KIP 7700

High Demand
Production
System

Service Manual

Version A.2

PREFACE

This service manual contains the basic information required for carrying out field service to support the product quality and functions of the KIP 7700 Digital Printer.

Chapter 1	**Introduction**	: Features, Specifications and Name of Each Part
Chapter 2	**Installation**	: Installation place and procedure/Unpacking
Chapter 3	**Copy Process**	: Brief explanation of image formation and copy processes
Chapter 4	**Electrical**	: Basic principles of electrical system and operation
Chapter 5	**Mechanical**	: Mechanical structure, disassembly, assembly, and adjustment methods
Chapter 6	**Maintenance**	: Field maintenance information
Chapter 7	**Troubleshooting**	: Procedures and handling against malfunctions and image quality
Chapter 8	**Service Mode / Utility**	: Service Mode and KIP SubGUI interface
Chapter 9	**Appendix**	: Overall circuit diagram, printed circuit diagram, etc.

Some of the information contained in this manual may be changed by product upgrades etc.
Such information will be communicated as engineering notices as necessary. Read this service manual and any engineering notices carefully. A deep and correct understanding of this machine is the only way to develop the skills for maintaining the product quality and functions of this product for a long period of time and the applied capacity for finding the causes of breakdowns.

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Chapter 1

Introduction

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1. 1 Features

- KIP 7700 Digital Printer can make a print in a speed of 120mm per second.
  The maximum print size is 36 inches (914mm) wide, and the minimum one is 8.5 inches (210mm) for cut sheet media, and 11 inches (294mm) for roll media.

- The print image is more stabilized than before since we adopt a minute toner for mono-component development.

- Density Compensation Process provides consistent image density in various environments.

- The combination of KIP Contact Development System and mono-component minute toner can produce a high definition line, distinctive grayscale and consistent solid black.
  The KIP HDP process generates no Waste Toner.

- Flange type loading mechanism eases operator's media loading work.

- Many user operations can be made on the Touch Screen Panel (User Interface).

- The Energy Star ® guideline 2009 compliant

1. 2 Specifications

Subject	Specification
Model	KIP 7700
Configuration	Console
Printing method	Electro photography
Photoconductor	Organic Photoconductive Drum
Print speed	120mm per second (Inch) ..... E: 5 sheets/min D Landscape: 9 sheets/min (Metric) ..... A0: 5 sheets/min A1 Landscape: 9 sheets/min
Print head	LED
Resolution	600dpi
Print width	Maximum ..... 36" / 914mm Minimum ..... Roll: 11" / 297mm Cut sheet (Portrait): 8.5" / 210mm
Print length	Maximum (Standard) ..... 6,000mm (bond, 36" / A0 wide only) or "5 x Standard length" (bond) "2 x Standard length" (vellum) "1 x Standard length" (film) (Option) ..... 24,000mm Minimum ..... 8.5" / 210mm **NOTE:** If the print is longer than the standard maximum listed above, its image quality or the reliability of paper feeding is not guaranteed.
Warm up time	Less than 2 minutes (23 degrees Centigrade, 60% RH and the rated voltage / Bond)
First print time	21 seconds (A0 from Roll 1)
Fusing method	Roll Fuser
Development method	Dry type with non-magnetic mono-component toner
Exposure method	LED
Charging method	Corona
Transfer method	Corona
Separation method	Corona
Input power	220V - 240V plus 6% or minus 10%, 50/60Hz, 13A
Power consumption	Maximum ..... 3,400w Stand by ..... 1.0kwh (Average) Printing ..... 2.0kwh (Average) Cold Sleep ..... 14w or less 230V, 50/60Hz and Dehumidify Heater is ON
Acoustic noise	less than 67db (Printing) less than 55db (Standby)
Ozone	less than 0.1ppm (Maximum)
Dimensions	1370mm (Width) x 700mm (Depth) x 965mm (Height) (w/o UI) 1385mm (Width) x 820mm (Depth) x 1590mm (Height, max) (w/ UI)
Weight	Approx. 330kg (2 Roll Type) Approx. 370kg (4 Roll Type)
Media	(Recommended Media) US model: Bond ..... US Bond (PB-20) Vellum ..... US Vellum (XV-20) Film ..... 4MIL (PF-4DME) Europe model Plain Paper ..... Oce Red Label (75g/m^2) Tracing Paper ..... Oce Transparent Paper (80g/m^2) Film ..... Oce 3.5MIL

(continued on the next page)

Environmental condition for usage	Temperature: 10 to 32 degrees Centigrade Humidity: 15 to 85% RH
Interface	Ethernet (10 BASE-T, 100 BASE-TX, 1000 Base-T)
Storage of consumables	(Media) Wrap the media surely to shut out the humidity. (Toner cartridge) Keep the toner cartridge away from the direct sunlight, and store it in the condition of 0 to 35 degrees Centigrade and 10 to 85% RH.

⚠ NOTE

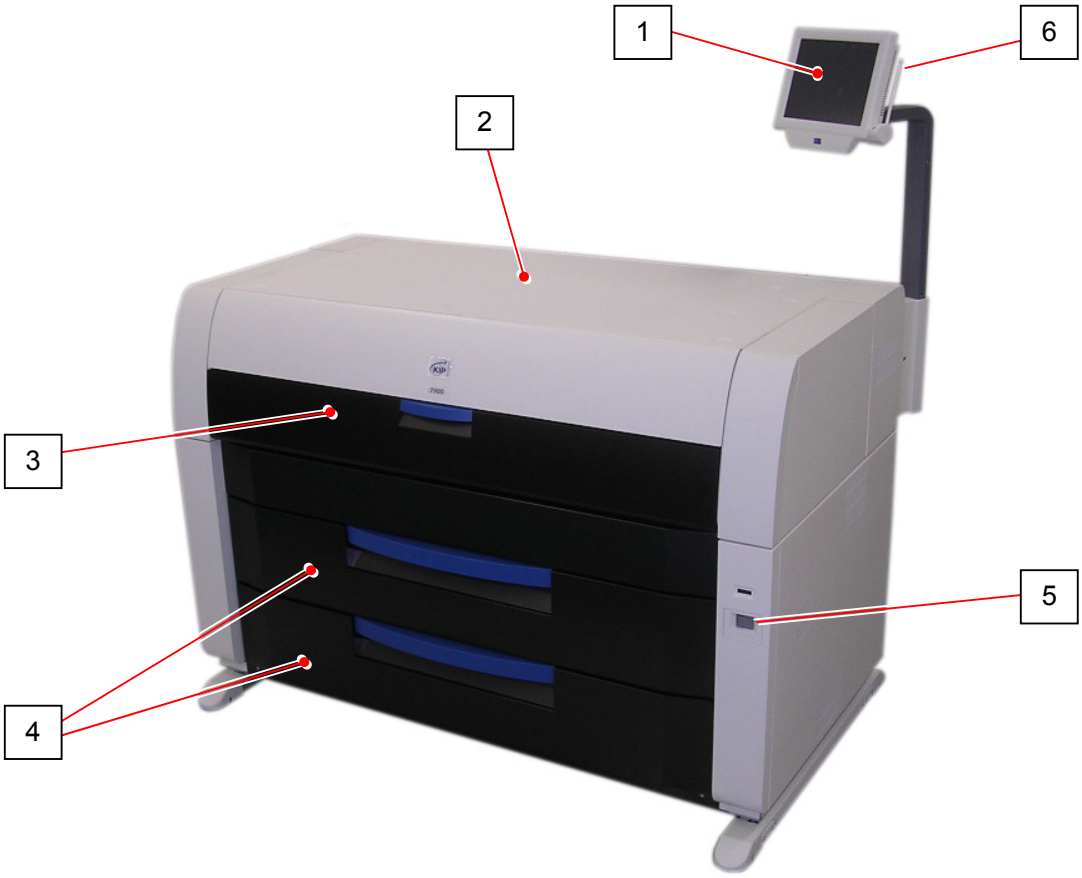
The above specifications are subject to change without notice.

NOTE for Tracing Paper / Vellum

Due to the characteristics of the Tracing Paper (Vellum), it is easy to be affected to the temperature or humidity.
Under the extreme environment, such as high temperature / high humidity or low temperature / low humidity, it may have a case of wrinkling problem if you use the loaded Tracing Roll (Vellum).
In case of this, adjust the room environment to the normal condition.

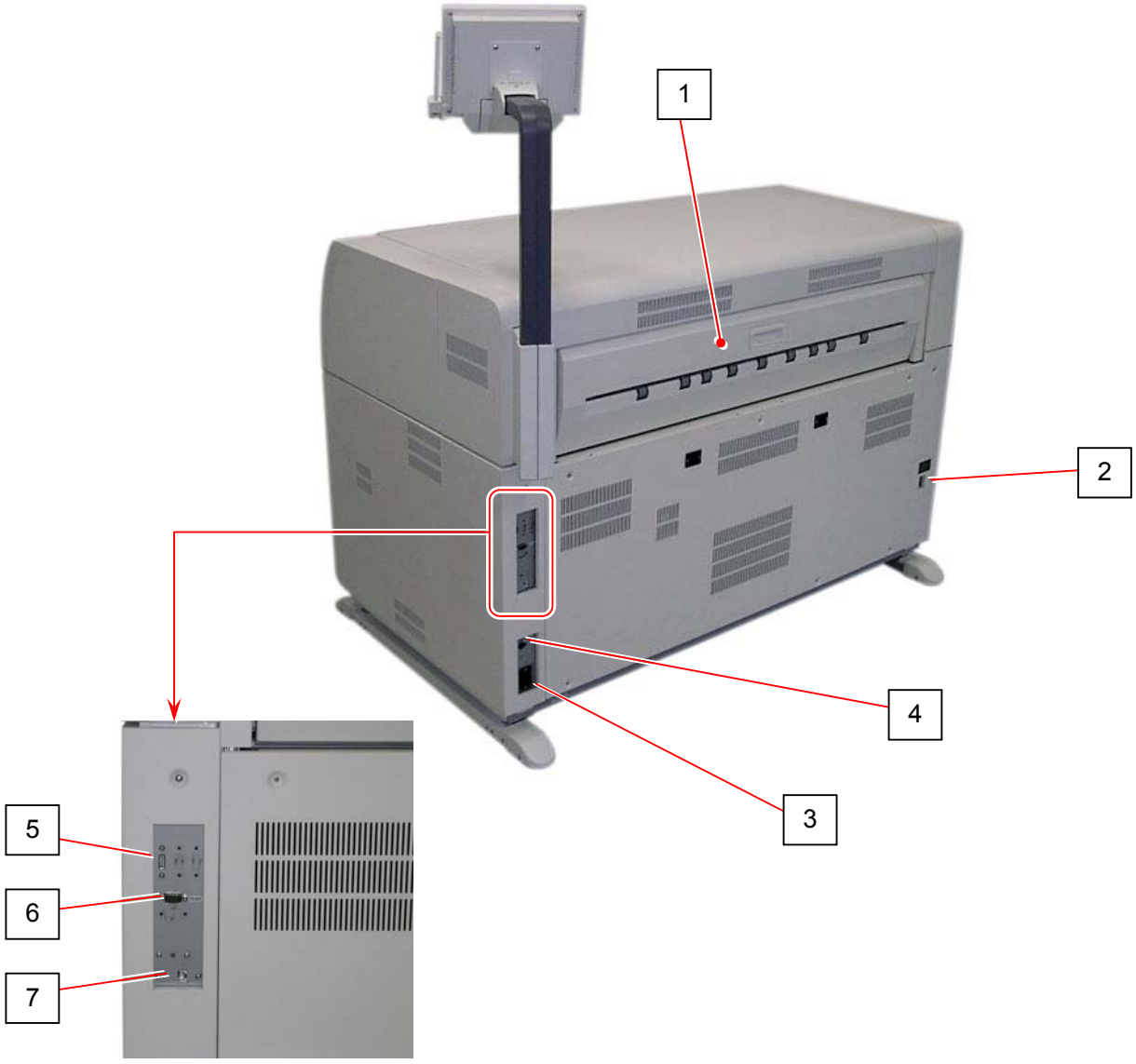
1. 3 Appearance

1. 3. 1 Front



	Name of part	Function
1	User Interface (UI)	This is a Touch Screen, and many user operations are available. **PLEASE DO NOT** push the LCD area too strong.
2	Top Cover	Open here to clear the mis-fed paper.
3	Manual Table	Open here to insert a cut sheet or to pull the Upper Frame Unit.
4	Roll Decks	Each Roll Deck drawer holds 2 rolls of print media.
5	Power Switch	You can turn on/off the KIP 7700.
6	Stylus	This pen is used to operate the User Interface (UI). **PLEASE DO NOT** use any other pointed object to tap on the UI.

1. 3. 2 Rear



	Name of part	Function
1	Exit Cover	Open the Exit Cover when you remove the mis-fed media.
2	Dehumidify Heater Switch	Press “H” to turn on the Dehumidify Heater, and press “L” to turn it off.
3	Inlet Socket	Connect the power cord here. **NOTE**: Specification for the power cord used in North America Use the following type of power cord (UL-Listed). (1) Rating 250VAC, 20A (2) Plug type NEMA6-20 (3) Socket type IEC60320 : C19 (4) Cord SJT 3xAWG12 L <4.5m (5) UL-Listed
4	Breaker	It is possible to shut off supplying the AC power.
5	USB connector (USB2.0)	Connect the cable to this terminal for a KIP Scanner (option). (max.5Vdc)
6	COM Port	Connect the cable from a finishing device (option). (D-Sub Connector 9 pins: max.12Vdc (Small))
7	LAN Port	Connect the LAN Cable to connect the KIP 7700 to the network. (Do not connect a telephone line.)

1. 4 Specifications for Printing Media

1. 4. 1 Available Print Size

Available print size is as follows.

	Minimum	Maximum
Width	297mm / 11” (Roll) 210mm / 8.5” (Cut Sheet)	914mm / 36”
Length	210mm / 8.5”	6m

⚠ NOTE

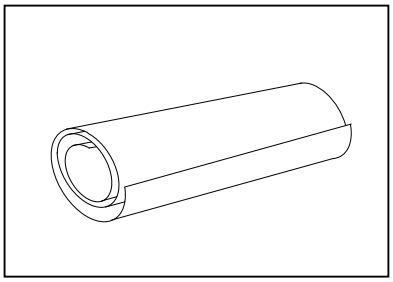
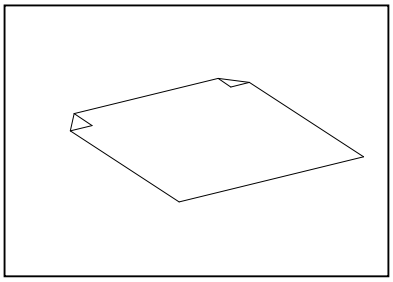
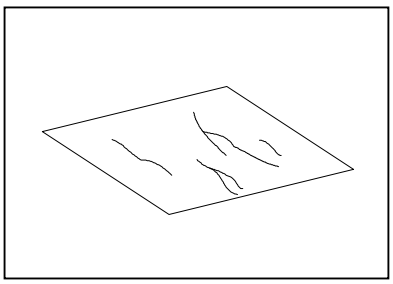
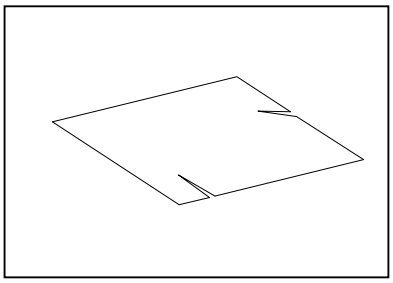
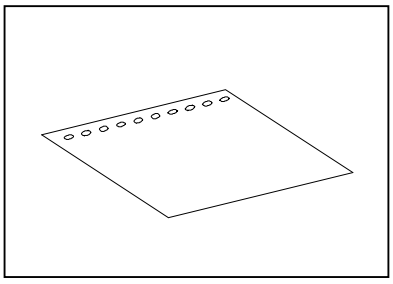
It is possible to print longer than 6 meters as an option.

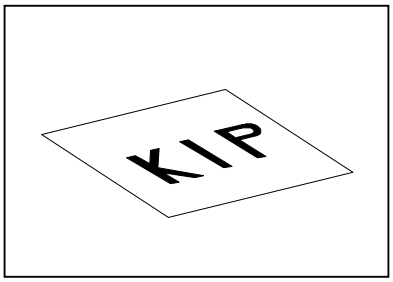
Call your service personnel if you would like to print over 6 meters as the user can not change this setting in the printer.

If you print longer than 6 meters, the image quality or the reliability of media feeding is not guaranteed.

1. 4. 2 Media not to be used

Do not use the following kinds of printing paper. Doing so may damage the printer.

Excessively curled	
Folded	
Creased	
Torn	
Punched	

Pre-printed	
Extremely slippery	
Extremely sticky	
Extremely thin and soft	
OHP Film	

⚠ CAUTION

Do not use the paper with staple, or do not use such conductive paper as aluminum foil and carbon paper.
The above may result in a danger of fire.

⚠ NOTE

(1) Print image may become light if printed on a rough surface of the paper.

(2) Print image may become defective if the print paper has an excess curl.

(3) It will cause paper mis-fed, poor print image or creasing if you use a paper that does not satisfy the specifications.

(4) Do not use a paper of which surface is very special, such as thermal paper, art paper, aluminum foil, carbon paper or conductive paper.

(5) Tracing paper / vellum exposed to air over a long period tends to cause a defective printing. It is recommended to remove one round on the surface of the tracing / vellum roll from the beginning.

(6) Remove fully any adhesive from the roll that may remain due to tape placed by the media supplier.

(7) Do not use papers with unpacked (exposed in high / low temperature & humidity) in a long period. Such papers may result in mis-feed, defective image or paper creasing.

(8) It is recommended to trim the leading edge by using Initial Cut Key on the User Interface (UI) before making a long print.

1. 4. 3 Maintaining Media

Keep the paper in the custody taking care of the following matters.

1. Do not expose the paper to the direct sunlight.
2. Keep the paper away from high humidity. (It must be less than 70%)
3. Put the paper on a flat place, do not damage the media.
4. If you will keep paper which you has already been unpacked, put it into the plastic bag to avoid humidity in the media.

1. 4. 4 Environmental Condition - Correction

Take a necessary treatment according to the environmental condition as shown below.

Humidity(%)	Possible problem	Necessary treatment
Low ↑	"Void of image", "crease of paper" and other problems occurs when you print with plain paper and vellum.	1. Install the humidifier in the room, and humidify the room air. 2. Remove the media from the machine right after the completion of print, and keep it in a plastic bag.
40%	"Void of image" occurs when you print with vellum.	If you will not make print soon, remove the vellum from the machine and keep it in a plastic bag.
70%		Remove the paper from the machine after everyday use, and keep it in a plastic bag.
	"Void of image" occurs when you print with plain paper and vellum.	If you will not make print soon, remove the media from the machine and keep it in a plastic bag.
↓ High	"Void of image", "crease of paper" and other problems occurs when you print with plain paper and vellum.	1. Turn on the Dehumidify Heater. 2. Remove the media from the machine right after the completion of print, and keep it in a plastic bag.

⚠ NOTE

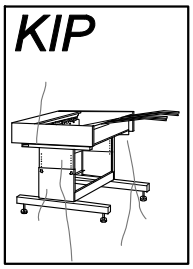
(1) KIP 7700 is equipped with the Dehumidify Heater.
Using it in high humidity environment (65% or higher) is recommended.

(2) "Void of image" and "crease of paper" will occur in case of extremely high or low humidity.

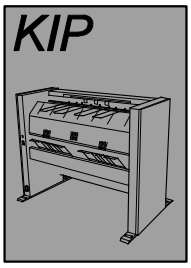
Normal Print

If the media is humidified; →

Crease of paper

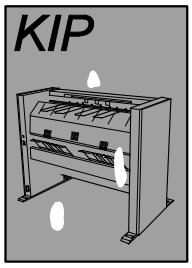


Normal Print



If the media is humidified; →

Loss of image



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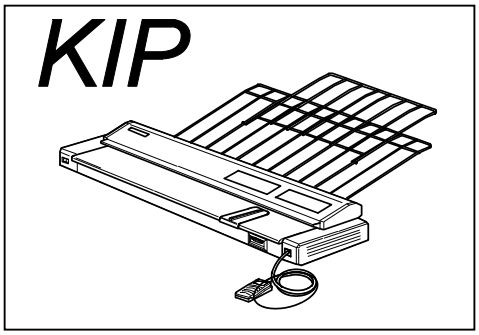
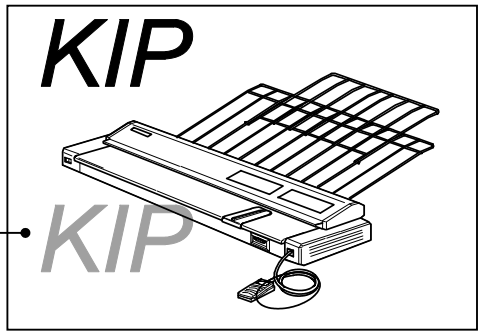
⚠ NOTE (cont.)

(3) Re-appearance of image (solid black image especially) may occur if you print with a humidified film.

When film is installed under the high humidity environment (higher than 60%RH), we also recommend that you turn on the Dehumidify Heater.



Normal print



Re-appeared image

Chapter 2

Installation

This machine is packaged and shipped after careful adjustment and passed a strict inspection in our factory.
Installation is important work to reappear the efficiency of the machine that has passed the test in our factory after having installed at customer site.
A service engineer has to understand this machine's function very well, install this machine in a good environmental place in a correct procedure, and check this machine completely.

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2. 1 Installation Requirements

The following conditions are required for installation of the equipment.

1. Power source should be rated as follows.
   220V - 240V plus 6% or minus 10%, 50/60Hz, 20A or higher
2. The equipment must be on an exclusive circuit.
3. The outlet must be near the equipment and easily accessible.

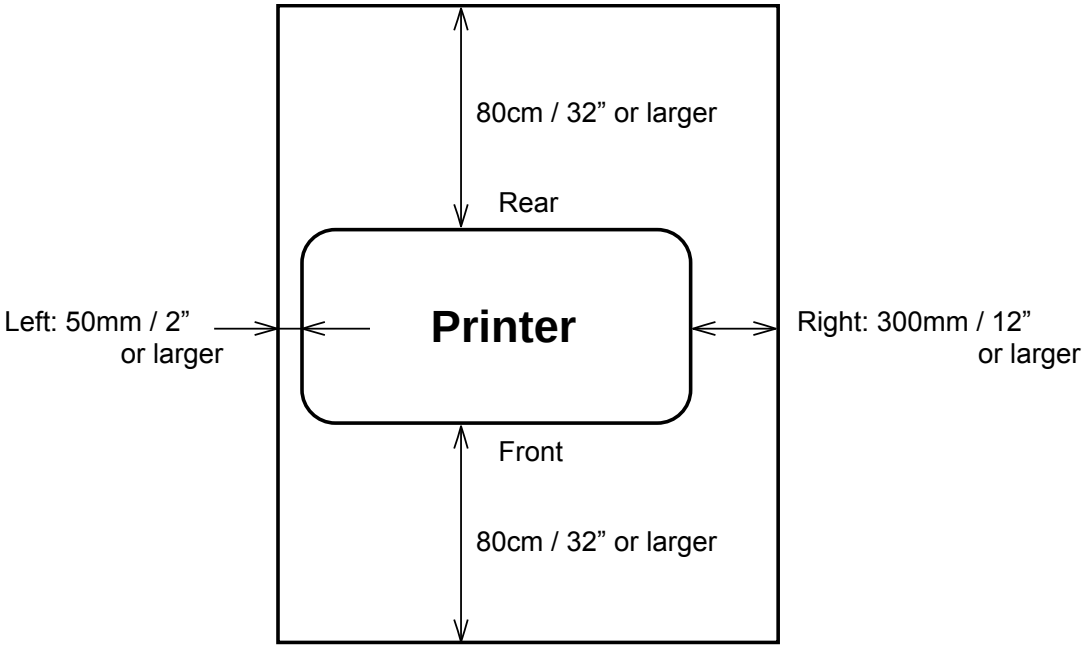
1. Make sure to connect this equipment to a grounded outlet.
2. For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.

The site temperature range = 10 to 32 degrees Centigrade, with the humidity between 15% to 85% RH. (NON-CONDENSING)
Keep the printer away from water sources, boilers, humidifiers or refrigerators.

1. The installation site must not have open flames, dust or ammonia gases.
2. The equipment must not be exposed to the air vents from air conditioners. It may affect the image quality.
3. The equipment should not be exposed to the direct sunlight. Please draw curtains to block any sunlight. When you open the Upper Unit to remove a mis-feed, do not expose the Photoconductive Drum to strong (intense) light as this will damage the Drum.

Ozone will be generated while this equipment is use, although the quantity generated is within safe levels. (See certifications.)
Ventilate the room, if required.

Keep ample room around the equipment to ensure comfortable operation.
(Refer to the following figure.)
The equipment must be leveled and the floor strength must be ample to sustain the weight of the equipment.



2. 2 Unpacking

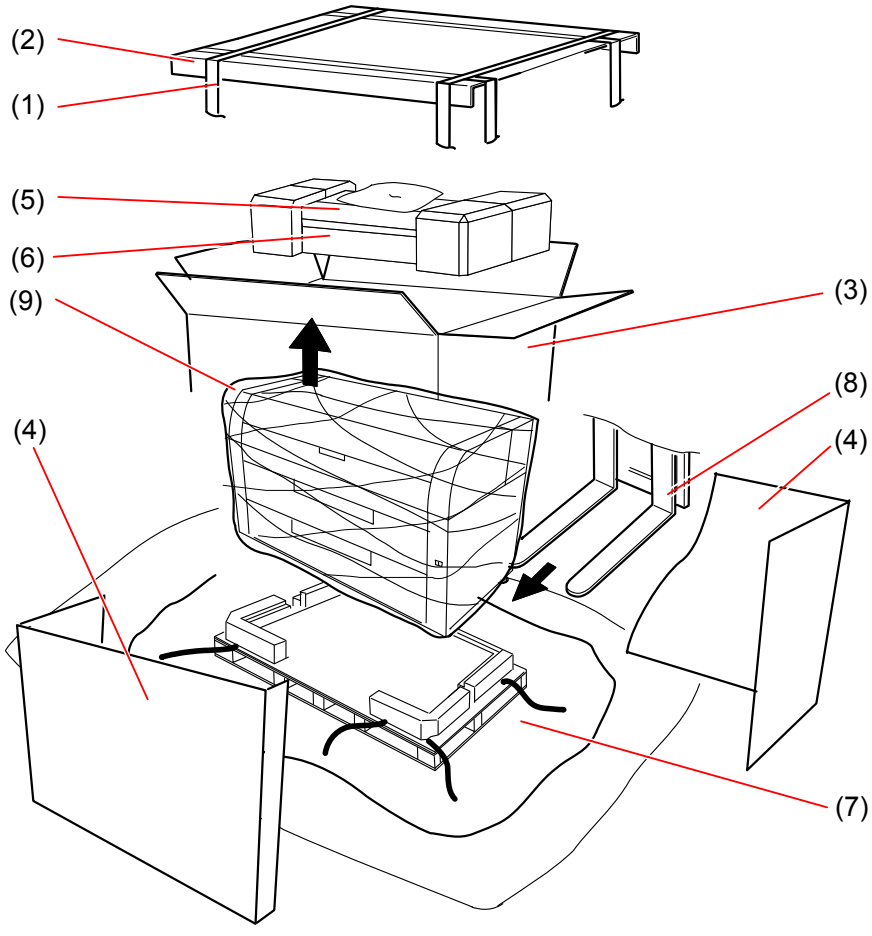
CAUTION

1. The printer must be acclimated to its environment before unpacking. Please allow the machine 6 hours (or longer) undisturbed at the installation site before removing its package. If the printer is unpacked without adjusting to room-temperature, condensation may form, damaging the equipment.
2. Handle with great care when you unpack or install the printer because its weight is approx. 330kg (2 Roll Type) / 370kg (4 Roll Type).

NOTE

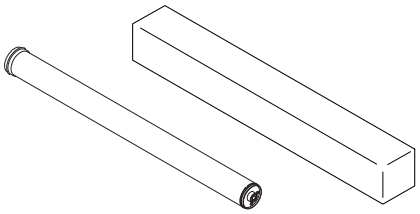
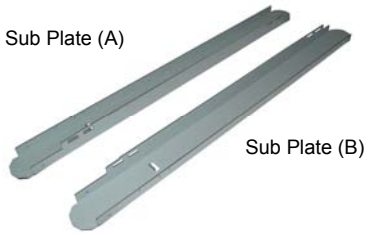
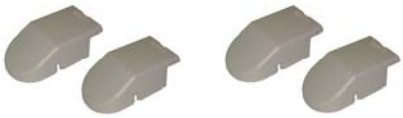
The printer package does not include print media.
These must be ordered separately before installing the printer.

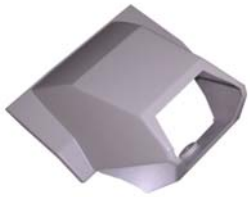
1. Cut four packing bands (1) and remove Top board (2).
2. Open the top of outer carton box (3).
3. Remove User's Manual and Setup Procedure.
4. Lift the outer carton box (3) upward and remove side boards (4).
5. Take out Photoconductive Drum (5), Accessory Box (6).
6. Peel off plastic bag (7).
7. Unload the machine from the pallet to the floor using a forklift (8).
8. Remove wrapping film (9) from the machine and move it to the proper installation place selected in advance.



2. 3 Accessory List

Confirm the following parts are attached to the product.

Item Name		Number of article	Remarks
Photoconductive Drum		1	
Sub Plate (A) Sub Plate (B)		2	
Sub Plate Cover (C)		2	
Sub Plate Cover		4	
Bracket		4	
Bind Head Screw (M4x6)		20	for Sub Plate and Sub Plate Cover
Cap Assy		4 or 8	4 for 2 Roll type 8 for 4 Roll type 2 pcs for one roll media

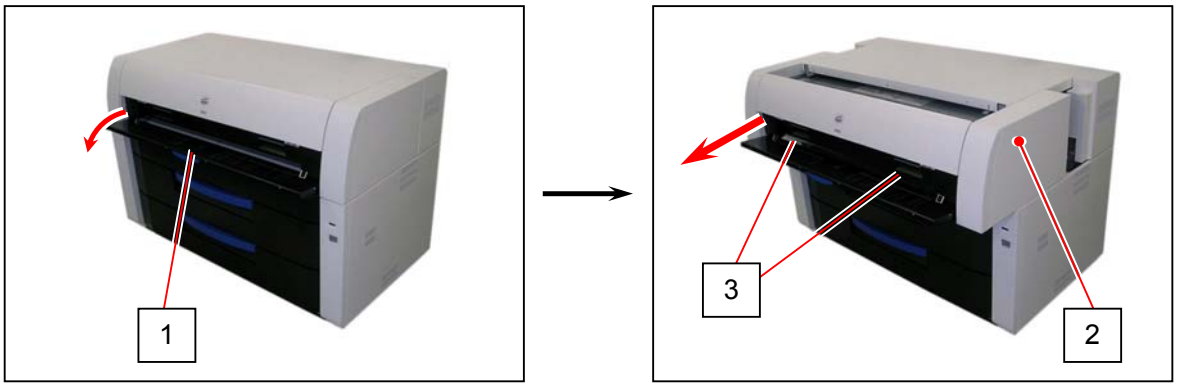
Item Name		Number of article	Remarks
Toner Cartridge		1	
Developer Handle		1	
Monitor Assy		1	
Cover 5		1	
Arm Assy		1	
Bracket Touch Panel		1	
EMI Core		1	Power Cable on Arm Assy

Item Name		Number of article	Remarks
UI Arm Base		1	
Cover 3 Cover 4	(Cover 4) (Cover3)	1 1	
Plate 3 Plate 4	(Plate 4) (Plate3)	1 1	
Bind Head Screw (M4x6)		4	Temporarily fixes the parts above.
Wire Saddle		1	
Bushing		1	
Bind. Head Screw (M4x6)		14	for Arm Assy
Bind. Head Screw (M4x10)		4	for Bracket Touch Panel
Bind. Head Screw (M3x14)		1	for Holder Assy
Holder Assy		1	

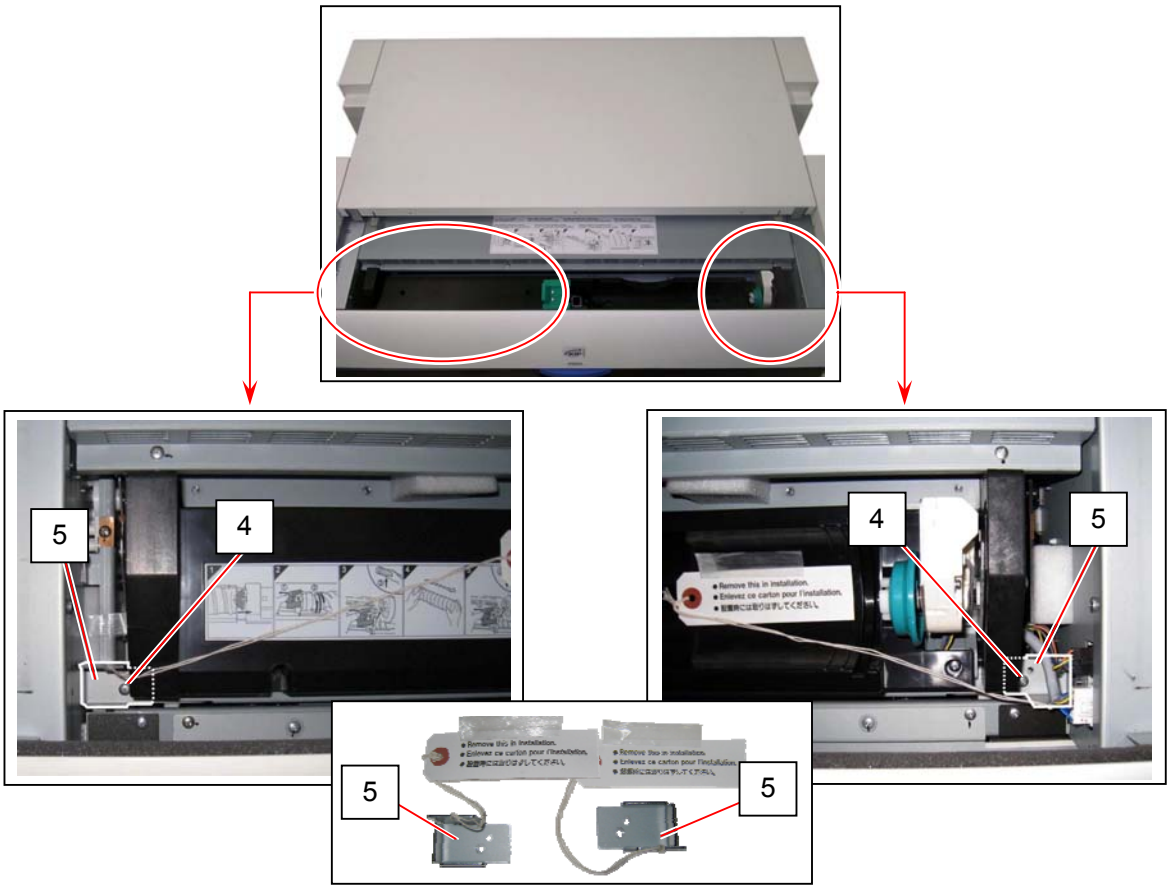
Item Name		Number of article	Remarks
Pen		1	
User's Manual (CD)		1	
Setup Procedure		1	this leaflet
User's Manual Leaflet (German)		1	Europe model only
Stopper		2	for KIP 2100 Scanner (option)

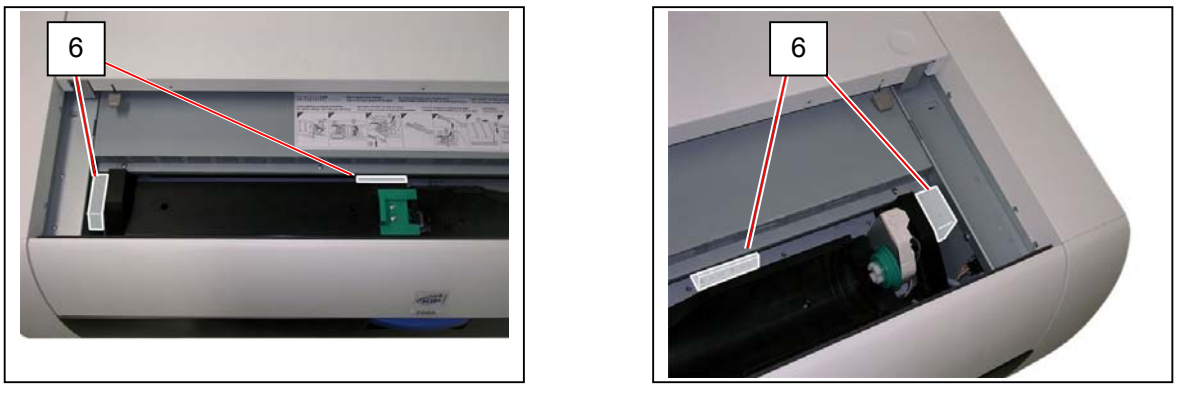
2. 4 Removing Shipping Tapes

1. Open the Manual Table (1), and then pull out the Upper Frame Unit (2) frontward with holding both handles (3).

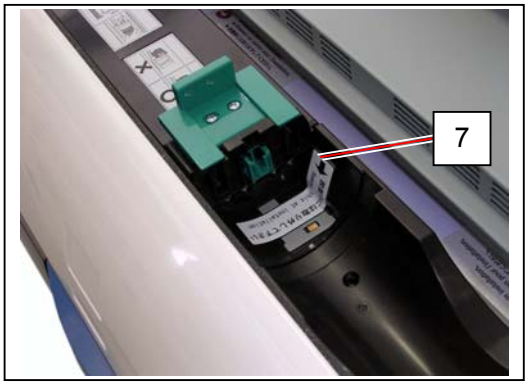


2. Remove 2 screws (4) to remove Fixing Plate (5), and then remove 4 pads (6) around the Developer Unit.

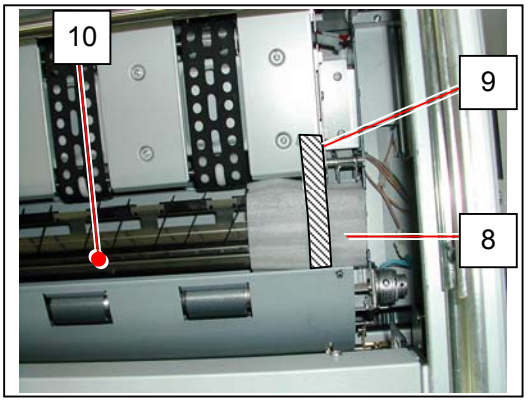




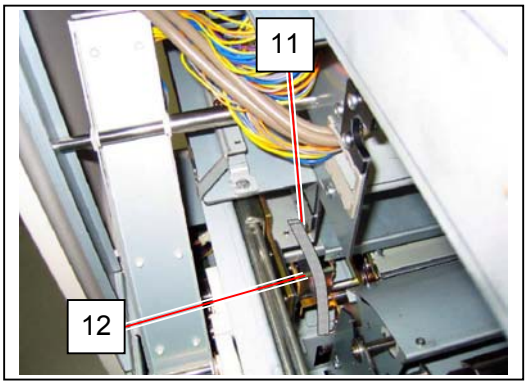
3. Remove 1 label (7) on the toner supply hole of Toner Hopper.



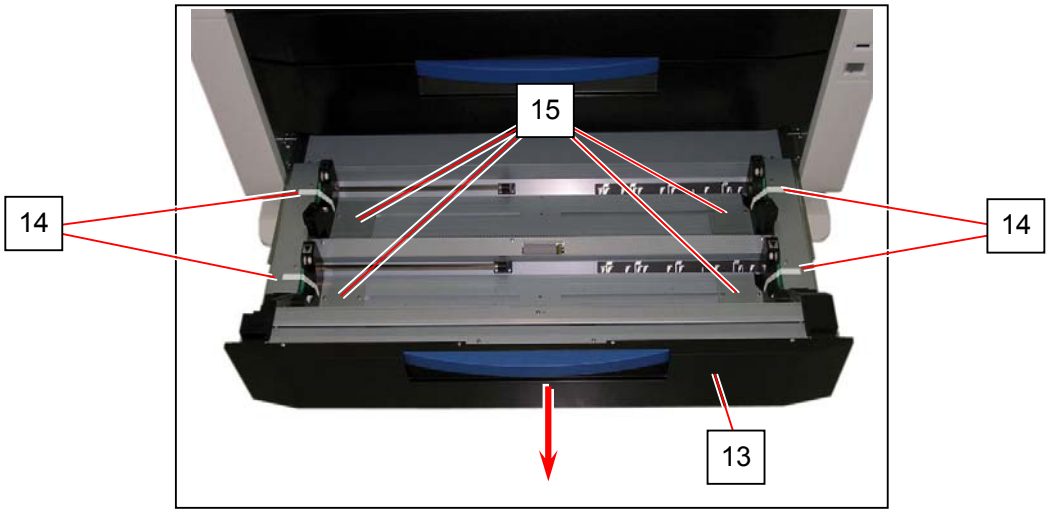
4. Remove the Mirror Mat (8) with tape (9) from the Transfer Corona Assy (10).



5. Remove the tape (11) from the Cutter Solenoid (12).



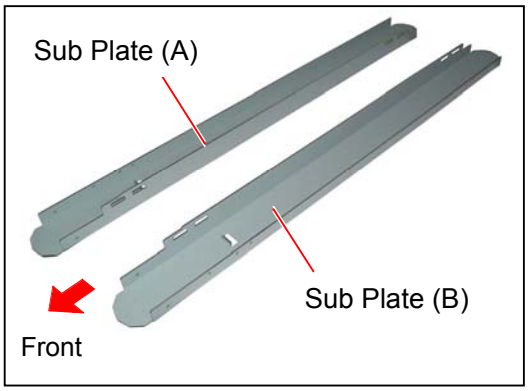
6. Draw out each Roll Deck (13), and remove tapes (14) fixing Slide Guides (15).

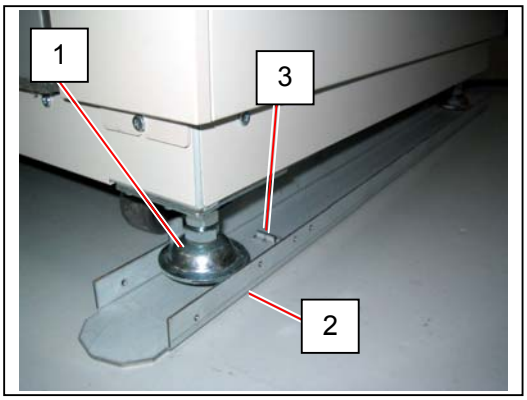


2. 5 Installing Floor Plates / Leveling

The following procedure is for the installation of Sub Plate (B). Install the Sub Plate (A) in the same way.

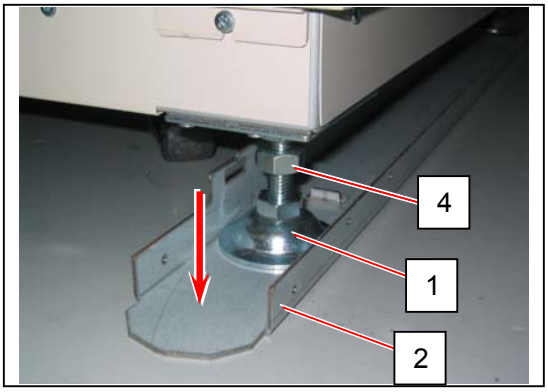
1. Insert the **Sub Plate B** (2) between the floor and the Adjusters (1) which are at the bottom of machine.
   Make sure that the Positioning Bent (3) is at the back of the front Adjuster.



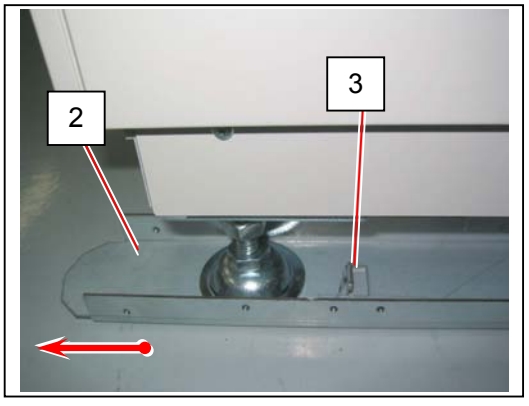


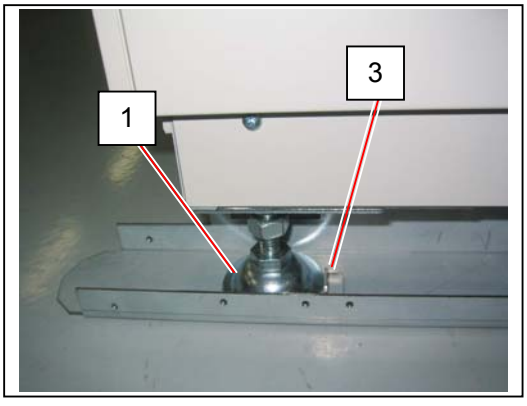
2. Lower the Adjusters (both the front and rear) (1) until they touch the Sub Plate (B) (2).

> **NOTE**
>
> Do not lower the upper Nut (4).



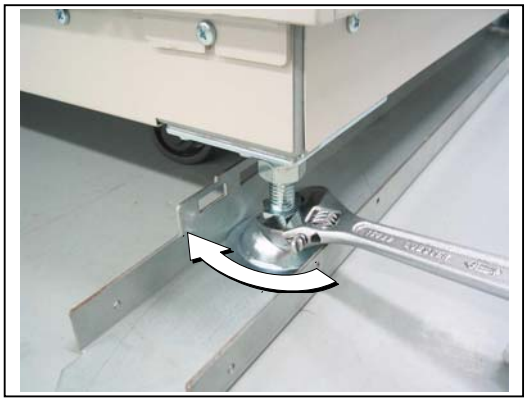
3. Slide the Sub Plate (B) (2) in the direction indicated by the arrow (to the front side) until the Positioning Bent (3) hits the front Adjuster (1).

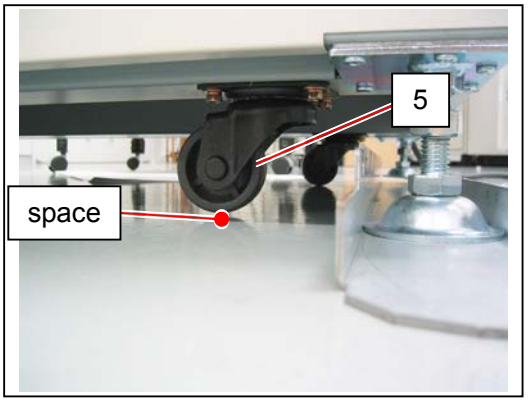




4. Fully lower both the front and rear Adjusters.

5. Rotate both the front and rear Adjusters about 3 revolutions, and check that casters (5) are lifted up from the floor.

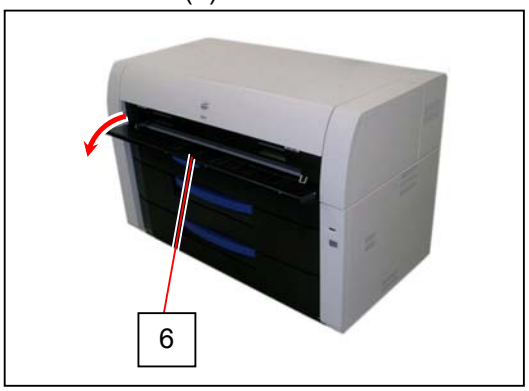


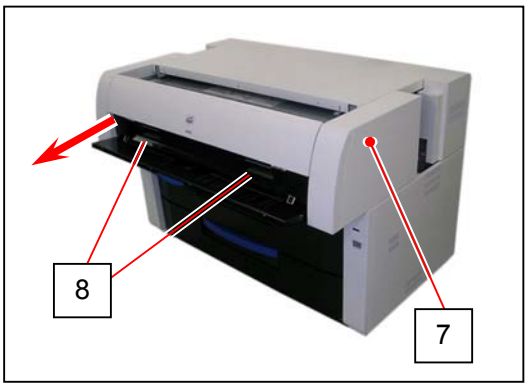


NOTE

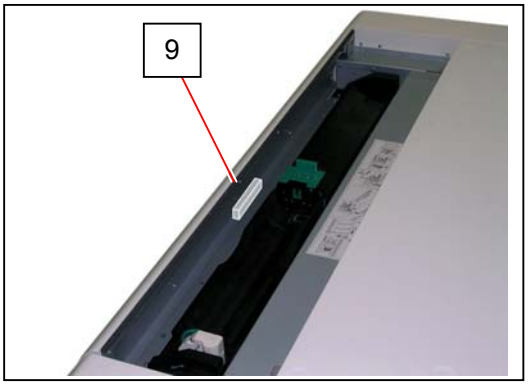
You will check the level in the later steps. First attach Sub Plate (A) to the machine.

6. Open the Manual Table (6), and then pull out the Upper Frame Unit (7) frontward with holding both handles (8).

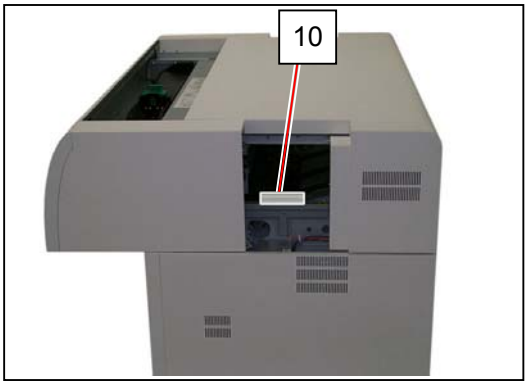




7. Put the leveler on the shown position (9) to check the level.

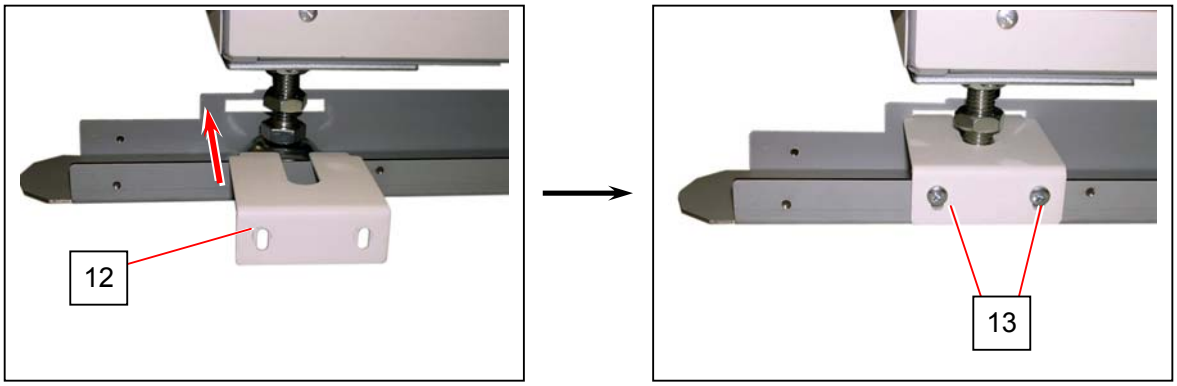


8. Put the leveler on the right side plate (10) to check the level.

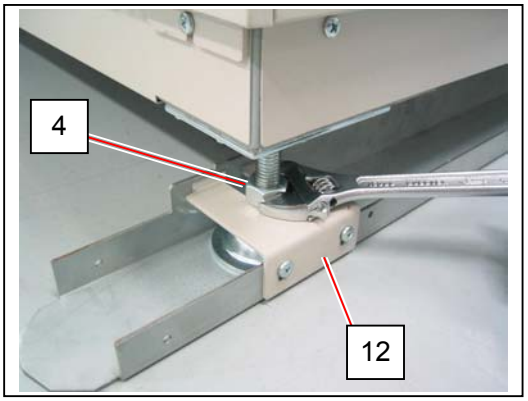


9. Put the leveler on the left side plate (11) to check the level.

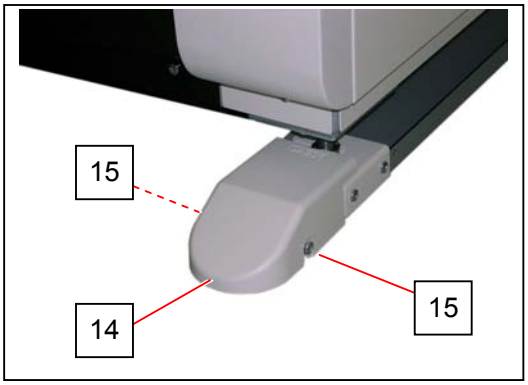
10. Fix the **Bracket** (12) with **2 Bind Head Screws (M4x6)** (13). (front/rear, right/left respectively.)



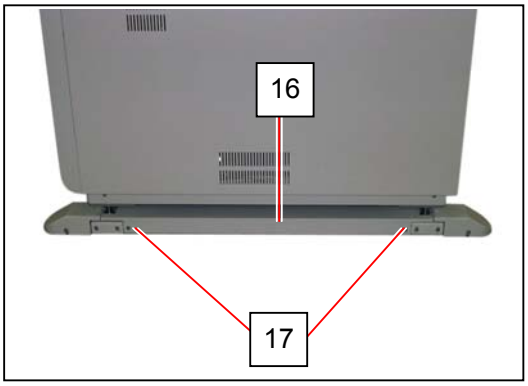
11. Lower the upper Nut (4) and tighten it with a wrench to fix the Bracket (12).



12. Fix the **Covers** (14) with **2 Bind Head Screws (M4x6)** (15). (front/rear, right/left respectively.)

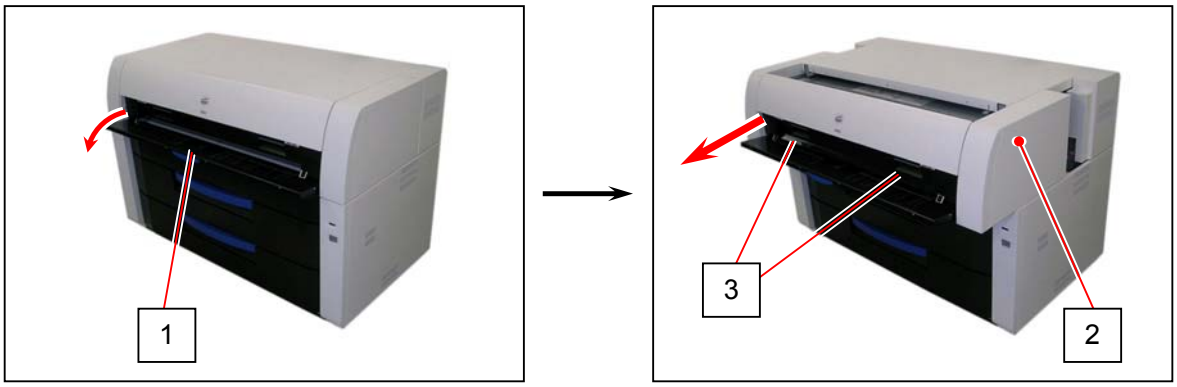


13. Fix the **Cover (C)** (16) with **2 Bind Head Screws (M4x6)** (17).

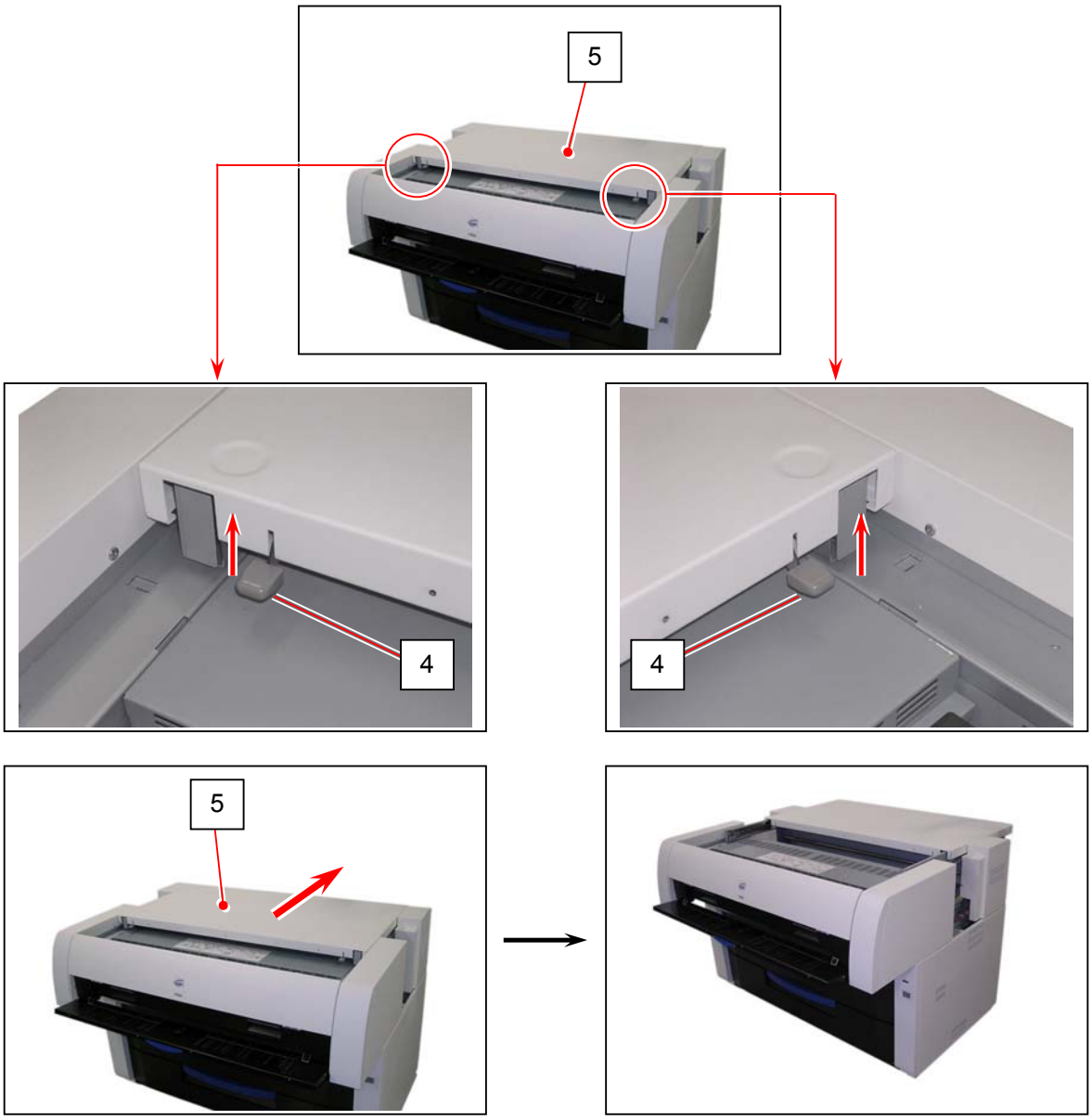


2. 6 Releasing LED Head

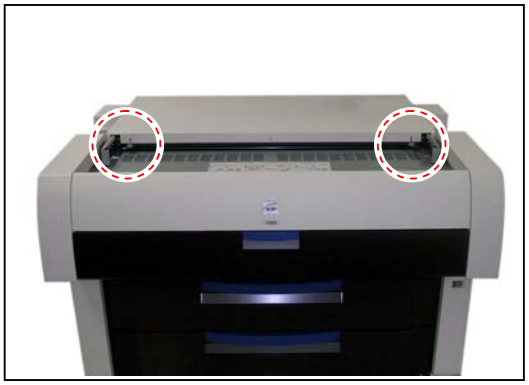
1. Open the Manual Table (1), and then pull out the Upper Frame Unit (2) frontward with holding both handles (3).

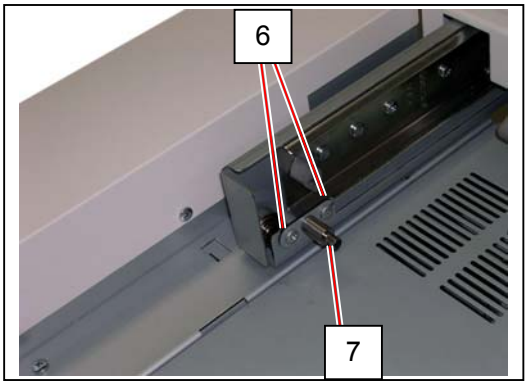


2. Pull up both knobs (4), and then open the Top Cover (5) by pushing it toward the rear side.

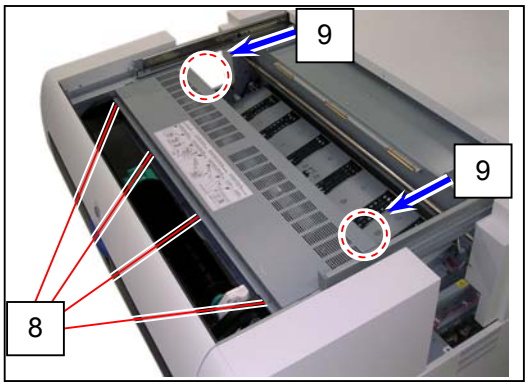


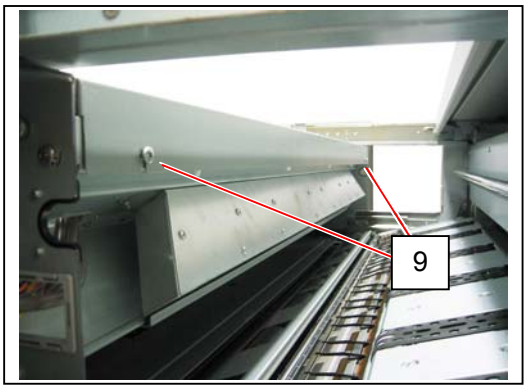
3. Remove 2 screws (M4x6) (6), and remove the Hook Pin Assy (7) from both sides.

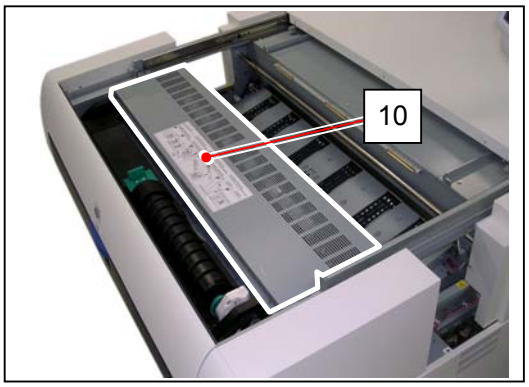


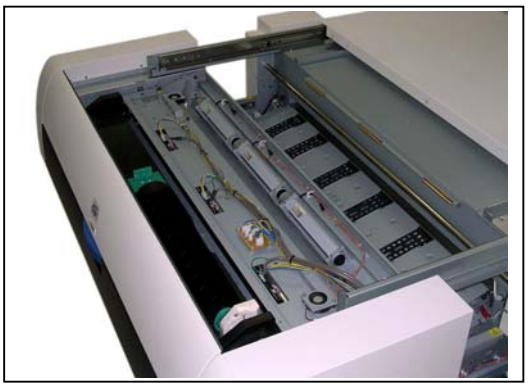


4. Remove 4 screws (M4x6) (8) at the top, loosen 2 screws (M4x6) (9) at the rear side, and then remove the Process Cover. (10)

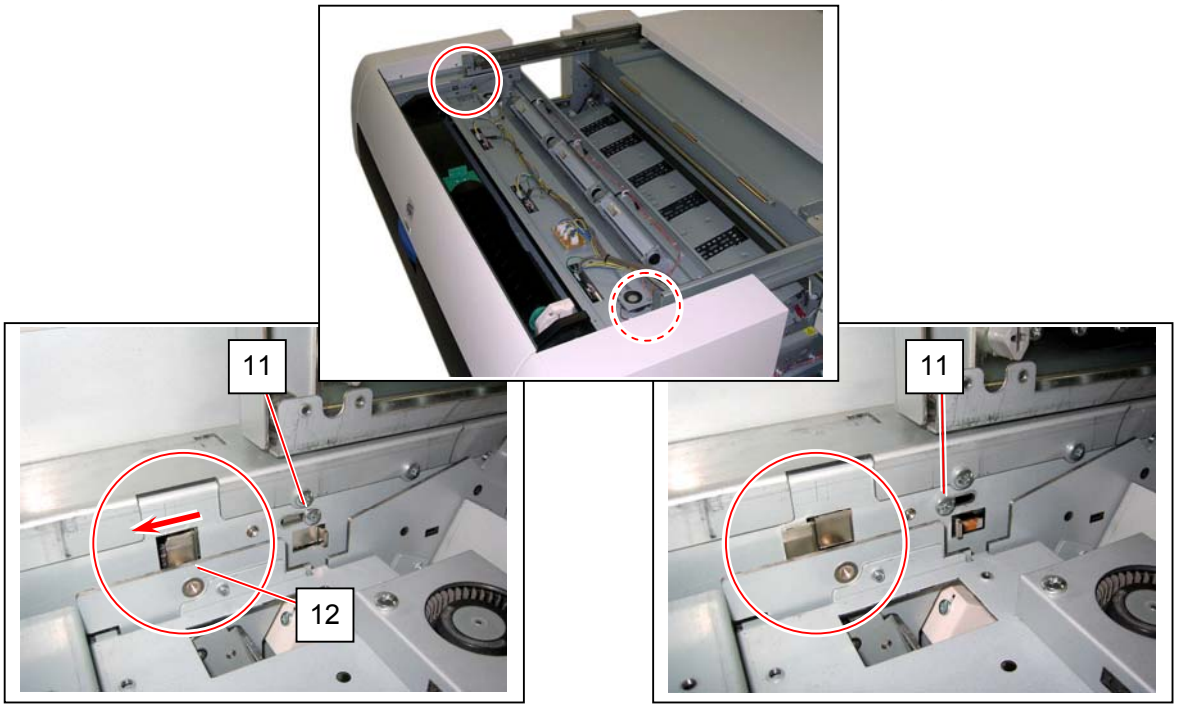






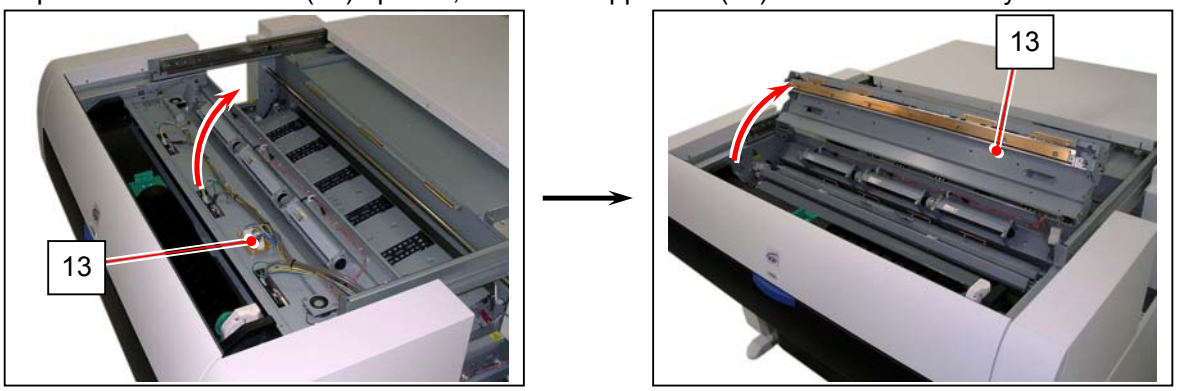


5. Loosen 2 screws (11). Slide both Stopper Levers (12) toward the front.
   Movable Unit (13) will be unlocked and becomes possible to open upward by this work.



(Lock) (Unlock)

6. Open the Movable Unit (13) upward, and the Stopper Pin (14) works automatically.

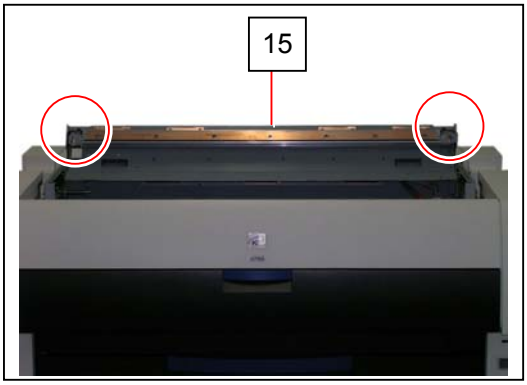


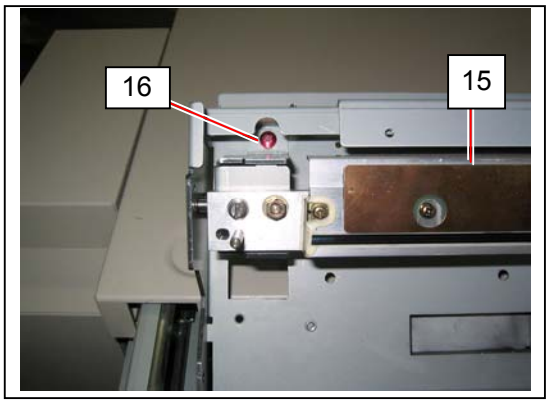
NOTE

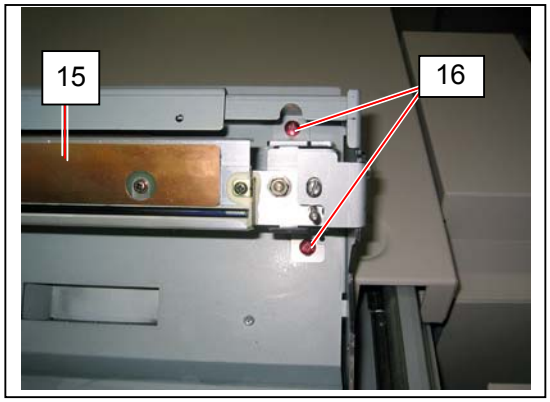
When you opened Movable Unit, make sure that Stopper Pin (14) is properly in Lock position.
When you close Movable Unit, pull Stopper Pin (14) inside to unlock Movable Unit.

Lock Position Pull Stopper Pin to unlock

7. The LED Head (15) has been fixed to the Movable Unit during the transportation. Remove 3 red head screws (M4x8) (16) to release the LED Head.





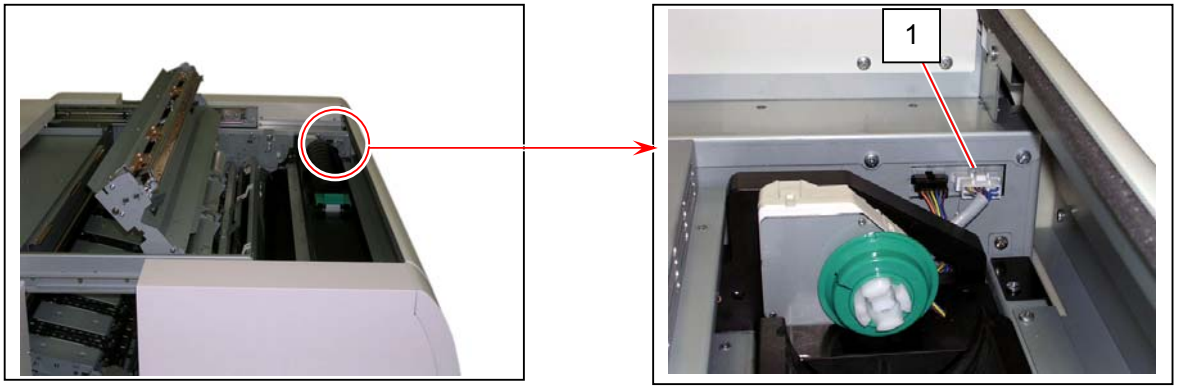


8. Leave Movable Unit open for the later work.

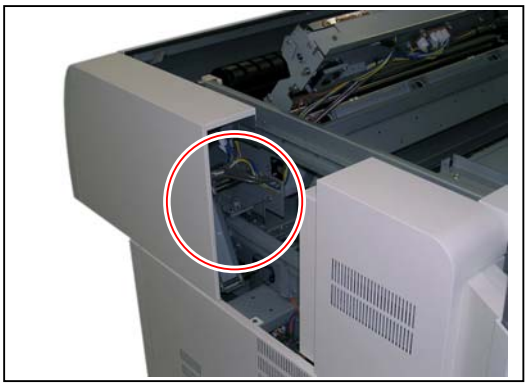
2. 7 Process Unit Setup

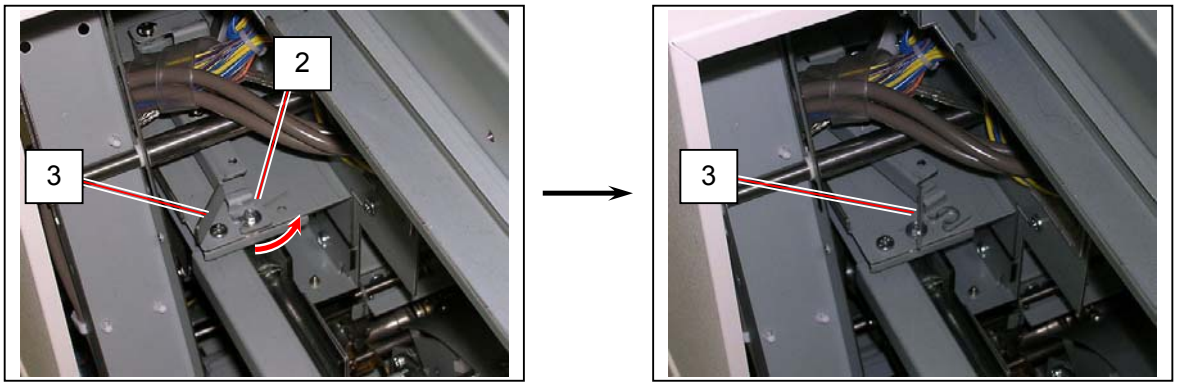
2. 7. 1 Developer Assy Setup

1. Disconnect 1 connector (1) of the Developer Unit.

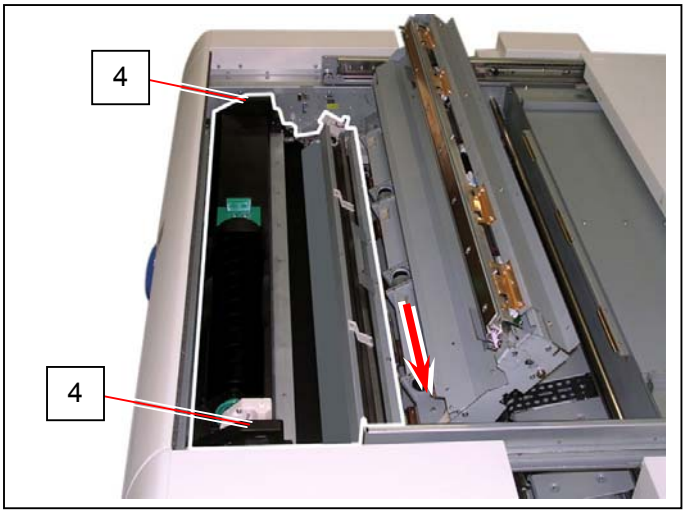


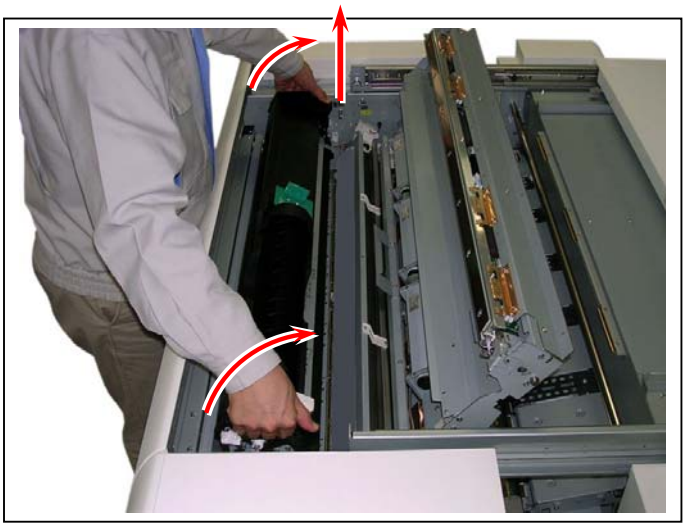
2. Loosen the Hex Head Screw (2), and shift the Lever (3) to the arrow direction.



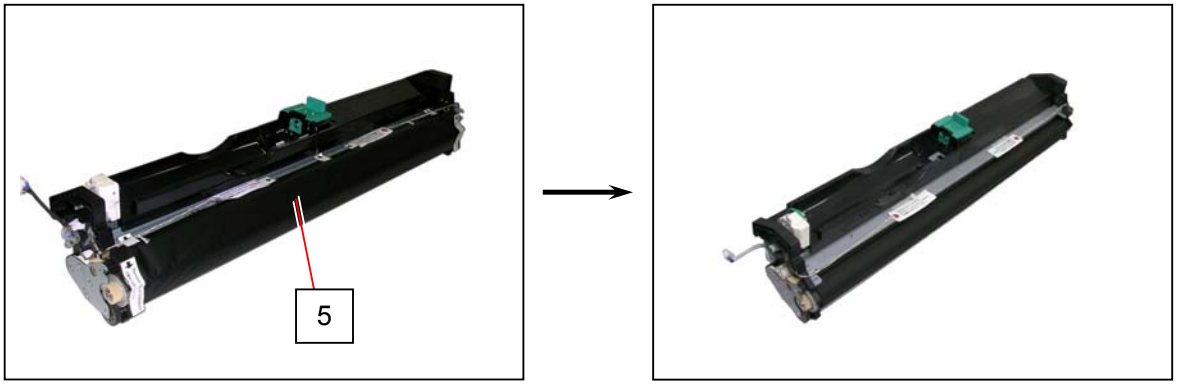


3. Hold the top of Developer Side Plates (4), and **slide the whole Process Unit to the right** to disengage Developer Unit from the machine frame.
Lean Developer Unit to the arrow direction, and lift it up from the machine.
Place Developer Unit on a flat surface.

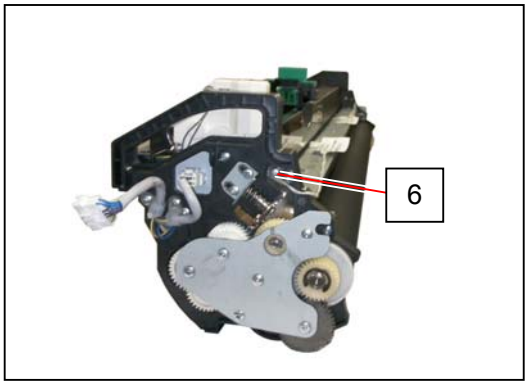


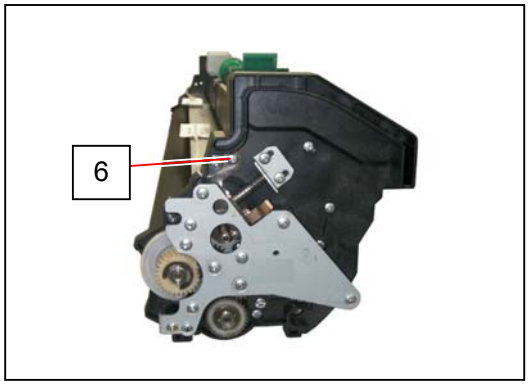


4. Remove the wrapping sheet (5) from Developer Unit.

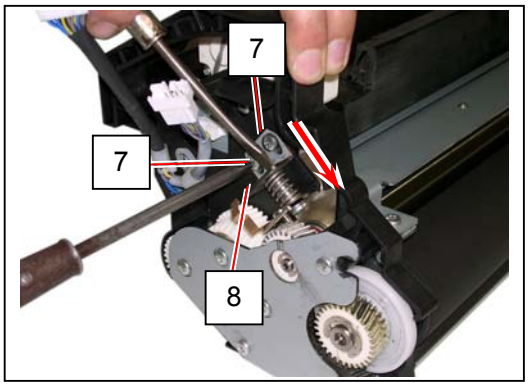


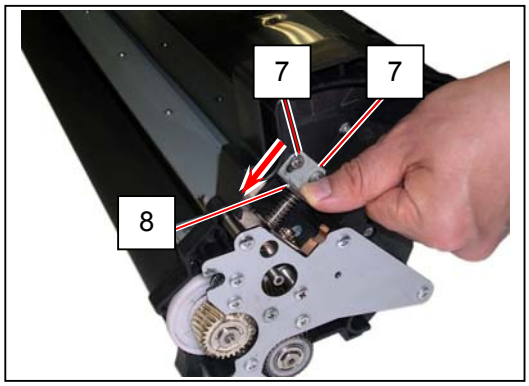
5. Remove 2 tagged screws (6). These are not used for machine setup.

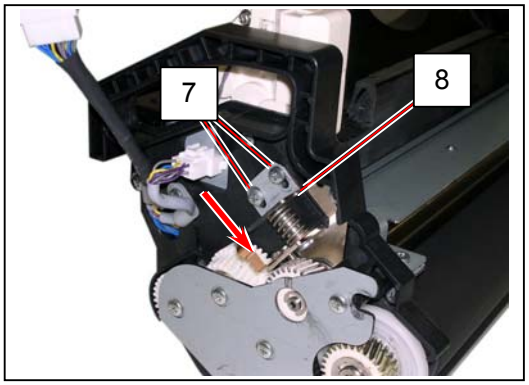


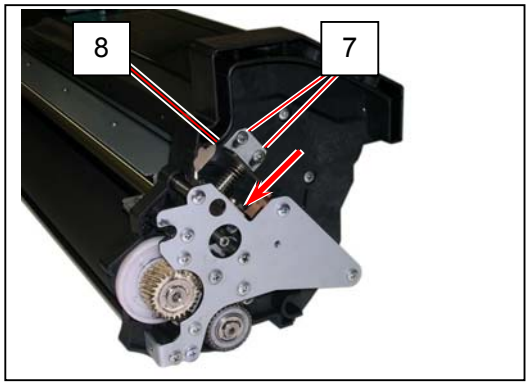


6. Loosen 4 screws (7). Fully depress Pressure Plates (8) to the arrow direction.
With holding, secure Pressure Plates with the screws (7).
Now Blade Roller is pressed onto Developer Roller.









Reference

Use a long flat tip screwdriver to push the drive side Pressure Plate.
Put the tip to the top of the Pressure Plate, and push the screwdriver on the grip end with your body. With holding, tighten the screws.

(See the next page)

NOTE

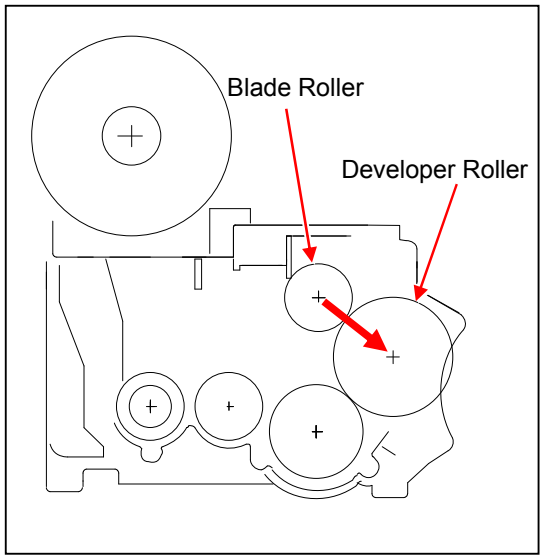
(1) **Incorrect pressurization of Blade Roller for either or both sides makes the toner layer on Developer Roller surface thicker than required. In such a condition, uneven density or dirt by excessive toner may appear on print images.**

(2) Blade Roller is not pressurized during transportation to prevent damage Developer Roller, but it must be pressurized fully before using the machine.
Before moving the machine to another site, it is also is necessary to release Blade Roller as follows.

