIEW

d1582154
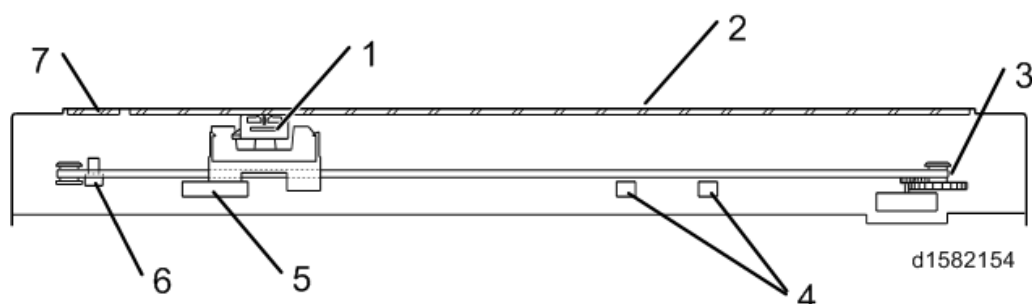
1. CIS unit (with carriage)	4. APS sensor (length)
2. Exposure Glass	5. APS sensor (width)
3. Scanner Motor	6. Scanner HP sensor
	7. DF Exposure Glass

◆ **CIS unit**

   1-ch unity-magnifying contact image sensor (RGB_LED+SLA+CMOS sensor)/capable of A3 color scanning

◆ **Bottom frame**

   Resin base

◆ **Upper frame**

   Composed of a resin base, exposure glass, and DF exposure glass

◆ **Sensor**

   1-ch CIS + integrated carriage + slide guide

◆ **Drive**

   Belt drive using a PM stepping motor

◆ **Exterior**

   The bottom frame (resin base) is integrated into the exterior.

◆ **APS Sensor**

   2 width sensors and 2 length sensors (the sensor location depends on the country of use)

5.2 SCANNER DRIVE
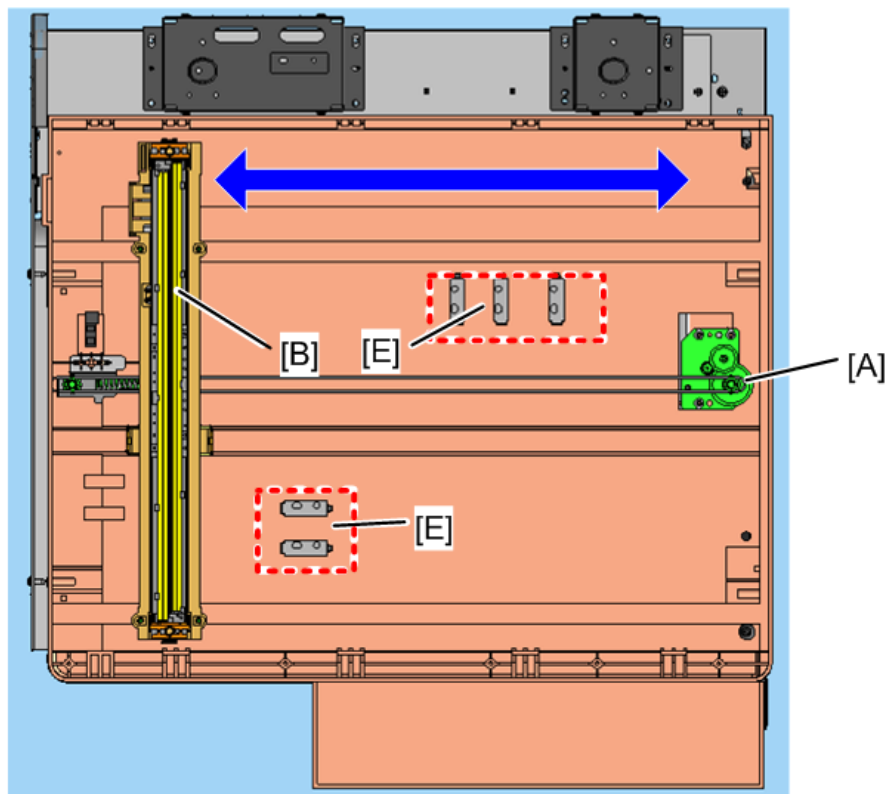
d1582140
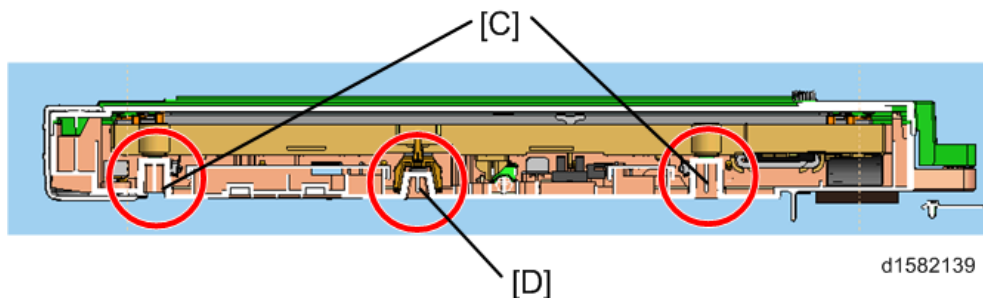
d1582139

Models D160, D161 and D170 are flatbed scanners using a CIS.

To scan an original, the scanner motor (A) moves the carriage on which the CIS (B) is mounted along the carrier guide rail.

The CIS can be raised or lowered using the side guide rails (C) and adjusted relative to the main scanning direction using the center guide rail (D). This is a factory adjustment; do not do this in the field.

The size of the original is detected by the APS sensors (E) on the bottom frame.
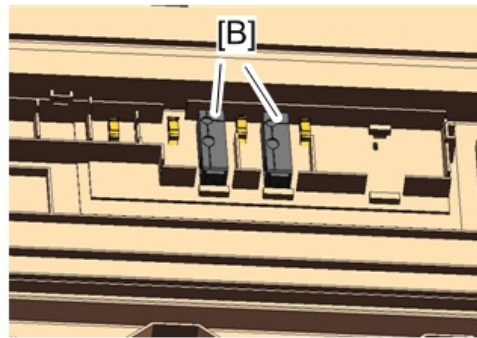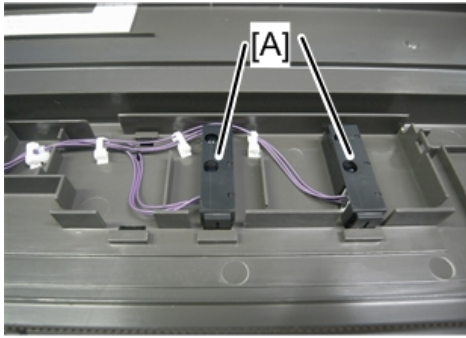
d1582117

[A]: All areas except China

[B]: China only

6. LASER EXPOSURE

6.1 OVERVIEW

d1582213
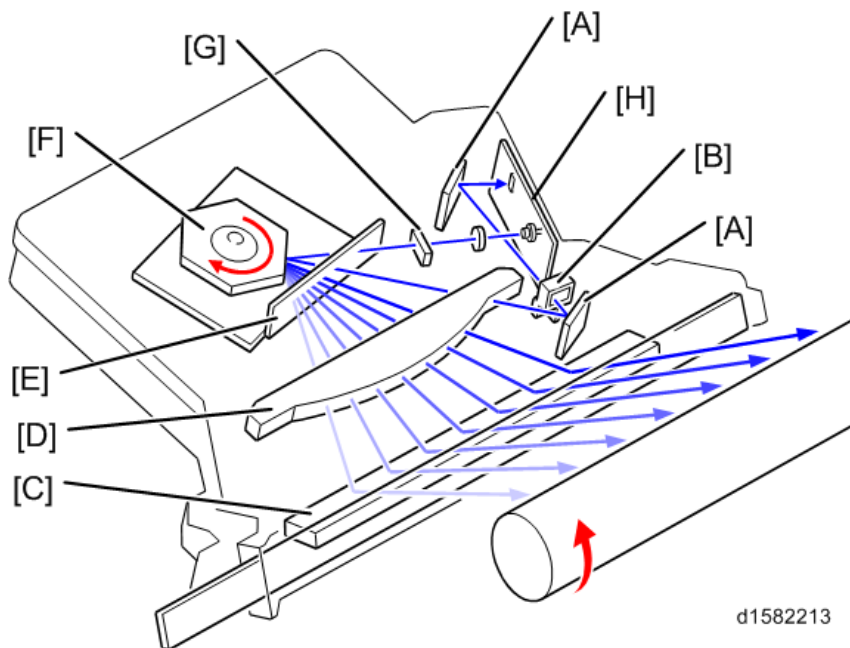
	Name
A	Synchronization detector mirrors
B	Synchronization detector lens
C	Mirror
D	F-theta lens
E	Soundproof glass
F	Polygon Motor
G	Cylindrical lens
H	LD board

⬇ Note

The LD drive board controls both the laser output and laser synchronization mechanism.

The machine cuts off the power supply to the LD drive board if the front or right cover is opened.

6.2 AUTO POWER CONTROL (APC)
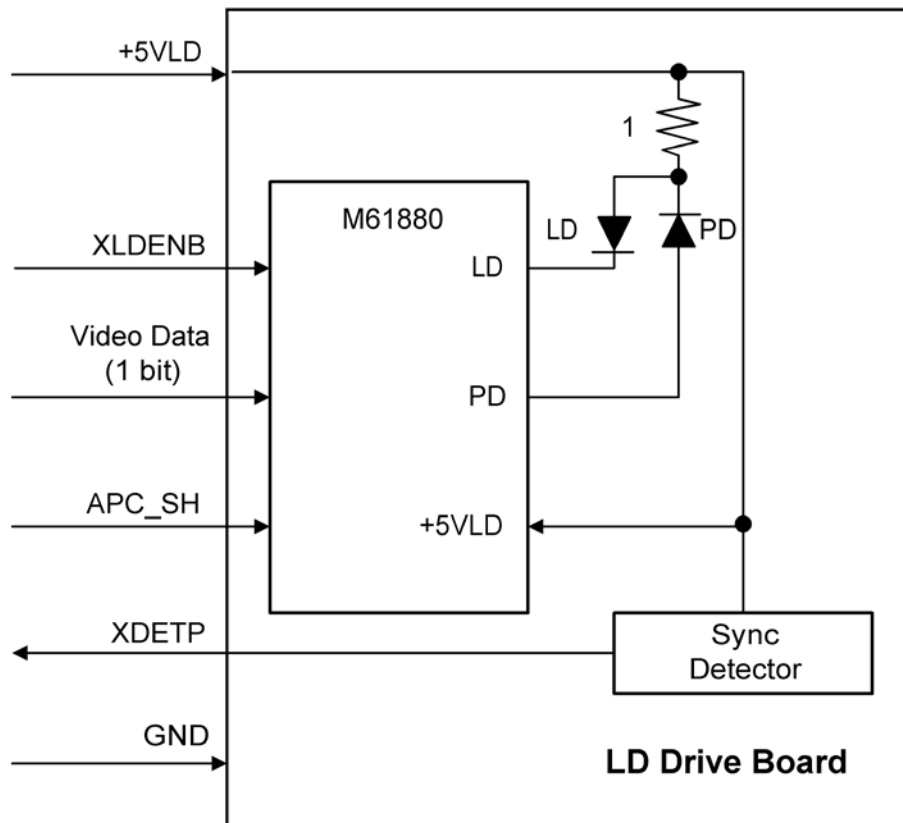
The LD driver IC drives the laser diode. To prevent the intensity of the laser beam from changing because of the temperature, the machine monitors the current passing through the laser diode (LD). The machine adjusts the current to the laser diode by comparing it with the reference level from the reference circuit.

This auto power control is done just after the machine is turned on and during printing.

The laser diode power is adjusted on the production line.

Note

Do not touch the variable resistors on the LD unit in the field.

6.3 LD SAFETY SWITCH

d1582145
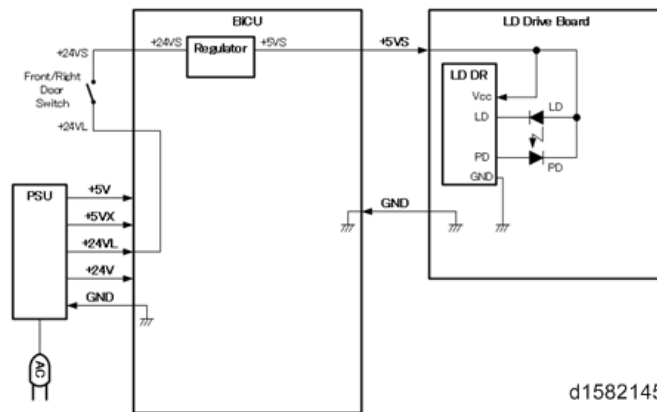
To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, safety switches are located at the front and right covers. The switches are installed on the +5VLD line through the BICU board.

When the front cover or the right cover is opened, the power supply to the laser diode is interrupted.

7. PHOTOCONDUCTOR UNIT (PCU)

7.1 OVERVIEW
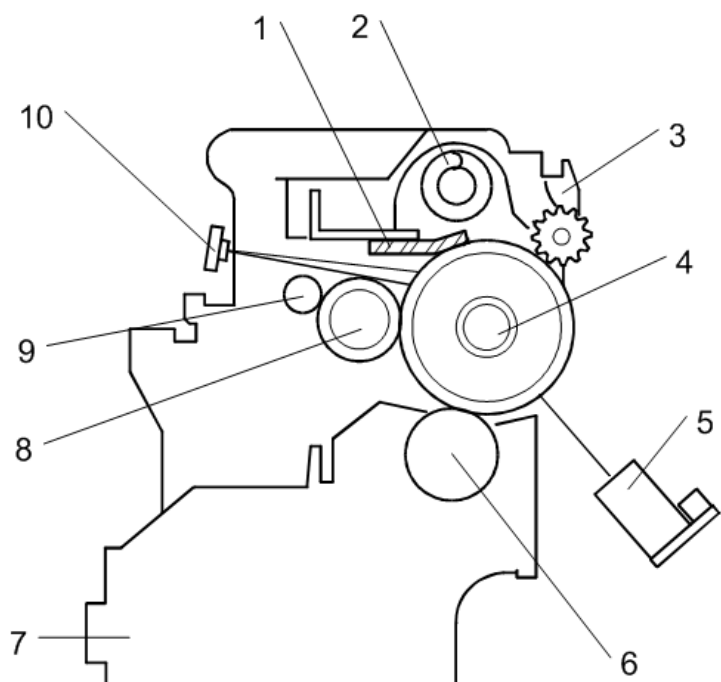
d1582146

The PCU consists of the components shown in the above illustration. An organic photoconductor (OPC) drum (diameter: 30 mm) is used in this machine.

1. Cleaning Blade

2. Toner Collection Coil

3. Pick-off Pawl

4. OPC Drum

5. ID Sensor (see note)

6. Development Roller

7. Development Unit

8. Charge Roller

9. Charge Roller Cleaning Brush

10. Quenching Lamp (see note)

Overview

The ID sensor and quenching lamp are not included in the PCU.
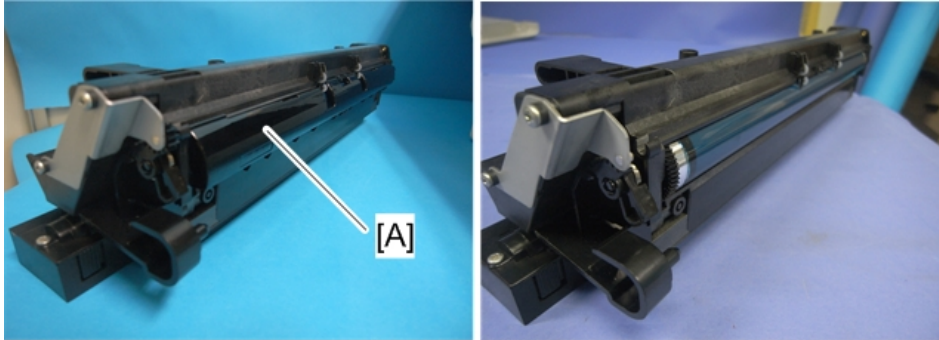
d1582153

The OPC drum's shutter [A] of the previous model has been removed.

7.2 DRIVE
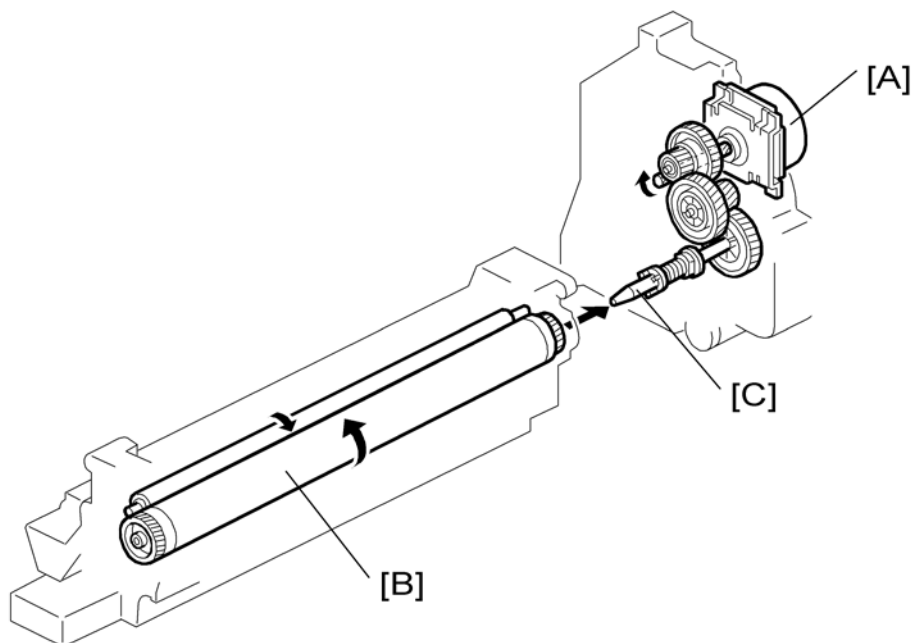
The main motor [A] drives the drum [B] through a series of gears and the drum drive shaft [C]. The main motor assembly includes a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

8. DRUM CHARGE

8.1 OVERVIEW
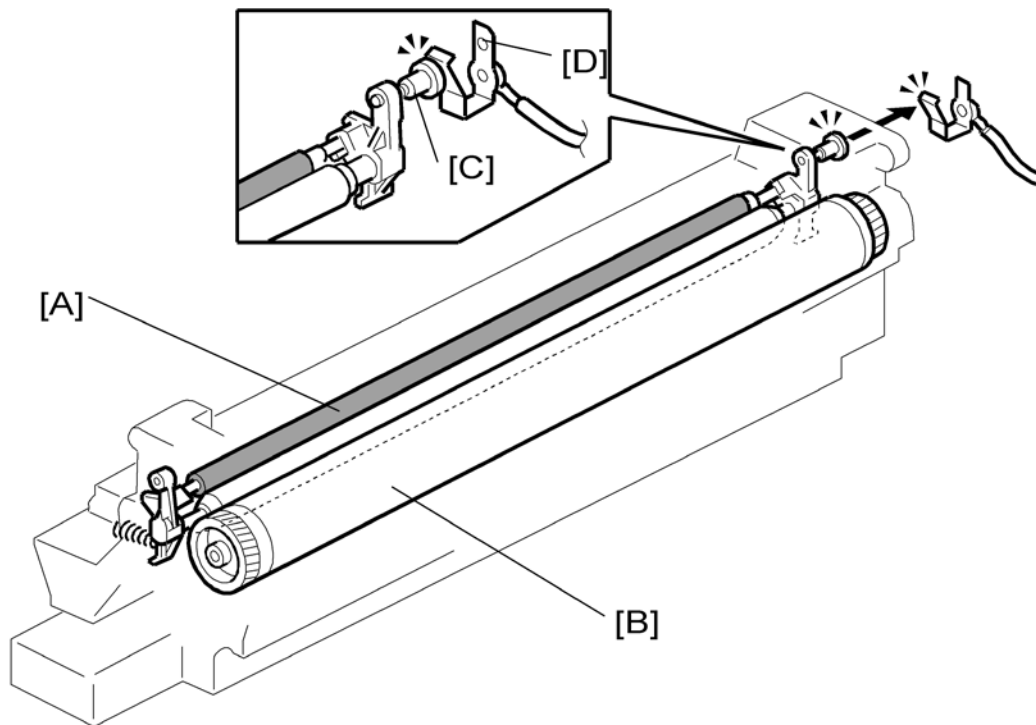
This copier uses a drum charge roller to charge the drum. The drum charge roller [A] always contacts the surface of the drum [B] to give it a negative charge of –950 V.