1. Loosen 4 screws (7).

   Slide Pressure Plates (8) on both sides in the opposite direction of step 6, and then tighten the screws.

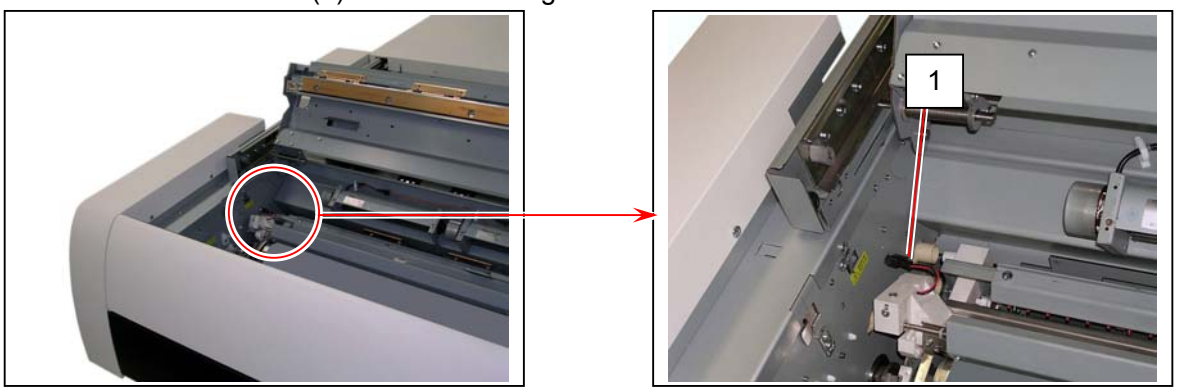
   This releases Blade Roller from Developer Roller.



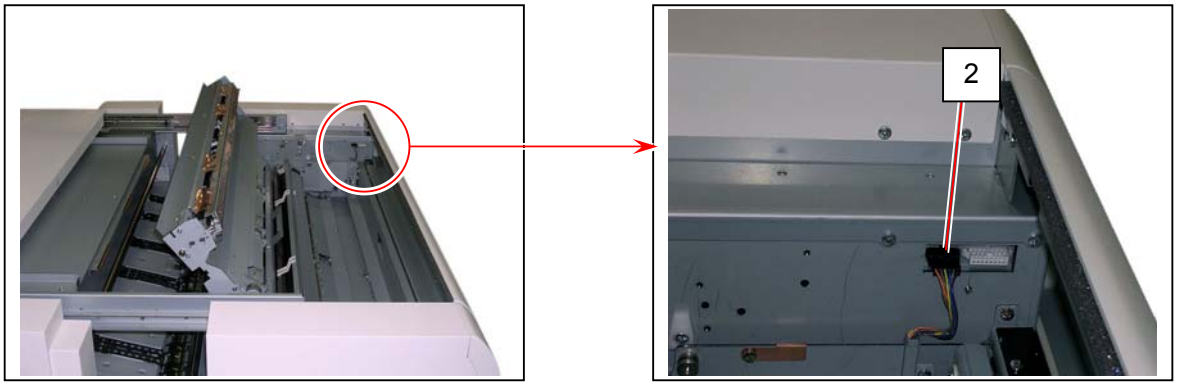
2. Pack Developer Unit separately. Do not put it back into the machine. If Developer Unit is moved inside the machine, toner may leak from Developer Assembly and affect the print quality.

2. 7. 2 Installing Photoconductive Drum

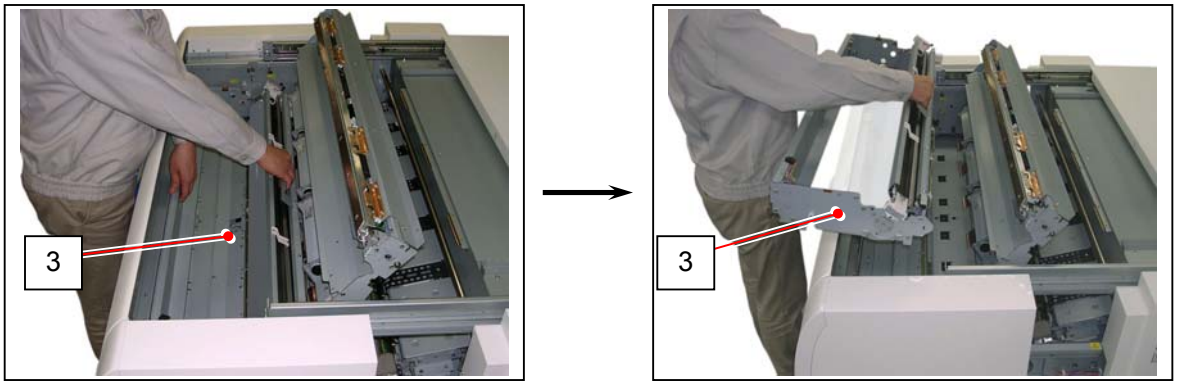
1. Disconnect 1 connector (1) of Wire Cleaning Motor.



2. Disconnect 1 connector (2) of Eraser Lamp.



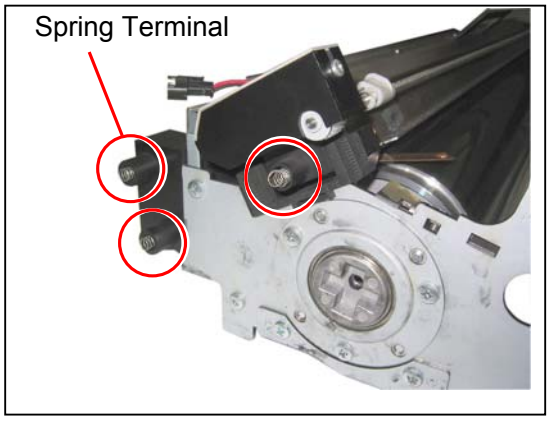
3. Remove the Process Unit (3) from the machine with holding the front and the rear handle.



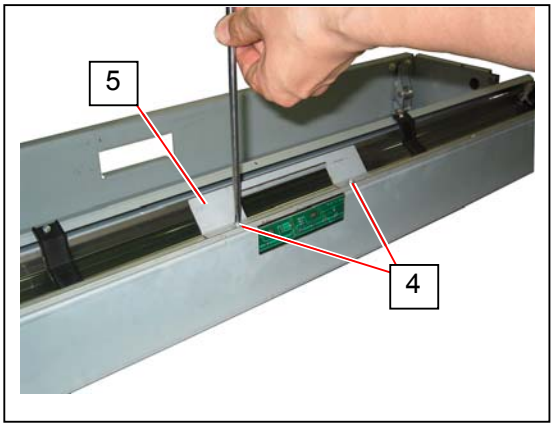
NOTE

(1) Be careful not to damage the Spring Terminals when removing the Process Unit from the machine.

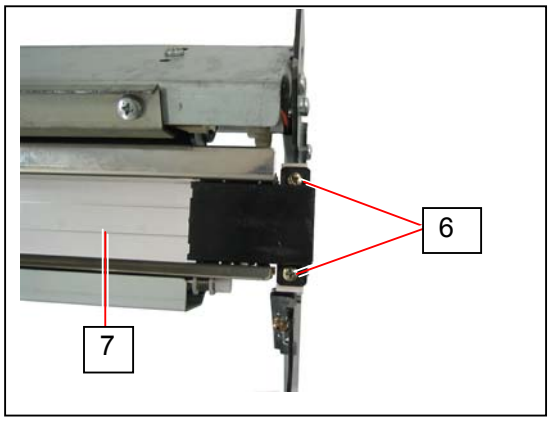
(2) Place the Process Unit on a flat surface.

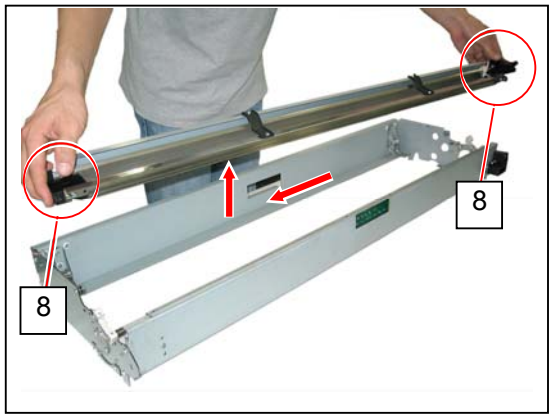


4. Remove 2 screws (M4x6) (4) to take out the Handle (5).



5. Remove 2 screws (M3x8) (6) to take out the Image Corona Assy (7) from the Process Unit.
   At the time of removing the Image Corona Assy, hold the plastic Corona Head (8) on both sides, and slide the Image Corona Assy a little as shown arrows.

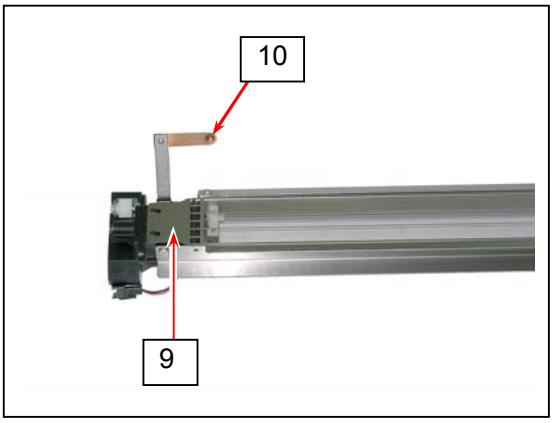




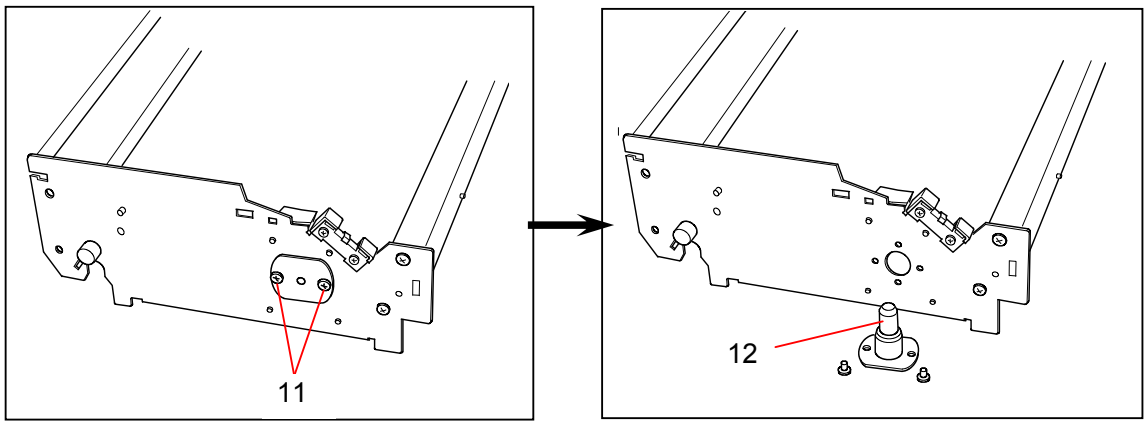
NOTE

1. Make sure to hold the Corona Block on both sides. In case of holding other metallic parts, the Image Corona Assy may be deformed by its weight and so on. It may have some effects on the image quality.

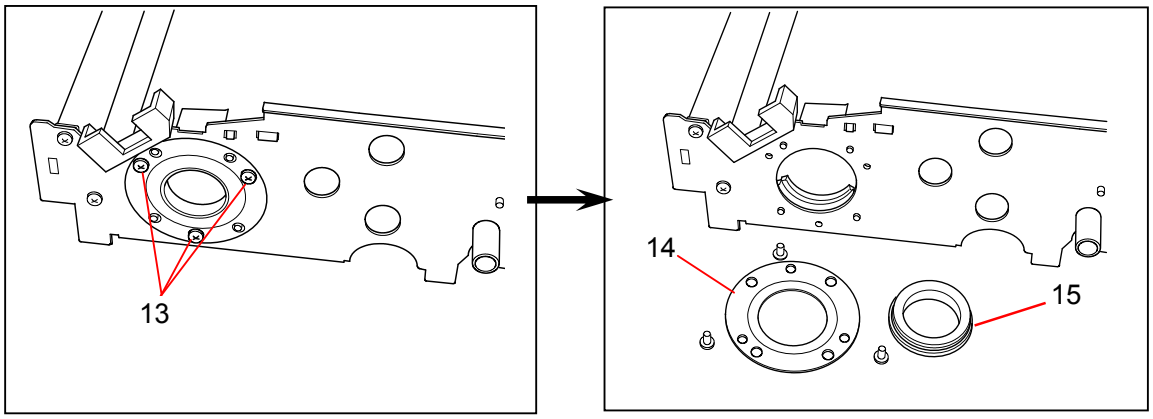
2. At the time of placing the Image Corona Assy, put the side of the Grid Plate face upward in order not to damage the Grid Plate (9) and the Earth Plate (10).



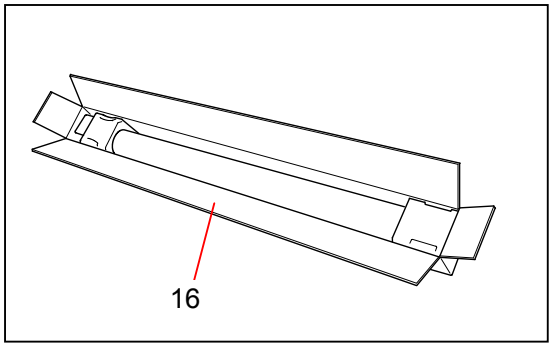
6. Remove 2 screws (11) to take out the Drum Shaft (12) at the right side of Process Unit.



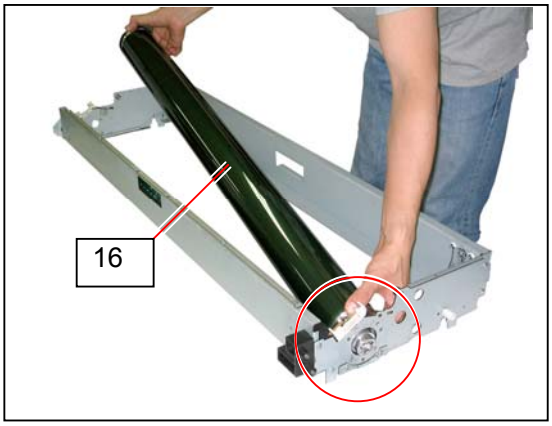
7. Remove 3 screws (M4x6) (13) to take out Plate Bearing (14) and Bearing (15) at the left side of Process Unit.



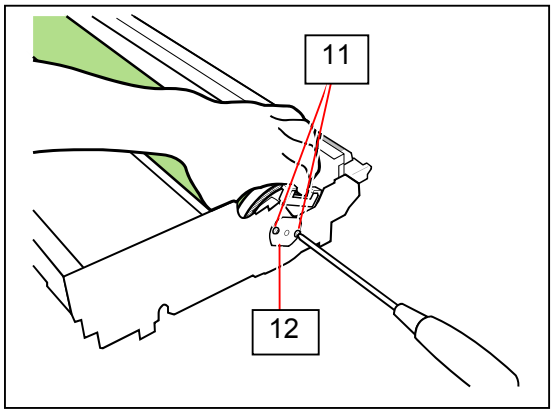
8. Open the package and take out the **Photoconductive Drum** (16) with holding the Gear side on your right hand and the other side on your left hand.



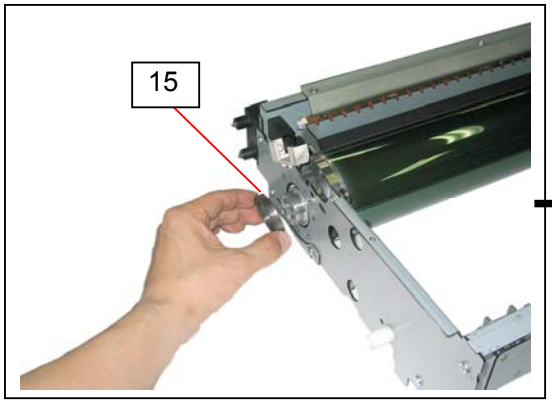
9. Install the Photoconductive Drum (16) to the Process Unit.
   At first, insert the left shaft of the Photoconductive drum into the hole of the Process Side Plate.

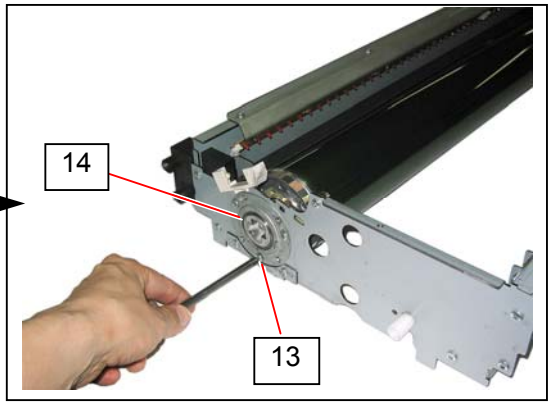


10. Hold the gear side of the Photoconductive Drum by the left hand, and then fix the Drum Fixing Plate (12) with the screw (M4x6) (11).

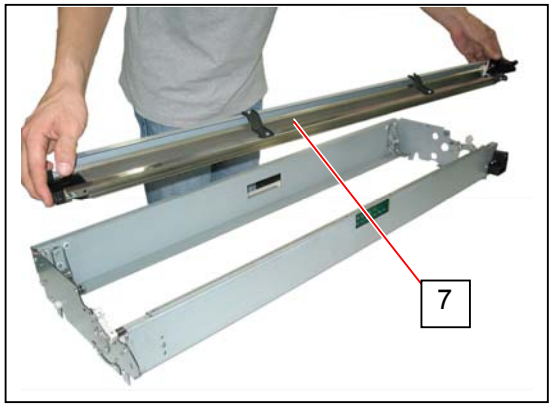


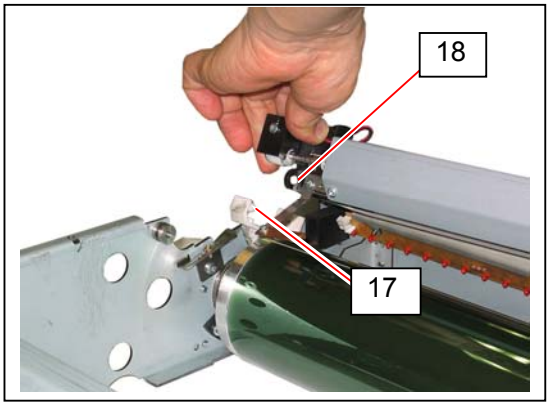
11. Put the Bearing (15) on the left shaft of the Photoconductive Drum, and then fix the Plate Bearing (14) with the screw (M4x6) (13).



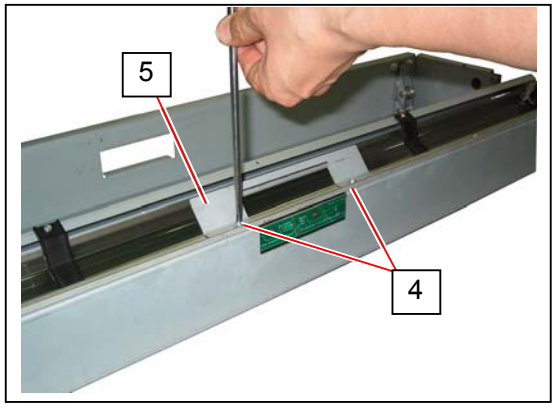


12. Install the removed Image Corona Assy (7) with the screws (M3x8) (6). At this time, fit the protrusion (17) of the Corona Head Holder to the hole of the Corona Head (18).

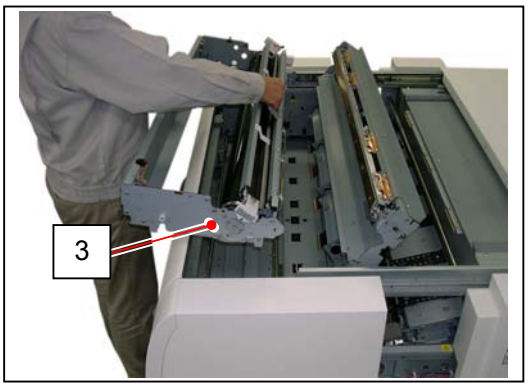




13. Fix the removed Handle (5) with 2 screws (M4x6) (4).



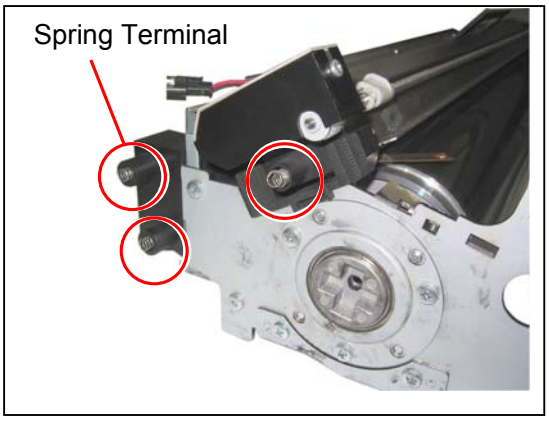
14. Lift up the Process Unit (3) with holding the front and the rear handle, and then reinstall it into the machine.



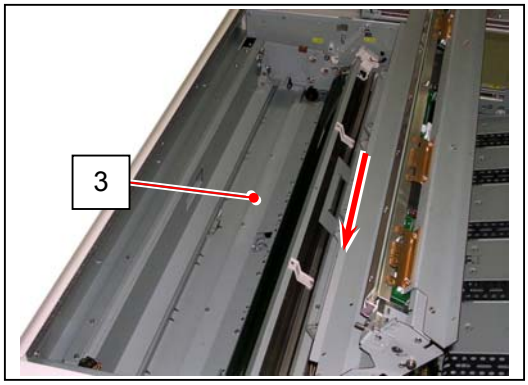
NOTE

(1) Be careful not to damage the Spring Terminals when reinstalling Process Unit to the machine.

(2) Be careful not to damage the Photoconductive Drum.



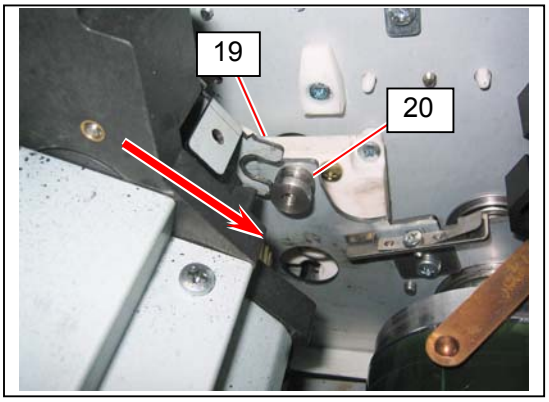
(3) Slide the whole Process Unit (3) rightward, or it is impossible to install the Developer Unit.



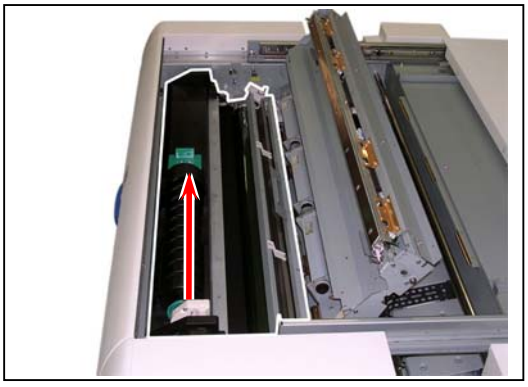
15. Put back the Developer Unit to the machine, which is finished the set-up.

NOTE

Fit the Shaft Plates of the Developer Unit (19) to the Positioning Collar (20) of Process Unit on both sides.



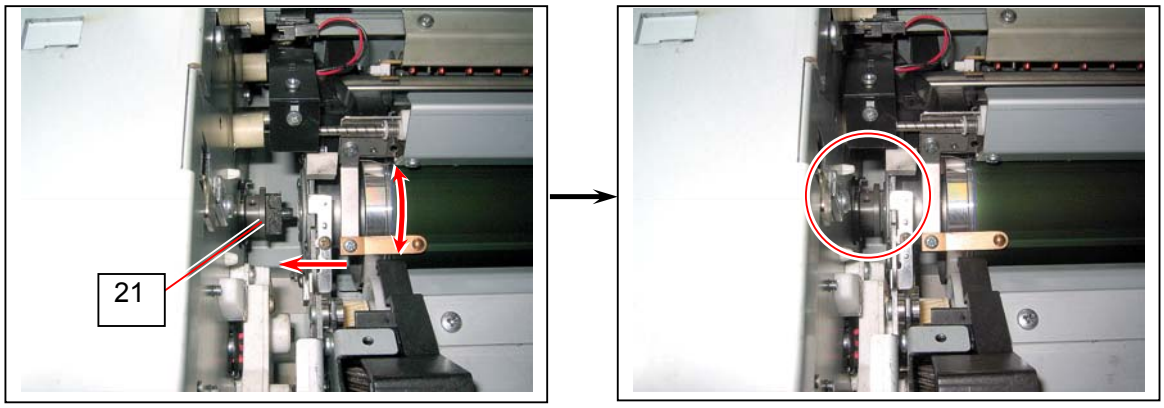
16. Slide the whole Process Unit leftward.



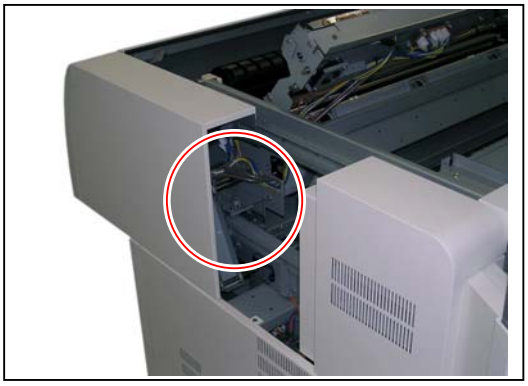
(continued on the next page)

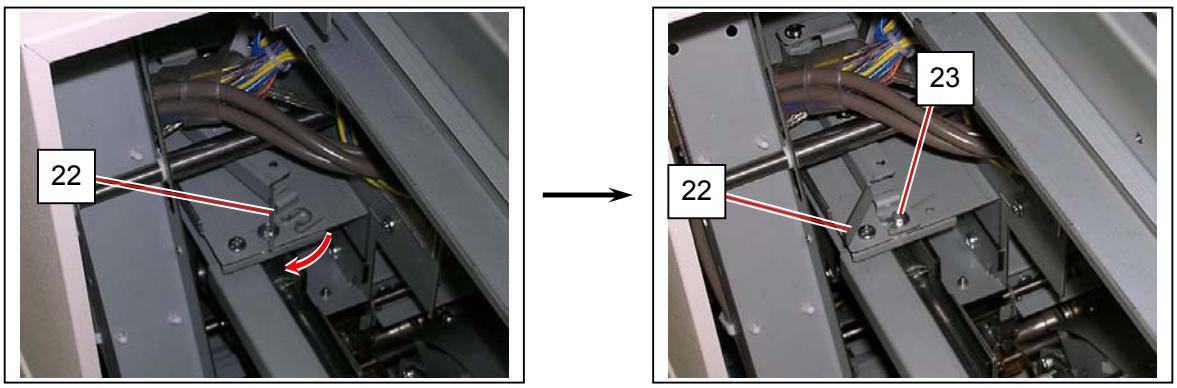
NOTE

Check that the cross-shaped groove of the Photoconductive Drum is firmly jointed with the Drum Drive Shaft (21). If not, rotate the Drum to adjust.
At this time, do not touch on the surface of Drum directly but hold the flange part to rotate.

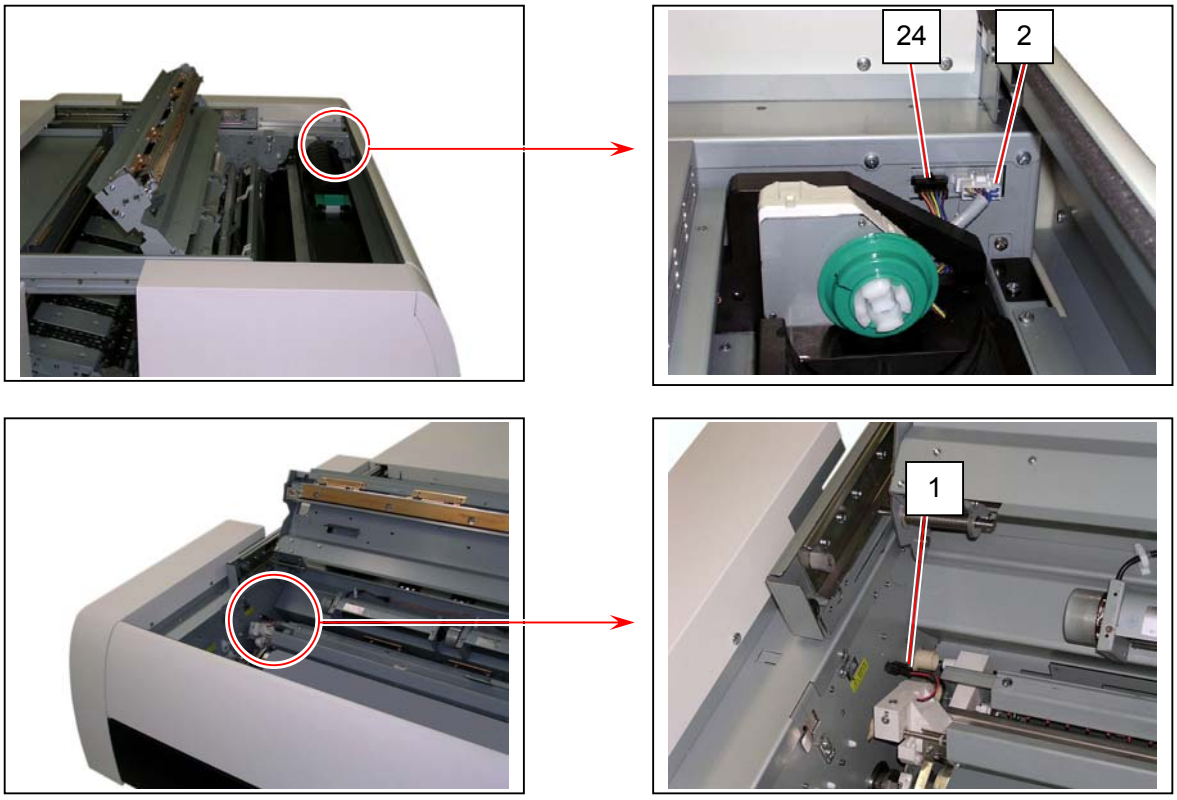


17. Shift the Lever (22) to the arrow direction and tighten the Screw (Hex Head) (23) to fix the Process Unit.

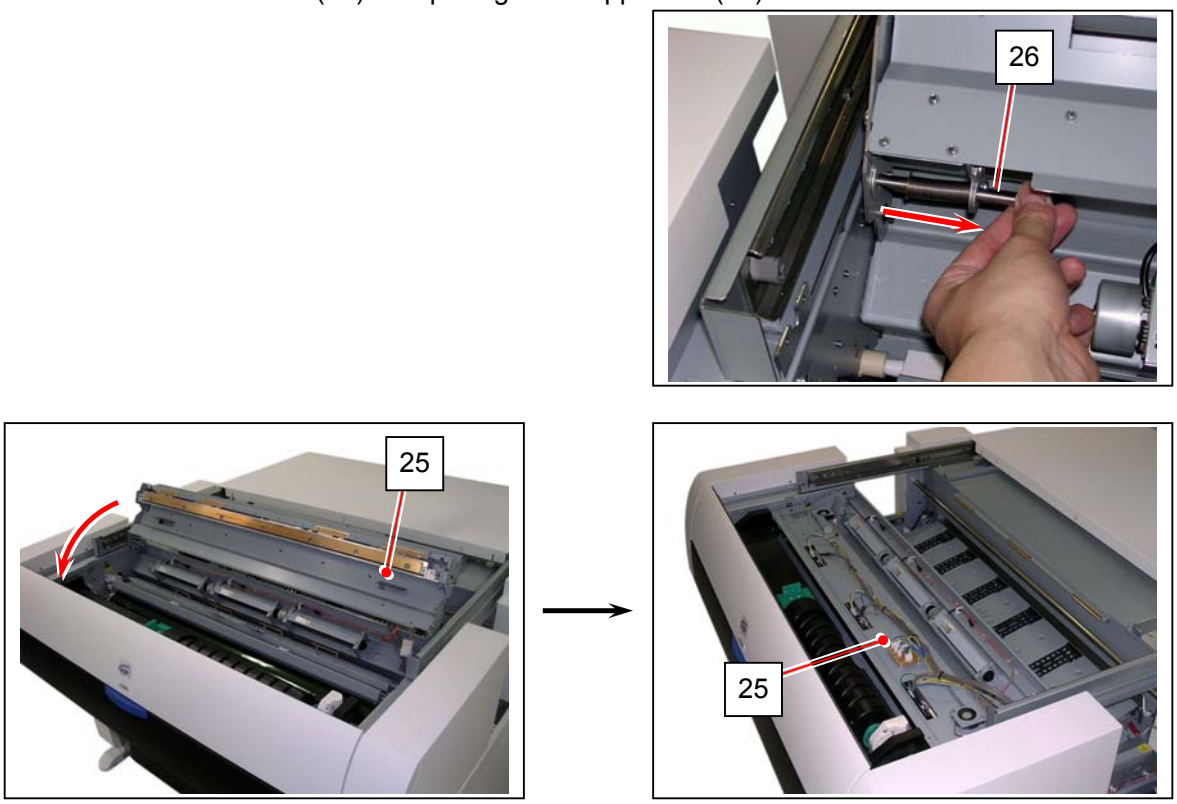




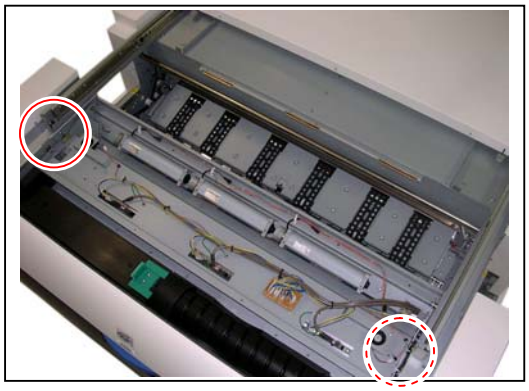
18. Connect 3 connectors; the connector (24) of Developer Unit, the connector (2) of Eraser Lamp, and the connector (1) of Wire Cleaning Motor.

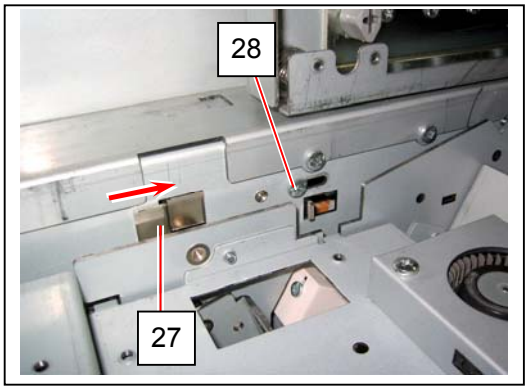


19. Close the Movable Unit (25) with pulling the Stopper Pin (26) inward.

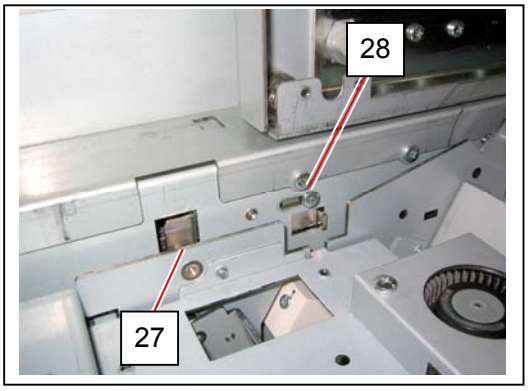


20. Slide the Stopper (27) toward the rear side, and then tighten the screw (28) to lock the Movable Unit. (This work also should be done at the other side.)



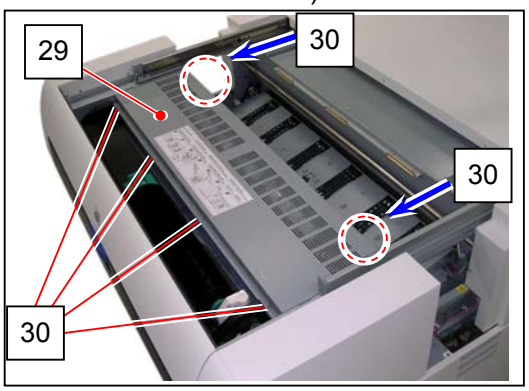


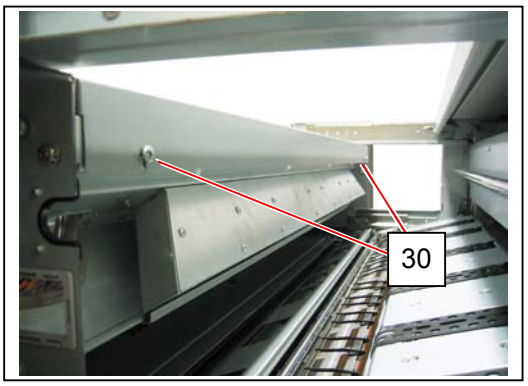
(Unlock)



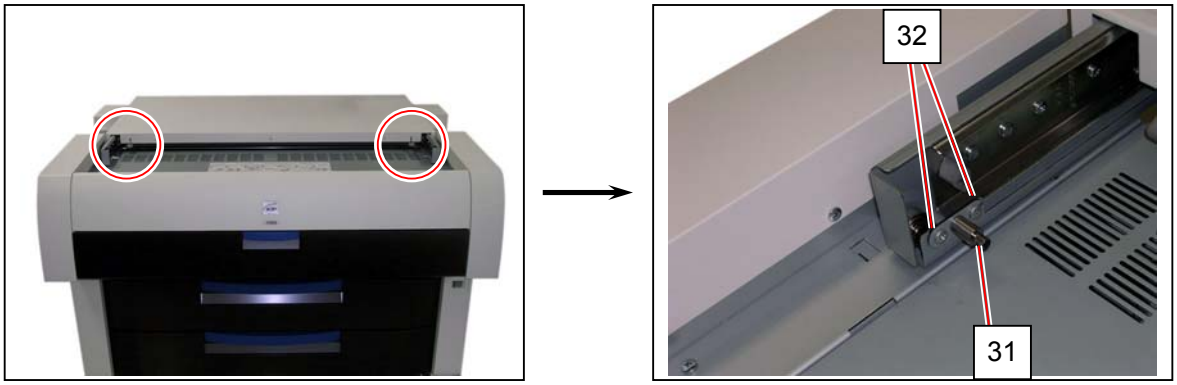
(Lock)

21. Fix the Process Cover (29) with 6 screws (M4x6) (30). (4 screws for the front side and 2 screws for the rear side)

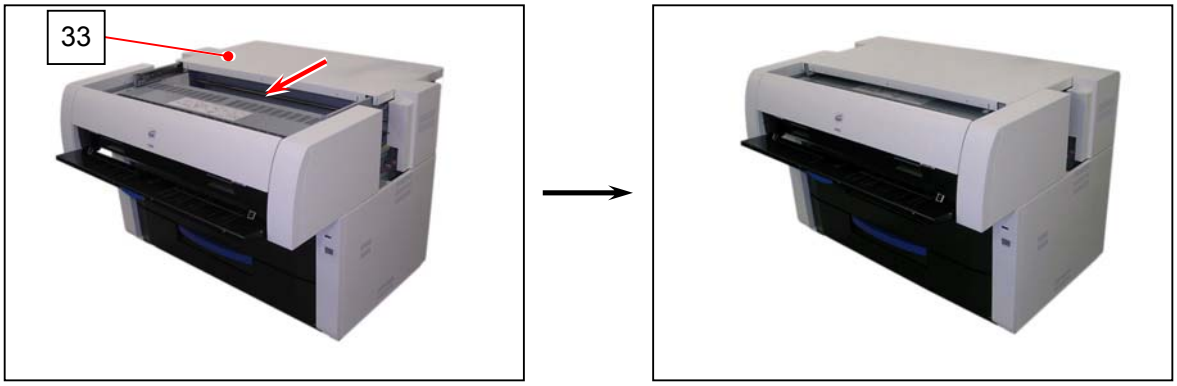




22. Fix the Hook Pin Assy (31) to both sides with 2 screws (M4x6) (32).

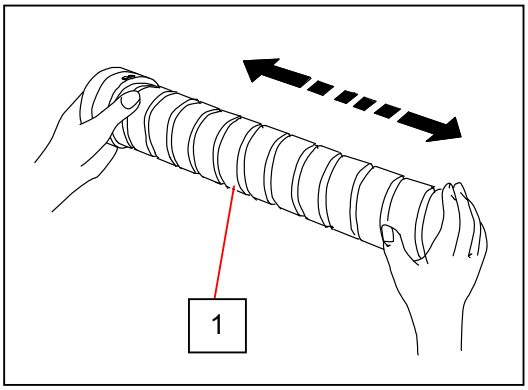


23. Close Top Cover (33). Leave Upper Frame Unit open for the later work.

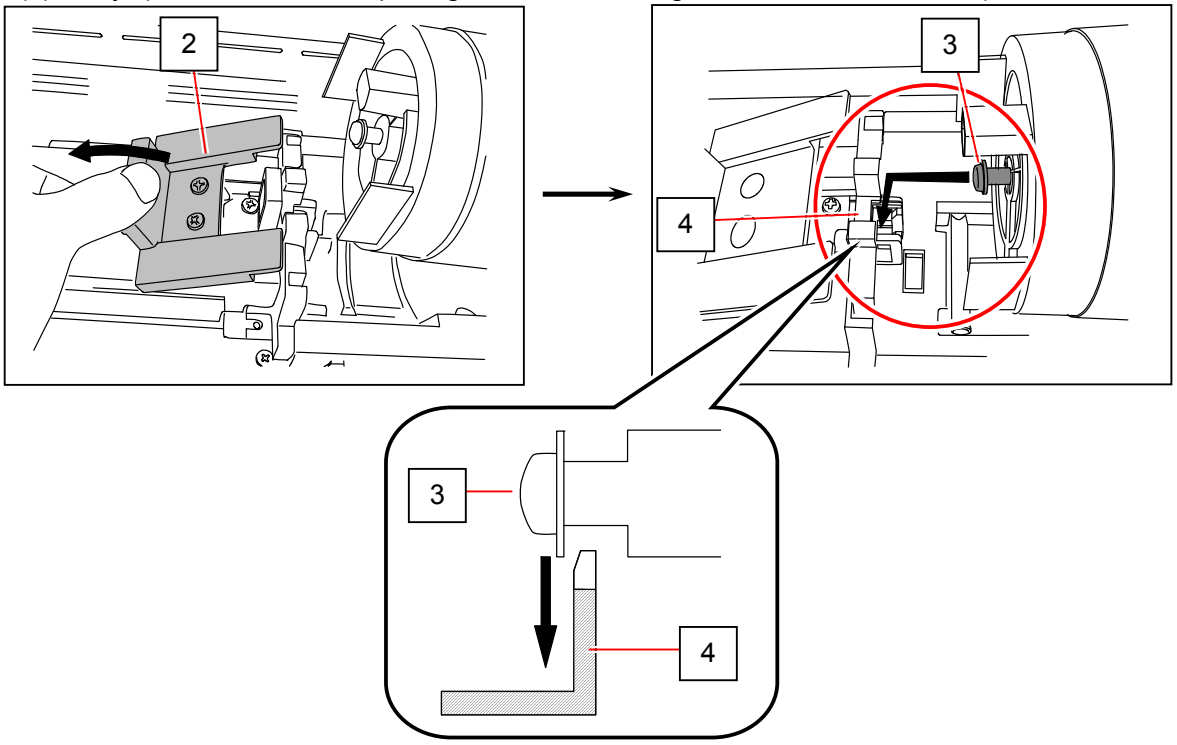


2. 7. 3 Installing Toner Cartridge

1. Shake a new **Toner Cartridge** (1) several times right and left to make the toner smooth.

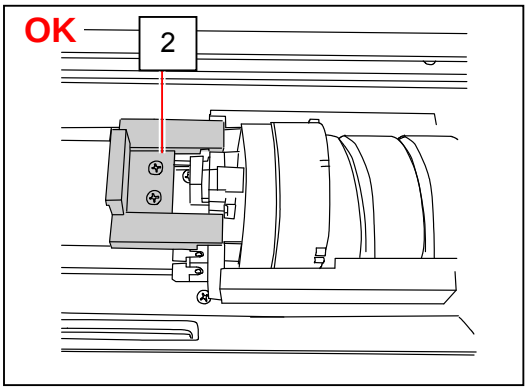


2. Press the Lever (2) down until it clicks. Insert the far left pin (3) on Toner Cartridge into the slot (4) firmly. (Please direct the opening on Toner Cartridge downward at this time.)

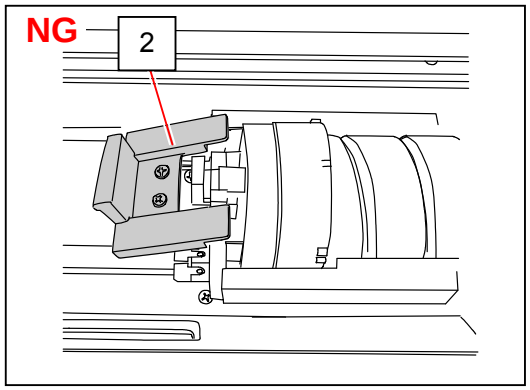


NOTE

Please confirm that the Lever (2) firmly locks the Toner Cartridge at the correct position. (It must be at a level position.)

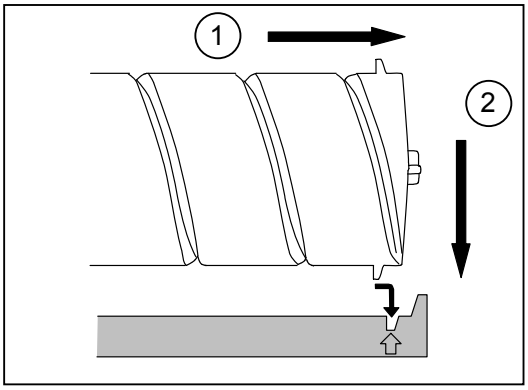


Correct: Lever in position

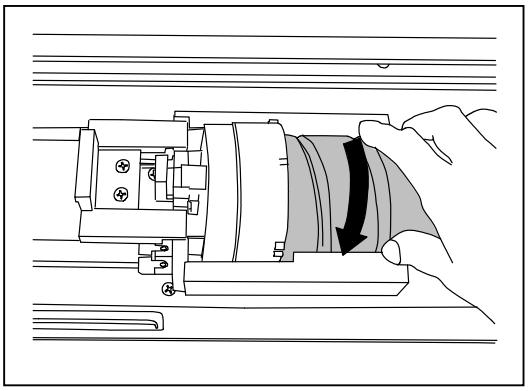


Wrong: Toner Cartridge not locked

3. Slightly pull Toner Cartridge rightward and insert the swelling tab in the arrowed slot.

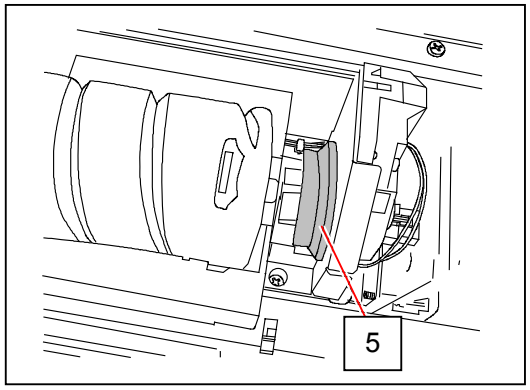


4. Rotate Toner Cartridge body to the arrow direction in 180 degrees or more.
(The new Toner Cartridge is closed firmly so as not to lose the toner during the transportation)

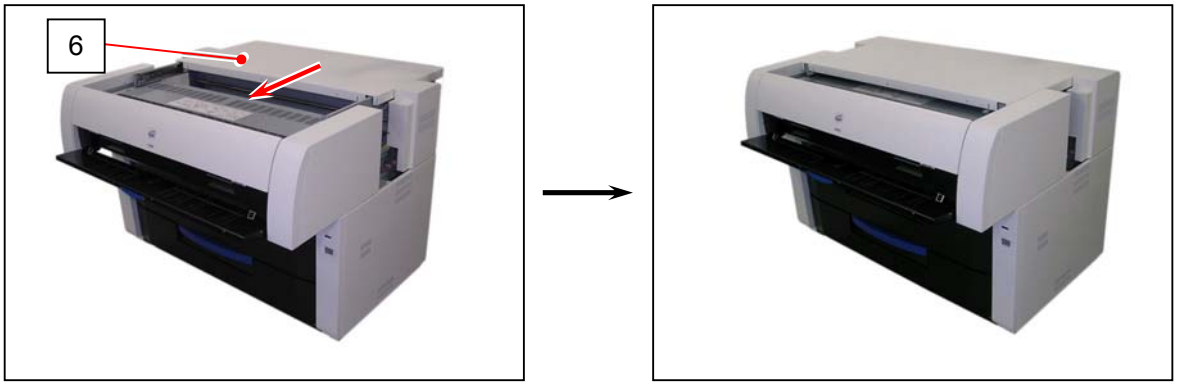


NOTE

Even if the Joint (5) is not fit to the Toner Cartridge, when you turn on the printer, it is automatically fit properly.

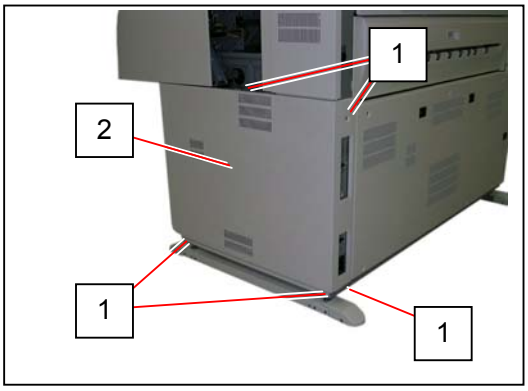


5. Close Top Cover (6). Leave Upper Frame Unit open for the later work.

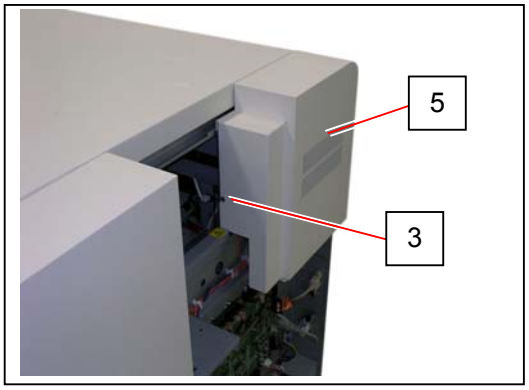


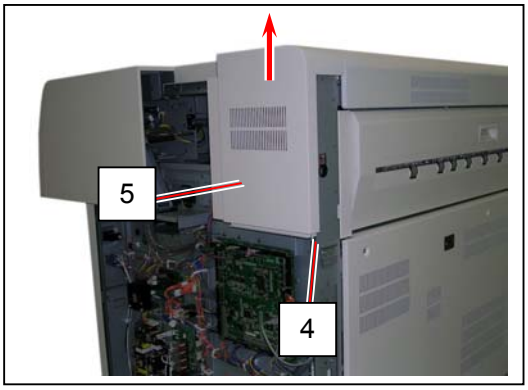
2. 8 Fuser Unit Setup

1. Check that Upper Frame Unit is open.
   Remove 5 Bind Head Screws (M4x6) (1) on the right side to remove Lower Right Cover (2).

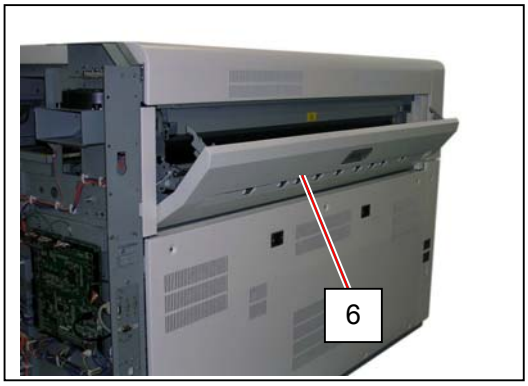


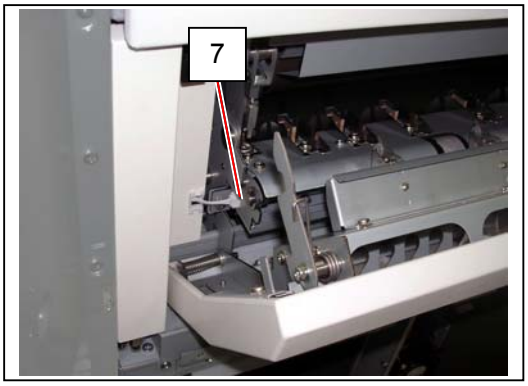
2. Remove 1 screw (M4x6) (3) and loosen 1 tooth washer screw (4) to remove Right Rear Cover (5).



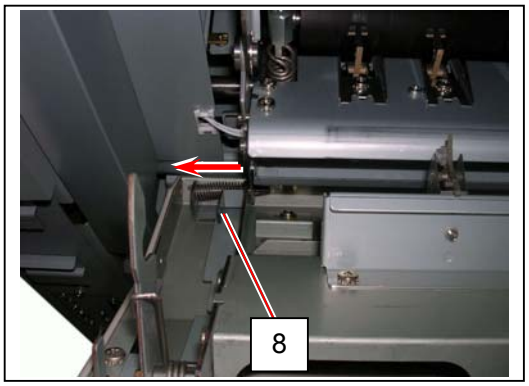


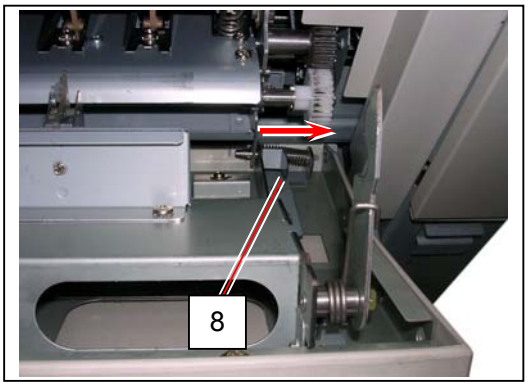
3. Open Exit Cover (6). Disconnect 1 connector (7) on the rear right.

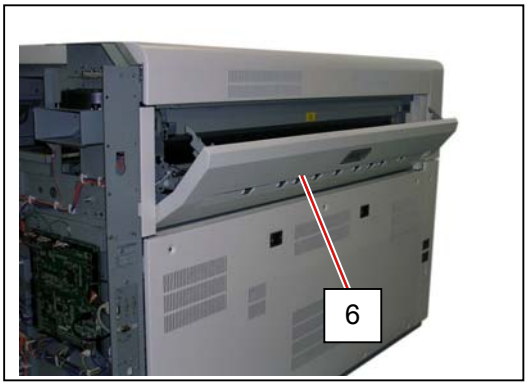




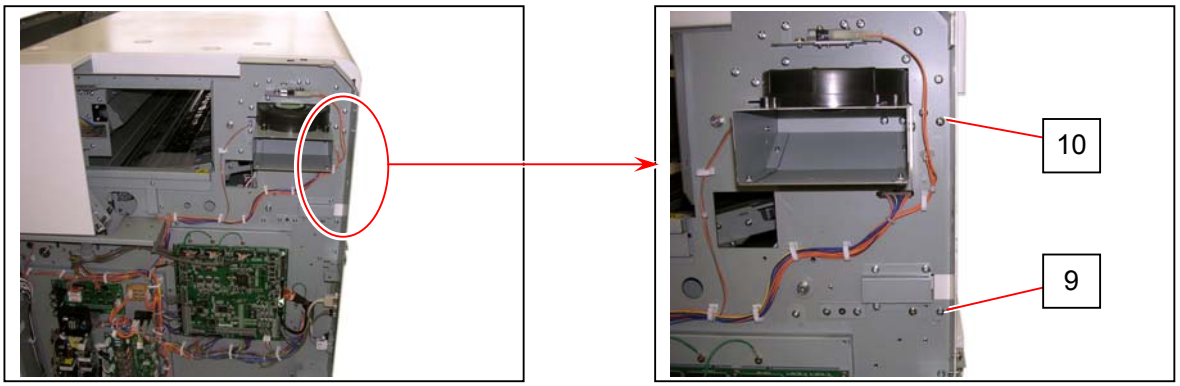
4. With supporting Exit Cover (6), push Shaft 4 (8) on both sides outward to release them from the hinge holes. Remove Exit Cover (6) from the machine.

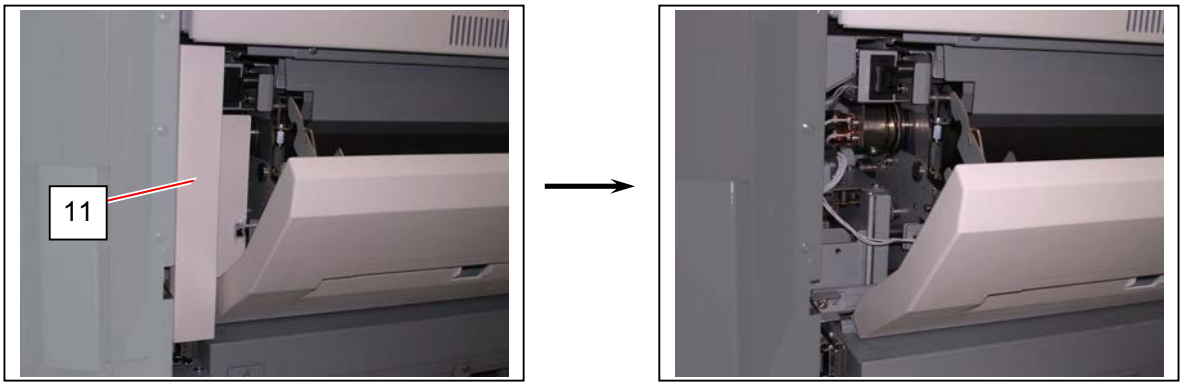




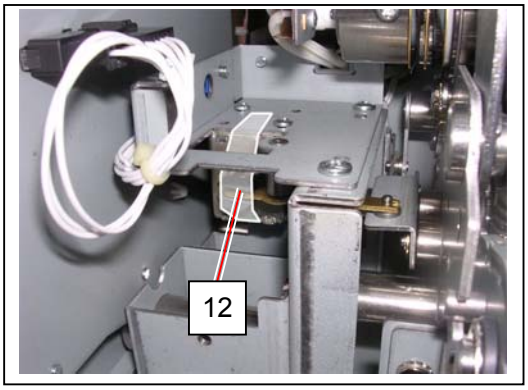


5. On the right side, remove 1 Bind Head Screw (M4x6) (9) and 1 Tooth Washer Screw (M4x6) (10) to remove Fuser Side Cover R (11).

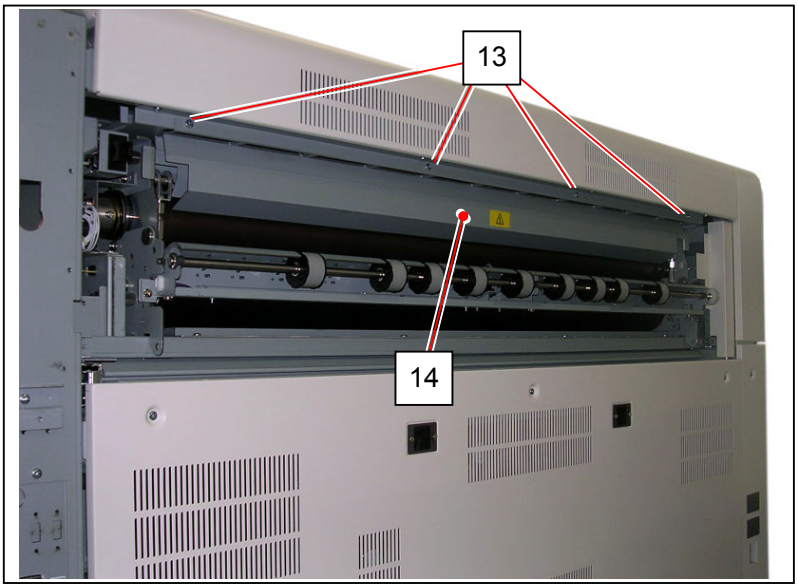




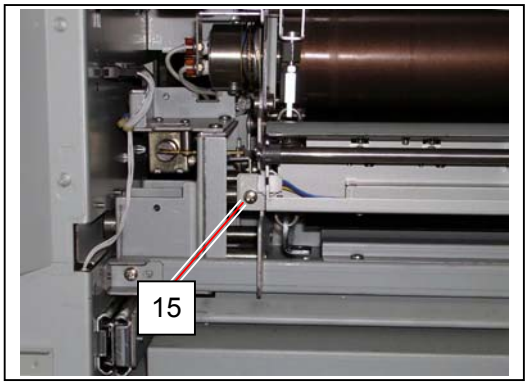
6. Inside the machine on the rear right, remove the shipping tape (12) from Fuser Solenoid.

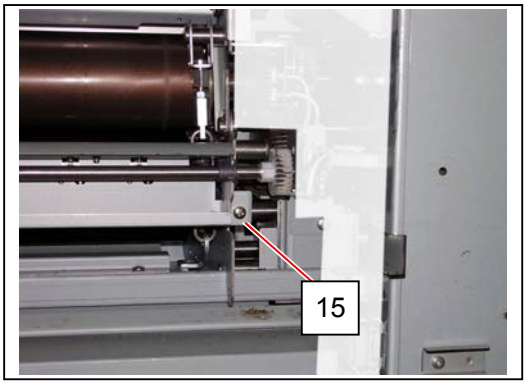


7. Remove 4 screws (M4x6) (13) to remove Fuser Cover (14).

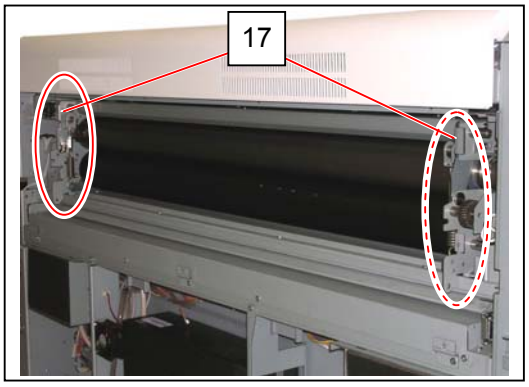


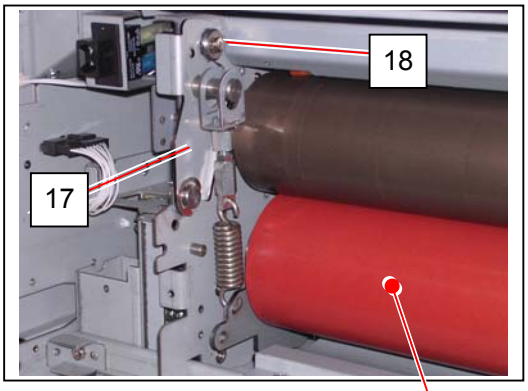
8. Remove 2 tooth screws (15) to remove Paper Exit Assy (16).

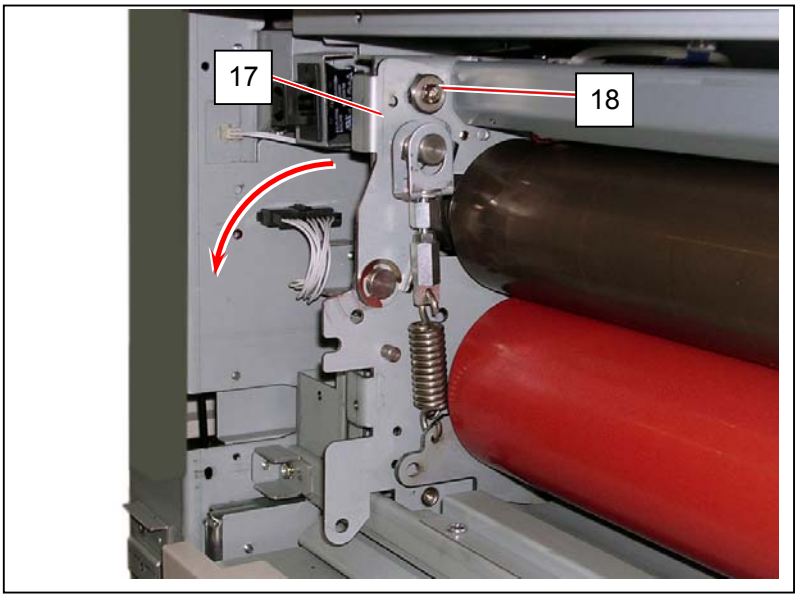


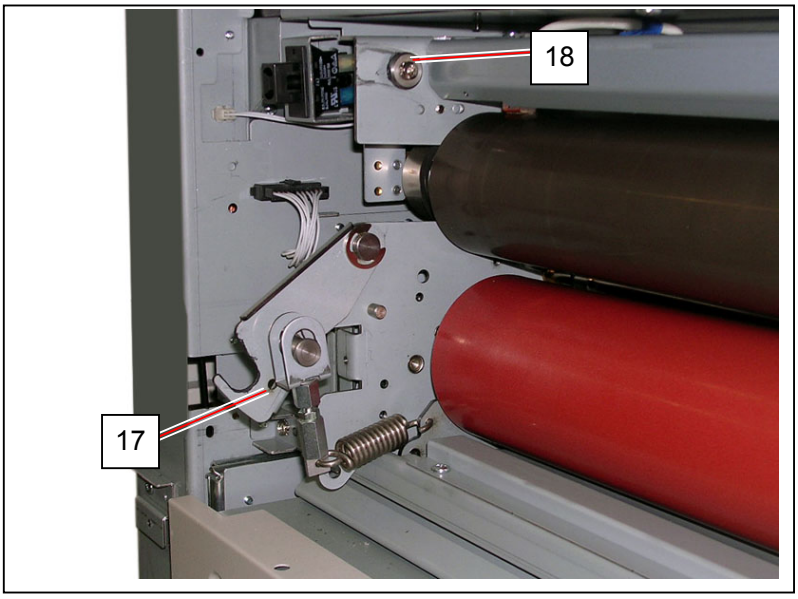


9. Pull Lever L and Lever R (17) from the pins (18) to release Pressure Roller.
Note that the following steps partly show Pressure Roller in a different color from the actual one for clarification.

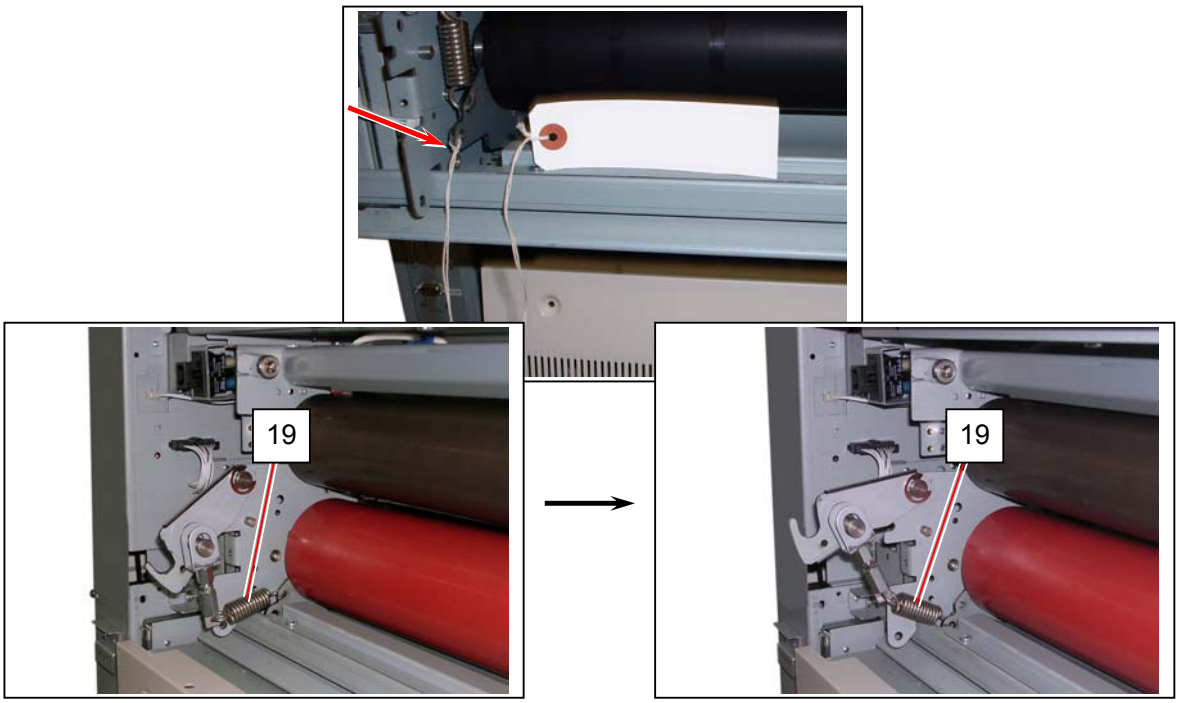


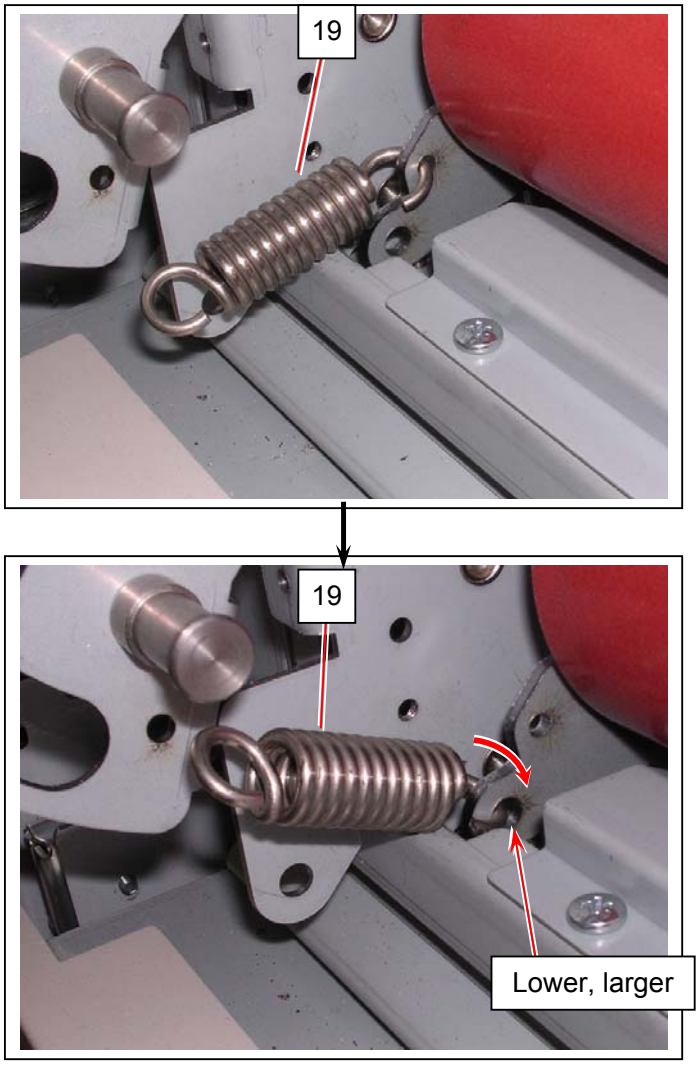






10. On both sides, release the lower end of Extension Spring A (19) from the frame. Hook Extension Spring A (19) to the lower, larger, tagged hole from outside to inside.

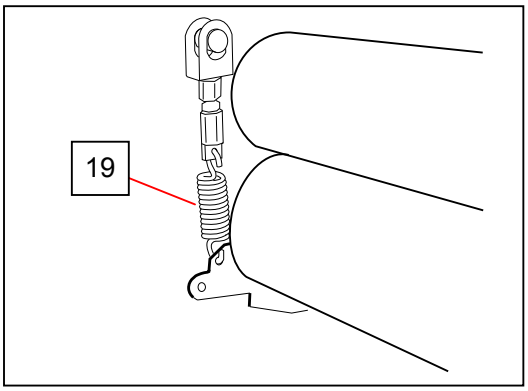




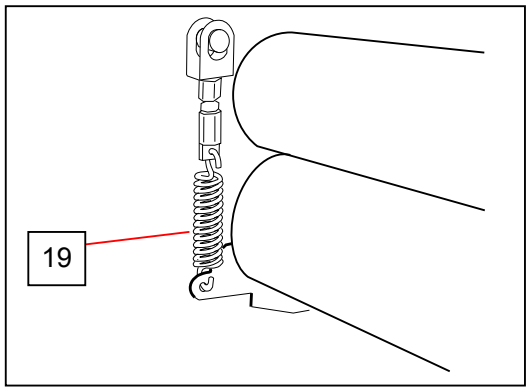
(continued on the next page)

Reference

Pressure Roller is set to “release position” at the factory.
This hole switching allows Fuser Unit to give a proper fusing pressure by a stronger spring tension.



pressure release position

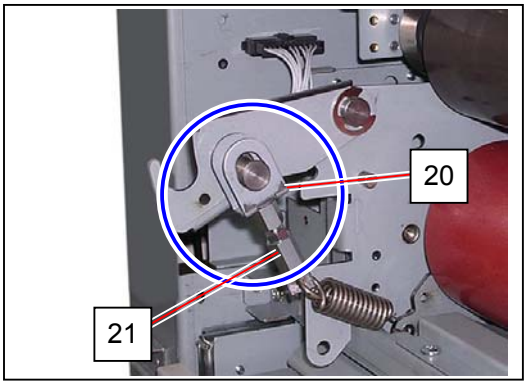


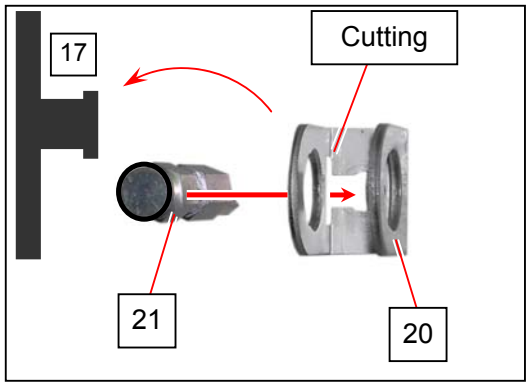
pressure set position

NOTE

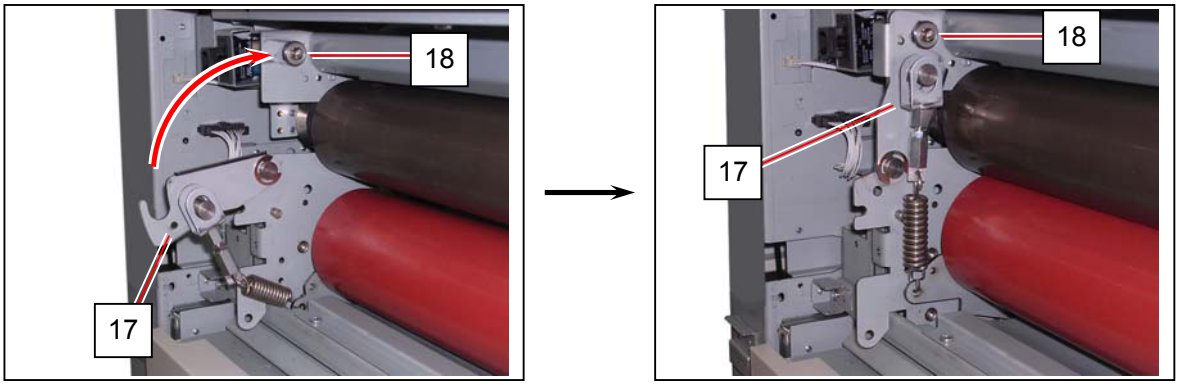
(1) The lower end of Extension Spring A (19) should be inserted into the lower hole from outside to inside.

(2) The bottom cutting of Spring Hook 3 (20) should face Lever R / L (17) so that the top pin of Spring Hook 1 (21) comes into the cutting from outside.



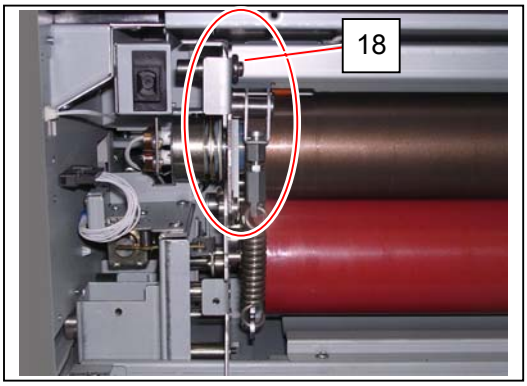


11. Set Lever L and Lever R (17) onto the pins (18) to provide the standard fusing pressure.

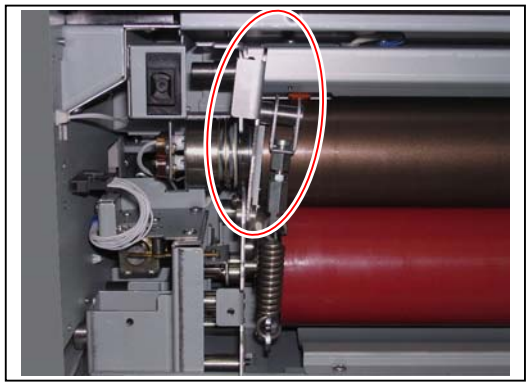


NOTE

Push Lever L and Lever R (17) onto the pins (18) correctly. Not doing so will obtain an incorrect fusing pressure.

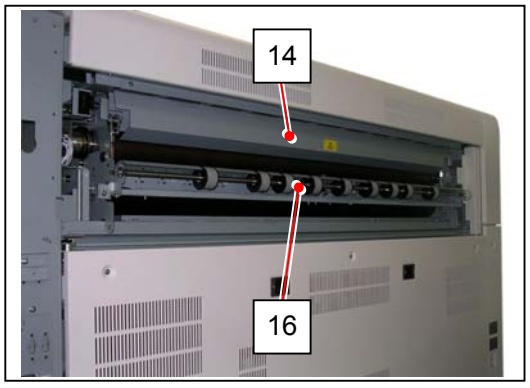


Correct: Lever on Pin (in position)

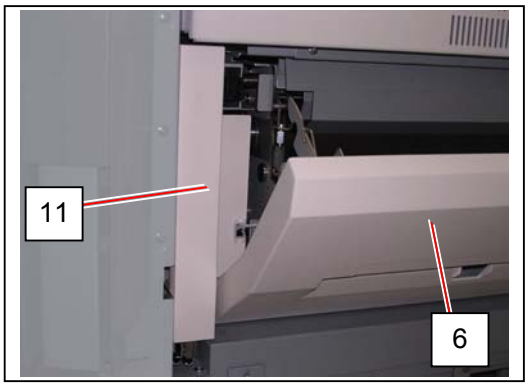


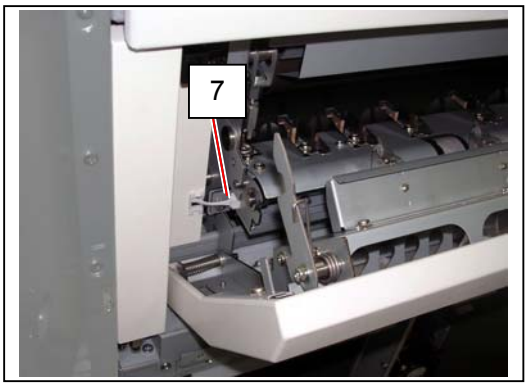
Wrong: Lever out of Pin

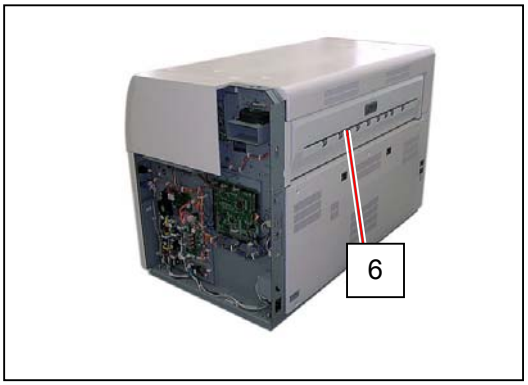
12. Replace Paper Exit Assy (16) and Fuser Cover (14).



13. Replace Exit Cover (6), Fuser Side Cover R (11) and the white connector (7).
Leave Lower Right Cover (2) and Right Rear Cover (5) removed for the later work.

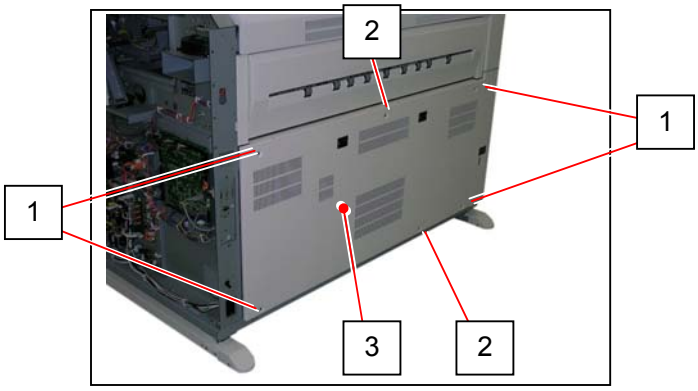




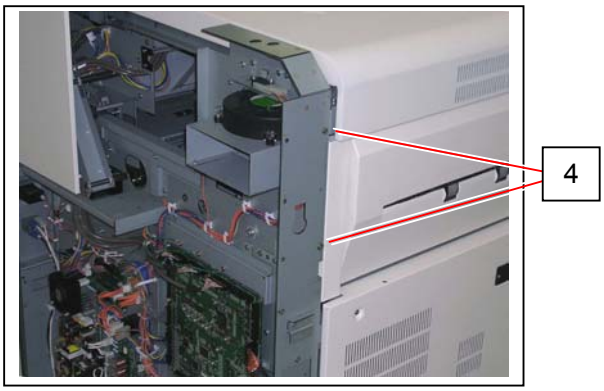


2. 9 Installing Touch Panel

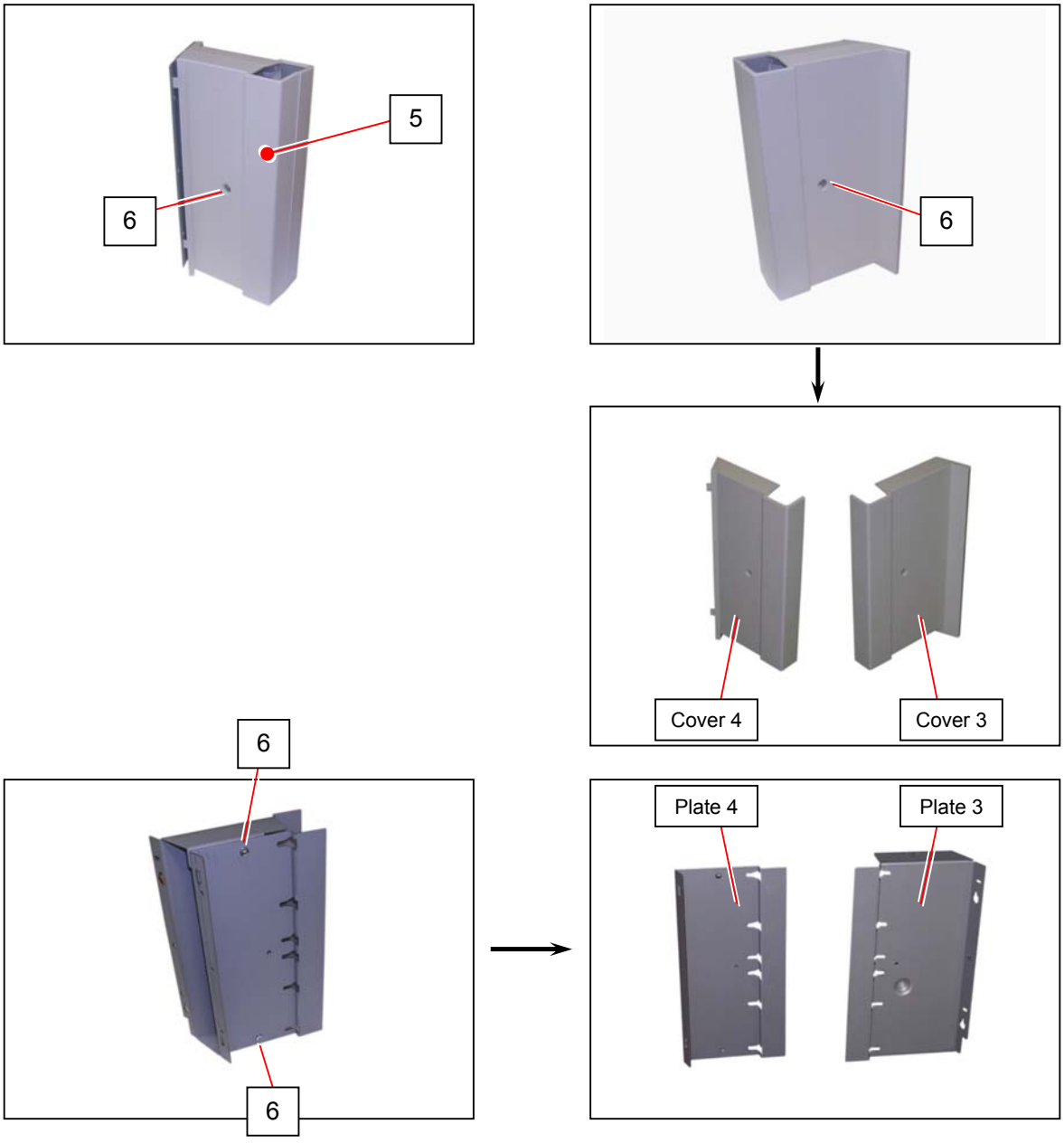
1. Remove 4 screws (M4x6) (1) and 2 tooth washer screws (2) to remove Rear Cover (3).



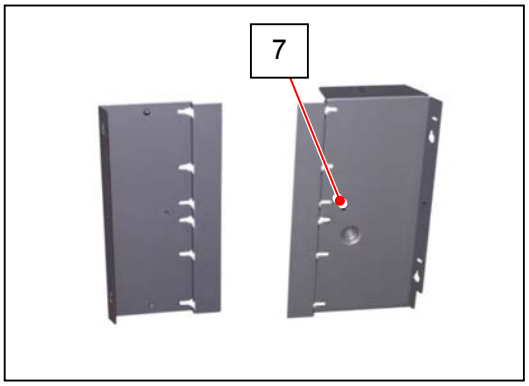
2. Attach **2 Bind Head Screws (M4x6)** (4) to the holes on the rear plate.

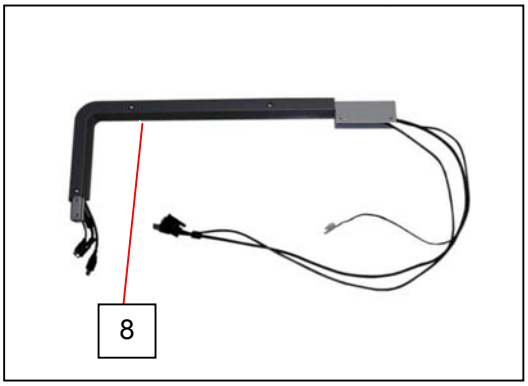


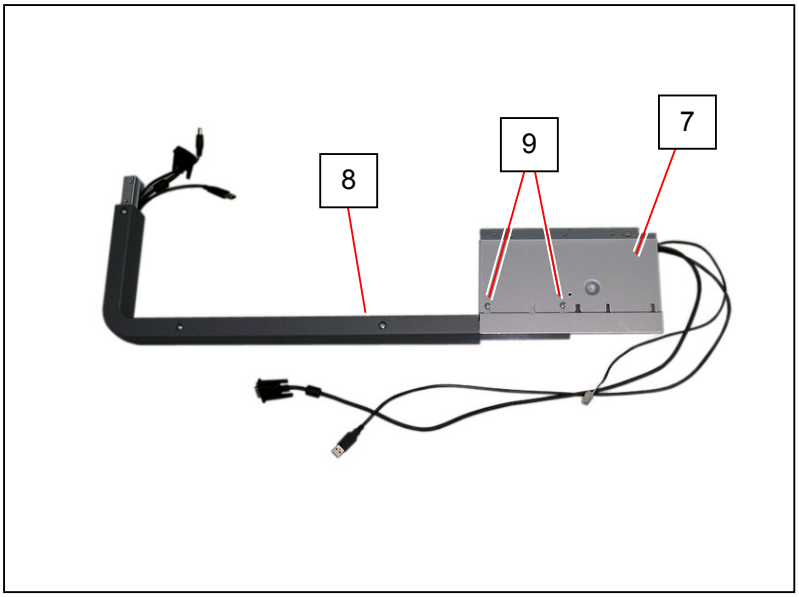
3. **UI arm base** (5) is temporarily assembled with Cover 4, Cover 3, Plate 4, Plate 3 and 4 screws (M4x6).
   Remove 4 screws (M4x6) (6) from UI arm base.
   Note that all the 4 screws (6) will be reused in the later steps.



4. Attach Plate 3 (7) to **Arm Assy** (8) with **2 Bind Head Screws (M4x6)** (9) mentioned at step 3.
   Note that the screw holes for Arm Assy (8) to be used depend on your system configuration.



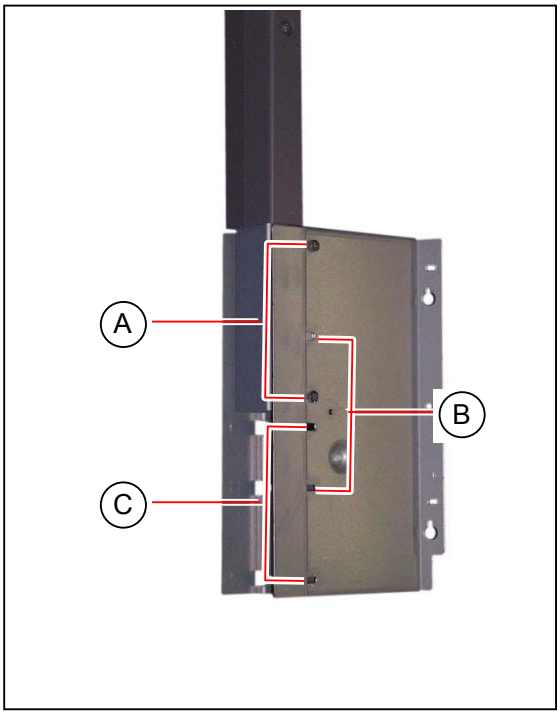




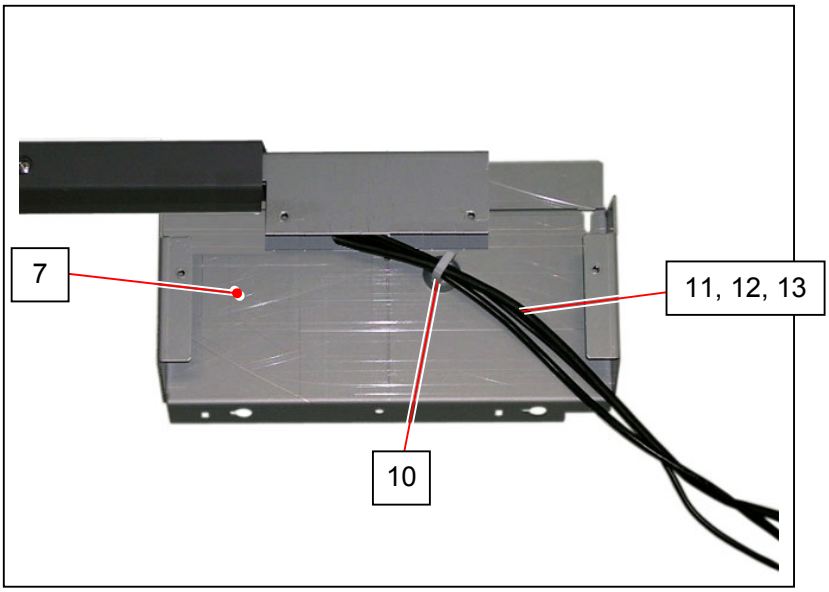
Reference

It is possible to adjust the height of Monitor Assy according to your optional KIP Scanner.
Large X: recommended

KIP Scanner Model *option	screw hole combination (UI Height)		
	A higher	**B** middle	**C** lower
KIP 2300	**X**	- - -	- - -
KIP 2100	**X**	- - -	- - -
KIP 600	x	**X**	- - -
w/o scanner	x	x	**X**



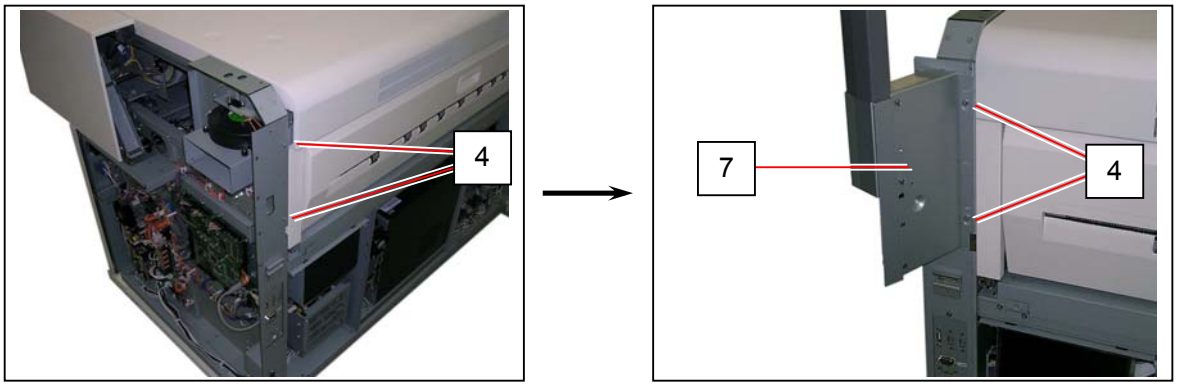
5. If you fix Arm Assy in UI Height B (middle) or C (lower), attach **Wire Saddle** (10) inside of Plate 3 (7).
   Secure Power Cable (11), USB Cable (12) and VGA Cable (13) into the Wire Saddle (10).



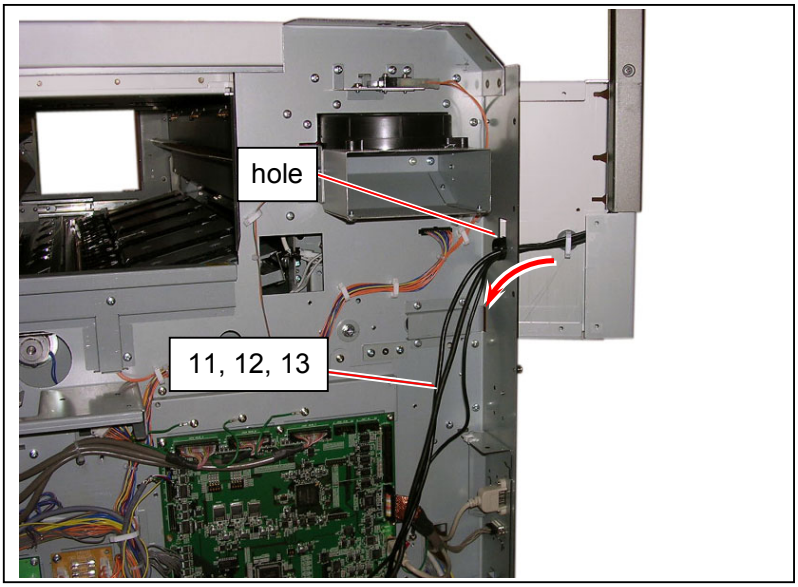
NOTE

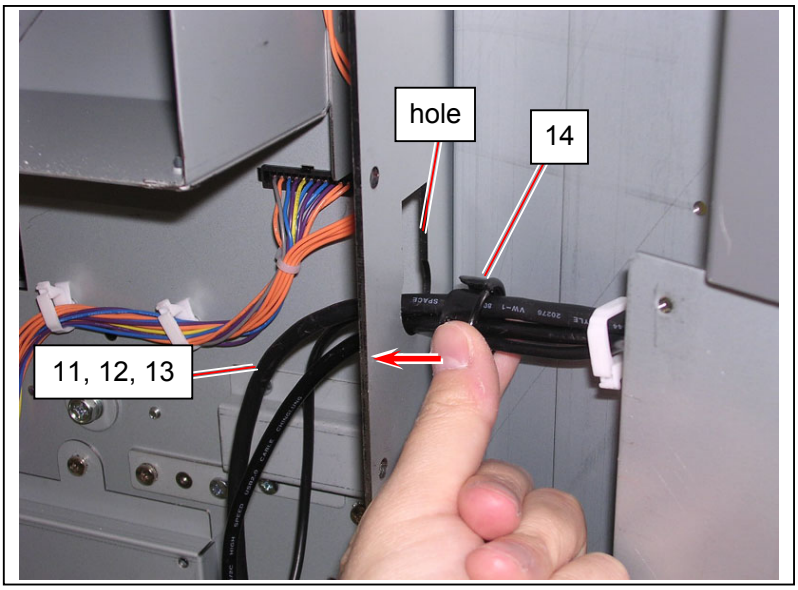
For “UI Height A (higher)”, do not attach Wire Saddle (10) for efficient wiring.

6. Hook Plate 3 (7) and Arm Assy onto the screws (4) installed at step 2.

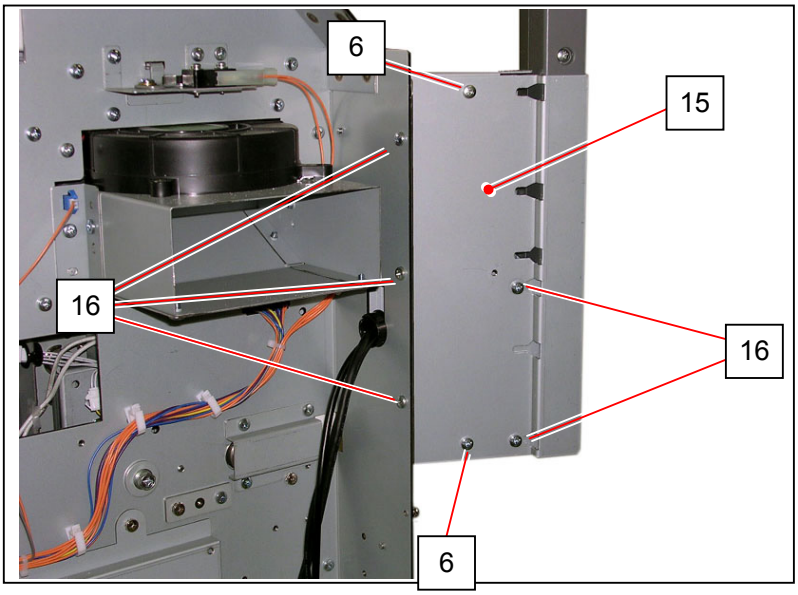


7. Pass Power Cable (11), USB Cable (12), VGA Cable (13) through the hole on the rear plate. Attach **Bushing** (14) to the hole from rear to front.

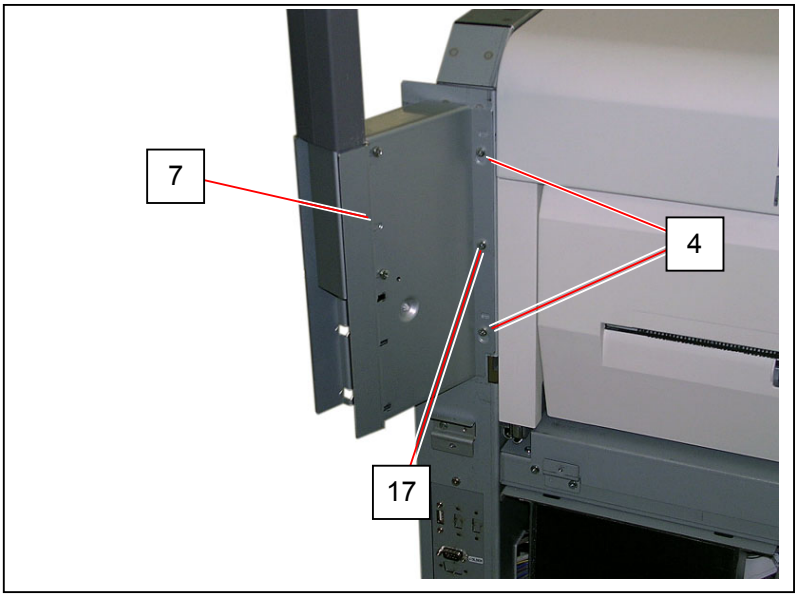




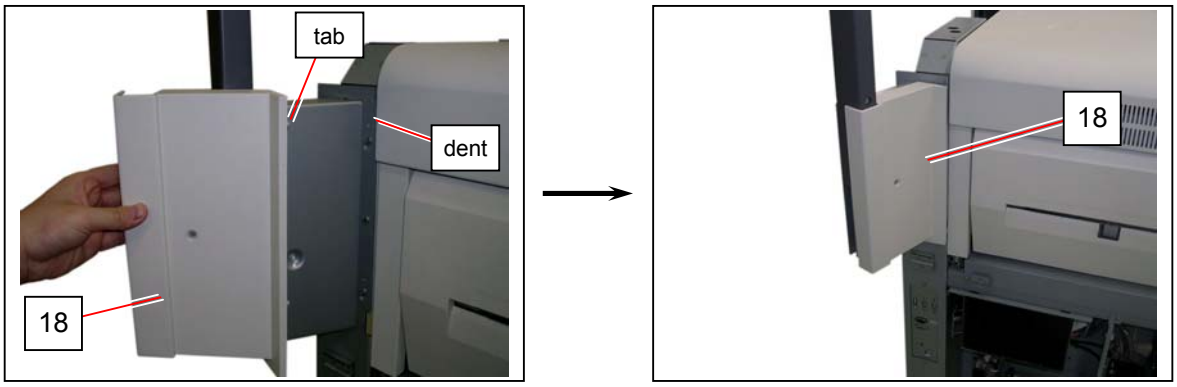
8. Install Plate 4 (15) with 2 screws (M4x6) (6) mentioned at step 3 and **5 Bind Head Screws (M4x6)** (16).

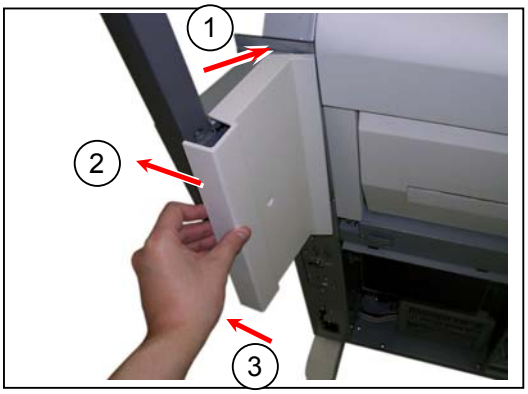


9. Tighten 2 Bind Head Screws (M4x6) (4) and install **1 Bind Head Screw (M4x6)** (17) to fix Plate 3 (7) and Arm Assy.

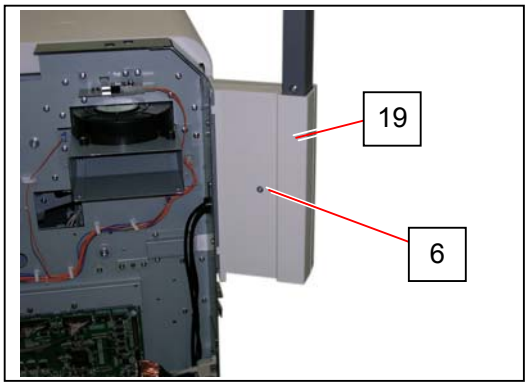


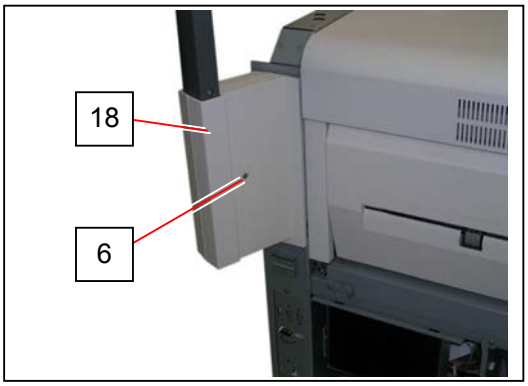
10. Attach Cover 3 (18) on Plate 3.
First fit the tab on Cover 3 to the dent on the rear plate.



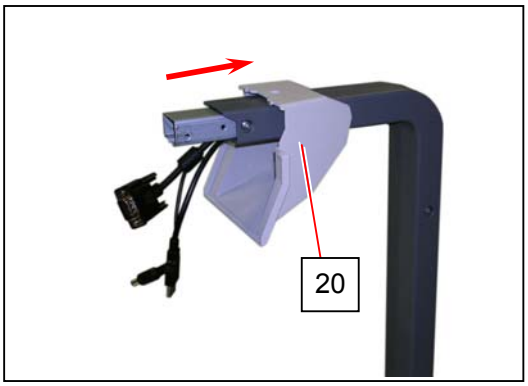


11. Attach Cover 4 (19) on Plate 4.
    Fix Cover 3 (18) and Cover 4 (19) together with 2 screws (M4x6) (6) mentioned at step 3.

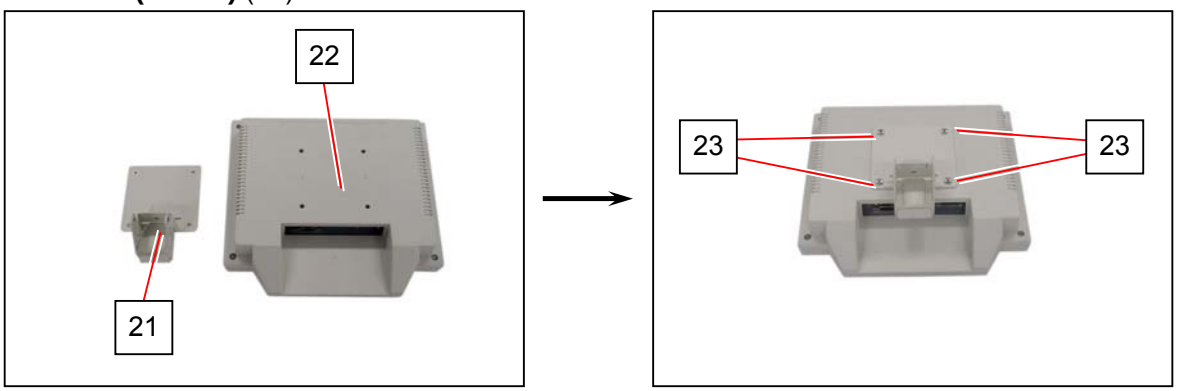




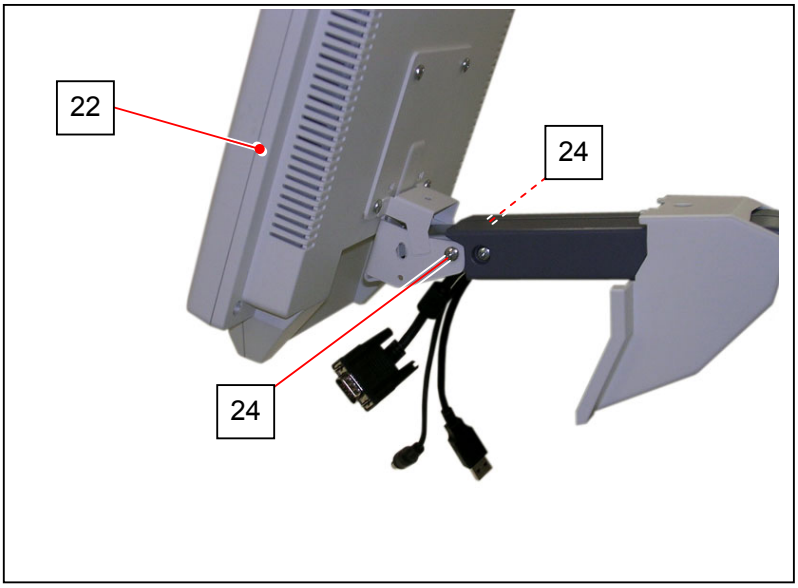
12. Pass **Cover 5** (20) on the top of Arm Assy.



13. Attach **Bracket Touch Panel** (21) to the back of **Monitor Assy** (22) with **4 Bind Head Screws (M4x10)** (23).



14. Loosely fix Monitor Assy (22) on the top end of Arm Assy with **2 Bind Head Screws (M4x6)** (24).



NOTE

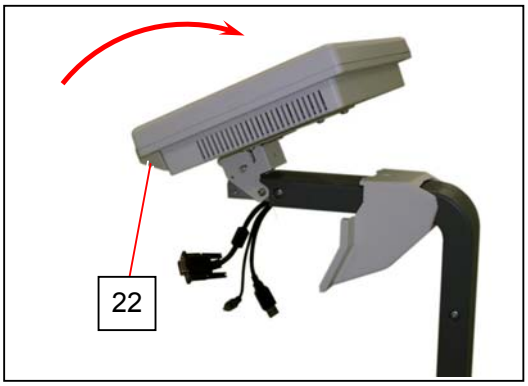
(1) Keep the cables' length in "100mm" between the bottom opening of Arm Assy and the connector neck.

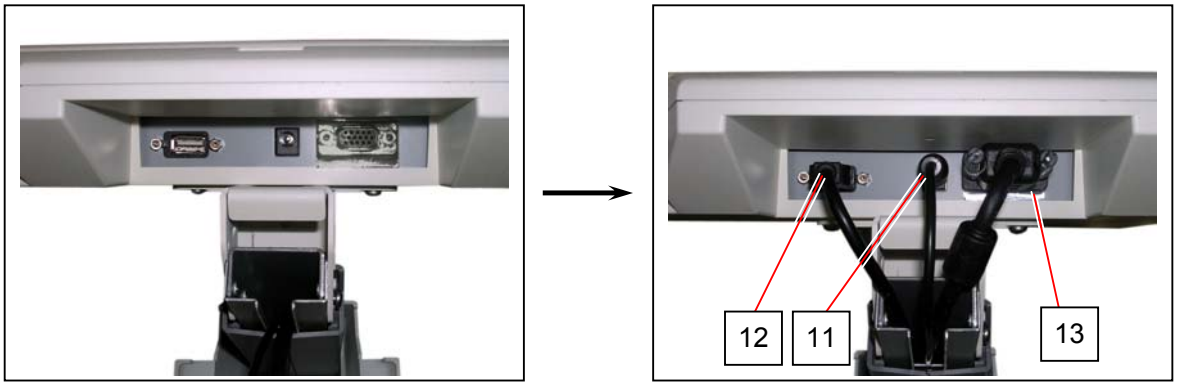
(2) Hold the frame of Monitor Assy and do not push the LCD area too strong.

15. Lean Monitor Assy (22). Connect Power Cable (11), USB Cable (12) and VGA Cable (13) to the corresponding connectors.

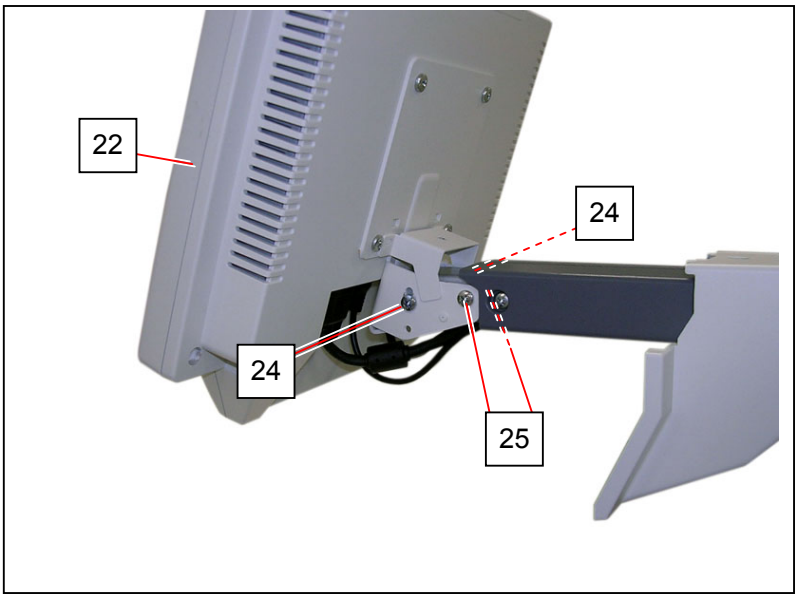
NOTE

Visually confirm the shape of each connector and its connecting direction to connect the cables correctly.





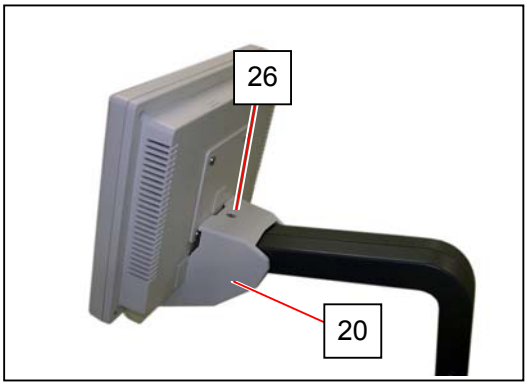
16. Install **2 Bind Head Screws (M4x6)** (25) and tighten all the 4 screws (24) (25) to fix Monitor Assy (22).



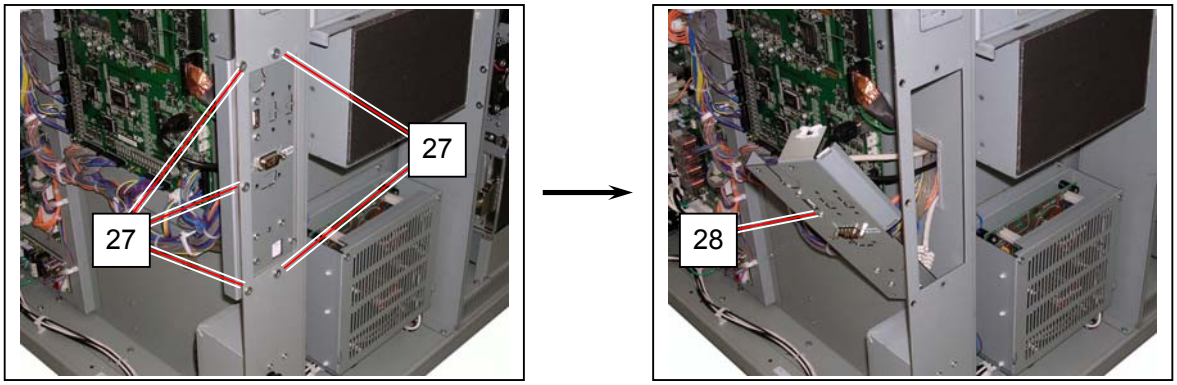
Reference

Monitor Assy can be reclined in 15 degrees.

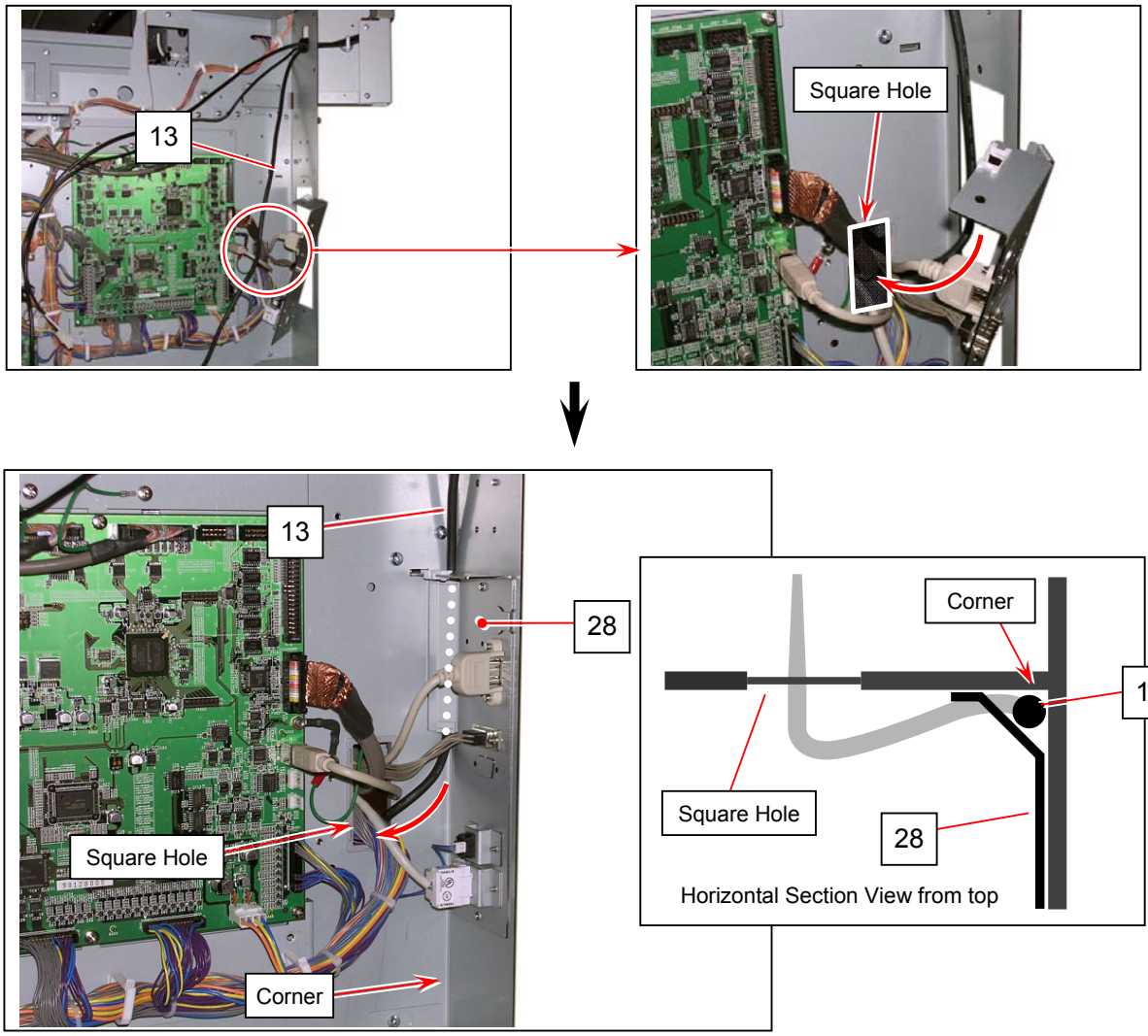
17. Install Cover 5 (20) on Monitor Assy with **1 Bind Head Screw (M4x6)** (26).



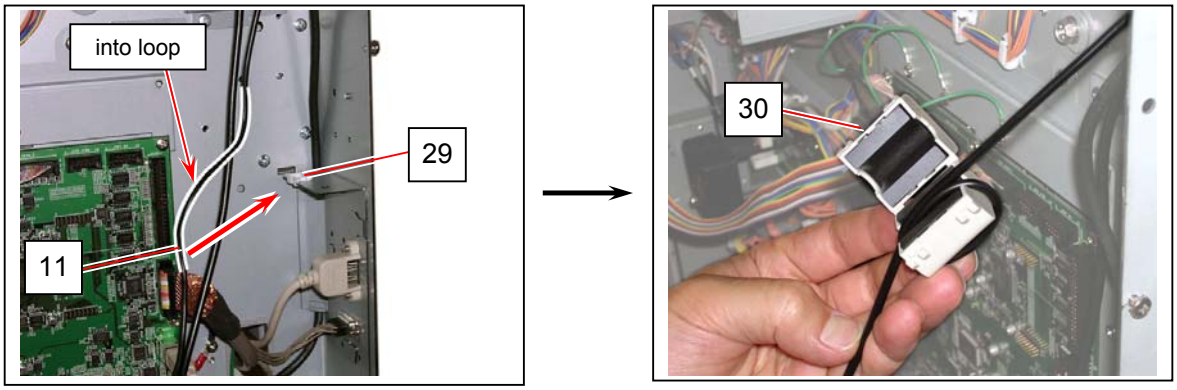
18. On the rear of the printer, remove 5 screws (M4x6) (27) to release Connector Plate (28).

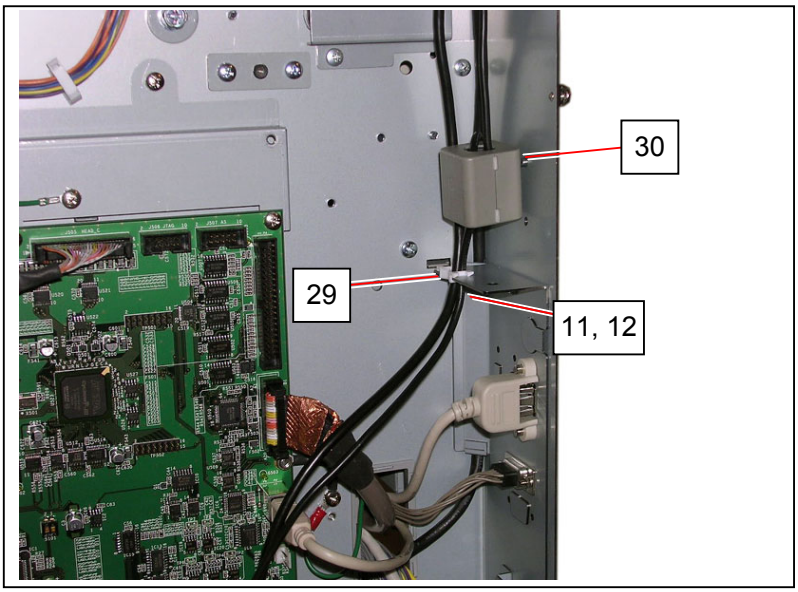


19. Route VGA Cable (13) into the square hole on the right side plate. Route the middle of VGA Cable (13) along the inside corner and reinstall Connector Plate (28) to hide VGA Cable (13) in the corner.

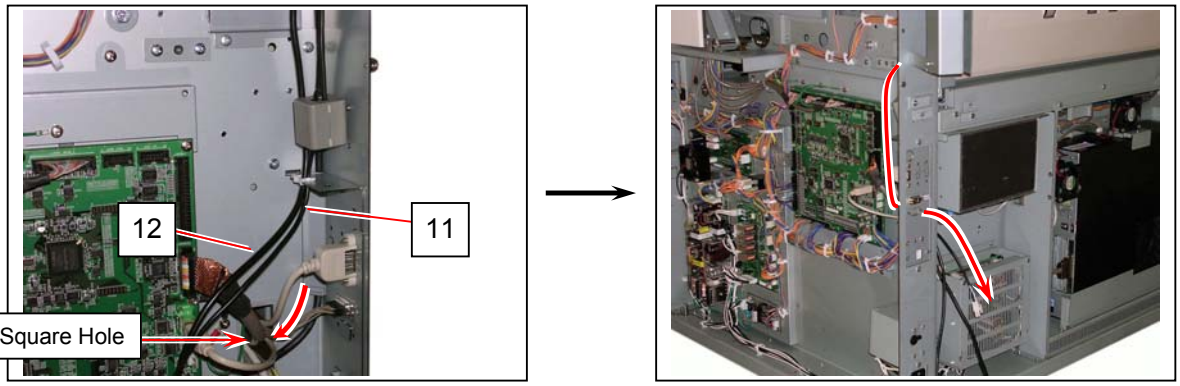


20. Insert USB Cable (12) and Power Cable (11) into the edge saddle (29).
Wire Power Cable (11) at the upper part against the edge saddle (29) into a single loop and install **EMI Core** (30) there.

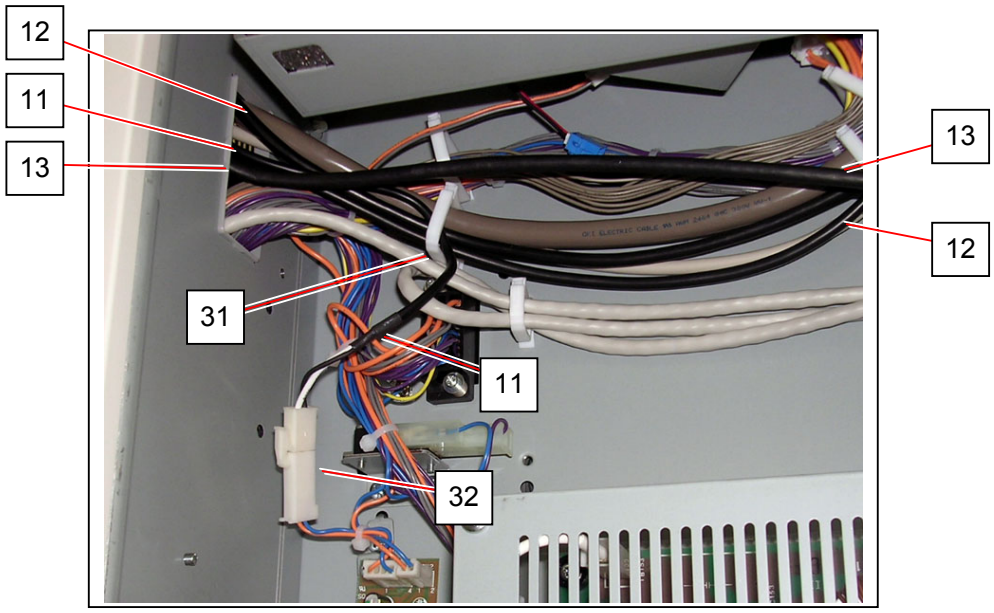




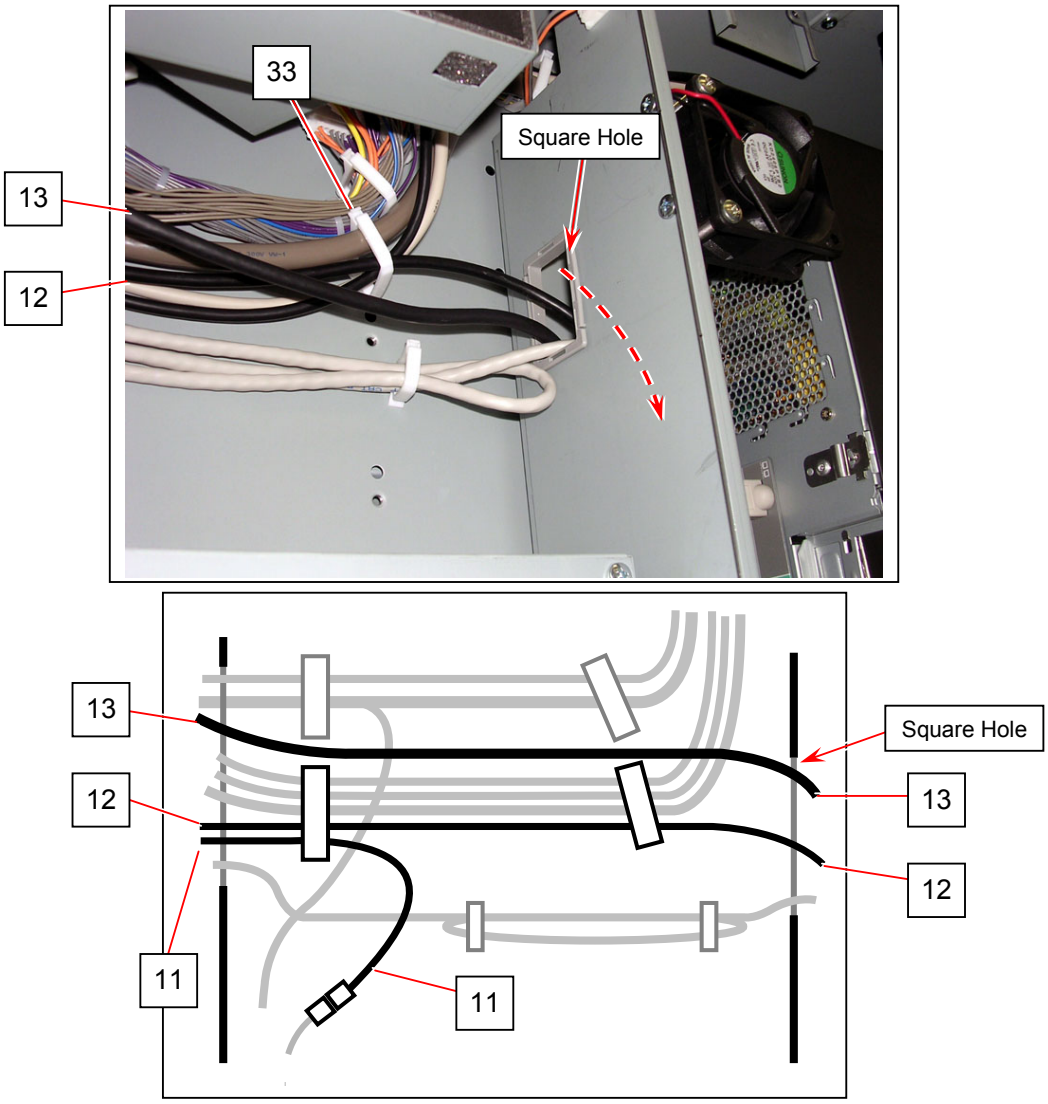
21. Route Power Cable (11) and USB Cable (12) into the square hole.
Then all the UI cables come from right to the rear side.



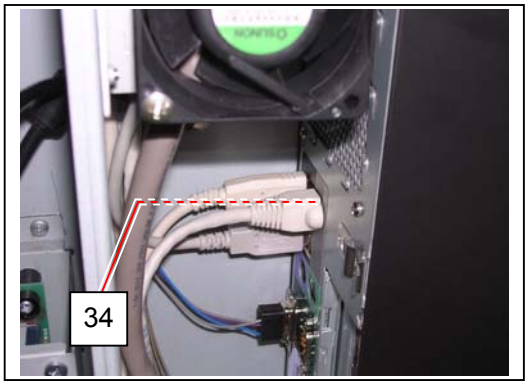
22. Secure Power Cable (11) and USB Cable (12) with the middle wire saddle (31) on the rear.
Connect Power Cable (11) to the connector (32).
Note that VGA Cable (13) is not secured with wire saddles.

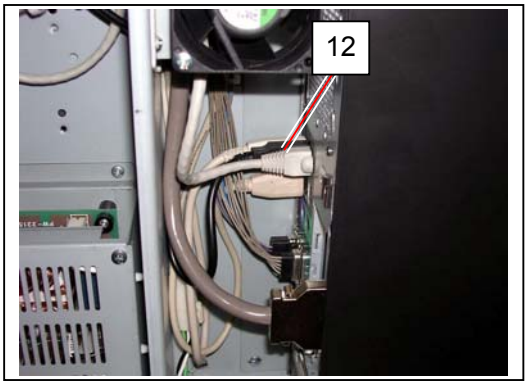


23. Secure USB Cable (12) with the middle wire saddle (33).
Note that VGA Cable (13) is not secured with wire saddles.
Route USB Cable (12) and VGA Cable (13) into the square hole in the rear middle.



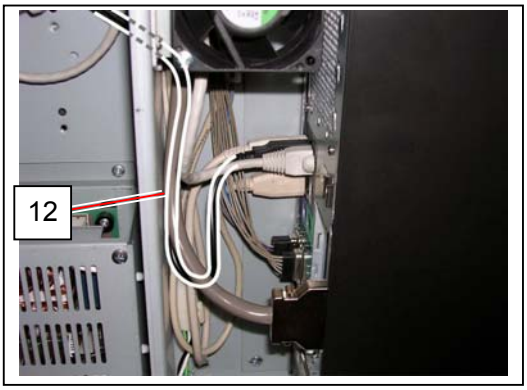
24. Connect USB Cable (12) to the USB connector (34) on the controller.



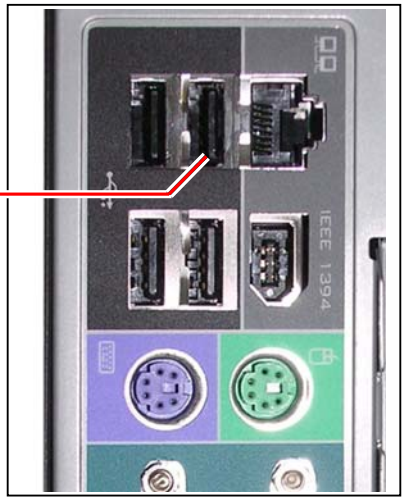


Reference

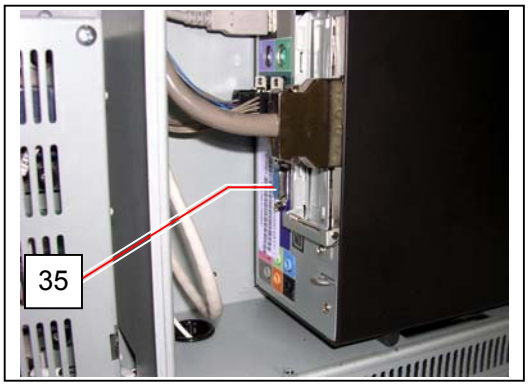
(1) Route the excessive part of USB Cable (12) as shown in the right photo.

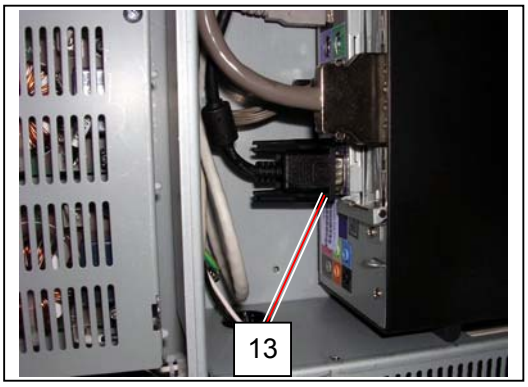


(2) USB Cable (12) should be inserted to the port as shown in the right figure.

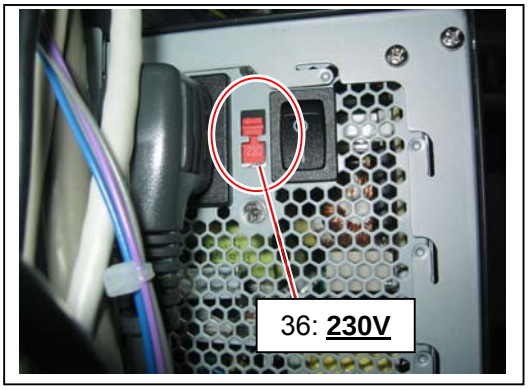


25. Connect VGA Cable (13) to the VGA connector (35) on the controller.

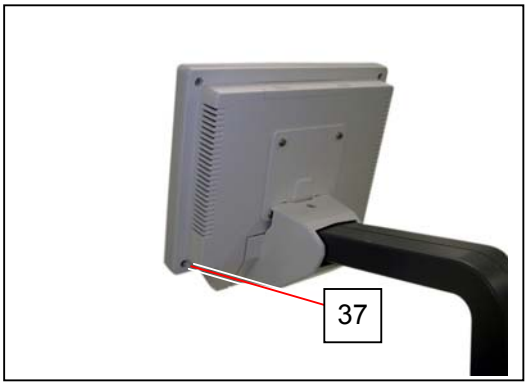




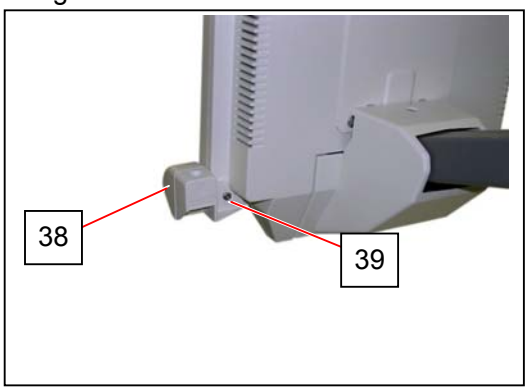
26. Check that the power unit switch (36) on the controller shows 230V.

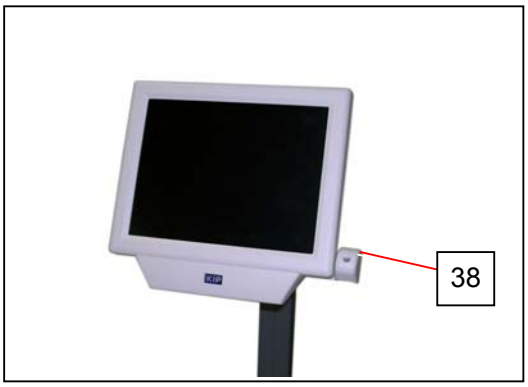


27. Remove 1 screw (37) on the corner of Monitor Assy.

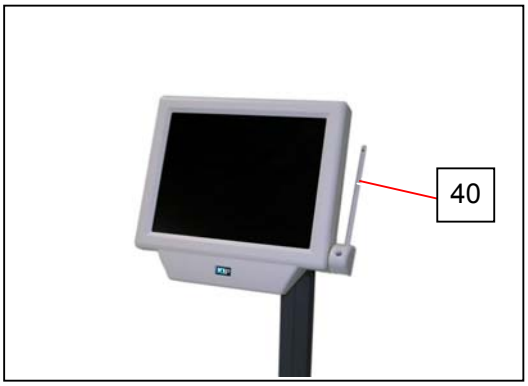


28. Install **Holder Assy** (38) and fix it on the corner with **1 Bind Head Screw (M3x14)** (39) together.





29. Attach **Pen** (40) on Holder Assy.



30. Replace Rear Cover, Rear Right Cover, and Lower Right Cover in position.

2. 10 Supplying Toner to Developer Unit

⚠ NOTE

(1) Developer Unit should contain a certain amount of toner for printing, but does not at this time. (Only Toner Supply Roller holds a small amount.)
Follow the instruction below that shows “Toner Supply Mode” to supply adequate toner to Developer Unit.

(2) You can start “Toner Supply Mode” while the printer is in warm up. You do not have to wait until ready.

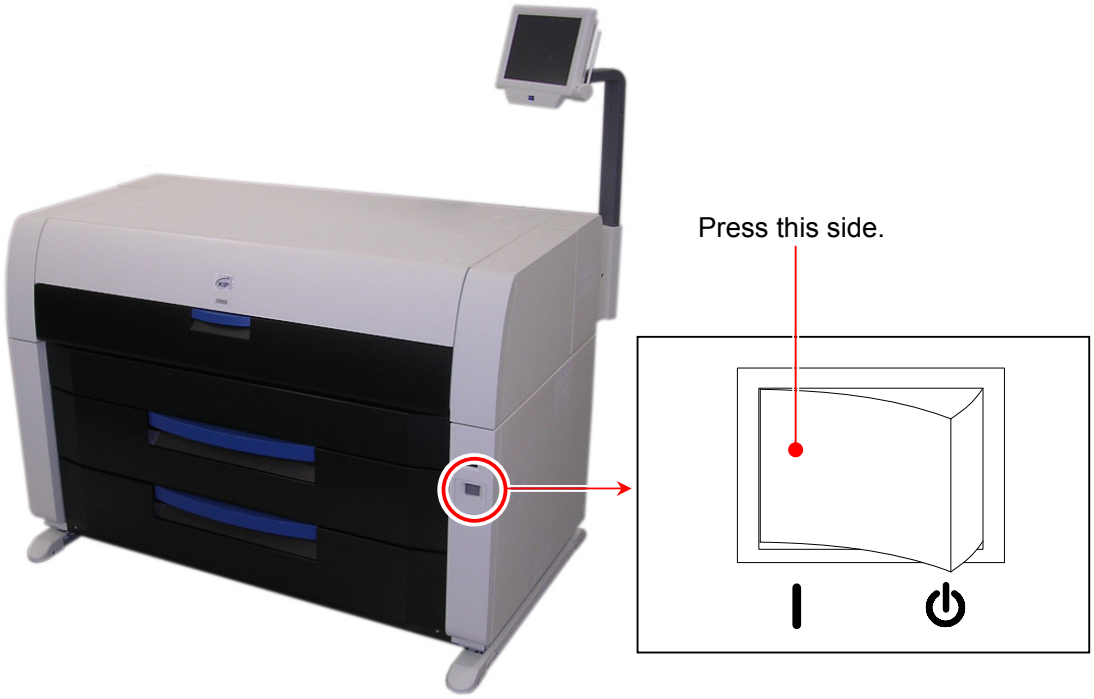
Reference

Toner Supply Mode is the utility to supply toner powder from an installed Toner Cartridge to Developer Roller, and evens the toner level in it.

It takes approximately 8 minutes to complete. When finished, the printer gets ready.
The operation of Toner Supply Mode is suspended by accidental power off or door open.
The operation will resume and continue in 8 minutes total.

1. Check that Toner Cartridge is set correctly.

2. Plug the printer.
   Press " | " side to turn on the printer.



⚠ WARNING

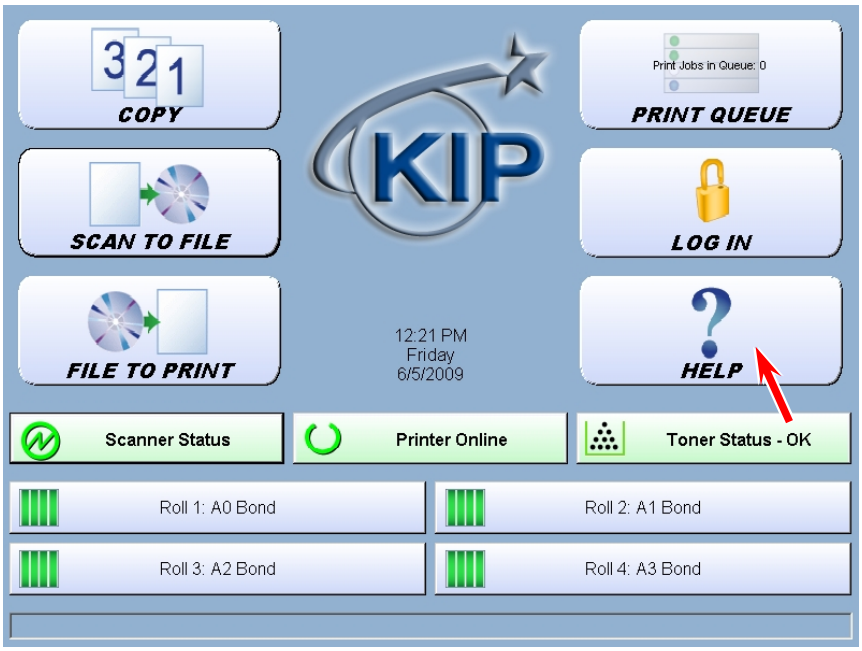
(1) Do not handle the Power Plug with wet hands, or you may receive an electrical shock.

(2) Ground the printer for safety.

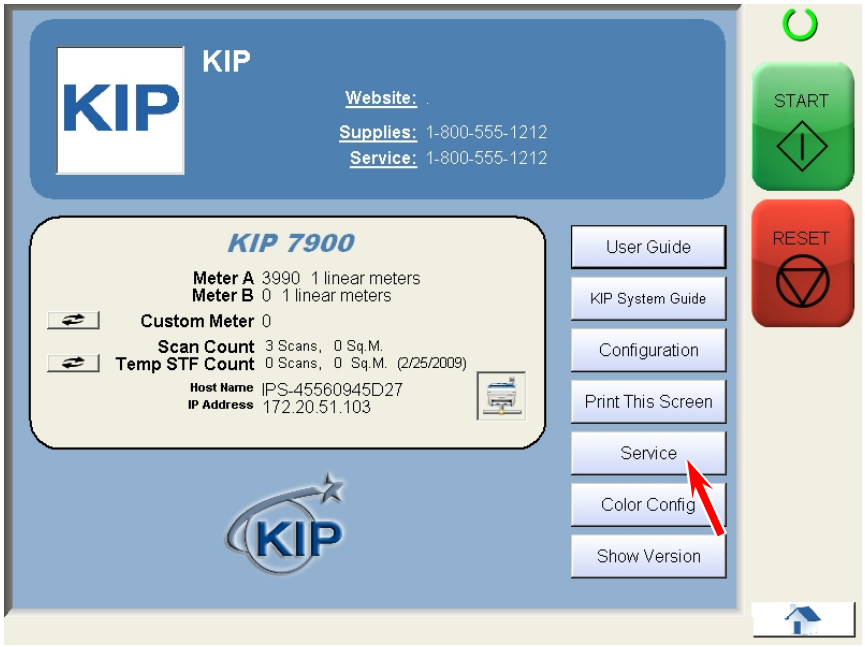
(3) Do not plug the printer into a multi-wiring connector in which other devices are plugged into. It may overheat the outlet and may result in a fire.

(4) The outlet must satisfy the following rated power condition.
220V to 240V plus 6% or minus 10%, 50/60Hz, 20A or higher

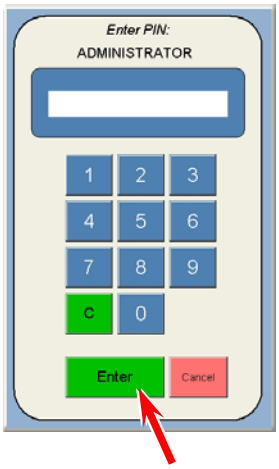
3. Press “? - Help” on Home screen.



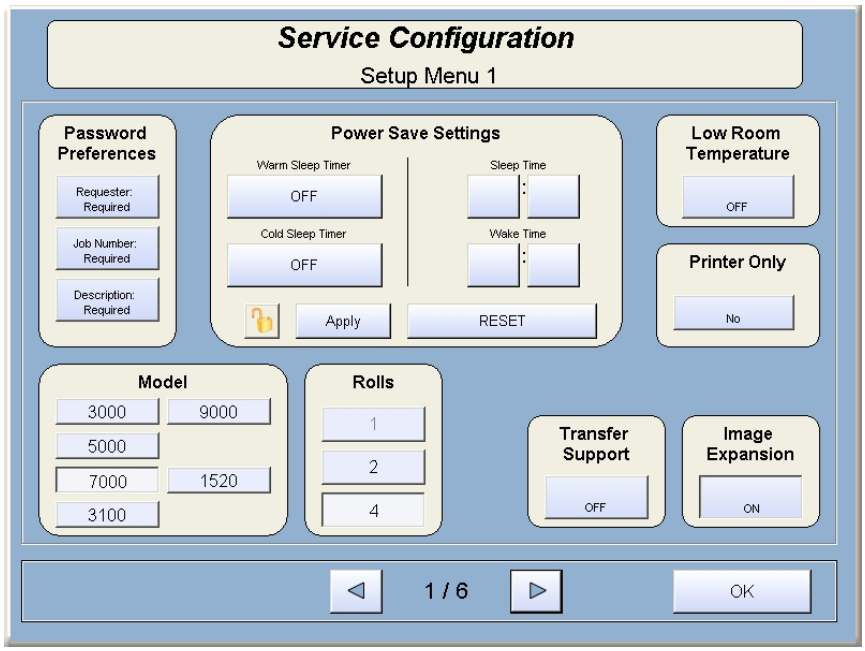
4. Press [Service].



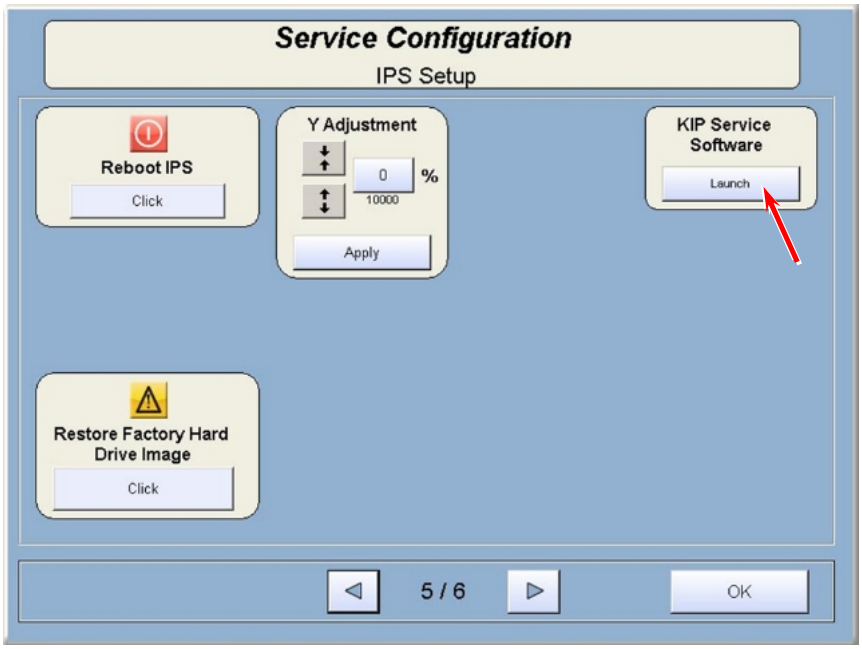
5. On-screen Keypad appears.
Input “8495107” and press [Enter].



6. Service Configuration screen will appear.

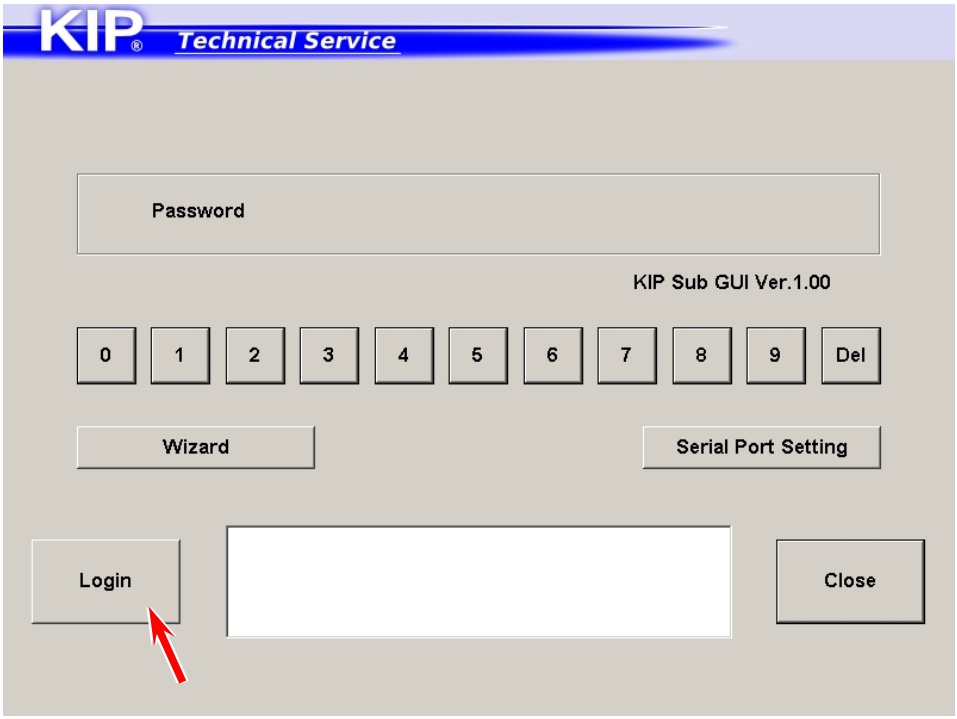


7. Use the arrow keys to open [5/6 IPS Setup]. Press [Launch] in “KIP Service Software”.

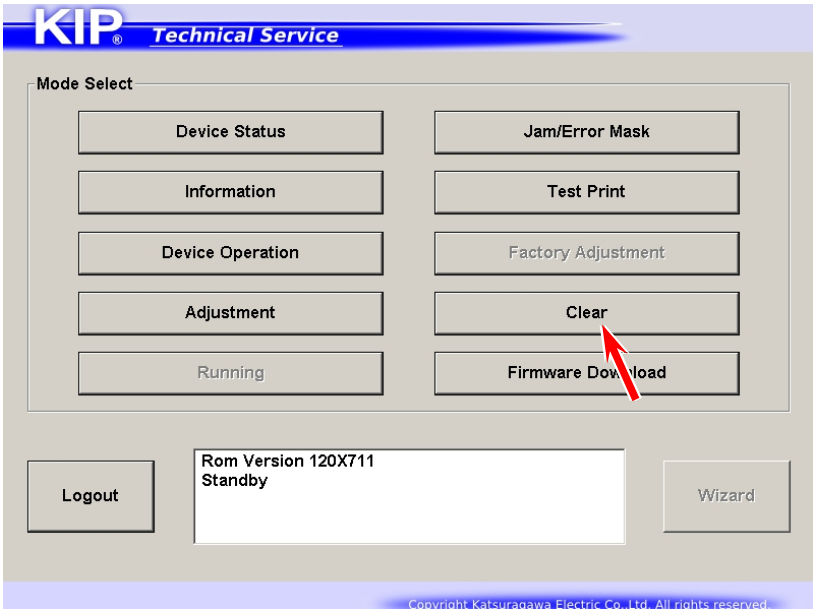


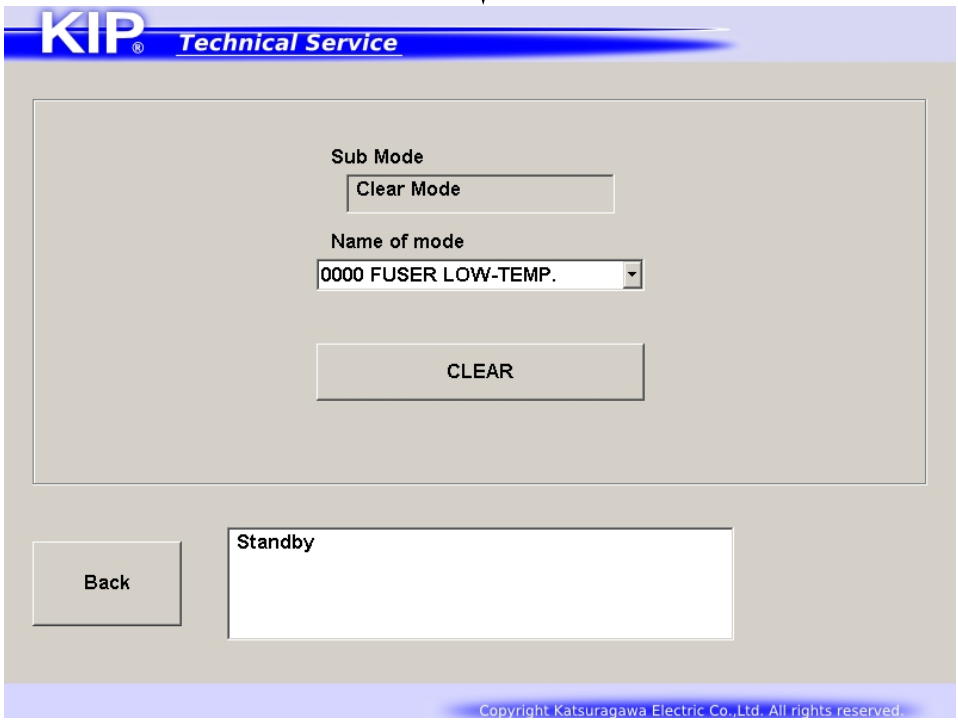
8. Press [Yes].

9. Press [Login] to log in Service Mode.

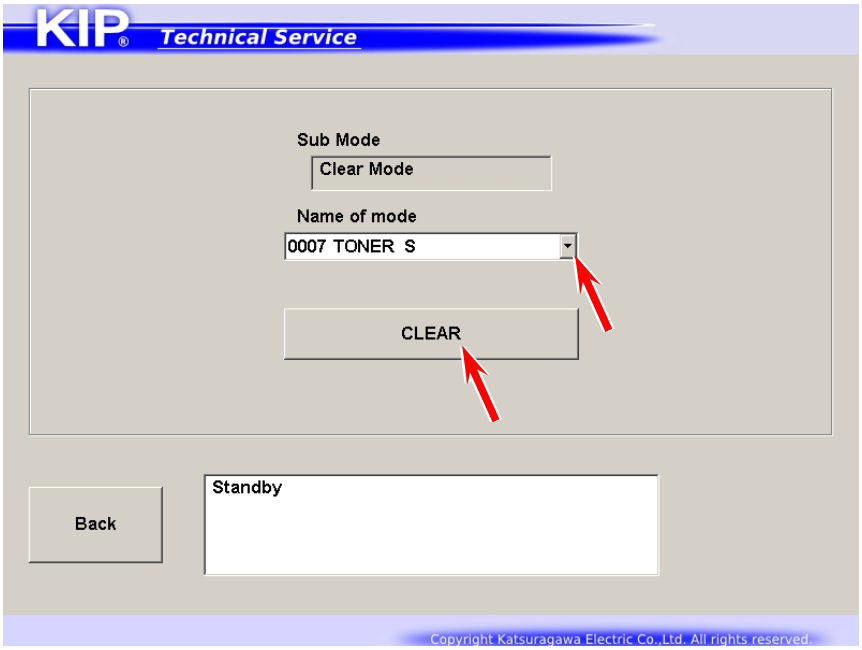


10. Press [Clear] in Service Mode Home.
    Clear Target screen appears.



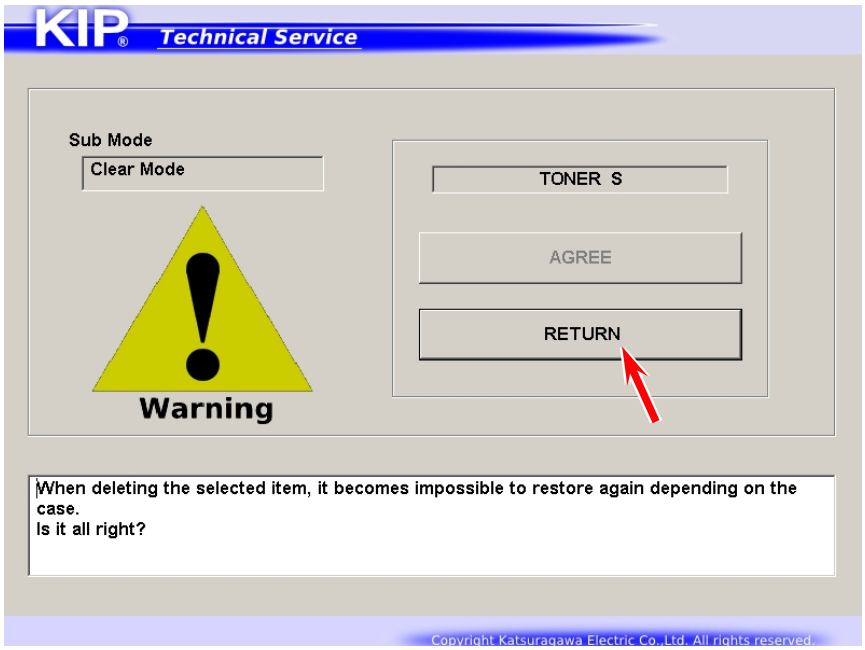


11. Select “0007 Toner S” from Name of mode menu. Press [CLEAR].

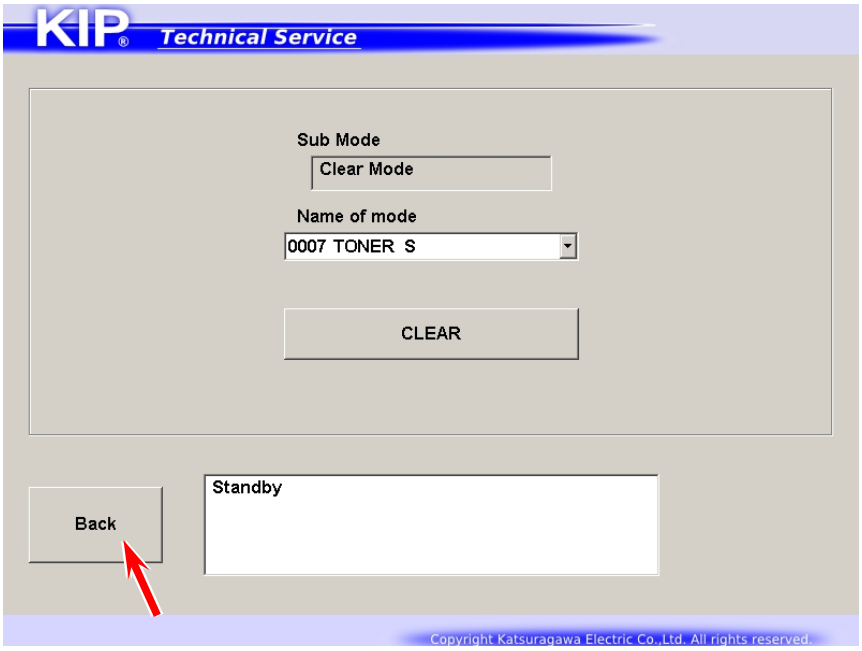


12. Confirmation screen appears. Press [Agree].
Toner supply / leveling starts. This will tale about 7 minutes to complete.

13. Once you press [Agree], it will turn deactivated. Press [Return].



14. The screen goes back to Clear Target Screen. The status window shows “warm up” during toner supply / leveling.
After the completion (in 7 minutes), it changes to “standby”. Then press [Back].

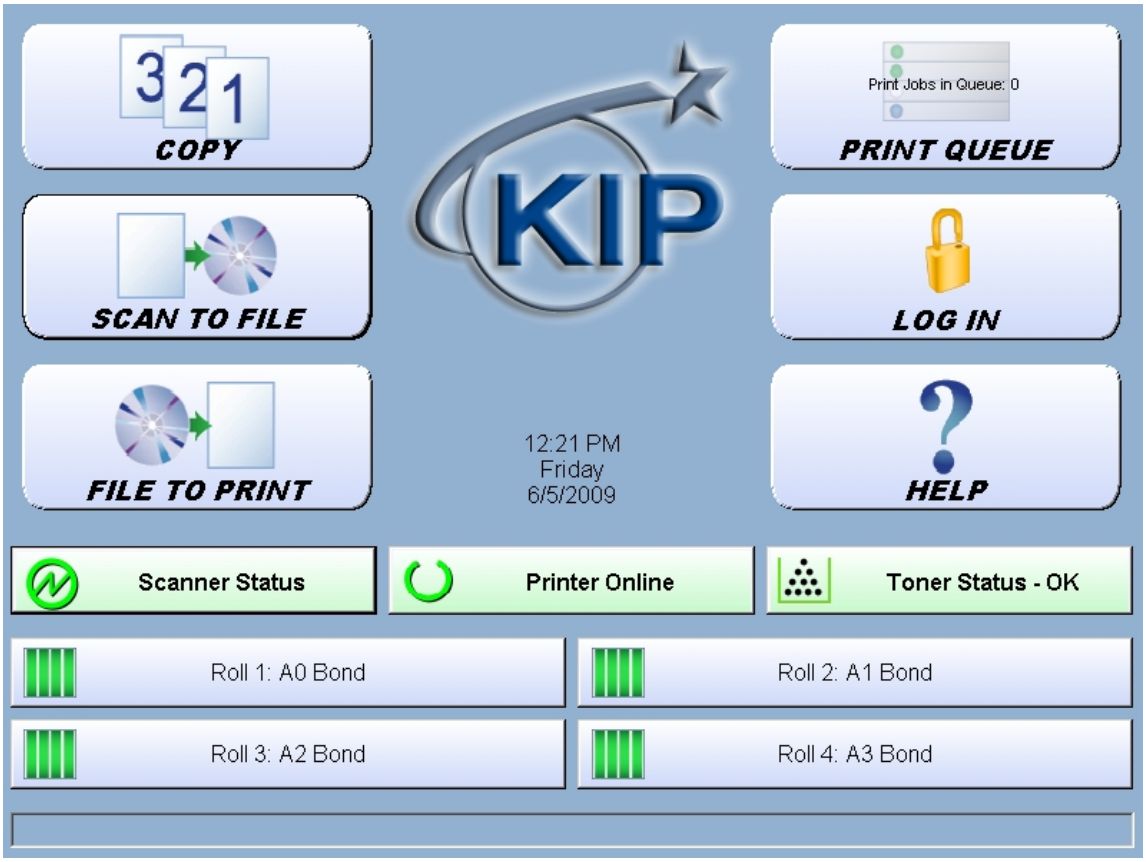


NOTE

Just in case of abnormality on the machine, turn off the machine. Remove the cause and try again from the beginning.

15. In Service Mode Home screen, press [Logout].

16. In Login screen, press [Close].
    UI screen will display Home screen after a short time.



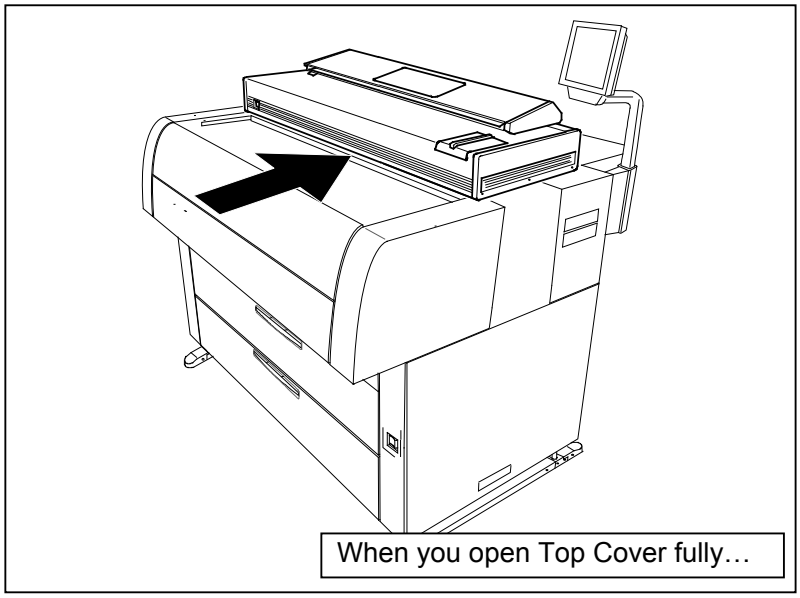
2. 11 Installing Stopper

NOTE

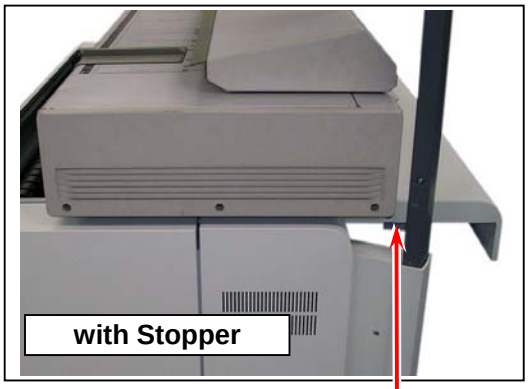
KIP Scanner (option) can be integrated with the printer.
This section describes preparation for KIP Scanner installation in single footprint.