The high voltage supply board gives a negative charge of –1700 V to the drum charge roller through the screw [C] and terminal plate [D]. This voltage can be changed using SP2-001-001 (Charge Roller Bias Adjust Setting (Copying)).

8.2 ID SENSOR PATTERN PRODUCTION TIMING

The ID sensor pattern is not made every page or every job.

It is only made in the following conditions:

- During warm-up at power on
- When the machine starts warming up from energy saver mode and the temperature is less than the target temperature as set with SP Mode.
- When the machine starts warming up from energy saver mode and the machine prints more than 100 prints after generating the p-pattern.

8.3 DRUM CHARGE ROLLER CLEANING
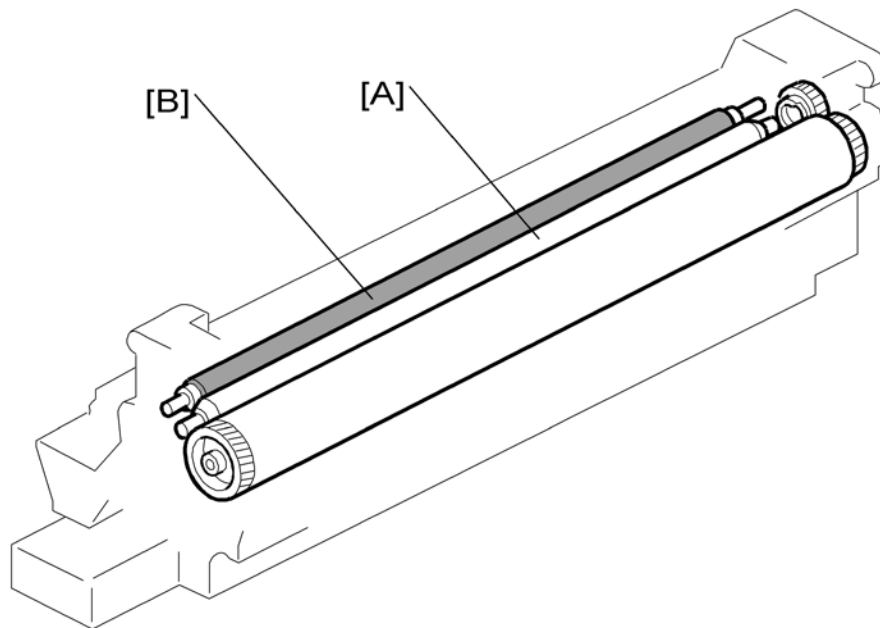
Because the drum charge roller [A] always contacts the drum, it gets dirty easily. So, the cleaning brush [B] also contacts the drum charge roller all the time to clean the surface of the drum charge roller.

9. DEVELOPMENT

9.1 OVERVIEW
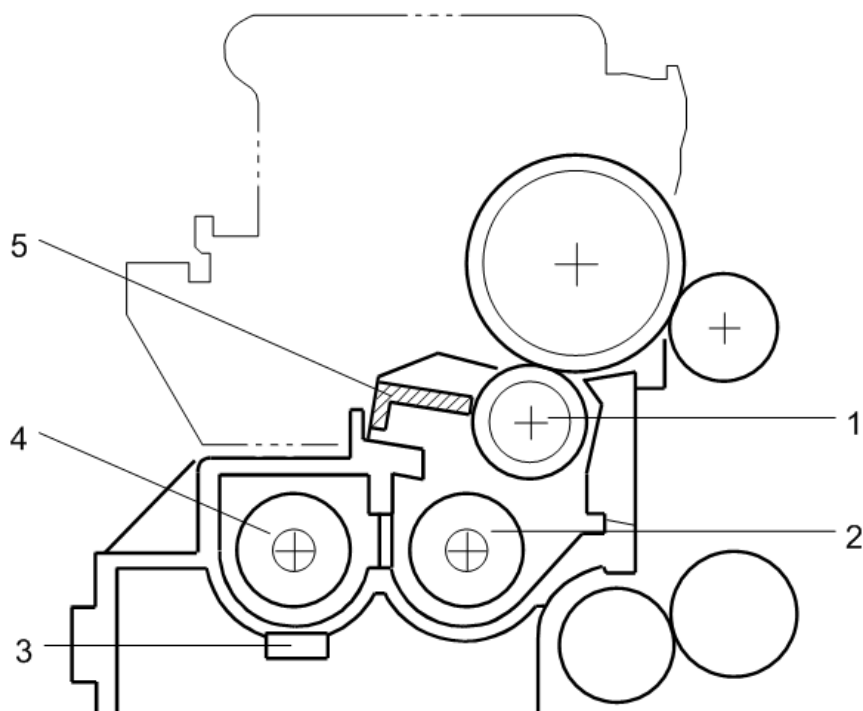
d1582147

The development unit consists of the following parts.

1. Development roller

2. Mixing auger 2

3. TD sensor

4. Mixing auger 1

5. Doctor blade

This machine uses a single-roller development system. Two mixing augers mix the developer. The toner density (TD) sensor and image density (ID) sensor (see the illustration in the PCU section) are used to control the image density on the copy.

9.2 DRIVE
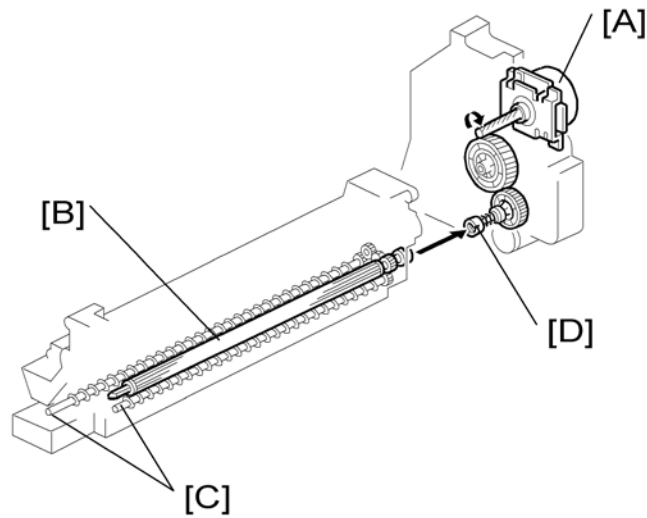
The main motor [A] drives the development roller [B] and mixing augers [C] through a train of gears and the development drive shaft [D]. When the PCU is pushed in, the development drive shaft engages the development roller gear.

The development drive gears (except for the gears in the development unit) are helical gears. These gears are quieter than normal gears.

9.3 DEVELOPER MIXING
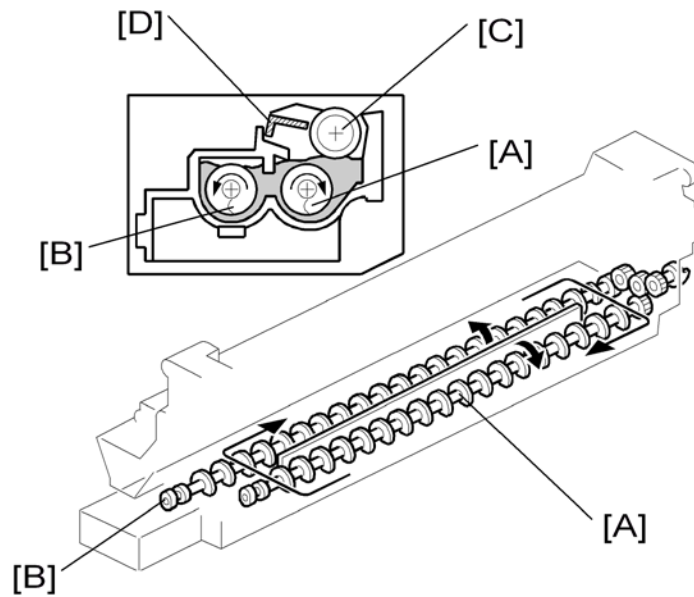
The two mixing augers, [A, B] keep the developer evenly mixed. Mixing auger 2 [A] transports excess developer, scraped off the development roller [C] by the doctor blade [D], towards the front of the machine. Mixing auger 1 [B] returns the excess developer, along with new toner, to the rear of the mixing assembly. Here the developer is reapplied to the development roller.

9.4 DEVELOPMENT BIAS
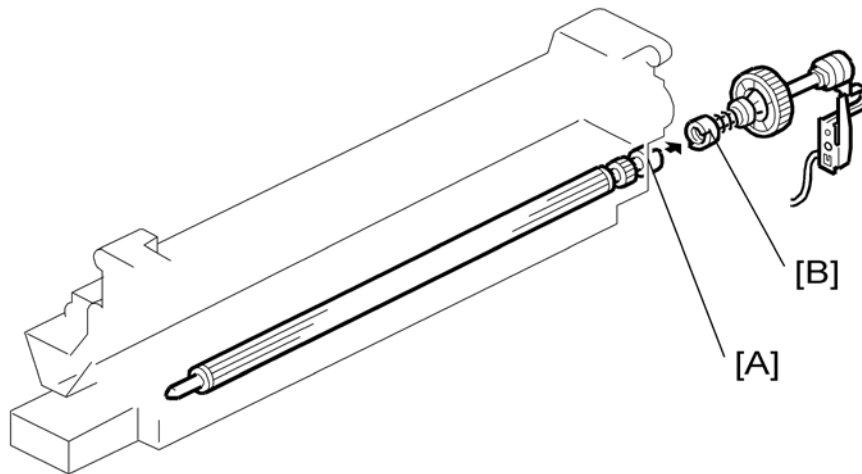
This machine uses a negative-positive development system, in which black areas of the latent image are at a low negative charge (about −154 ± 50 V) and white areas are at a high negative charge (about –950 V).

To attract negatively charged toner to the black areas of the latent image on the drum, the high voltage supply board applies a bias of –650 volts to the development rollers throughout the image development process. The bias is applied to the development roller shaft [A] through the drive shaft [B].

The development bias voltage (–650 V) can be adjusted with SP 2201 1.

9.5 TONER SUPPLY

9.5.1 TONER BOTTLE REPLENISHMENT MECHANISM
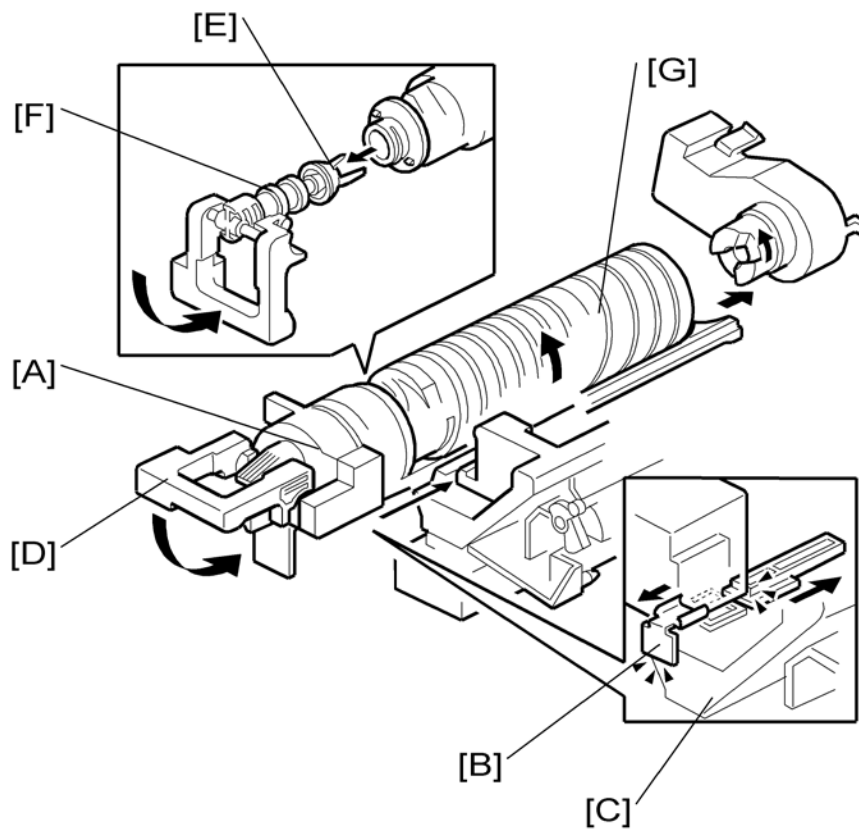
When a toner bottle is placed in the bottle holder unit [A] and the unit is pushed in completely, toner shutter [B] moves against the side [C] of the PCU. When the toner bottle holder lever [D] is put back in the original position, the cap [E] on the toner bottle is pulled away and kept in place by the chuck [F].

The toner supply mechanism transports toner from the bottle to the development unit. The toner bottle has a spiral groove [G] that helps move toner to the development unit.

To add a new toner bottle, first lift the toner bottle holder. When this is done, the chuck releases the toner bottle cap into its proper position to prevent toner from scattering.

Then, when the bottle holder unit is pulled out to add a new toner bottle, the toner shutter shuts to block the opening as a result of pressure from a spring.

9.6 TONER SUPPLY MECHANISM
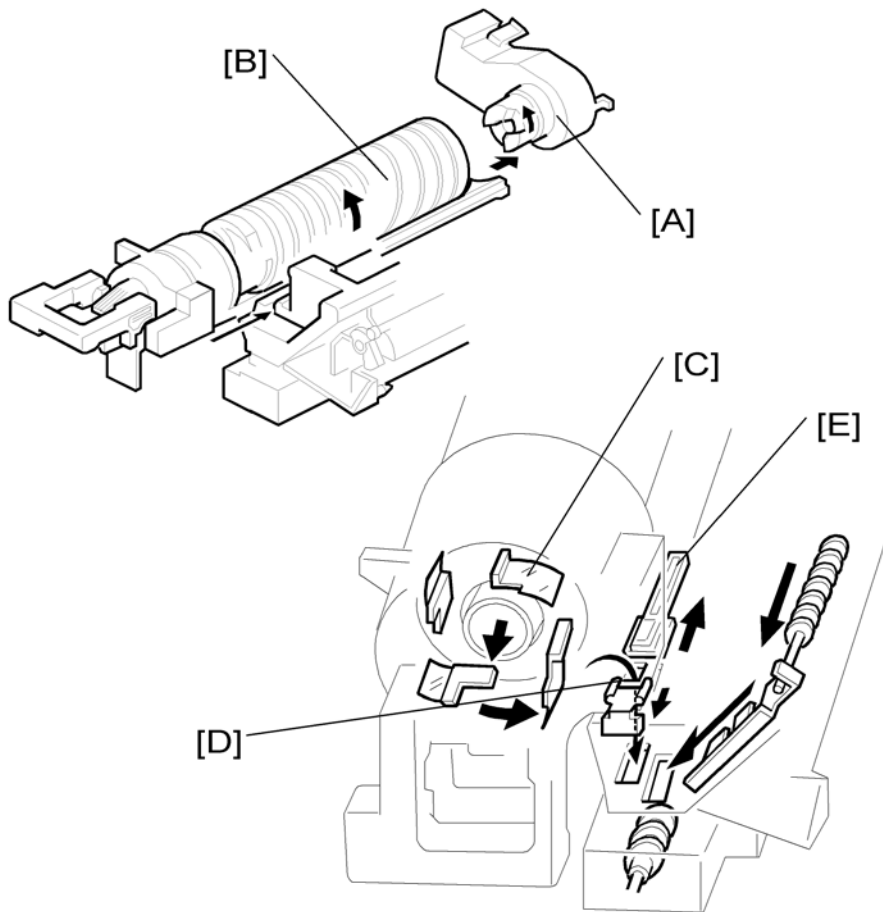
The toner supply motor [A] drives the toner bottle [B] and the mylar blades [C]. First, the toner falls down into the toner bottle holder. The toner supply mylar blades transfer the toner to the slit [D]. When the PCU is installed in the machine, the shutter [E] above the PCU is opened by the toner bottle holder. Then the toner falls down into the development unit through the slit and the shutter.

9.7 TONER DENSITY CONTROL

9.7.1 OVERVIEW

There are four modes for controlling toner supply as shown in the following tables, which can be changed with by SP 2921. The factory setting is sensor control 1 mode.

Basically, the toner concentration in the developer is controlled using the standard TD sensor voltage (Vts), toner supply reference voltage (Vref), actual TD sensor output voltage (Vt), and ID sensor output data (Vsp/Vsg).
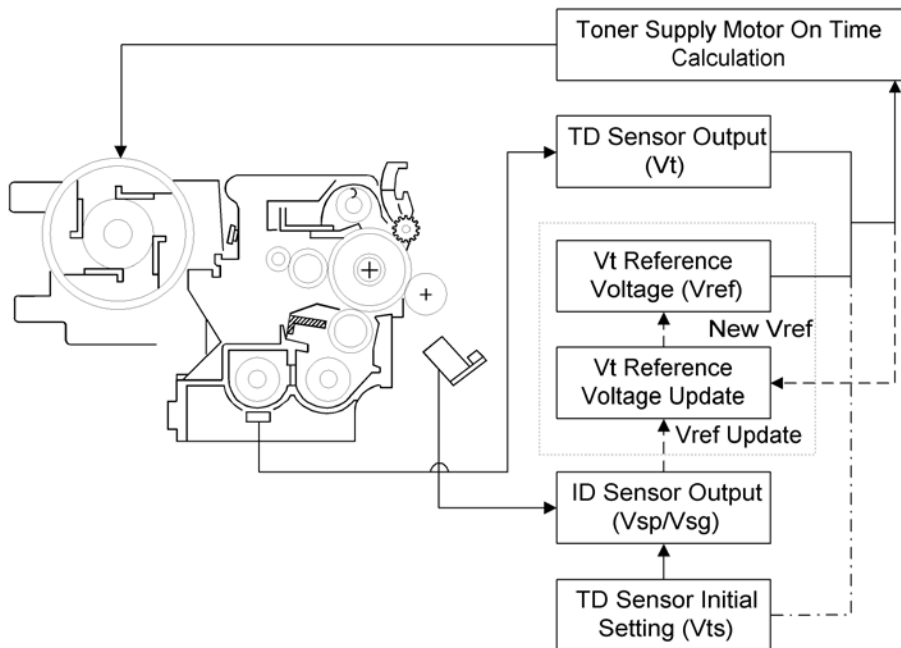
The four-toner density control modes are as follows.

Sensor control 1

Mode	Sensor control 1 (SP 2921, "0"): Normally use this setting only
Toner supply decision	Compare Vt with a reference voltage (Vts or Vref)
Toner control process	Toner is supplied to the development unit when Vt is higher than the reference voltage (Vts or Vref). This mode keeps the Vref value for use with the next toner density control. Vts is used for the first toner density control after a new PCU has been installed, until it has been corrected with the ID sensor output. Vref is used after Vts has been corrected with the ID sensor output voltage (corrected during the first toner density control for a new PCU).

Toner Density Control

Toner supply amount	Varies
Toner end detection	Performed

Sensor control 2

Mode	Sensor control 2 (SP 2921, "1"): For designer's use only; do not use in the field
Toner supply decision	Compare Vt with a reference voltage (Vts)
Toner control process	This toner control process is the same as sensor control 1 mode. However, the reference voltage used is always Vts.
Toner supply amount	Varies
Toner end detection	Performed

Fixed control 1

Mode	Fixed control 1 (SP 2921, "2"): For designer's use only; do not use in the field
Toner supply decision	Compare Vt with a reference voltage (Vts or Vref)
Toner control process	This toner control process is the same as sensor control 1 mode.
Toner supply amount	Fixed (SP 2925)
Toner end detection	Performed

Fixed control 2

Mode	Fixed control 2 (SP 2921, "3"): Use temporarily if the TD sensor needs to be replaced
Toner supply decision	None
Toner control process	Toner is supplied every printed page regardless of Vt.
Toner supply amount	Fixed (SP 2925)
Toner end detection	Not performed

9.7.2 TONER DENSITY SENSOR INITIAL SETTING

The TD sensor initial setting (SP2-801-001 Developer Initialization) procedure must be done after replacing the developer. During TD sensor initial setting, the TD sensor is set so that the TD sensor output is the value of SP 2926 (default: 2.5V). This value will be used as the standard reference voltage (Vts) of the TD sensor.

9.7.3 TONER CONCENTRATION MEASUREMENT

The toner concentration in the developer is detected once every copy cycle. The sensor output voltage (Vt) during the detection cycle is compared with the standard reference voltage (Vts) or the toner supply reference voltage (Vref).

9.7.4 VSP/VSG DETECTION

The ID sensor detects the following voltages.

- Vsg: The ID sensor output when checking the drum surface

- Vsp: The ID sensor output when checking the ID sensor pattern

In this way, the reflectivity of both the drum surface and the pattern on the drum are checked, compensating for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface.

The ID sensor pattern is made on the drum by the charge roller and laser diode.