For KIP 2100 Scanner in single footprint installation, it is mandatory to attach Stoppers to prevent KIP 2100 Scanner from touching UI arm. Please follow this section.

For KIP 600/600A Scanner, it is not necessary to attach Stoppers. You can skip this section.



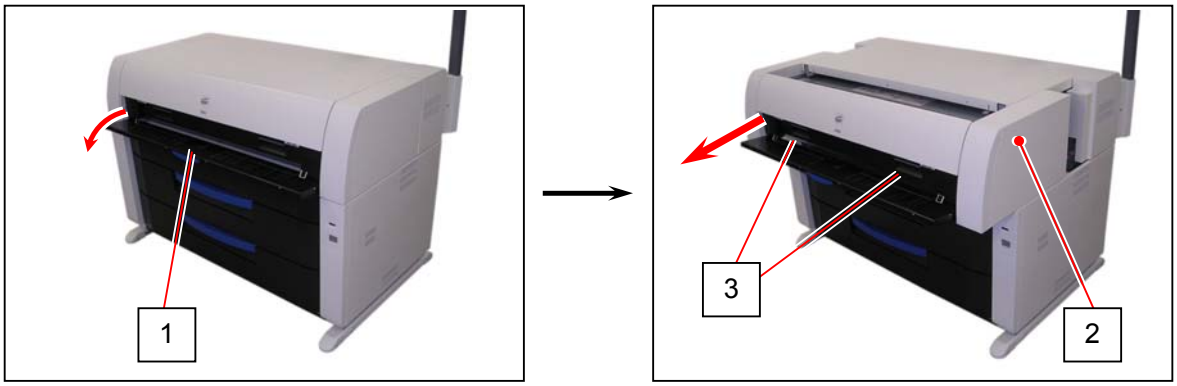
When you open Top Cover fully…



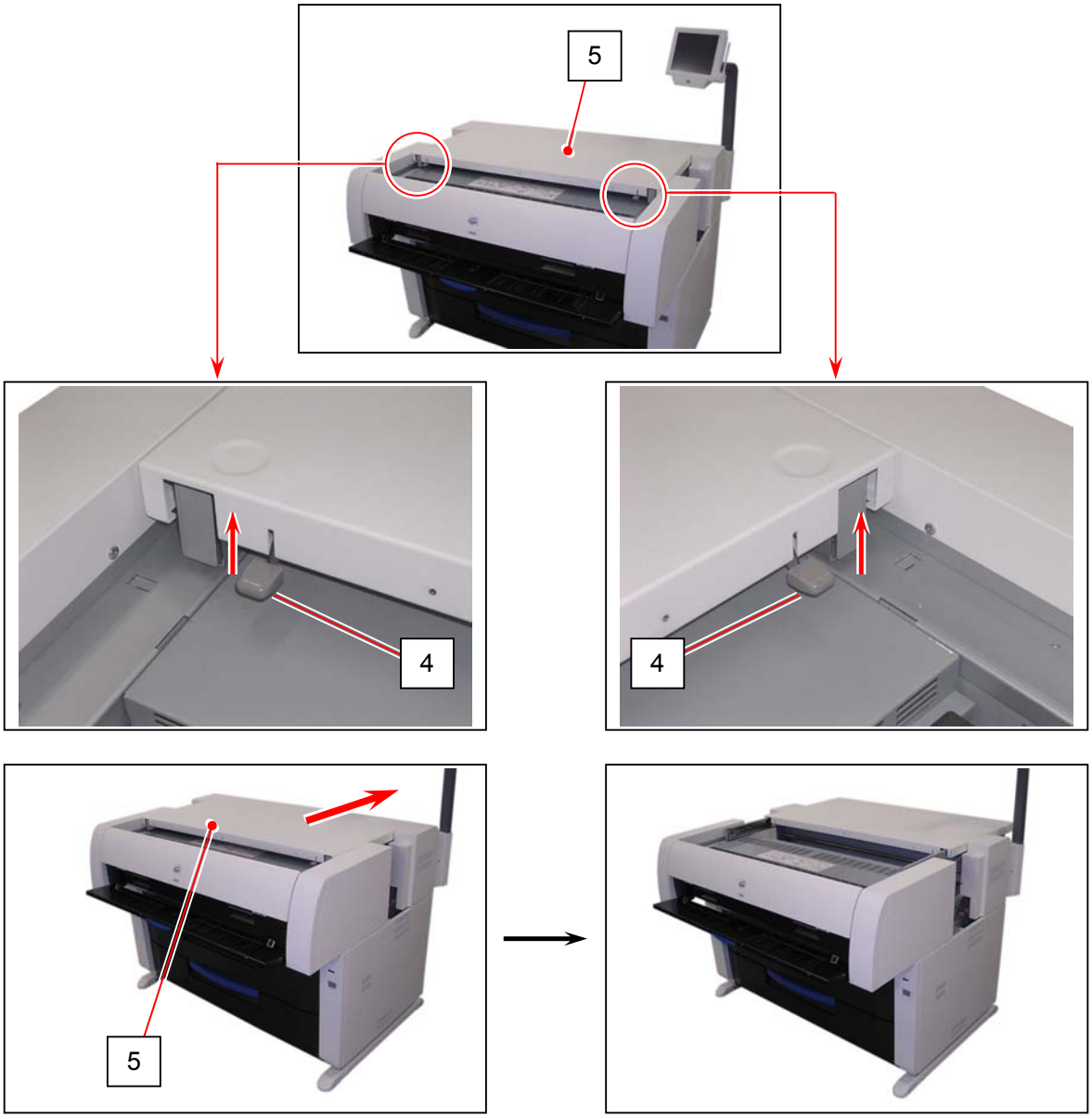
Top Cover stops here.

Scanner may touch UI Arm.

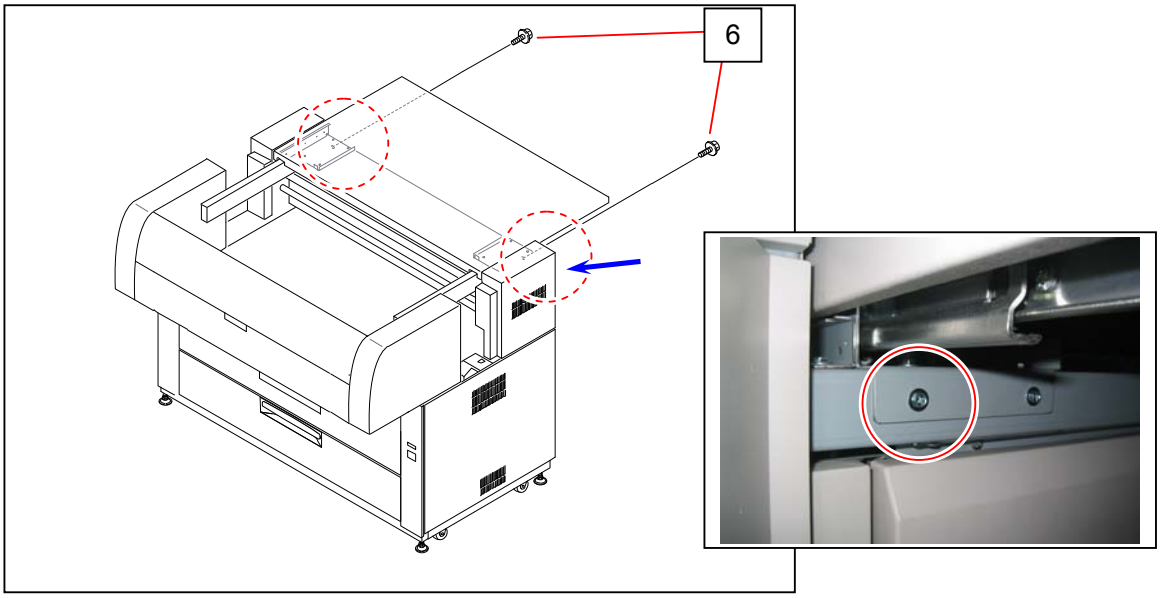
1. Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



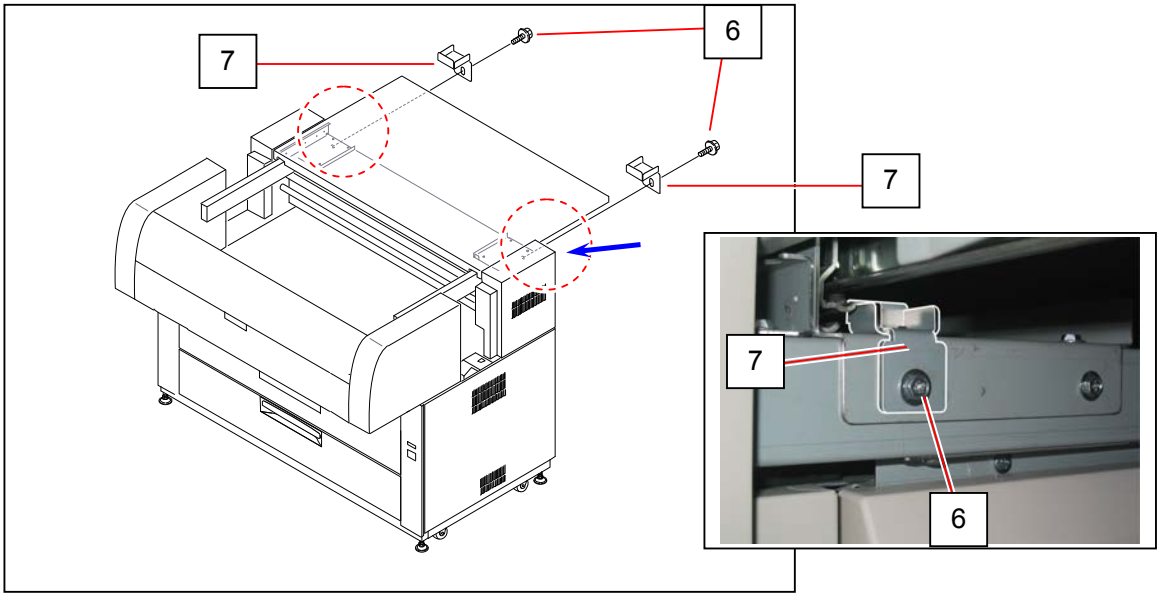
2. Pull up both knobs (4), and slightly open the Top Cover (5) by pushing it toward the rear side.



3. Remove 2 screws (M5x8) (6) from the rear the machine.



4. Attach Stopper (7) on each side and fix them with the screws (6) together.



5. Replace all the covers in position.

Chapter 3

Print Process

Page

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3.5 Density Compensation Process 3-21

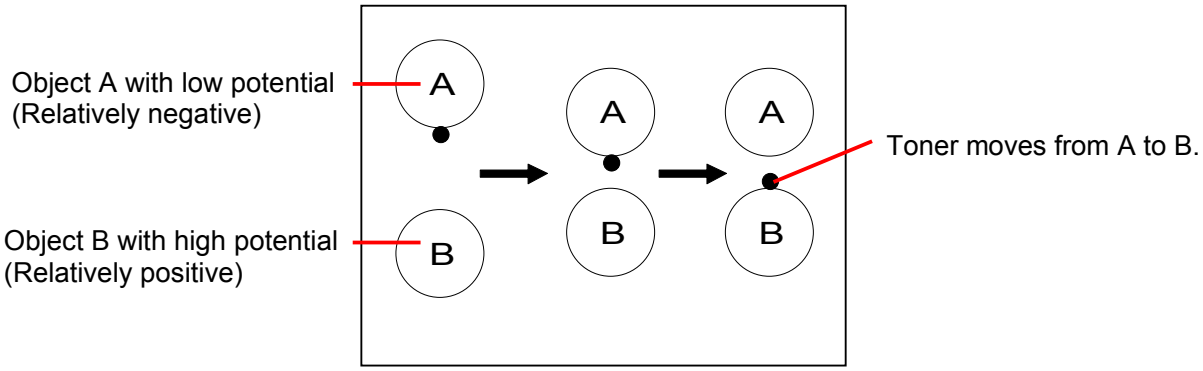
3. 1 Characteristic of Toner

The toner used for KIP 7700 Digital Printer has a characteristic to be charged “negative” (like a negative object), which tends to be attracted to a relatively “positive” object.

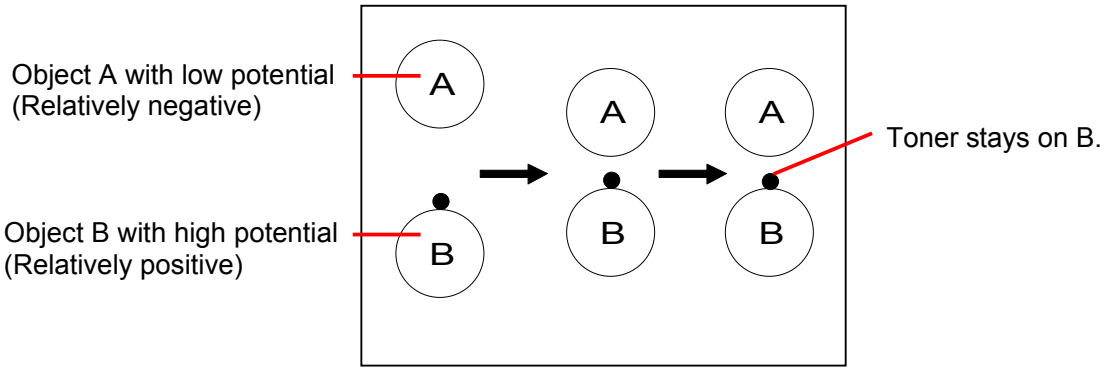
Suppose that there are objects A and B, and the situation is as follows.

1. Electric potential of the object B is higher than that of object A.
2. Toner exists on the object A.

Comparing the potential of both objects, it can be said that the object B is relatively “positive” and the object A is “negative”. (In another word, object B is more “positive” than the object A.)
As the toner is “negative”, it is attracted to the object B that is more “positive”.
If you move the object B close to the object A, therefore, the toner moves onto the object B.



On the contrary, suppose that the toner exists on the object B of which electric potential is higher than the object A.
Even if you move the object A close to the object B, the toner continues to stay on the object B because negative toner and relatively negative object A repel each other.

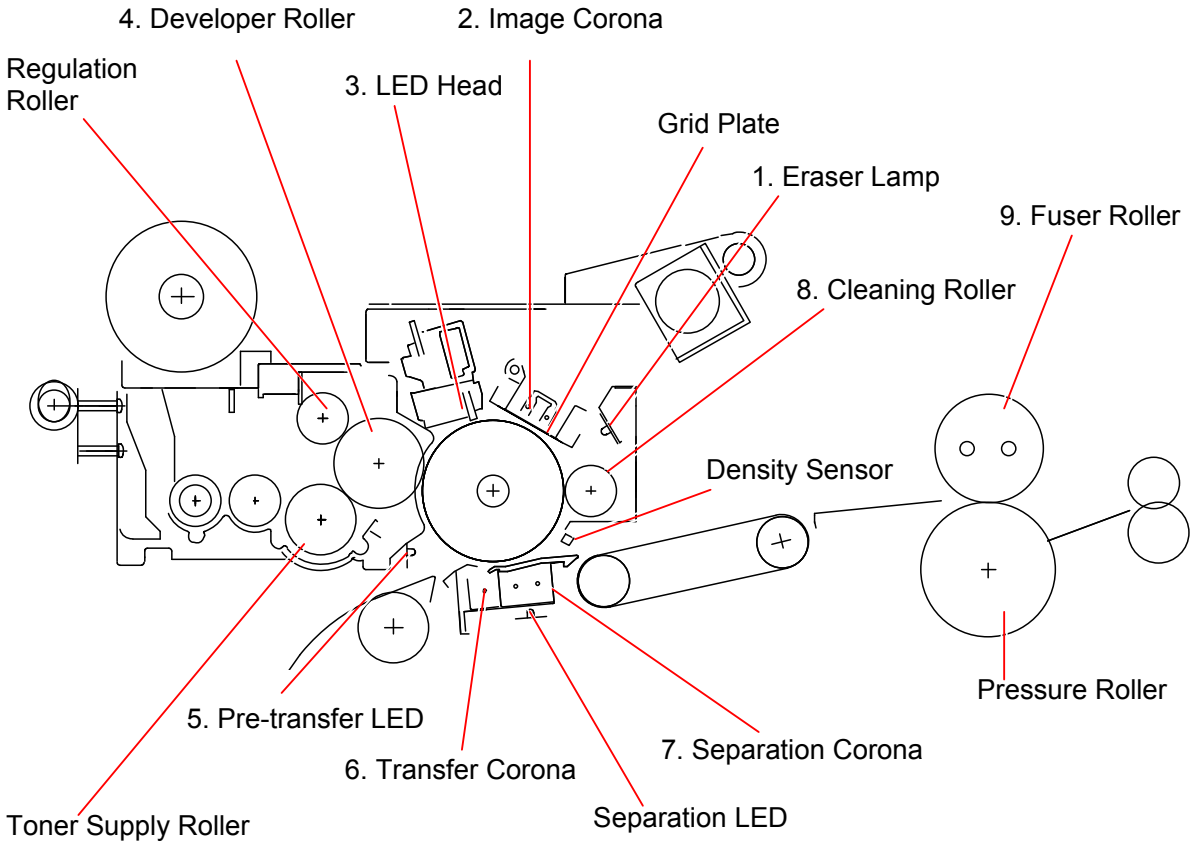


Thus, the toner has a characteristic to move from one place with a lower potential to another place with a higher potential.
If we properly control the electric potentials, therefore, it is possible to move the toner from one place to another as we intend, or it is also possible to remove the toner from unwanted place.
KIP 7700 Digital Printer controls the electric potentials properly working each part as Drum, Corona Units, Lamps, Developer Unit and Cleaning Roller.
The movement of toner is controlled correctly and several processes as Development, Toner Transfer, Drum Cleaning and etc. are performed.

3. 2 Print Processes

One cycle of print consists of the following 9 processes.

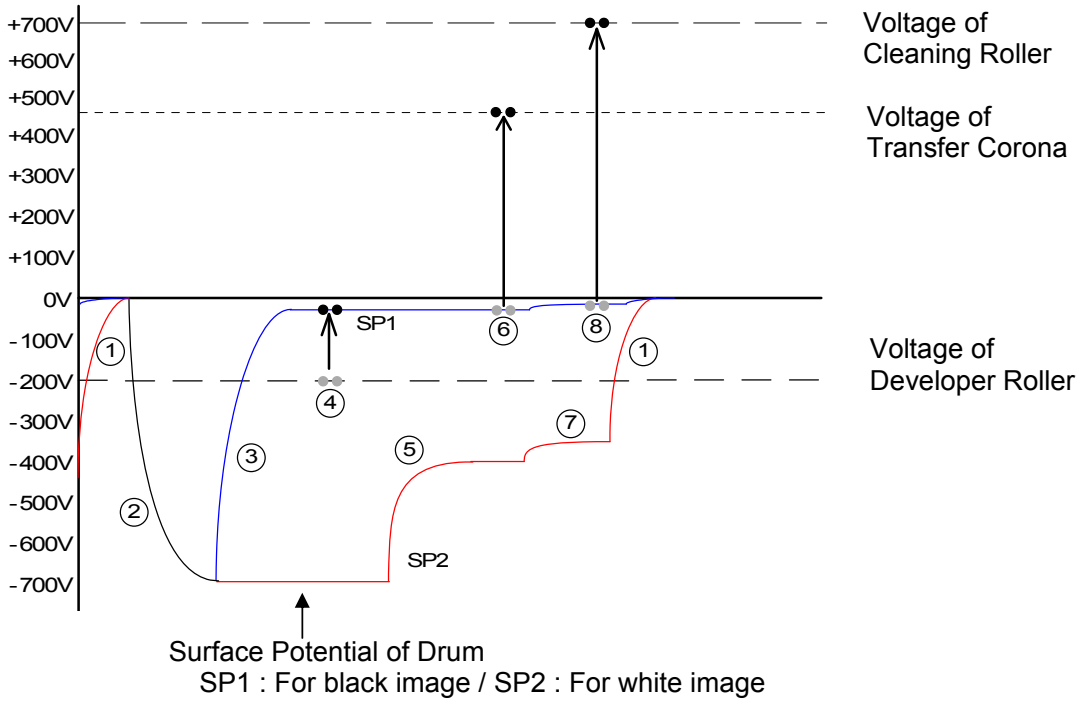
1. Erasing (Removal of negative electric charges)
2. Charge of Drum
3. Exposure
4. Development
5. Pre-Transfer LED
6. Transfer
7. Separation
8. Drum Cleaning (Removal of remained toner)
9. Fusing



Operation Condition of Pre-Transfer LED and Separation LED

	Roll			Cut Sheet		
	Plain	Tracing (Vellum)	Film	Plain	Tracing (Vellum)	Film
Pre-Transfer LED (Green)	OFF	OFF	OFF	ON	OFF	ON
Separation LED (Red)	OFF	OFF	ON	ON	ON	OFF

Processes from 1 to 8 are related with the control of the electric potentials.
The following graphic shows the electric potential at each process and the movement of toner.



Name of part	Voltage (Current) during Print Cycle	Voltage during Toner Collection Process
Image Corona Wire	-1.6mA +/-0.02mA	---
Grid Plate	-700V +/-10V	---
Developer Roller	-200V +/-5V (***** see below)	+350V +/-5V
Regulation Roller (Center)	-50V +/-2V (***** see below) against the voltage of Developer Roller	-50V +/-2V against the voltage of Developer Roller
Regulation Roller (Sides)	0V (Connected to the ground)	0V (Connected to the ground)
Toner Supply Roller	the same voltage with Developer Roller -100V +/-30V (High Coverage Mode) against the voltage of Developer Roller	the same voltage with Developer Roller
Transfer Corona	+460V +/-30V	---
Separation Corona	AC (4.60KV) + DC (-300V +/-5V)	---
Cleaning Roller	+700V +/-5V	-500V +/-5V

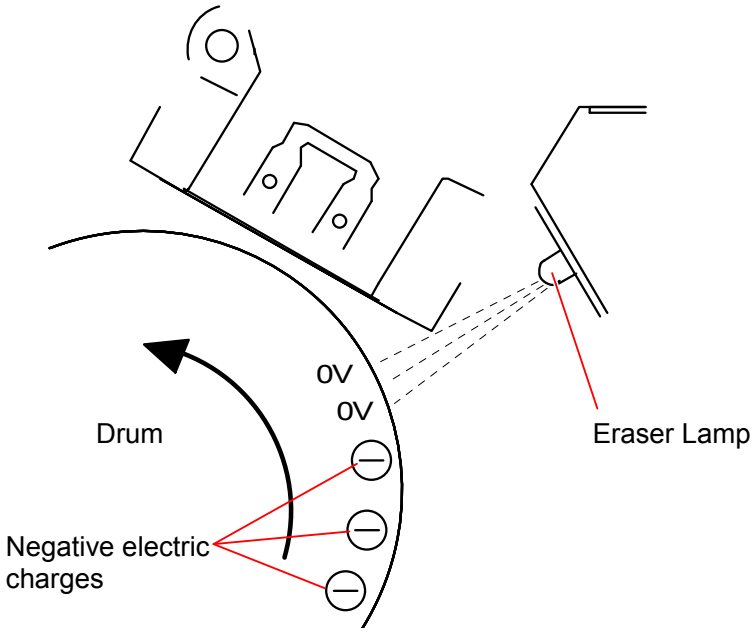
***** Note that these voltage values under actual usage condition exclude adjustment by Density Compensation Process on page 3-21.

Reference

When the printer is going to stop after printing, or when the used Roll Deck is changed with other one, the KIP 7700 Digital Printer will make “Toner Collection Process” to take back the remained toner into the Developer Unit.
Refer to [3.4 Toner Collection Process] on the page 3-18 for the detail.

3.2.1 Erasing (Removal of negative electric charges)

As the first step of print cycle, it is necessary to remove the negative electric charges from the Drum, which have remained there after the former print cycle.
The Drum has a characteristic to lose the negative electric charges if it is exposed to the light.
Therefore, the Drum is rotated and evenly exposed to the light from the Eraser Lamp.
The electric potential on the Drum becomes 0V (residual potential) by this process.

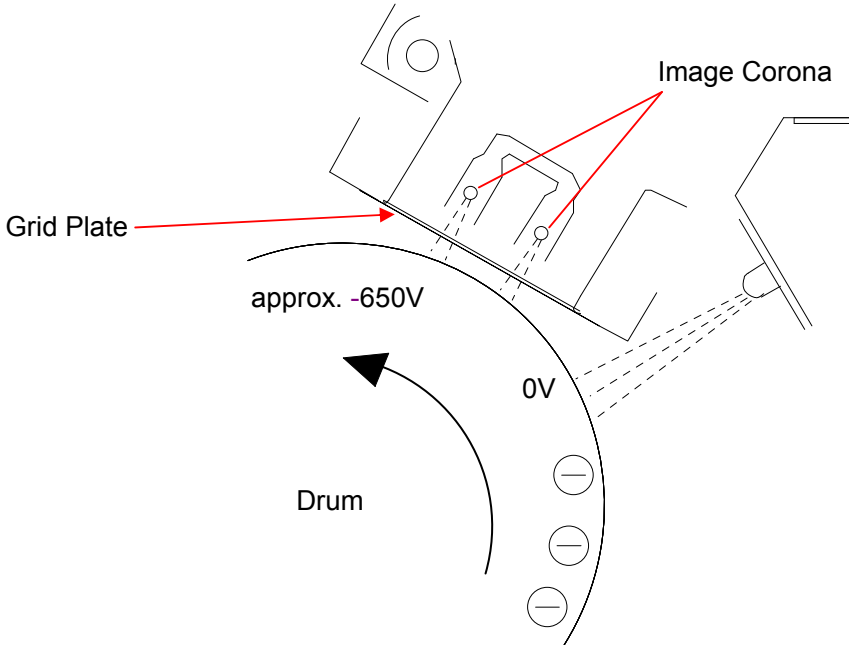


3.2.2 Charge of Drum

The Image Corona discharges negative electric charges which are given to the Drum.
The surface of Drum is charged approximately -650V evenly as a result, which corresponds to the white area of the printed image pattern.
The Grid Plate is also connected to the High Voltage Power Supply individually.

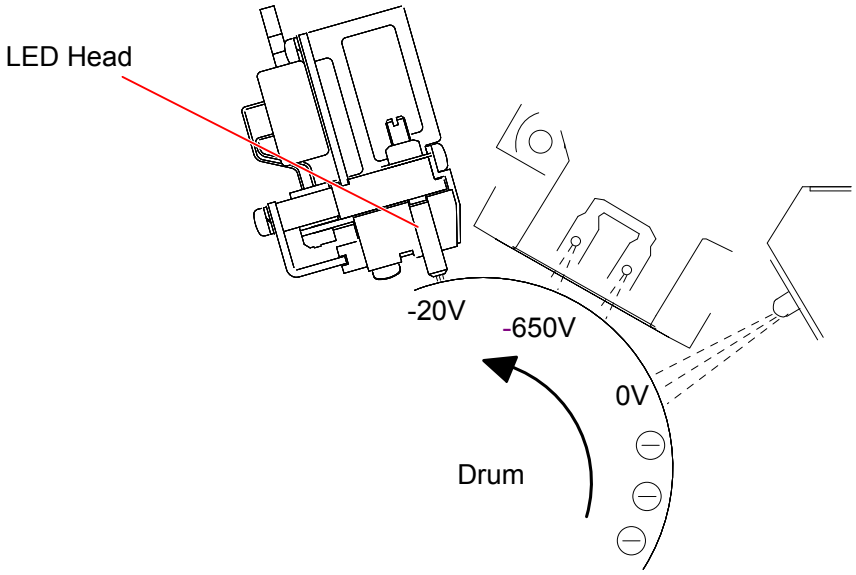
Current and Voltage supplied to the Image Corona Wire and the Grid Plate are as follows.

Corona Wire ..... -1.6mA +/-0.02mA
Grid Plate ..... -700V +/-10V

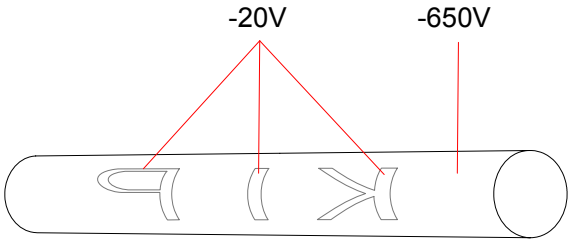


3.2.3 Exposure

According to the printed image pattern, the LED Head throws the light (780nm) onto some part of Drum which corresponds to the black area of printed image pattern. As the Drum has a characteristic to lose, the negative electric charges if it is exposed to the light, this part of Drum surface loses the charges and its potential becomes about -20V. (This potential is not constant but is variable by the environment.)
The other part of Drum surface, which was not exposed to the light from the LED Head, keeps the potential (approx. -650V) that was given by the Image Corona.
An invisible electric image pattern consists of the area (approx. -650V) and the area (-20V) is formed on the surface of Drum as a result. (This is called “Electrostatic Latent Image”.)



(Distribution of electric potentials after the Exposure)



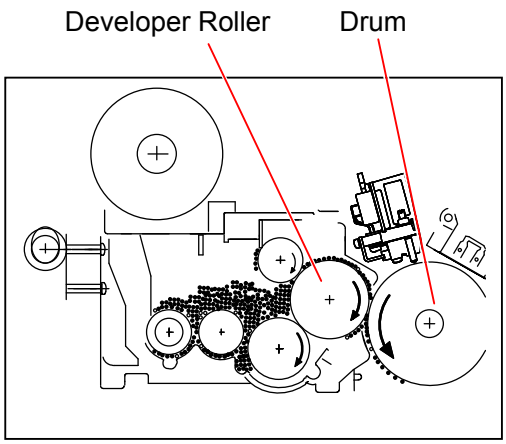
Reference

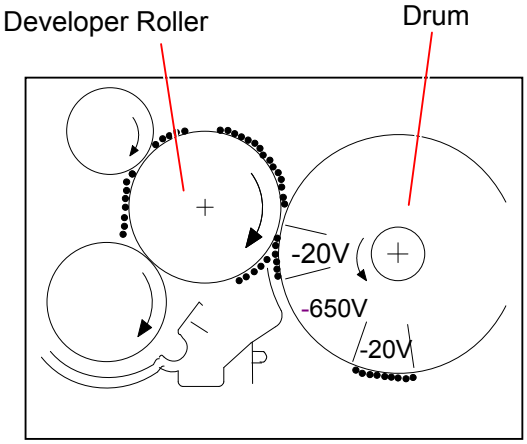
(1) The LED Head of the KIP 7700 has the ability to produce 8 density gradations. The actual potential for exposed areas is not constantly -20V but slightly varies in pixels to pixels by the gradations.

(2) Even if the toner remains on the Drum, it will not block the light from the LED Head as the diameter of toner (9 micrometers) is much smaller than that (42 micrometers) of 1 pixel of LED.
You do not have to worry because the electric charges on the Drum are surely removed.

3.2.4 Development

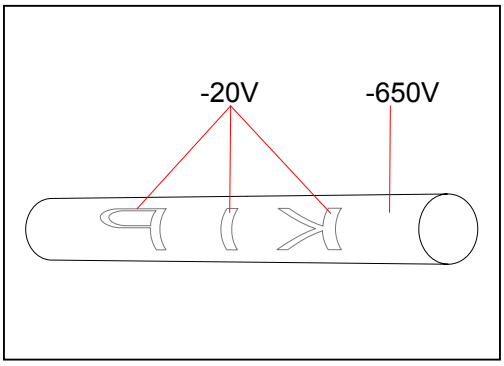
The Developer Roller, which is evenly covered with the toner, is contacted to the Drum because the Developer Unit is pressed to the Drum side. (The width of contact point is about 5mm.)
The Developer Roller is supplied with -200V during the print cycle.
And both the area approx. -650V) and the area (-20V) exist on the Drum because the Electrostatic Latent Image has been formed in the former Exposure process.
Seen from the voltage of Developer Roller (-200V), the -20V area on the Drum is relatively “positive”.
So the toner moves from the Developer Roller to the -20V area of Drum.
On the other hand, the area (approx. -650V) is relatively “negative” seen from the Developer Roller.
Therefore, the toner does not move to the Drum but stays on the Developer Roller.
A visible toner image is formed on the Drum as a result.

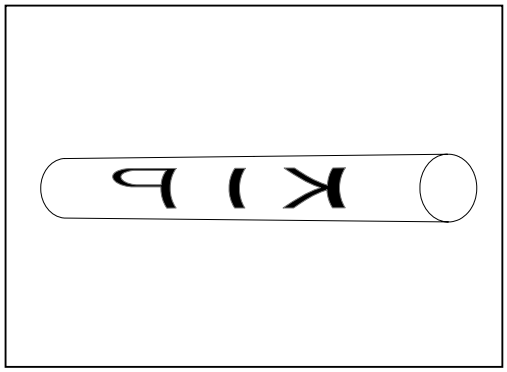




Before Development

After Development : Toner moves only to -20V area.



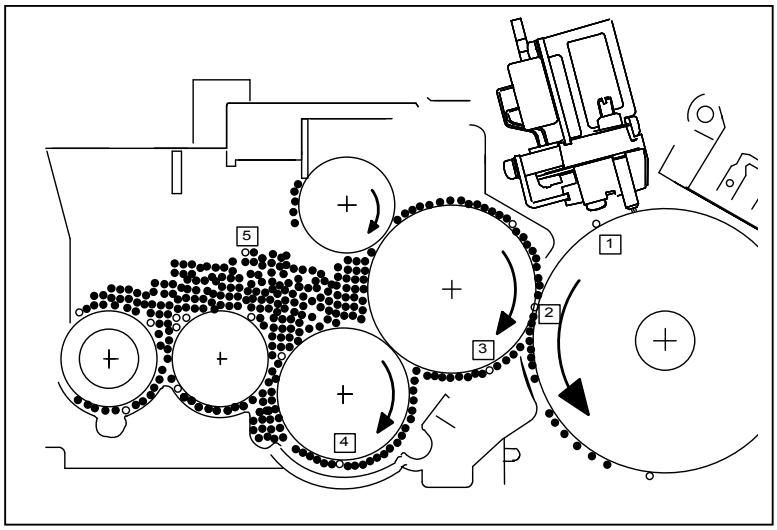


(Invisible Electrostatic Latent Image)

(Visible toner image)

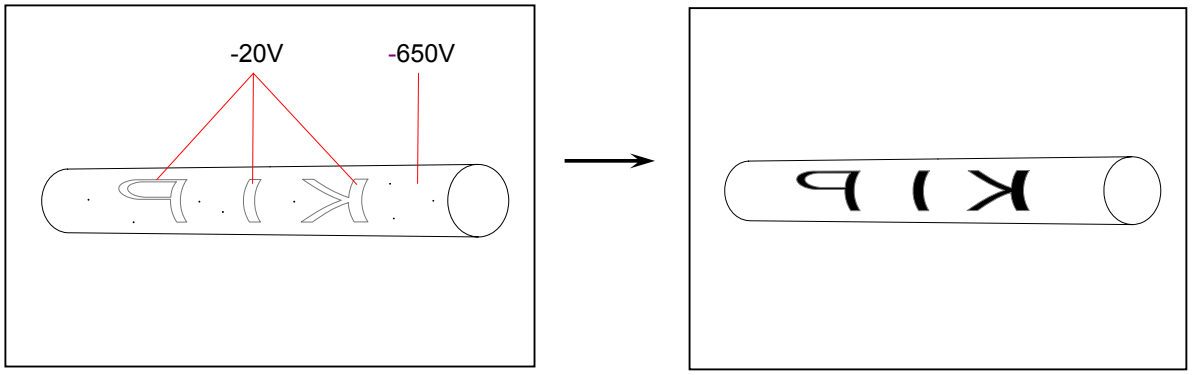
Even if some toner was not removed by the Cleaning Roller but remained on the area (approx. -650V) of Drum (It corresponds to the white area of the print) in the later [3.2.8 Drum Cleaning], this toner is removed at the time of Development because it moves to the Developer Roller of which potential (-200V) is higher than Drum (approx. -650V).
So there will be no case that unnecessary black spot is printed on the white area of the print.
The remained toner that moved to the Developer Roller is carried into the Developer Unit and then reused.

1. Toner remained on the Drum
2. Toner moves from the Drum to the Developer Roller.
3. Developer Roller carries the toner toward the Toner Supply Roller
4. Toner is shifted to the inside of the Developer Unit by the revolution of Toner Supply Roller.
5. Toner is reused.



Before Development
(Toner is remaining on the white area.)

After Development
(Toner is removed from the white area.)

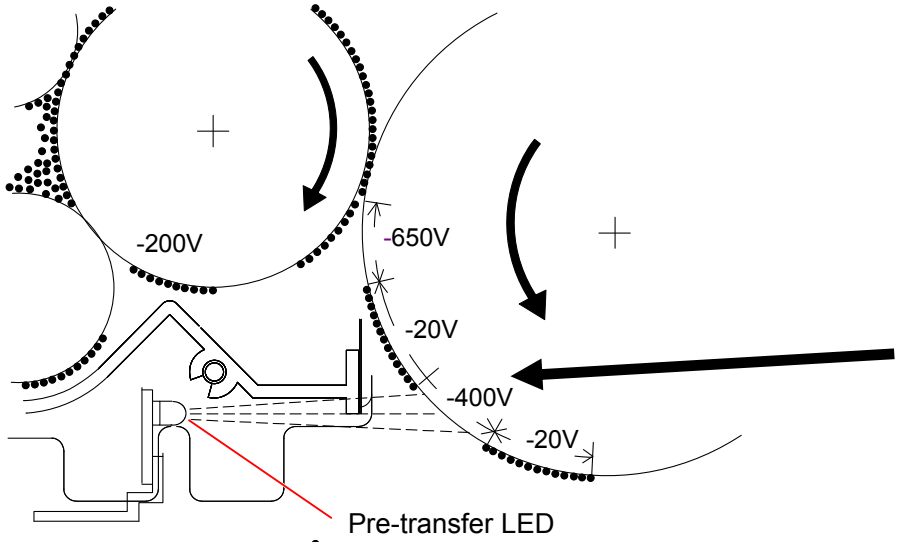


Reference

The Developer Unit has not only the Developer Roller but also 2 more rollers inside which are also supplied with the individual voltages.
The Developer Unit controls the movement of toner in the unit taking advantage of the difference of potentials among these rollers, and covers the Developer Roller with the toner in the end.
Refer to [3.3 Controlling the Movement of Toner in the Developer Unit] to know how the Developer Unit controls the movement.

3.2.5 Pre-transfer LED

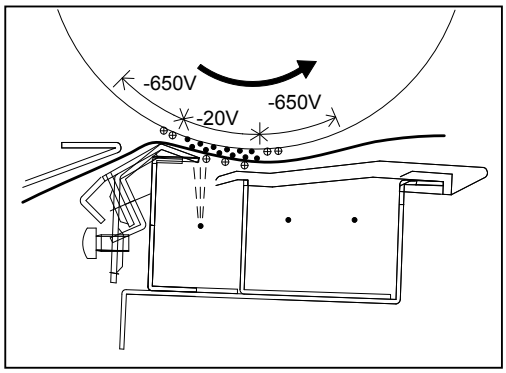
The potential of non-toner area on the Drum is strongly charged with approximately -650V.
If we take the next [Transfer Process] and [Separation Process] with this state, the toner may not be transferred enough from the Drum to the printing media, or it will be difficult to separate the printing media from the Drum.
Therefore the Pre-transfer LED (green LED) throws light onto the Drum to remove the negative electric charges some degree from the non-toner area.
The potential of non-toner area is increased to approx. -400V (This potential is not constant but it is variable by the environment) by this process.



Reference

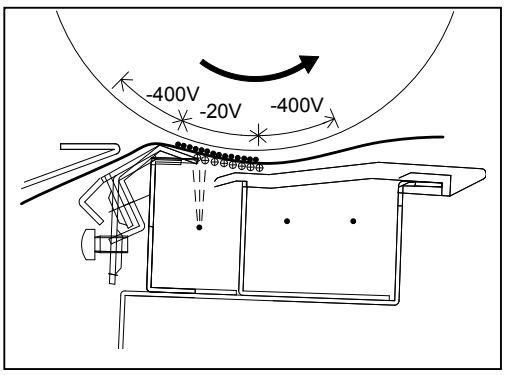
(1) The non-toner area of the Drum will keep the negative potential (approx. -650V) if we do not take the Pre-transfer Process.
Such a high negative potential tends to attract the positive electric charges given from the Transfer Corona to the printing media.
As some of positive charges will move onto the Drum, the printing media can not keep enough positive charges.
As a result, not so small amount of toner remains on the Drum because the printing media loses the power to attract it. (Print tends to get lighter.)
If a light is thrown from the Pre-transfer LED, the potential of non-toner area is increased to -400V.
With this potential, it is possible to avoid the positive charges move onto the Drum.
As the printing media is enough charged positively, toner is transferred well.

(Before the Pre-transfer LED Process is completed.)



Positive charges move onto the Drum.
Media is not enough charged positively.

(After the Pre-transfer LED Process is completed.)



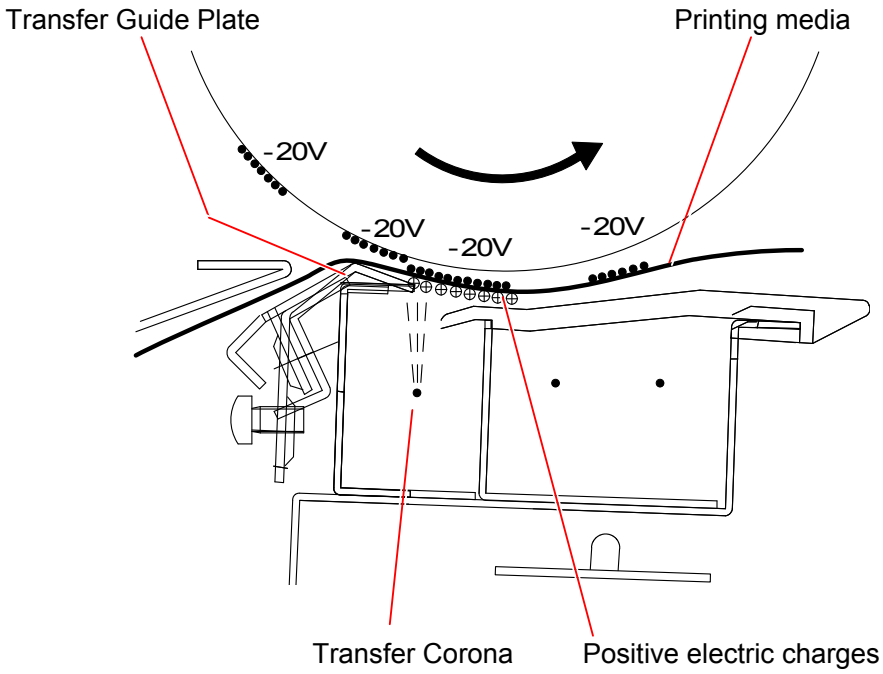
Media is enough charged positively.

(2) The potential (approx. -650V) on the non-toner area is so strong that the media, which is charged positively by the Transfer Process, is strongly attracted to this area (approx. -650V) by the static force.
So it is difficult to separate the media from the Drum, which will result in a jam or other problems.
If the Pre-transfer LED throws light to the non-toner area, the negative charges are removed from the non-toner area and the static force gets weaker.
It becomes easier to separate the media from the Drum as a result.

3.2.6 Transfer

The printing media is charged positively as the Transfer Corona discharges positive electric charges from under the media.
The toner existing on the -20V area on the Drum will move to the printing media because the potential of the media comes to be higher than the Drum by the Transfer Process.
The voltage supplied to the Transfer Corona Wire is as follows.

Transfer Corona Wire : +460 +/-30V (When the Insulated Drum is used.)



Reference

The Transfer Guide Plate, which exists before the transfer point, is grounded through the Varistor to keep only the necessary amount of positive electric charges while dismissing over charges to the ground.

1. If the Transfer Guide Plate is directly grounded, the positive electric charges given to the printing media will escape to the ground through the Transfer Guide Plate.
   As the printing media is not enough charged positive, much toner remains on the Drum not being transferred onto the media.
   The image looks very light in this case.

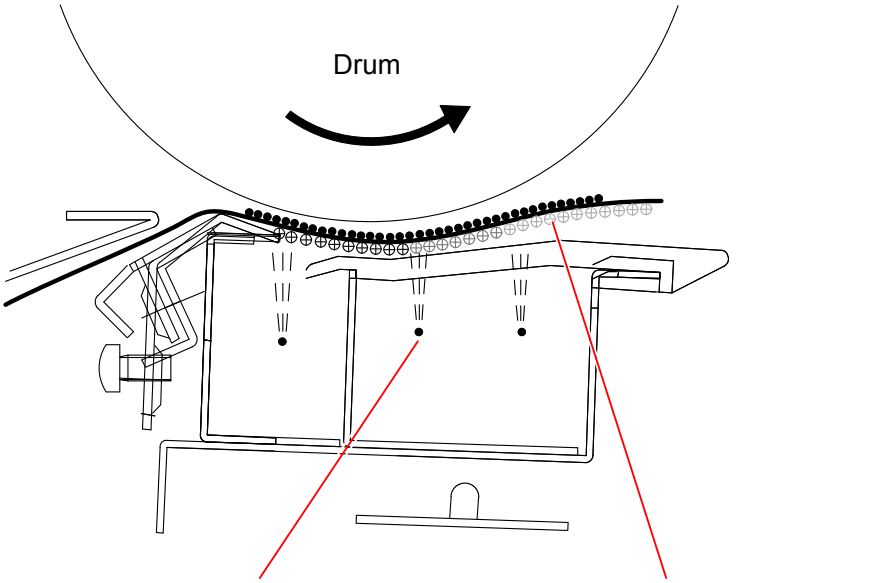
2. If the Transfer Guide Plate is floated from the ground so as to block the escape route of the positive electric charges, it collects too much positive charges because the Transfer Corona exists nearby it.
   As the Transfer Guide Plate is strongly charged positive, it attracts the toner floating inside the machine.
   This toner attracted onto the Transfer Guide Plate will cause the dirt on the back of the print.

3.2.7 Separation

The printing media is attracted to the Drum after the Transfer because the potential of media is positive and that of Drum is negative.
It is necessary to avoid the jam to separate the media from the Drum by removing the static force between them.
The Separation Corona takes AC discharge being supplied with the AC voltage and the DC voltage.

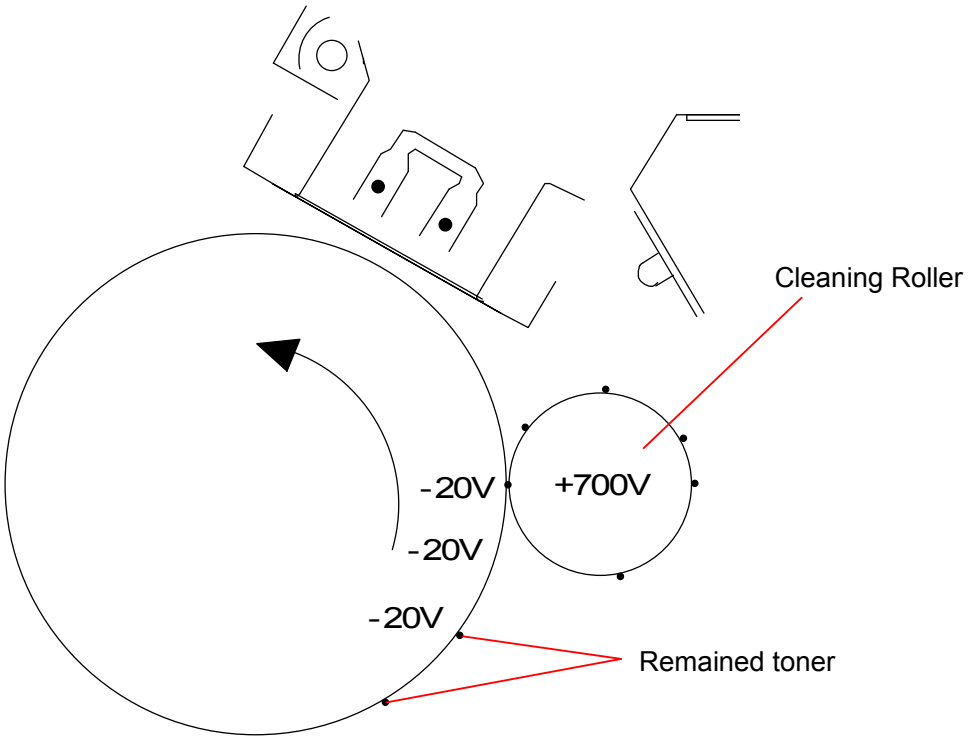
AC voltage : 4.6KV
DC voltage : -300V

As the AC voltage is compensated by the negative DC voltage, the negative charges are generated more than positive ones.
The negative charges from the Separation Corona and the positive charges of the printing media offset each other.
The static force between the printing media and the Drum is reduced as a result, and the media is separated from the Drum by its weight.



3.2.8 Drum Cleaning (Removal of remained toner)

Some amount of toner was not transferred onto the printing media but remained on the Drum.
This remained toner will be removed by the Cleaning Roller.
The Cleaning Roller is supplied with +700V (+/-5V), and the potential of Drum is about -20V at this time.
As the Cleaning Roller is relatively “positive” and the Drum is “negative”, the toner moves from the Drum to the Cleaning Roller.

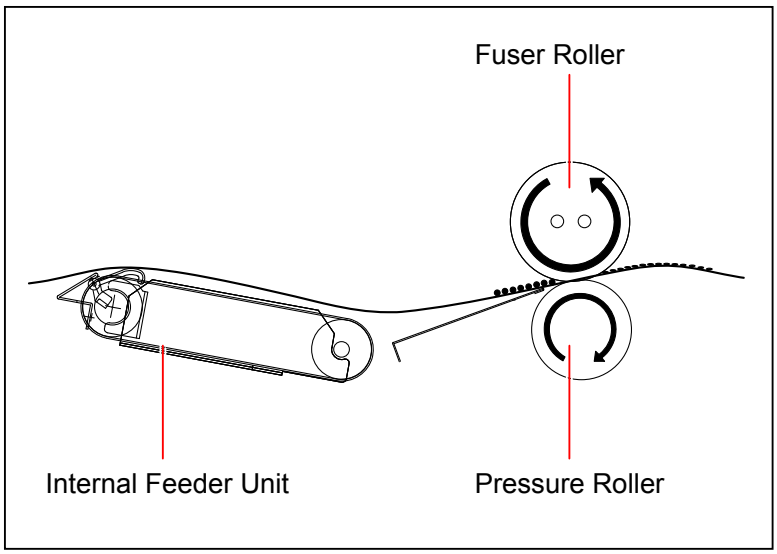


NOTE

If too much toner exists in a small area (like a trace of solid black image) the Cleaning Roller may not be able to remove all of them.
But this toner is removed from the Drum in the Development Process.

3.2.9 Fusing

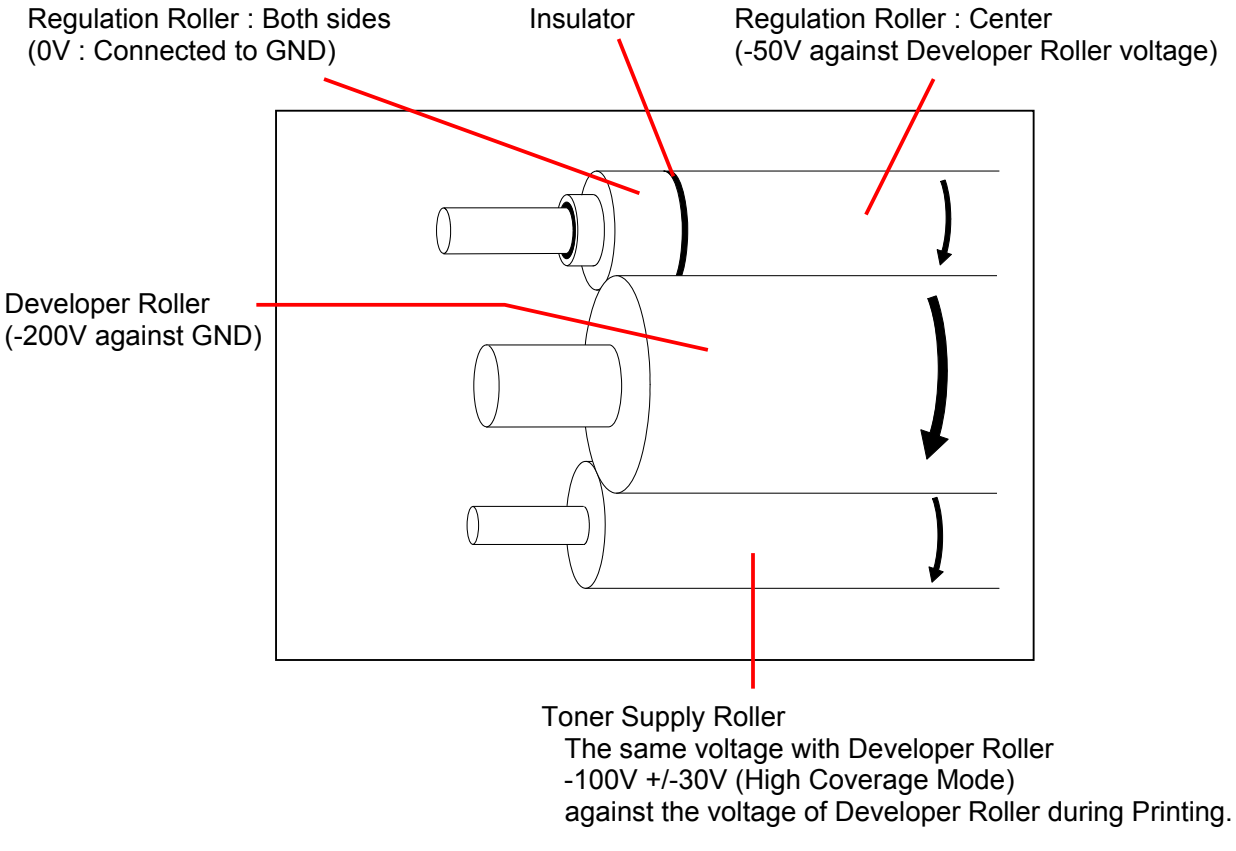
After Transfer / Separation Processes, the printing media is transported to the Fuser Unit by the Internal Feeder Unit.
The Fuser Unit mainly consists of the Fuser Roller and the Pressure Roller.
The Fuser Roller is very hot, and the Pressure Roller is strongly pressed to the Fuser Roller by the spring.
The toner is firmly fused onto the printing media by the heat and the pressure when the media passes through between these rollers.



3. 3 Controlling the Movement of Toner in Developer Unit

There are 3 kinds of rollers called “Developer Roller”, “Regulation Roller” and “Toner Supply Roller” in the Developer Unit.
Each roller is supplied with its own voltage.
In the following list, the voltage of the Developer Roller (-200V) is measured against the ground.
The other voltages mean the difference against the voltage of Developer Roller.

Name of roller	Supplied voltage
Developer Roller	-200 +/-5V against the ground
Regulation Roller (Center)	-50 +/-2V against the voltage of Developer Roller
Regulation Roller (Both sides)	0V (Connected to the ground)
Toner Supply Roller	The same voltage with Developer Roller -100V +/-30V (High Coverage Mode)



NOTE

The Regulation Roller is divided into central area and both sides area by the insulator, and individual voltages is supplied to each area.

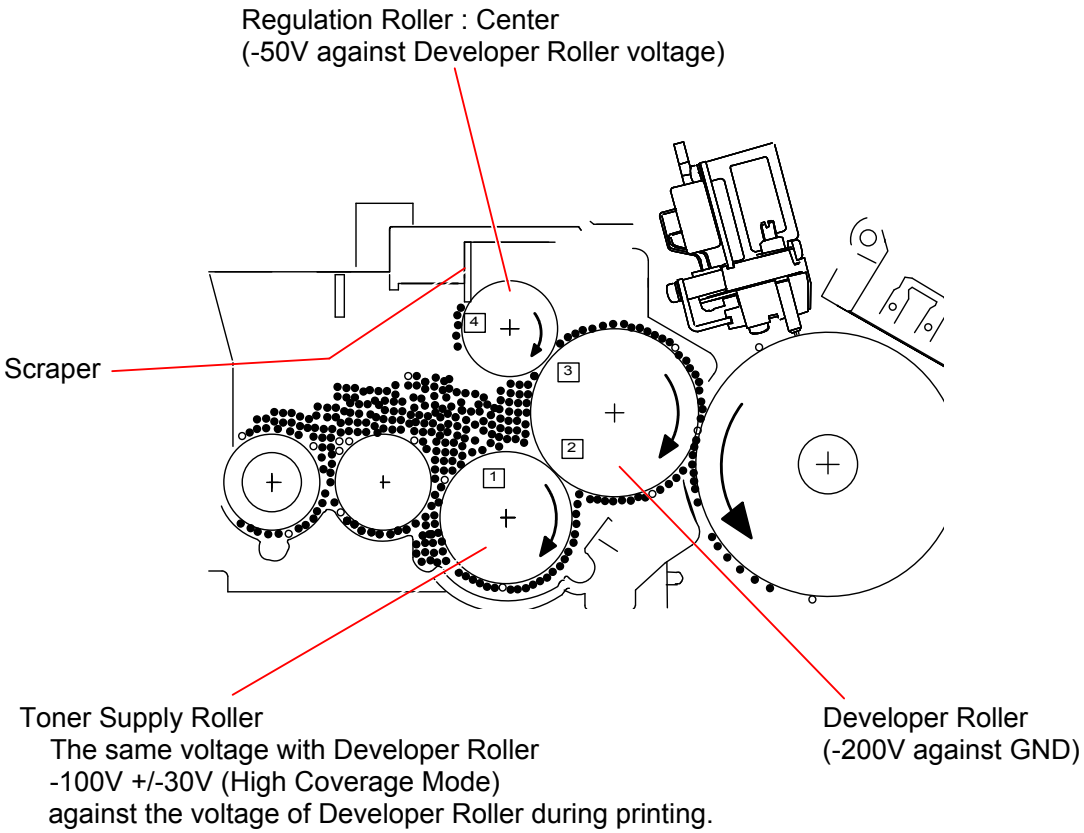
Taking advantage of the difference of potentials among these rollers, the movement of toner is controlled in the Developer Unit as follows.

1. The Toner Supply Roller carries the toner toward the Developer Roller.

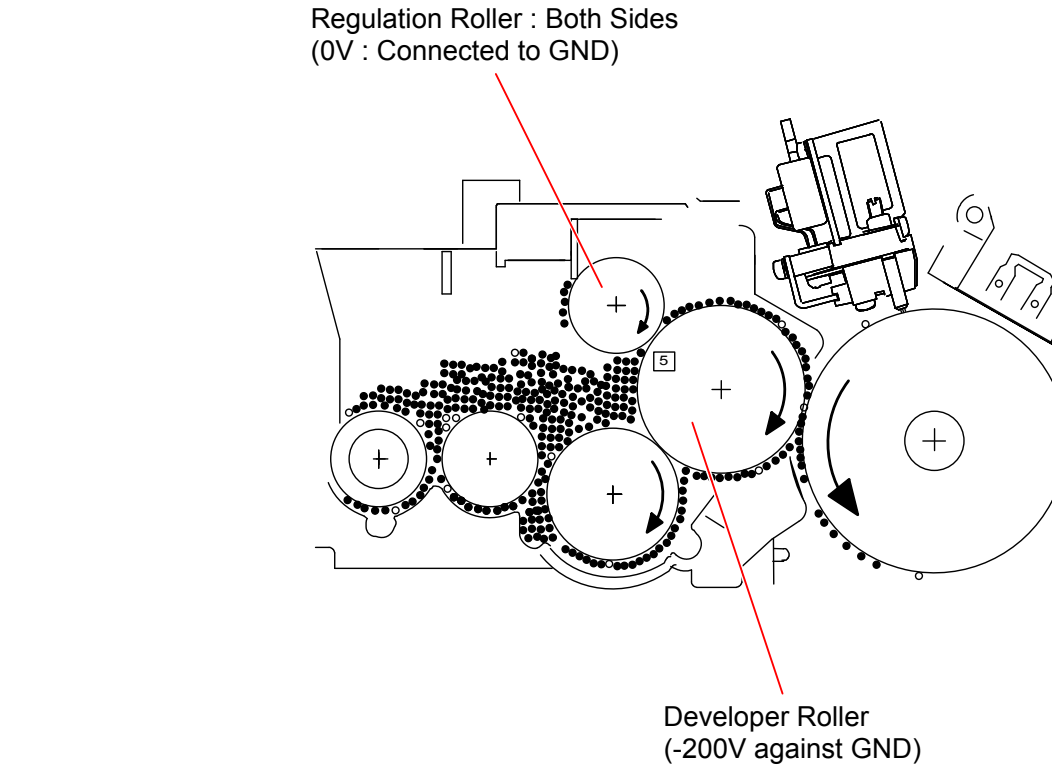
2. The voltage of the Toner Supply Roller is 0V (or 100V under High Coverage Mode) lower than that of Developer Roller.
   When the toner reaches the contact point of these rollers, Toner Supply Roller rub toner powder on it to Developer Roller.
   Then the Developer Roller carries the toner toward the Regulation Roller.

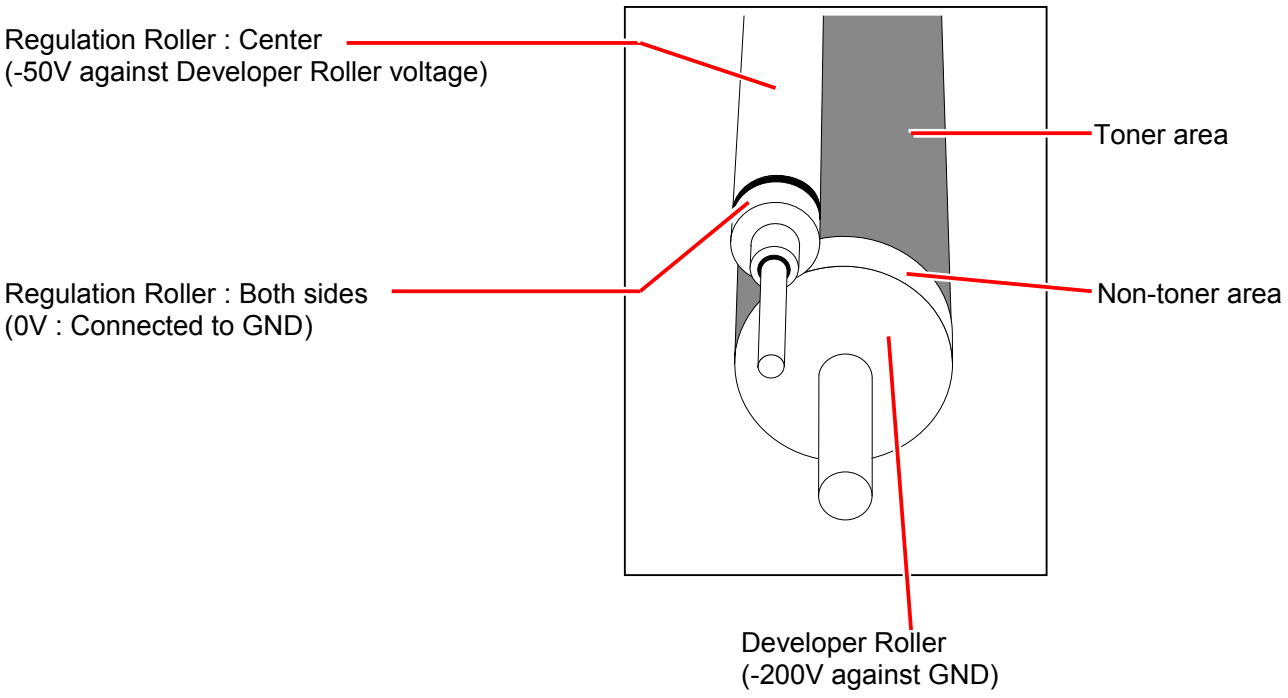
3. The Regulation Roller is strongly pressed to the Developer Roller by the spring, and these 2 rollers move to the opposite direction each other at the contact point.
   Even if the Developer Roller carries more toner than required, the Regulation Roller limits the amount of toner that can pass through between 2 rollers. So very small amount of toner can pass through between rollers and the rest is returned back to the inside.
   As the voltage of Developer Roller is -50V higher than that of Regulation Roller (Center), the toner which has passed through between these rollers is firmly attracted to the Developer Roller.
   Very thin layer of toner is evenly formed on the surface of Developer Roller as a result.

4. Much toner sticks onto the Regulation Roller when it is returned back to the inside.
   This toner is scraped off by the Scraper which is contacted to the Regulation Roller.



5. The voltage of both sides of Regulation Roller is 0V as these parts are connected to the ground. It is higher than that of Developer Roller (-200V).
   When the toner reaches the contact point of these rollers, therefore, it moves onto the Regulation Roller.
   The side areas of the Developer Roller are not covered with the toner as a result, so it is possible to avoid the toner drops into the machine from the side.





3. 4 Toner Collection Process

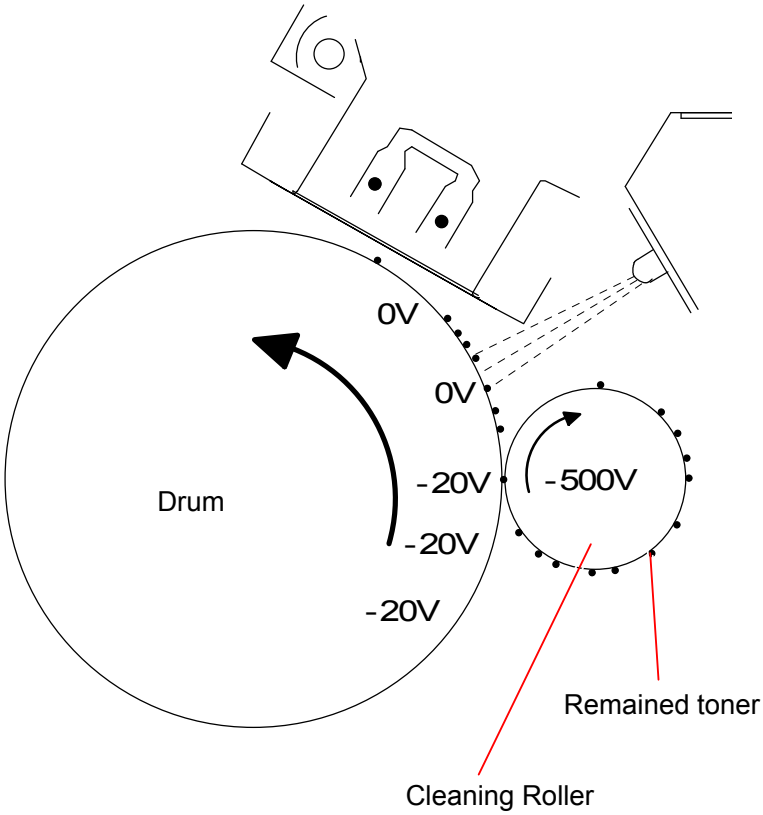
As explained in [3.2.8 Drum Cleaning] on page 3-13, the Cleaning Roller is supplied with +700V to remove the remained toner from the Drum during the print cycle.
This toner gathered by the Cleaning Roller is returned to the Developer Unit in the following 3 cases.

(1) When the printer has finished printing out all the accumulated print jobs and then going to stop.
(2) When the used roll media is ended and changed with another one.
(3) When the used roll media if changed from one to another because the print size specified in the job is different.

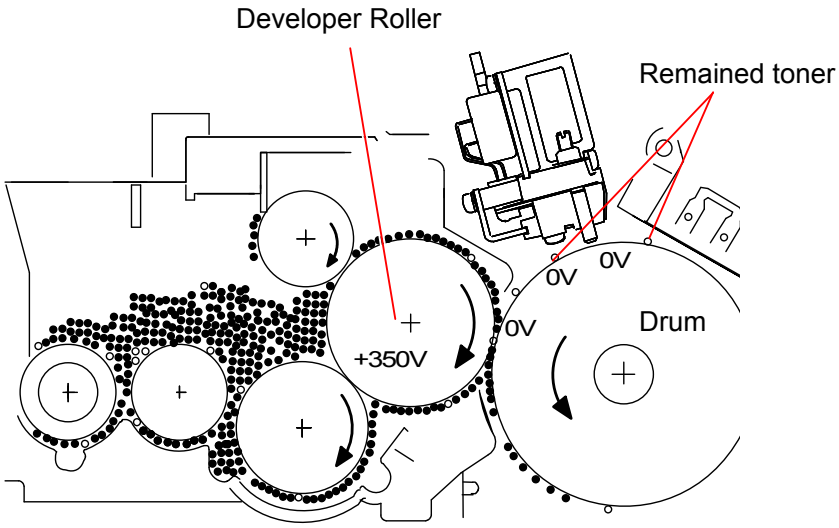
This process to return the toner is called “Toner Collection Process”.
When the trailing edge of the last sheet passes over the Separation Area, the printer will take the Toner Collection Process as follows rotating the Drum for 2 revolutions.

1. The Eraser Lamp throws light onto the Drum to remove the negative electric charges from the Drum. The potential of Drum becomes 0V.

2. The voltage supplied to the Cleaning Roller is changed to -500V in the Toner Collection Process. As the potential of Drum becomes higher than that of Cleaning Roller, toner on the Cleaning Roller moves onto the Drum.



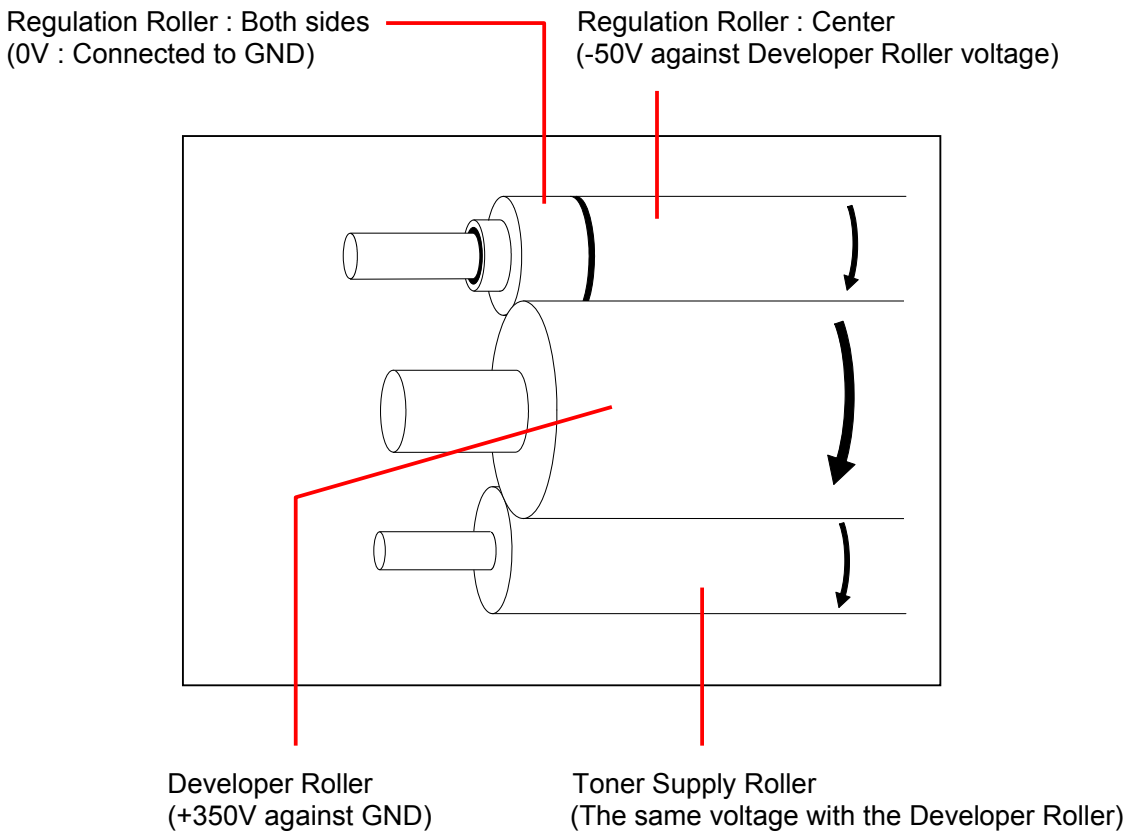
3. The voltage supplied to the Developer Roller is also changed to +350V (+/-5V) in the Toner Collection Process.
   As the potential of Developer Roller becomes higher than that of Drum, toner on the Drum moves onto the Developer Roller.
   Then the toner is carried into the Developer Unit by both the Developer Roller and the Toner Supply Roller.



Reference

Voltages supplied to Regulation Roller and Toner Supply Roller are changed also as follows.

Name of roller	Supplied voltage
Developer Roller	+350 +/-5V against the ground
Regulation Roller (Center)	-50 +/-2V against the voltage of Developer Roller
Regulation Roller (Both sides)	0V (Connected to the ground)
Toner Supply Roller	The same voltage with the Developer Roller



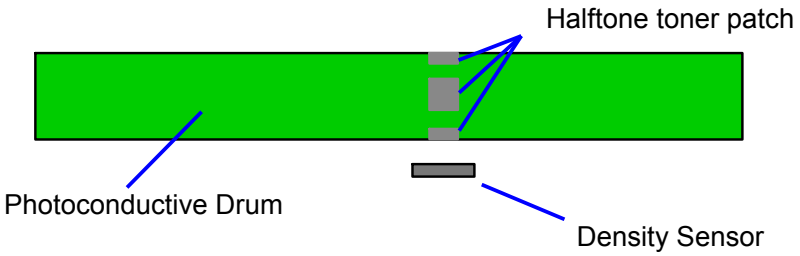
3. 5 Density Compensation Process

If Developer Bias is settled to a constant voltage, the image density on prints may vary according to the surrounding temperature change or under a special usage. To avoid any influence by them, Density Compensation Process will adjust Developer Bias / Regulation Bias for environment of usage.

In Density Compensation Process, Density Sensor measures toner density on the surface of Photoconductive Drum at regular time intervals. Developer / Regulation Bias will be automatically adjusted based on the measurement result in order to compensate image density.

Density Measure starts at regular intervals of 1 hour of Main Motor operating time, after the completion of the current print queue.

1. Several halftone toner patches are created on the surface of Photoconductive Drum as follows.



2. Toner density of all the patches is measured by Density Sensor (This step is called Density Measure). The average density of the patches is calculated.

3. According to the calculation result, the most appropriate voltage for Developer Bias is applied in order to obtain a closer density to Target Density.

   If a required voltage value for Developer Bias is beyond the set range, not Developer Bias but Regulation Bias will be adjusted first. Then Developer Bias is initialized and recalculated based on the adjusted Regulation Bias.

4. Due to the bias adjustment, image density will stabilize for a satisfactory image quality regardless of the machine usage.

	Developer Bias against GND (Negative)	Regulation Bias against Developer Bias (Negative)
Acceptable range of voltage value	-200 to -250V	-50 to -140V
To adjust density closer to Target Density;	Adjusted the most appropriate voltage within the range above.	As long as a required voltage for Developer Bias remains within the range, Regulation Bias will remain unchanged.
If Developer Bias is required adjustment beyond the range;	Regulation Bias will be adjusted first. After that, Developer Bias is initialized and recalculated.	Adjusted to the appropriate value step. (30V increment).

(See the next page)

NOTE

After replacing Developer Roller / toner refreshment, you must reset bias adjustment by Density Compensation Process.
Otherwise a darker image appears because the adjusted values are too high voltage for the refreshed Developer Unit.

Brief procedure for the reset is as follows.

1. After replacing Developer Roller, return the unit to the machine.
2. Turn on the machine.
3. Enter Service Mode.
4. Enter Clear Mode and execute Developer Clear.

For further information, refer to the related section listed below.

Contents	Related Chapter/Section	page
Developer Roller replacement	[5.8.2 Replacing Recommended Periodic Replacement Parts]	5-123
Service Mode operation	[8.1 General Information of Service Mode] [8.2 KIP SubGUI Overview]	8-1 8-2
Monitoring Analog Voltage	[8.4.1 Monitoring Analog Data]	8-22
Detail of Density Compensation Process	[8.6.3 (79) Density Compensation ON/OFF]	8-78
Bias adjustment reset	[8.11.2 Reset of Adjustment by Density Compensation Process]	8-114

Chapter 4

Electrical System

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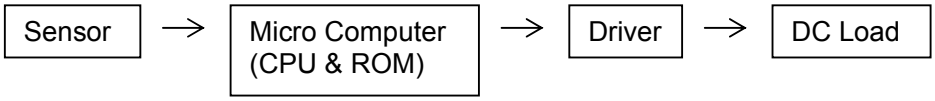
4.1 General Information

This machine is mainly controlled by a microcomputer, which is located on DC Controller.
This microcomputer reads input signals from sensors, control loads such as motors, SSRs, solenoid, clutches and blowers on programmed timing.



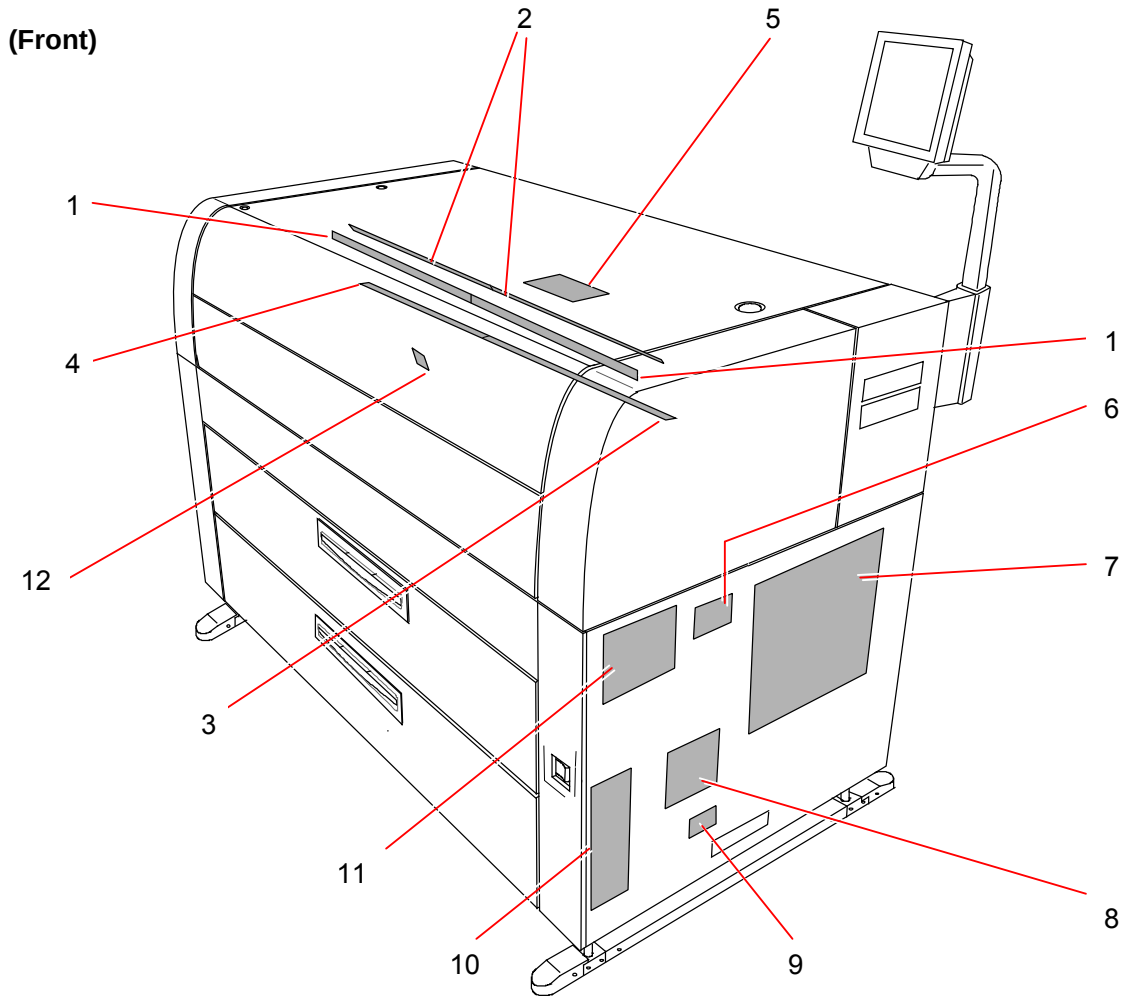
DC Controller has an LED, meaning that 5VDC is applied on this DC Controller safely.

Generally the color of wiring is separated depends on the voltage.

0VDC	: blue
5VDC	: yellow
24VDC	: orange
36VDC	: pink
Signal in to DC Controller (sensors)	: purple
Signal out from DC Controller	: gray

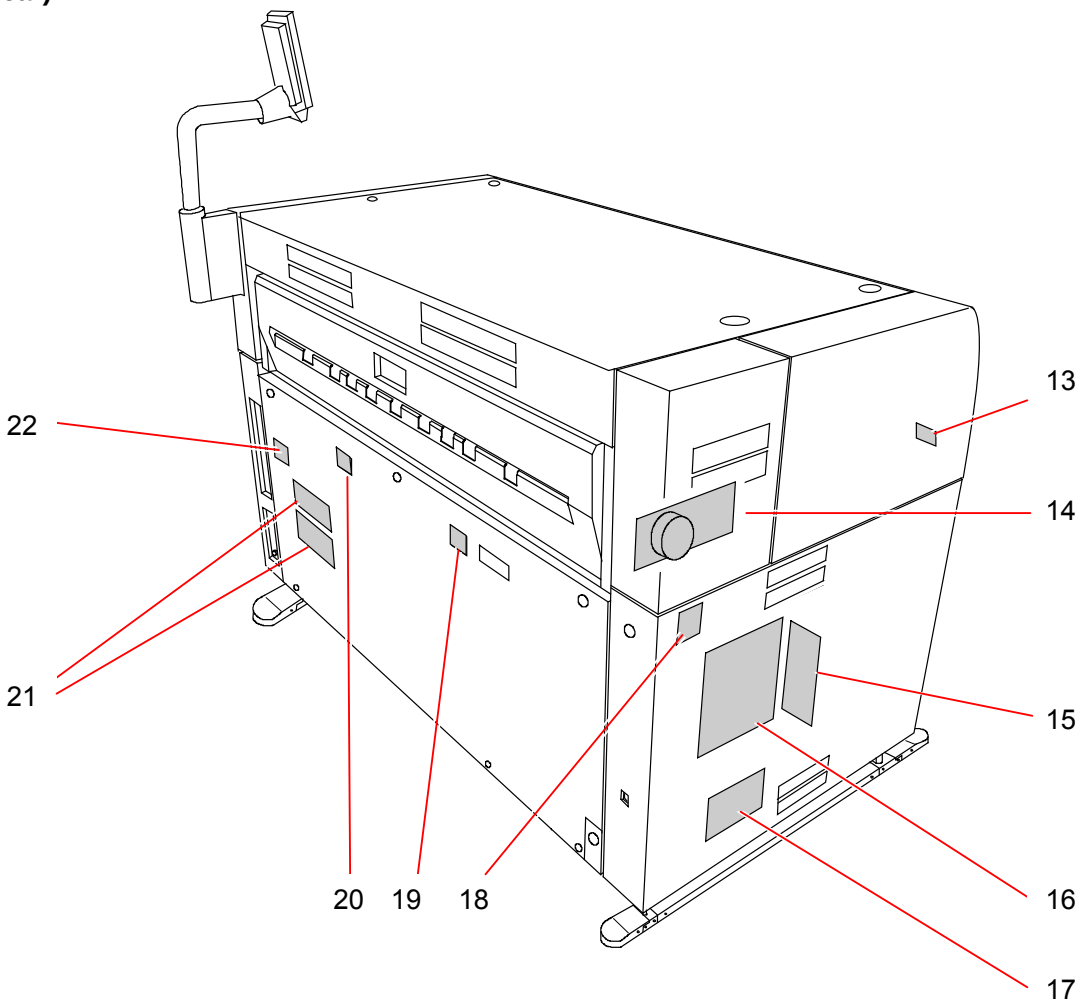
4.2 Electric Assembly Location/Function

4.2.1 Printed Circuit Board



Item	Symbol	Signal name	Name	Function
1	PW9630	-	LED PCB C (Pre-transfer LED)	Supporting the toner transferring from the Drum to the printing media
2	PW6631	-	Eraser PCB A (Eraser Lamp)	Removing electric charges from the Drum before starting the print process
3	PW1034	-	Eraser PCB C (Separation Lamp)	Assisting the paper separation by removing the electric charges from the Drum at the time of Separation Process
4	PW1034	-	Eraser PCB I (Separation Lamp)	Assisting the paper separation by removing the electric charges from the Drum at the time of Separation Process
5	PW6690	-	DC Terminal PCB	Junction of DC power for LED Head
6	PW9690	-	Fuse PCB	Protecting the circuit
7	PW12020	-	Main PCB (DC Controller)	Overall Sequence Control with Interface
8	PW12010	-	PW12010 PCB Assy	AC Terminal, reducing Flicker, shutting down PC controller
9	DCP4	-	Power Supply (DC Power Supply 4)	Supplying +24V to AC Terminal PCB
10	DCP1	-	Power Supply	Supplying +5V to PCBs and sensors. Supplying +24V to motors, solenoid, clutches, fans, relays and SSR.
11	PW12050	-	Driver PCB (DC Driver)	Driver for Pre-Transfer Lamp, fans and clutches
12	IC-TAG R	-	IC-TAG R (RFID)	Reads/writes Cartridge status on Toner Cartridge

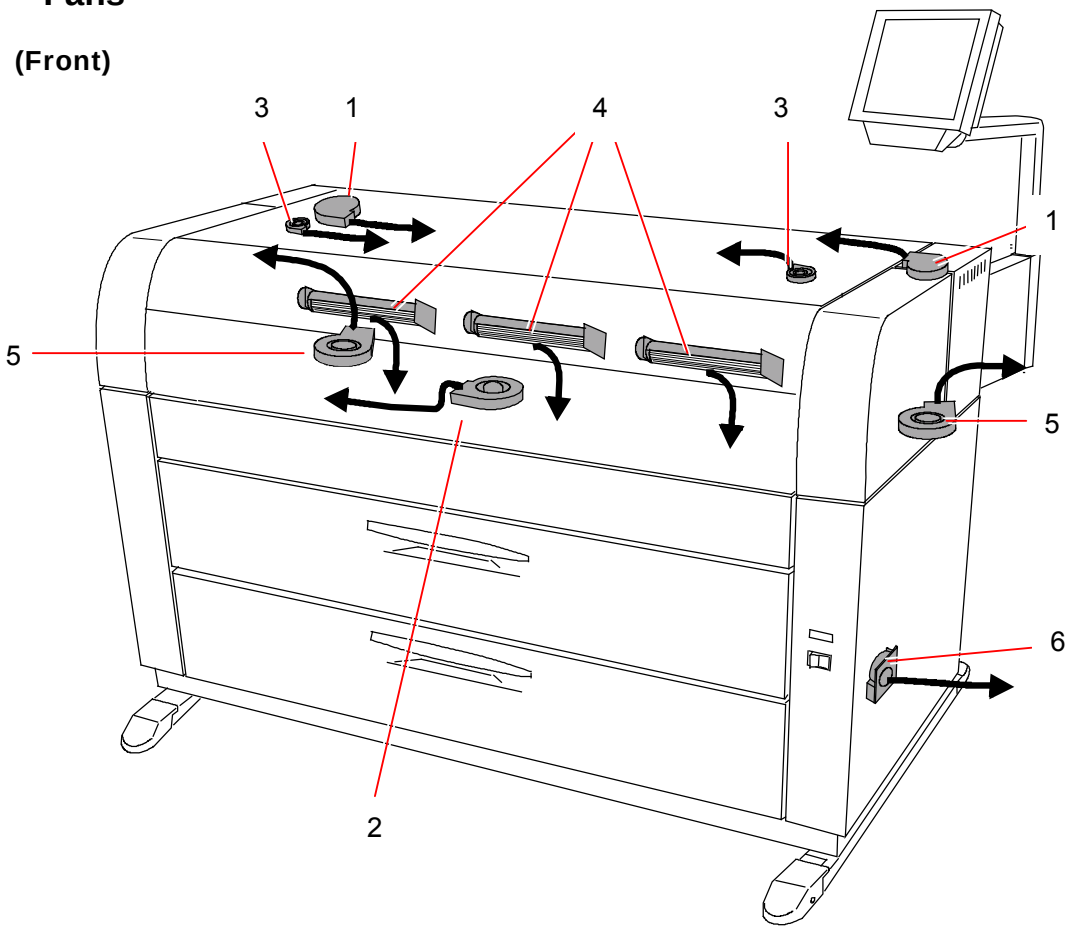
(Rear)



Item	Symbol	Signal name	Name	Function
13	PW3185A	-	Sensor PCB Assy	Detecting Cutter Blade existing its home position
14	DRG-6236-226B	-	Fuser Motor Driver	Fuser Motor + Driver
15	PW12051	-	Paper Feed Motor Controller PCB	Controlling the rotation of Paper Feed Motor
16	HVP1	-	High Voltage Power Supply PCB (EUK1MGA60HA)	Supplying the high voltage to each Image Corona, Transfer Corona, Separation Corona and Developer Unit
17	DCP3	-	Power Supply (DC Power Supply 3)	Supplying +36V to the Main Motor and the Cutter Motor
18	HVP2		High Voltage Power Supply PCB	Controlling the voltage for the Grid Plate
19	PW5491	-	Transmission PCB (Option)	Communication with optional device
20	PW5490	-	Reception PCB (Option)	Communication with optional device
21	PW2215	-	Line Filter PCB	Line Filter for AC Power Source
22	PW11250	-	PW11250 PCB Assy	Converting 24VDC to 12VDC

4.2.2 Fans

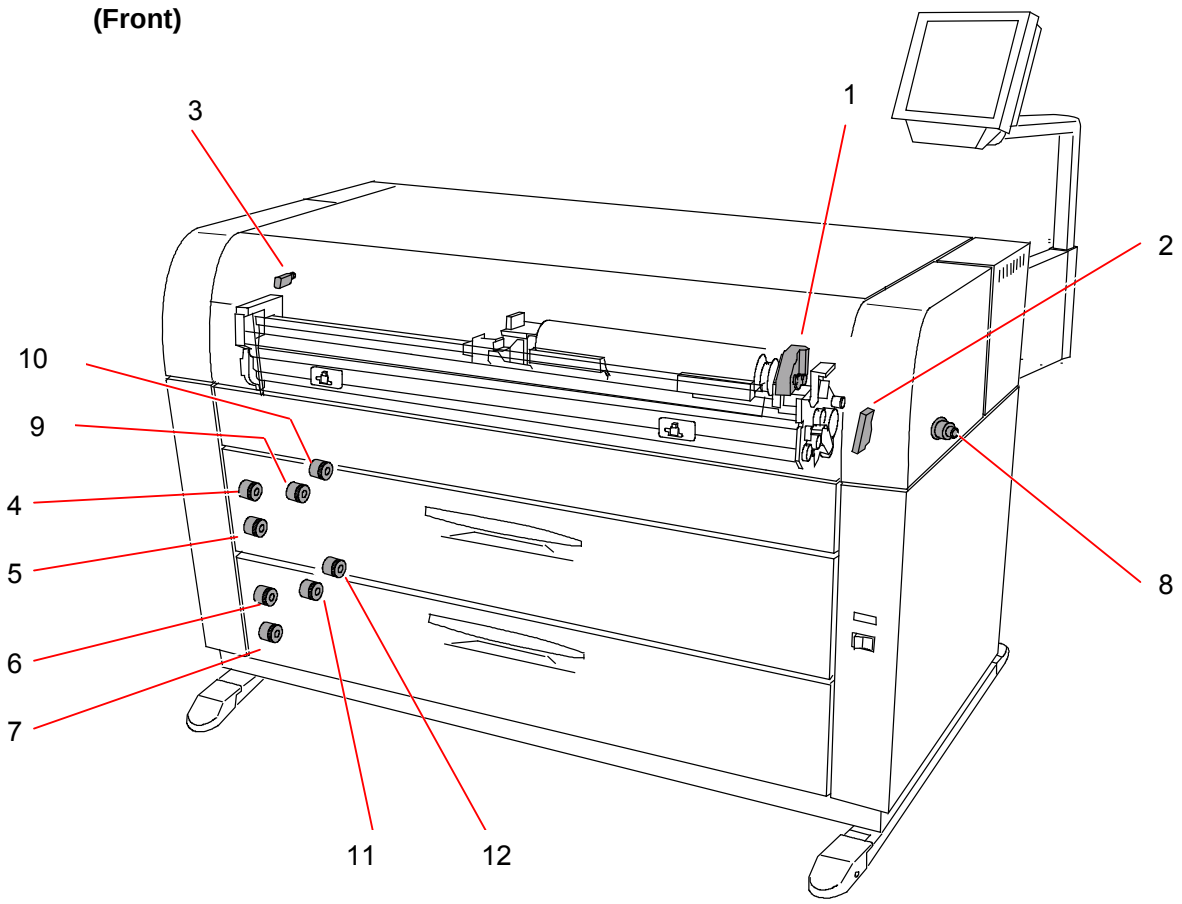
(Front)



The arrows show the flow of air.

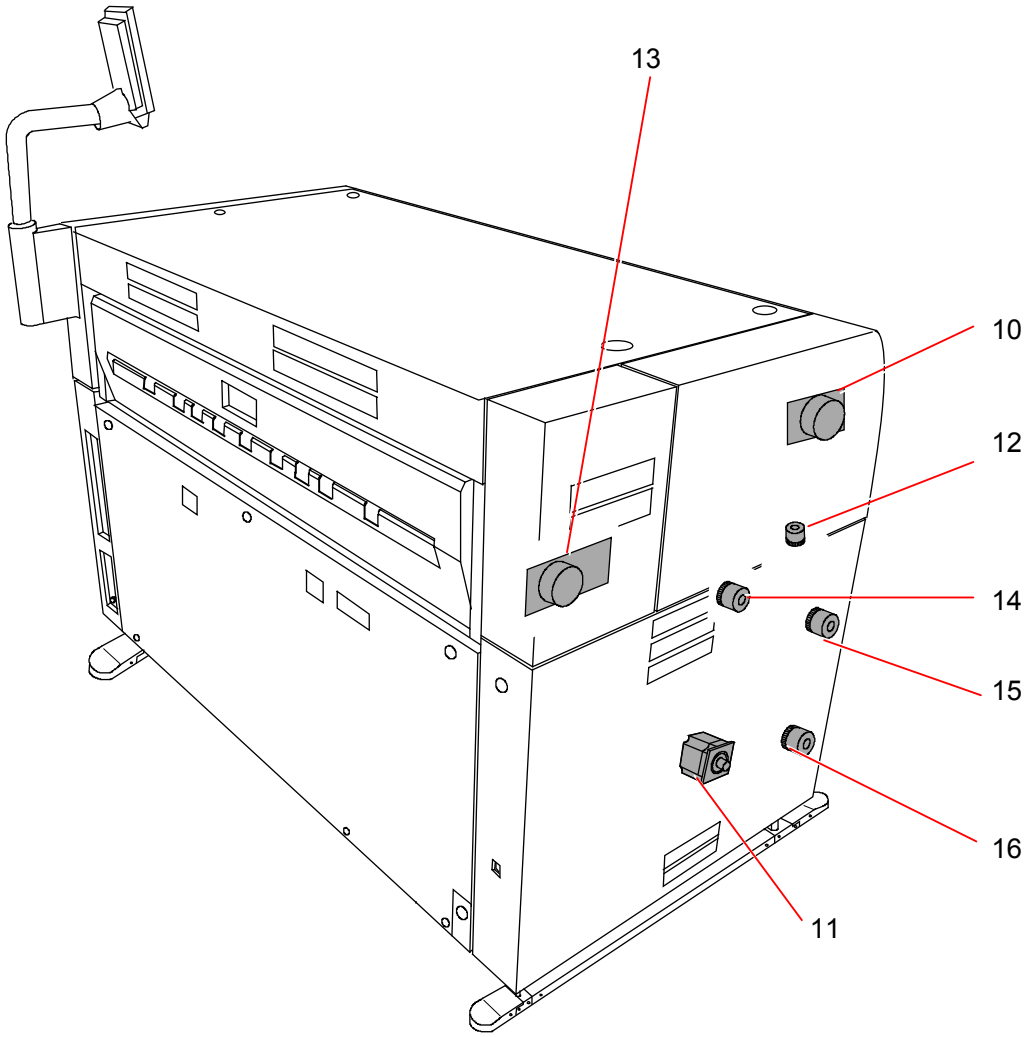
Item	Symbol	Signal name	Name	Function
1	FAN 1A, 1B	FUFAN	Fuser Cooling Fans	Cooling down around the Fuser
2	FAN 2	SEPFAN	Separation Fan	Helping to separate the printing media from the Drum by inhaling the air from the bottom
3	FAN 3A, 3B	LEDFAN	LED Cooling Fans	Cooling down the LED Head
4	FAN 5A,5B,5C	PRSFAN	Pressure Fans	Pressing down the paper to the Internal Feed Assembly
5	FAN 4A, 4B	FUFAN2	Fuser Cooling Fans	Cooling down around the Fuser
6	FAN6	-	DCP Cooling Fan	Cooling down the DC Power Supply

4.2.3 Motors, Clutches & Brake



Item	Symbol	Signal name	Name	Function
1	M6	TNMTR	Toner Supply Motor (DC Motor)	Supplying the toner from Toner Cartridge to Developer Unit
2	M7	DVPSMTR	Developer Pressing Motor (DC Motor)	Pressing the Developer Unit to the Drum
3	M5	-	Wire Cleaning Motor (DC Motor)	Cleaning the Image Corona Wire
4	MC2A	RPFD1	Roll Feed Clutch 1	Feeding the Roll 1
5	MC2B	RPFD2	Roll Feed Clutch 2	Feeding the Roll 2
6	MC2C	RPFD3	Roll Feed Clutch 3	Feeding the Roll 3
7	MC2D	RPFD4	Roll Feed Clutch 4	Feeding the Roll 4
8	MC5	GATE_BK	Paper Gate Brake	Brake for Paper Gate Roller
9	MC6A	RPREV1	Roll Reverse Clutch 1	Rewinding Roll 1
10	MC6B	RPREV2	Roll Reverse Clutch 2	Rewinding Roll 2
11	MC6C	RPREV3	Roll Reverse Clutch 3	Rewinding Roll 3
12	MC6D	RPREV4	Roll Reverse Clutch 4	Rewinding Roll 4

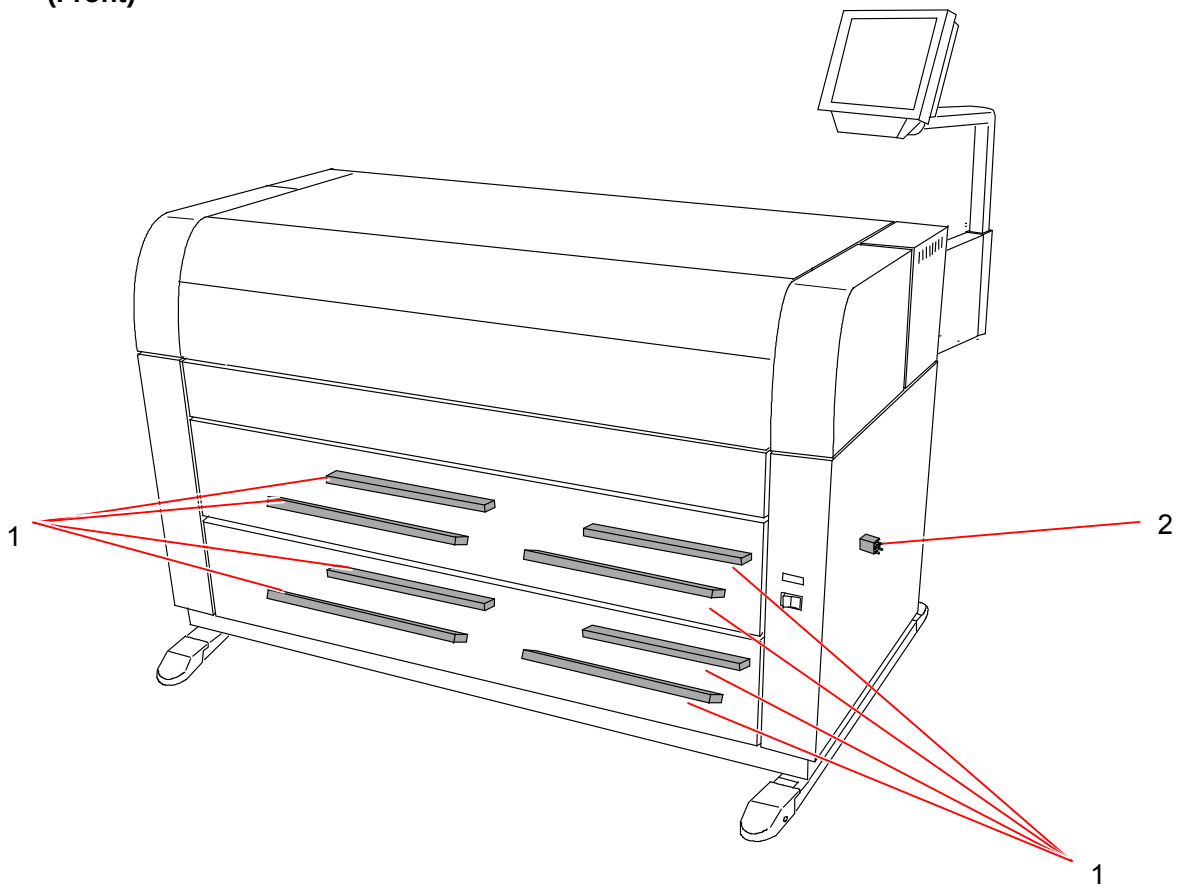
(Rear)



Item	Symbol	Signal name	Name	Function
10	M1	MAMTR	Main Motor	Driving both the Drum and the Developer Unit
11	M2	-	Paper Feed Motor (Stepping Motor)	Driving the paper feeding mechanism
12	M3	-	Cutter Motor	Moving the Cutter Blade end to end
13	M4	FUMTR	Fuser Motor (DC Motor)	Driving the Fuser Unit
14	MC3	GATECL	Paper Gate Clutch	Meeting the leading edge of printing media and the head of image with each other
15	MC1A	DECK1_FD	Deck 1 Feed Clutch	Feeding Roll 1 & Roll 2 of the Roll Deck 1
16	MC1B	DECK2_FD	Deck 2 Feed Clutch	Feeding Roll 3 & Roll 4 of the Roll Deck 2

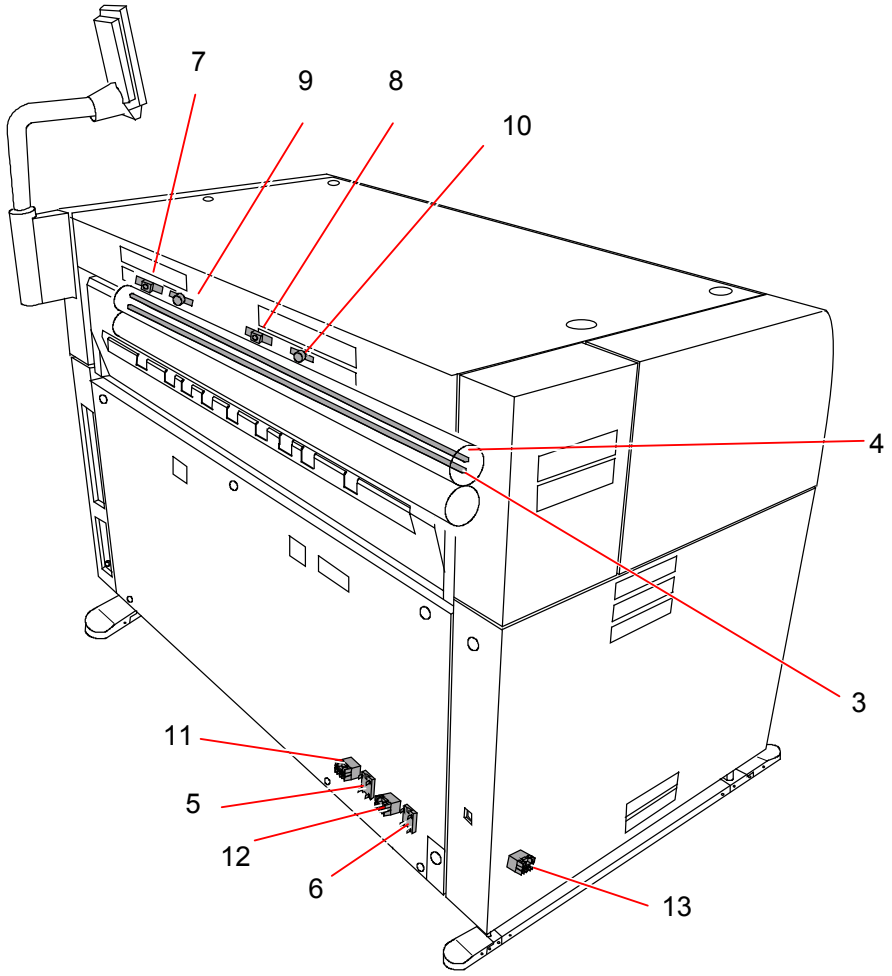
4.2.4 Heaters, SSR, Relays, Thermistor & Thermostats

(Front)



Item	Symbol	Signal name	Name	Function
1	H3	DEHUM	Dehumidify Heater	Dehumidifying the roll media
2	RY1	-	Relay 1	ON and OFF of 24VDC

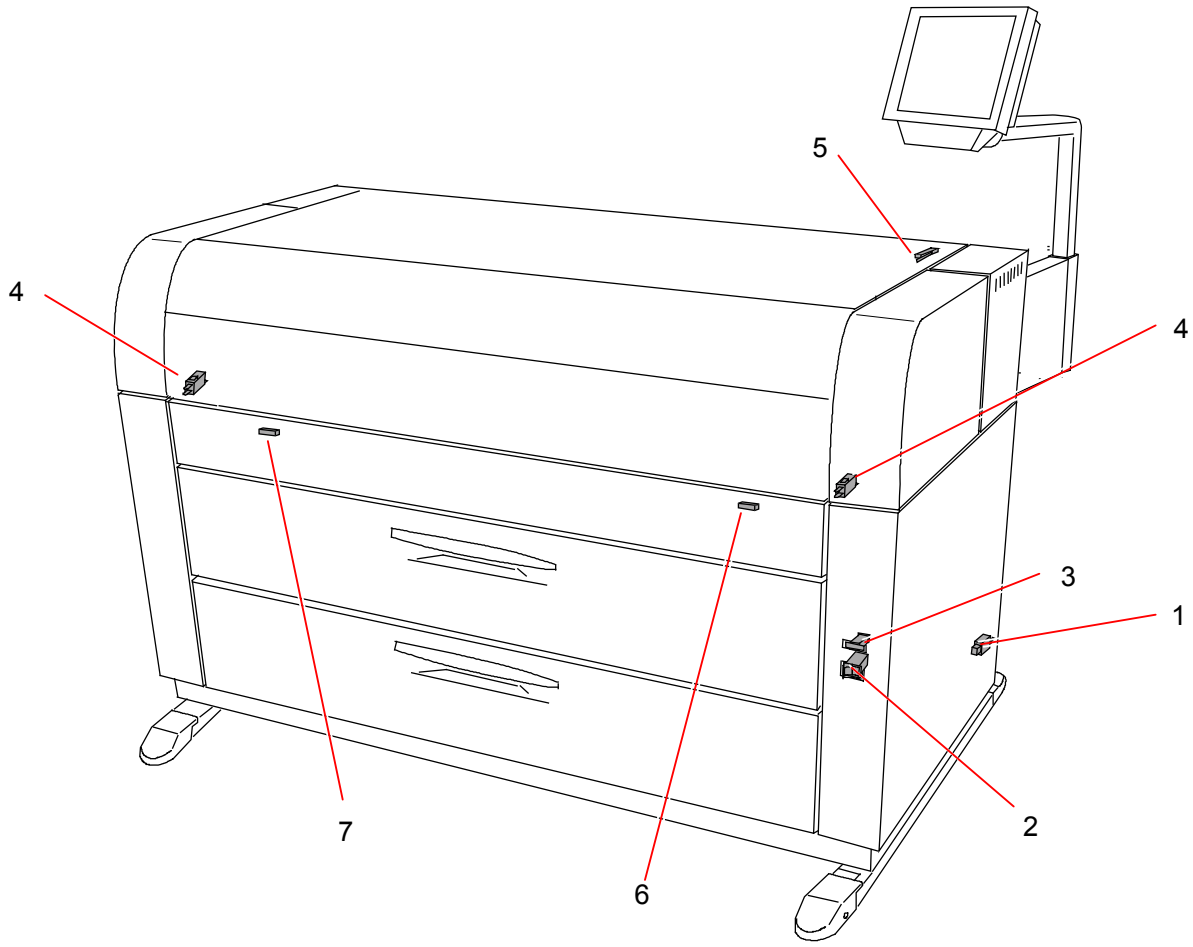
(Rear)



Item	Symbol	Signal name	Name	Function
3	H1	-	IR Lamp (1500W) (QIR230-1500KIC)	Heating the central area of Fuser Roller Connector: WHITE
4	H2	-	IR Lamp (1300W) (QIR230-1300KIAG)	Heating both side areas of Fuser Roller Connector: RED
5	SSR1	FHEAT1	Solid State Relay (AQJ426V)	Controlling the IR Lamp (H1)
6	SSR2	FHEAT2	Solid State Relay (AQJ426V)	Controlling the IR Lamp (H2)
7	TH1	F_TEMP1	Thermistor	Detecting the temperature of the side area of Fuser Roller
8	TH2	E_TEMP2	Thermistor	Detecting the temperature of the central area of Fuser Roller
9	TS1A		Thermostat	When TS1B is open-circuited, 24VDC is shut off to stop driving.
10	TS1B		Thermostat	When TS1S is open-circuited, 24VDC is shut off to stop driving.
11	RY2	-	Relay	ON/OFF of AC for Fuser Heater
12	RY3	-	Relay	
13	RY4	-	Relay	ON/OFF for DC Power Supply (DCP3) (36V)

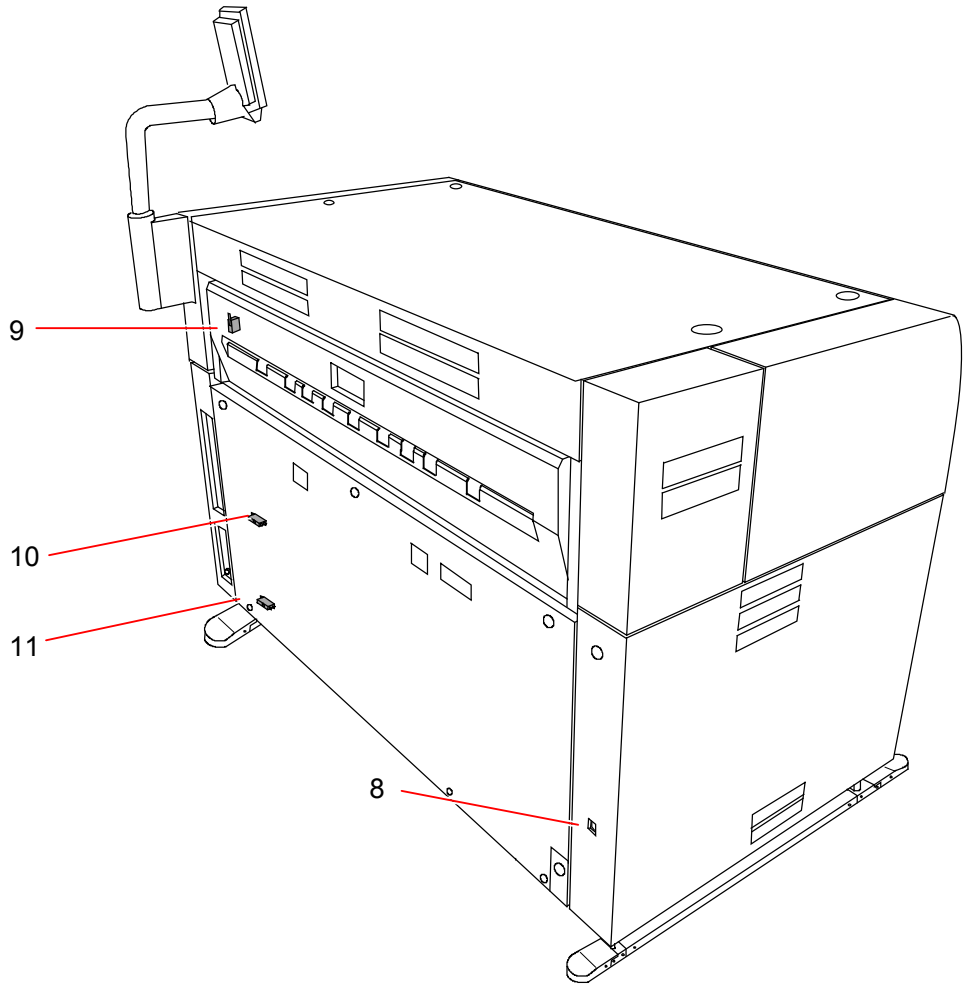
4.2.5 Circuit Protector, Line Filter, Micro Switches, Switches & Counter

(Front)



Item	Symbol	Signal name	Name	Function
1	CB1	-	Circuit Protector	When the current exceeds the specified quantity, CB1 shuts off the circuit automatically.
2	SW1	E_STAR	Main Switch	Turning on and off the printer
3	CNT1	LN_CNT	Counter	Counting the total area (or linear length)of prints
4	MS2A,2B	INTLK3	Door Switch	When the Top Cover or Upper Frame Unit is opened, RY1 is opened to shut off 24VDC.
5	MS2C	INTLK3	Unit Switch	When the Top Cover is opened, RY1 is opened to shut off 24VDC.
6	MS (right)	CUTHP1	Cutter Home Position R Switch	Detects Cutter Home Position on the right.
7	MS (left)	CUTHP2	Cutter Home Position L Switch	Detects Cutter Home Position on the left.

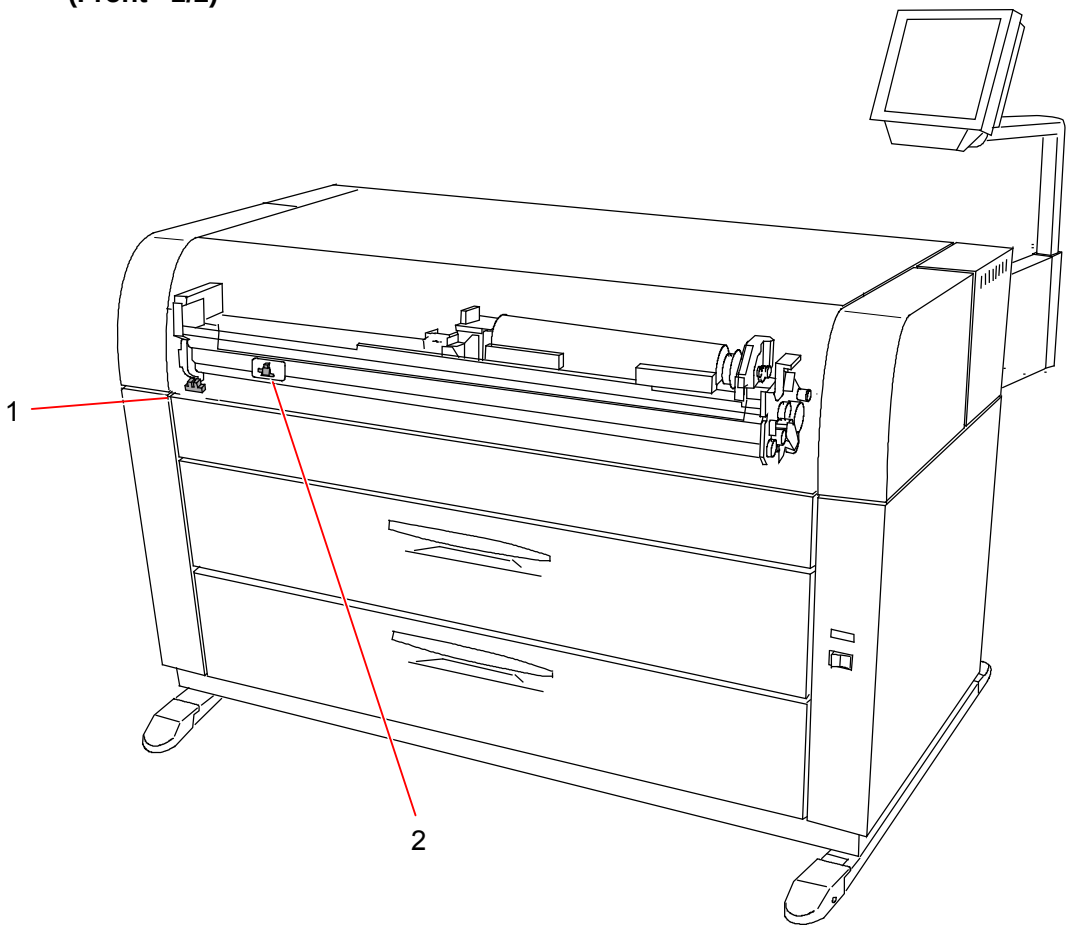
(Rear)



Item	Symbol	Signal name	Name	Function
8	SW2	-	Dehumidify Heater Switch	Turning on and off the Dehumidify Heater
9	MS1	INTLK2	Fuser Door Switch	When the Exit Cover is opened, RY1 is opened to shut off 24VDC.
10	MS3A	DECKSW1	Deck Switch 1	When the Roll Deck 1 is opened, [Deck Open Signal] is sent to DC Controller PCB.
11	MS3B	DECKSW2	Deck Switch 2	When the Roll Deck 1 is opened, [Deck Open Signal] is sent to DC Controller PCB.

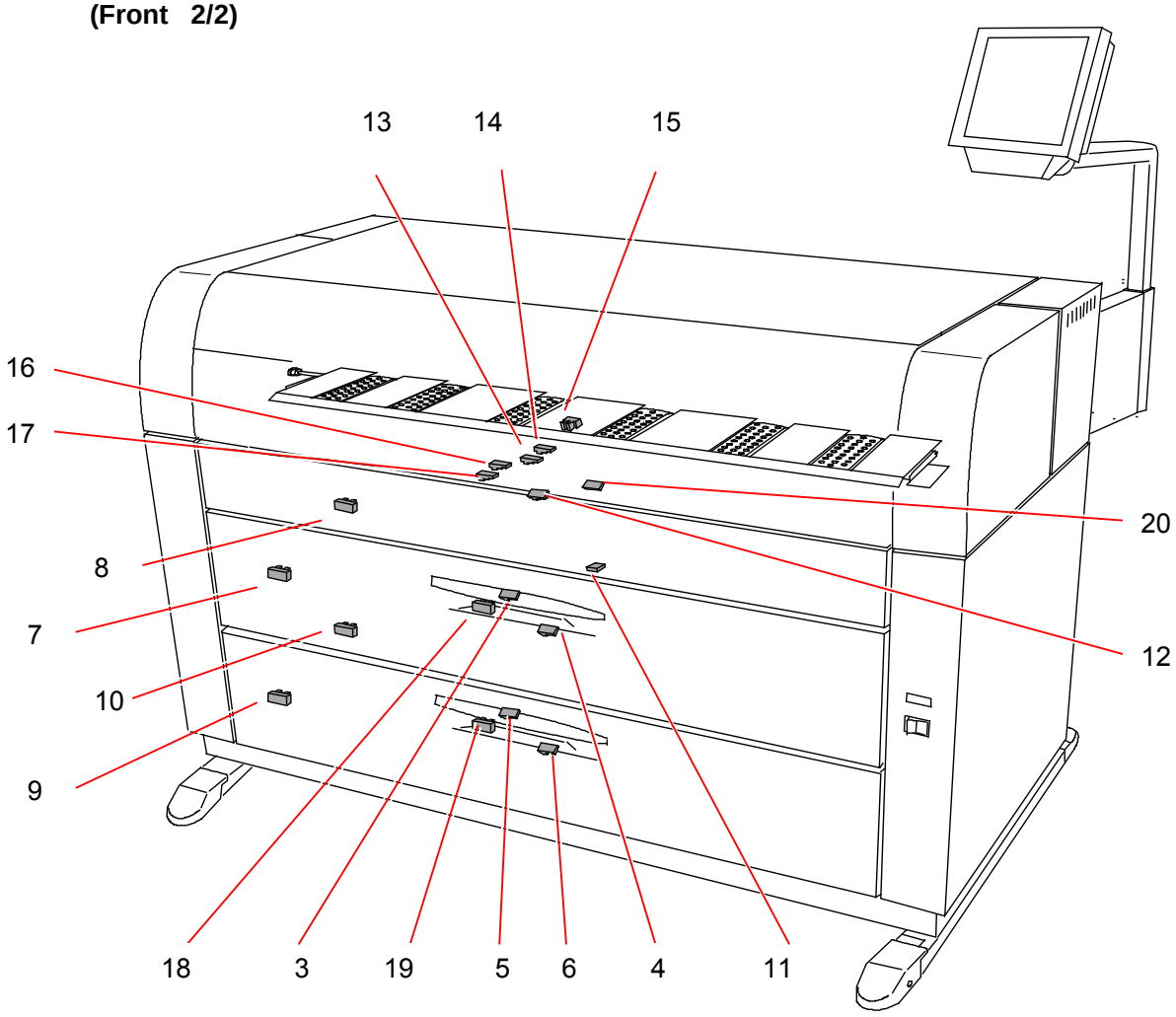
4.2.6 Sensors

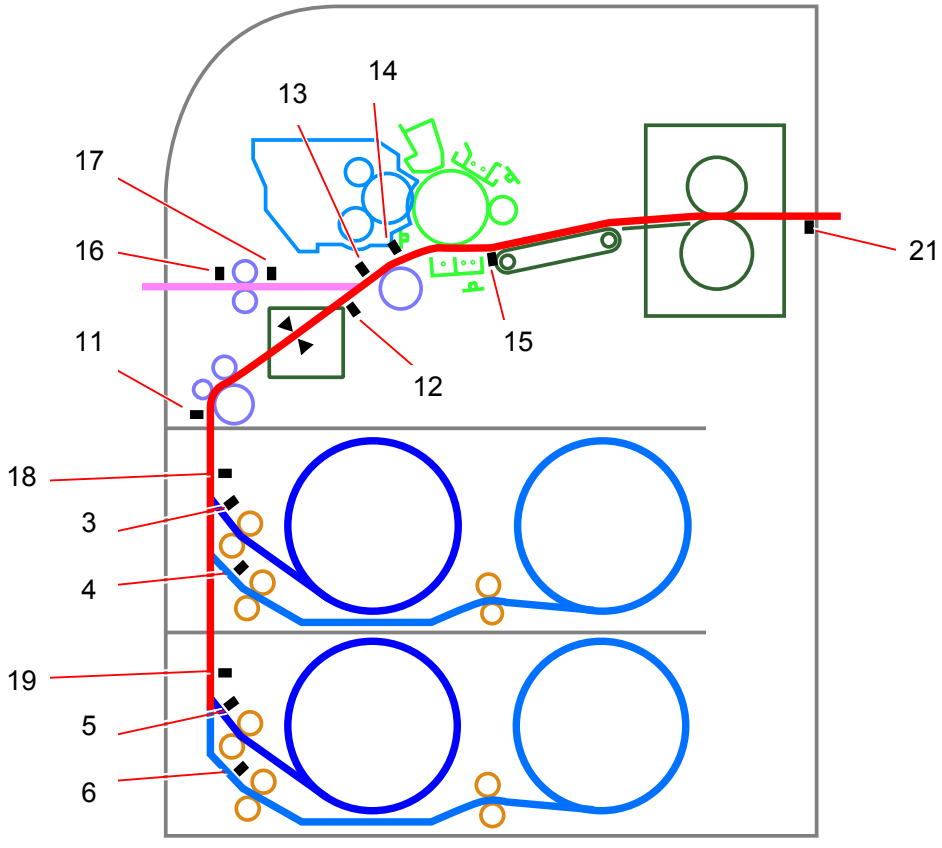
(Front 1/2)



Item	Symbol	Signal name	Name	Function
1	PH9	DEVE_HP	Developer Home Position Sensor	Detecting the pressurization of Developer Unit
2	TLS1	DVTNR1	Toner Sensor	Detecting the existence of toner in the Developer Unit

(Front 2/2)

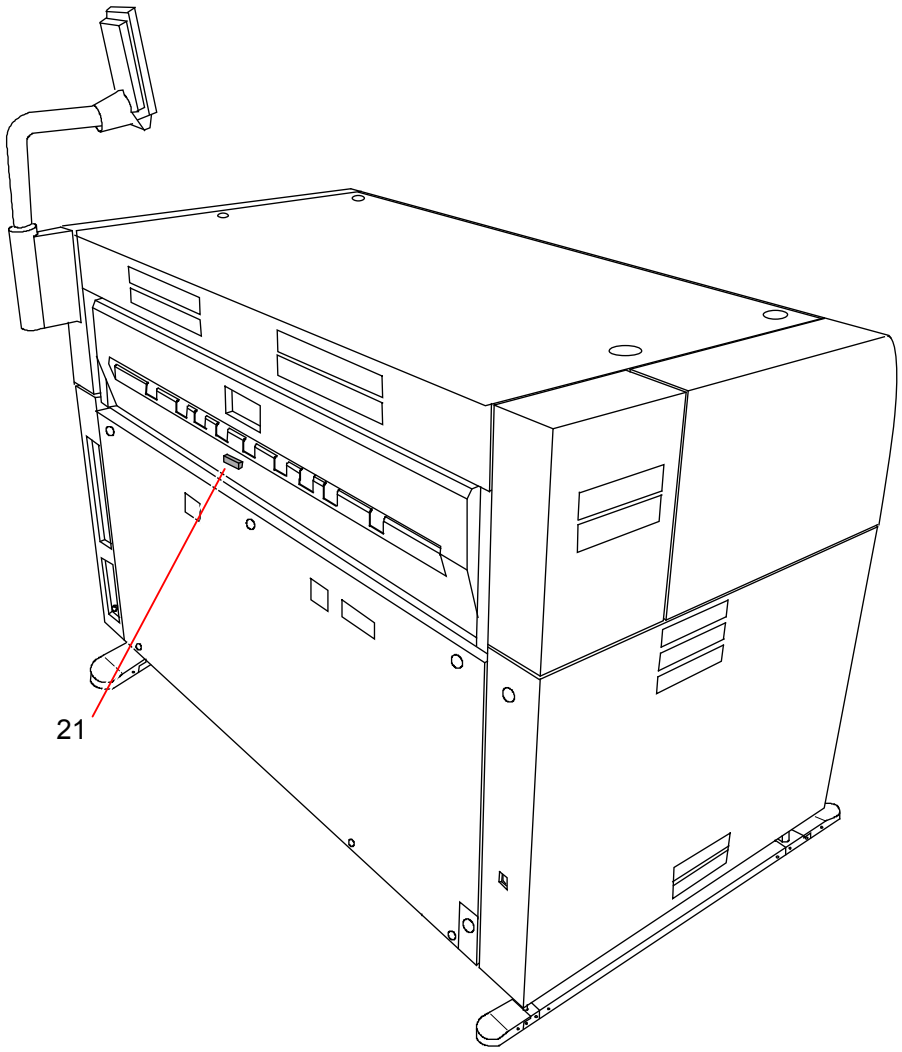




K120sm4e1_77

Item	Symbol	Signal name	Name	Function
3	PH1A	RPSET1	Roll Paper Set Sensor 1	Detecting the leading edge of Roll 1
4	PH1B	RPSET2	Roll Paper Set Sensor 2	Detecting the leading edge of Roll 2
5	PH1C	RPSET3	Roll Paper Set Sensor 3	Detecting the leading edge of Roll 3
6	PH1D	RPSET4	Roll Paper Set Sensor 4	Detecting the leading edge of Roll 4
7	PH2A	RPCLK1	Roll Remaining Level Sensor 1	Detecting the remaining level of Roll 1
8	PH2B	RPCLK2	Roll Remaining Level Sensor 2	Detecting the remaining level of Roll 2
9	PH2C	RPCLK3	Roll Remaining Level Sensor 3	Detecting the remaining level of Roll 3
10	PH2D	RPCLK4	Roll Remaining Level Sensor 4	Detecting the remaining level of Roll 4
11	PH3A	SZDATA0	Roll Media Sensor	Detecting “Cutter Jam”.
12	PH4	P_CUT	Paper Sensor	Detecting “Cutter Jam”.
13	PH5	P_ENTR	Paper Entry Sensor	Detecting “Inner Transport Jam”.
14	PH6	P_GATE	Paper Gate Sensor	Detecting “Inner Transport Jam”.
15	PH7	P_SEPR	Separation Sensor	Detecting “Separation Jam”.
16	PH12	MP_ENT1	Manual Paper Sensor	Detecting whether cut sheet exists.
17	PH13	MP_ENT2	Manual Paper Sensor	Detecting the leading edge of cut sheet.
18	PH14A	RLNG1	Feed Sensor	Detecting feeding distance for Roll 1/2
19	PH14B	RLNG2	Feed Sensor	Detecting feeding distance for Roll 3/4
20	PH10	DENS_S	Density Sensor	Detecting Toner Density on Photoconductive Drum

(Rear)



Item	Symbol	Signal name	Name	Function
21	PH8	P_EXIT	Exit Sensor	Detecting “Exit Jam”.

4. 3 Check & Adjustment of Analog Output from HV Power Supply

4. 3. 1 Situations necessary to check the analog output

It is necessary to check the analog output from High Voltage Power Supply after replacing the following parts.

- PW12020 PCB (DC Controller)
- HV Power Supply PCB (HVP1: EUK1MGA60HA)
- HV Power Supply PCB (HVP3)

Please check the analog output for each of the following part, and please adjust if it is out of the specified range.
Each “Reference page” in the list shows how to check and adjust each item.

Check Item	page
Analog Voltage to Image Corona	4-15
Analog Current for Grid Plate	4-17
Analog Current for Transfer Corona	4-18
AC Component for Separation Corona	4-20
DC Component for Separation Corona	4-22
Negative Developer Bias for Developer Roller	4-24
Positive Developer Bias for Developer Roller	4-26
Bias Gap between Developer Roller and Regulation Roller	4-28
Positive Cleaning Roller Bias (For Print Cycle)	4-30
Negative Cleaning Roller Bias (For Toner Collection Process)	4-32

Reference

Please try to replace the PW12020 PCB or HV Power Supply PCB if you have the following kinds of problem.

PW12020 PCB
(1) If the UI indicates abnormal indication although the UI has no problem.
(2) If the electric component such as motor or lamp does not work properly although such component has no problem.

HV Power Supply PCB (HVP1: EUK1MGA60HA)
If the output to Image Corona / Transfer Corona / Separation Corona / Developer Roller / Toner Supply Roller / Regulation Roller / Cleaning Roller is abnormal.

HV Power Supply PCB (HVP3)
If the output to Grid Plate is abnormal.

⚠ NOTE

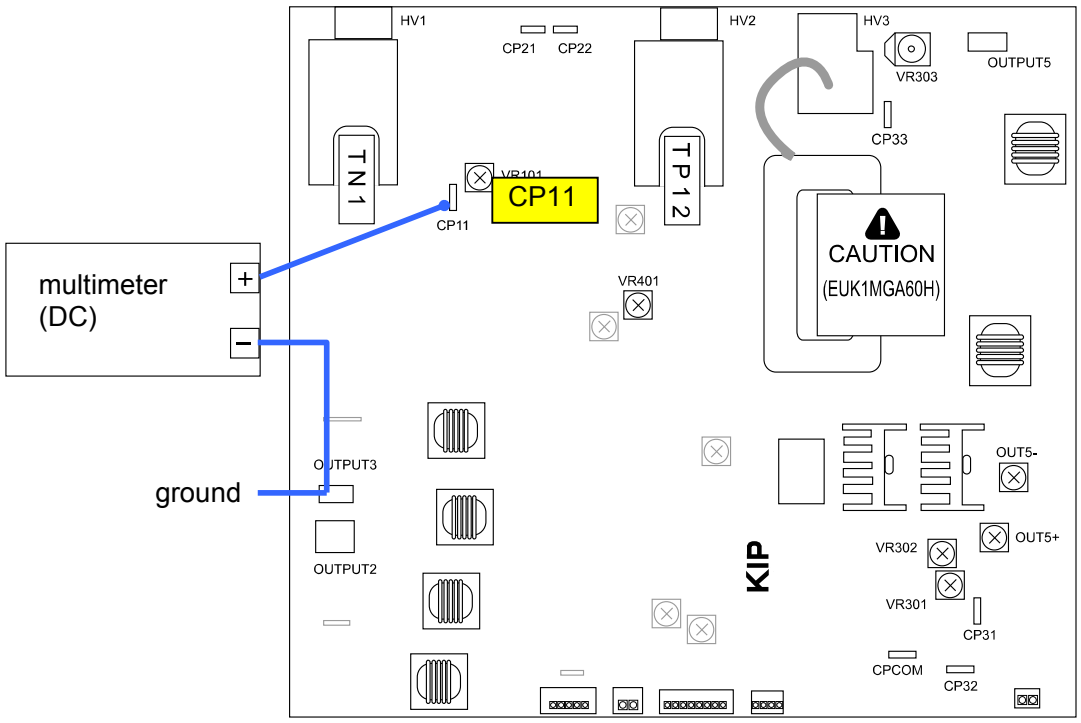
Before replacing PW12020 PCB, be sure to;
(1) make a backup for all the settings of Service Mode.
(2) restore the backup settings to the new PW12020 PCB.

Refer to [8.1 General Information of Service Mode] on page 8-1.

4. 3. 2 Analog Voltage to Image Corona

The standard value of the voltage outputted from the HV Power Supply PCB to the Image Corona is **1.60 +/-0.02V**.
Check and adjust the output current in the following way.

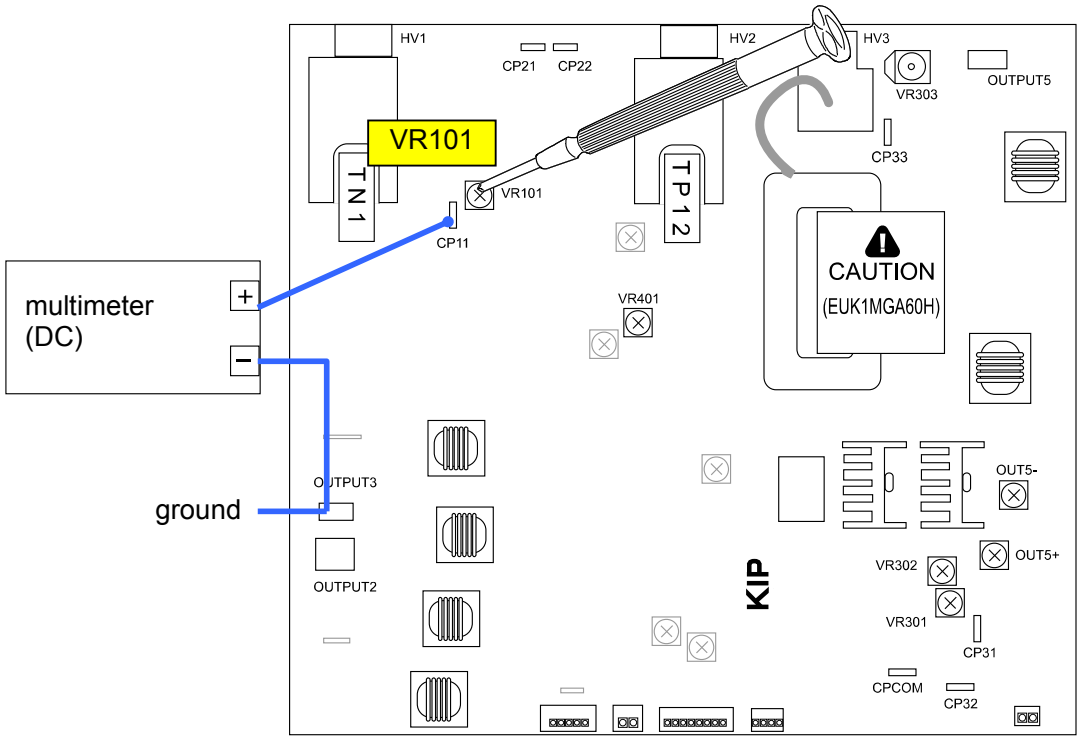
1. Connect the “+” cable of the multi-meter to the “CP11” pin on HV Power Supply PCB (EUK1MGA60HA).
   Also connect the “-” one to the ground.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the high voltage is supplied to the Image Corona during the test print, check the voltage with the multi-meter.

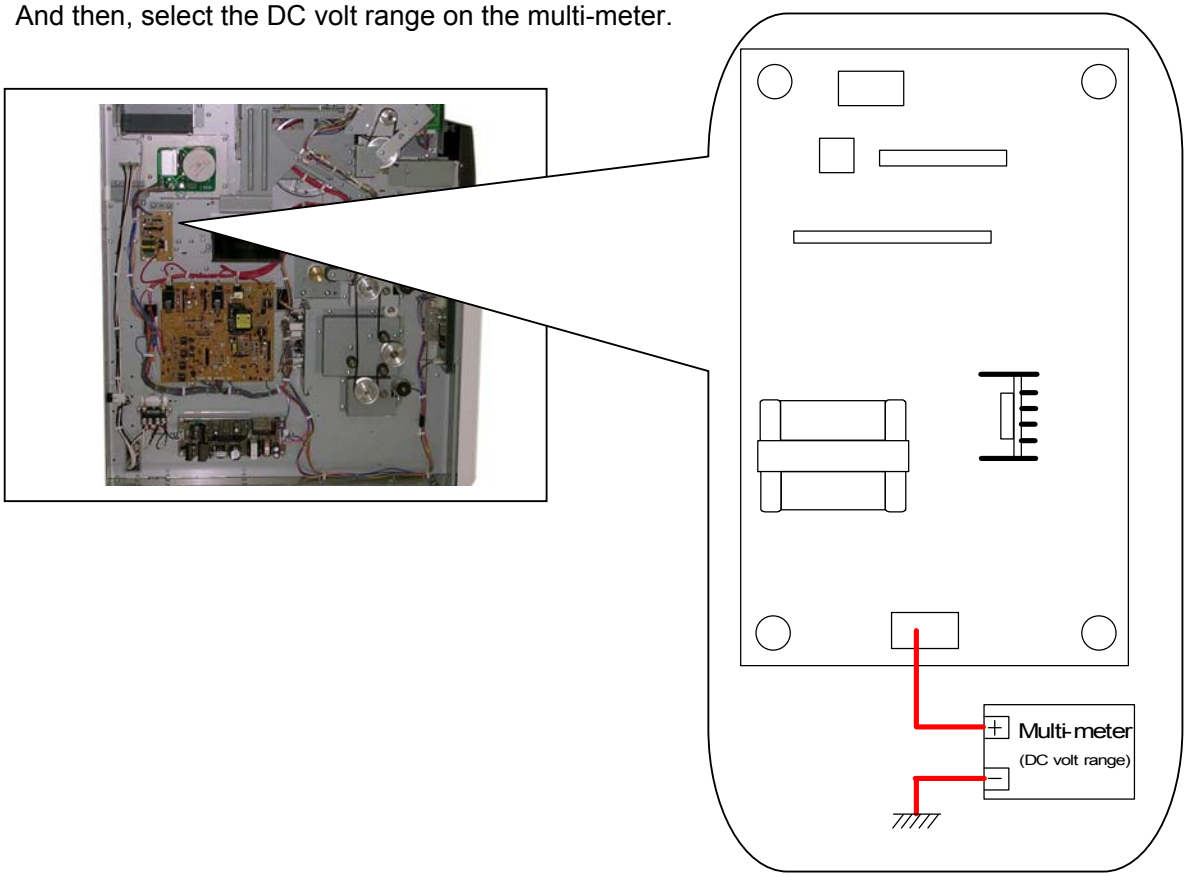
   Standard value of the output voltage to the Image Corona is **1.60 +/-0.02V**.

3. Adjust the output voltage if it does not satisfy **1.60 +/-0.02V**.
   To adjust it, rotate the VR101 with a screwdriver.



4. 3. 3 Analog Current for Grid Plate

1. Connect the “+” cable of the multi-meter to the “OUTPUT” on the High Voltage Power Supply PCB (HVP3), and connect the “-” one to the ground.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the high voltage is supplied to the Grid Plate during test print, check the voltage with the multi-meter.

   The standard current value for Grid Plate is **-700 +/-10V**.

3. Adjust the current value if it does not satisfy **-700 +/-10V** making reference to [8.6.3 (1f) Grid Analog Setting] on page 8-51.

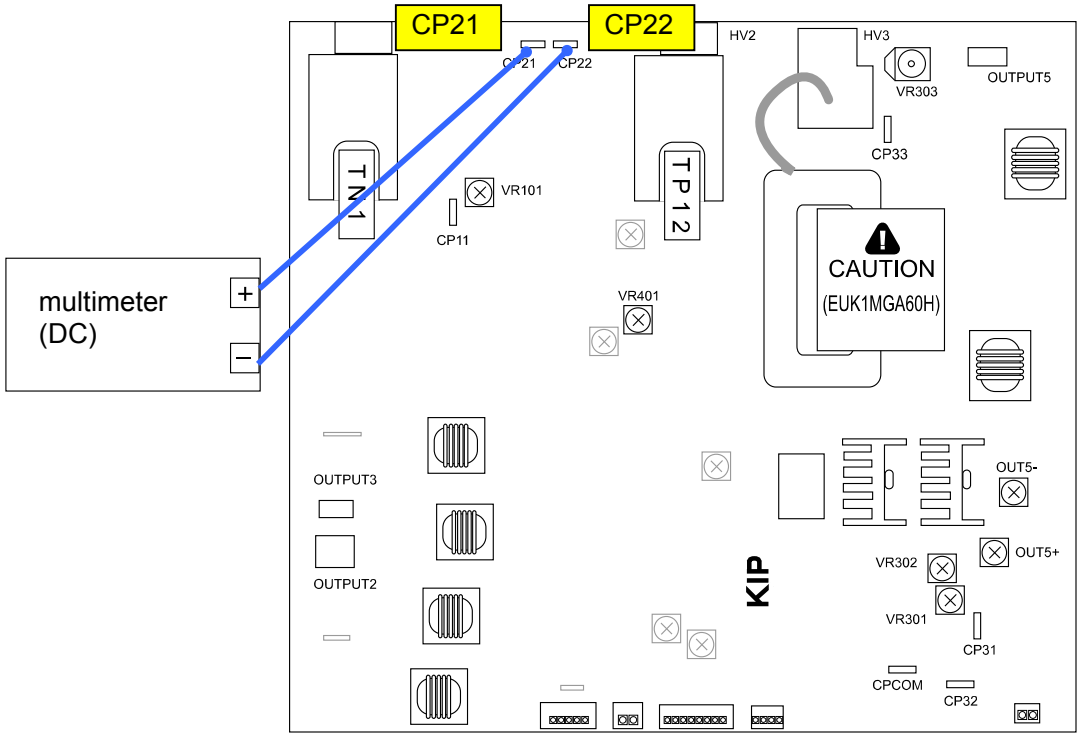
4. 3. 4 Analog Voltage to Transfer Corona

The standard value of the voltage outputted from the HV Power Supply PCB to the Transfer Corona is specified to each type of paper as follows.

Plain paper	**1.30 +/-0.02V**
Tracing paper	**1.30 +/-0.02V (1.50 +/-0.02V for EU model)**
Film	**1.30 +/-0.02V**

Check and adjust the output current in the following way.

1. Connect the “+” cable of the multi-meter to the “CP21” pin on the HV Power Supply PCB (EUK1MGA60HA).
   Also connect the “-” one to the “CP22” pin.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the high voltage is supplied to the Transfer Corona during test print, check the voltage with the multi-meter.

   The standard current value for Transfer Corona is **1.30 (1.50) +/-0.02V**.

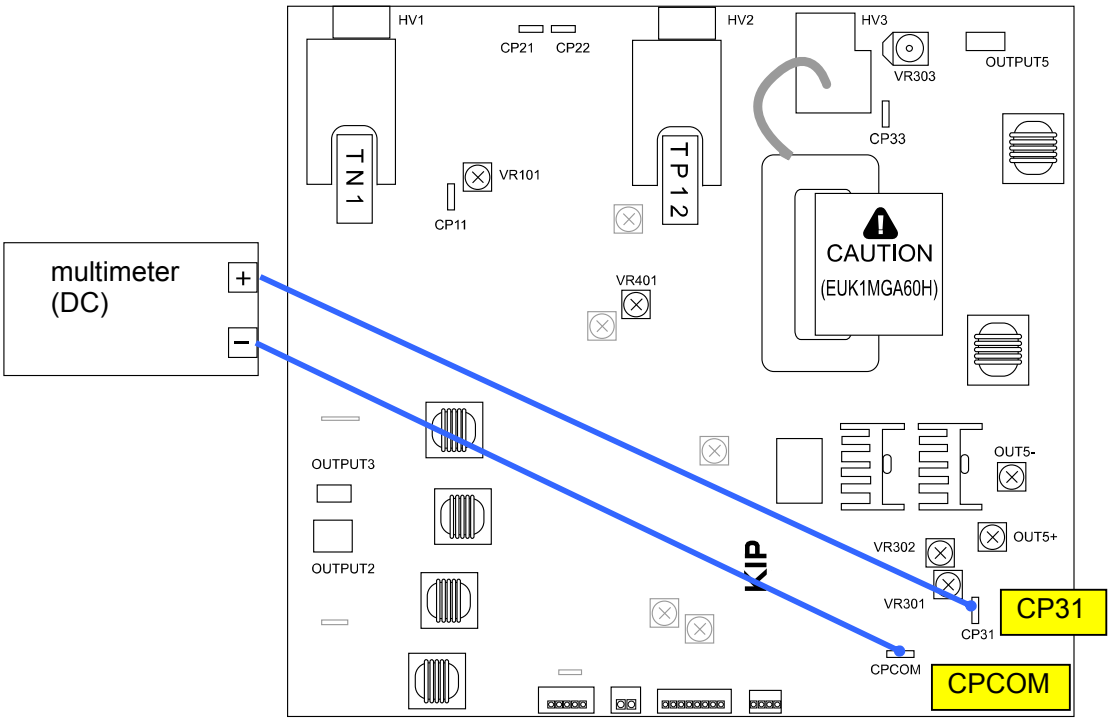
3. Adjust the current value if it does not satisfy **1.30 (1.50) +/-0.02V** making reference to [8.6.3 (1a) (1b) (1c) Transfer Corona Analog Voltage] on page 8-50 and [8.6.3 (56) (57) (58) Transfer Corona Analog Voltage] on page 8-71.

Sub Mode No.	Contents
1a	Transfer Corona Analog Voltage (Plain / Roll)
1b	Transfer Corona Analog Voltage (Tracing / Roll)
1c	Transfer Corona Analog Voltage (Film / Roll)
56	Transfer Corona Analog Voltage (Plain / Cut Sheet)
57	Transfer Corona Analog Voltage (Tracing / Cut Sheet)
58	Transfer Corona Analog Voltage (Film / Cut Sheet)

4. 3. 5 AC Component for Separation Corona

The standard value of the AC Component outputted from the HV Power Supply PCB to the Separation Corona is **4.60 +/-0.05V**.
Check and adjust the AC Component in the following way.

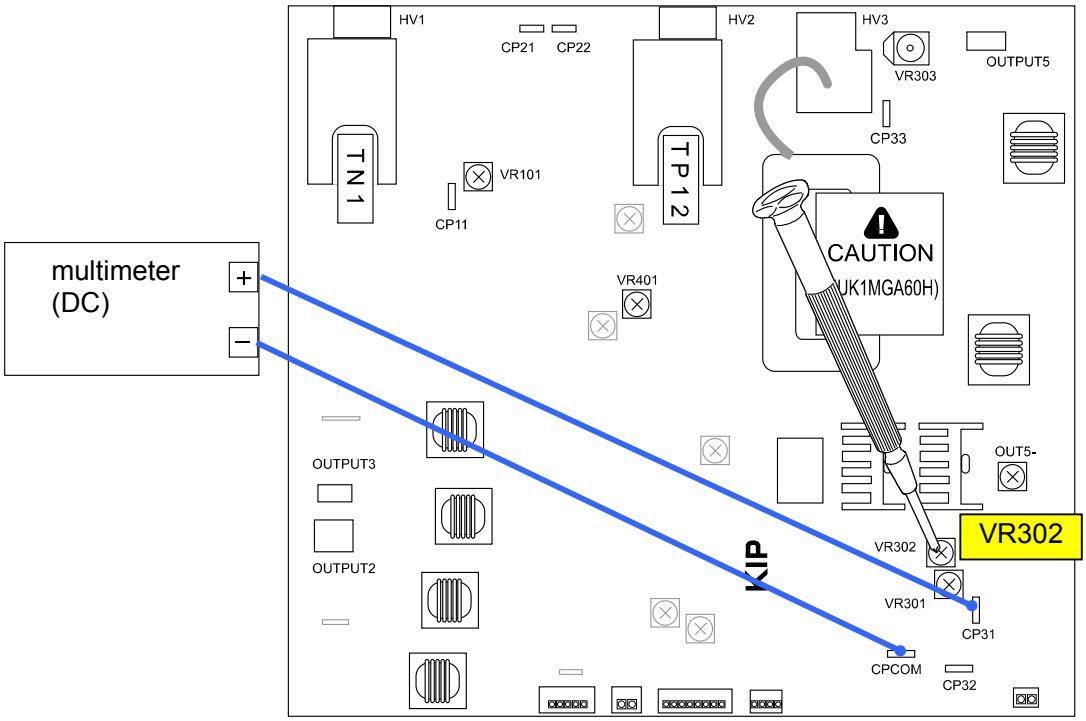
1. Connect the “+” cable of the multi-meter to the “CP31” pin on the HV Power Supply PCB (EUK1MGA60HA).
   Also connect the “-” one to the “CPCOM” pin.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the high voltage is supplied to the Separation Corona during test print, check the voltage with the multi-meter.

   The standard current value for Transfer Corona is **4.60 +/-0.05V**.

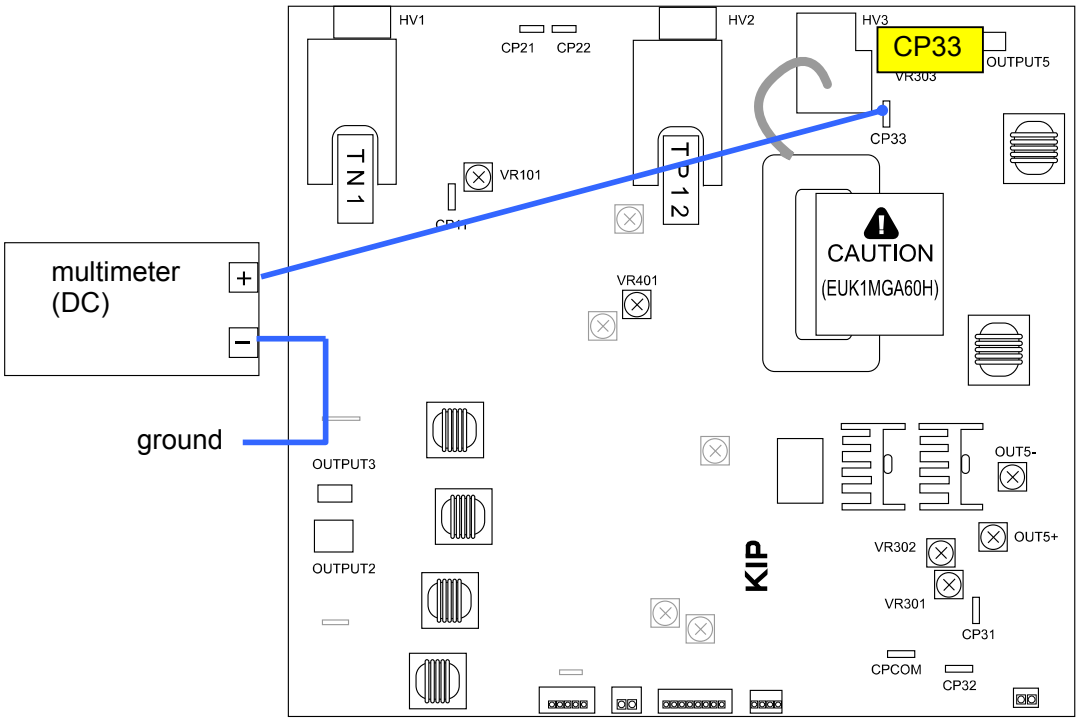
3. Adjust the AC Component if it does not satisfy **4.60 +/-0.05V**.
   To adjust it, rotate the VR302 with a screwdriver.



4. 3. 6 DC Component for Separation Corona

The standard value of the DC Component outputted from the HV Power Supply PCB to the Separation Corona is **-300 +/-5V**.
Check and adjust the DC Component in the following way.

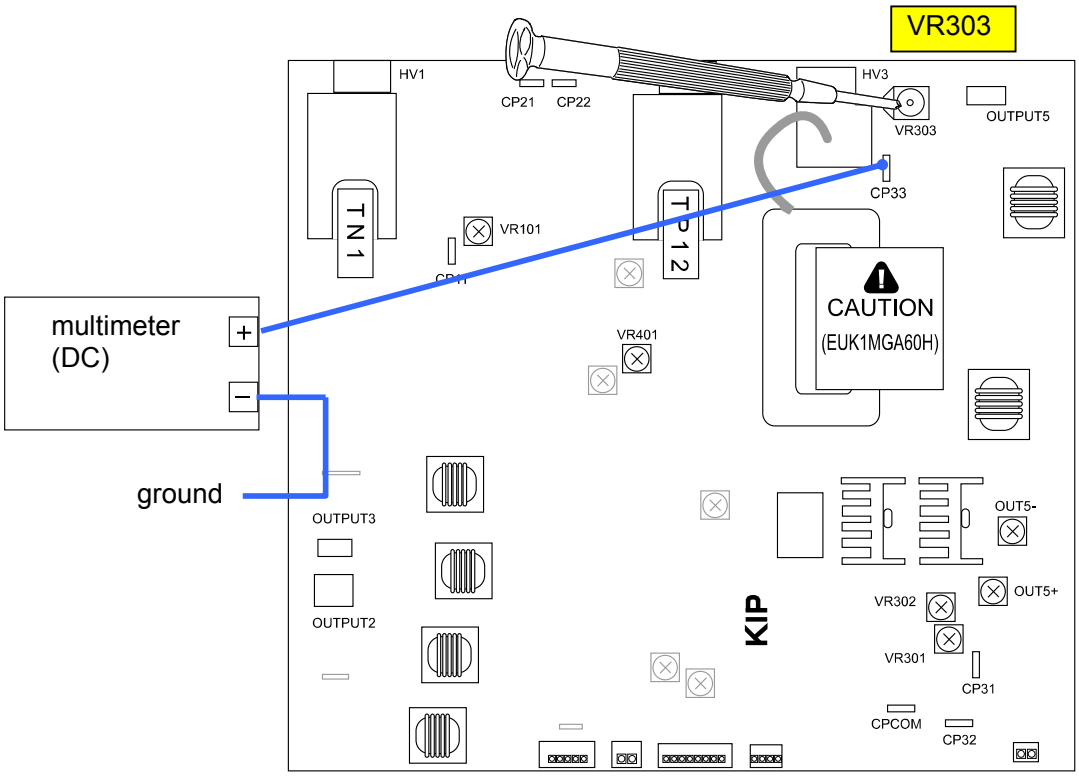
1. Connect the “+” cable of the multi-meter to the “CP33” pin on the HV Power Supply PCB (EUK1MGA60HA).
   Also connect the “-” one to the ground.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the high voltage is supplied to the Separation Corona during Test Print, check the voltage with the multi-meter.

   Standard value of the DC Component to the Separation Corona is **-300 +/-5V**.

3. Adjust the DC Component if it does not satisfy **-300 +/-5V**.
   To adjust it, rotate the VR303 with a screwdriver.



4. 3. 7 Negative Developer Bias for Developer Roller

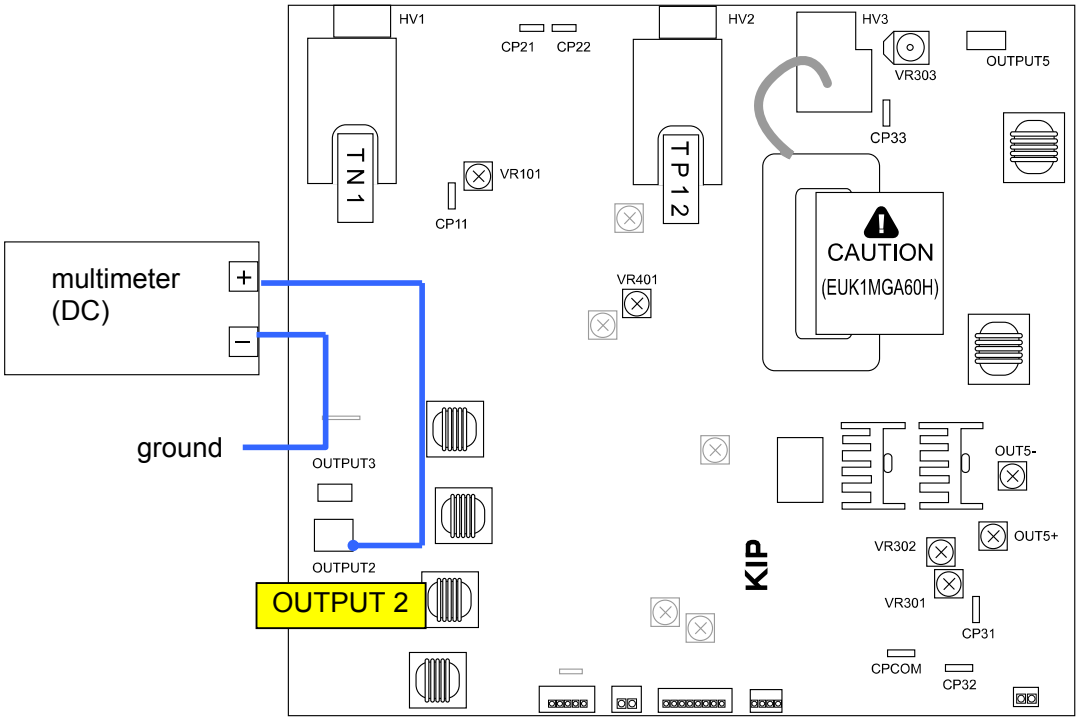
The Negative Developer Bias means the voltage supplied to the Developer Roller during the Print Cycle.
The standard value of the Negative Developer Bias is as follows for each type of paper.

Plain paper	**-200 to -250 +/-5V** against the ground
Tracing paper	**-200 to -250 +/-5V** against the ground
Film	**-200 to -250 +/-5V** against the ground

> **NOTE**
>
> Negative Developer Bias is adjusted accordingly within -200 to -250 +/-5V by Density Compensation Process.

Check and adjust the Negative Developer Bias in the following way.

1. Connect the “+” cable of the multi-meter to the “OUTPUT2” pin on the HV Power Supply PCB (EUK1MGA60HA).
   Also connect the “-” one to the ground.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the Negative Developer Bias is supplied to the Developer Roller during test print, check the voltage with the multi-meter.

   The standard value of the Negative Developer Bias is **-200 to -250 +/-5V**.

3. Adjust the voltage value if it does not satisfy **-200 to -250 +/-5V** making reference to [8.6.3 (15) (16) (17) Developer Bias] on page 8-49.

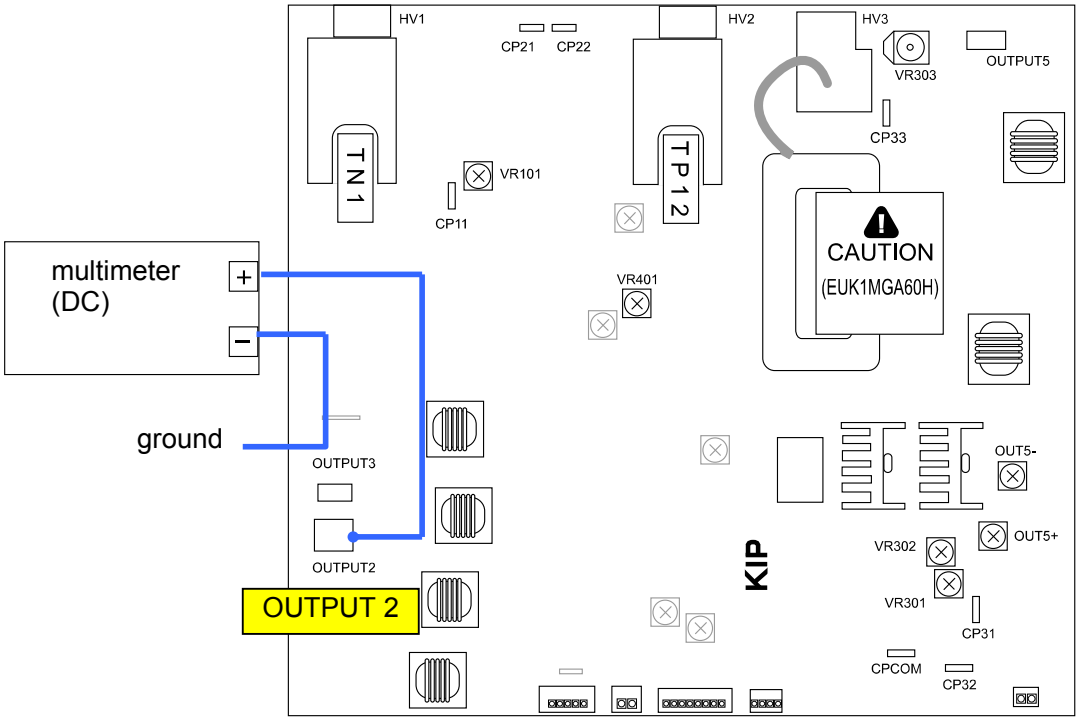
Sub Mode No.	Contents
15	Developer Bias (Plain)
16	Developer Bias (Tracing)
17	Developer Bias (Film)

4. 3. 8 Positive Developer Bias for Developer Roller

The Positive Developer Bias means the voltage supplied to the Developer Roller during the Cleaning Cycle.
The standard value of the Positive Developer Bias is **350 +/-5V against the ground**.

Check and adjust the Negative Developer Bias in the following way.

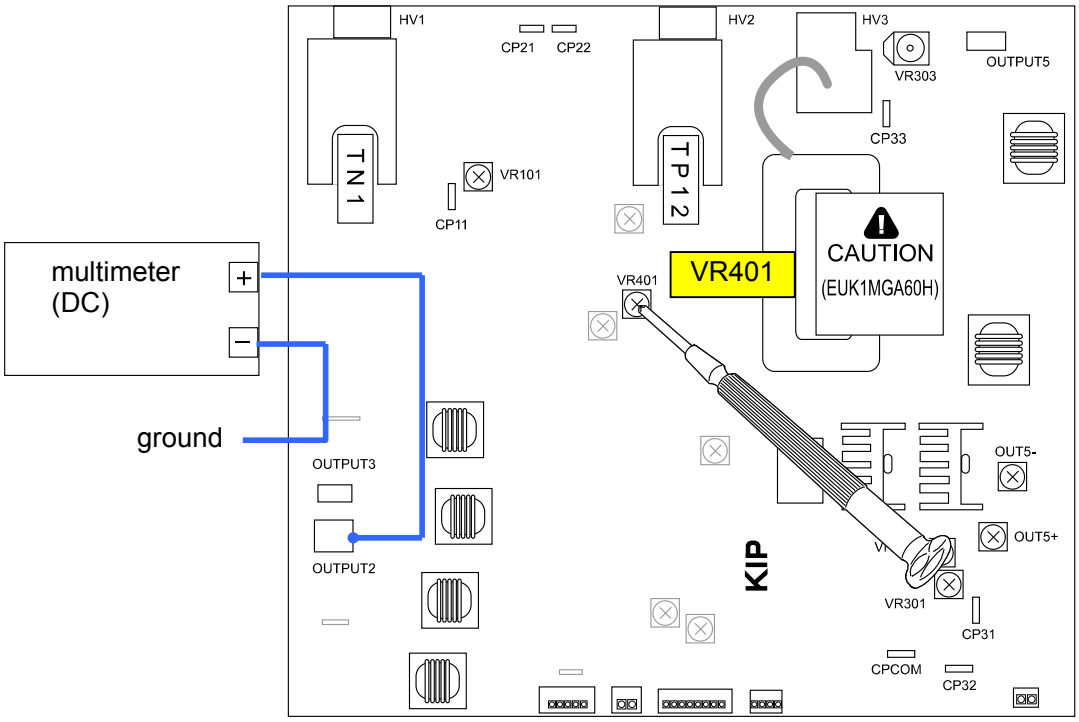
1. Connect the “+” cable of the multi-meter to the “OUTPUT2” pin on the HV Power Supply PCB (EUK1MGA60HA).
   Also connect the “-” one to the ground.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the Positive Developer Bias is supplied to the Regulation Roller when the printer is going to stop, check the voltage with the multi-meter.

   Standard value of Positive Developer Bias for Developer Roller is **350 +/-5V**.