Vsp/Vsg is not detected every page or job; it is detected at the following times to decide Vref.

- During warm-up at power on

If the machine starts warming up when the fusing temperature is 30°C or less (default) after entering night mode or low power mode (SP 2994 specifies the temperature setting).

9.7.5 TONER SUPPLY REFERENCE VOLTAGE (VREF) DETERMINATION

The toner supply reference voltage (Vref) is used for toner supply determination (see below). Vref is determined using the following data:

- ID sensor output (Vsp/Vsg)

- (Vts or the current Vref) - Vt

9.7.6 TONER SUPPLY DETERMINATION

The reference voltage (Vts or Vref) is the threshold voltage for determining whether or not to supply toner. If Vt becomes greater than the reference voltage, the machine supplies additional toner.

This can be checked using SP 2220.

9.7.7 TONER SUPPLY MOTOR ON TIME DETERMINATIONS

For fixed control mode, the toner supply motor on time is specified by the setting of SP 2925, and does not vary. The default setting is 200 ms for each copy. The toner supply motor on time for each value of SP 2925 is as follows.

Value of SP2-925	Motor On Time (t = 200 ms)
0	T
1	2t
2	4t
3	8t
4	12t
5	16t
6	Continuously
7	Not supplied

For sensor control modes 1 and 2, the toner supply motor on time is decided by the following factors.

- Vt

- Vref or Vts

- TD sensor sensitivity (coefficient: S, value is 0.4)

There are seven levels for toner supply motor on time as shown below.

Level	Decision	Motor On Time (seconds)
1	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/16	t (0.4)
2	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/8	t x 2 (0.8)
3	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/4	t x 4 (1.6)
4	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/2	t x 8 (3.2)
5	(Vts or Vref) < Vt ≤ (Vts or Vref) + 4S/5	t x 16 (6.4)
6	Vt ≥ (Vts or Vref) + 4S/16 (near-end)	T (30); see note 3
7	Vt ≥ (Vts or Vref) + S (toner end)	T (30); see note 3

The value of "t" can be changed using SP 2922 (default: 0.4 second)

The value of "T" can be changed using SP 2923 (default: 30 seconds)

T (30) means that toner is supplied intermittently in a 1/3 duty cycle (1 s on, 2 s off) for 30 seconds

9.8 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS

9.8.1 ID SENSOR

Readings are abnormal if any of the following conditions occur:

- $Vsg \leq 2.5V$

- $Vsg < 3.5V$ when maximum power (979) is applied

- $Vsp \geq 2.5V$

- $(Vsg - Vsp) < 1.0V$

- $Vt \geq 4.5V$ or $Vt \leq 0.2V$

The above ID sensor values can be checked using SP 2221.

When this is detected, the machine changes the value of Vref to 2.5 V then does the toner density control process (in a similar way to sensor control mode 2).

No SC code is generated if the ID sensor is defective.

9.8.2 TD SENSOR

The TD sensor output is checked every copy. If the readings from the TD sensor become abnormal, the machine changes the toner density control mode to fixed supply mode 2, and the toner supply amount per page is always 200 ms, regardless of the value of SP 2925. If the machine detects the TD sensor error condition 10 times consecutively, an SC code is generated (SC390) and the machine must be repaired.

9.9 TONER NEAR END/END DETECTION AND RECOVERY

The toner near end and end conditions are detected using the Vt and Vref values, in a similar way to toner density control.

This is done in all toner supply modes except for fixed mode 2, when toner end is not detected.

9.9.1 TONER NEAR END DETECTION

If Vt is at level 6 (see the table on the previous page) five times consecutively, the machine enters the toner near end condition and the toner end indicator starts blinking. Then the machine supplies toner for a certain time, which depends on the setting of SP 2923 (see the previous page).

9.9.2 TONER NEAR END RECOVERY

If the machine detects "Vt < (Vref or Vts) + 4S/5" twice consecutively in any of the following situations, the machine clears the toner near end condition.

- While in the toner recovery cycle (supplying toner on and off for 30 seconds) after the machine has detected a toner near end condition.

- During copying in the toner near end condition.

- If the front cover is opened and closed for more than 10 seconds while a toner near end condition exists.

9.9.3 TONER END DETECTION

There are two situations for entering the toner end condition.

- When Vt is level 7 three times consecutively, the machine enters the toner end condition.

- When 50 copies have been made since entering the toner near end condition. The number of copies between toner near-end and toner end can be changed using SP 2213.

9.9.4 TONER END RECOVERY

While turning on the main switch, if the front cover is opened for 10 seconds or more and then closed while a Toner End condition exists (following toner bottle replacement), the machine clears the Toner End condition. The recovery procedure is the same as for toner near end. It takes about two minutes.

10. DRUM CLEANING AND TONER RECYCLING

10.1 DRUM CLEANING

d1582148
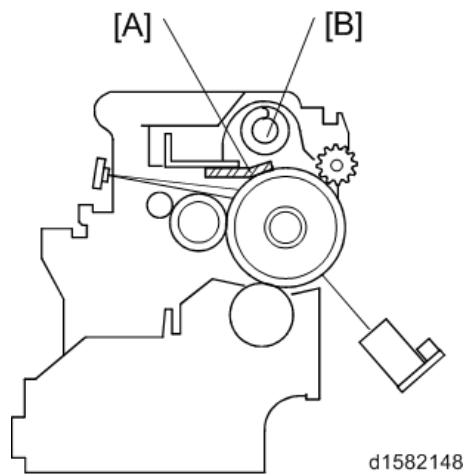
The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This model uses a counter blade system.

The cleaning blade scrapes off toner remaining on the drum. When toner builds up in the cleaning unit, toner at the top of the pile is removed by the toner collection coil [B].

To remove the toner and other particles that are accumulated at the edge of the cleaning blade, the drum turns in reverse for about 5 mm at the end of every copy job.

10.2 TONER RECYCLING
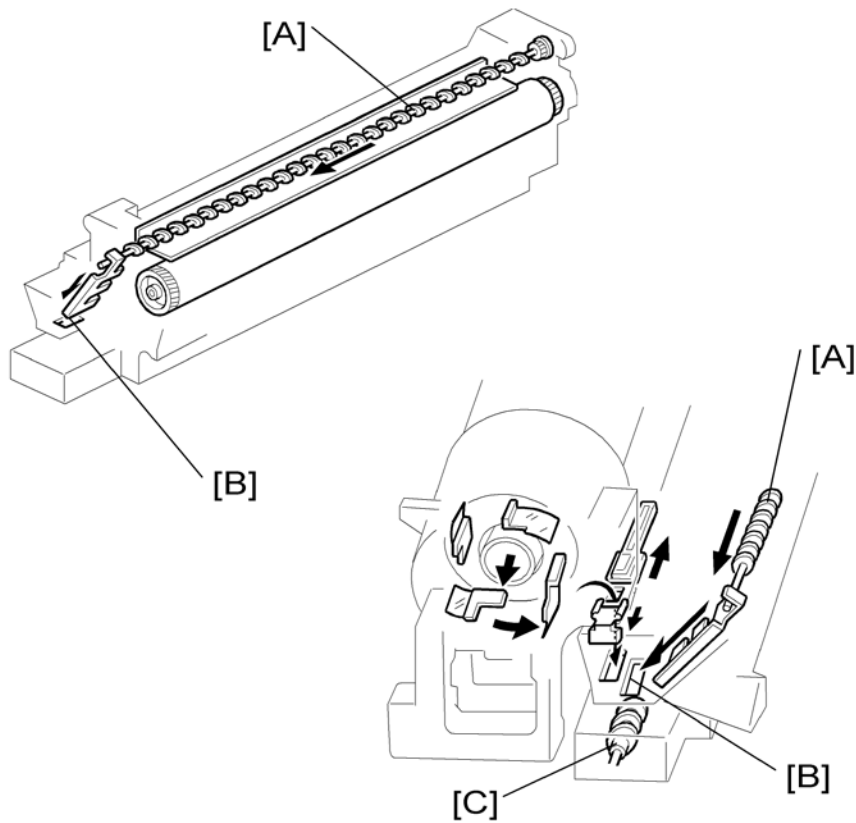
Toner picked up by the toner collection coil [A], is transported to the opening [B] in the side of the PCU. Then, this toner falls into the development unit with new toner coming from the toner bottle and it is all mixed together by mixing auger 1 [C] and used again.

11. PAPER FEED

11.1 OVERVIEW

d1582156
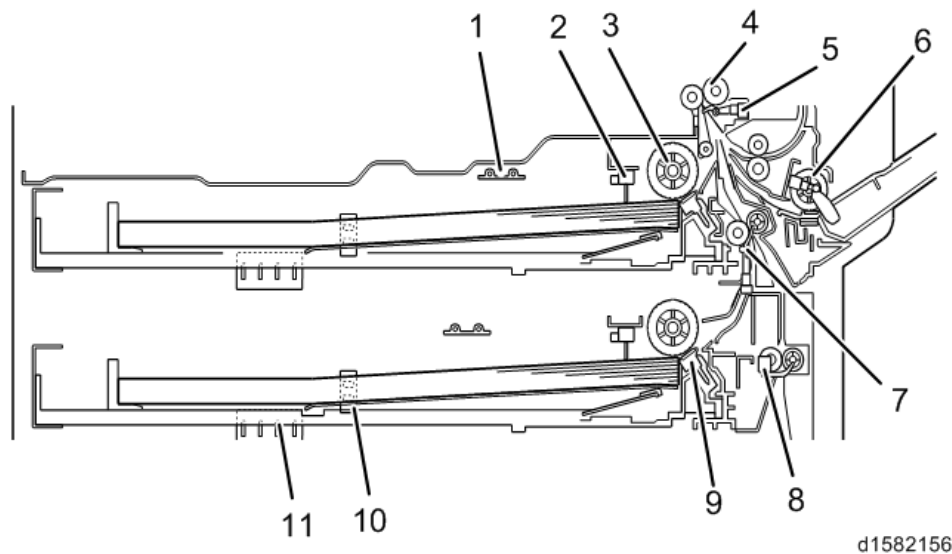
- There are one or two paper trays, each of which can hold 250 sheets.

- The paper tray feed stations use a friction pad system. To prevent paper from getting caught inside the machine when the tray is pulled out, the paper feed roller and shaft do not separate from the tray when the tray is pulled out.

- The two relay sensors are used for paper jam detection. The lower one detects jams when paper is fed up from the optional paper feed unit.

- The components of the paper feed station are as follows.

1. Tray Heater	6. By-pass Feed Roller
2. Paper End Sensor	7. Upper Relay Sensor
3. Paper Feed Roller	8. Lower Relay Sensor
4. Registration Roller	9. Friction Pad
5. Registration Sensor	10. Tray Lift Sensor
	11. Paper Size Switch

11.2 PAPER FEED DRIVE MECHANISM
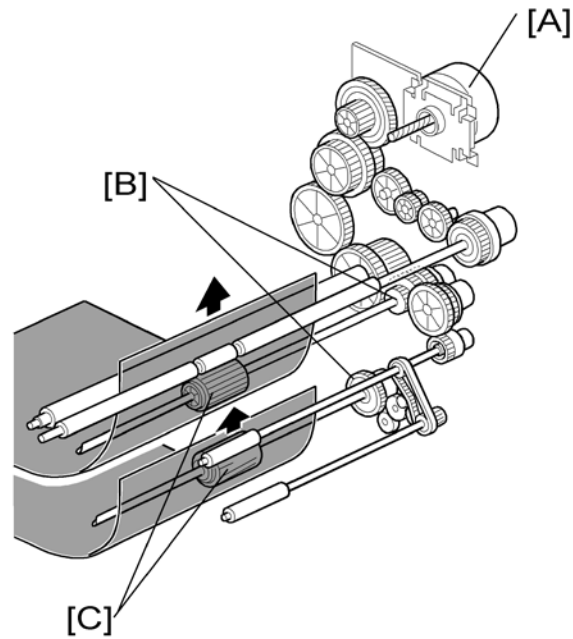
The main motor [A] drives the pick-up and feed mechanism of both the first and second paper trays. The paper feed clutches [B] transfer drive from this motor to the paper feed rollers [C].

When the paper feed clutch turns on, the feed roller starts to feed the paper. The paper feed clutch stays on until shortly after the registration sensor has been activated.

11.3 PAPER FEED AND SEPARATION MECHANISM
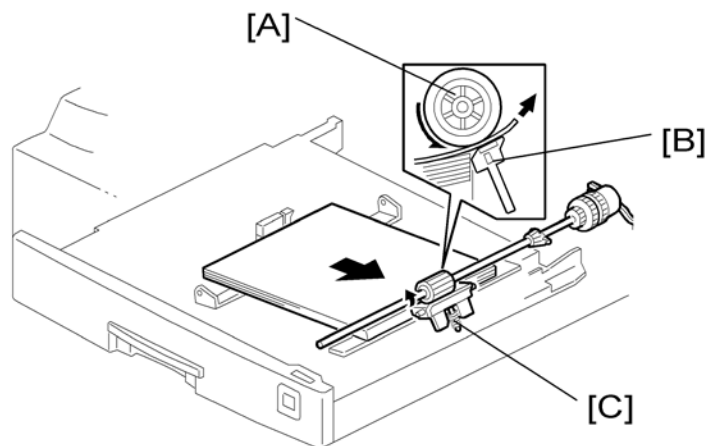
The paper feed roller [A] drives the top sheet of paper from the paper tray to the copier. The friction pad [B] allows only one sheet to feed at a time. The friction pad applies pressure to the feed roller with a spring [C].

The friction pad pressure cannot be adjusted.

11.4 PAPER LIFT MECHANISM

d1582180
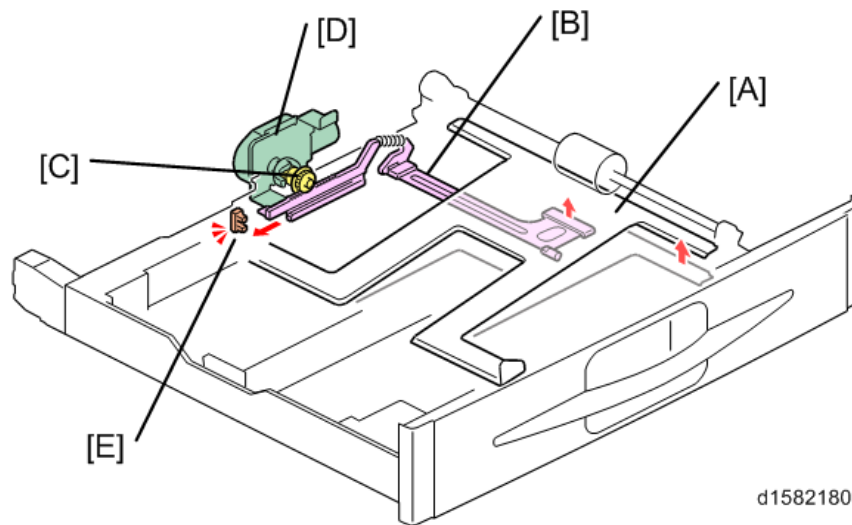
[A] Bottom plate	[D] Tray lift motor
[B] Bottom plate lift arm	[E] Bottom plate lift HP sensor
[C] Bottom plate lift gear	

The tray lift motor rotates the gear [C] and the gear makes the rack [F] move.

The movement of the rack pulls the spring and this moves the bottom plate lift arm [B].

The arm lifts the bottom plate [A].

The position of the bottom plate is detected by the bottom plate lift HP sensor [E]. This machine does not use motor control to detect the bottom plate position.

11.5 BY-PASS TRAY BOTTOM PLATE LIFT MECHANISM

d1582181
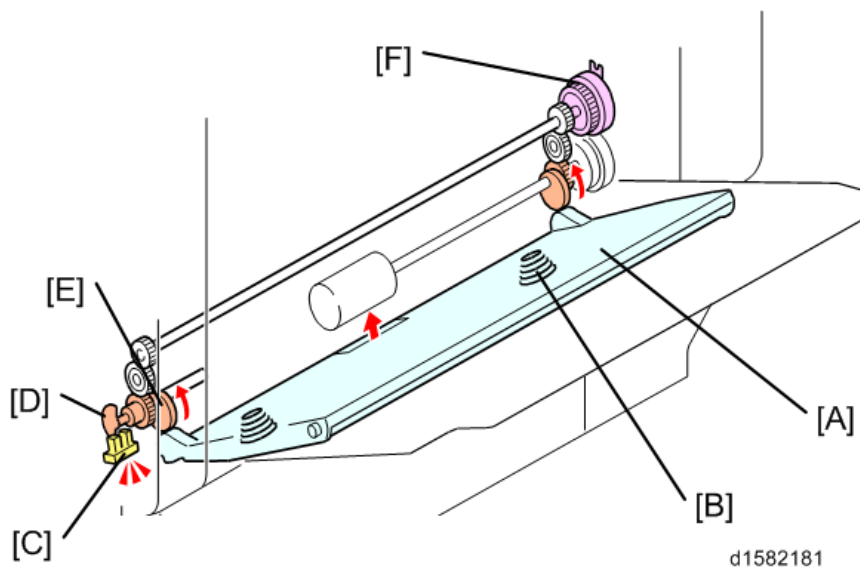
[A] By-pass tray bottom plate

[B] Pressure spring

[C] By-pass tray bottom plate lift cam HP sensor

[D] Actuator

[E] By-pass tray bottom plate lifting up cam (Front and rear)

[F] By-pass tray bottom plate lifting up cam clutch

The paper transport motor rotates the by-pass tray bottom plate lift cam clutch [F], and this moves the by-pass tray bottom plate [A] up and down.

The position of the by-pass tray bottom plate lift cams (and because of this, the by-pass tray bottom plate) is detected by the by-pass tray bottom plate lift cam HP sensor. [C].

11.6 PAPER END DETECTION
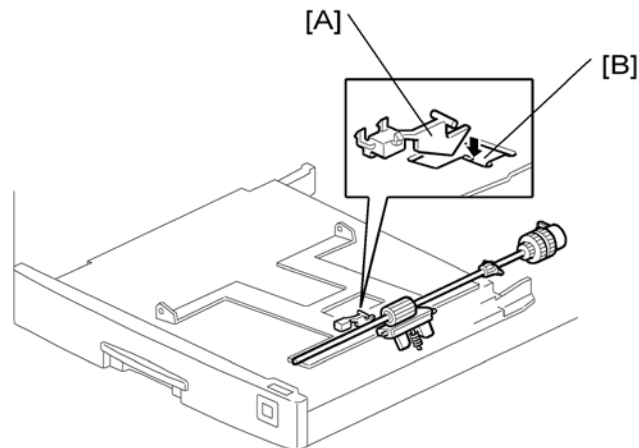
If there is any paper in the paper tray, the paper stack lifts the feeler, the paper end sensor [A] is deactivated.

When the paper tray runs out of paper, the paper end feeler drops into the cutout [B] in the tray bottom plate and the paper end sensor is activated.

When the paper tray is drawn out with no paper in the tray, the shape of the paper end feeler causes it to lift up.

11.7 PAPER SIZE DETECTION

11.7.1 PAPER TRAY

d1582182
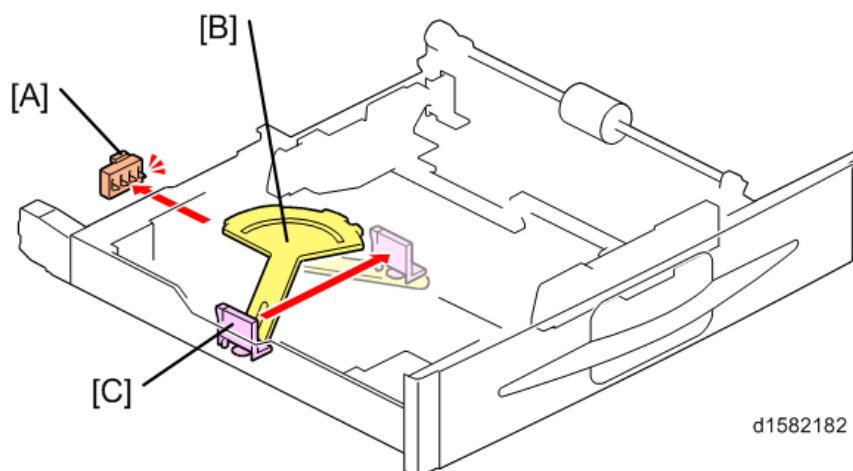
There is no size switch for tray 1. The paper size is fixed at either A4 or LT (LEF for both sizes). You can change the size setting with SP5-181-1.

For tray 2, there are four paper size switches [A] working in combination. Switch 1 (right end) is for tray set detection. The other three switches detect the paper size as shown in the table below. The actuator [B] is moved by the end plate [C].

0: Pushed, 1: Not pushed

Models		Switch Location		
North America	Europe/Asia	SW4	SW3	SW2
DLT (A3) SEF*[1]	A3 (DLT) SEF*[1]	0	0	1
LG (B4) SEF*[2]	B4 (LG) SEF*[2]	0	0	0
A4 SEF	A4 SEF	1	1	0
LT SEF	LT SEF	1	1	1
B5 SEF	B5 SEF	0	1	1
LT (A4) LEF*[3]	A4 (LT) LEF*[3]	1	0	0
Exe (B5) LEF*[4]	B5 (Exe) LEF*[4]	0	1	0
A5 LEF	A5 LEF	1	0	1

⬇ **Note**

*1: The machine detects either DLT SEF or A3 SEF, depending on the setting of SP5-181-3.

*2: The machine detects either LG SEF or B4 SEF, depending on the setting of SP5-181-4.

*3: The machine detects either LT LEF or A4 LEF, depending on the setting of SP5-181-2.

*4: The machine detects either Exe LEF or B5 LEF, depending on the setting of SP5-181-5

SP 5-181-6 to –19 does similar functions for the optional paper trays.

The machine disables paper feed from a tray if the paper size cannot be detected (if the paper size actuator is broken or no tray is installed).

For non-standard paper sizes, if they are not visible on the user tool screen for selecting paper sizes, then set SP5-112-001 (Non-Standard Paper Selection) to "1". If the user selects one of these sizes, auto paper size selection is disabled.

Paper Size Detection

11.7.2 BY-PASS TRAY
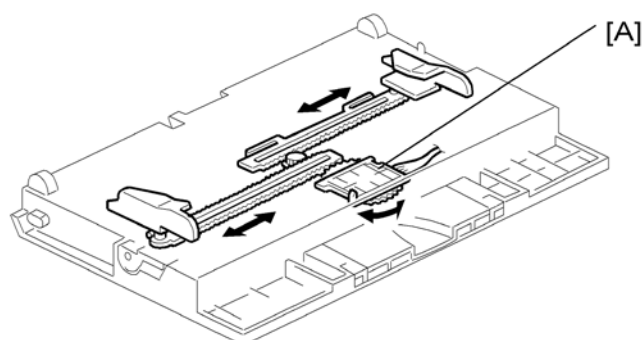
The by-pass feed paper size switch [A] monitors the paper width. The side fence is connected to the terminal plate gear. When the side fences move to match the paper width, the circular terminal plate rotates over the wiring patterns on the rectangular part of the paper size switch. The patterns for each paper width in the paper size switch are unique.

North America

CN No. (BICU)	11" x 17"	$8^1/_2$" x 14"	$5^1/_2$" x $8^1/_2$"		
CN136-1	ON/OFF	OFF	OFF	OFF	OFF
CN136-2	OFF	OFF	OFF	ON	OFF
CN136-3 (GND)	OFF	OFF	OFF	OFF	OFF
CN136-4	OFF	ON	OFF	OFF	ON
CN136-5	ON	ON	OFF	OFF	OFF

Europe/Asia

CN No. (BICU)	A3	A4 SEF	8" x 13"	A5 SEF
CN136-1	ON/OFF	OFF	OFF	OFF
CN136-2	OFF	OFF	OFF	ON/OFF
CN136-3 (GND)	OFF	OFF	OFF	OFF
CN136-4	OFF	ON	ON	OFF
CN136-5	ON	ON	OFF	OFF

11.8 SIDE FENCES
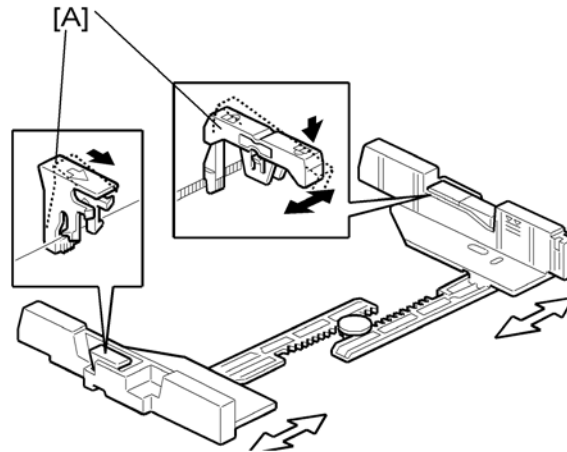
If the tray is full of paper and it is pushed in strongly, the fences may deform or bend. This may cause the paper to skew or the side-to-side registration to be incorrect. To correct this, each side fence has a stopper [A] attached to it. Each side fence can be secured with a screw, for customers who do not want to change the paper size.

11.9 PAPER REGISTRATION
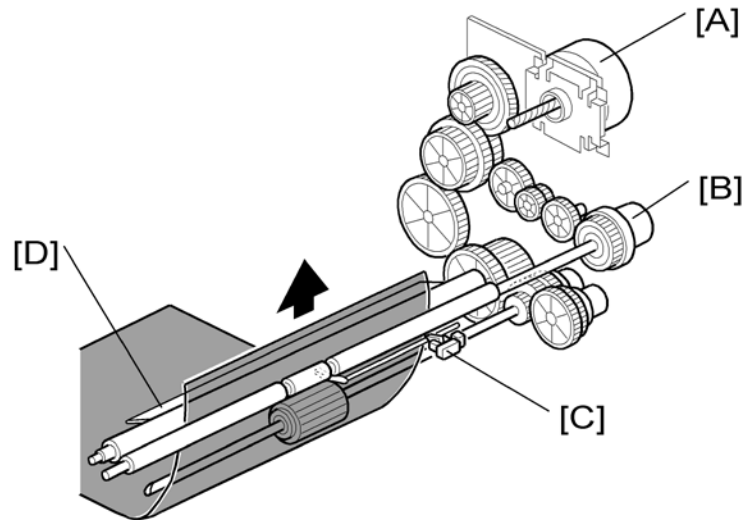
The drive from the main motor [A] is transmitted to the registration roller through the registration clutch gear [B].

The registration sensor [C] is used for correcting paper skew and for detecting paper misfeeds.

The cleaning mylar [D] contacts the registration roller. It removes paper dust from the registration roller so that this dust will not transfer into the development unit through the drum-cleaning unit.

The amount of paper buckle at the registration roller to correct skew can be adjusted with SP1-003 (Paper Buckle).

If jams frequently occur after registration, SP1-903 (Feed Cl Re-energize) can be used to activate the relay clutch so that the relay roller assists the registration roller in feeding the paper along. When feeding from the by-pass tray, the by-pass feed clutch is activated, turning the by-pass feed roller. This feature may be needed when feeding thick paper, and cannot be used for the first paper feed tray.

12. IMAGE TRANSFER AND PAPER SEPARATION

12.1 OVERVIEW
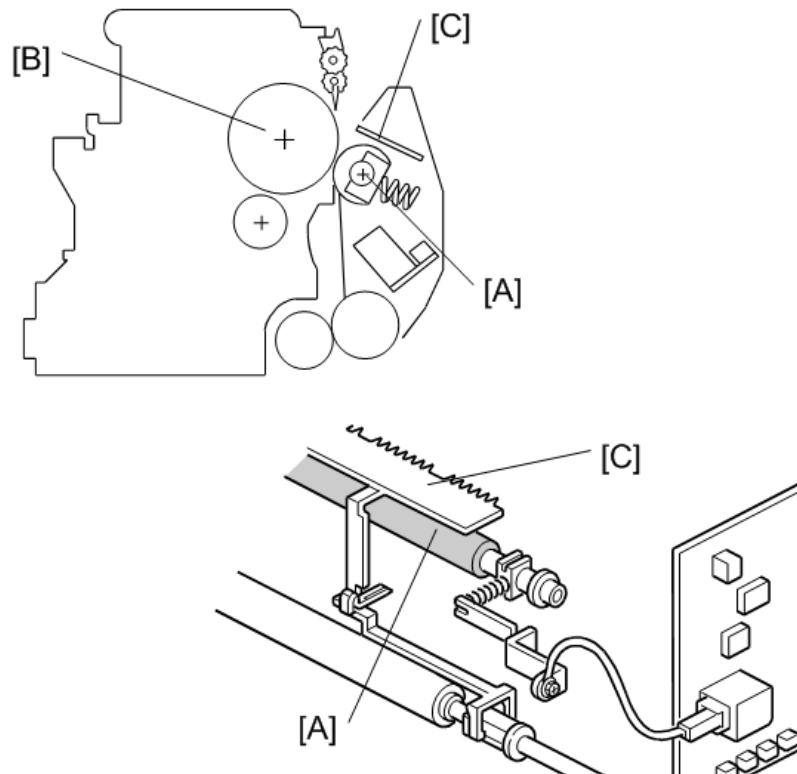
d1582149

The transfer roller [A] touches the surface of the drum [B]. The high voltage supply board supplies a positive current to the transfer roller, which attracts the toner from the drum onto the paper. The current depends on the paper width, paper type, and paper feed tray.

The curvature of the drum and the discharge plate [C] help the paper to separate from the drum. The discharge plate is grounded.
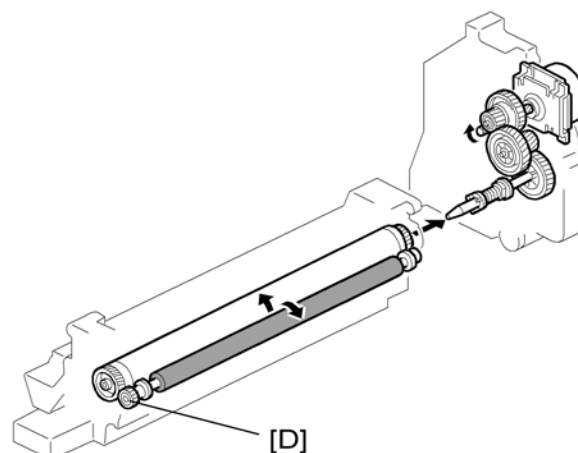
Drive from the drum through a gear [D] turns the transfer roller.

12.2 IMAGE TRANSFER CURRENT TIMING

There are two transfer current levels: low and high. The image transfer procedure is as follows:

6. When the CPU receives the image writing start signal, the CPU instructs the high voltage supply board to supply +10 microamperes (low transfer current level) to the roller. This prevents any positively charged toner on the drum surface from transferring to the transfer roller.

7. At a certain time after the low transfer current has been supplied to the roller, high transfer current is applied to the roller to transfer the toner to the paper (see the table below).

8. After the trailing edge of the paper has passed through the roller, transfer current turns off. In multiple copy mode, the transfer current shifts again to the low transfer current.

The high transfer current levels (default) are as shown in the following table. With SP 2301, the high transfer current level used for the paper feed trays, duplex tray, by-pass tray, and cleaning an be adjusted.

	By-pass Tray (Thick/OHP)	Paper Tray/ By-pass Tray (Normal)	By-pass Tray (Special/ Envelope)	Duplex (1st Side)	Duplex (2nd Side)
A3/A4 LEF	11 μA	12 μA	13 μA	12 μA	17 μA
DLT	12 μA	18 μA	15 μA	18 μA	17 μA
B4 SEF	12 μA	12 μA	15 μA	12 μA	18 μA
LT SEF	17 μA	17 μA	15 μA	17 μA	24 μA
A4 SEF	21 μA	15 μA	28 μA	15 μA	24 μA
B5 SEF	22 μA	19 μA	28 μA	19 μA	22 μA
A5 SEF	22 μA	19 μA	28 μA	19 μA	28 μA
HLT SEF	22 μA	19 μA	28 μA	—	—
B6 SEF	22 μA	19 μA	28 μA	—	—
A6 SEF	22 μA	19 μA	34 μA	—	—
Post card/ Envelope	22 μA	19 μA	34 μA	—	—

Be careful when increasing the transfer current. This may cause a ghosting effect, in which part of the image at the top of the page is repeated lower down the page at a lower density. In the worst case, it may also damage the OPC drum.

12.3 TRANSFER ROLLER CLEANING

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

During transfer roller cleaning, the high voltage supply unit supplies a negative cleaning voltage (about –1 kV) to the transfer roller. Any negatively charged toner on the transfer roller is then transferred back to the drum. Then a positive cleaning current (+10 microamperes) is applied to the transfer roller to push back to the drum any positively charged toner on the transfer roller.

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

- Before starting the printing job (only if enabled with SP 2996; note that the default setting is off).

- Just after the power is switched on.

- After a copy jam has been cleared.

- After 10 or more sheets of paper have been copied and the copy job has finished.

Also, the transfer roller cleaning current can be adjusted using SP 2301 4.

12.4 PAPER SEPARATION MECHANISM

d1582150
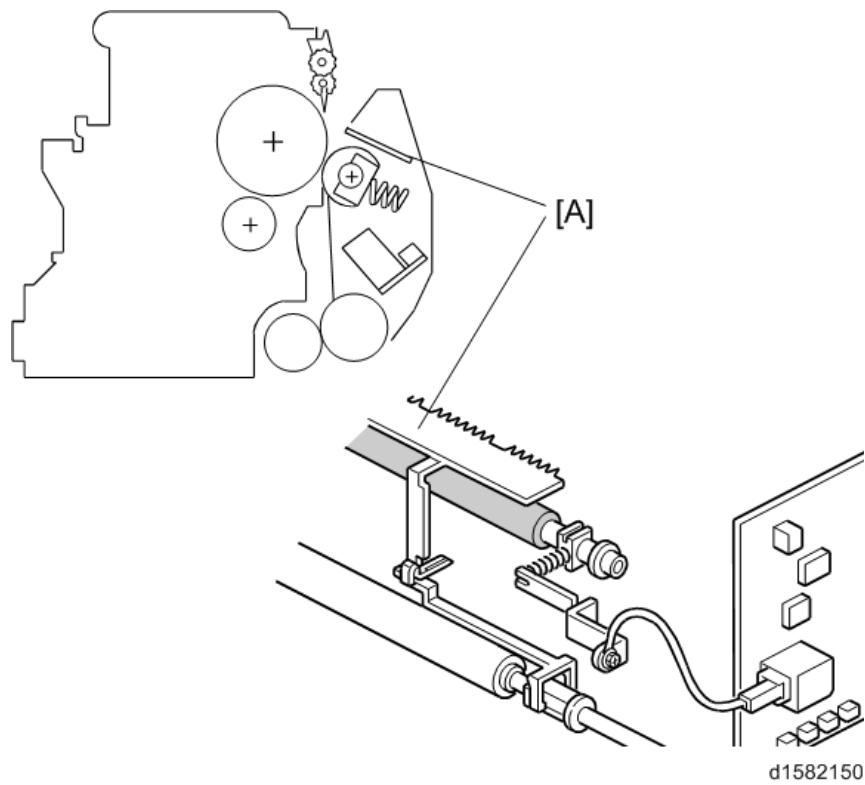
The discharge plate [A] and the drum curvature of the drum help the paper to separate away from the drum. The discharge plate is grounded.

13. IMAGE FUSING AND PAPER EXIT

13.1 OVERVIEW

d1582183
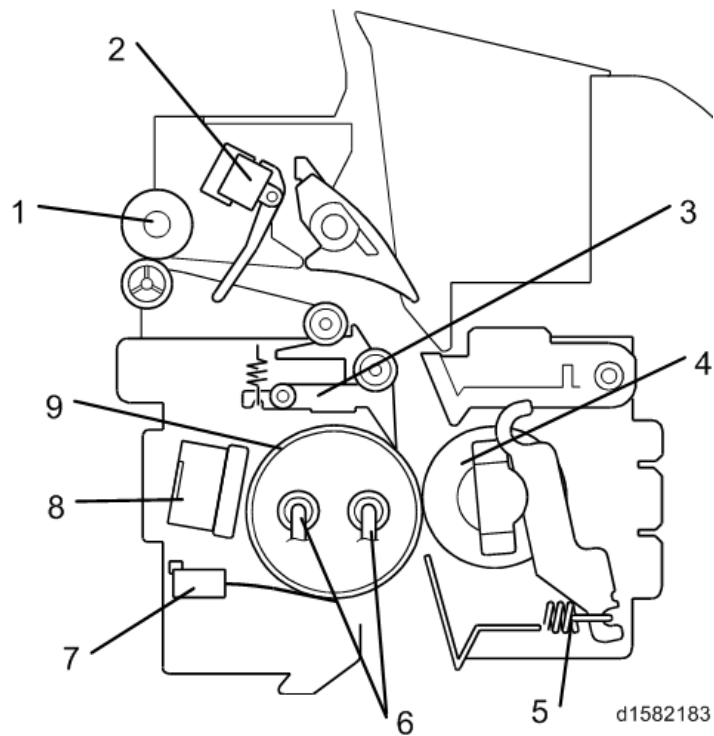
1. Paper exit roller	6. Fusing lamps
2. Exit sensor	7. Thermistor
3. Hot roller strippers	8. Thermostat
4. Pressure roller	9. Hot roller
5. Pressure spring	

13.2 FUSING UNIT DRIVE AND RELEASE MECHANISM
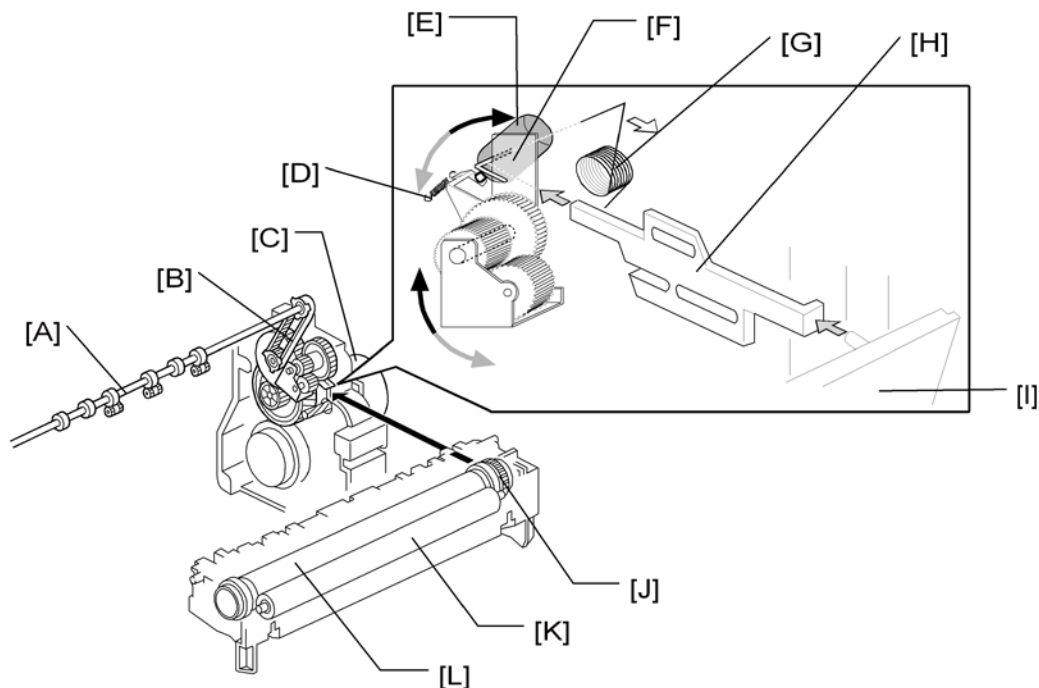
13.2.1 FUSING UNIT DRIVE

The main motor [C] drives the fusing unit through a gear train, and drives the paper exit rollers [A] through the timing belt [B].

13.2.2 DRIVE RELEASE MECHANISM

When the right door [I] is open, the spring [G] pushes the top end of the gear holder [F] to the right. The drive gear is released from the fusing-unit drive gear [J]. When you close the right door, the mechanical link [H] pushes the spring [G]. The gear holder turns counterclockwise by the force of another spring [D], and engages with the fusing-unit drive gear.

13.2.3 CONTACT/RELEASE CONTROL

The drive power is not transmitted to the fusing unit during warming up when the fusing temperature (at the start) is 18°C or higher. The drive power is transmitted when the fusing temperature is less than 18°C. This contact/release control is based on the following conditions.

Fusing Temp.	Contact/Release
18°C or higher	Release
Less than 18°C	Contact

The hot roller [L] takes a shorter time to become hot enough if it is not turning during warming up. When, however, the fusing temperature (at the start) is low, the temperature of the hot-roller surface may become uneven.

You can disable this control (SP1103 1).

13.2.4 DRIVE RELEASE SOLENOID

Solenoid	Drive gear
Off	Engaged
On	Released

The fusing drive release solenoid [E] is on the rear end of the gear holder. When the solenoid is off, the spring [D] pulls the gear holder, and the drive gear engages with the fusing unit drive gear. When the solenoid is on, it pulls the top end of the gear holder to the right, and the gear holder turns clockwise. As a result, the drive gear is released from the fusing unit drive gear.