3. Adjust Developer Bias if it does not satisfy **350 +/-5V**.
   To adjust it, rotate the VR401 with a screwdriver.



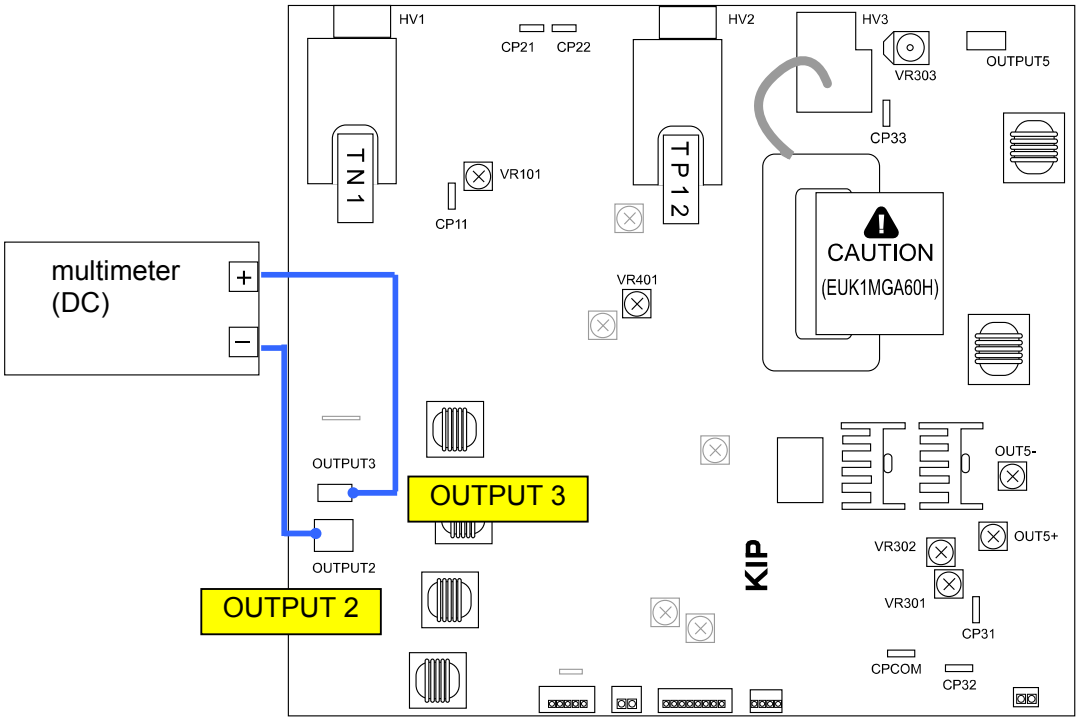
4. 3. 9 Bias Gap between Developer Roller and Regulation Roller

The standard value of the bias gap between Developer Roller and Regulation Roller is **50 to 140 +/-2V**.

> **NOTE**
>
> The amount of the bias gap is not constant because Negative Regulation Bias is adjusted accordingly within 50 to 140 by Density Compensation Process.

Check and adjust it in the following way.

1. Connect the “+” cable of the multi-meter to the “OUTPUT3” pin on the HV Power Supply PCB (EUK1MGA60HA).
   Also connect the “-” one to the “OUTPUT2” pin.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   As the Bias is supplied to both the Developer Roller and the Regulation Roller, check the Bias gap between them with the multi-meter.

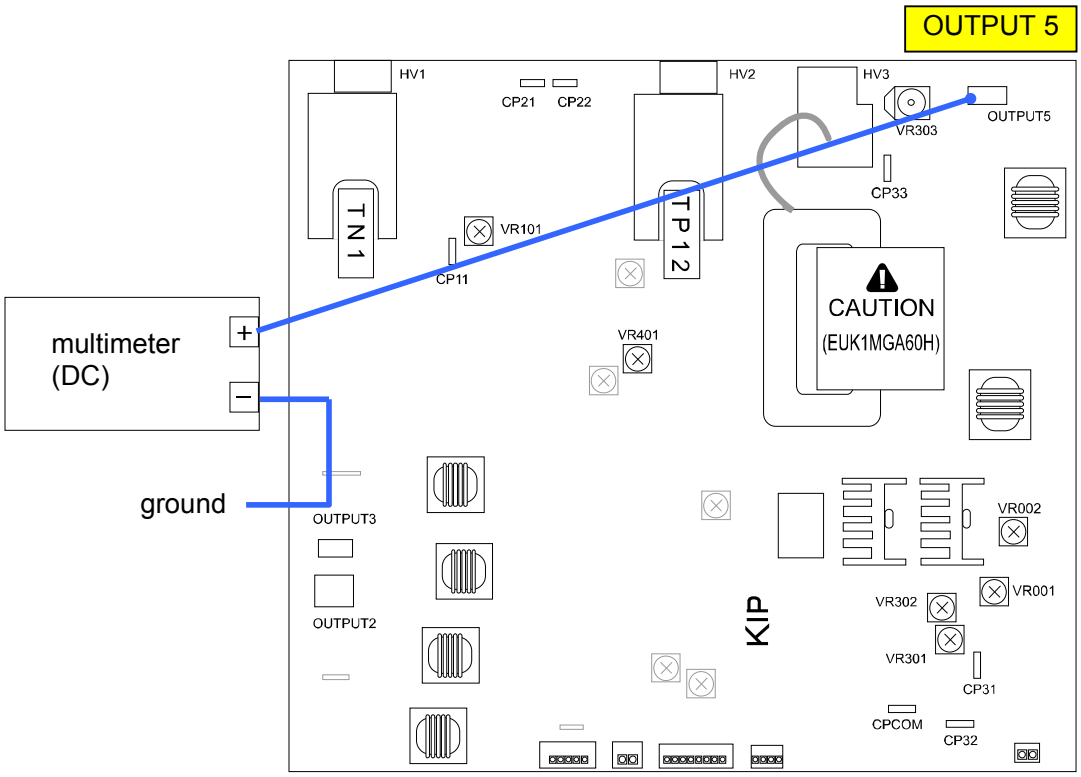
   The standard value of the Bias gap between Developer Roller and Regulation Roller is **50 to 140 +/-2V**.

3. Adjust Regulation Bias if it does not satisfy **50 to 140 +/-2V** making reference to [8.6.3 (78) Regulation Bias] on page 8-77.

4. 3. 10 Positive Cleaning Roller Bias (Print Cycle)

The Positive Cleaning Roller Bias means the voltage supplied to the Cleaning Roller during the Print Process.
The standard value of the Positive Cleaning Roller Bias is **+700 +/-5V**.
Check and adjust it in the following way.

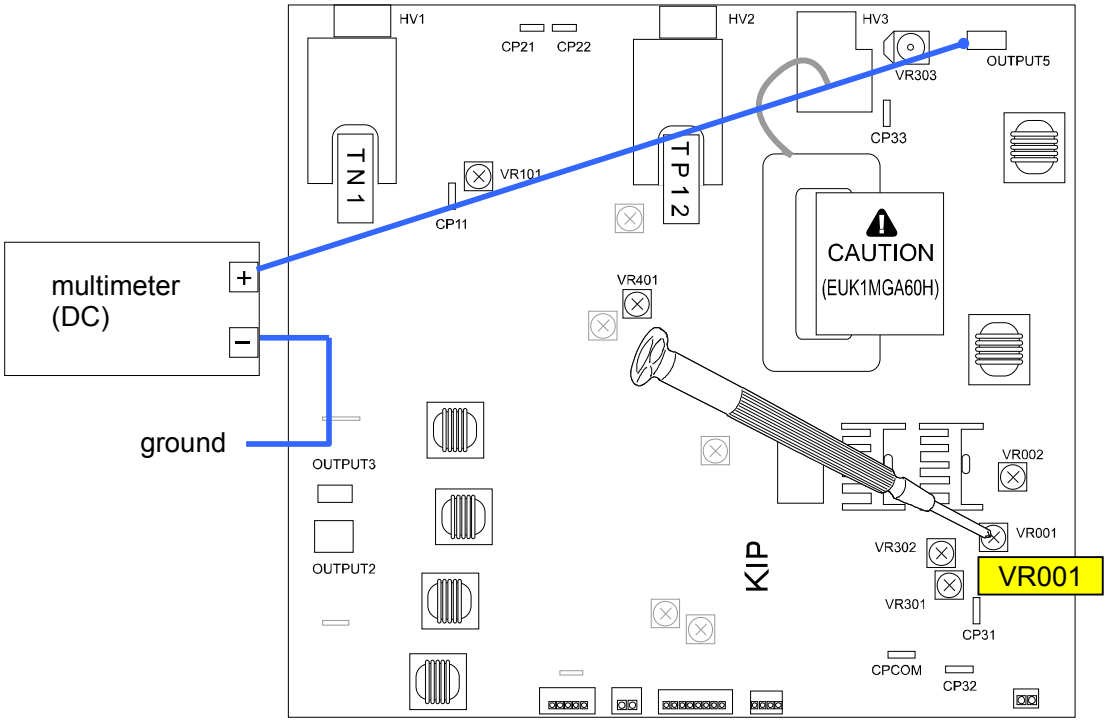
1. Connect the “+” cable of the multi-meter to the “OUTPUT 5” pin on the HV Power Supply PCB
   Also connect the “-” one to the ground.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   Toner Collection Process works for some seconds after the printed paper has been ejected.
   Check the voltage value with the multi-meter during that period.

   Standard value of Positive Cleaning Roller Bias is **+700 +/-5V**.

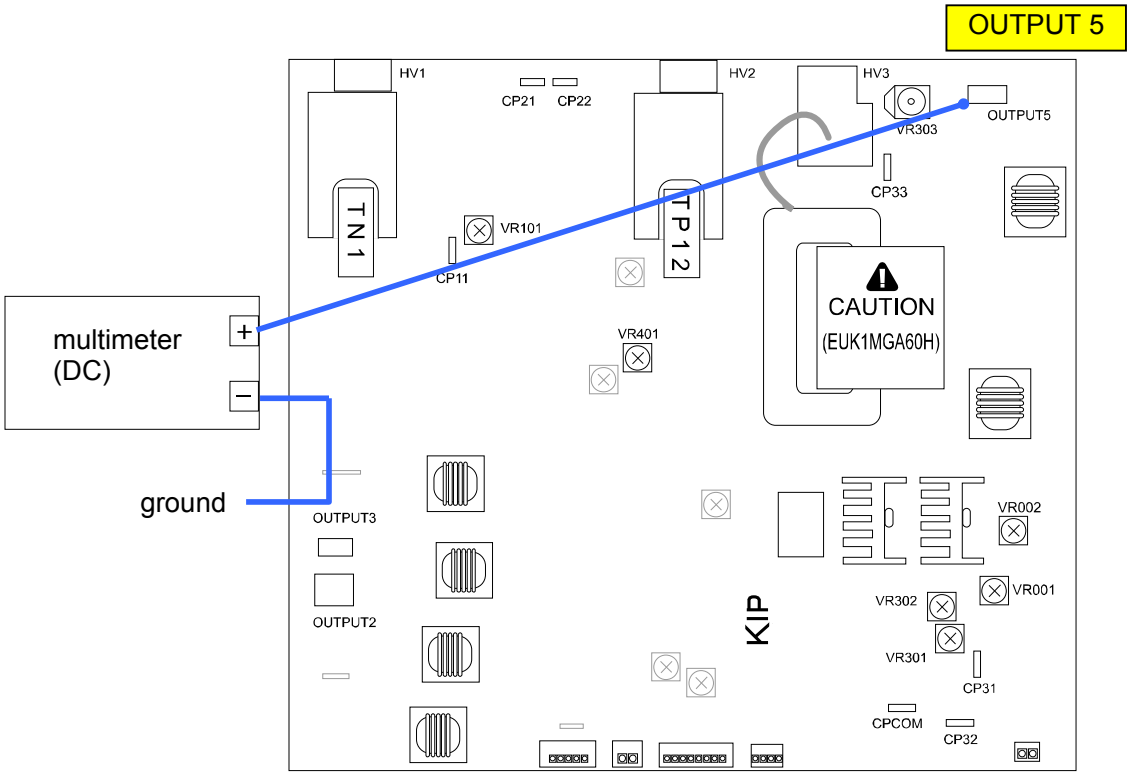
3. Adjust Positive Cleaning Roller Bias if it does not satisfy **+700 +/-5V**.
   To adjust it, rotate the VR001 with a screwdriver.



4. 3. 11 Negative Cleaning Roller Bias (Toner Collection Process)

The Negative Cleaning Roller Bias means the voltage supplied to the Cleaning Roller during the Toner Collection Process, which is done after the completion of Print Process.
The standard value of the Negative Cleaning Roller Bias is **-500 +/-5V**.
Check and adjust it in the following way.

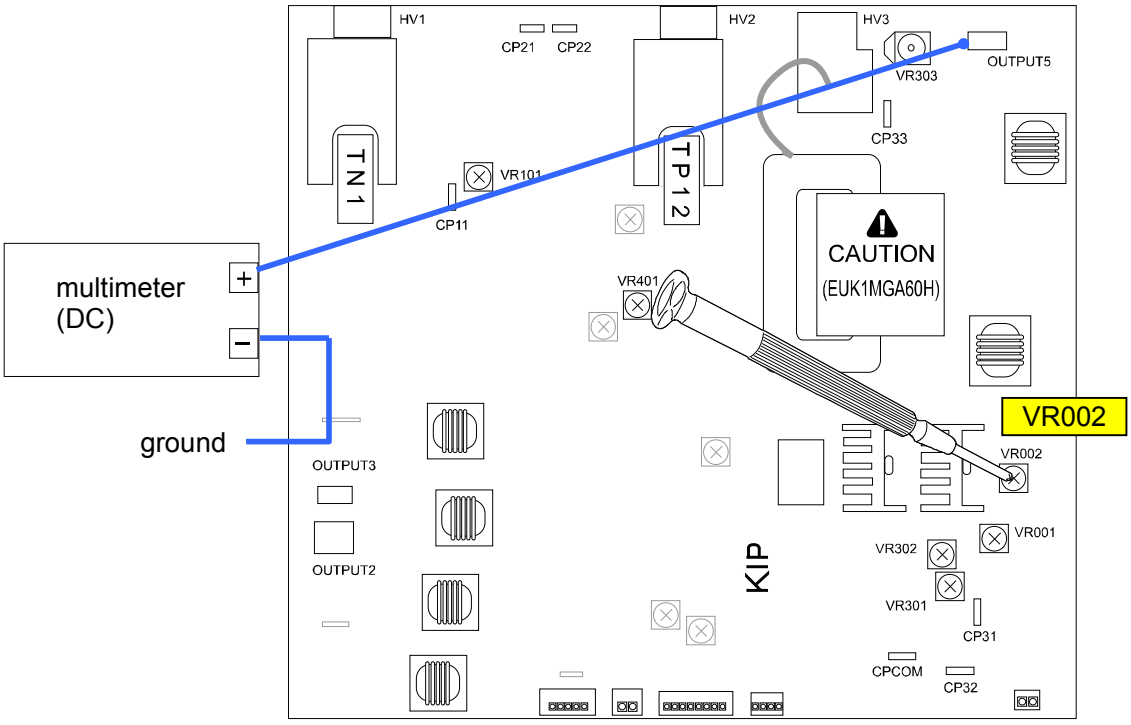
1. Connect the “+” cable of the multi-meter to the “OUTPUT 5” pin on the HV Power Supply PCB
   Also connect the “-” one to the ground.
   And then, select the DC volt range on the multi-meter.



2. Make a test print making reference to [8.9.1 Making Test Print] on page 8-105.
   Toner Collection Process works for some seconds after the printed paper has been ejected.
   Check the voltage value with the multi-meter during that period.

   Standard value of Negative Cleaning Roller Bias is **-500 +/-5V**.

3. Adjust Negative Cleaning Roller Bias if it does not satisfy **-500 +/-5V**.
   To adjust it, rotate the VR002 with a screwdriver.



4. 4 Remaining Toner Detection

The amount of remaining toner powders in Toner Cartridge is estimated based on the total operation time of Toner Supply Motor. “Remaining Information” is divided into 4 ranks as follows and will be written on the Toner Cartridge’s IC Tag.
It is also used for the controller to indicate toner remaining level via Interface 8.

- 75% or more (4/4)
- 75 to 50% (3/4)
- 50 to 25% (2/4)
- 25% or less (1/4)

Reference

(1) Remaining Information is an approximate calculation and may slightly differ from the actual remaining amount.

(2) Remaining Information would differ from the actual amount in some situations below.

- If the toner supply hole on the cap of Toner Cartridge does not open completely, the toner would remain more than estimated by operation time of Toner Supply Motor.
- If some large amount of toner is spilled out and gone, the toner would remain less than estimated.

(3) There is no function to detect whether the toner in Toner Cartridge is emptied.
Toner Empty sign will appear when the remaining toner in Developer Unit is left less than a certain level detected by Toner Sensor (TLS1).

Once the Toner Cartridge becomes empty with the toner, the machine recognizes its IC Tag information. The same Toner Cartridge can no more be installed onto the machine after that. The machine does not operate with indicating Toner Empty sign or “Toner Cartridge not set correctly” if once emptied Toner Cartridge is installed.

Chapter 5

Mechanical

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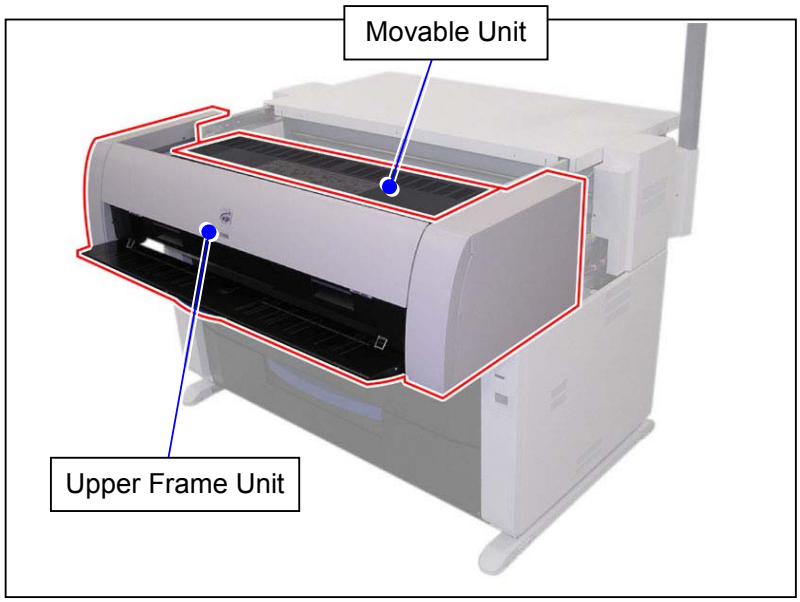
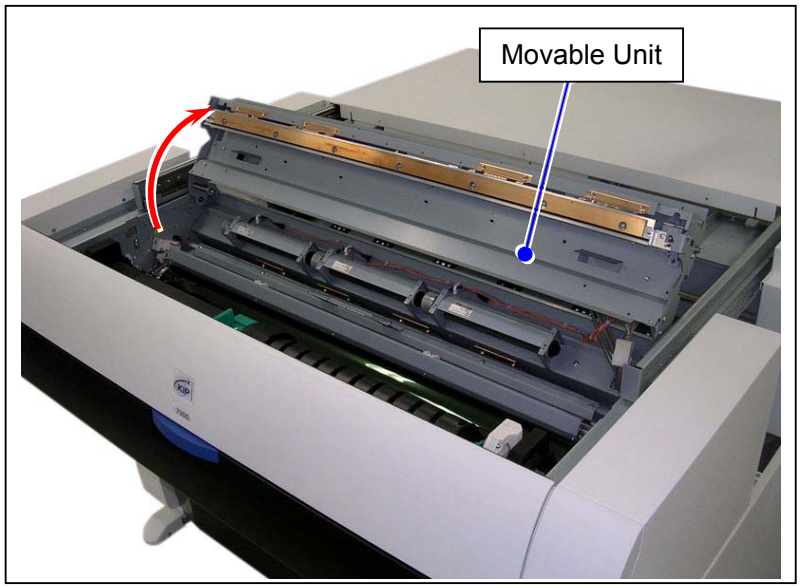
General Notice for Disassembly / Reassembly

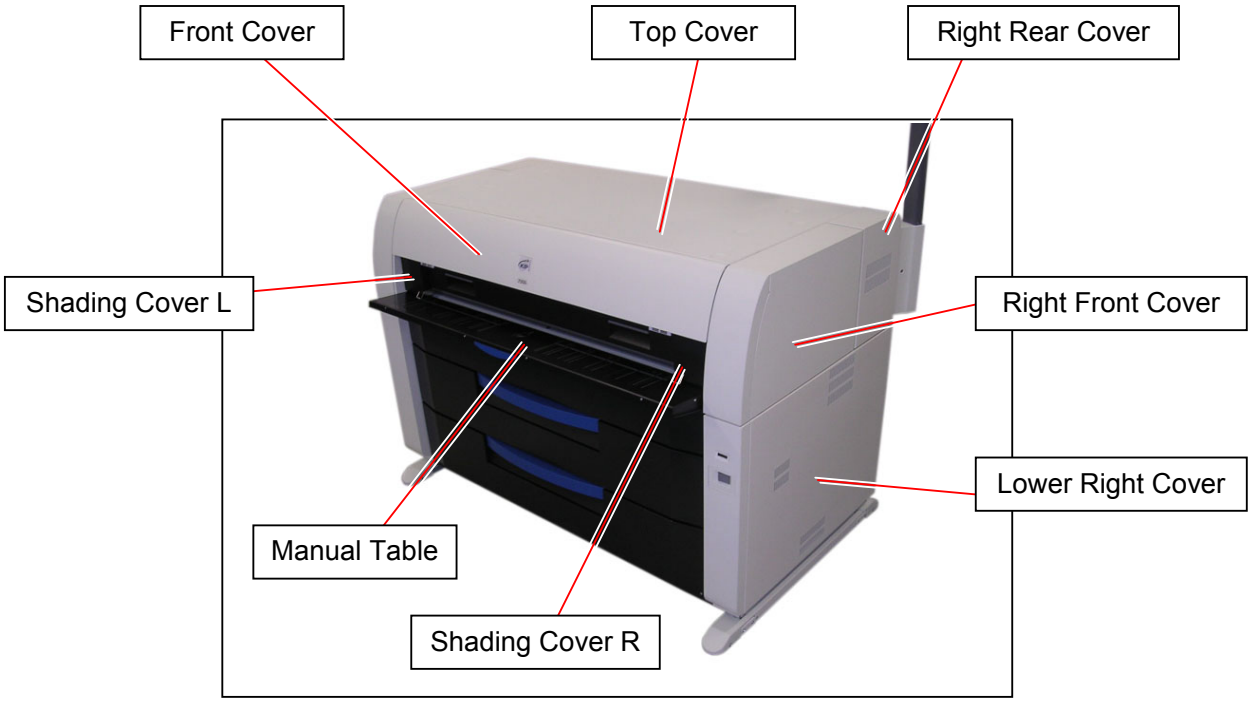
It is described that the mechanical features, operation, and the way of disassembling or assembling in Chapter 5.
Be sure to observe the following whenever disassembling or assembling.

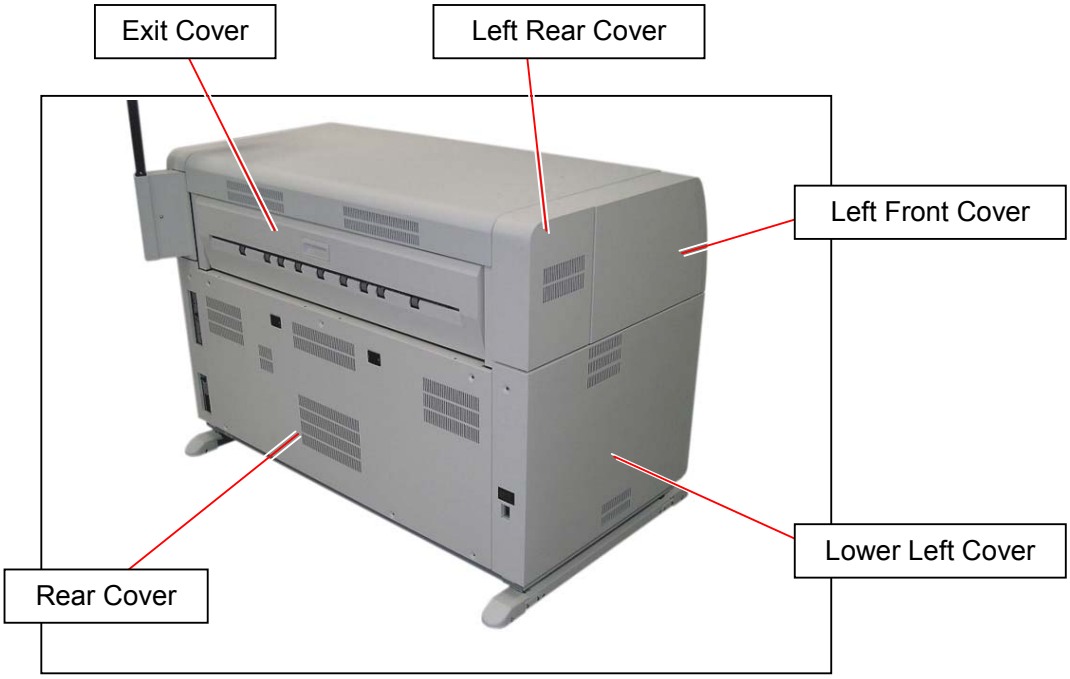
1. Unplug the power cable for safety before working.
2. Unless noted, reverse the steps used to disassemble the machine for assembly.
3. Identify the screws by type (length, diameter) and location.
4. As a rule, do not operate the machine when any of its parts are removed.
5. Do not throw toner into fire, or it may explode.
6. Do not touch the surface of the Photoconductive Drum.
7. If the Movable Unit must be kept open during the servicing work, remove the Photoconductive Drum or keep it protected from light by means of the fresh copy paper and so on.





5.1 External Cover

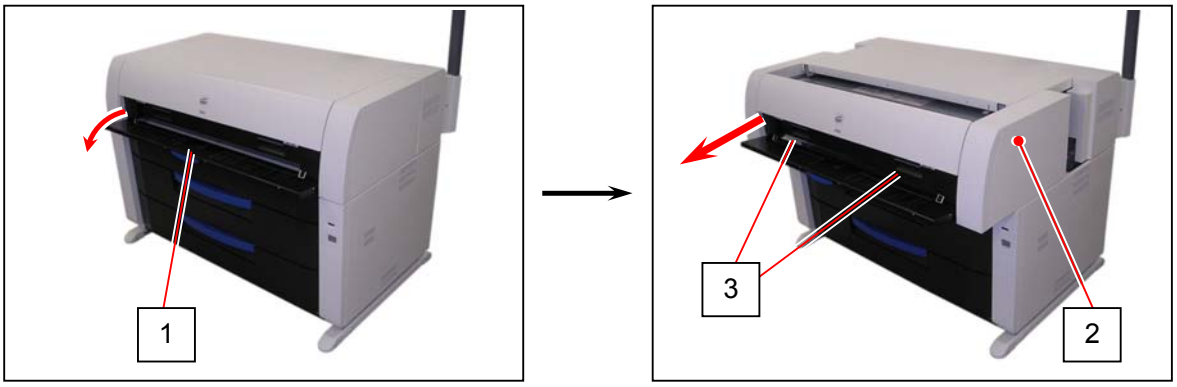




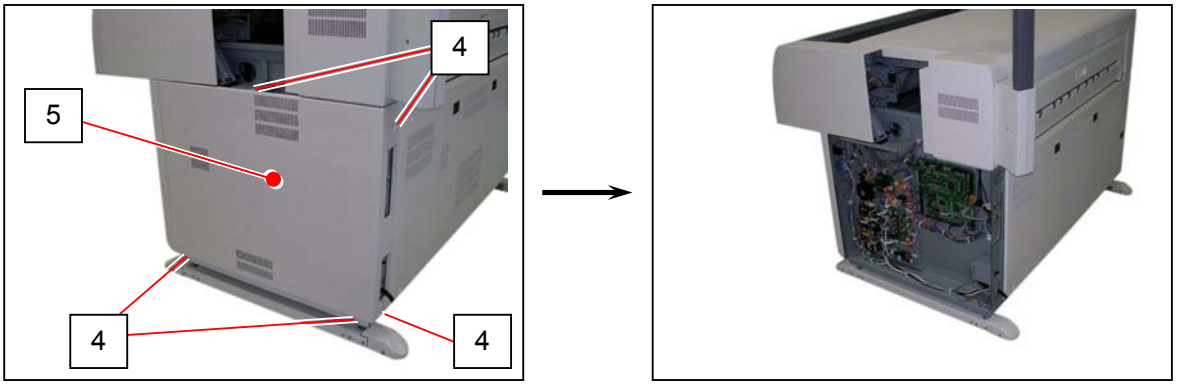
5.1.1 Removing Lower Right / Left Cover

The following are the steps about removing Lower Right Cover.
Take the same way for removing Lower Left Cover.

1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



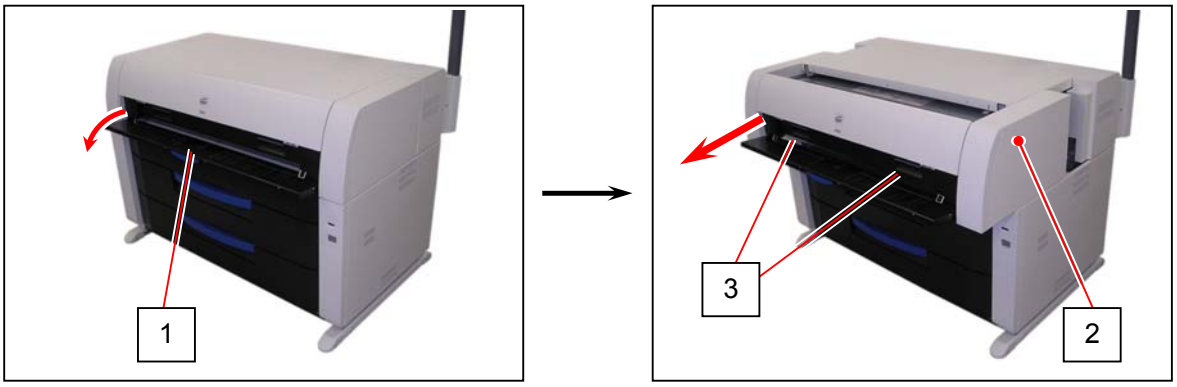
2) Remove 5 Bind Head Screws (M4x6) (4) to remove Lower Right Cover (5).



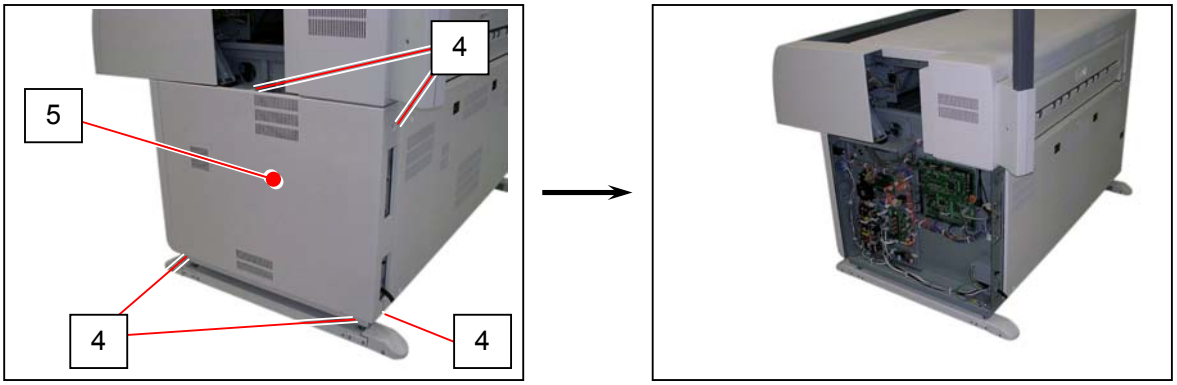
5.1.2 Removing Right / Left Front Cover

The following are the steps about Right Front Cover.
Take the same way for removing Left Front Cover.

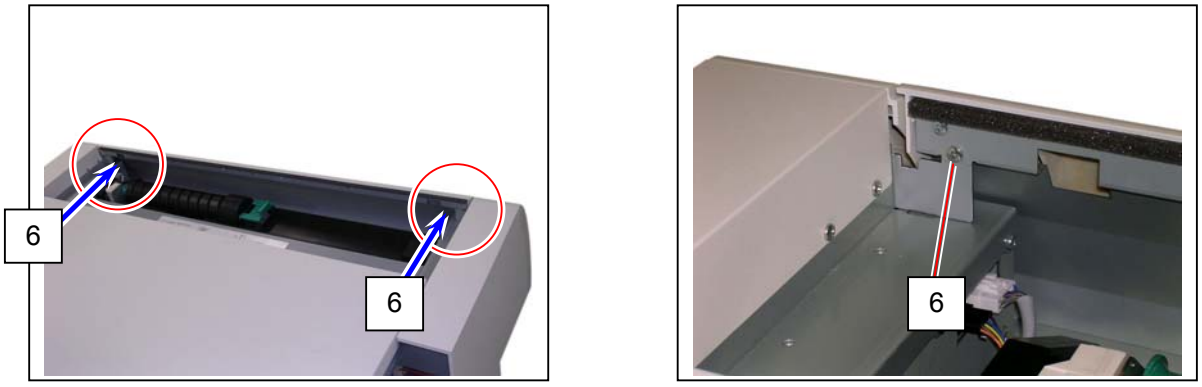
1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



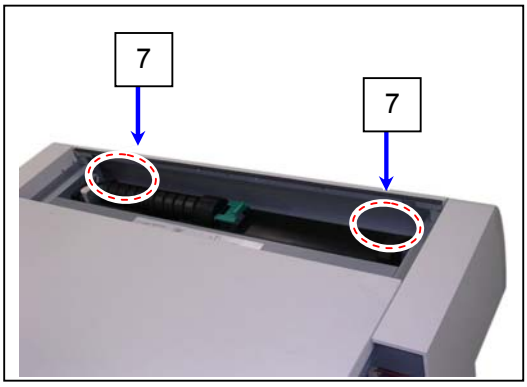
2) Remove 5 Bind Head Screws (M4x6) (4) to remove Lower Right Cover (5).

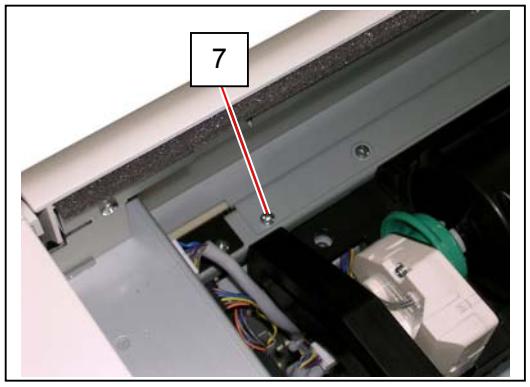


3) Loosen 2 screws (M4x6) (6) on both sides.

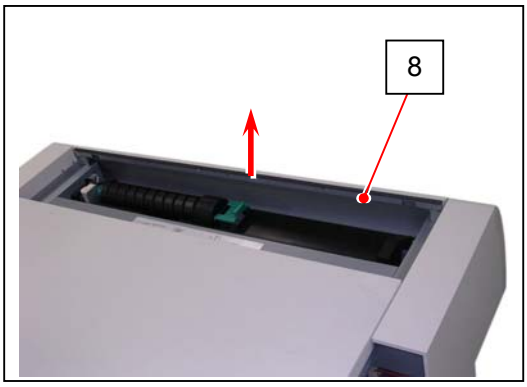


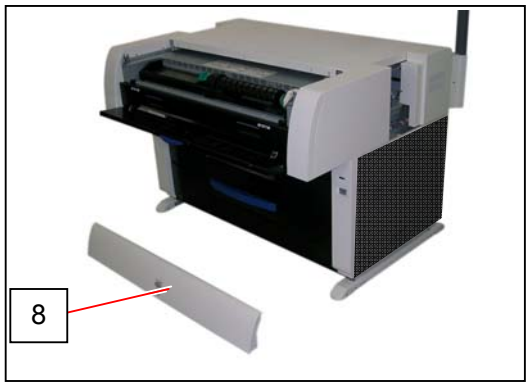
4) Remove 2 Bind Head Screws (M4x6) (7) from both sides.



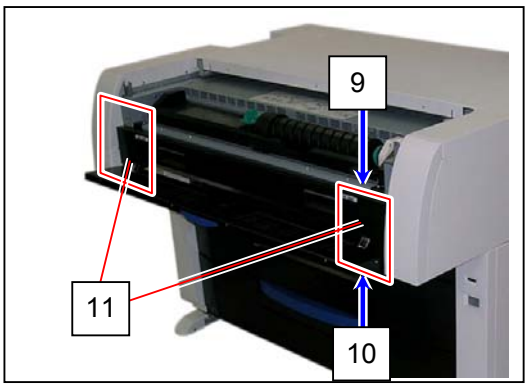


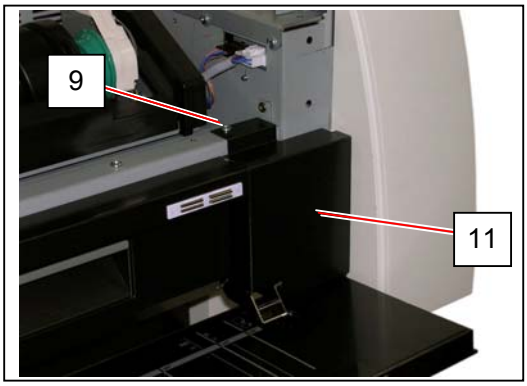
5) Lift Front Cover (8) upward to remove it.

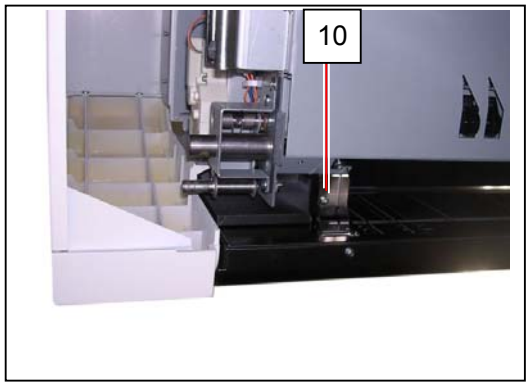




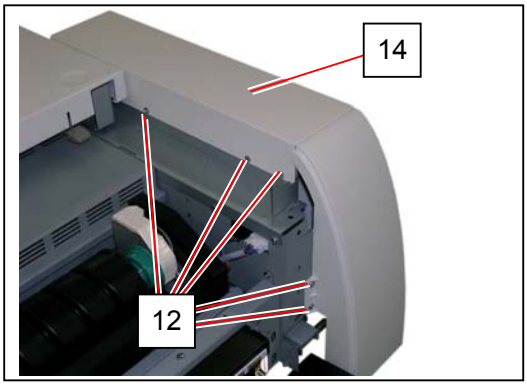
6) Remove 1 Bind Head Screw (M4x6) (9), loosen 1 screw (M3x6) (10) at the bottom, and then remove Shading Cover R (11).

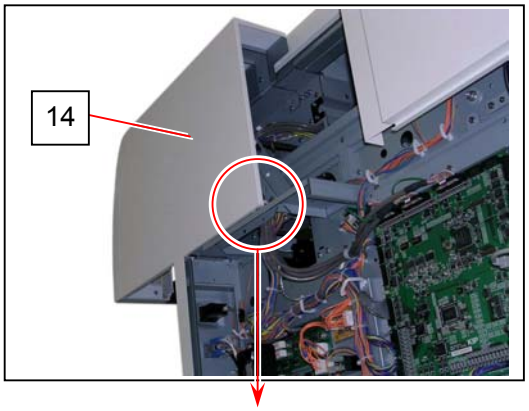


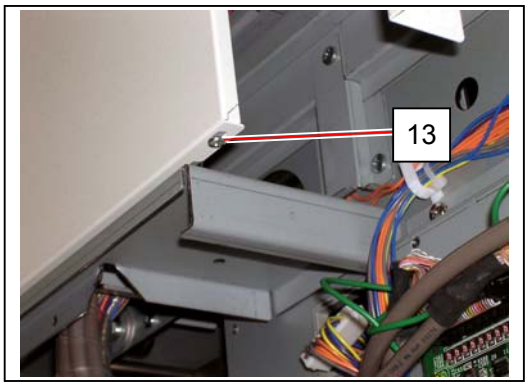




7) Remove 5 Bind Head Screws (M4x6) (12) and 1 screw (M3x6) (13) at the bottom, and then remove Right Front Cover (14).



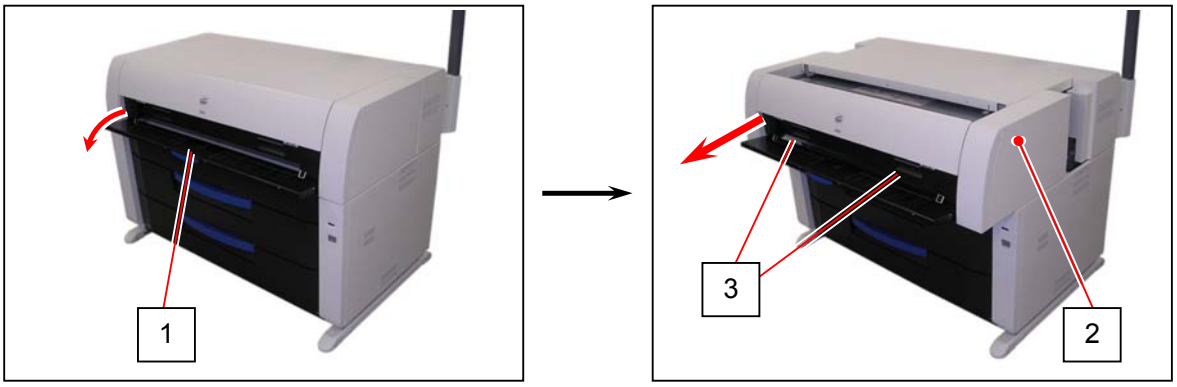




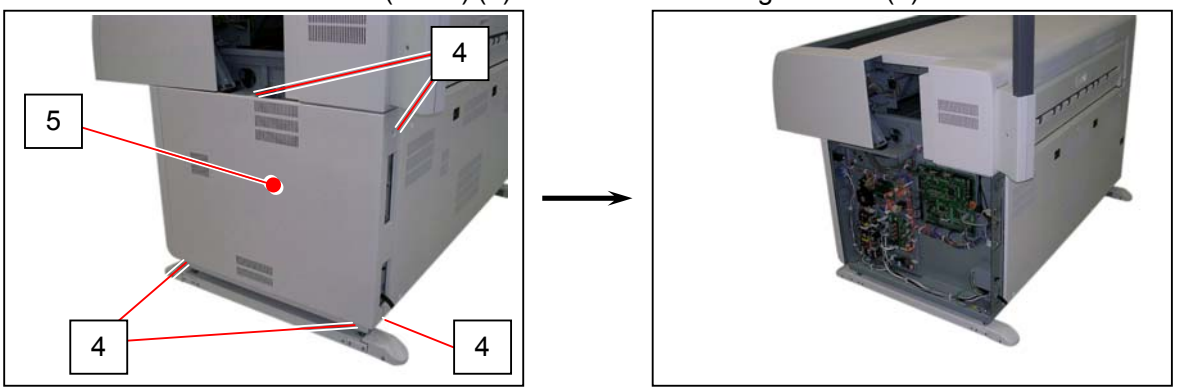
5.1.3 Removing Right / Left Rear Cover

The following are the steps about removing Right Rear Cover.
Take the same way for removing Left Rear Cover.

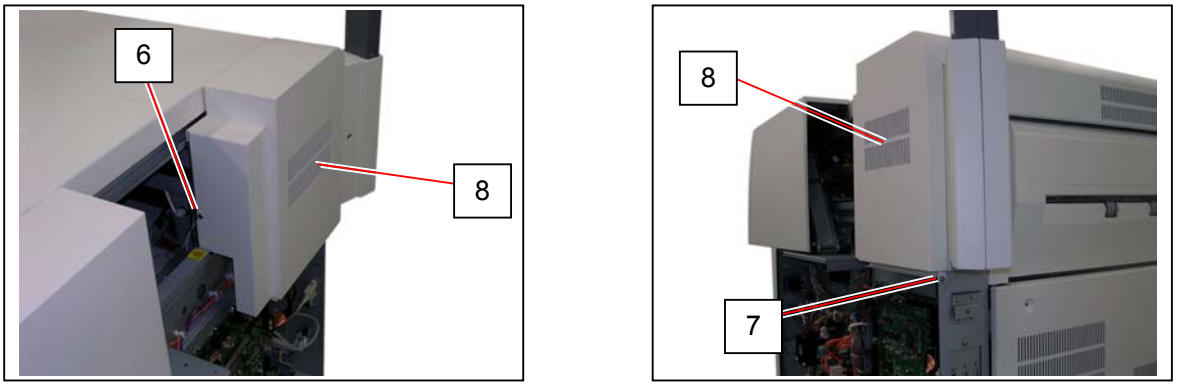
1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



2) Remove 5 Bind Head Screws (M4x6) (4) to remove Lower Right Cover (5).

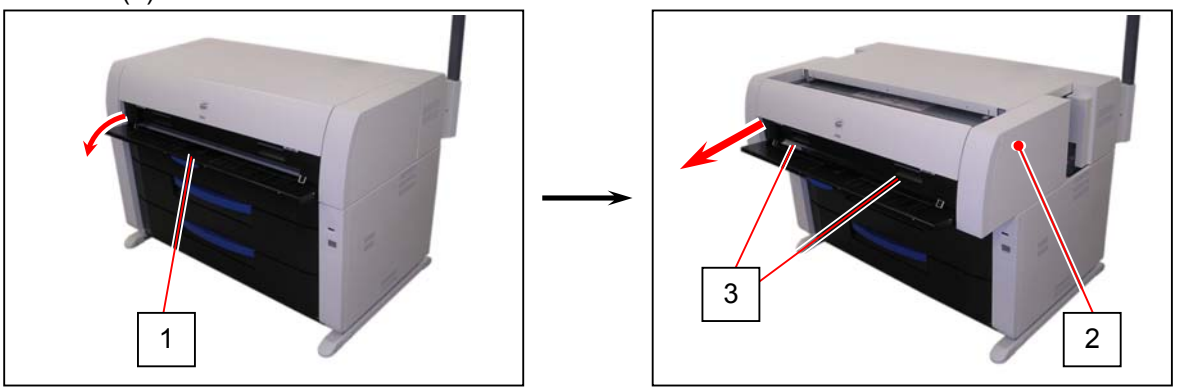


3) Remove 1 Bind Head Screw (M4x6) (6) and loosen 1 Tooth Washer Screw (7) to remove Right Rear Cover (8).

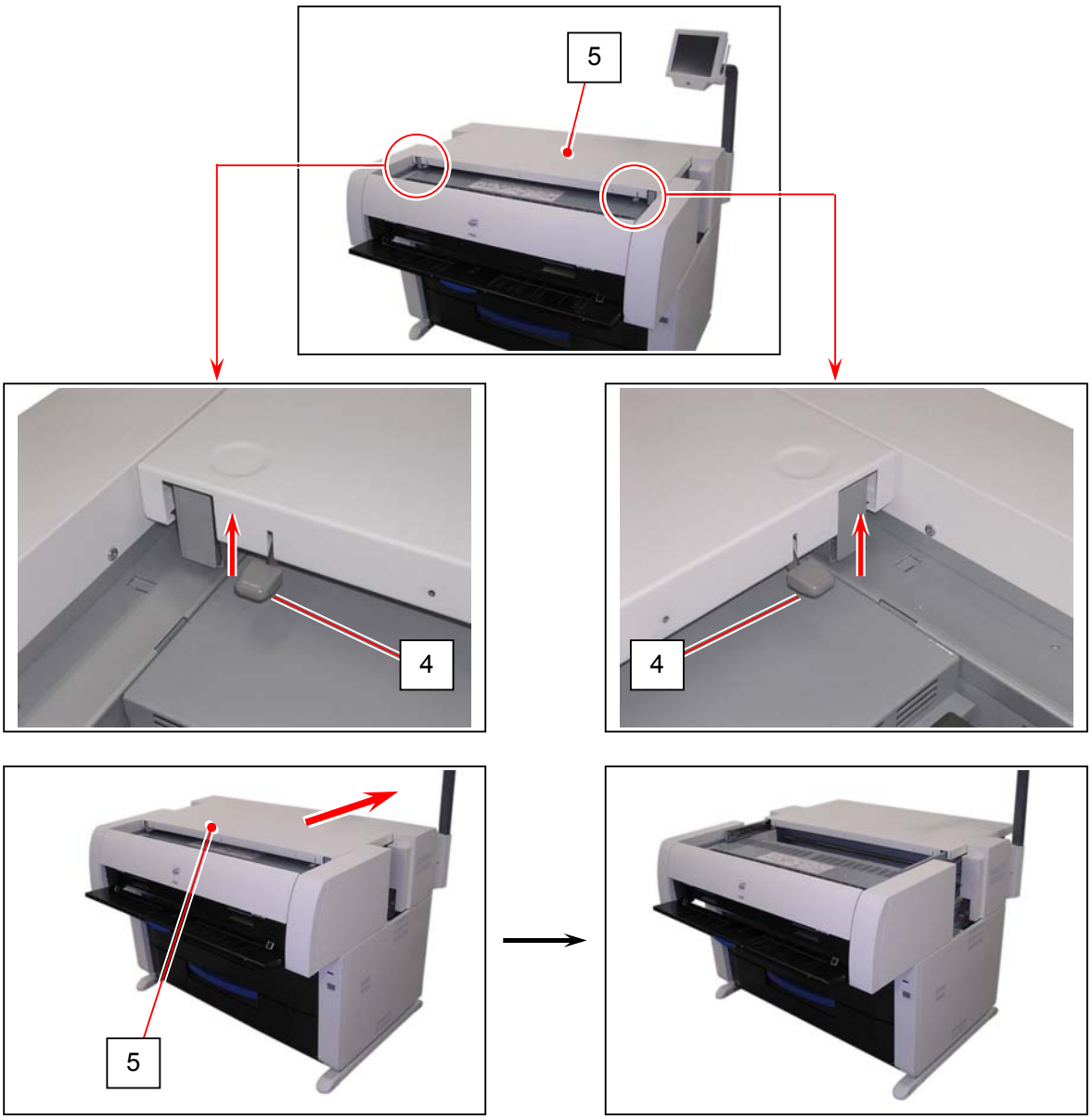


5.1.4 Removing Top Cover

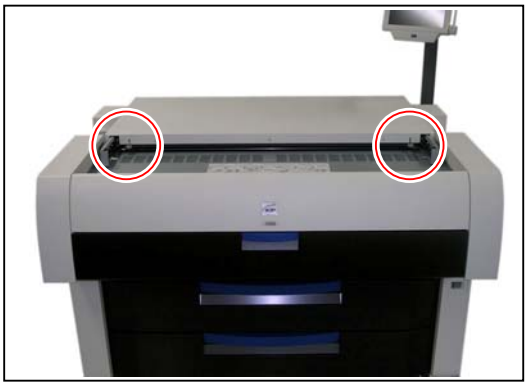
1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).

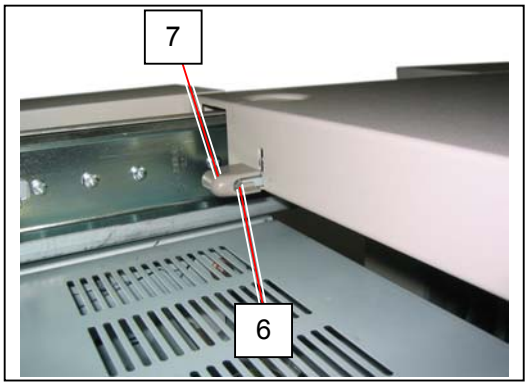


2) Pull up Knobs (4) on both sides, and then open Top Cover (5) by pushing it toward the rear side.

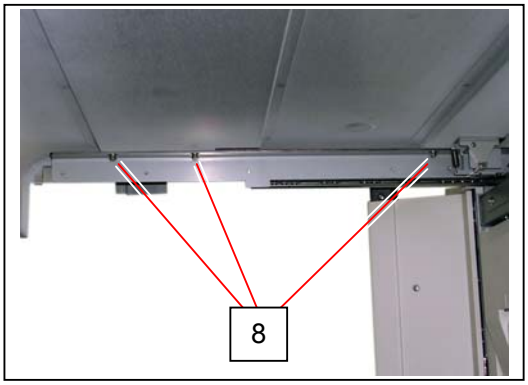


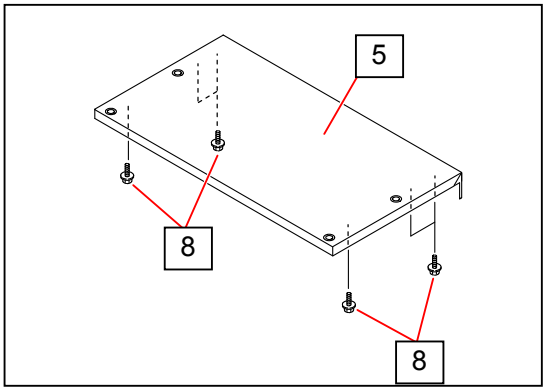
3) Remove 2 screws (M3x6) (6) to remove Knobs (7).





4) Remove 6 screws (M5x8) (8) from the reverse side of Top Cover (5) to remove it.



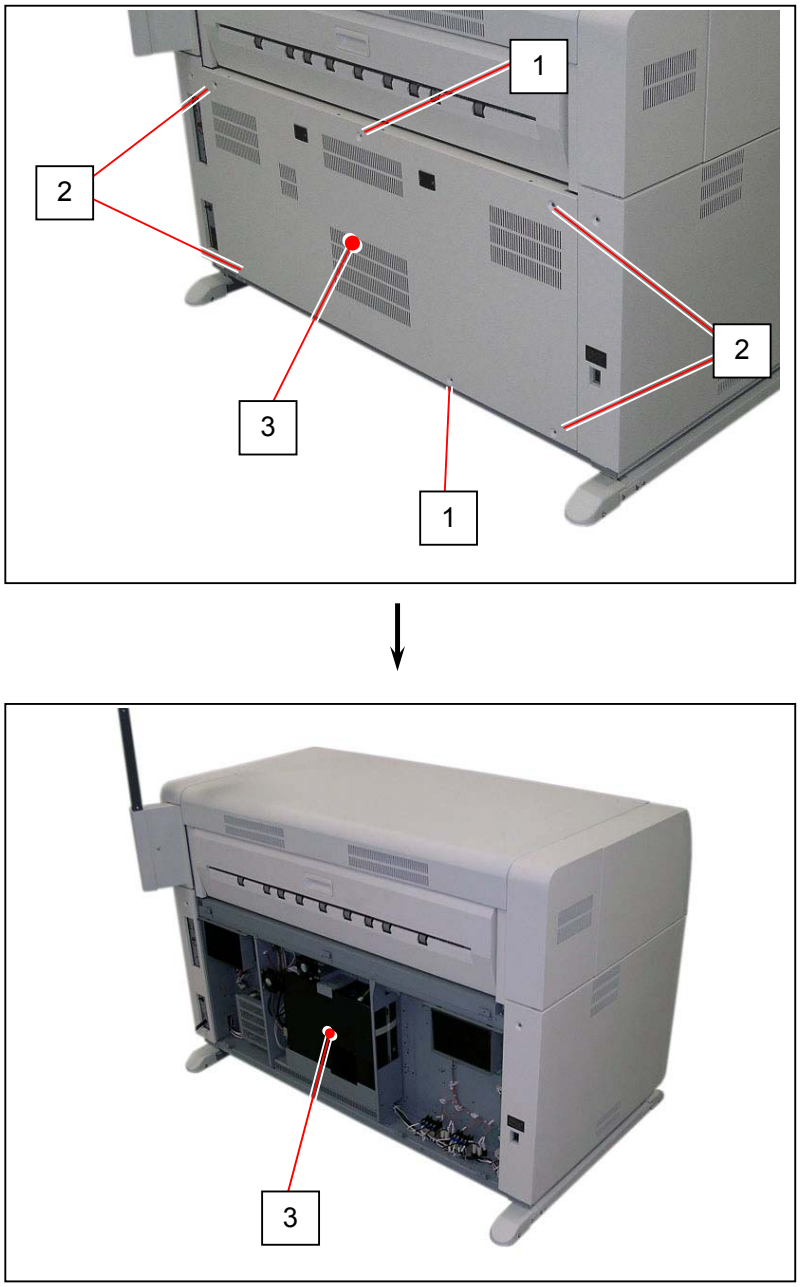


NOTE

Take great care in working, because the Top Cover is heavy.

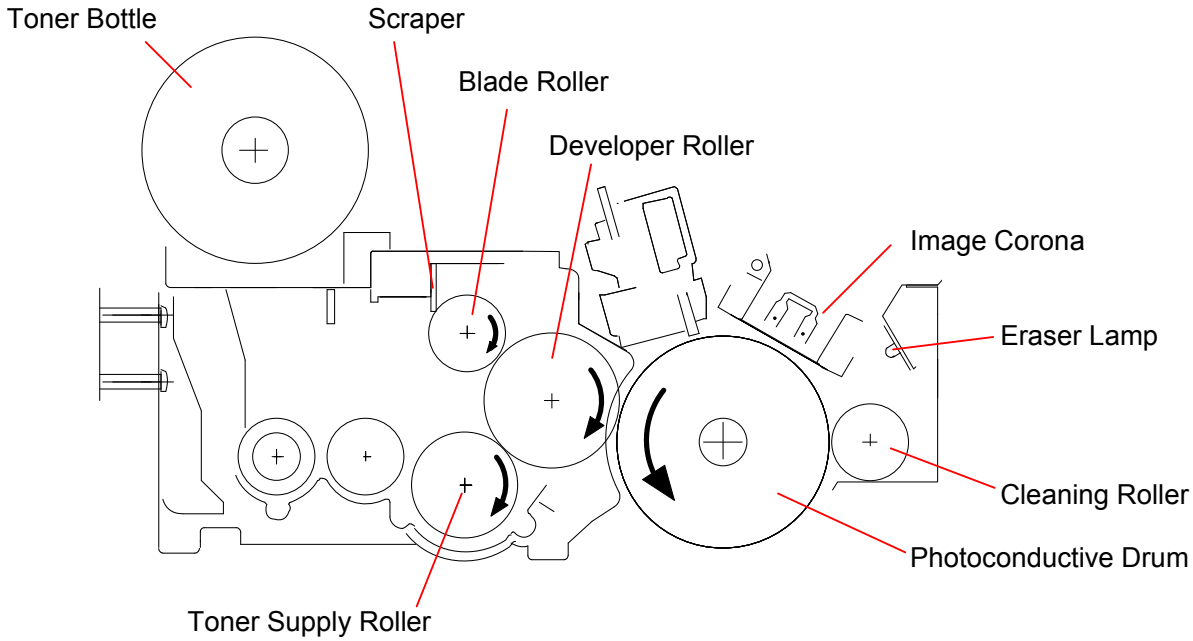
5.1.5 Removing Rear Cover

1) Remove 2 Tooth Washer Screws (M4x6) (1) and 4 Bind Head Screws (M4x6) (2) to remove Rear Cover (3). You can see the controller (3) on the rear.



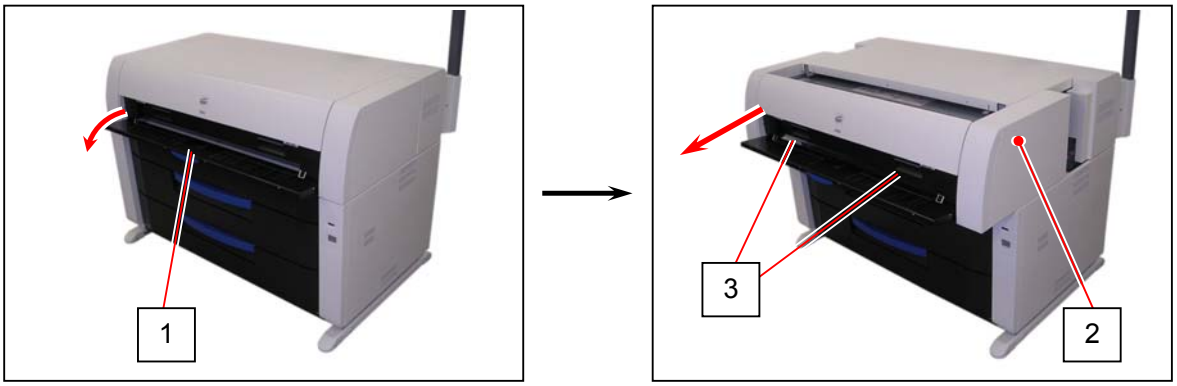
5.2 Process Unit

Side Section from right



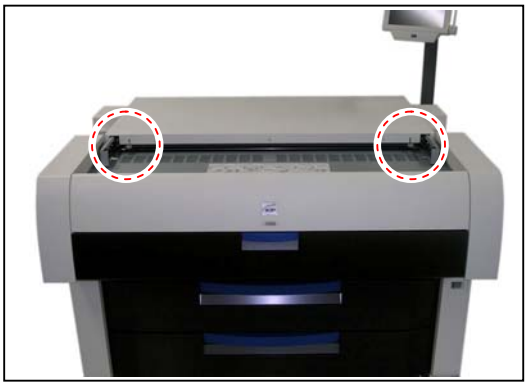
5.2.1 Opening Movable Unit

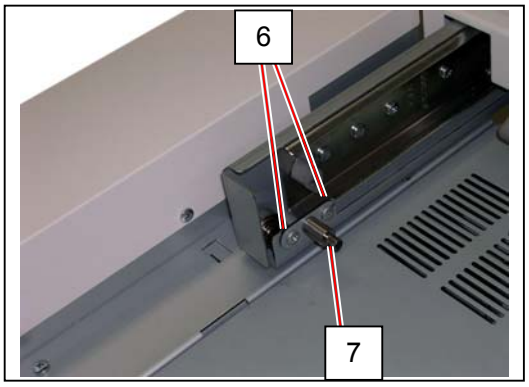
1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



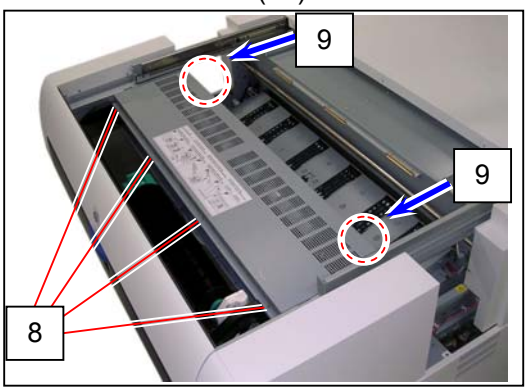
2) Pull up both knobs (4), and then open the Top Cover (5) by pushing it toward the rear side.

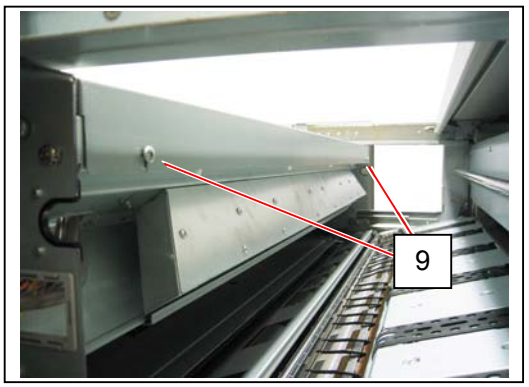
3) Remove 2 screws (M4x6) (6), and remove the Hook Pin Assy (7) from both sides.

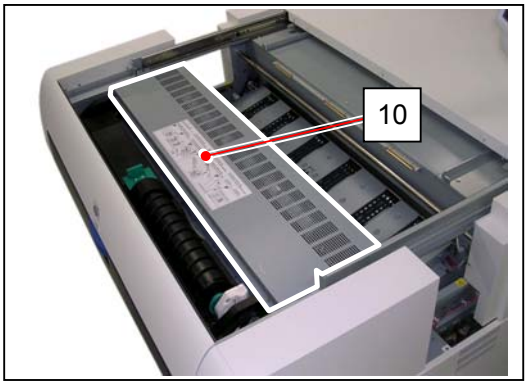




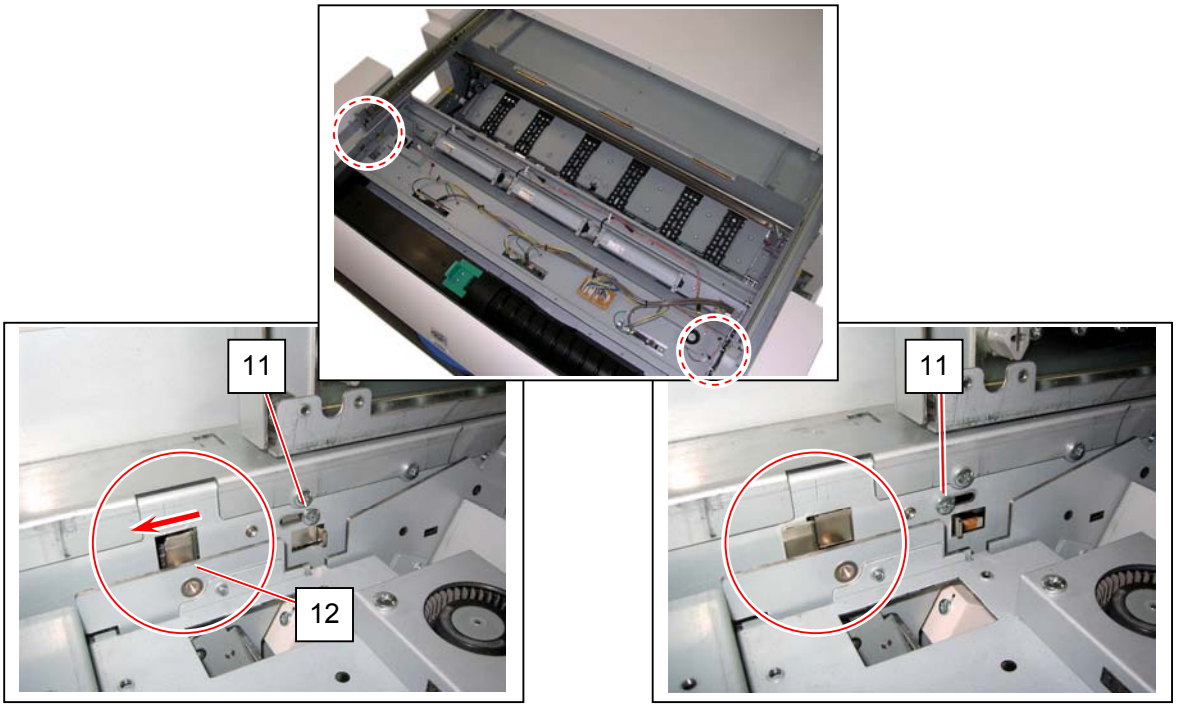
4) Remove 4 screws (M4x6) (8) at the top, loosen 2 screws (M4x6) (9) at the rear side, and then remove the Process Cover. (10)





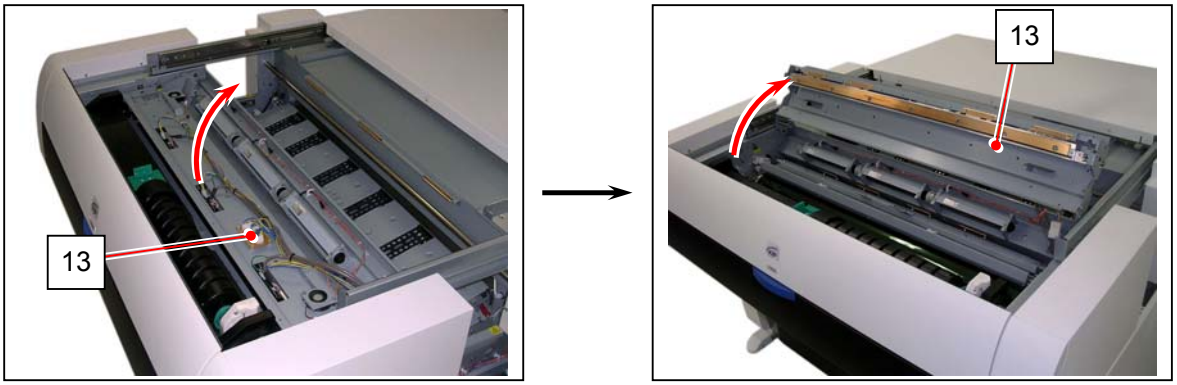


5) Loosen 2 screws (11). Slide both Stopper Levers (12) toward the front.
Movable Unit (13) will be unlocked and becomes possible to open upward by this work.



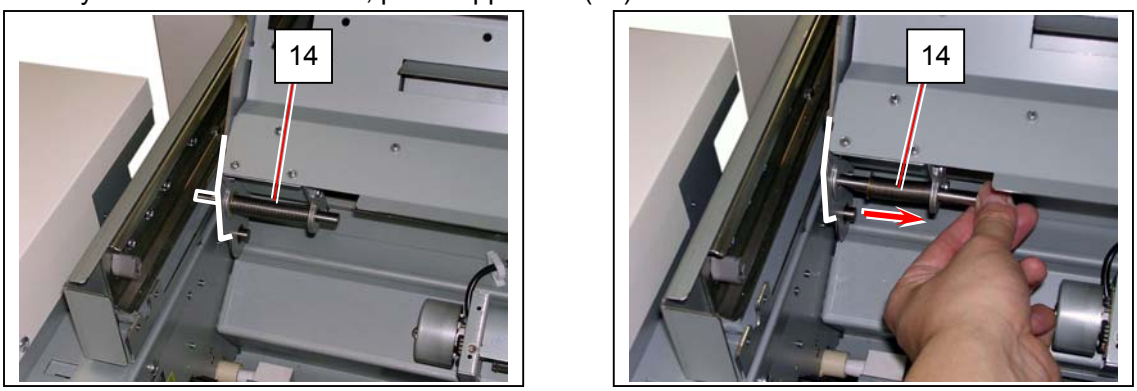
(Lock) (Unlock)

6) Open Movable Unit (13) upward and Stopper Pin works automatically.



NOTE

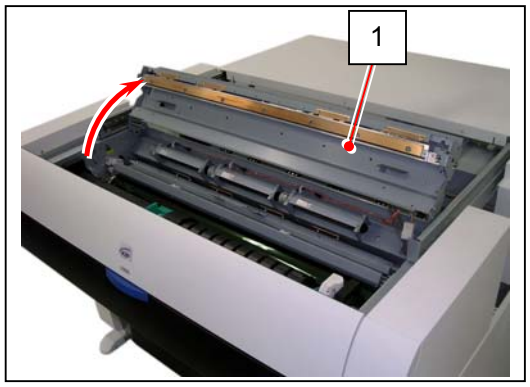
When you opened Movable Unit, make sure that Stopper Pin (14) is properly in Lock position.
When you close Movable Unit, pull Stopper Pin (14) inside to unlock Movable Unit.



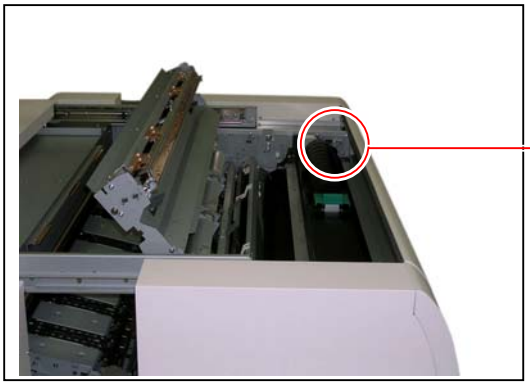
Lock Position Pull Stopper Pin to unlock

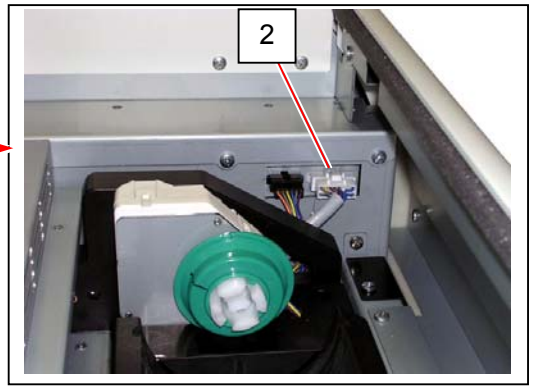
5.2.2 Removing Developer Unit

1) Open Movable Unit (1). Refer to [5.2.1 Opening Movable Unit] on page 5-10.

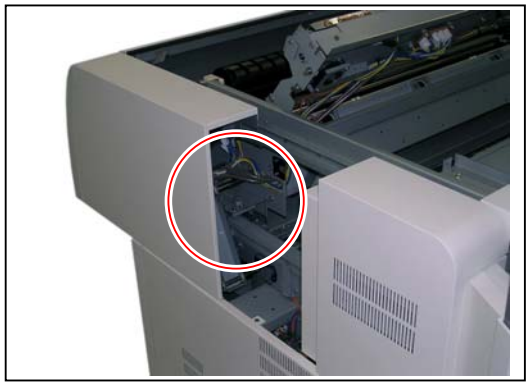


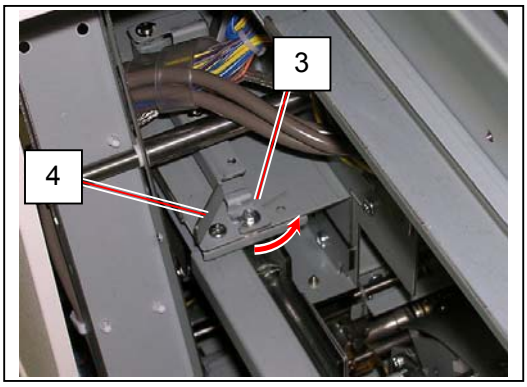
2) Disconnect 1 connector (2) of Developer Unit.

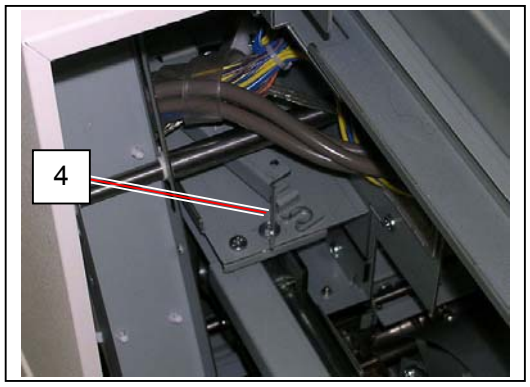




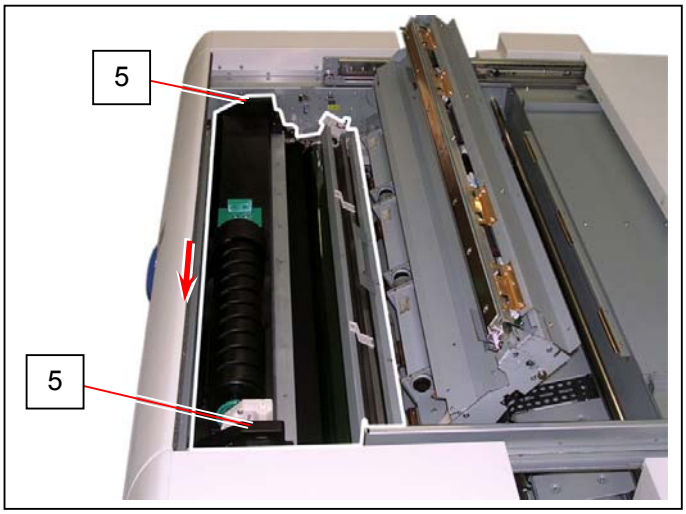
3) Loosen the Hex Head Screw (3), and shift the Lever (4) to the arrow direction.

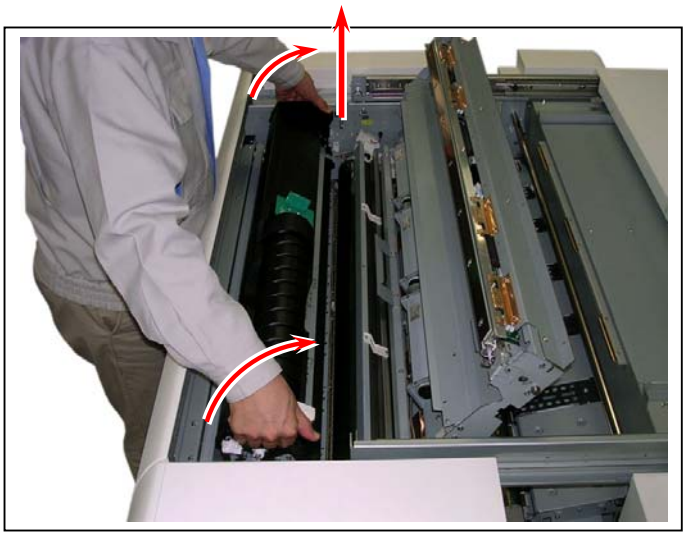






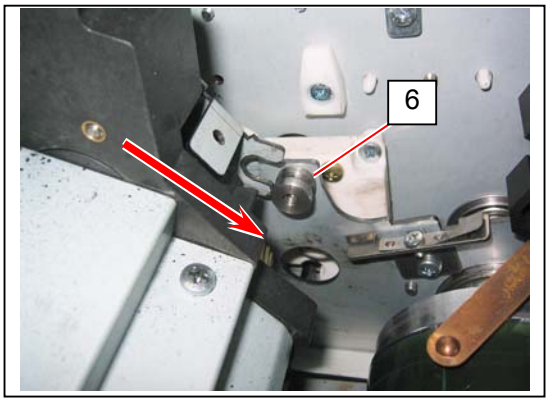
4) Hold the top of Developer Side Plates (5), and **slide the whole Process Unit to the right** to disengage Developer Unit from the machine frame.
Lean Developer Unit to the arrow direction, and lift it up from the machine.
Place Developer Unit on a flat surface.





NOTE

Fit the Shaft Plates of the Developer Unit to the Positioning Collar (6) of Process Unit on both sides.

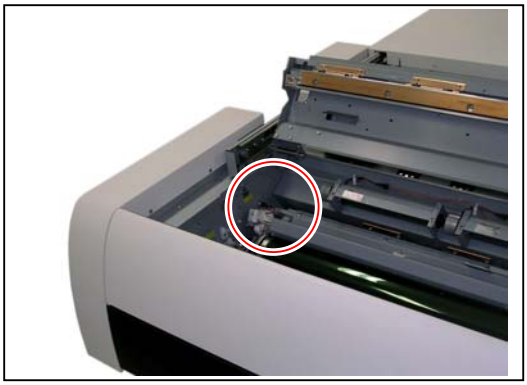


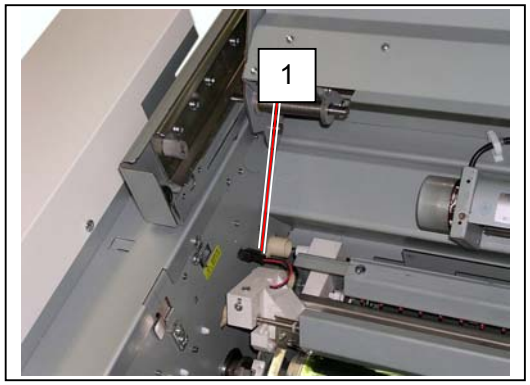
5.2.3 Replacing Photoconductive Drum

> **NOTE**
>
> Photoconductive Drum is included in recommended periodic replacement parts for preventive maintenance. (Part Number: Z031700010)

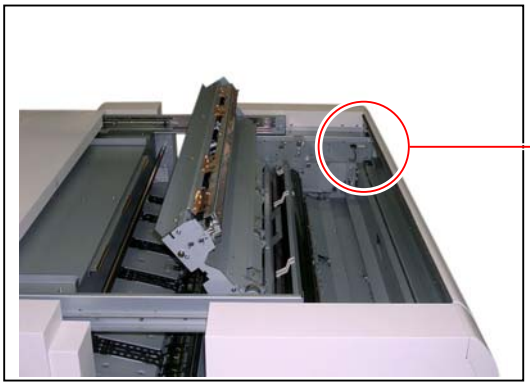
1) Take out the Developer Unit. Refer to [5.2.2 Removing Developer Unit] on page 5-14.

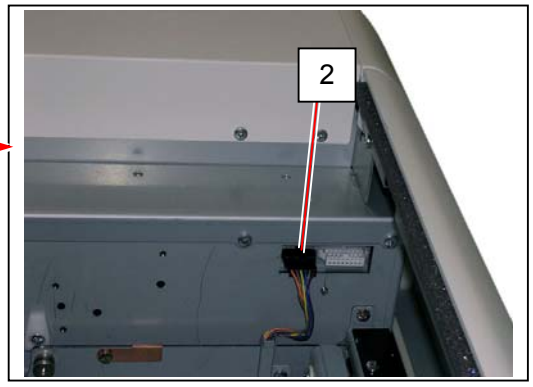
2) Disconnect 1 connector (1) of Wire Cleaning Motor.



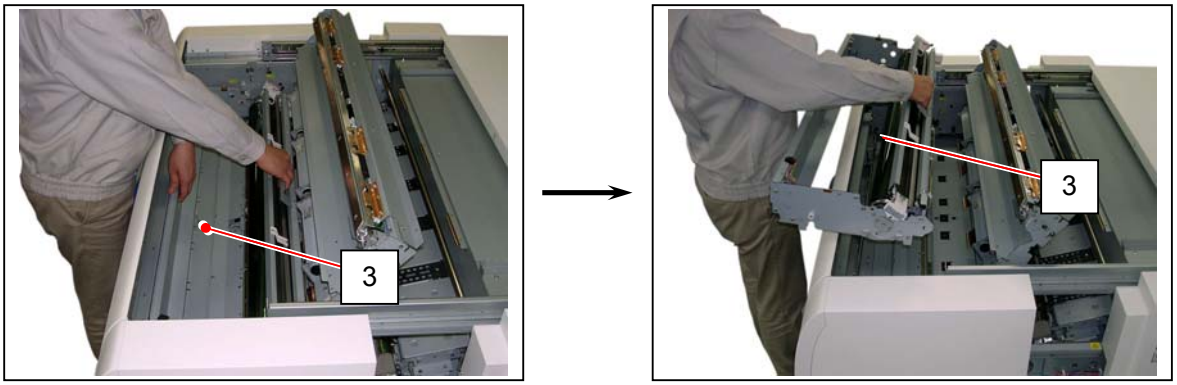


3) Disconnect 1 connector (2) of Eraser Lamp.





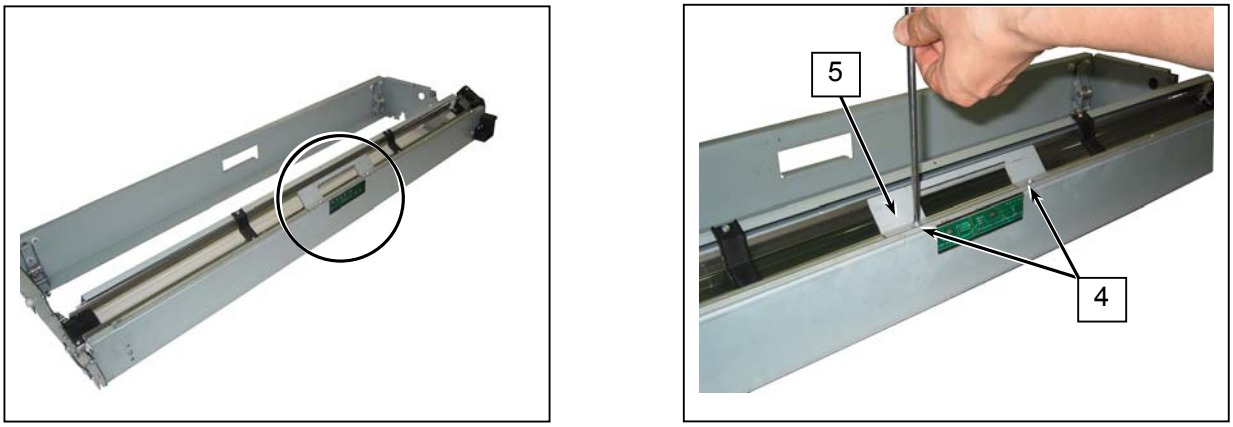
4) Make sure the Process Unit (3) has been slid rightward.
Then, remove the Process Unit (3) from the machine with holding the front handle and the rear handle.