The release solenoid comes on when you turn on the main switch if the fusing temperature is 18°C or higher. The solenoid releases the drive gear from the fusing unit drive gear. The fusing lamps heat the hot roller [L] more effectively since the heat is not conducted to the pressure roller [K]. When the hot roller becomes hot enough, the release solenoid turns off, letting the drive gear engage with the fusing unit drive gear.

13.3 FUSING ENTRANCE GUIDE SHIFT
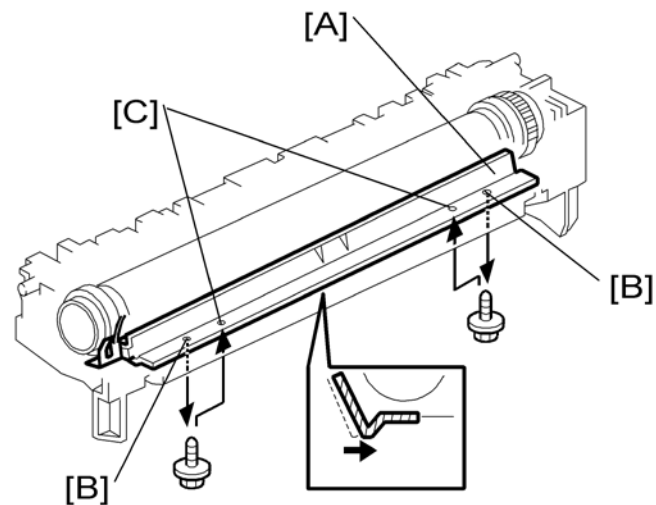
The entrance guide [A] is adjustable for paper thickness to prevent creasing. The outer screw holes [B] on each side are used as the default setting.

If creasing occurs frequently in the fusing unit, adjust the entrance guide to the right, by securing it with the inner holes [C]. This allows more direct access to the gap between the hot roller and the pressure roller.

13.4 PRESSURE ROLLER
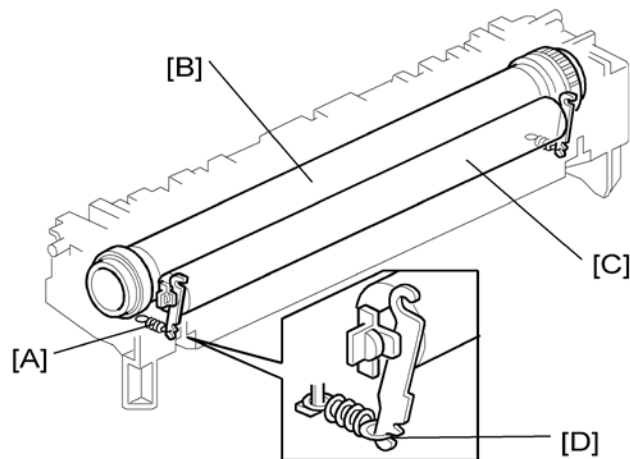
The pressure springs [A] constantly apply pressure between the hot roller [B] and the pressure roller [C]. Applied pressure can be changed by adjusting the position of the pressure springs. The spring is positioned at the end [D] as the default setting.

13.5 FUSING TEMPERATURE CONTROL

13.5.1 OVERVIEW

d1582184
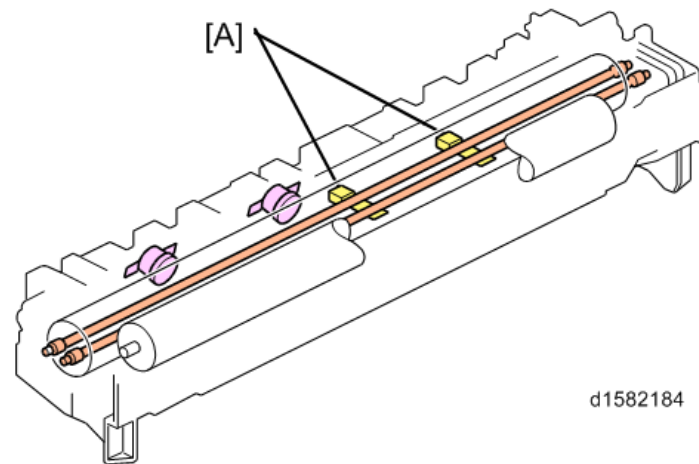
There are two fusing lamps (not identical), two thermistors, and four thermostats.

The fusing temperature is controlled using the thermistors [A].

The CPU checks the output from the fusing thermistor once every 1.5 seconds. The CPU decides how long the lamps must be switched on during the next 1.5 seconds by comparing the following temperatures:

- The center thermistor temperature and the target center temperature

- The end thermistor temperature and the target end temperature

The fusing lamp works to maintain a target fusing temperature of 160°C during copying.

13.5.2 TEMPERATURE CONTROL

According to the operation mode, the fusing temperature is controlled. The diagram illustrates the transition of fusing temperature. After you turn the main switch on, the fusing temperature rises from the room temperature (t0) to one of the specified temperatures. You can adjust some of the temperatures.
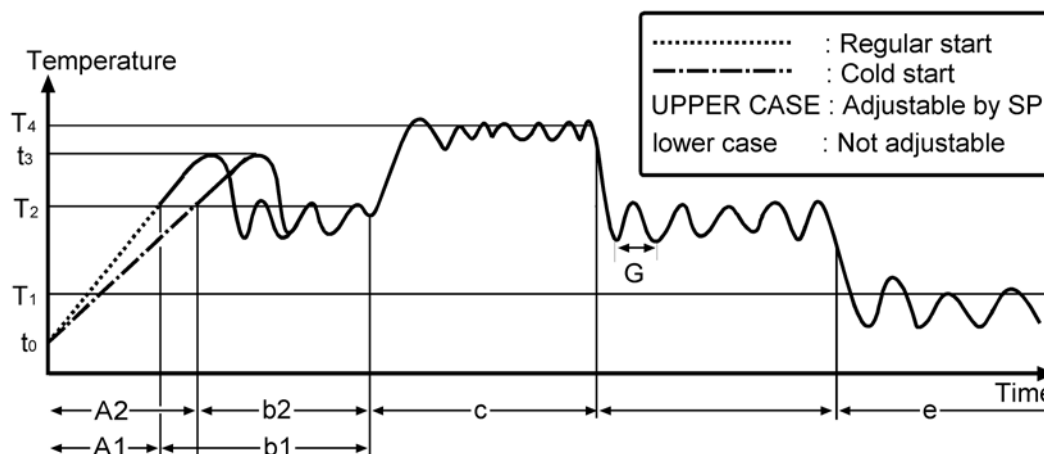
A1: Regular Start Mode/A2: Cold Start Mode (SP1-105-001, 002)

Turning the fusing lamp on and off may affect the voltage of the power source in the room, causing the fluorescent lights in the room to flicker. To lighten this problem, you can reduce the checking repetition to 20 times.

When machine initialization ends, the fusing temperature is set to one of the following temperatures:

- The Standby Temperature (T2: SP 1105 3-4) when there is no print job.

- The First Print Temperature when the copier has received a print request during machine initialization.

You cannot directly adjust the First Print Temperature. This temperature is 10°C higher (up to 185°C) than the Copying Temperature (☛ Copy Adjustments Printing/Scanning).

C: Copying Mode

When the copier is making copies, the fusing temperature is set to one of the following temperatures:

- The Warm Up Temperature (SP 1105 1-2) to output the first print after the Low Power Mode (☛ Copy Adjustments Printing/Scanning)

- The Copying Temperature (T4: SP 1105 5-6) to output the second print (and after the second)

You can raise the Warm Up Temperature to make better the fusing quality of the first print. While the copier is adjusting the fusing temperature to the Warm Up Temperature, the message "Copy starts after warm up" is displayed.

c : Thick Paper Mode

When the machine is making copies on thick paper, the fusing temperature is set to the Thick Paper Temperature (SP 1105 9-10). When thick paper reaches the registration sensor, the copier checks the fusing temperature, and executes one of the following processing:

- Stops feeding the thick paper (and keeps it at the registration sensor) and waits for the fusing temperature to reach the predefined temperature–the temperature 5°C lower than the Thick Paper Temperature. (The fusing temperature keeps rising until it reaches the Thick Paper Temperature while the thick paper travels from the registration sensor to the fusing unit.)

- Continues feeding paper and executes the print job if the fusing temperature is high enough.

b1/b2: Standby Mode

When the copier is not making copies, the fusing temperature is set to the Standby Temperature (T2: SP 1105 3-4). You can adjust this temperature. However, if you have raised this temperature, the BICU may be unable to generate a SC code in the event of fusing lamp error.

While in the Standby Mode, the copier checks the fusing temperature every 1.5 seconds (G: SP 1108 1). Turning on and off the fusing lamp may affect the voltage of the power source (in the room), causing the fluorescent lights (in the room) to flicker. To lighten such trouble, you can adjust the control period. However, if you elongate this period (to two seconds or longer), the BICU may be unable to generate a SC code in the event of a fusing lamp error.

e: Low Power Mode

When the Energy Saver Timer ([⬥/▥] > System Settings > Timer Settings > Energy Saver Timer) expires, the fusing temperature is set to the Low Power Temperature (T1: SP 1105 7-8).

13.6 OVERHEAT PROTECTION

This machine protects its hardware from overheat by three features. Normally, the first feature can fully protect the hardware. The second feature works as the fail-safe feature for the first one. The third feature works as the fail-safe feature for the second one.

First Feature:

If the fusing temperature reaches 230°C (or higher) and stays so for one second, the controller turns the fusing lamp off. In a case like this, SC543 or SC553 shows.

Second Feature:

If the fusing feature reaches 250°C, the controller cuts off the 24V line. (The fusing lamps are on the 24V line.)

Third Feature:

Two thermostats are attached on each line of the two fusing lamps. (four thermostats in total). One of the two thermostats cuts the power supply to the fusing lamp at 179°C, and the other cuts the power supply at 180°C. (Note that the thermostat temperature is somewhat lower than the fusing temperature.)

14. DUPLEX UNIT

14.1 OVERALL
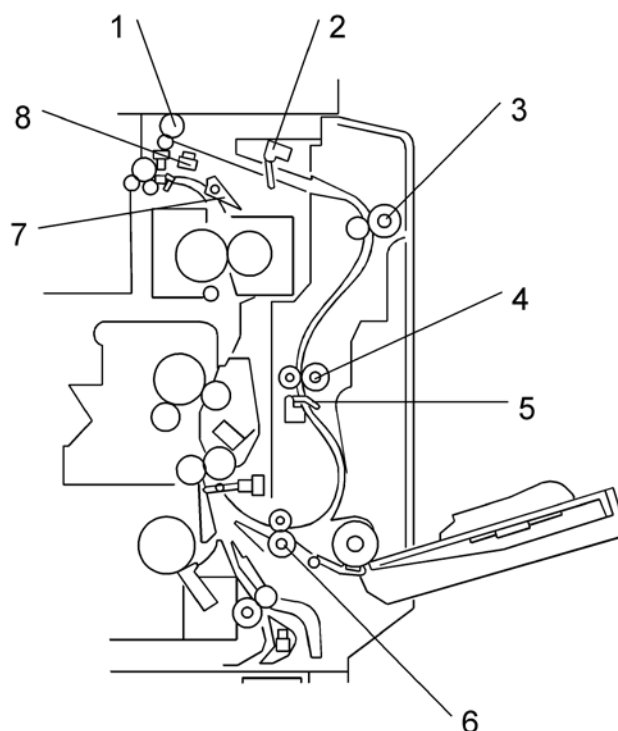
The printed page from the fusing unit goes straight through to the exit tray, or upward to the inverter section, depending on the position of the junction gate.

If the user selects duplex mode, the page is directed to the inverter tray, then reversed through the duplex unit, and back into the machine for printing the second side.

1. Duplex Inverter Roller

2. Duplex Entrance Sensor

3. Upper Transport Roller

4. Middle Transport Roller

5. Duplex Exit Sensor

6. Lower Transport Roller

7. Junction Gate

8. Duplex Inverter Sensor

14.2 DRIVE MECHANISM
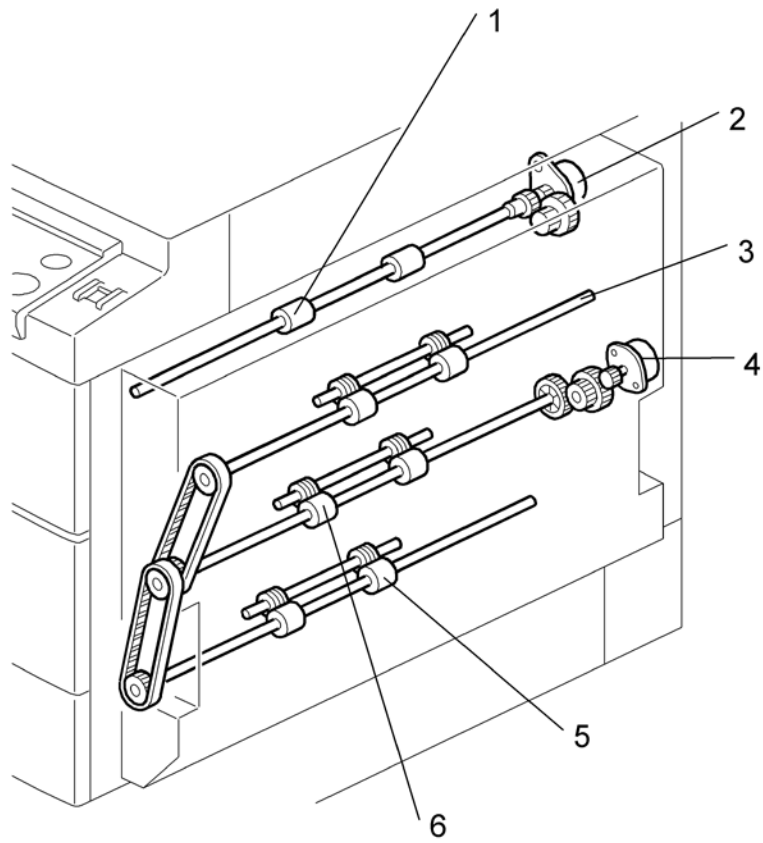
1. Duplex Inverter Roller
2. Duplex Inverter Motor
3. Upper Transport Roller

4. Duplex Transport Motor
5. Lower Transport Roller
6. Middle Transport Roller

14.3 BASIC OPERATION

To increase the productivity of the duplex unit, copies are printed as follows.

- Larger than A4 Short-edge/LT Short-edge -

The paper feed path can hold only one sheet of copy paper at a time.

Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).
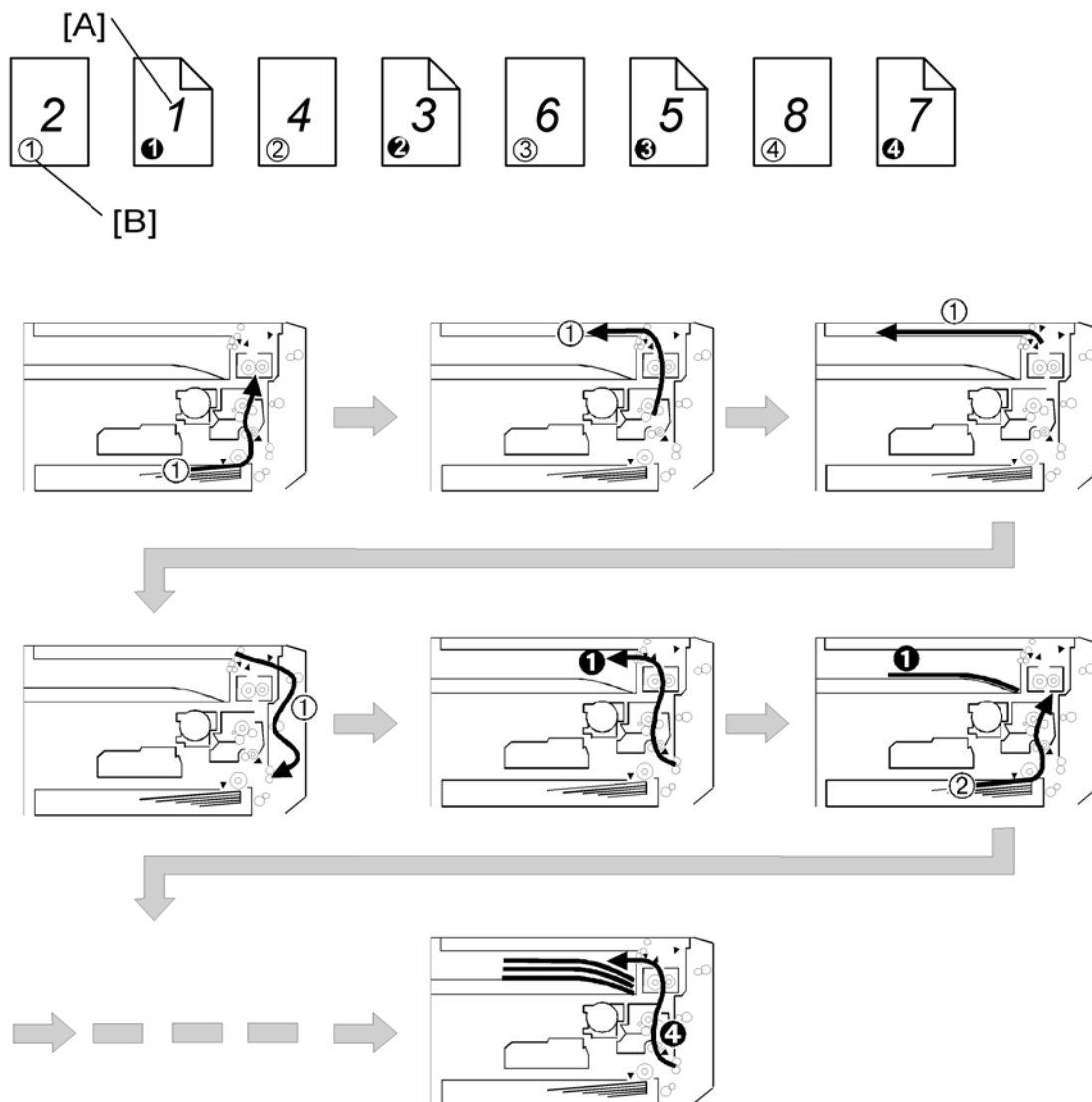
Basic operation

- Up to A4 Short-edge/LT Short-edge -

The paper feed path can hold two sheets of copy paper.

Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).
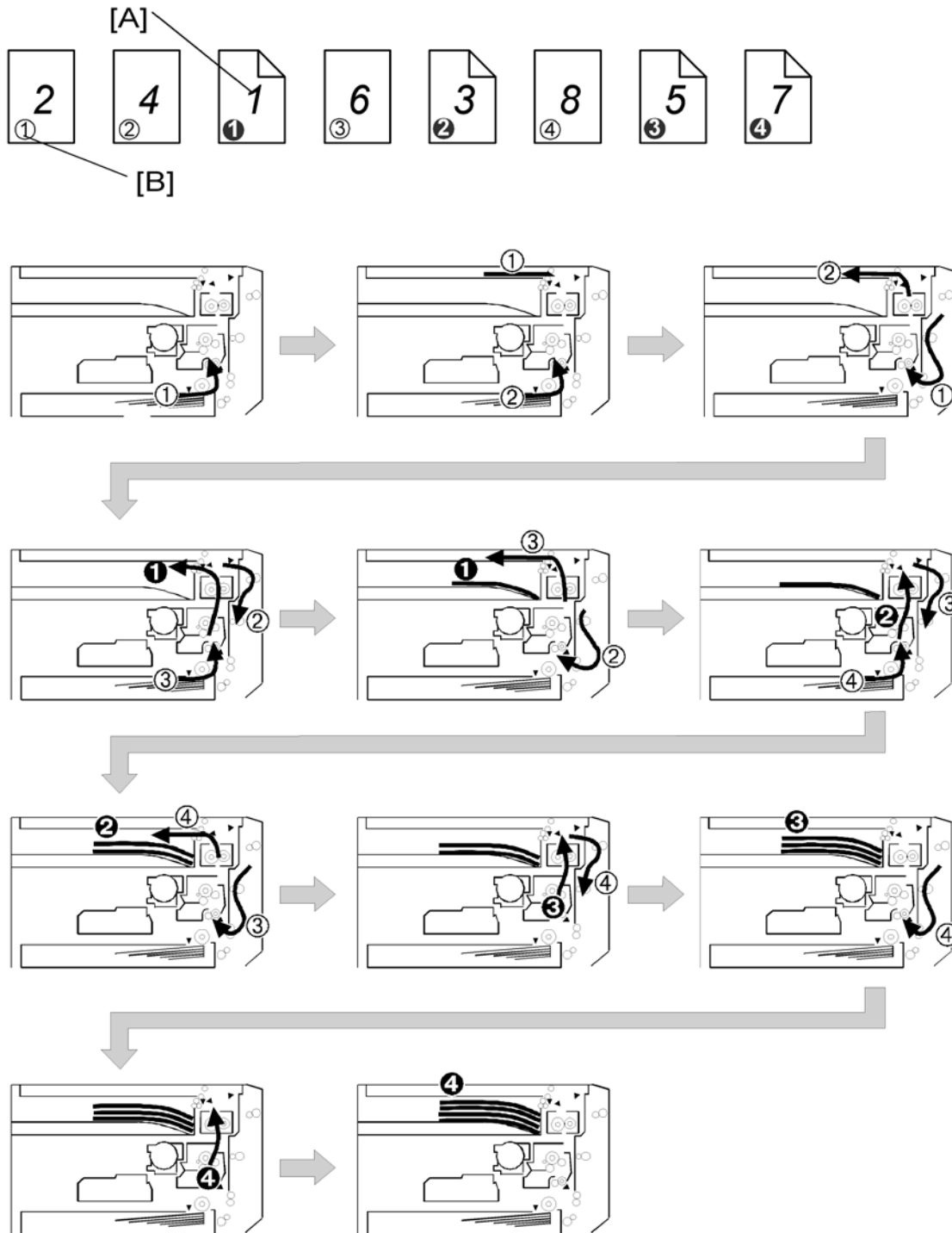
14.4 FEED IN AND EXIT MECHANISM
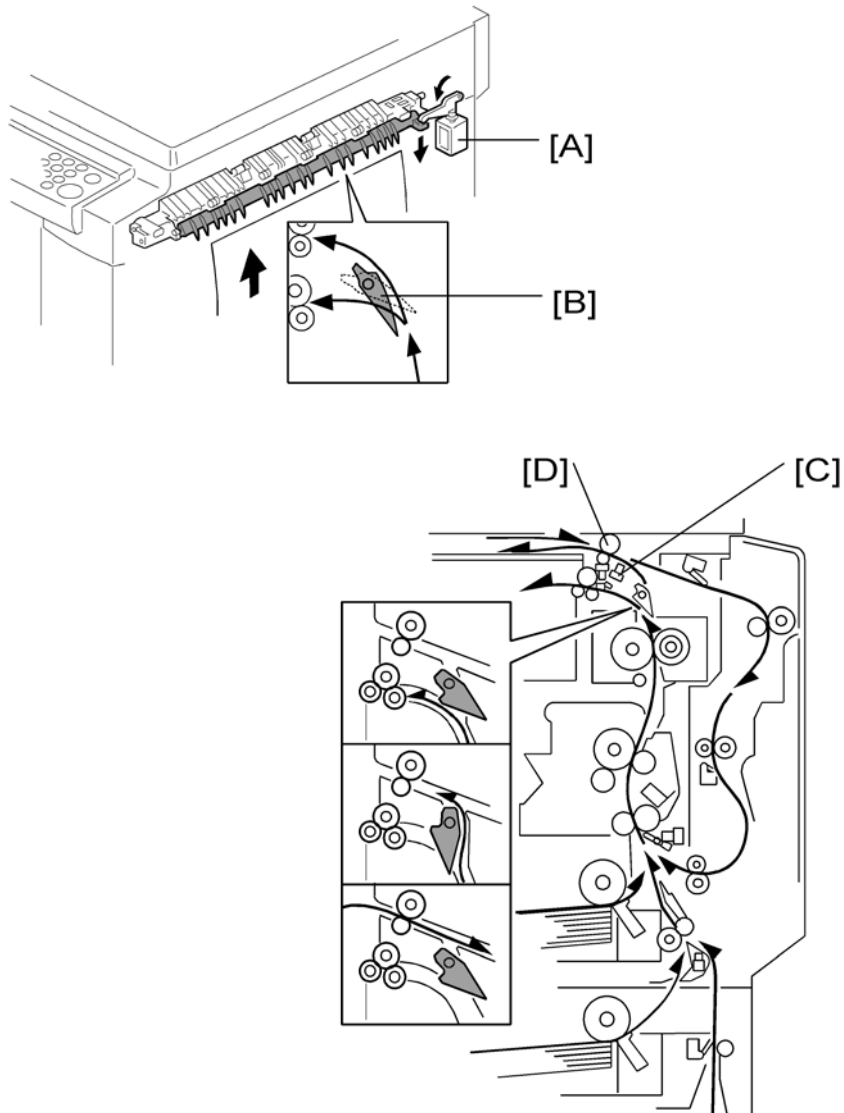
During duplex copying, the inverter gate solenoid [A] switches on and the junction gate [B] switches over to direct the paper to the inverter. When the paper trailing edge reaches the duplex inverter sensor [C], the inverter roller [D] reverses its rotation direction and the paper goes to the duplex unit. The paper is then sent to the mainframe registration rollers to print the reverse side.

If there are two or more copies being made with A4/8$^1/_2$" x 11" SEF (or smaller), the next sheet waits at the registration sensor for the current sheet to exit the inverter.

15. ENERGY SAVER MODES OF BASIC MACHINES

This section illustrates the energy saver modes of the basic machine (the machine without the optional controller). For the energy saver modes of the GDI machine (the machine with the optional controller), see the section of "Energy Saver Modes of GDI Machines".

15.1 OVERVIEW
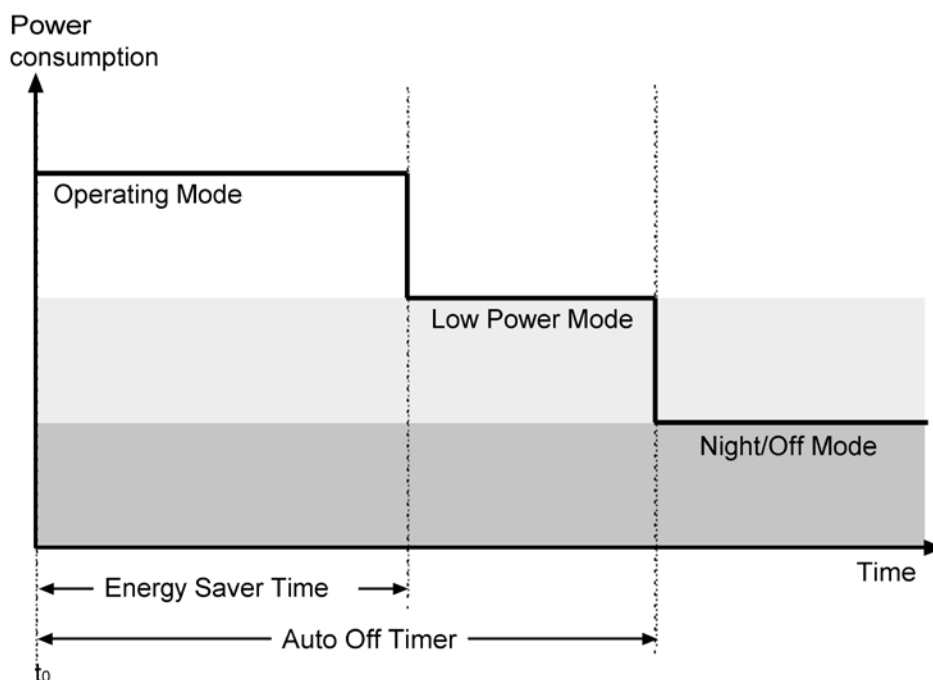
The machine has two energy-saver modes: the Low Power Mode and the Night/Off Mode. The table lists the status of several components. For the fusing temperature, see the section of "Fusing Temperature Control".

	Operation panel	Engine	Exhaust fan
Operating Mode[*]	On	On	On
Low Power Mode	Off	On	Off
Night/Off Mode	Off	Off[**]	Off

[*] The "Operating Mode" here refers to all the modes (and status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends on job status and environmental conditions.

[**] The SRAM is alive and backs up the engine controller.

15.2 AOF

When AOF is off, the engine controller is unable to start the Night/Off Mode. The user should keep AOF on (⬙/🔢 > System Settings > Key Operator Tools > AOF).

15.3 TIMERS

The engine controller references the Energy Saver Timer to start the Low Power Mode, and references the Auto Off Timer to start the Night/Off Mode. The user can set these timers (⬙/🔢 > System Settings > Timer Settings).

The Energy Saver Timer and the Auto Off Timer start at the same time (t_0) when the machine ends all jobs or when the user ends all manual operations. Note that the Auto Off Timer does not wait for the Energy Saver Timer. Therefore, if the user specifies a smaller value in the Energy Saver Timer, the Auto Off Timer expires earlier than the Energy Saver Timer. In a case like this, the Low Power Mode is not activated. Instead, the engine controller starts the Night/Off Mode when the Auto Off Timer expires.

Specified value	Low Power Mode	Night/Off Mode
Energy Saver Timer > Auto Off Timer	Can start	Can start
Energy Saver Timer = Auto Off Timer	Cannot start	Can start
Energy Saver Timer < Auto Off Timer	Cannot start	Can start

15.4 RECOVERY

Any of the following operations brings the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover (or document feeder) is opened.

16. ENERGY SAVER MODES OF GDI MACHINES

This section illustrates the energy saver modes of the GDI machine (the machine with the optional controller). For the energy saver modes of the basic machine (the machine without the optional controller), see the section of "Energy Saver Modes of Basic Machines".

16.1 OVERVIEW
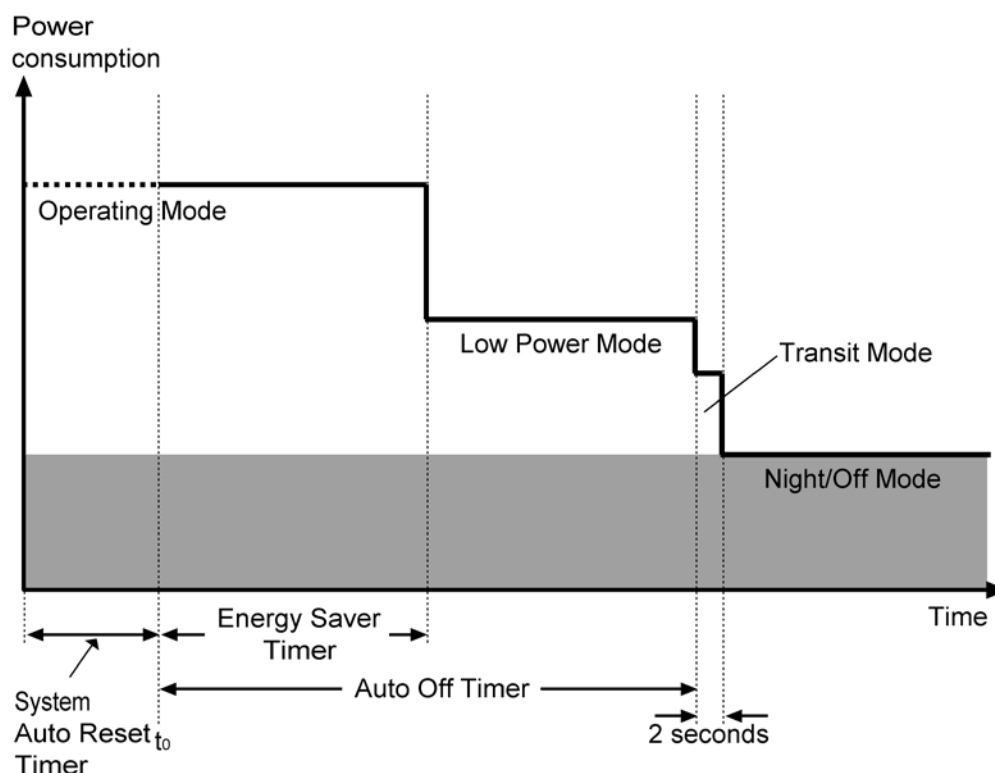
The machine has three energy-saver modes: the Low Power Mode, the Transit Mode, and the Night/Off Mode. The Transit Mode continues for about two seconds (probably, the user does not recognize this mode when it occurs). The table lists the status of several components. For the fusing temperature, see the section of "Fusing Temperature Control".

	Operation panel	Engine	Exhaust fan
Operating Mode*	On	On	On
Low Power Mode	Off	On	Off
Transit Mode	Off	On	Off
Night/Off Mode	Off	Off**	Off

* The "Operating Mode" here refers to all the modes (or status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends on job status and environmental conditions.

** The SRAM is alive and backs up the engine controller.

16.2 AOF

See "AOF" in the section of "Energy Saver Modes of Basic Machines".

16.3 TIMERS

The Energy Saver Timer and Auto Off Timer start at the same time (t0) when the machine ends all jobs, when the user ends all manual operations, or when the controller starts the default application program (the program specified by the user [◈/⊞ > System Settings > General Features > Function Priority]). The default application program starts when the System Auto Reset Timer expires (◈/⊞ > System Settings > Timer Settings > System Auto Reset Timer).

For more information, see "Timers" in the section of "Energy Saver Modes of Basic Machines".

16.4 RECOVERY

Any of the following operations brings the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover (or document feeder) is opened.
- The controller receives a job over the network or the telephone line.
- An SC code is generated.

17. OVERVIEW

GWFCU3.8

w_d7022001
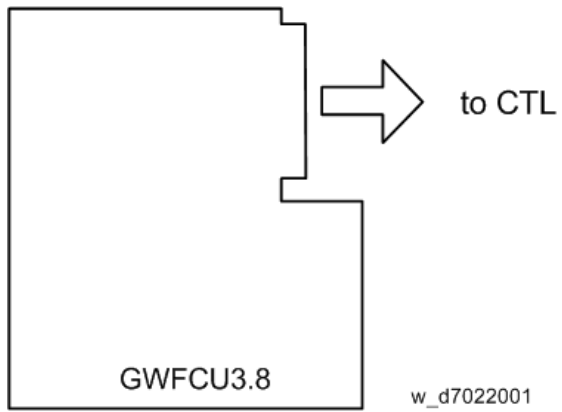
The FCU controls all the fax communications and fax features, in cooperation with the controller board.

18. BOARDS

18.1 FCU

w_d7022002
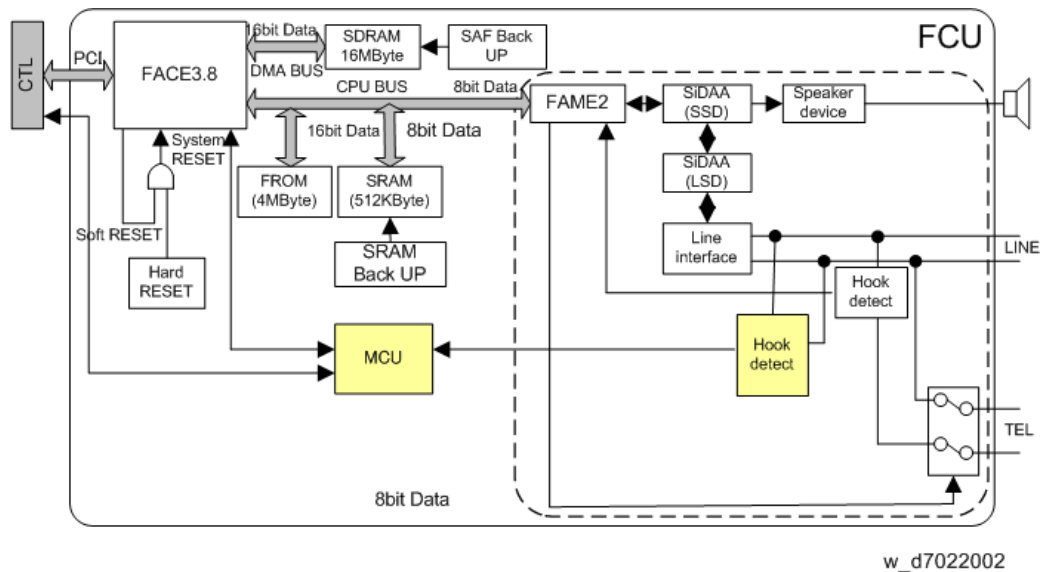
The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, and all the fax options.

FACE3.8 (Fax Application Control Engine)

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control

Modem (FAME2)

- V.34, V33, V17, V.29, V.27ter, V.21, and V.8

DRAM

- The 16 MB of DRAM is shared as follows.
  - SAF memory: 4MB
  - Working memory: 4MB
  - Page memory: 8MB
- The SAF memory is backed up by a rechargeable battery.

ROM

- 4MB flash ROMs for system software storage

SRAM

- The 512 KB SRAM for system and user parameter storage is backed up by a lithium battery.

FCU

Memory Back-up

- A rechargeable battery backs up the SAF memory (DRAM) for 12 hours.
- A lithium battery backs up the system parameters and programmed items in the SRAM, in case the base copier's main switch is turned off.

Switches

Item	Description
SW1	Switches the SRAM backup battery on/off.

19. SERVICE RAM ADDRESSES

NOTE:

Do not change the settings which are marked as "Not used" or "Read only."

680001 to 680004(H) - ROM version (Read only)

> 680001(H) - Revision number (BCD)
>
> 680002(H) - Year (BCD)
>
> 680003(H) - Month (BCD)
>
> 680004(H) - Day (BCD)

680006 to 680015(H) - Machine's serial number (16 digits - ASCII)

680018(H) - Total program checksum (low)

680019(H) - Total program checksum (high)

680020 to 68003F(H) - System bit switches

680050 to 68005F(H) - Printer bit switches

680060 to 68007F(H) - Communication bit switches

680080 to 68008F(H) - G3 bit switches

680090 to 68009F(H) - G3-2 bit switches: Not used

6800A0 to 6800AF(H) - G3-3 bit switches: Not used

6800D0(H) - User parameter switch 00 (SWUER_00) : Not used

6800D1(H) - User parameter switch 01 (SWUSR_01) : Not used

6800D2(H) - User parameter switch 02 (SWUSR_02)

> Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
>
> Bit 1: Center mark printing on received copies
>
> (This switch is not printed on the user parameter list.)
>
> 0: Disabled, 1: Enabled
>
> Bit 2: Reception time printing
>
> (This switch is not printed on the user parameter list.)

FCU

0: Disabled, 1: Enabled

Bit 3: TSI print on received messages 0: Disabled, 1: Enabled

Bit 4: Checkered mark printing

(This switch is not printed on the user parameter list.)

0: Disabled, 1: Enabled

Bit 5: Not used

Bit 6: Not used

Bit 7: Not used

6800D3(H) - User parameter switch 03 (SWUSR_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: Not used

Bit 7: Journal 0: Off, 1: On

6800D4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)

Bit 0: Not used

Bit 1: Automatic communication failure report and transfer result report output 0: Off, 1: On

Bits 2 to 3: Not used

Bit 4: Indicates the parties 0: Not indicated, 1: Indicated

Bit 5: Include sender's name on reports 0: Off, 1: On

Bit 6: Not used

Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

6800D5(H) - User parameter switch 05 (SWUSR_05)

Bit 0: Substitute reception when the base copier is in an SC condition

0: Enabled, 1: Disabled

Bits 1 and 2: Condition for substitute rx when the machine cannot print messages (Paper end, toner end, jam, and during night mode)

Bit 2: 0, Bit 1: 0 = The machine receives all the fax messages.

Bit 2: 0, Bit 1: 1 = The machine receives the fax messages with RTI or CSI.

Bit 2: 1, Bit 1: 0 = The machine receives the fax messages with the same ID code.

Bit 2: 1, Bit 1: 1 = The machine does not receive anything.

Bit 3: Not used

Bit 4: Not used

Bit 5: Just size printing 0: Off, 1: On

Bit 6: Not used

Bit 7: Add paper display when a cassette is empty 0: Off, 1: On

6800D6(H) - User parameter switch 06 (SWUSR_06): Not used

6800D7(H) - User parameter switch 07 (SWUSR_07)

Bit 0 Ringing 0: Off, 1: On

Bit1: Automatic answering message 0: Off, 1: On

Bit 2: Parallel memory transmission 0: Off, 1: On

Bits 3 and 4: Not used

Bit 5: Remote control 0: Off, 1: On

Bits 6 and 7: Not used

FCU

6800D8(H) - User parameter switch 08 (SWUSR_08)

Bits 0 and 1: Not used.

Bit 2: Authorized reception

0: Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted.

1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.

Bits 3 to 7: Not used.