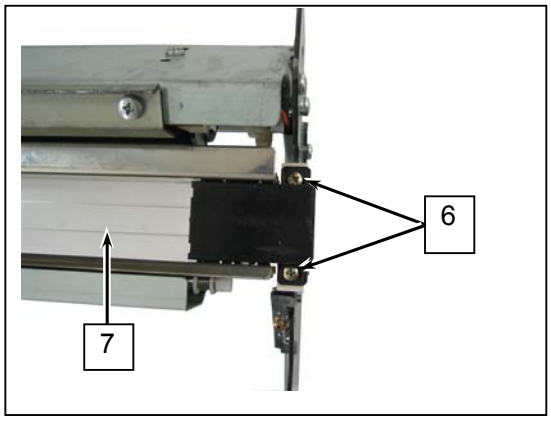
NOTE

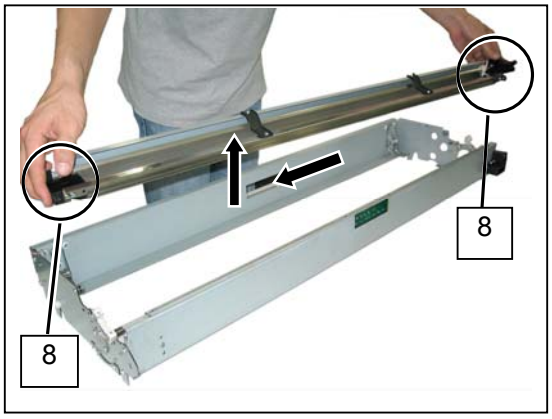
Put a clean sheet on a flat surface with enough space for Process Unit.
Gently place Process Unit on the sheet.
Be sure to keep away any foreign matters from the surface of the sheet.
Always cover Photoconductive Drum with a shade (black sheet or anything) to block light.

5) Remove 2 screws (M4x6) (4) to take out the Handle (5).



6) Remove 2 screws (M3x8) (6) to take out the Image Corona Assy (7) from the Process Unit.
At the time of removing the Image Corona Assy, hold the plastic Corona Head (8) on both sides, and slide the Image Corona Assy as shown arrows.

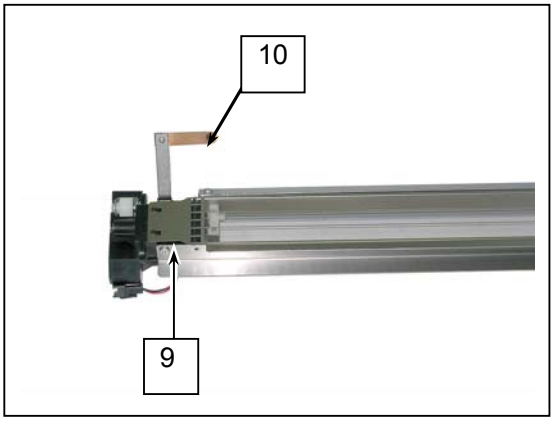




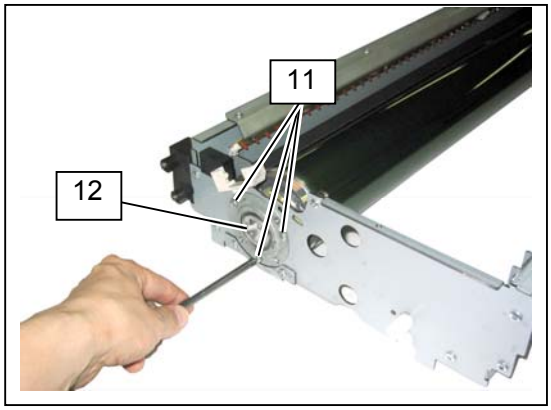
⚠ NOTE

1. Be sure to hold the Corona Block on both sides. In case of holding other metallic parts, the shape of Image Corona Assy may be changed by its weight and so on. It may have some effects on the image quality.

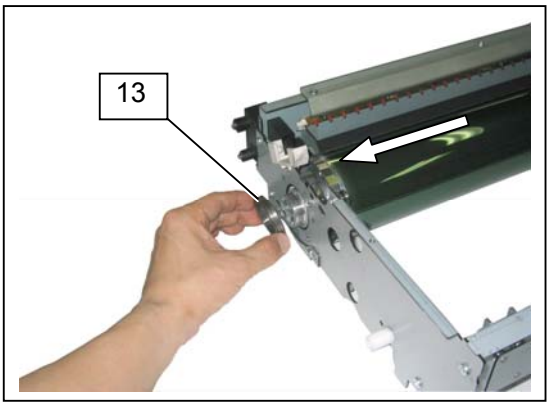
2. At the time of putting the Image Corona Assy, make the side of the Grid Plate face upward in order not to damage the Grid Plate (9) and the Earth Plate (10).



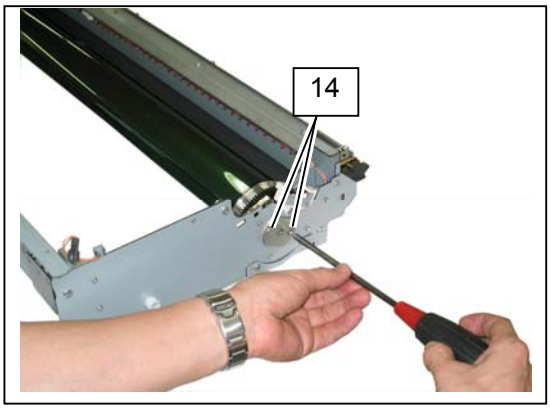
7) Remove 3 screws (11) to take out the Bearing Plate (12).

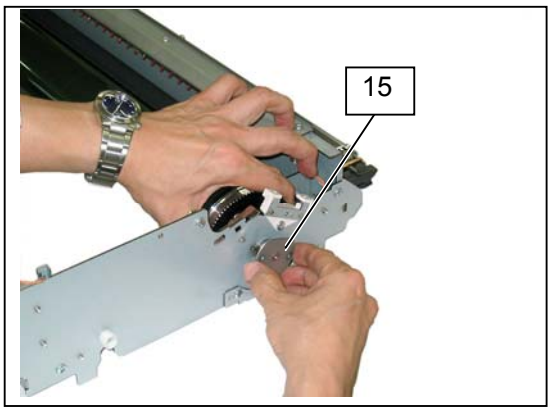


8) Slide the Drum as shown arrow to take out the Bearing (13).



9) Remove the screw (M4x6) (14) to remove the Drum Fixing Plate (15).





NOTE

After removing the Plate (15), hold the Gear with your left hand and keep the position of the Drum until taking the step 10.

10) Catch the Gear side by your right hand and the opposite side by your left hand.
Then, take out the Drum of the Process Unit.

11) Replace the Drum with the new one.

⚠ NOTE

Take extra care not to damage the Photoconductive Drum.
The Photoconductive Drum is so susceptible to light that it may produce copies with white spots or dark lines even if the Drum is exposed to room light.
Note the following to avoid possible problems:

- If the Process Unit must be kept out of the machine during the servicing work, keep it protected by means of fresh copy paper.
- Do not touch the surface of the Photoconductive Drum.
- Never use the Drum Cleaning Powder.

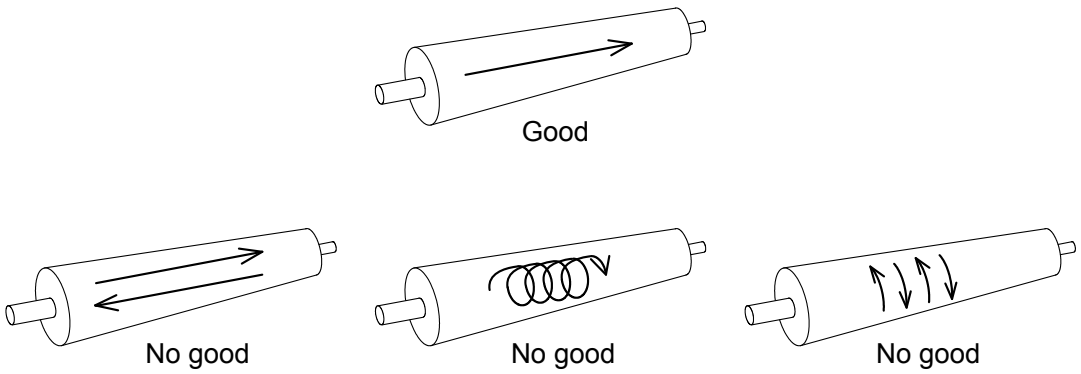
5.2.4 Cleaning Photoconductive Drum

1) Wipe the surface of the Drum with a dry cloth to remove the toner.
2) If the toner is too strongly fixed on the surface of Drum to be removed, wipe it with alcohol and a soft cloth having smooth surface. (Do not use the one of rough surface.)
3) In case of wiping with alcohol, wipe that area and also surrounding area with water and a soft cloth in order to avoid unevenness between these areas.
4) Wipe the whole surface of Drum with a dry cloth, and then dry the Drum leaving for about 10 minutes avoiding a shiny place.

⚠ NOTE

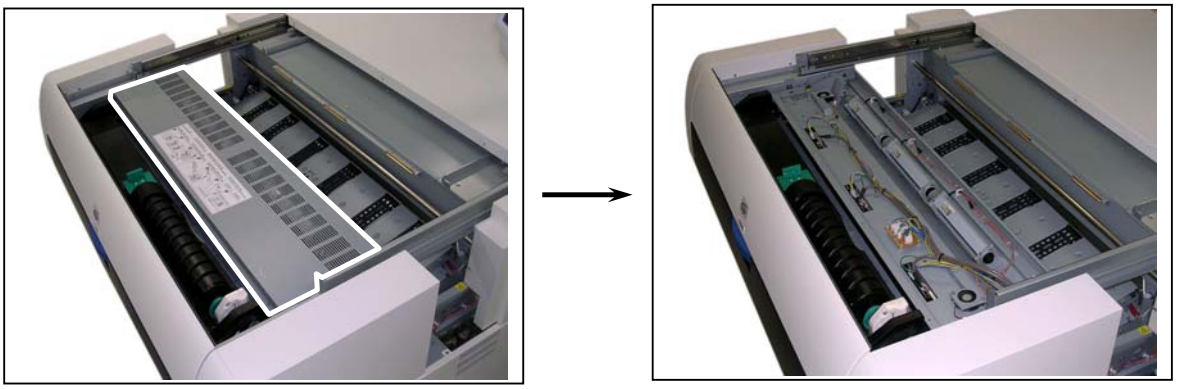
(1) A defective image may be printed right after the cleaning (about 10 to 20 sheets of A0), but it will be fixed naturally as the time passes.

(2) Wipe the surface always to one direction.
You will damage the Drum if you wipe in other ways.

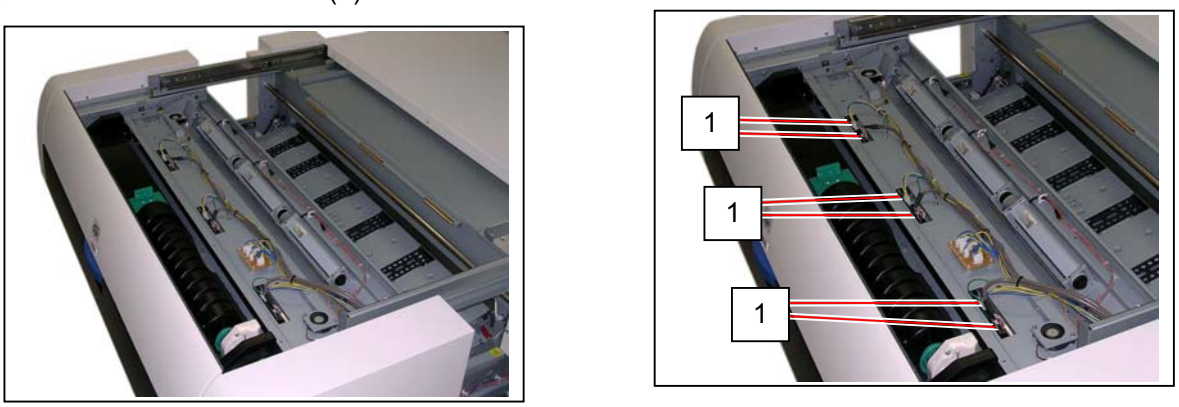


5.2.5 Replacing LED Head

1) Remove Process Cover. Refer to [5.2.1 Opening Movable Unit] on page 5-11.

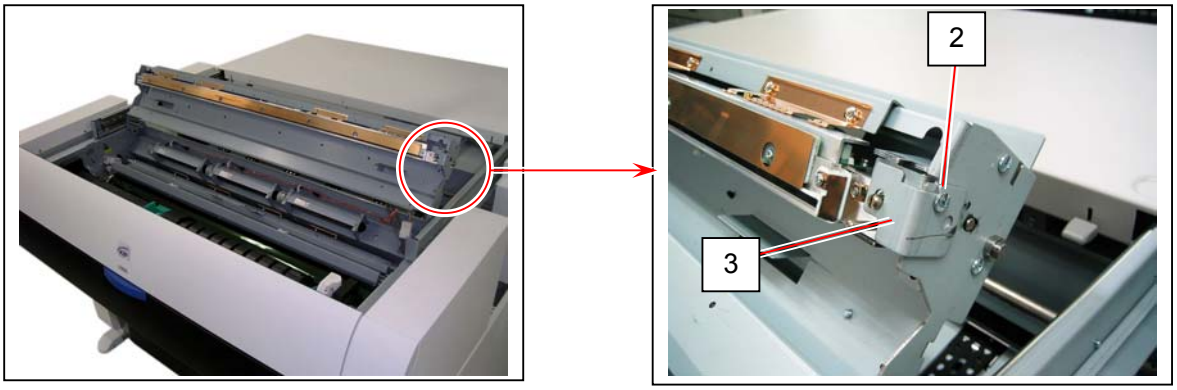


2) Disconnect 6 connectors (1) from the LED Head.

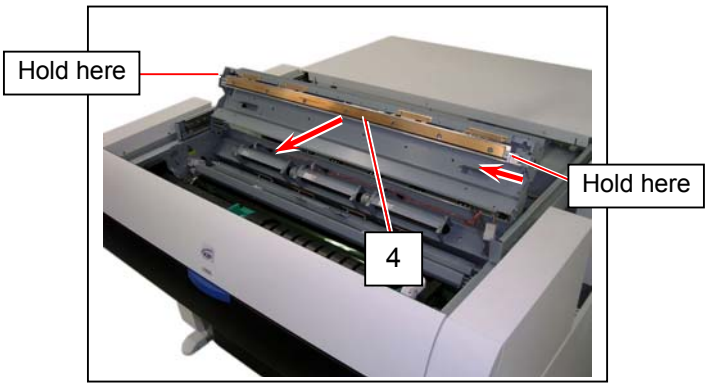


3) Open Movable Unit. Refer to [5.2.1 Opening Movable Unit] on page 5-11.

4) Remove 1 screw (2) to take out the Fixing Plate (3).



5) Hold the both ends of LED Head, shift it leftward first and pull the right side to the front, then shift it to right side to take out LED Head (4).



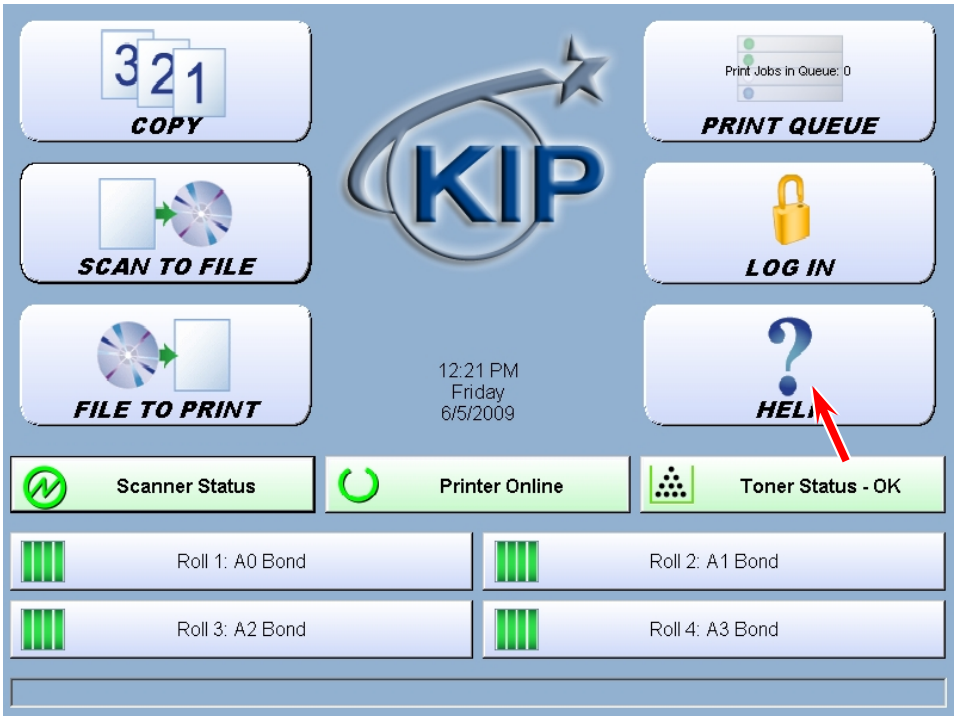
6) Replace LED Head with a new one.

5.2.6 LED Head Focus Adjustment

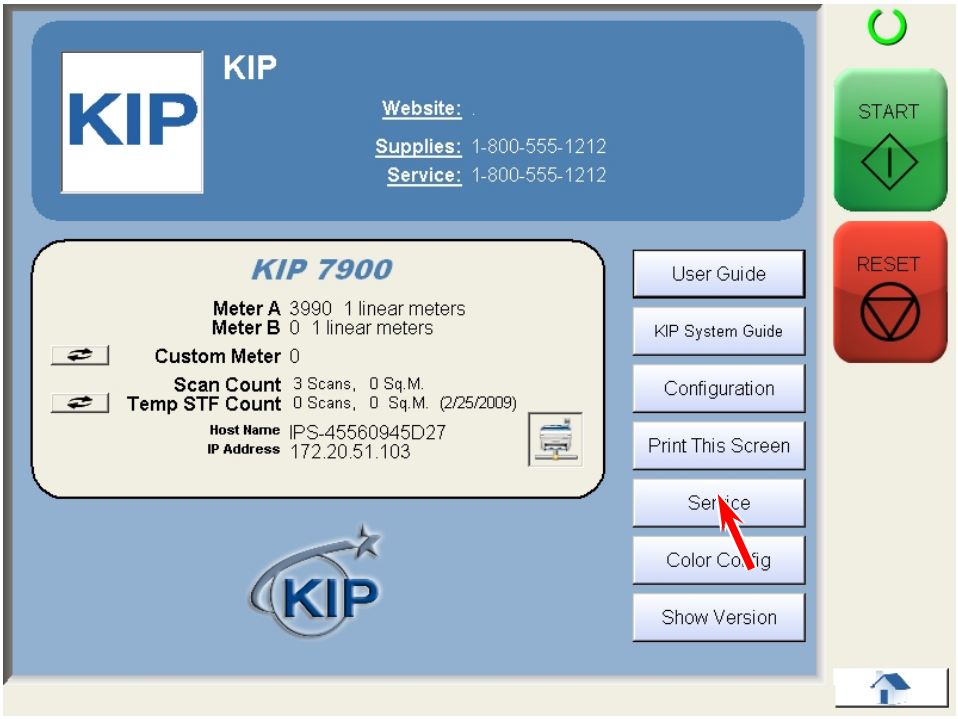
Every time you replace LED Head with a new one, please adjust the focus of LED Head.

1) Replace all the parts in position. Prepare a A0 / 36” wide plain paper (either roll or cut sheet). Turn on the machine.

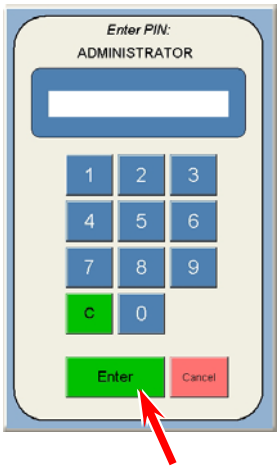
2) Press “? - Help” on Home screen.



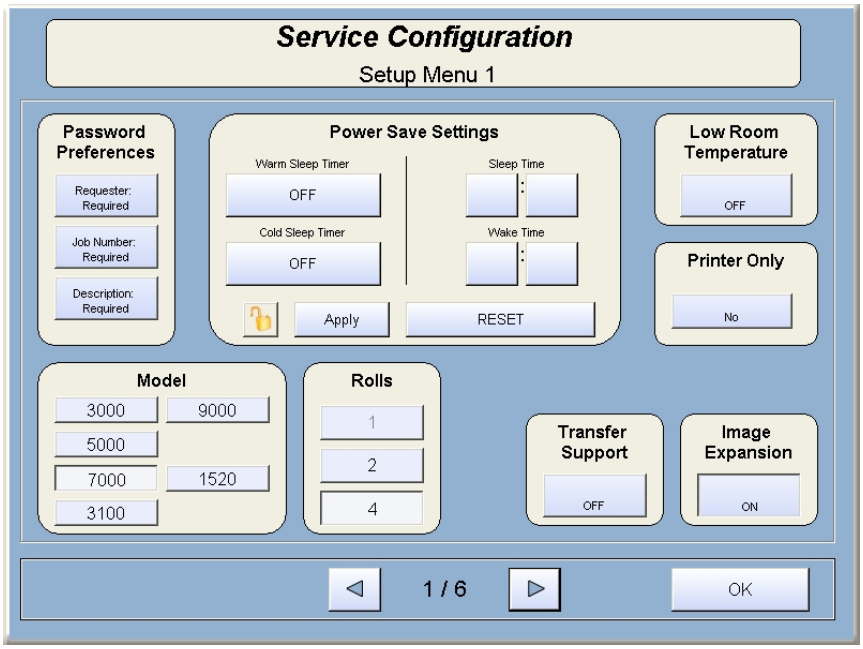
3) Press [Service].



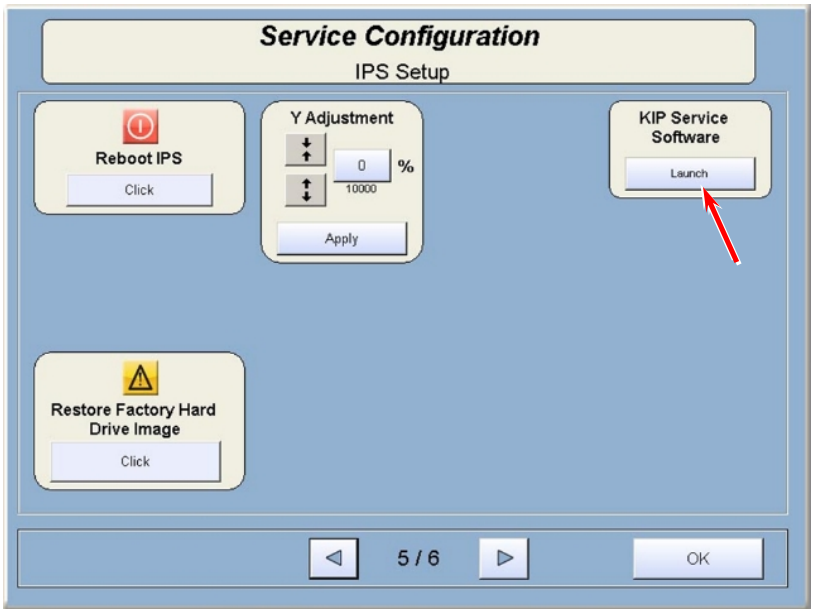
4) On-screen Keypad appears.
Input “8495107” and press [Enter].



5) Service Configuration screen will appear.

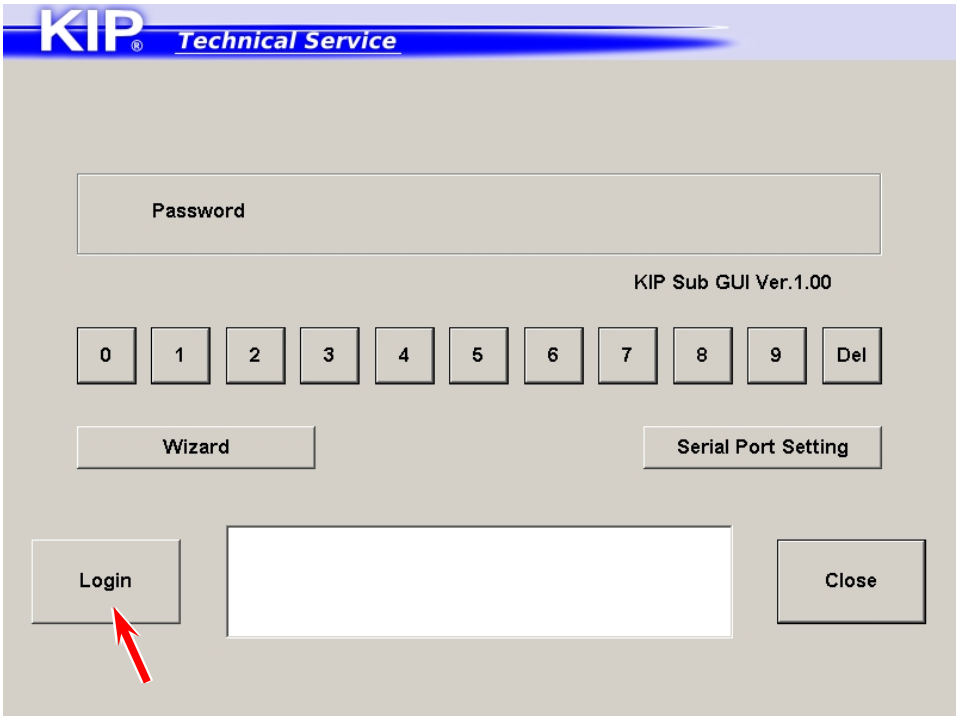


6) Use the arrow keys to open [5/6 IPS Setup]. Press [Launch] in “KIP Service Software”.

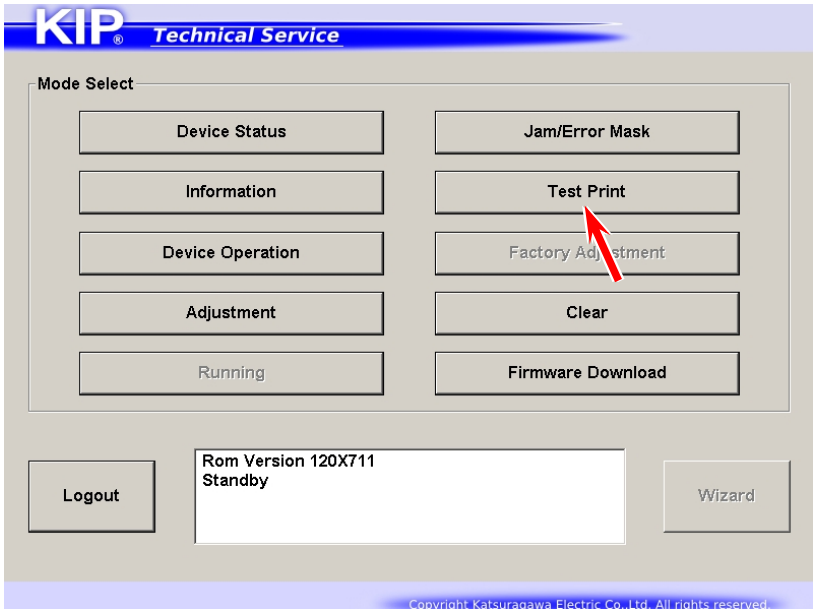


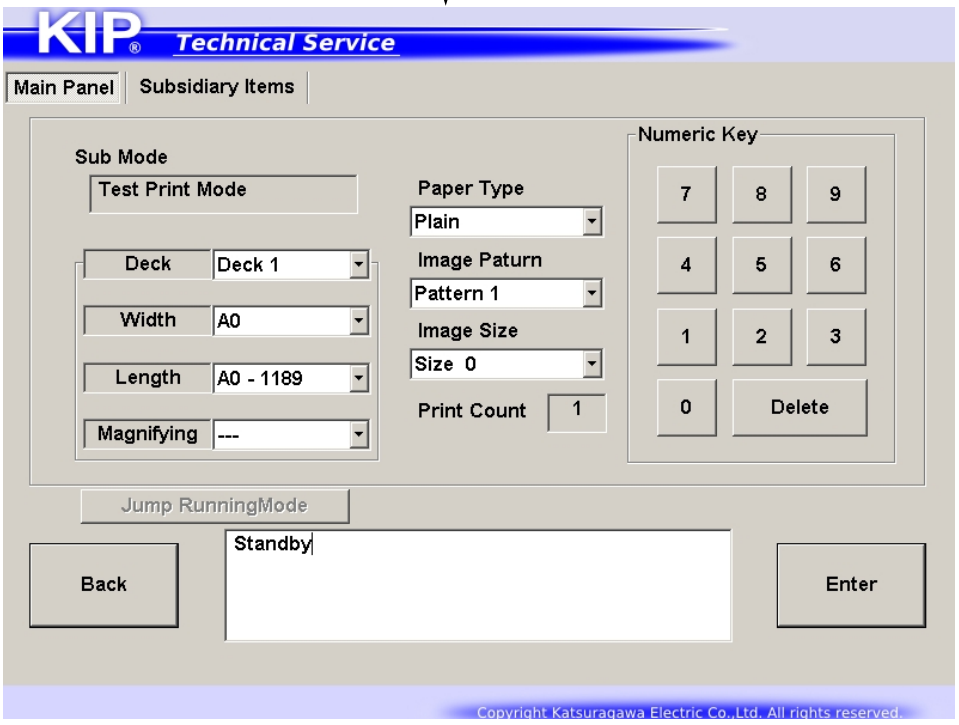
7) Press [Yes].

8) Press [Login] to log in Service Mode.

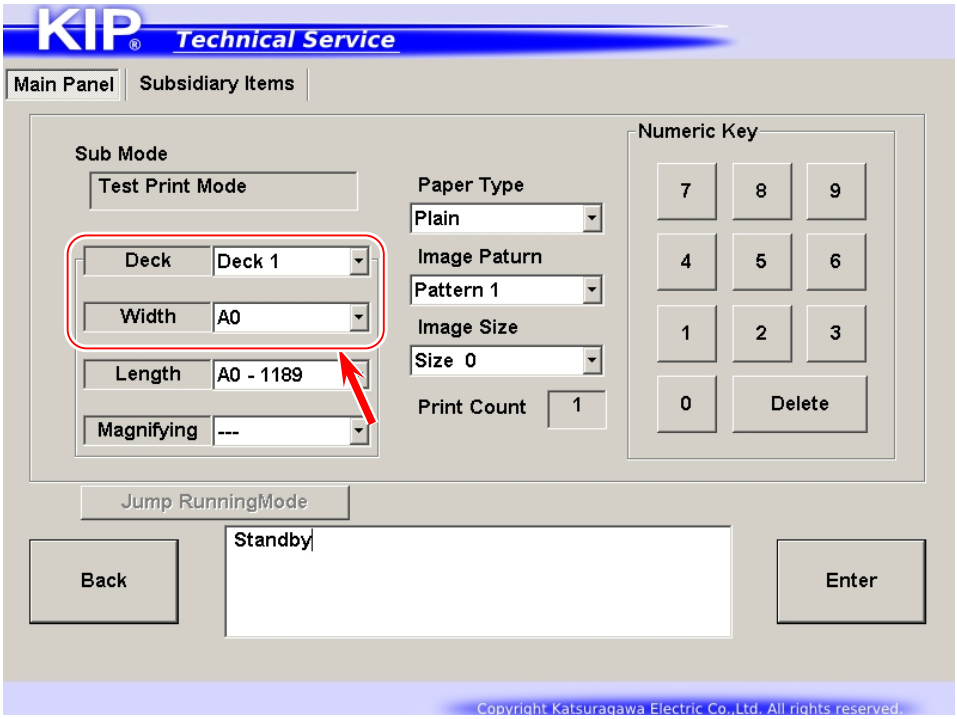


9) Press [Test Print] in Service Mode home.

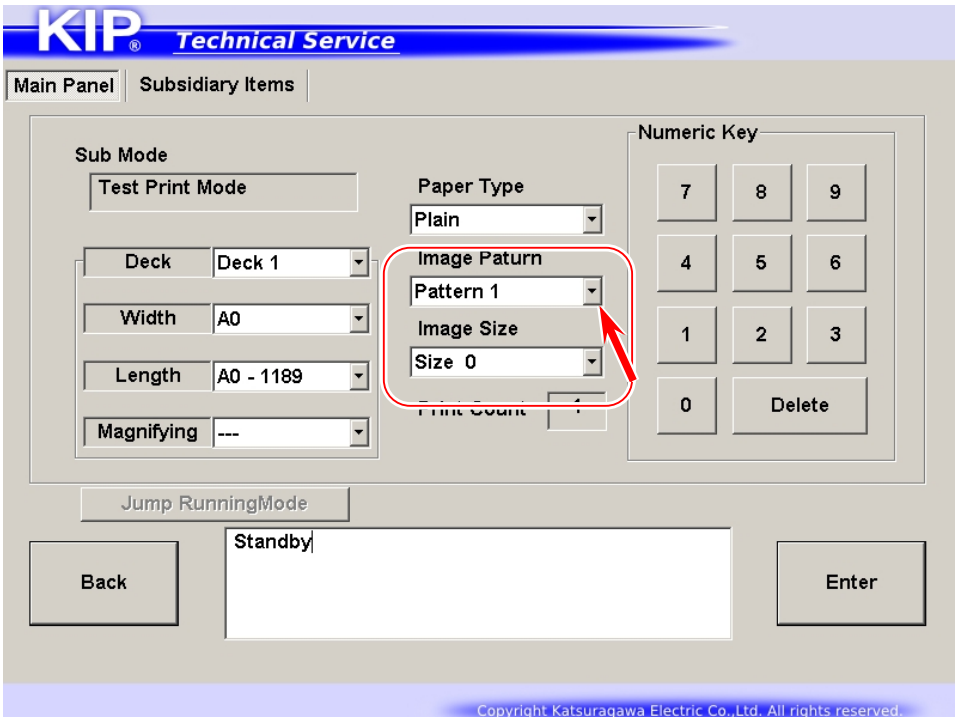




10) Make a test print in Test Pattern No.3 S(0) on the media you have prepared.
Specify “Deck” according to your media in A0 / 36” to be set.
Check that “Width” displays A0 / 36”.



11) Choose Pattern 3 from “Image Pattern” menu.
Choose Size 0 from “Image Size” menu.
Press [Enter] to start printing.

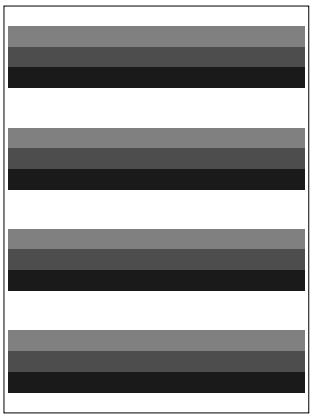


12) Check for uniform density throughout each horizontal gray bar on the test print.

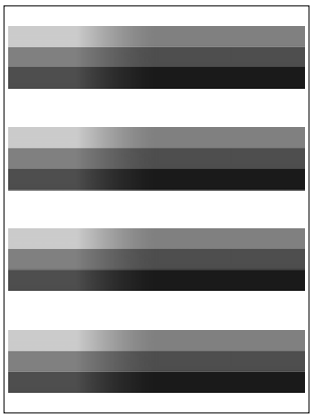
If the density of halftone is uniform as the following left image, you do not have to make anything because the focus is correctly adjusted.

But it is different among left/right as the following right image, it is necessary to adjust the focus.

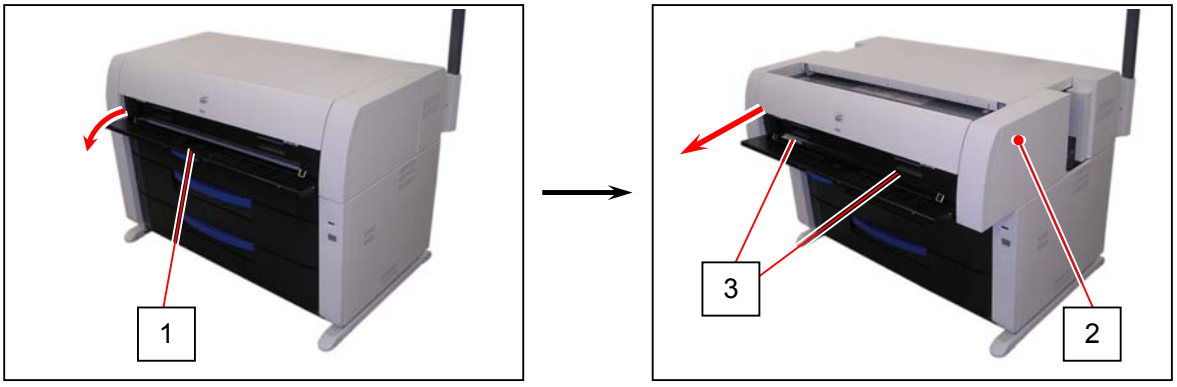
OK



NG
requires focus adjustment

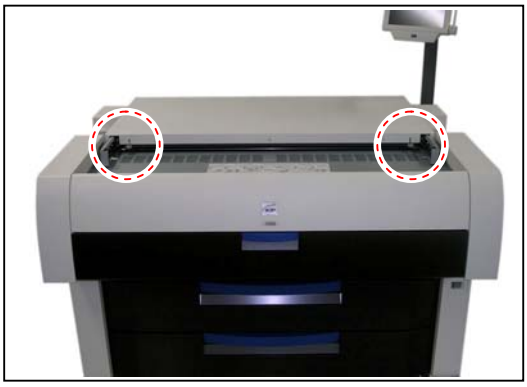


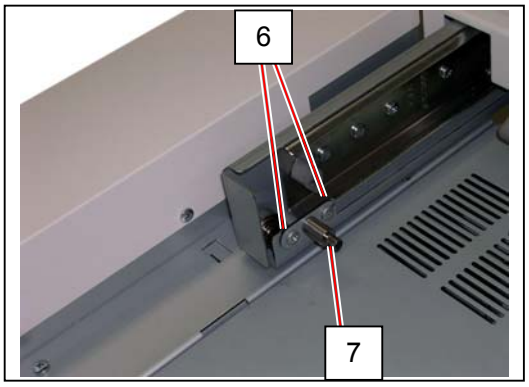
13) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



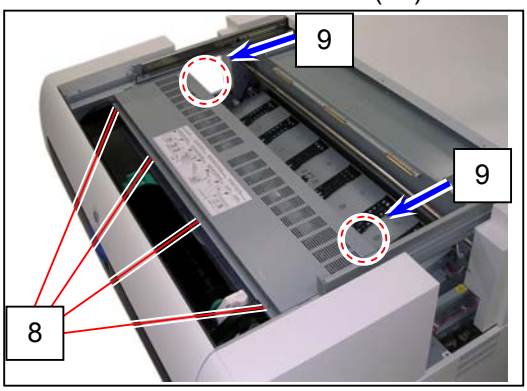
14) Pull up both knobs (4), and then open the Top Cover (5) by pushing it toward the rear side.

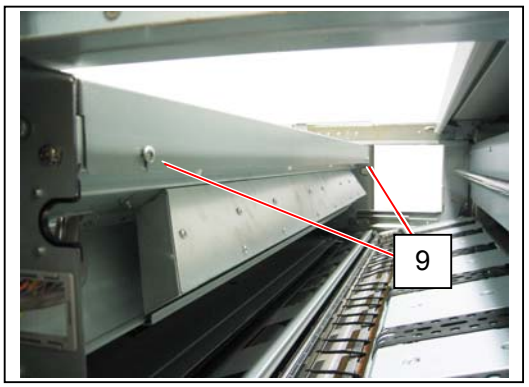
15) Remove 2 screws (M4x6) (6), and remove the Hook Pin Assy (7) from both sides.

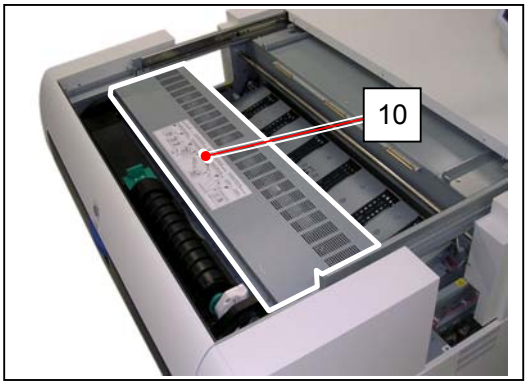




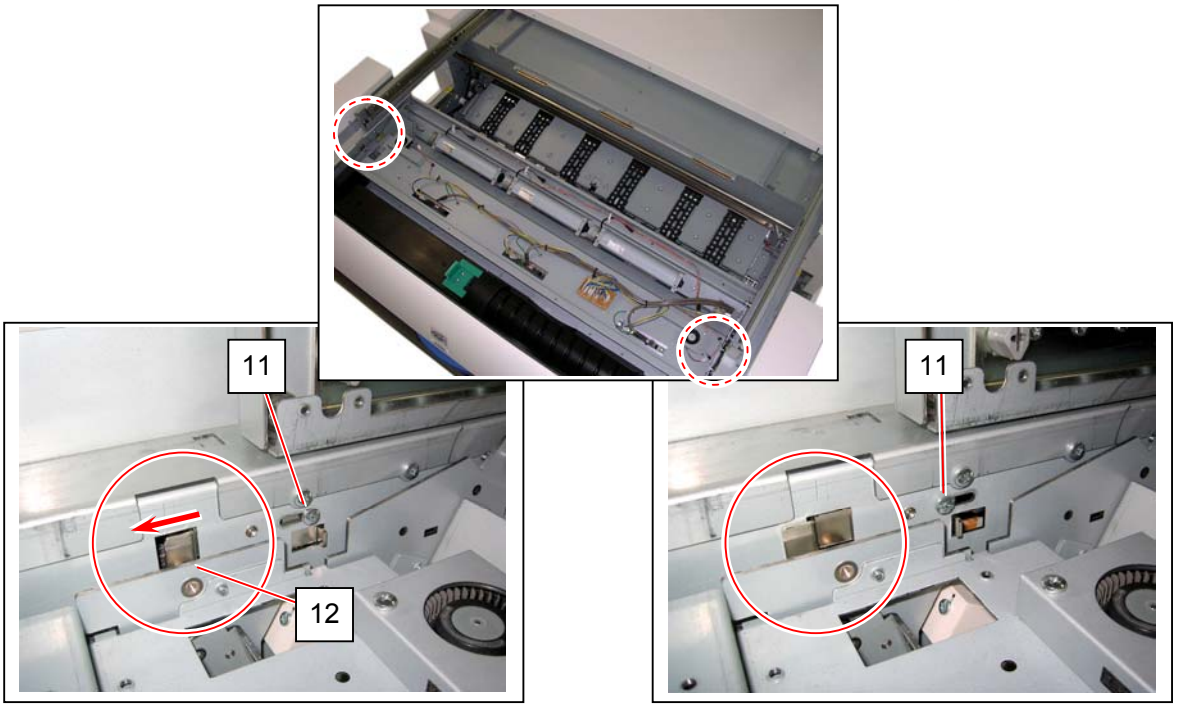
16) Remove 4 screws (M4x6) (8) at the top, loosen 2 screws (M4x6) (9) at the rear side, and then remove the Process Cover. (10)





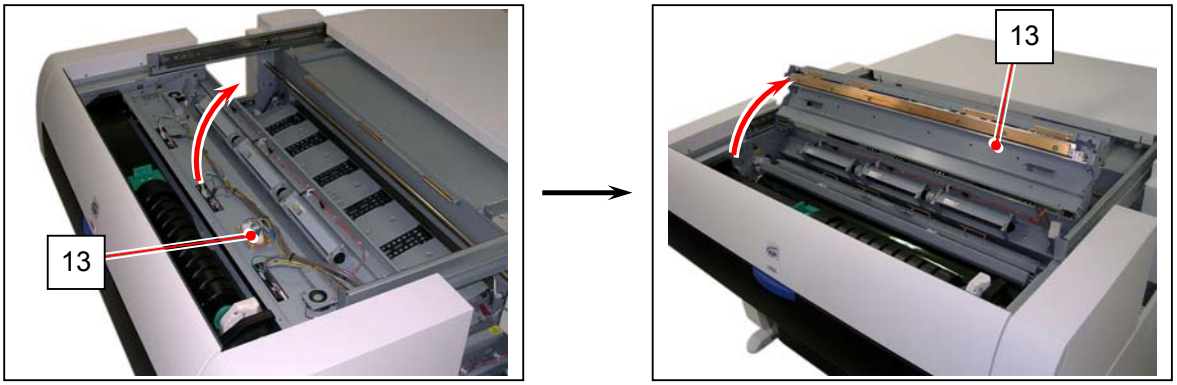


17) Loosen 2 screws (11). Slide both Stopper Levers (12) toward the front.
Movable Unit (13) will be unlocked and becomes possible to open upward by this work.



(Lock) (Unlock)

18) Open Movable Unit (13) upward and Stopper Pin works automatically.

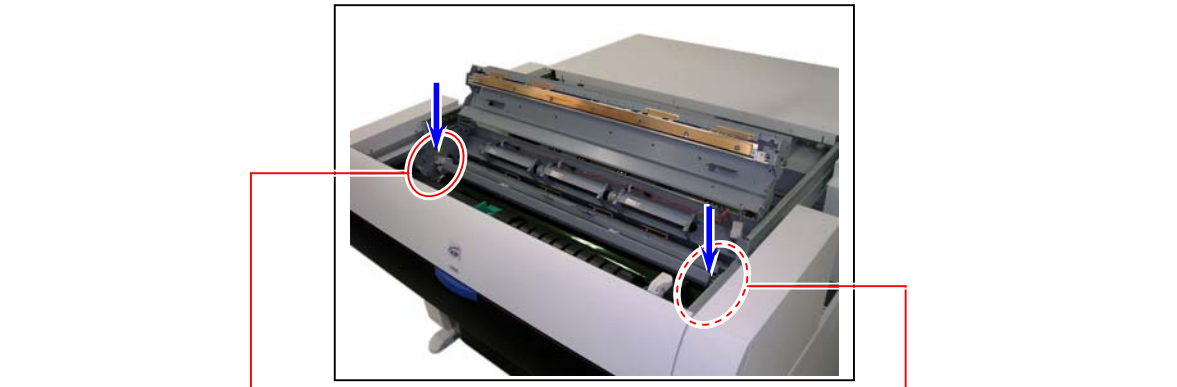


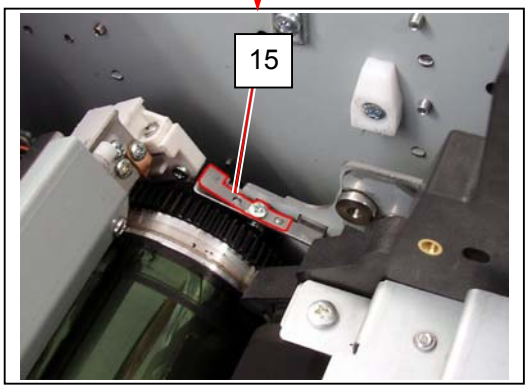
NOTE

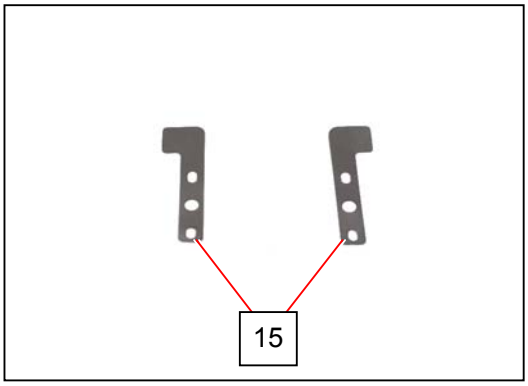
When you opened Movable Unit, make sure that Stopper Pin (14) is properly in Lock position.
When you close Movable Unit, pull Stopper Pin (14) inside to unlock Movable Unit.

Lock Position Pull Stopper Pin to unlock

19) The focus of LED Head (in other words, the distance between LED Head and Drum surface) is determined and adjusted by the number of Spacers (15) on both sides.
Add or remove Spacer(s) to adjust the focus.







NOTE

(1) The same Spacer (Part Number: 6601700660) is used on both sides.
(0.05mm in thickness)

(2) The number of Spacer may differ by individual machine.
The number of Spacer may differ on the left/right side.

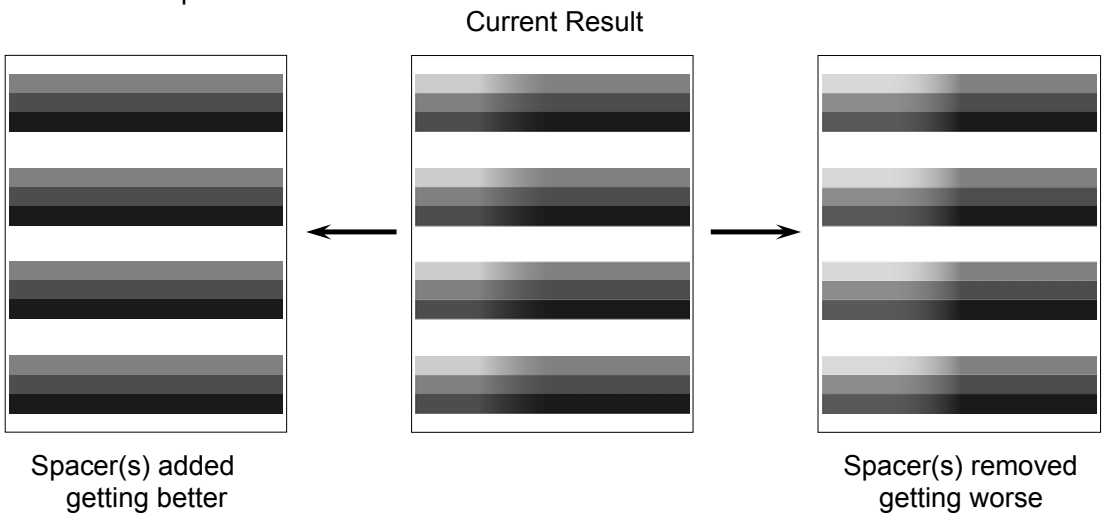
(continued on the next page)

NOTE (cont.)

(3) It is quite not clear which of “addition” or “removal” of Spacer is effective to solve the focus problem.
(Even if the defective image caused by the focus problem looks same, for example, it is fixed by “addition” in some case but in another case it is fixed by “removal”.)

Only the way to find the best focus is just “trial”.
Please try both “removal” and “addition” to find which way the image becomes better.
After finding the better way, try several combinations of Spacers to find the best height.

The example illustrated below shows “adding Spacer(s)” optimizes the focus of LED Head in this particular case.

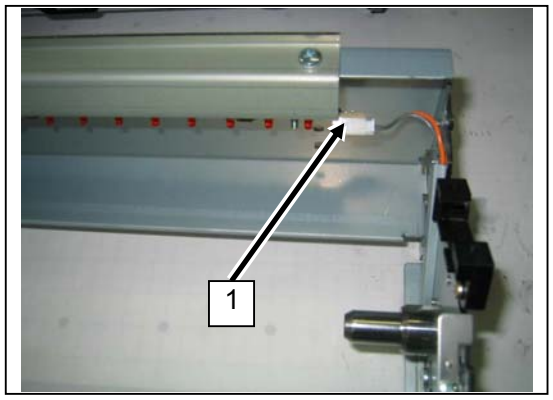


5.2.7 Replacing Eraser Lamp

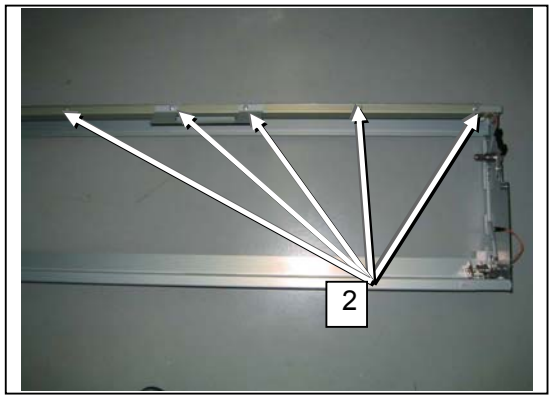
1) Remove Developer Unit.
   Refer to [5.2.2 Removing Developer Unit] on page 5-14.

2) Remove Process Unit and Photoconductive Drum.
   Refer to [5.2.3 Replacing Photoconductive Drum] on page 5-16.

3) Disconnect 1 connector (1) from Eraser Lamp.
.



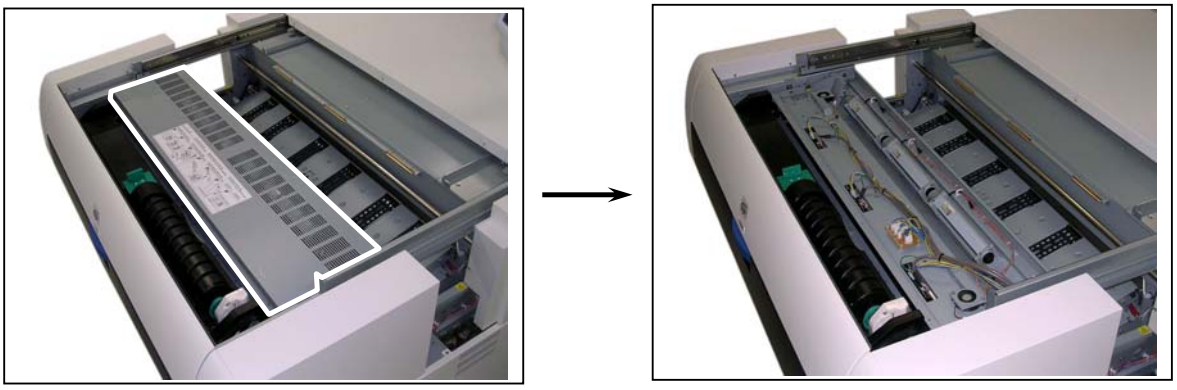
4) Remove 6 screws (M4x6) (2) from top to remove Eraser Lamp with Bracket.



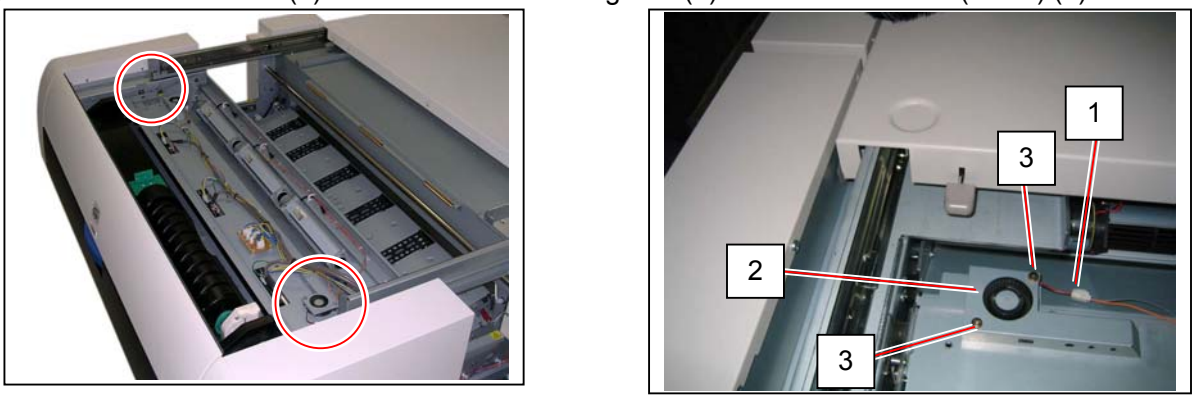
5) Replace the Erase Lamp with the new one.

5.2.8 Replacing LED Head Cooling Fan (Fan3A, Fan3B)

1) Remove Process Cover. Refer to [5.2.1 Opening Movable Unit] on page 5-11.



2) Remove 1 connector (1) from LED Head Cooling Fan (2). Remove 2 screws (M3x6) (3).



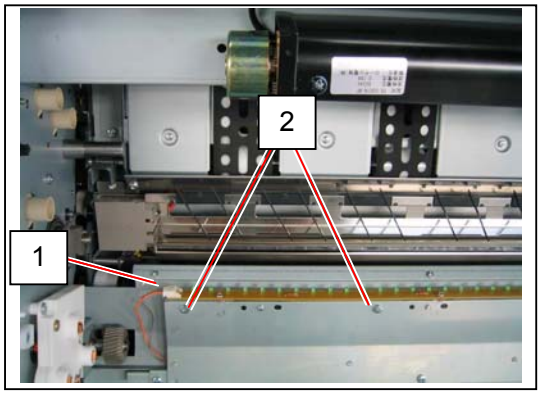
3) Replace LED Head Cooling Fan with a new one.

5.2.9 Replacing Pre-Transfer LED

1) Remove Developer Unit.
   Refer to [5.2.2 Removing Developer Unit] on page 5-14.

2) Remove Process Unit. Refer to [5.2.3 Replacing Photoconductive Drum] on page 5-16.

3) Disconnect 1 connector (1) from Pre-Transfer LED. Remove 6 screws (M3x6) (2).



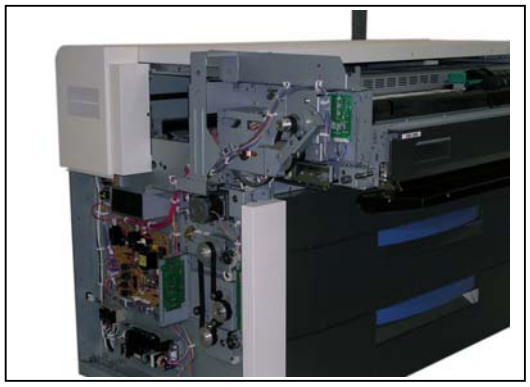
4) Remove the Pre-Transfer LED with the Bracket.

5) Replace the Pre-Transfer LED with the new one.

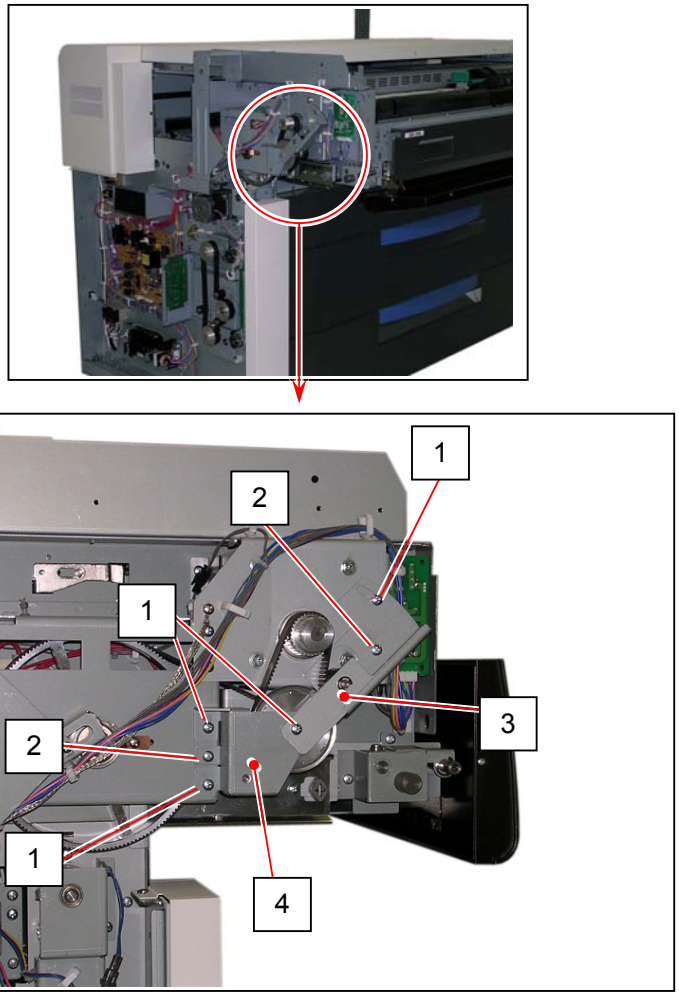
> **NOTE**
>
> Pre-Transfer LED can be separated to 2 pieces. Both of them are exactly the same PCBs.

5.2.10 Replacing Main Motor (M1)

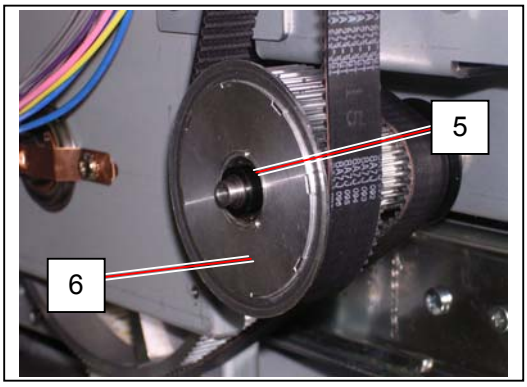
1) Remove Left Front Cover. Refer to [5.1.2 Removing Right / Left Front Cover] on page 5-4.

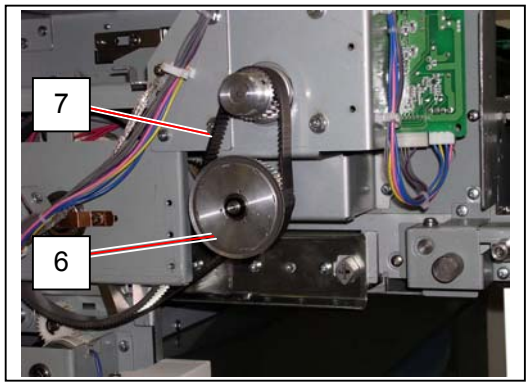


2) Remove 4 screws (M4x6) (1) and 2 screws (M4x8) (2) to remove Tension Plate 1 (3) and Tension Plate 2 (4).

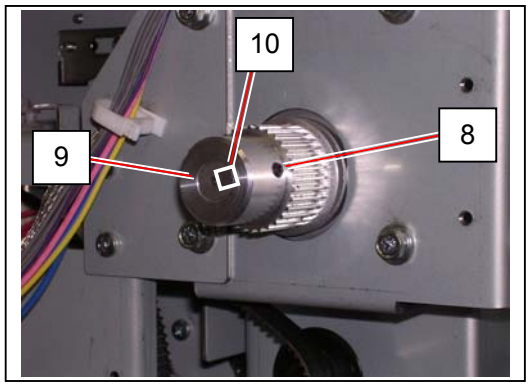


3) Remove Collar (5) and 24/59T Pulley (6) to remove Timing Belt (7).

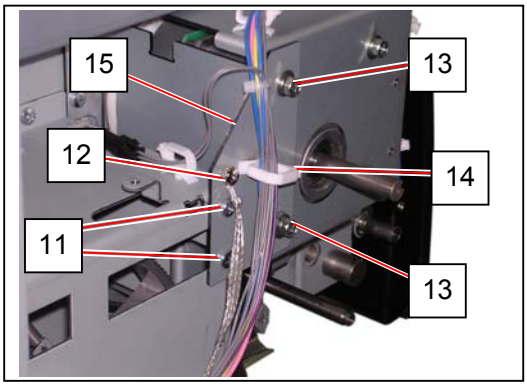


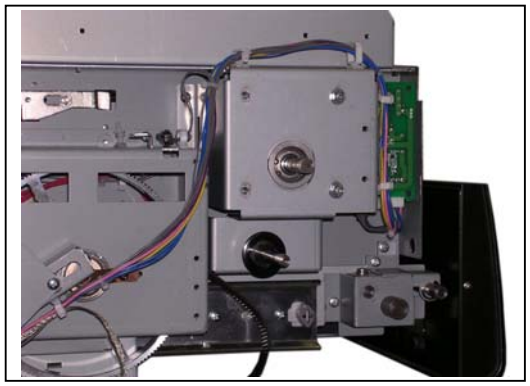


4) Loosen 1 set screw (8) to remove 32T Pulley (9) and Pin (10).

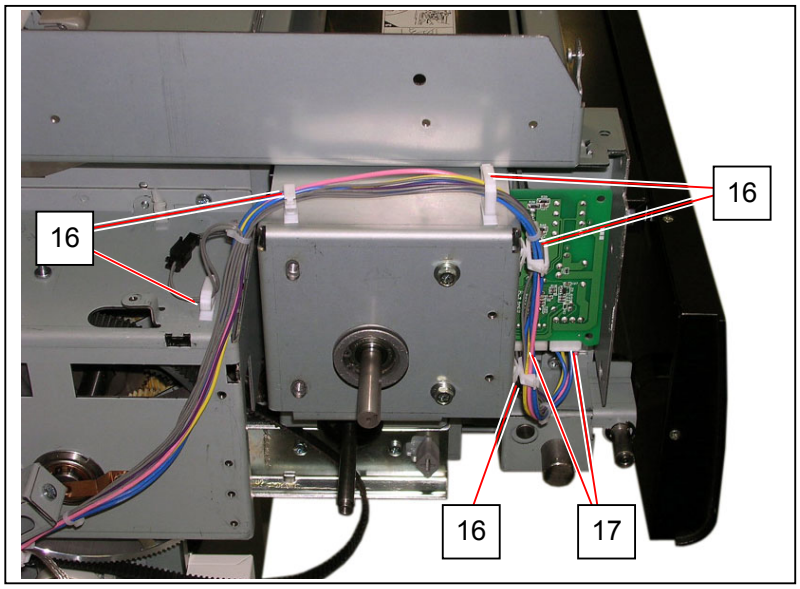


5) Remove 2 screws (M4x6) (11), 1 tooth washer screw (M4x6) (12) and 2 Hex. Head Screws (M5x8) (13).
Release the harness (14) to remove Reinforcement Bracket (15).

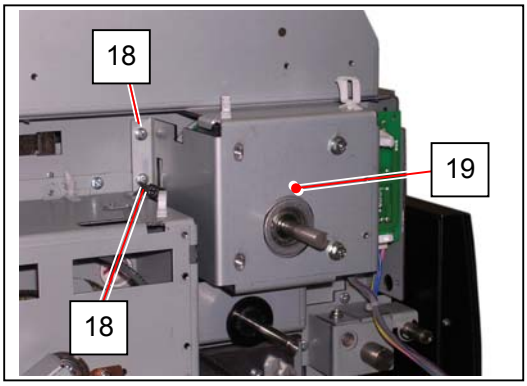


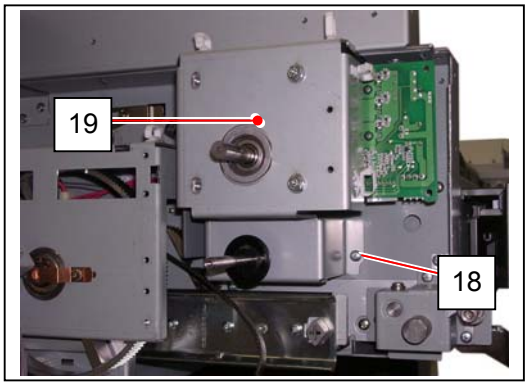


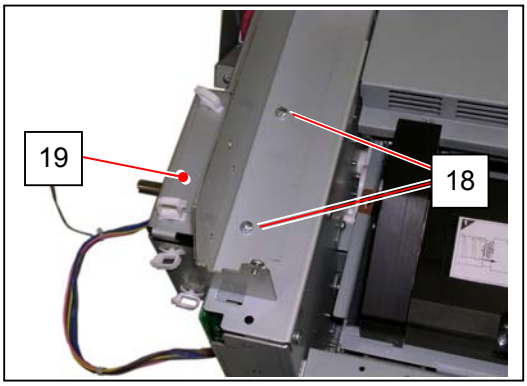
6) Open 5 clamps (16) and disconnect 2 connectors (17) to release the harnesses.

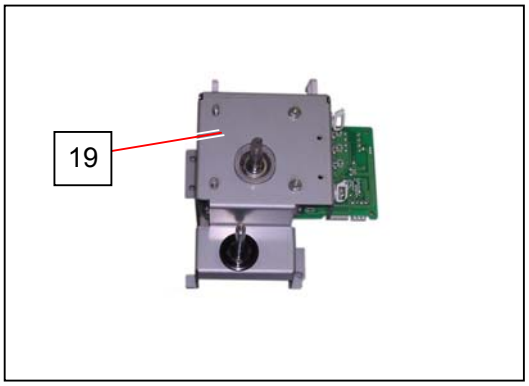


7) Remove 5 screws (M4x6) (18) to remove Motor Fixing Bracket (19).

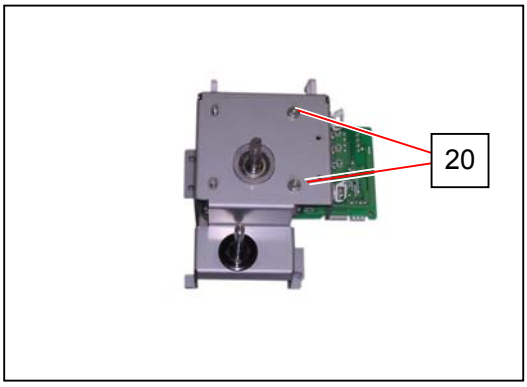


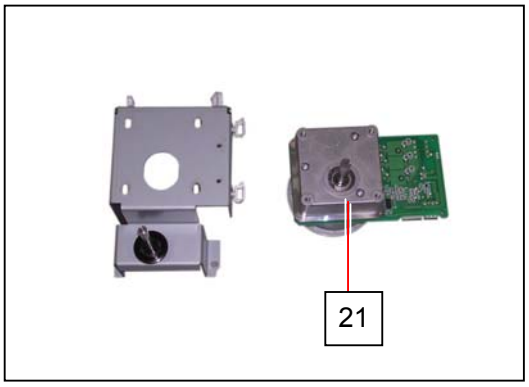






8) Remove 2 Hex. Head Screws (20) to remove Main Motor (21).

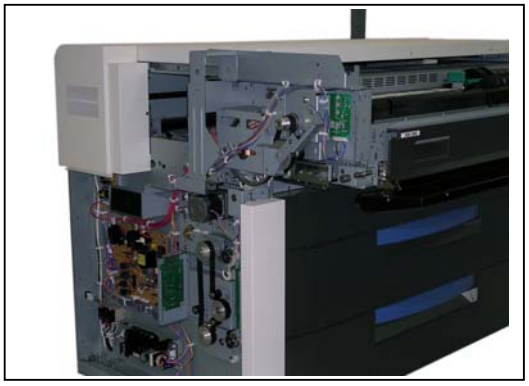




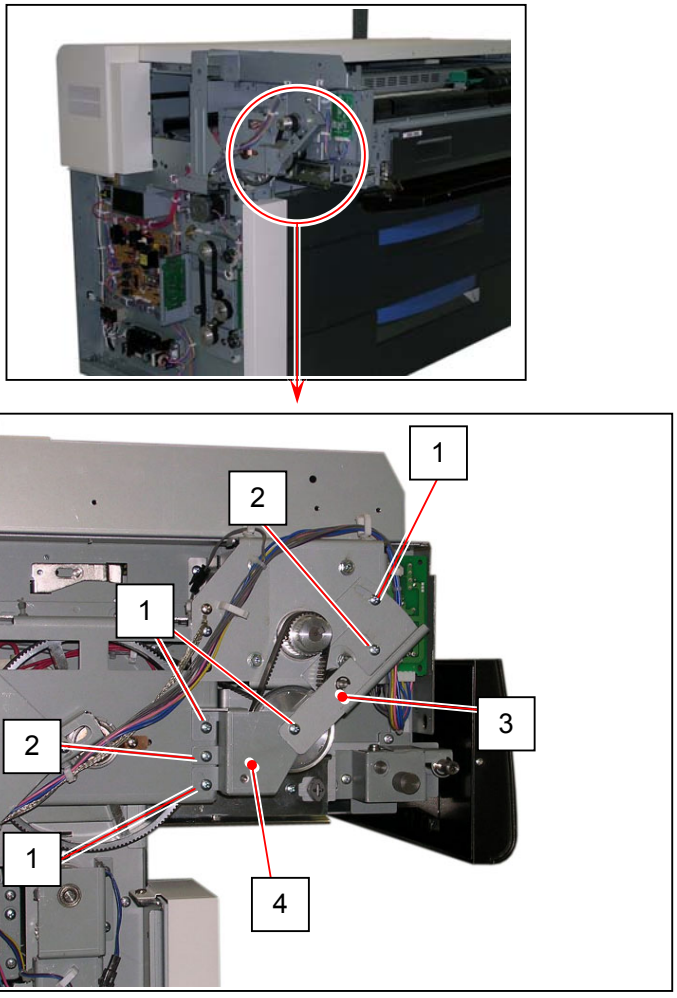
9) Replace Main Motor with a new one.

5.2.11 Replacing Timing Belt for Pulley / P161

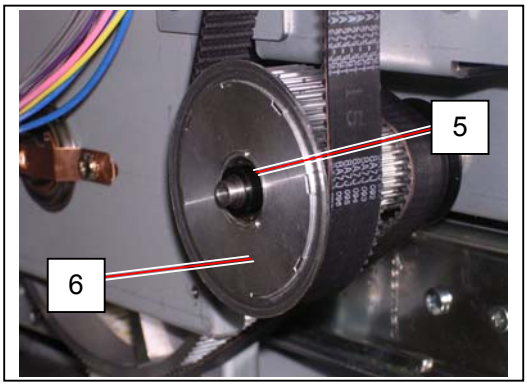
1) Remove Left Front Cover. Refer to [5.1.2 Removing Right / Left Front Cover] on page 5-4.

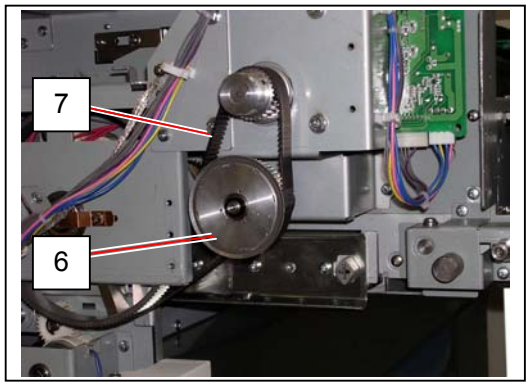


2) Remove 4 screws (M4x6) (1) and 2 screws (M4x8) (2) to remove Tension Plate 1 (3) and Tension Plate 2 (4).

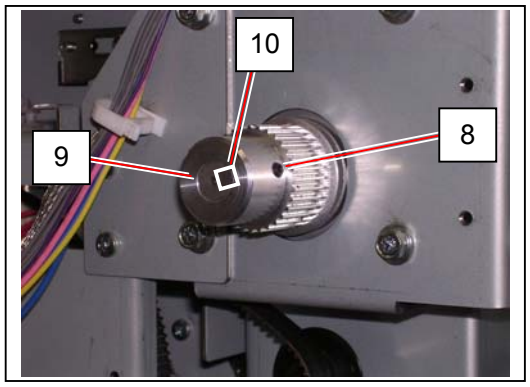


3) Remove Collar (5) and 24/59T Pulley (6) to remove Timing Belt (7).

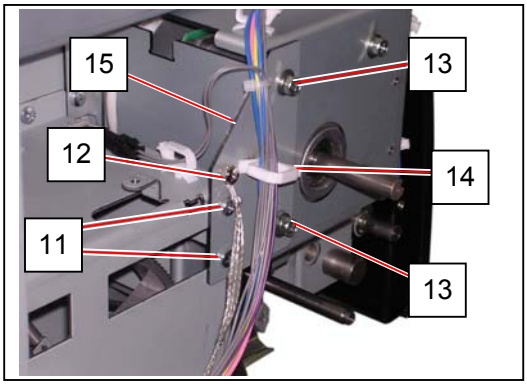


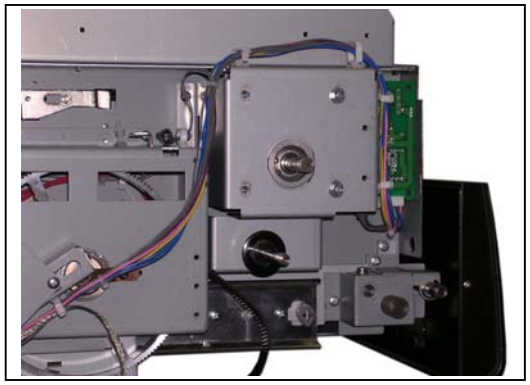


4) Loosen 1 set screw (8) to remove 32T Pulley (9) and Pin (10).

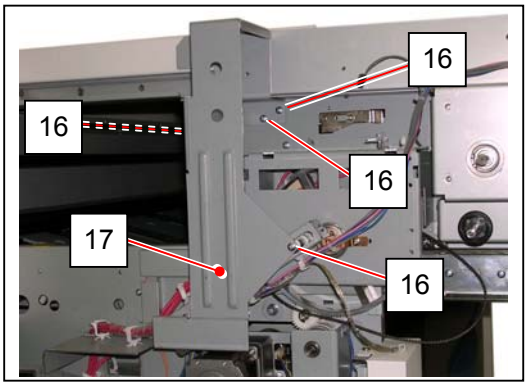


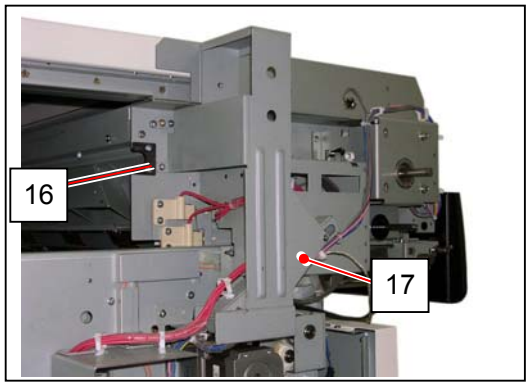
5) Remove 2 screws (M4x6) (11), 1 tooth washer screw (M4x6) (12) and 2 Hex. Head Screws (13). Release the harness (14) to remove Reinforcement Bracket (15).

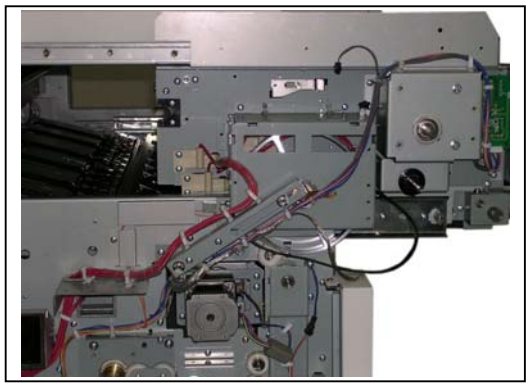




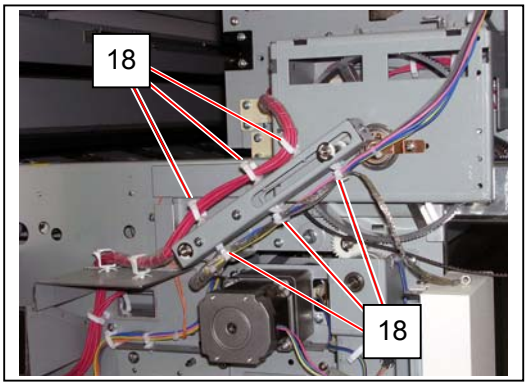
6) Remove 4 screws (M4x6) (16) to remove Bracket L (17).

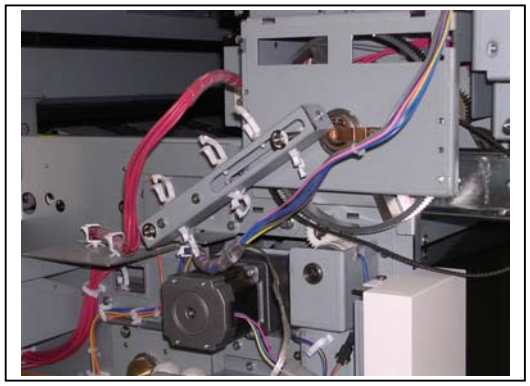




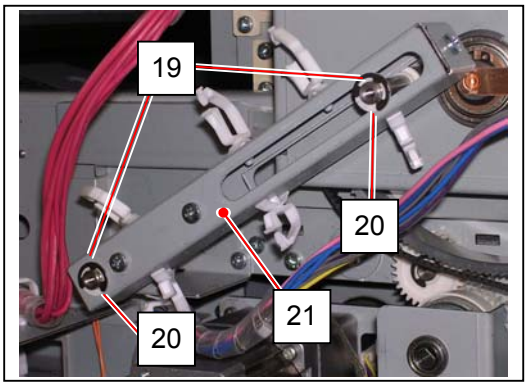


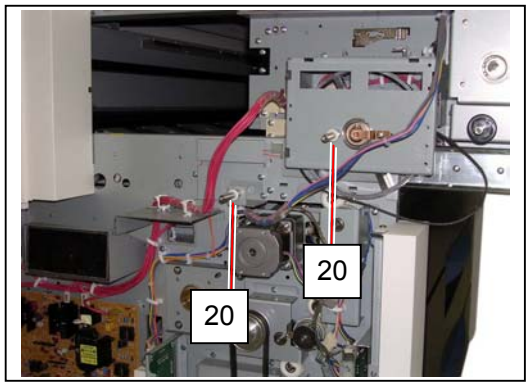
7) Open 6 clamps (18) to release the harnesses.





8) Remove Retaining Ring-E (19) and Collar (20) to remove Arm L (21).

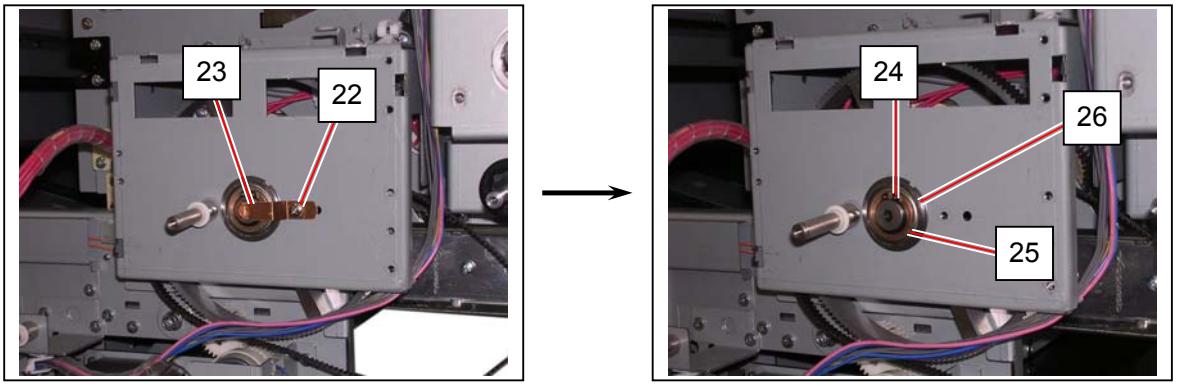




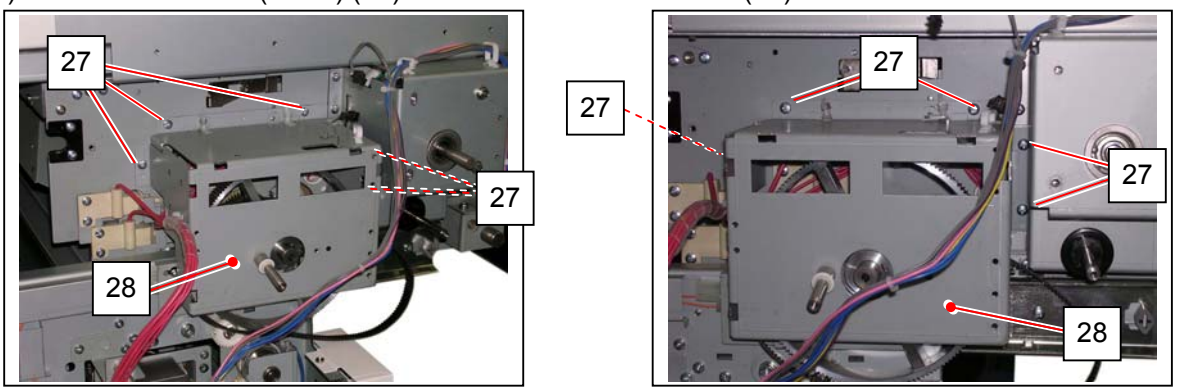
NOTE

Be sure not to loose 4 pieces of Collars that sandwich Arm L.