6800D9(H) - User parameter switch 09 (SWUSR_09): Not used

6800DA(H) - User parameter switch 10 (SWUSR_0A)

Bits 0 to 2: Not used

Bit 3: Page reduction 0: Off, 1: On

Bits 4 and 5: Not used

Bit 6: Use both e-mail notification and printed reports to confirm the transmission results 0: Off, 1: On

Bit 7: Not used

6800DB(H) - User parameter switch 11 (SWUSR_0B)

Bits 0 and 1: Not used

Bit 2: White original detection 0: Off, 1: On (alarm and alert message on the LCD)

Bit 3: Receive rejection for 1300 Hz transmission 0: Off (receive), 1: On (not receive)

Bit 5: Not used

Bit 6: Printout of messages received while acting as a forwarding station 0: Off, 1: On

Bit 7: Not used

6800DC(H) - User parameter switch 12 (SWUSR_0C): Not used

6800DD(H) - User parameter switch 13 (SWUSR_0D): Not used

6800DE(H) - User parameter switch 14 (SWUSR_0E)

Bit 0: Message printout while the machine is in Night Printing mode 0: On, 1: Off

Bit 1: Maximum document length detection 0: Double letter, 1: Longer than double-letter (well log) – up to 1,200 mm

Bit 2: Not used

Bit 3: Fax mode settings, such as resolution, before a mode key (Copy/Fax/Printer/Scanner) is pressed 0: Not cleared, 1: Cleared

Bits 4 to 6: Not used

Bit 7: Not used

6800DF(H) - User parameter switch 15 (SWUSR_0F)

(This switch is not printed on the user parameter list.)

Bits 0, 1 and 2: Cassette for fax printout

Bit 2: 0, Bit 1: 0, Bit 0: 1 = 1st paper feed station

Bit 2: 0, Bit 1: 1, Bit 0: 0 = 2nd paper feed station

Bit 2: 0, Bit 1: 1, Bit 0: 1 = 3rd paper feed station

Bit 2: 1, Bit 1: 0, Bit 0: 0 = 4th paper feed station

Bit 2: 1, Bit 1: 0, Bit 0: 1 = LCT

Other settings Not used

Bits 3 and 4: Not used

Bit 5: Using the cassette specified by bits 0, 1 and 2 above only 0: On, 1: Off

Bits 6 and 7: Not used

6800E0(H) – User parameter switch 16 (SWUSR_10)

(This switch is not printed on the user parameter list.)

Bits 0 and 1: Not used

Bit 2: Paper size selection priority for an A4 size fax message when A4/LT size paper is not available. 0: A3 has priority, 1: B4 has priority

Bits 3 to 7: Not used

FCU

6800E1(H) – User parameter switch 17 (SWUSR_11)

Bit 0: Not used

Bit 1: Not used

Bit 2: Inclusion of the "Add" button when a sequence of Quick/Speed dials is selected for broadcasting 0:Not needed, 1: Needed

Bits 3 to 6: Not used

Bit 7: Press "Start" key without an original when using the on hook dial or the external telephone,

0: displays "Cannot detect original size". 1: Receives fax messages.

6800E2(H) - User parameter switch 18 (SWUSR_12)

Bit 0: TTI date 0: Off, 1: On

Bit 1: TTI sender   0: Off, 1: On

Bit 2: TTI file number   0: Off, 1: On

Bit 3: TTI page number   0: Off, 1: On

Bits 4 to 6: Not used

Bit 7: Japan only

6800E3(H) - User parameter switch 19 (SWUSR_13)

Bit 0: Not used

Bit 1: Journal format

0: The Journal is separated into transmissions and receptions

1: The Journal is separated into G3-1, G3-2, and G3-3 communications

Bit 2: Not used

Bit 3: 90° image rotation during B5 portrait Tx (This switch is not printed on the user parameter list.) 0: Off, 1: On

Bit 4: Reduction of sample images on reports to 50% in the main scan and sub-scan directions. (This switch is not printed on the user parameter list.) 0: Technician adjustment (printer switch 0E bits 3 and 4), 1: 50% reduction
Bit 5: Use of A5 size paper for reports (This switch is not printed on the user parameter list.) 0: Off, 1: On

Bits 6 and 7: Not used

6800E4(H) - User parameter switch 20 (SWUSR_14)

Bit 0: Automatic printing of the LAN fax result report 0: Off, 1: On
Bit 1: Not used.

Bits 2 to 5: Store documents in memory which could not be printed from PC fax (LAN fax) driver

Bit 5	Bit 4	Bit 3	Bit 2	Setting
0	0	0	0	0 min.
0	0	0	1	1 min.
1	1	1	0	14 min.
1	1	1	1	15 min.

Bits 6 and 7: Not used.

6800E5(H) - User parameter switch 21 (SWUSR_15)

Bit 0: Print results of sending reception notice request message 0: Disabled (print only when error occurs), 1: Enabled

Bit 1: Respond to e-mail reception acknowledgment request 0: Disabled, 1: Enabled

Bit 2: Not used

Bit 3: File format for forwarded folders 0: TIFF, 1:PDF

Bit 4: Transmit Journal by E-mail 0: Disabled, 1: Enabled

Bit 5: Not used

Bit 6: Network error display 0: Displayed, 1: Not displayed

Bit 7: Transmit error mail notification 0: Enabled, 1: Disabled

6800E6(H) - User parameter switch 22 (SWUSR_16)

(This switch is not printed on the user parameter list.)

Bit 0: Dial tone detection (PSTN 1) 0: Disabled, 1: Enabled

Bits 1 to 7: Not used

6800E7(H) – User parameter switch 23 (SWUSR_17): Not used

6800E8(H) - User parameter switch 24 (SWUSR_18): Not used

FCU

6800E9(H) - User parameter switch 25 (SWUSR_19)

Bit 0: Not used

Bit 1: Reception mode switch timer 0: Off, 1: On (switching Fax or Fax/Tel)

Bit 2: Mode priority switch 0: Fax first, 1: Tel first

Bit 3: Dial in function (Japan Only)

Bit 4: RDS operation 0: Not acceptable, 1: Acceptable for the limit specified by system switch 03

NOTE:

This bit is only effective when RDS operation can be selected by the user (see system switch 02).

Bits 5 to 7: Not used

6800EA(H) and 6800EB(H) - User parameter switches 26 and 27 (SWUSR_1A and 1B): Not used

6800EC(H) - User parameter switch 28(SWUSR_1C): Not used

6800ED(H) - User parameter switch 29(SWUSR_1D): Not used

6800EE(H) and 6800EF(H) - User parameter switches 30 and 31 (SWUSR_1E and 1F): Not used

6800F0(H) - User parameter switch 32 (SWUSR_20)

Bit 0: Quotation priority for a destination when there is no destination of the specified type

0: Paper output priority = Priority order: 1. IP-fax destination, 2. Fax Number, 3. E-mail address, 4. Folder

1: Electric putout order = Priority order: 1. E-mail address, 2. Folder, 3. IP-fax destination, 4. Fax number

Bits 1 to 7: Not used

6800F1(H) - User parameter switch 33 (SWUSR_21): Not used

6800F2(H) - User parameter switch 34 (SWUSR_22)

Bit 0: Gatekeeper server used with IP-Fax 0: Disabled, 1: Enabled

Bit 1: SIP server used with IP-Fax 0: Disabled, 1: Enabled

Bits 2 to 7: Not used

6800F3(H) - User parameter switch 35 (SWUSR_23)

Redial interval when sending a backup file

6800F4(H) - User parameter switch 36 (SWUSR_24)

Maximum number of redials when sending a backup file

6800F5-6800F8(H) - User parameter switch 37 (SWUSR_25)

Bit 0: Stop sending a backup file if the destination folder becomes full while the machine is sending or waiting to send a fax or the backup file 0: Disabled, 1: Enabled

Bit 1: Not used

Bit 2 and 3: Backup file is printed along with the TX communication failure report when a backup file transmission failure occurs. 00: Do not print, 01: Print first page only, 10: Print whole file

Bit 4: Display the sender's information in the file name of documents that are forwarded to folder destinations. 0: Disabled, 1: Enabled

Bit 5: Limit the file names of documents that are forwarded to folder destinations to plain characters only. 0: Disabled, 1: Enabled

Bit 6 to 7: Not used

6800F9(H) - User parameter switch 40 (SWUSR_28)

Bit 0: When memory space is insufficient, the machine prints and then deletes the oldest faxes, creating memory space for storage of new faxes. 0: Disabled, 1: Enabled

Bit 1 to 7: Not used

6800FF(H) - User parameter switch 45 (SWUSR_2D)

Bit 0 and 1: File format for files transmitted to e-mail addresses and folders registered as forwarding, destinations of backup file transmission, receivers for Personal Box, or end receivers for Transfer Box. 0: PDF 1: PDF/A

Bit 2 to 7: Not used

680100 to 68010F(H) - G4 Parameter Switches – Not used

680110 to 68012F(H) - G4 Internal Switches – Not used

680130 to 68016F(H) - Service Switches

680170 to 68017F(H) - IFAX Switches

680180 to 68018F(H) - IP-FAX Switches

680190 to 6801AF(H) - Service station's fax number (SP3-101)

6801B0 to 6801B9(H) - Own fax PABX extension number – Not used

6801BA to 6801C3(H) - Own fax number (PSTN) – Not used

6801C4 to 6801D7(H) - Own fax number (ISDN G4) – Not used

6801D8 to 6801E3(H) - The first subscriber number (ISDN G3) – Not used

6801E4 to 6801EF(H) - The second subscriber number (ISDN G3) – Not used

6801F0 to 6801FB(H) - The first subscriber number (ISDN G4) – Not used

6801FC to 680207(H) - The second subscriber number (ISDN G4) – Not used

680208 to 68021B(H) - PSTN-1 RTI (Max. 20 characters - ASCII) - See the following note.

68021C to 68022F(H) - PSTN-2 RTI (Max. 20 characters - ASCII) - Not used

680230 to 680246(H) - PSTN-3 RTI (Max. 20 characters - ASCII) - Not used

680247 to 680286(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.

680287 to 6802C6(H) - TTI 2 (Max. 64 characters - ASCII) - Not used

6802C7 to 680306(H) - TTI 3 (Max. 64 characters - ASCII) - Not used

680307 to 68031A(H) - PSTN-1 CSI (Max. 20 characters - ASCII)

68031B to 68032E(H) - PSTN-2 CSI (Max.20 characters - ASCII) - Not used

68032F to 680342(H) - PSTN-3 CSI (Max.20 characters - ASCII) - Not used

680343(H) - Number of PSTN-1 CSI characters (Hex)

680344(H) - Number of PSTN-2 CSI characters (Hex) - Not used

680345(H) Number of PSTN-3 CSI characters (Hex) - Not used

NOTE:

If the number of characters is less than the maximum (20 for RTI, 32 for TTI), add a stop code (00[H]) after the last character.

680380 to 680387(H) - Last power off time (Read only)

680380(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM), 02(H) - 12-hour clock (PM)

680381(H) - Year (BCD)

680382(H) - Month (BCD)

680383(H) - Day (BCD)

680384(H) – Hour

680385(H) – Minute

680386(H) – Second

680387(H) - 00: Monday, 01: Tuesday, 02: Wednesday, /// , 06: Sunday

680394(H) - Optional equipment (Read only – Do not change the settings)

Bit 0: Page Memory   0: Not installed, 1: Installed

Bit 1: SAF Memory   0: Not installed, 1: Installed

Bits 2 to 7; Not used

680395(H) - Optional equipment (Read only – Do not change the settings)

Bits 0 to 3: Not used

Bit 4: G3-2 0: Not installed, 1: Installed

Bit 5: G3-3 0: Not installed, 1: Installed

Bit 6 and 7: Not used

680406 to 68040A – Option G3 board (G3-2) ROM information (Read only)

680406(H) - Suffix (BCD)

680407(H) - Version (BCD)

680408(H) - Year (BCD)

680409(H) - Month (BCD)

68040A(H) - Day (BCD)

FCU

68040B to 68040F – Option G3 board (G3-3) ROM information (Read only)

    68040B(H) - Suffix (BCD)

    68040C(H) - Version (BCD)

    68040D(H) - Year (BCD)

    68040E(H) - Month (BCD)

    68040F(H) - Day (BCD)

680410(H) - G3-1 Modem ROM version (Read only)

680412(H) - G3-2 Modem ROM version (Read only)

680414(H) - G3-3 Modem ROM version (Read only)

680420(H) - Number of multiple sets print (Read only)

680476(H) - Time for economy transmission (hour in 24h clock format - BCD)

680477(H) - Time for economy transmission (minute - BCD)

680492(H) - Transmission monitor volume 00 - 07(H)

680493(H) - Reception monitor volume 00 - 07(H)

680494(H) - On-hook monitor volume 00 - 07(H)

680495(H) - Dialing monitor volume 00 - 07(H)

680496(H) - Buzzer volume   00 - 07(H)

680497(H) - Beeper volume   00 - 07(H)

6804A8(H) - Machine code (Check ram 4)

68AFDA(H) - IP-Fax backup data 00 - 600 (H) - Not used

69A614(H) - Own e-mail address for internet fax (Max. 128 characters - ASCII)

69A794(H) - User code for fax e-mail account (Max. 192 characters - ASCII)

69A854(H) – Password for fax e-mail account (Max. 128 characters - ASCII)

69A914(H) - Transmission mail size restriction for internet fax (Max. 4 bit)

69A918(H) - E-mail address for SMTP reception (Max. 128 characters - ASCII)

69A998(H) – Destination number for reception report e-mail (Max. 4 byte)

69FB40(H) to 69FDC0(H) - SIP server address (Read only)

    69FB40(H) - Proxy server - Main (Max. 128 characters - ASCII)

    69FBC0(H) - Proxy server - Sub (Max. 128 characters - ASCII)

    69FC40(H) - Redirect server - Main (Max. 128 characters - ASCII)

    69FCC0(H) - Redirect server - Sub (Max. 128 characters - ASCII)

    69FD40(H) - Registrar server - Main (Max. 128 characters - ASCII)

    69FDC0(H) - Registrar server - Sub (Max. 128 characters - ASCII)

69FE40(H) - Gatekeeper server address - Main (Max. 128 characters - ASCII)

69FEC0(H) - Gatekeeper server address - Sub (Max. 128 characters - ASCII)

69FF40(H) - Arias Number (Max. 128 characters - ASCII)

69FFC0(H) - SIP user name (Max. 128 characters - ASCII)

6A0040H(H) - **SIP digest authentication password** (Max. 128 characters - ASCII)

6A00C0H(H) - Gateway address information (Max. 7100 characters - ASCII)

6A1C7C(H) - Stand-by port number for H.323 connection

6A1C7E(H) - Stand-by port number for SIP connection

6A1C80(H) - RAS port number

6A1C82(H) - Gatekeeper port number

6A1C84(H) - Port number of data waiting for T.38

6A1C86(H) - Port number of SIP server

6A1C88(H) - Priority for SIP and H.323 0: H.323, 1: SIP

6A1C89(H) - SIP function 0: Disabled, 1: Enabled

6A1C8A(H) - H.323 function 0: Disabled, 1: Enabled

6A1C8B(H) - **SIP digest authentication function** 0: Disabled, 1: Enabled

6B9000 to 6B91FF(H) - Error code (Max. 512 byte)

6B9200 to 6BD61F - Reception results (Max. 17440 byte)

6BD620 to 6BDFA7 - Transmission error (Max. 2440 byte)

6BEBFE(H) - 6BEC1E (H) - Dial tone detection parameter (Max. 11 x 3 lines)

    This initializes following order. [0x04, 0x40, 0x03, 0x60, 0x64, 0xf4, 0x01,0x64, 0x04, 0xc8, 0x00]

FCU

6BEBFE(H) – Dial tone detection frequency – Upper limit (High)

Defaults: NA: 06, EU: 06, ASIA: 06

6BEBFF(H) – Dial tone detection frequency – Upper Limit (Low)

Defaults: NA: 50, EU: 50, ASIA: 50

6BEC00(H) – Dial tone detection frequency – Lower Limit (High)

Defaults: NA: 03, EU: 02, ASIA: 02

6BEC01(H) – Dial tone detection frequency – Lower Limit (Low)

Defaults: NA: 60, EU: 90, ASIA: 90

6BEC02(H) –Dial tone detection waiting time (20 ms)

Defaults: NA: 64, EU 64, ASIA: 64

6BEC03 to 6BEC04 – Dial tone detection monitoring time (20 ms)

Defaults

Area	6BEC03	6BEC04
NA	F4	01
EU	F4	01
ASIA	F4	01

6BEC05(H) – Dial tone detect judge time (20 ms)

Defaults: NA: 64, EU: 1B, ASIA: 32

6BEC06(H) – Dial tone disconnect permission time (20 ms)

Defaults: NA: 11, EU: 0F, ASIA: 11

20. VIDEO DATA PATH

20.1 TRANSMISSION

d629d102
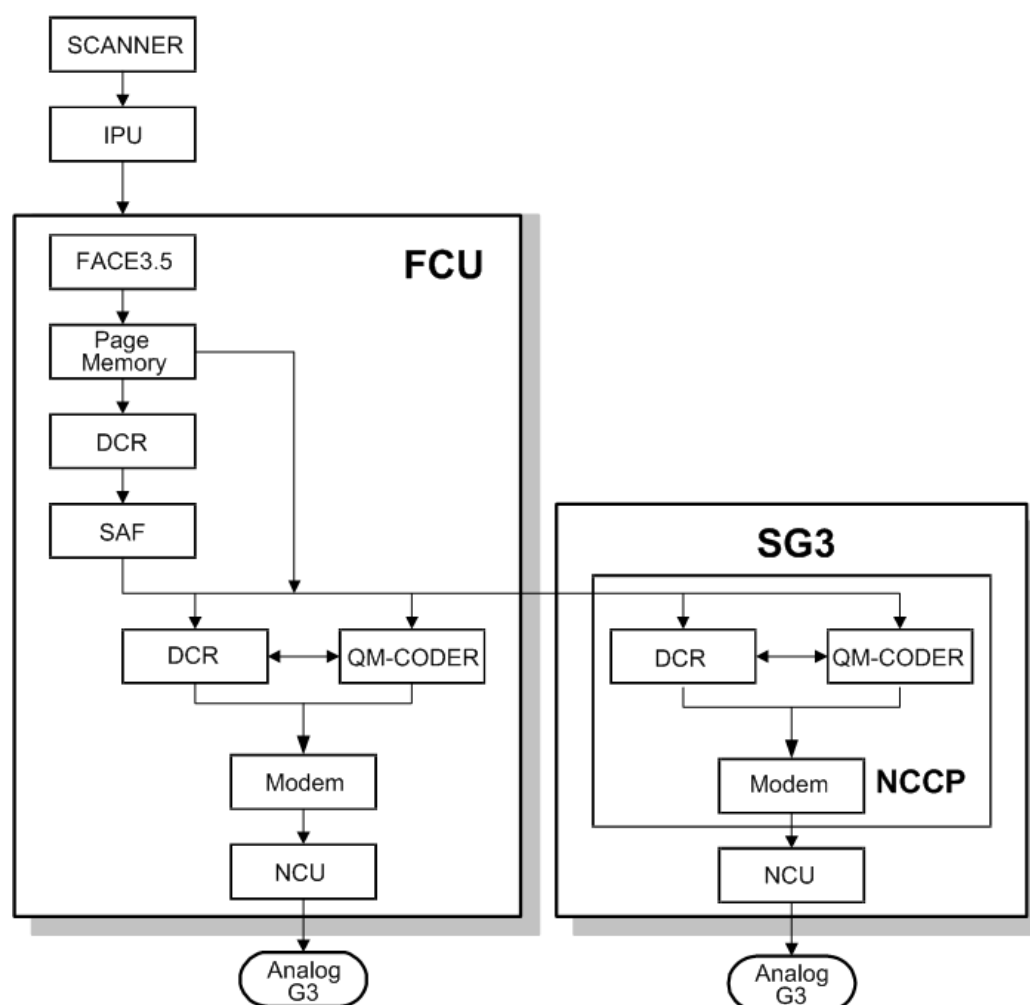
20.1.1 MEMORY TRANSMISSION AND PARALLEL MEMORY TRANSMISSION

The base copier's scanner scans the original at the selected resolution in inch format. The IPU processes the data and transfers it to the FCU.

NOTE:

When scanning a fax original, the IPU uses the MTF, independent dot erase and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then, the FCU converts the data to mm format, and compresses the data in MMR or raw format to store it in the SAF memory. If image rotation will be done, the image is rotated in page memory before compression.

Transmission

At the time of transmission, the FCU decompresses the stored data, then re-compresses and/or reduces the data if necessary for transmission. The NCU transmits the data to the line.

20.1.2 IMMEDIATE TRANSMISSION

The base copier's scanner scans the original at the resolution agreed with the receiving terminal. The IPU video processes the data and transfers it to the FCU.

> **NOTE:**
>
> ***When scanning a fax original, the IPU uses the MTF, independent dot erase and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.***

Then the FCU stores the data in page memory, and compresses the data for transmission. The NCU transmits the data to the line.

20.1.3 JBIG TRANSMISSION

Memory transmission: If the receiver has JBIG compression, the data goes from the DCR to the QM-Coder. Then the NCU transmits the data to the line.

Immediate transmission: If the receiver has JBIG compression, the data goes from the page memory to the QM-Coder. Then the NCU transmits the data to the line.

20.1.4 ADJUSTMENTS

- Priority for the line used for G3 transmissions (PSTN 1/PSTN 2 or 3): System switch 16 bit 1

20.2 RECEPTION

d629d103
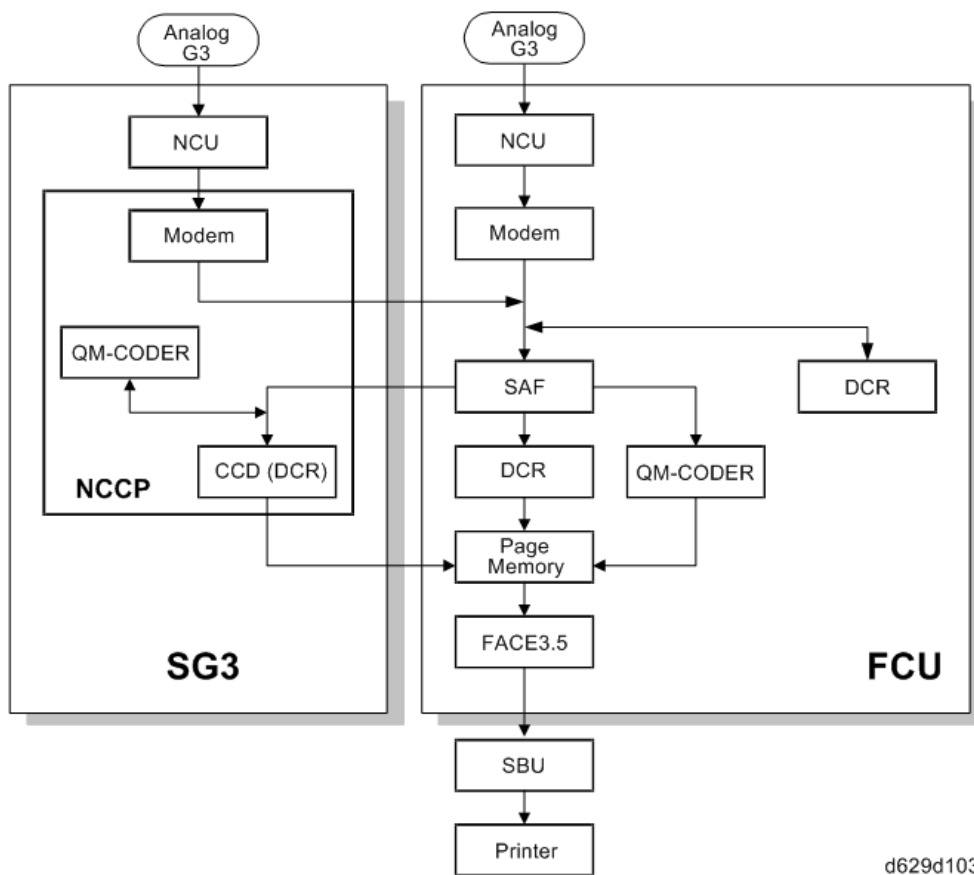
First, the FCU stores the incoming data from either an analog line to the SAF memory. (The data goes to the FACE3 at the same time, and is checked for error lines/frames.)

The FCU then decompresses the data and transfers it to page memory. If image rotation will be done, the image is rotated in the page memory. The data is transferred to the IPU.

JBIG Reception

When data compressed with JBIG comes in on PSTN-1 (the standard analog line), the data is sent to the QM-CODER for decompression. Then the data is stored in the page memory, and transferred to the IPU.

When data compressed with JBIG comes in on PSTN-2 (optional extra analog line), the data is sent to the QM-CODER on the SG3 board for decompression.

21. FAX COMMUNICATION FEATURES

21.1 DOCUMENT SERVER
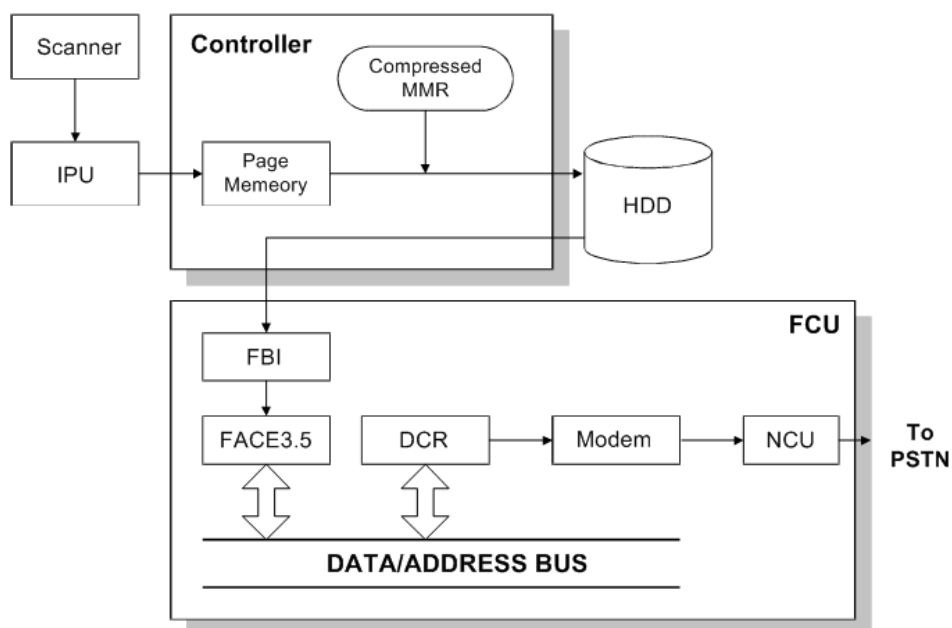
d629d104

The base copier's scanner scans the original at the selected resolution. The IPU video processes the data and transfers it to the controller board. Then the controller stores the data in the page memory for the copier function, and compresses the data in MMR (by software) to store it in the HDD. If image rotation will be done, the image is rotated in the page memory before compression. For transmission, the stored image data is transferred to the FCU. The FCU decompresses the image data, then recompresses and/or reduces the data if necessary for transmission. The NCU transmits the data to the line. The documents can be stored in the HDD (Document Server) from the fax application. The stored documents in the document sever can be used for the fax transmission in many times. More than one document and the scanned document can be combined into one file and then the file can be transmitted.

- When using the document server, the SAF memory is not used.
- The document is compressed with MMR and stored.
- Up to 9,000 pages can be stored (1 file: Up to 1,000 pages) from the fax application.
- Only stored documents from the fax application can be transmitted.
- Scanned documents are given a name automatically, such as "FAX001". But it is possible to change the file name, user name and password.
- Up to 30 files can be selected at once.

NOTE:

The compression method of the fax application is different from the copy application. The storing time is longer than the copier storing. When selecting "Print 1st page", the stored document will be reduced to A4 size.

21.2 INTERNET MAIL COMMUNICATION

21.2.1 MAIL TRANSMISSION

T.37 simple and full modes

This machine supports T.37 full mode. (ITU-T Recommendation, RFC2532). The difference between T.37 simple mode and full mode is as follows.

Function	T.37 Simple Mode	T.37 Full Mode
Resolution	200 x 100 200 x 200	200 x100 200 x 200 200 x 400 400 x 400 (if available)
RX Paper Width	A4	A4, B4, A3
RX Data Compression Method	MH	MH (default), MR, MMR,
Signals	Image data transmission only	Image data transmission, exchange of capability information between the two terminals, and acknowledgement of receipt of fax messages

Data Formats

The scanned data is converted into a TIFF-F formatted file.

The fields of the e-mail and their contents are as follows:

Field	Content
From	Mail address of the sender
Reply To	Destination requested for reply
To	Mail address of the destination
Bcc	Backup mail address
Subject	From CSI or RTI (Fax Message No. xxxx)
Content Type	Multipart/mixed Attached files: image/tiff
Content Transfer Encoding	Base 64, 7-bit, 8-bit, Quoted Printable
Message Body	MIME-converted TIFF-F (MIME standards specify how files are attached to e-mail messages)

Direct SMTP Transmission

Internet Fax documents can be sent directly to their destinations without going through the SMTP server. (Internet Faxes normally transmit via the SMTP server.)

For example:

        e-mail address: gts@ricoh.co.jp

        SMTP server address: gts.abcd.com

In this case, this feature destination e-mail address (gts@ricoh.co.jp) is read as the SMTP server address "gts.abcd.com", and the transmissions bypass the SMTP server.

Selectable Options

These options are available for selection:

- With the default settings, the scan resolution can be either standard or detail. Inch-mm conversion before TX depends on IFAX SW01 Bit 7. Detail resolution will be used if Super Fine resolution is selected, unless Fine resolution is enabled with IFAX SW01.
- The requirements for originals (document size, scan width, and memory capacity) are the same as for G3 fax memory TX.
- The default compression is TIFF-F format.
- IFAX SW00: Acceptable paper widths for sending
- IFAX SW09: Maximum number of attempts to the same destination

Secure Internet Transmission

SMTP Authentication:

- User Tools> System Settings> File Transfer> SMTP Authentication
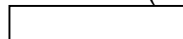
POP Before SMTP:

- User Tools> System Settings> File Transfer> POP before SMTP

21.2.2 MAIL RECEPTION

Three Types

This machine supports three types of e-mail reception:

- POP3 (Post Office Protocol Ver. 3.)
- IMAP4 (Internet Messaging Access Protocol)
- SMTP (Simple Mail Transfer Protocol)

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – Mail Reception

POP3/IMAP4 Mail Reception Procedure

The machine automatically picks up e-mail from the server at an interval which is adjustable in the range 2 to 1440 min. in 1-minute steps:

- User Tools> System Settings> File Transfer> E-mail Reception Interval

SMTP Reception

9. The IFAX must be registered as an SMTP server in the MX record of the DNS server, and the address of the received mail must specify the IFAX.
10. To enable SMTP reception: User Tools> System Settings> File Transfer> Reception Protocol
    - Even if the MX record on the DNS server includes the IFAX, mail cannot be received with SMTP until SMTP reception is enabled:
    - However, if SMTP reception is selected and the machine is not registered in the MX record of the DNS server, then either IMAP4 or POP3 is used, depending on the setting: User Tools> System Settings> File Transfer> Reception Protocol

Mail Delivery Conditions: Transferring Mail Received With SMTP

11. The machine must be set up for SMTP mail delivery:
    - User Tools> Facsimile Features> Reception Settings> SMTP RX File Delivery Settings
12. If the user wishes to limit this feature so that the machine will only deliver mail from designated senders, the machine's "Auth. E-mail RX" feature must be set (User Tools> Facsimile Features> Reception Settings> SMTP RX File Delivery Settings).
13. If the "SMTP RX File Delivery Setting" is set to "Off" to prohibit SMTP receiving, and if there is mail designated for delivery, then the machine responds with an error. (User Tools> Facsimile Features> Reception Settings> SMTP RX File Delivery Settings)
14. If the quick dial, speed dial, or group dial entry is incorrect, the mail transmission is lost, and the IFAX issues an error to the SMTP server and outputs an error report.

Auth. E-mail RX

In order to limit access to mail delivery with IFAX, the addresses of senders must be limited using the Access Limit Entry. Only one entry can be registered.

15. Access Limit Entry
For example, to limit access to @IFAX.ricoh.co.jp:

gts@IFAX.ricoh.co.jp	Matches and is delivered.
gts@IFAX.abcde.co.jp	Does not match and is not delivered.
IFAX@ricoh.co.jp	Does not match and is not delivered.

16. Conditions
   - The length of the Access Limit Entry is limited to 127 characters.
   - If the Access Limit Entry address and the mail address of the incoming mail do not match, the incoming mail is discarded and not delivered, and the SMTP server responds with an error. However, in this case an error report is not output.
   - If the Access Limit Entry address is not registered, and if the incoming mail specifies a delivery destination, then the mail is delivered unconditionally.

21.2.3 HANDLING MAIL RECEPTION ERRORS

Abnormal files

When an error of this type occurs, the machine stops receiving and commands the server to erase the message. Then the machine prints an error report and sends information about the error by e-mail to the sender address (specified in the "From" or "Reply-to" field of the message). If there is an incomplete received message in the machine memory, it will be erased.

The machine prints an error message when it fails to send the receive error notification after a certain number of attempts.

The following types of files are judged to be abnormal if one or more of the following are detected:

17. Unsupported MIME headers.
    Supported types of MIME header

Header	Supported Types
Content-Type	Multipart/mixed, text/plain, message/rfc822 Image/tiff
Charset	US-ASCII, ISO 8859 X. Other types cannot be handled, and some garbage may appear in the data.
Content-Transfer-Encoding	Base 64, 7-bit, 8-bit, Quoted Printable

18. MIME decoding errors
19. File format not recognized as TIFF-F format
20. Resolution, document size, or compression type cannot be accepted

Remaining SAF capacity error

The machine calls the server but does not receive e-mail if the remaining SAF capacity is less than a certain value (the value depends on IFAX Switch 08. The e-mail will be received when the SAF capacity increases (for example, after substitute reception files have been printed). The error handling method for this type of error is the same as for "Abnormal files".

If the capacity of the SAF memory drops to zero during reception, the machine operates in the same way as when receiving an abnormal file (refer to "Abnormal files" above).

21.2.4 SECURE INTERNET RECEPTION

To enable password encryption and higher level security: User Tools> System Settings> File Transfer> POP3/IMAP4 Settings> Encryption (set to "On")

21.2.5 TRANSFER REQUEST: REQUEST BY MAIL

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – Transfer Request

The fields of the e-mail and their contents are as follows:

Field	Content
From	E-mail address of the requesting terminal
To	Destination address (Transfer Station address)
Bcc	Backup mail address
Subject	From TSI (Fax Message No. xxxx)
Content-Type	Multipart/mixed Text/Plain (for a text part), image/tiff (for attached files)
Content-Transfer-Encoding	Base 64, 7-Bit, 8-bit, Quoted Printable
Mail body (text part)	RELAY-ID-: xxxx (xxxx: 4 digits for an ID code) RELAY: #01#*X#**01….
Message body	MIME-converted TIFF-F.

21.2.6 E-MAIL OPTIONS (SUB TX MODE)

The following features are available as options for mail sending: entering a subject, designating the level of importance, confirming reception of the mail.

Subject and Level of Importance

You can enter a subject message with: TX Mode> Subject

The Subject entry for the mail being sent is limited to 128 characters. The subject can also be prefixed with an "Confidential", "Urgent", "Please phone" or "Copy to corres. Section" notation.

- How the Subject Differs According to Mail Type -

Mail Type	Item 1	Item 2		Item 3
Subject Entry	---	Entry Condition		Fax Message No. + File No.
No Subject Entry		1. "CSI" ("RTI")		
		2. "RTI"	CSI not registered	
		3. "CSI"	RTI not registered	
		4. None	CSI, RTI not registered	
Confirmation of Reception	From	1. "CSI" ("RTI")		Normal: Return Receipt (dispatched). You can select "displayed" with IFAX SW02 Bits 2 and 3.
		2. "RTI"	CSI not registered	
		3. "CSI"	RTI not registered	Error: Return Receipt (processed/error)
		4. None	CSI, RTI not registered	
Mail delivery, memory transfer, SMTP receiving	From	RTI or CSI of the station designated for delivery	Mail delivery	Fax Message No. + File Number
		RTI or CSI of sender	Mail sending from G3 memory	

Mail Type	Item 1	Item 2		Item 3
and delivery		Mail address of sender	Memory sending	
		Mail address of sender	SMTP receiving and delivery (Off Ramp Gateway)	
Mail error notification	---	Error Message No. xxxx From CSI (RTI)		

Items 1, 2, and 3 in the table above are in the Subject.

- Subjects Displayed on the PC -

Sender		Date		Size		Subject	
Substation 2		04/25/2002		1,513		Parts List	
Substation 2		04/26/2002		1,147		Specifications	
Main Station		05/09/2002		33,551		[Urgent] Memo 2041	
				21,624,288			

b766d907

E-mail Messages

After entering the subject, you can enter a message with: TX Mode> Text

An e-mail message (up to 5 lines) can be pre-registered with: User Tools> System Settings> File Transfer> Program/Change/Delete E-mail Message

- Limitations on Entries -

Item	Maximum
Number of Lines	5 lines
Line Length	80 characters
Name Length	20 characters

Internet Mail Communication

Message Disposition Notification (MDN)

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC –
Internet/LAN Fax Boards – E-mail Options

The network system administrator can confirm whether a sent mail has been received
correctly or not. This confirmation is done in four steps.

1. Send request for confirmation of mail reception. To enable or disable this
   request (known as MDN): TX Mode> Reception Notice
2. Mail reception (receive confirmation request)
3. Send confirmation of mail reception
4. Receive confirmation of mail reception

The other party's machine will not respond to the request unless the two conditions below
are met:

- The other party's machine must be set up to respond to the confirmation request.
- The other party's machine must support MDN (Message Disposition Notification).

- Setting up the Receiving Party -

The receiving party will respond to the confirmation request if:

5. The "Disposition Notification To" field is in the received mail header (automatically
   inserted in the 4th line in the upper table on the previous page, if MDN is enabled), and
6. Sending the disposition notification must be enabled (User Parameter Setting SW21 (15
   [H]) Bit 1 for this model). The content of the response is as follows:

Normal reception:	"Return Receipt (dispatched)" in the Subject line
IFAX SW02 (Bit 2, 3)	"Return Receipt (displayed)" in the Subject line
Error:	"Return Receipt (processed/error)" in the Subject line

Handling Reports

- Sending a Request for a Return Receipt by Mail -

After the mail sender transmits a request for a return receipt, the mail sender's journal is annotated with two hyphens (--) in the Result column and a "Q" in the Mode column.

- Mail Receipt (Request for Receipt Confirmation) and Sending Mail Receipt Response -

After the mail receiver sends a response to the request for a return receipt, the mail receiver's journal is annotated with two hyphens (--) in the Result column and an "A" in the Mode column.

- Receiving the Return Receipt Mail -

- After the mail sender receives a return receipt, the information in the mail sender's journal about the receipt request is replaced, i.e. the journal is annotated with "OK" in the Result column.
- When the return receipt reports an error, the journal is annotated with an "E" in the Result column.
- The arrival of the return receipt is not recorded in the journal as a separate communication. Its arrival is only reported by the presence of "OK" or "E" in the Result column.
- If the mail address used by the sender specifies a mailing list (i.e., a Group destination; the machine sends the mail to more than one location. See "How to set up Mail Delivery"), the Result column of the Journal is updated every time a return receipt is received. For example, if the mailing list was to 5 destinations, the Result column indicates the result of the communication with the 5th destination only. The results of the communications to the first 4 destinations are not shown.
  Exceptions:

  If one of the communications had an error, the Result column will indicate E, even if subsequent communications were OK.

  If two of the communications had an error, the Journal will indicate the destination for the first error only.

- Report Sample -

```
 DATE    TIME   ADDRESS                   MODE     TIME     PAGE    RESULT
 ---------------------------------------------------------------------------
 MAY. 5  10:15  fuser_01@dom1g. ricoh. co.  Mail SM  0'09"      2        --

         10:16  fuser_01@dom1g. ricoh. co.  Mail SMQ 0'05"      1        --

         10:17  s_tadashi@dom1g. ricoh. co. Mail SMQ 0'09"      2        OK

         10:19  m_masataka@dom1g. ricoh. co. Mail SMA 0'05"     1        --
```

b771d506

22. IP-FAX

22.1 WHAT IS IP-FAX?

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – IP-FAX

22.2 T.38 PACKET FORMAT

TCP is selected by default for this machine, but you can change this to UDP with IPFAX SW 00 Bit 1.

22.2.1 UDP RELATED SWITCHES

IP-Fax Switch 01						
No.	**Function**					**Comments**
0-3	Select IP FAX Delay Level					Raise the level by selecting a higher setting if too many transmission errors are occurring on the network.
	Bit 3	Bit 2	Bit 1	Bit 0	Level	
	0	0	0	0	0	If TCP/UDP is enabled on the network, raise this setting on the T.30 machine. Increasing the delay time allows the recovery of more lost packets.
	0	0	0	1	1	
	0	0	1	0	2	
	0	0	1	1	3	If only UDP is enabled, increase the number of redundant packets.
						Level 1~2: 3 Redundant packets
						Level 3: 4 Redundant packets

22.3 SETTINGS

User parameter switch 34 (22[H]), bit 0

IP-Fax Gate Keeper usage, 0: No, 1: Yes

IP Fax Switches: Various IP-FAX settings (see the bit switch table)