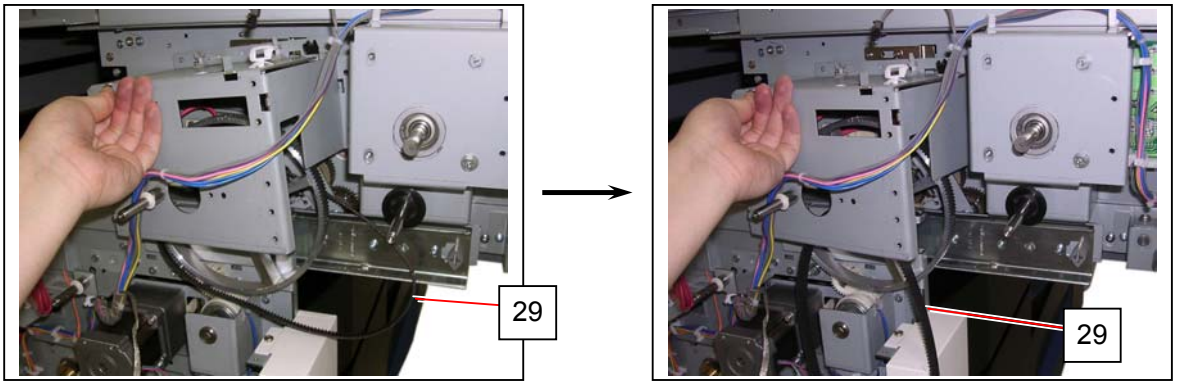
9) Remove 1 screw (M4x6) (22) to remove Leaf Spring (23).
Remove C Ring (24) and Washer (25) to remove Ball Bearing (26).



10) Remove 5 screws (M4x6) (27) to release Drive Side Plate (28).



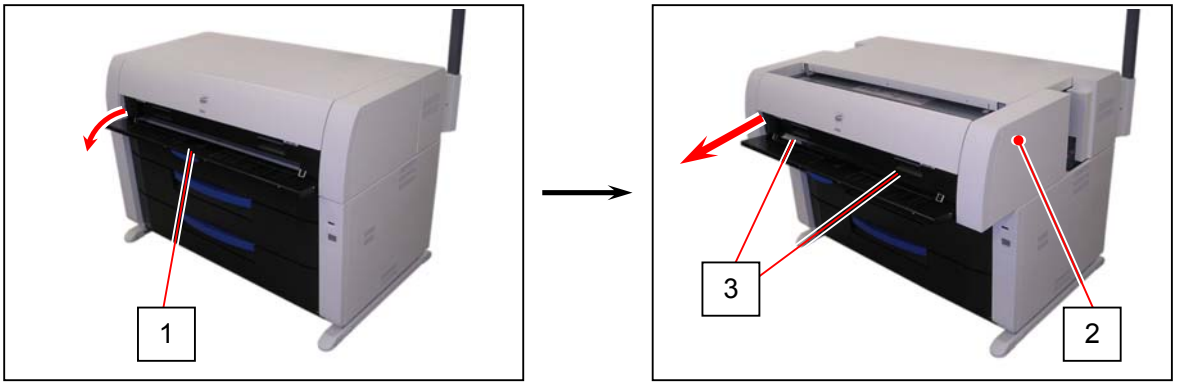
11) Replace Timing Belt (29) with a new one.



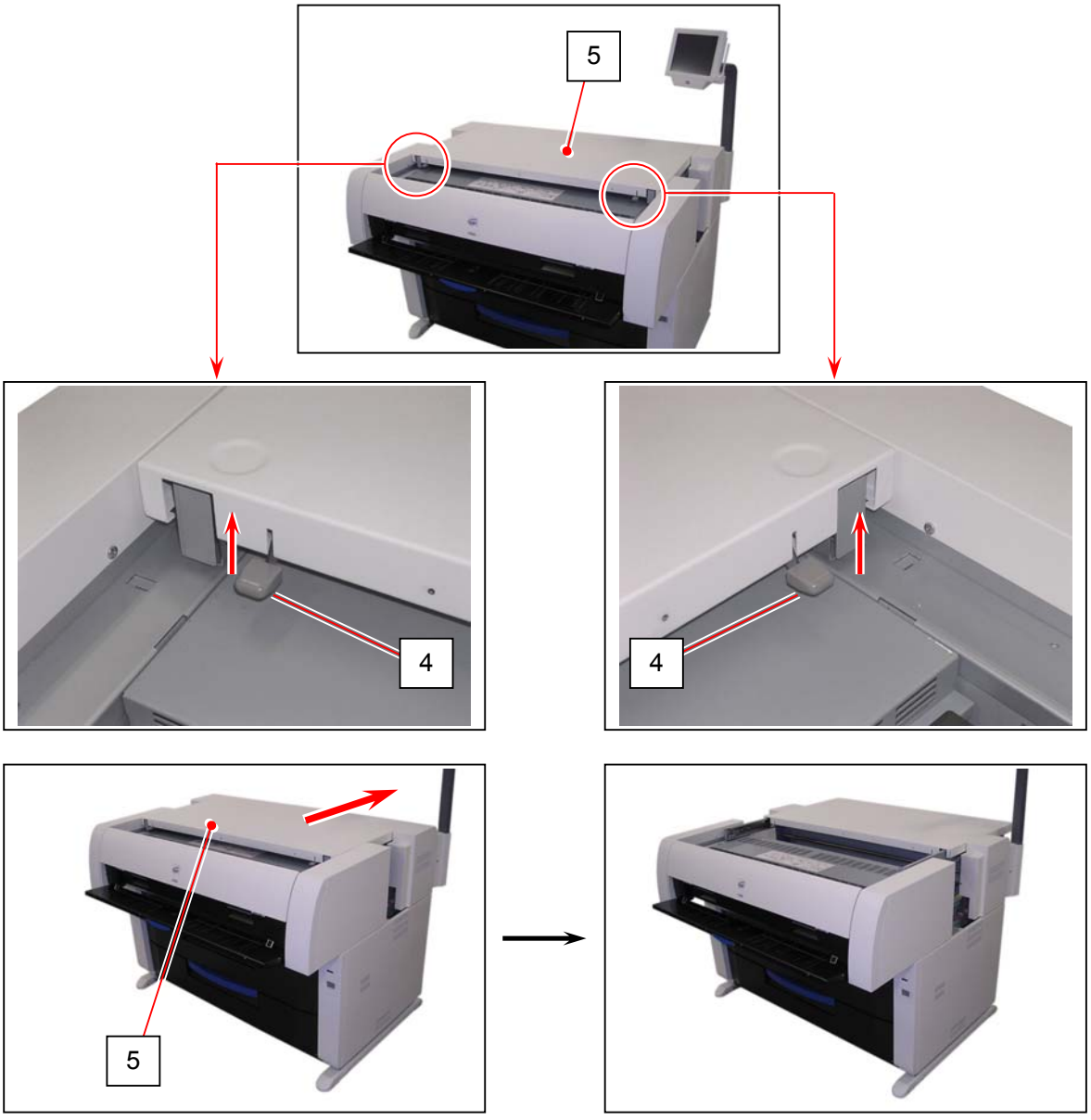
5.3 Main Frame

5.3.1 Replacing Paper Gate Brake (MC4)

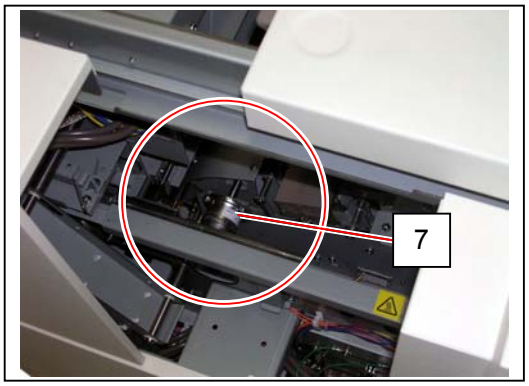
1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).

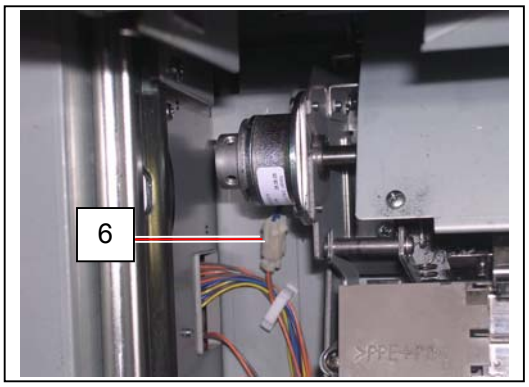


2) Pull up Knobs (4) on both sides, and then open Top Cover (5) by pushing it toward the rear side.

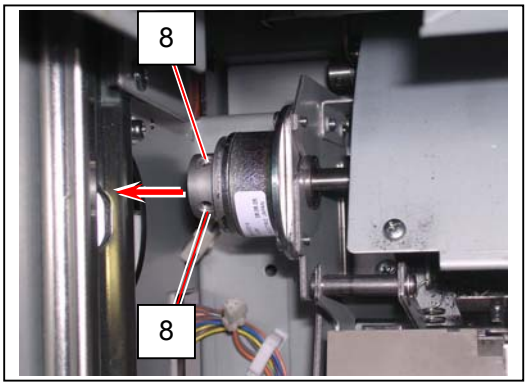


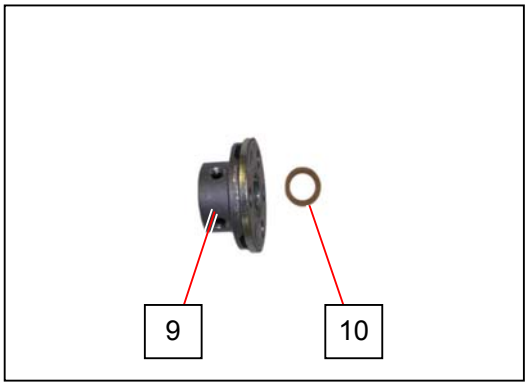
3) Disconnect 1 connector (6) of Paper Gate Brake (7).



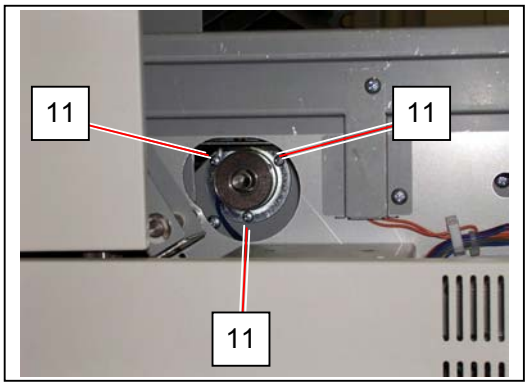


4) Remove 2 set screws (8) to remove Amateur (9) and 1 washer (10) from Paper Gate Brake.





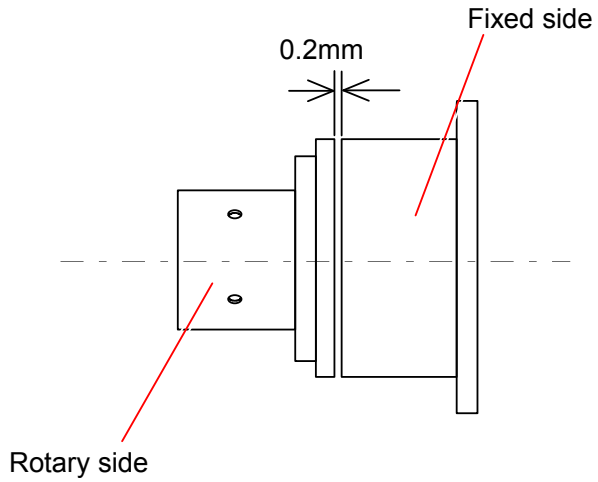
5) Remove 3 screws (M3x8) (11) to remove the fixed side of Paper Gate Brake.



6) Replace the Paper Gate Brake with the new one.

NOTE

When you install the new Paper Gate Brake, keep the 0.2mm space between the Amateur and the fixed side of Paper Gate Brake.



5.3.2 Replacing Paper Gate Clutch (MC3)

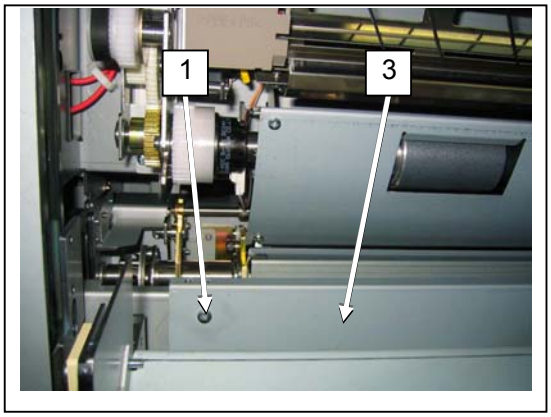
1) Remove Process Unit. Refer to [5.2.3 Replacing Photoconductive Drum] on page 5-16.

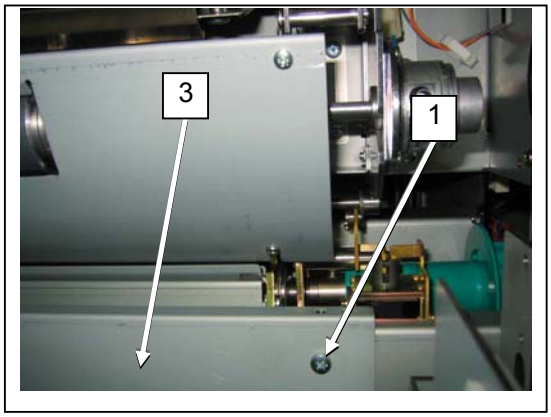
NOTE

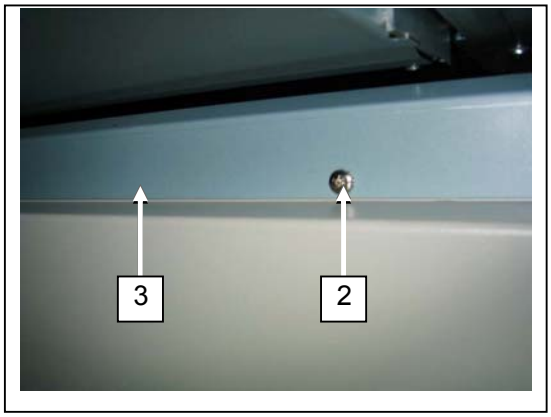
After removing the Photoconductive Drum, be sure to prevent it from being exposed to the light.

2) Remove the Paper Gate Brake. Refer to [5.3.1 Replacing Paper Gate Brake] on page 5-44.

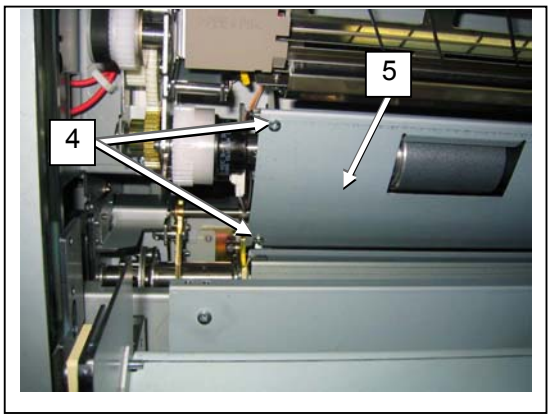
3) Remove 2 screws (M4x6) (1) from top and 5 screws (M4x6) (2) from front, and then remove the Manual Paper Guide Plate (3).

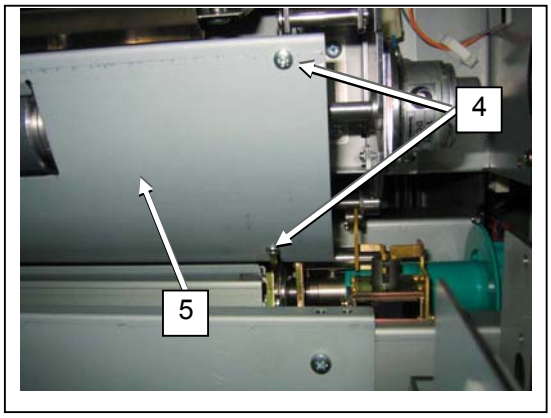






4) Remove 4 screws (M3x6) (4) to remove the Paper Guide (5).

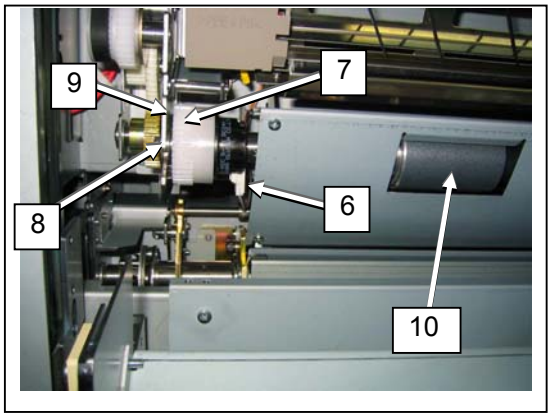




5) Disconnect a connector (6) from the Paper Gate Clutch (7).

6) Remove an E-ring (8) from the Paper Gate Clutch (7).

7) Remove the Ball Bearing (9) of Paper Gate Roller (10).



8) Remove the Paper Gate Roller (10) with the Paper Gate Clutch (7).

9) Loosen the set screw (11) and remove the Paper Gate Clutch (7) from the Paper Gate Roller (10).

10) Replace the Paper Gate Clutch with the new one.

5.3.3 Replacing Ozone Filter

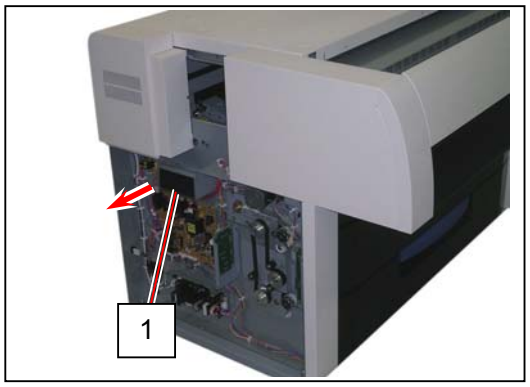
NOTE

A periodic replacement for the following parts is recommended.

Item	Number of article	Remarks
Air Filter S20 (for left)	1	All of these parts are contained in "Filter Kit" (Z200980020)
Air Filter (for rear)	2	

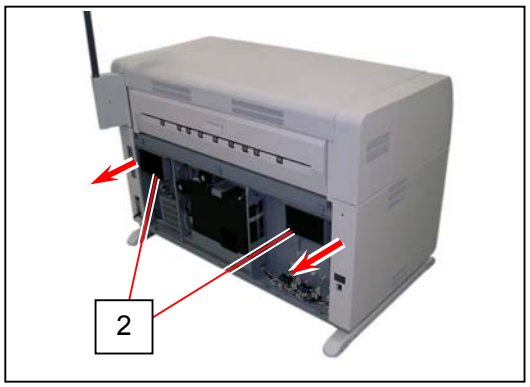
1) Remove Lower Left Cover.
Refer to [5.1.1 Removing Lower Right / Left Cover] on page 5-3.

2) Replace **Air Filter S20** (1) with a new one.



3) Remove Lower Left Cover.
Refer to [5.1.5 Removing Rear Cover] on page 5-10.

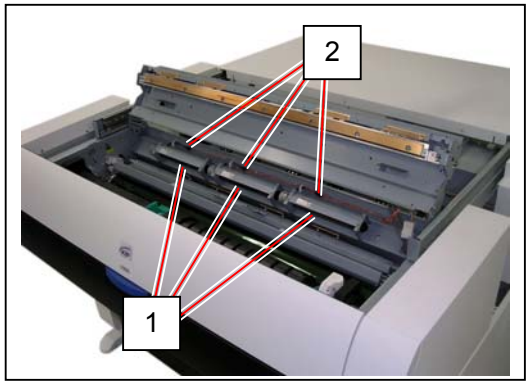
4) Replace **Air Filter** (2) with a new one.



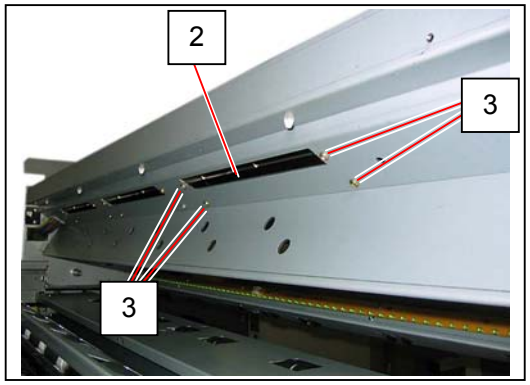
5.3.4 Replacing Pressure Fan (Fan 2)

1) Open Movable Unit.
   Refer to [5.2.1 Opening Movable Unit] on page 5-11.

2) Disconnect 1 connector (1) from Pressure Fan (2).



3) Remove 4 screws (M3x8) (3) to remove Pressure Fan (2).

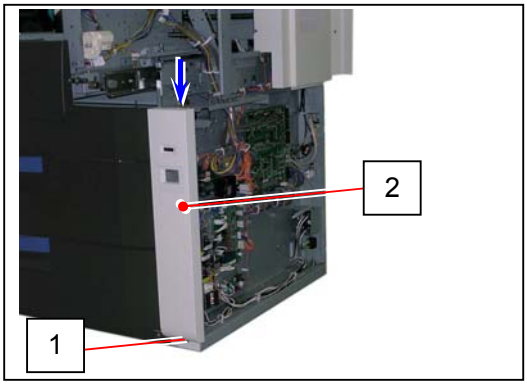


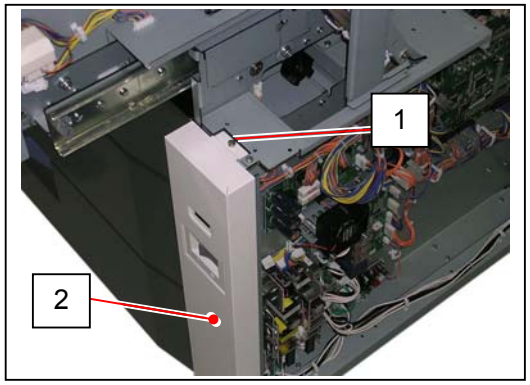
4) Replace the Pressure Fan with the new one.

5.3.5 Replacing Counter (CNT1)

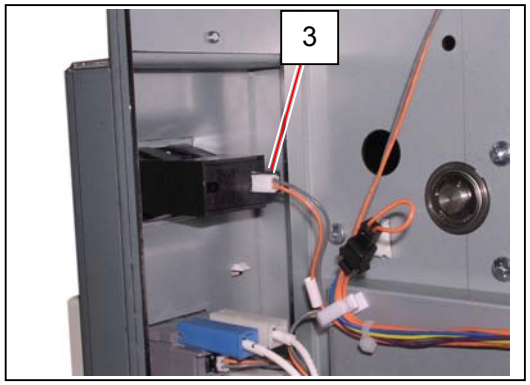
1) Remove Lower Right Cover, Front Cover and Right Front Cover.
Refer to [5.1.2 Removing Right / Left Front Cover] on page 5-4.

2) Remove 2 Bind Head Screws (M4x6) (1) to remove Front Side Cover R (2).

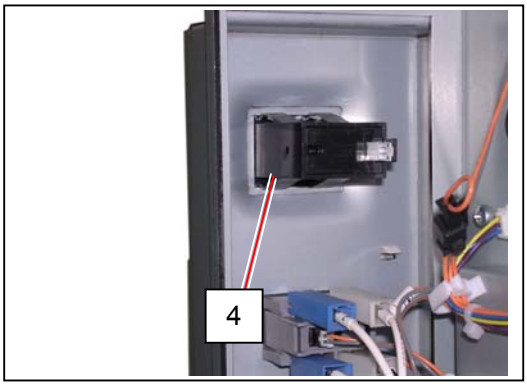


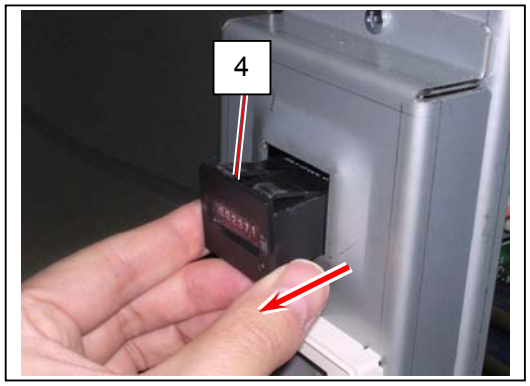


3) Disconnect 1 connector (3).



4) Push Counter (4) to the front and remove it.



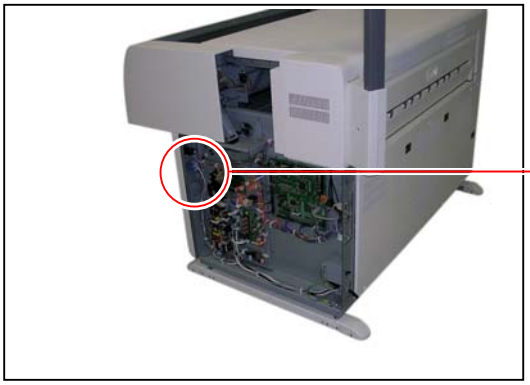


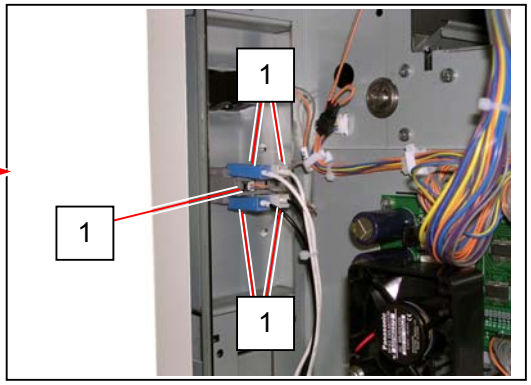
5) Replace the Counter with the new one.

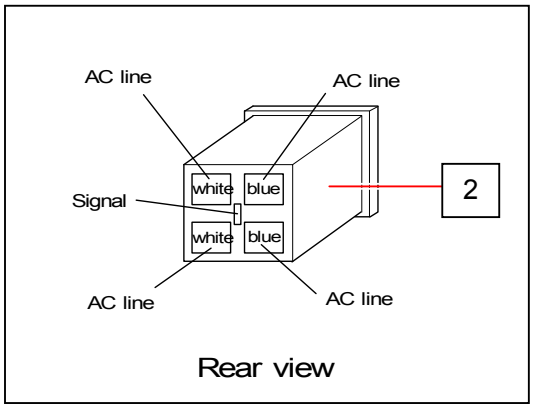
5.3.6 Replacing Main Switch (S1)

1) Remove Lower Right Cover.
   Refer to [5.1.1 Removing Lower Right / Left Cover] on page 5-3.

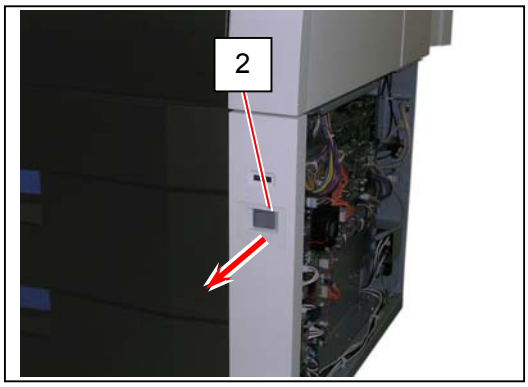
2) Disconnect 5 connectors (1) from Main Switch (2).







3) Push Main Switch (2) to the front and remove it



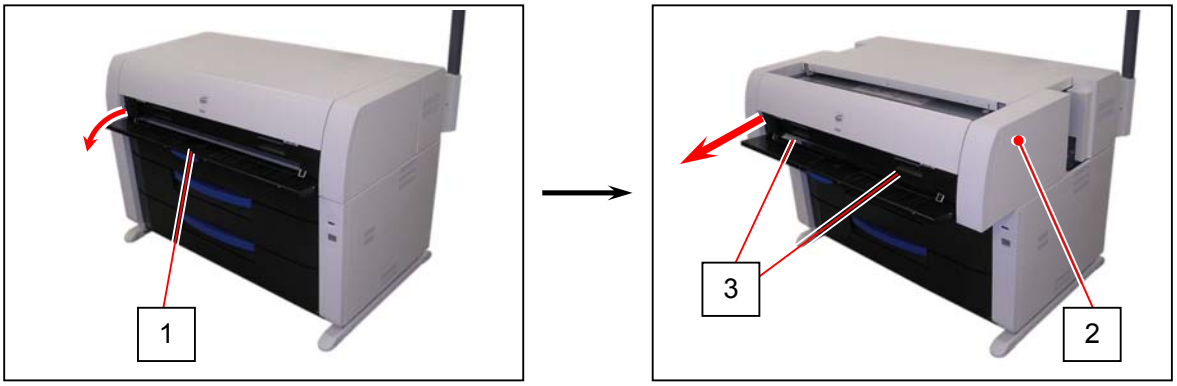
4) Replace the Main Switch with the new one.

5.4 Cutter Unit

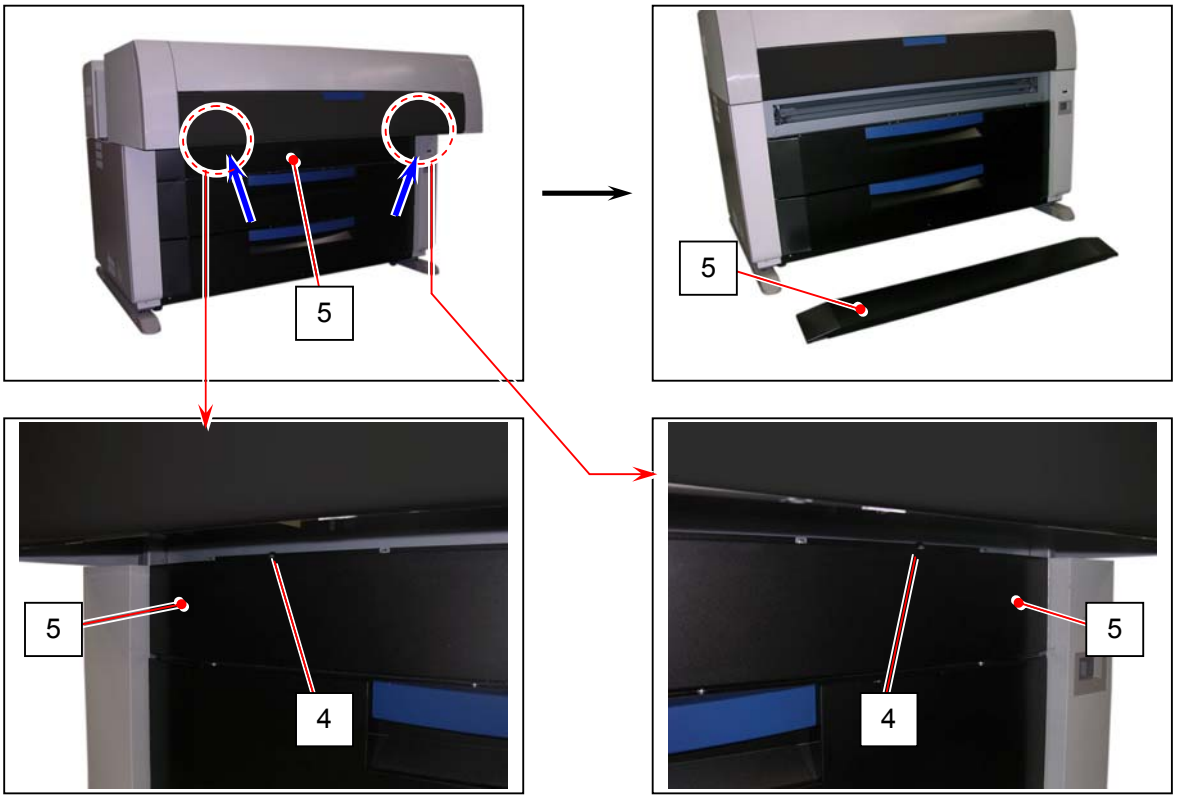
5.4.1 Removing/Adjusting Cutter Unit

1. Remove Lower Right Cover and Lower Left Cover.
   Refer to [5.1.1 Removing Lower Right/Left Cover] on page 5-3.

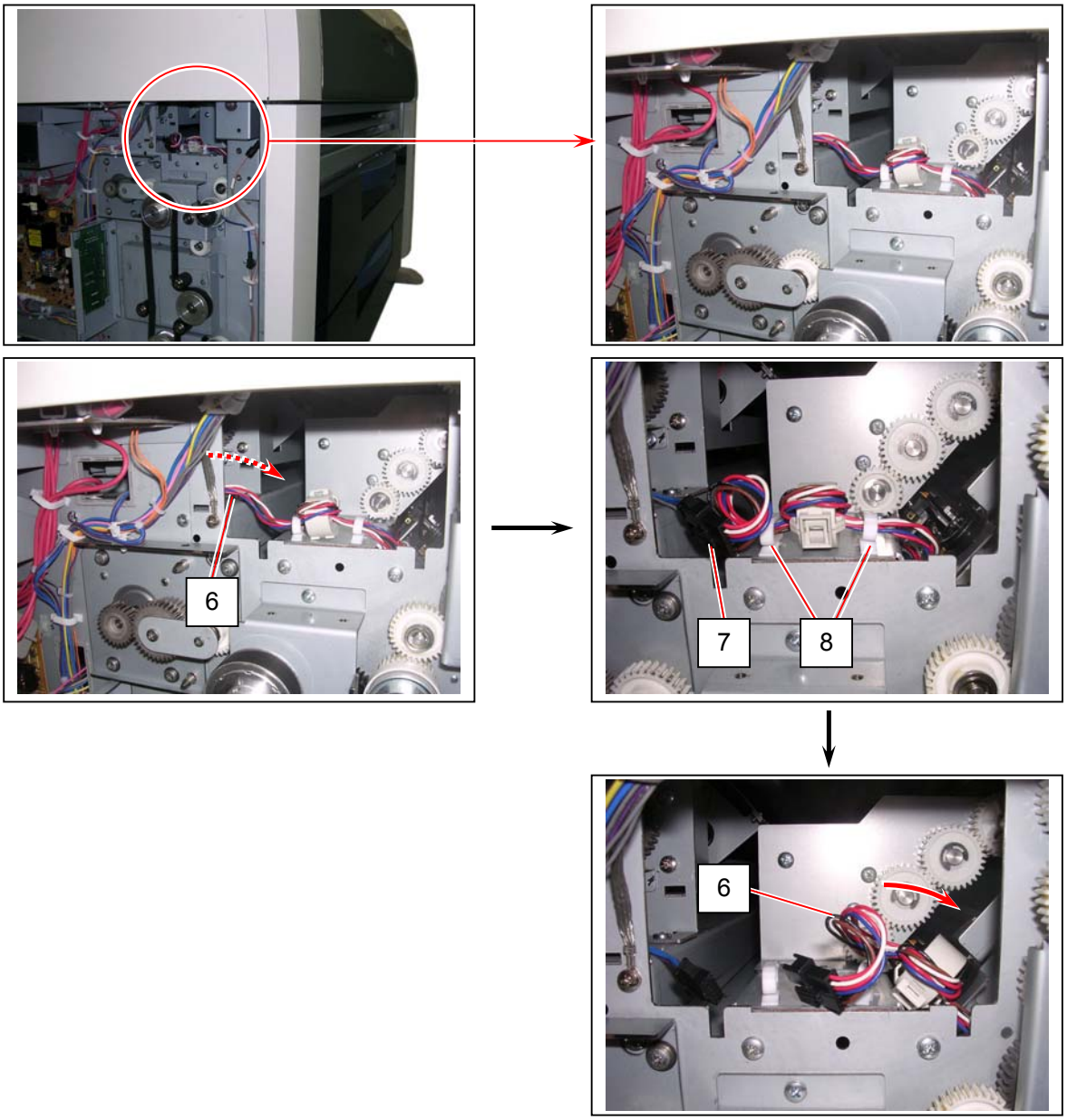
2. Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



3. Pull out the Upper Remove 2 screws (M4x6) (4) to remove Cutter Cover (5)



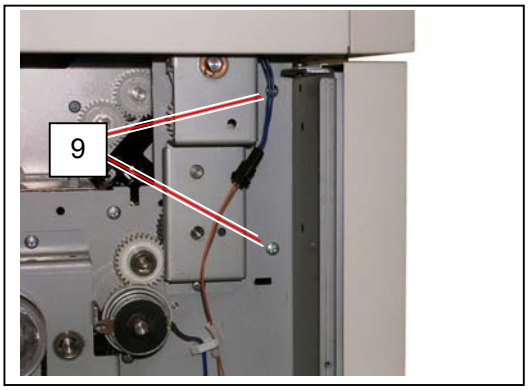
4. Pull the harness (6). Disconnect the connector (7). Open 2 clamps (8) to release the harness (6). Put the harness (6) inside the machine.



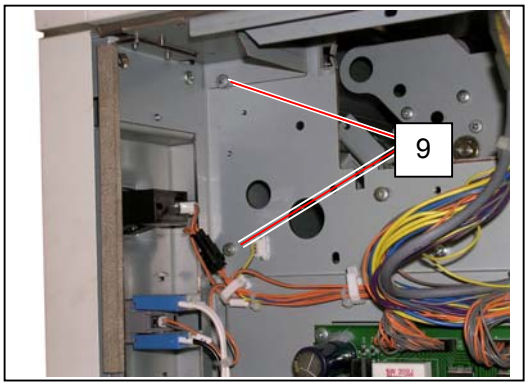
NOTE

The harness (6) may catch in the frame's rim at the time of removing Cutter Unit.
Be sure to put it inside the machine frame for efficient work.

5. Remove 2 screws each (M4x6) (9) on both sides.

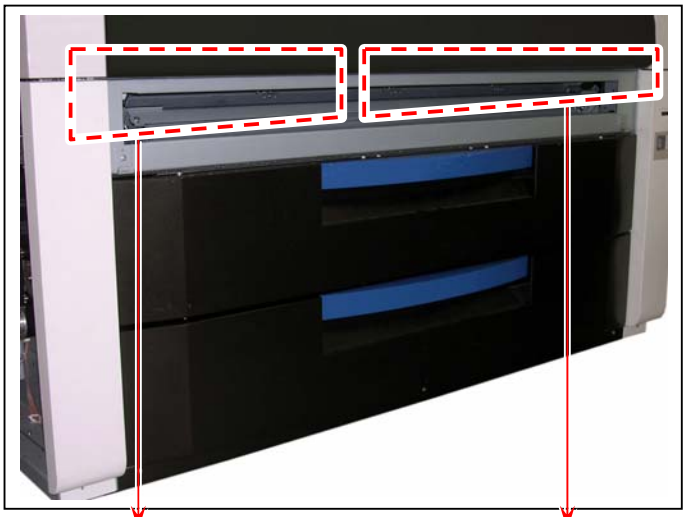


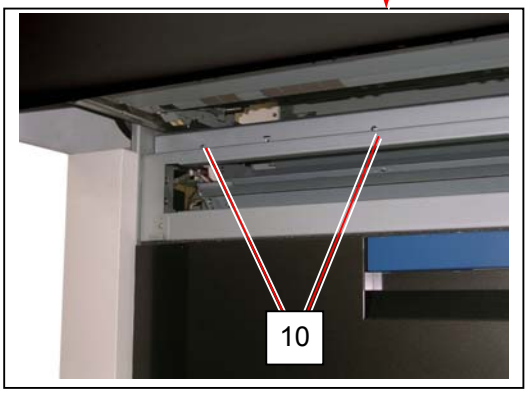
Right

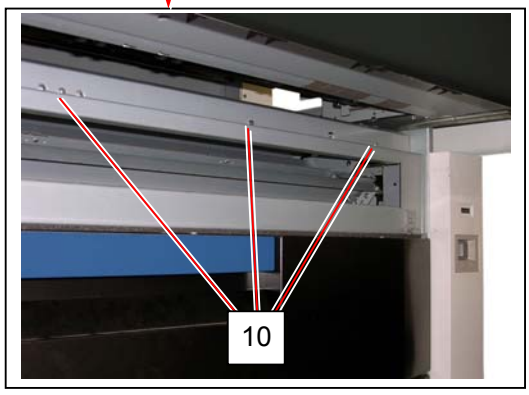


Left

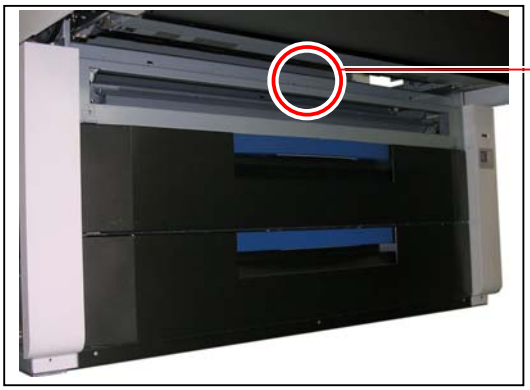
6. With Upper Frame Unit open, remove 5 screws (10) from the front.

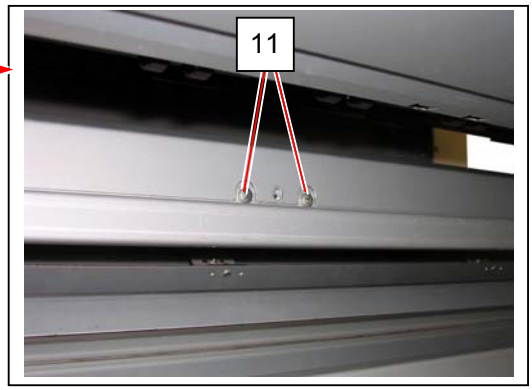




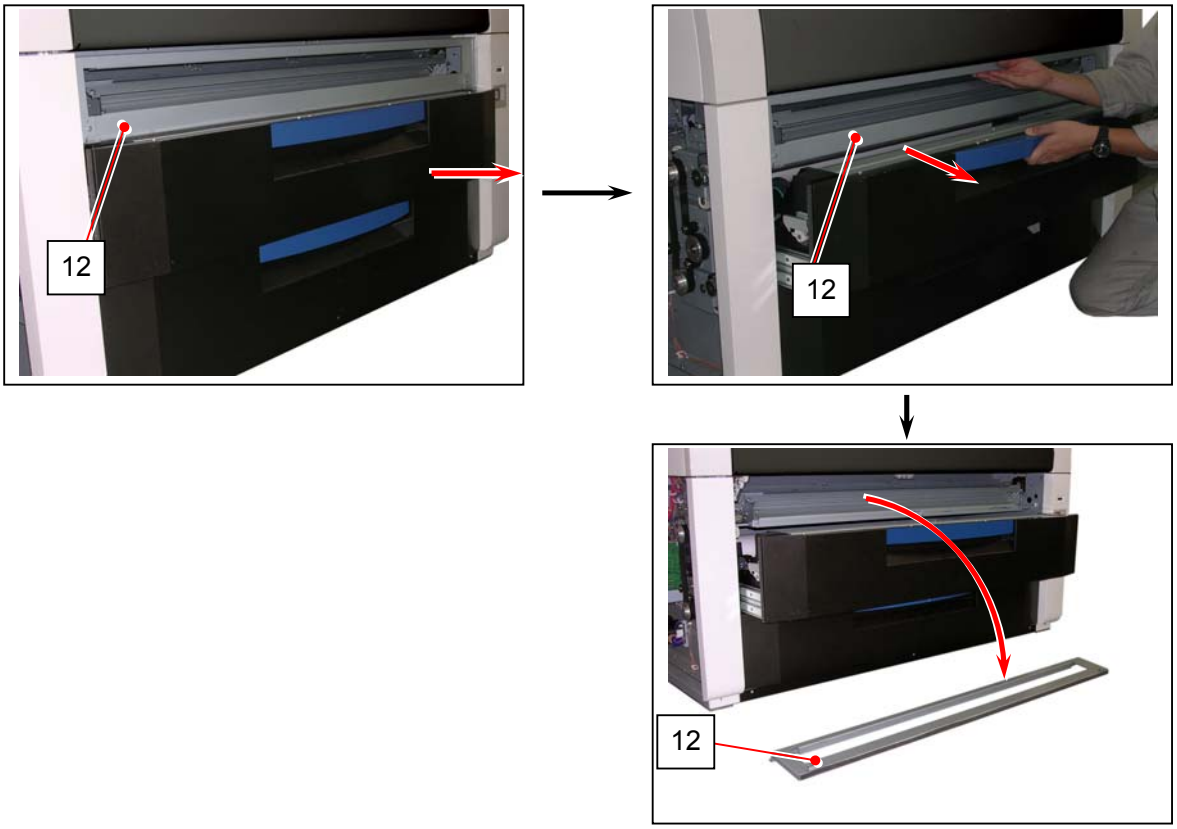


7. Loosen 2 screws (11) on the center.

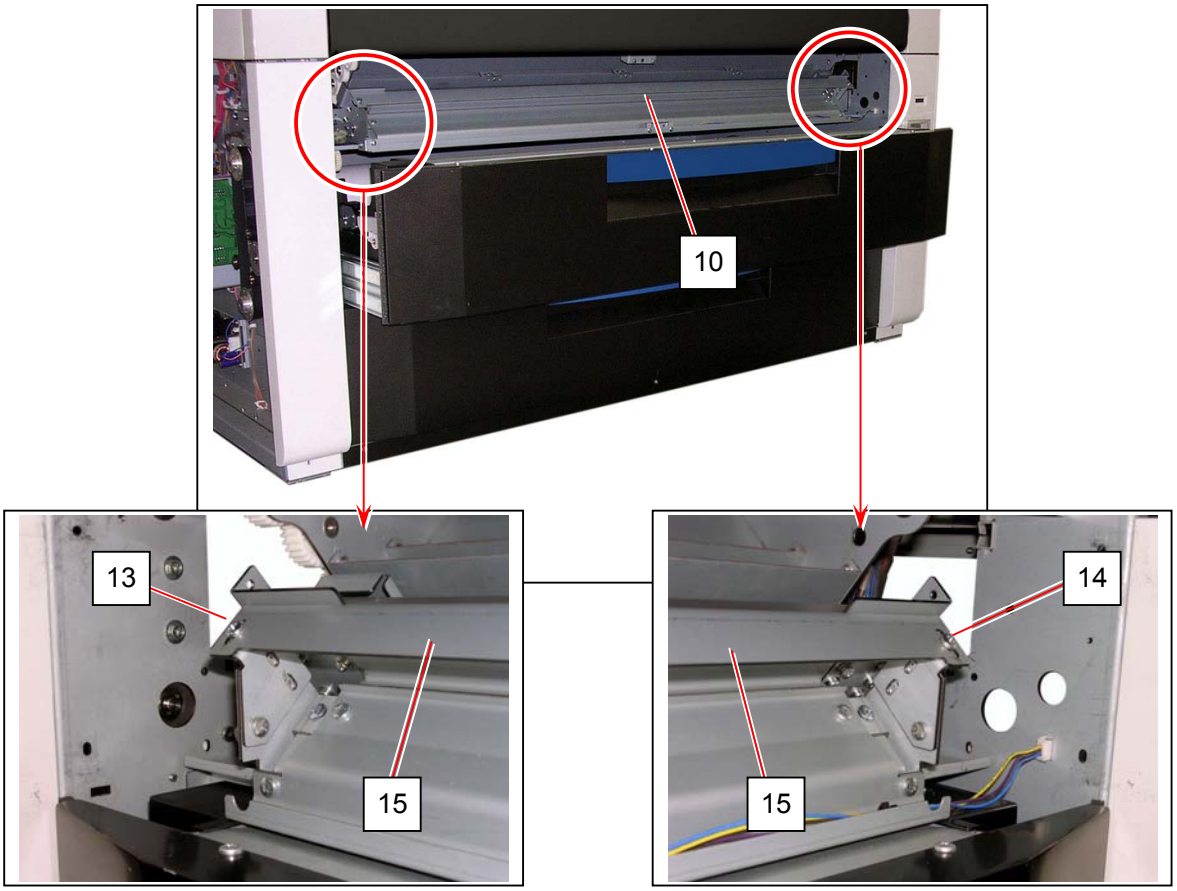




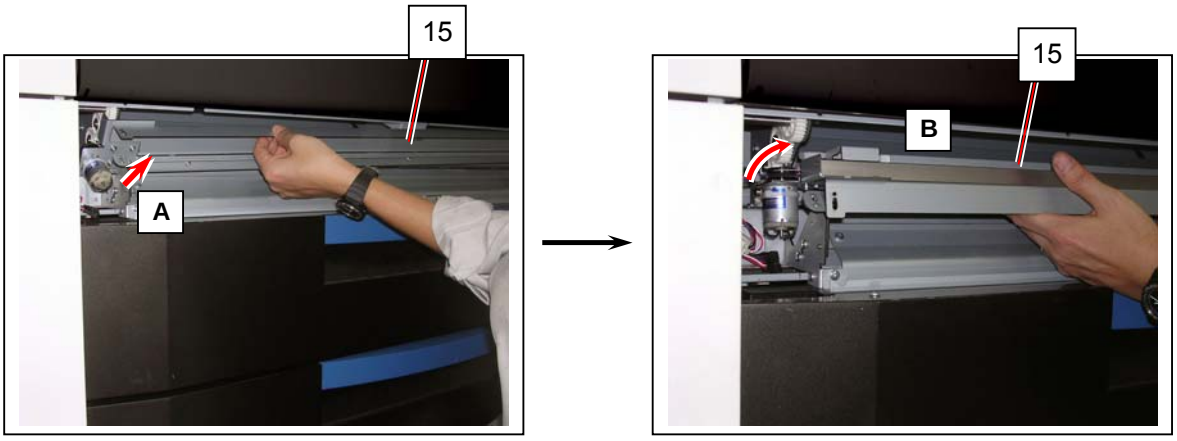
8. With supporting Center Frame (12), draw out the upper Roll Deck.
   Support Center Frame (12) inside space of Roll deck, remove it from the machine.

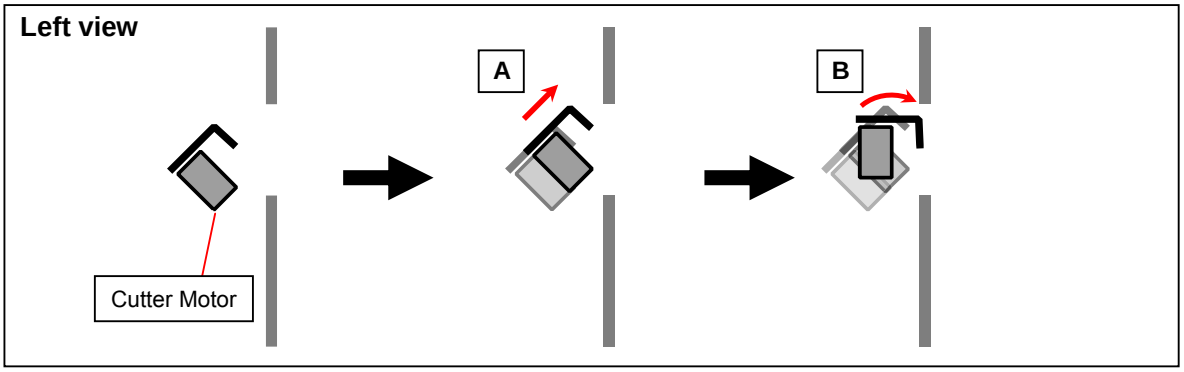


9. Remove 2 screws (13) (14) to release Cutter Unit (15).

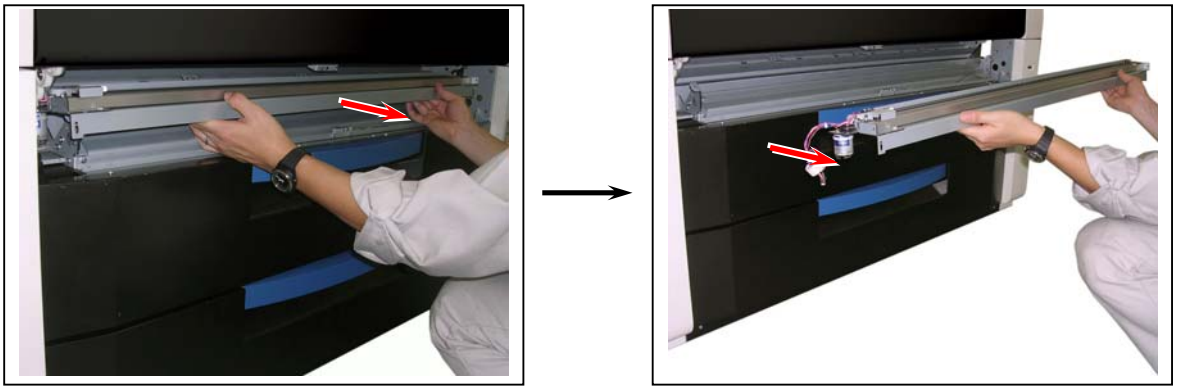


10. Slightly lift Cutter Unit (15) upward (**A**) and tilt it to the level (**B**).



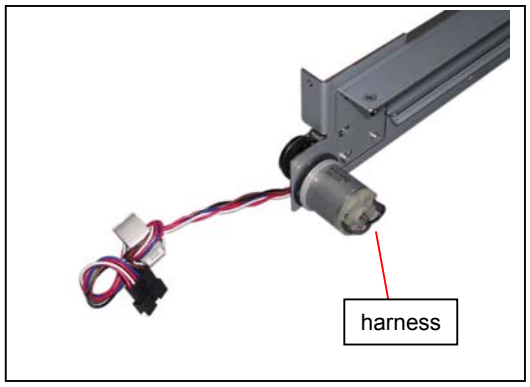


11. With supporting Cutter Unit level, pull and remove it from the machine.



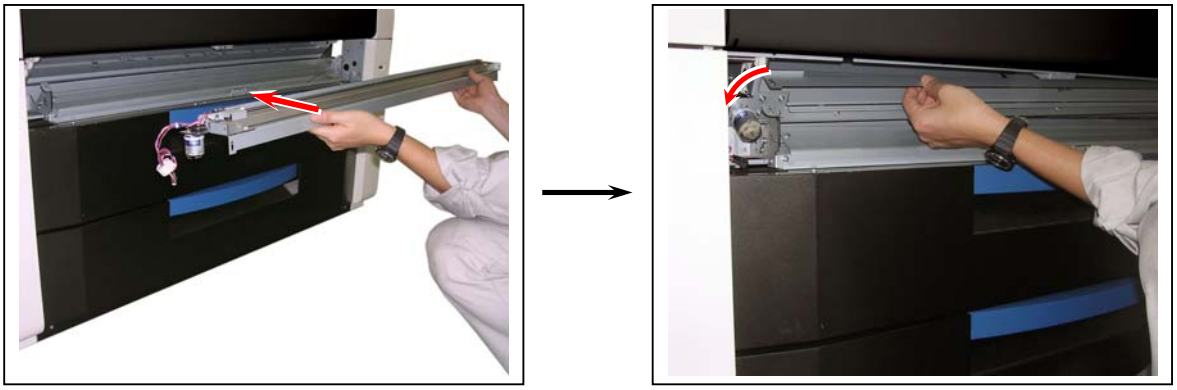
NOTE

Avoid damage on Cutter Unit's harness noting the sitting direction.

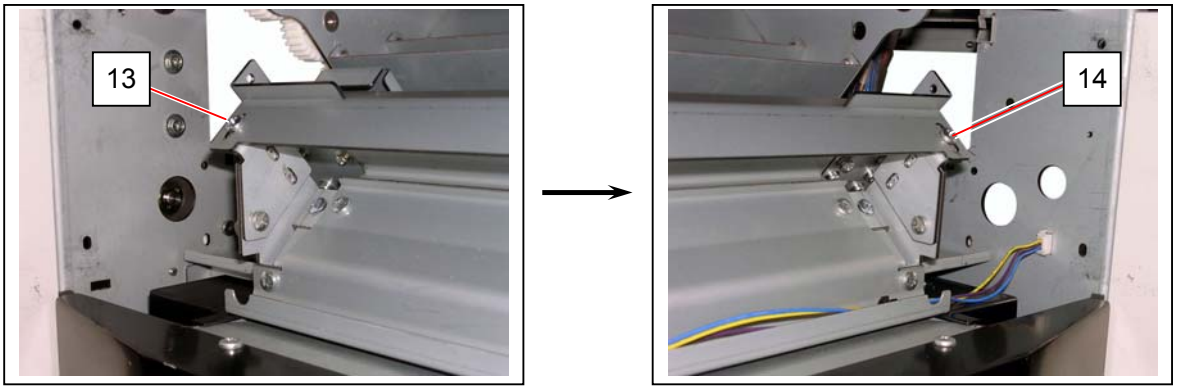


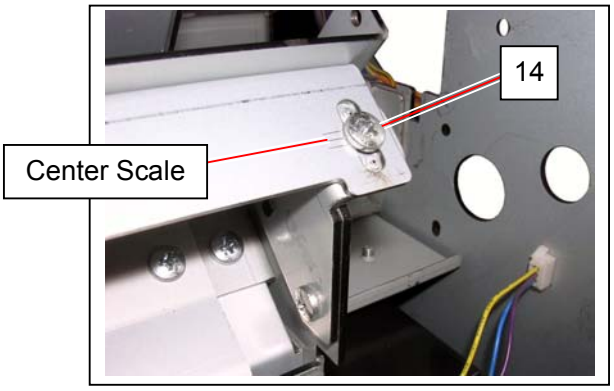
12. Replace the whole Cutter Unit with a new one.

13. First, put the harness (with 1 core and 1 connector) inside the machine through the opening. With supporting Cutter Unit level, put it into the machine. Then flip it down into the operation position.

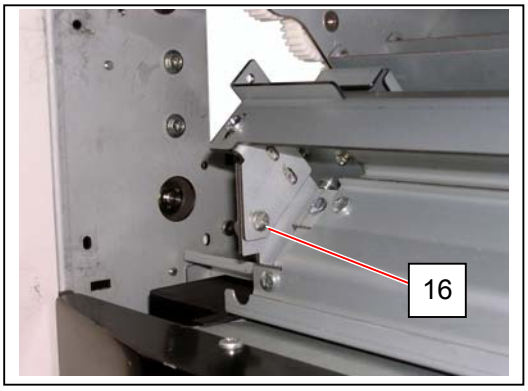


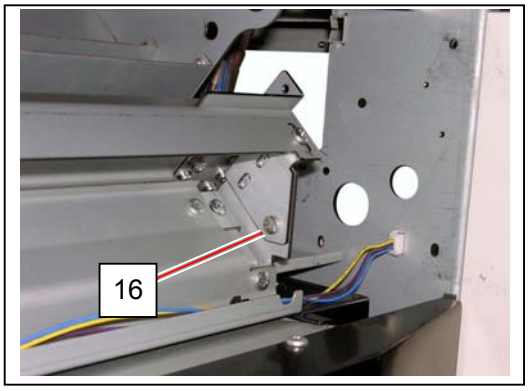
14. Secure Cutter Unit with 2 screws (13) (14).
The right screw (14) should be fixed at the center scale.



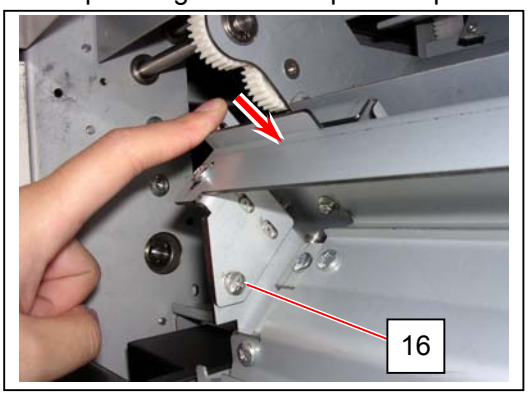


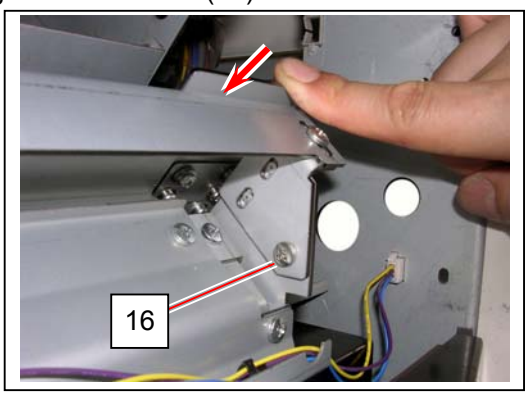
15. Loosen 2 screws (16) on the cutter support brackets to release Cutter Unit and the cutter support together.



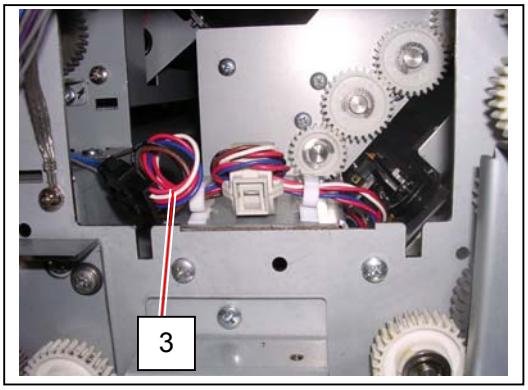


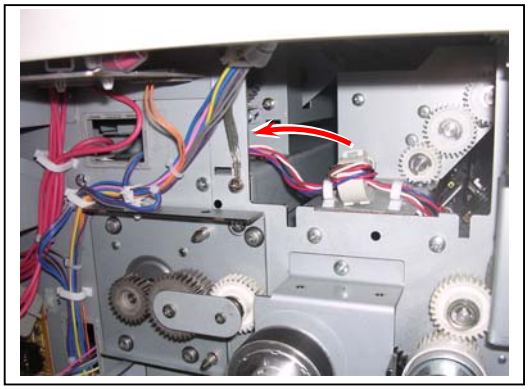
16. With pressing down the specified position below, tighten the screws (16).





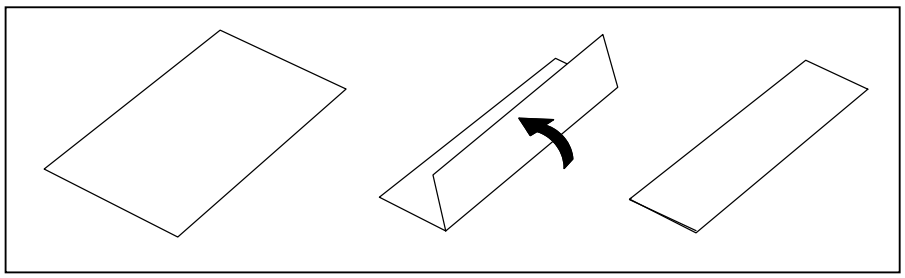
17. Reconnect the harness (3).



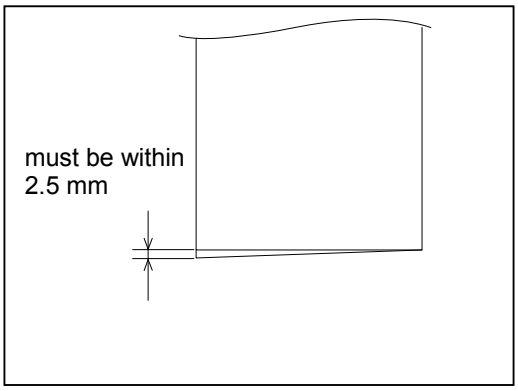


18. With Center Frame (12), Front Middle Cover (2), Right Lower Cover and Left Lower Cover uninstalled, Turn on the machine.

19. Make a print in A0/36” width, fold it in the center to overlap both sides each other.

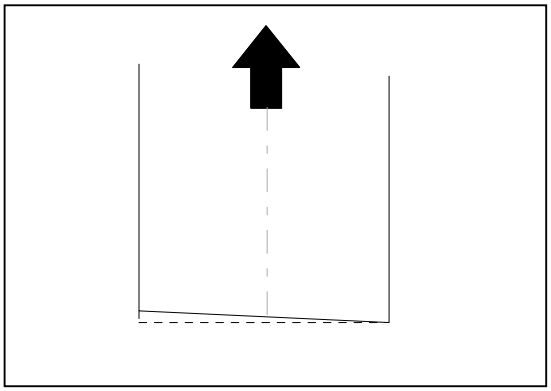


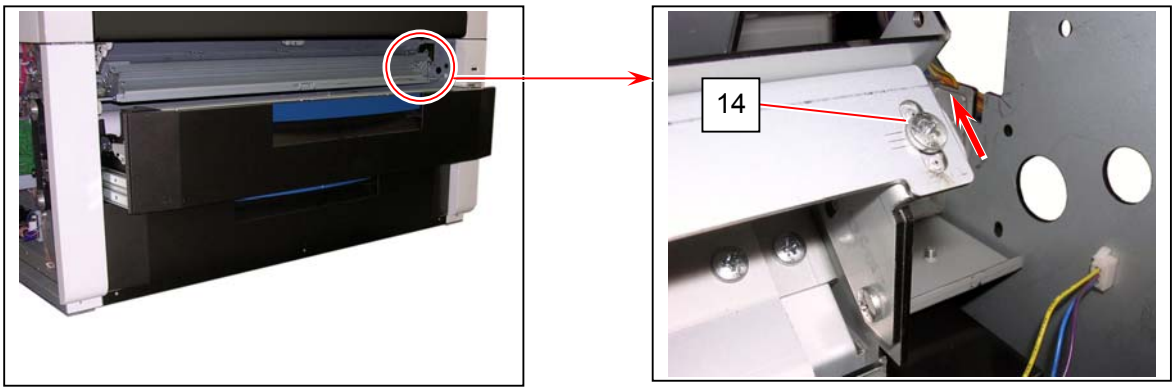
20. Measure the difference of the print length between left and right.
It must be within 2.5mm.



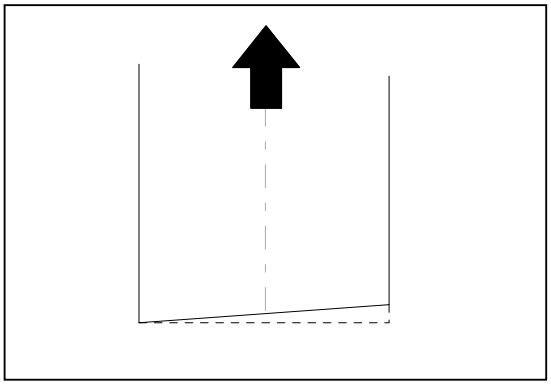
21. It is necessary to adjust the installation angle of Cutter Unit if the difference of the print length exceeds 2.5mm.
Loosen 1 screw (14) on the right side, and slide the right side of Cutter Unit up/down to adjust its installation angle.

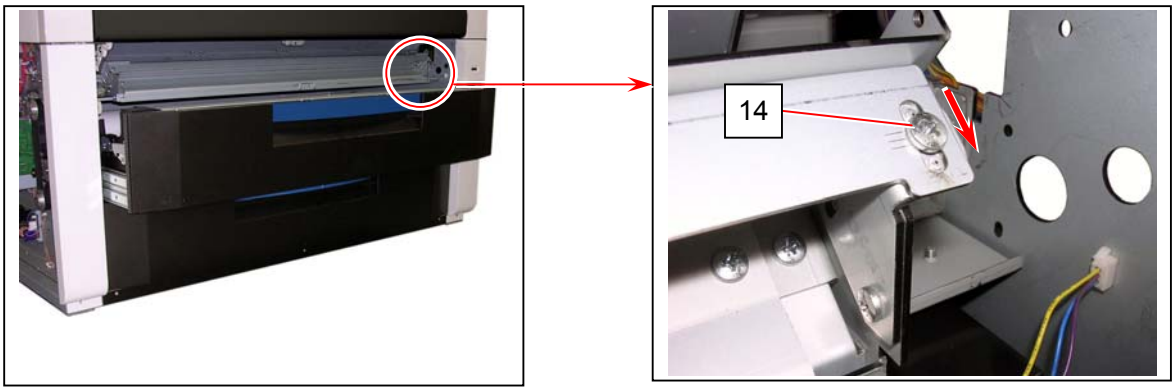
If the right side of the print is longer than the left, slightly slide the right side of Cutter Unit DOWN.



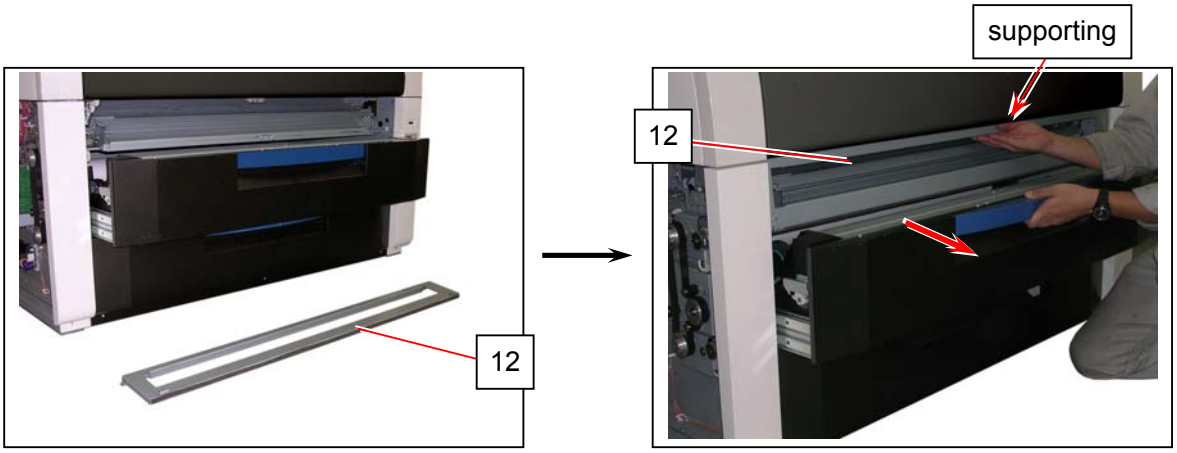


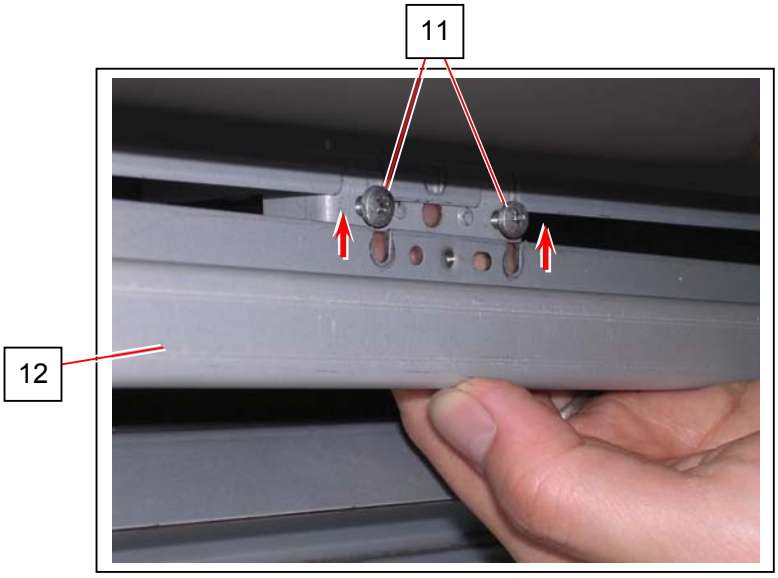
If the left side of the print is longer than the right, slightly slide the right side of Cutter Unit UP.



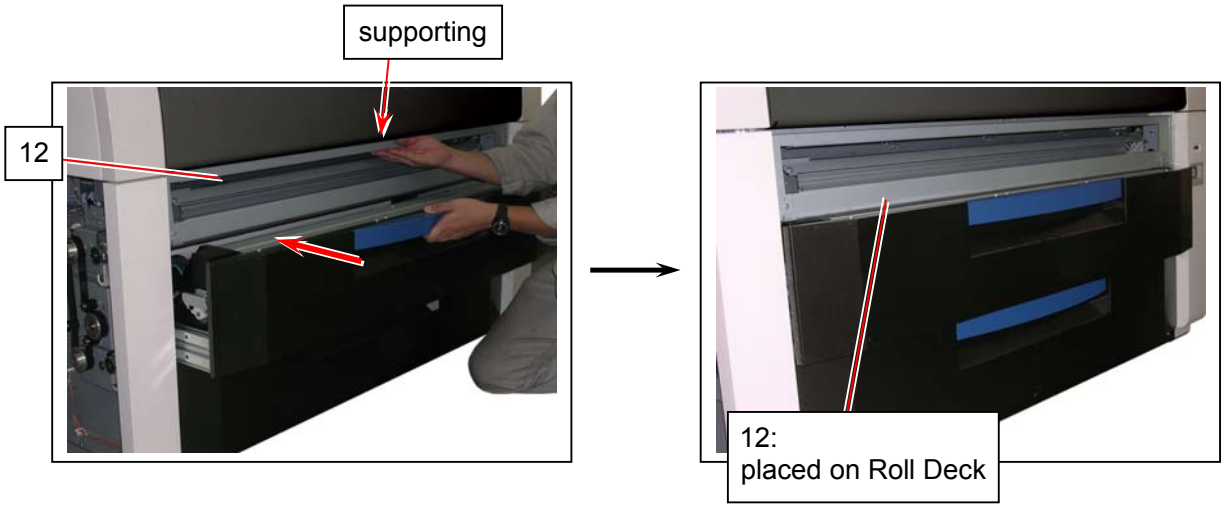


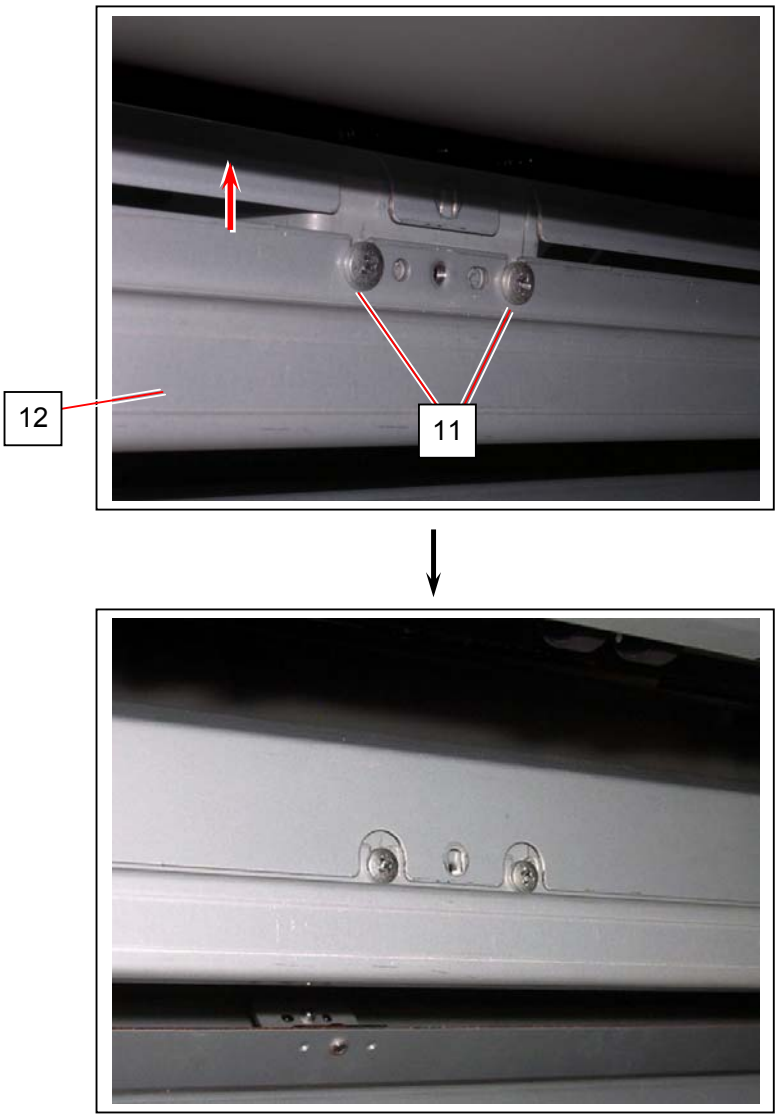
22. After the confirmation, draw out the upper Roll Deck.
Support Center Frame (12) inside space of Roll deck .
Insert the “U-shape cutting” at the top center of Center Frame (12) onto the screws (11).





23. With supporting Center Frame (12), secure the screws (11) and close the upper Roll Deck.
Place Center Frame (12) on the front frame of the upper Roll Deck to keep it being supported.



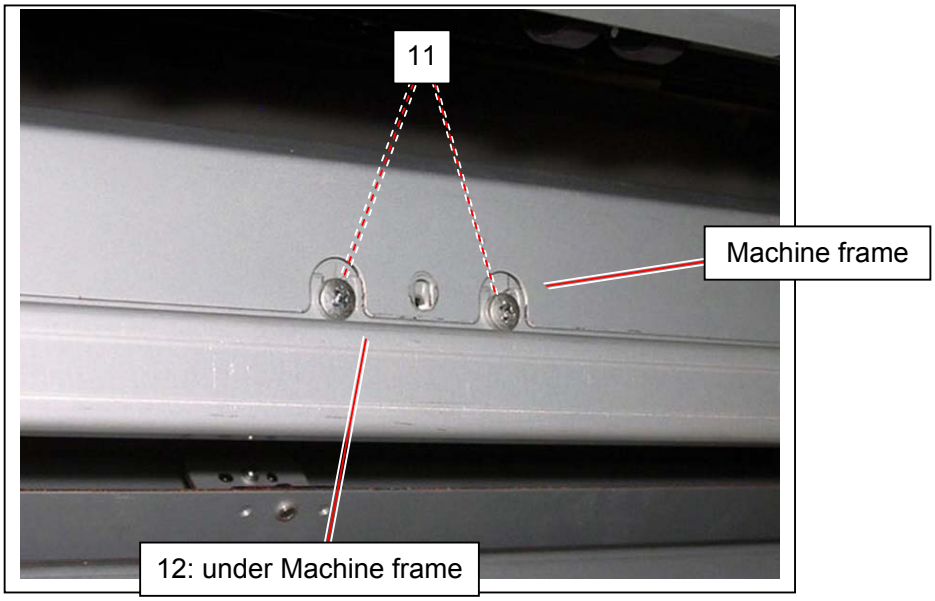


(Continued on the next page)

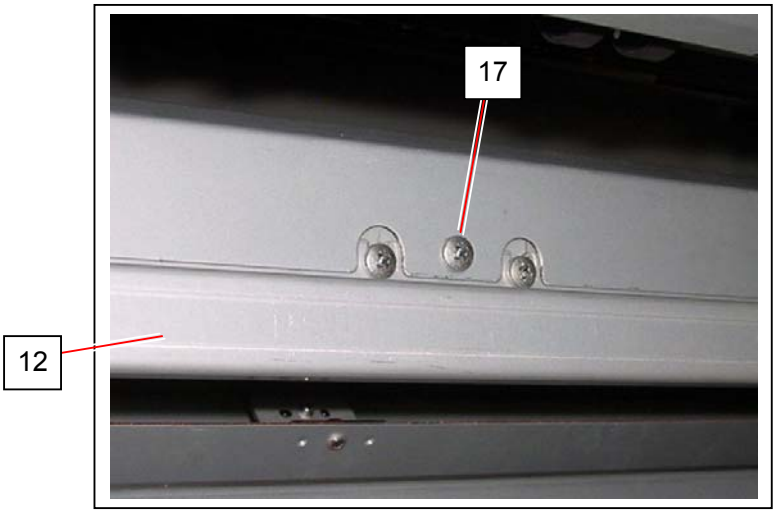
NOTE

(1) Center Frame (12) must be fixed by the screws (11) with supporting.
Not doing so would make Center Frame hang down the feeding roller's shaft to deform.

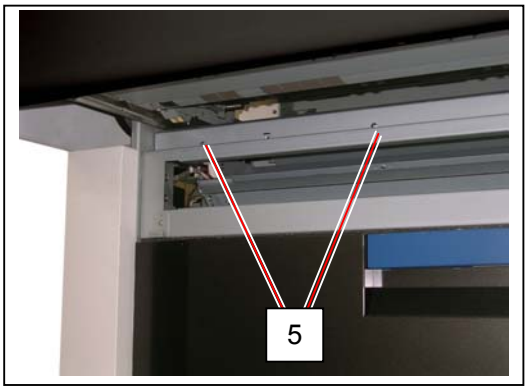
(2) The front face of Center Frame should go inside of the machine frame.

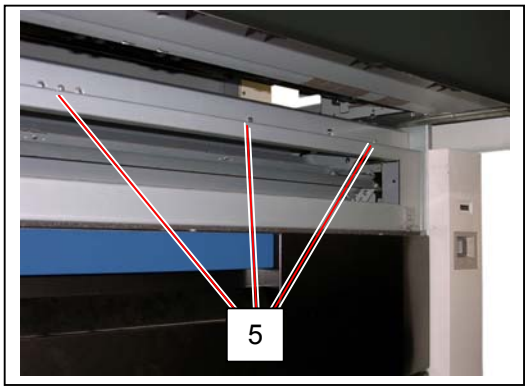


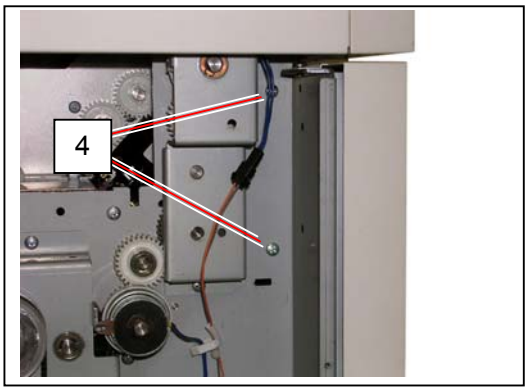
24. Fix Center Frame (12) on the machine frame with the screw (17).



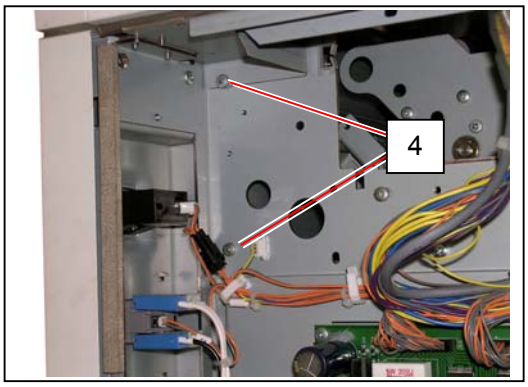
25. Fix Center Frame (12) with 8 screws (8) (9).







Right



Left

26. Return Front Middle Cover (2), Right Lower Cover and Left Lower Cover in position.

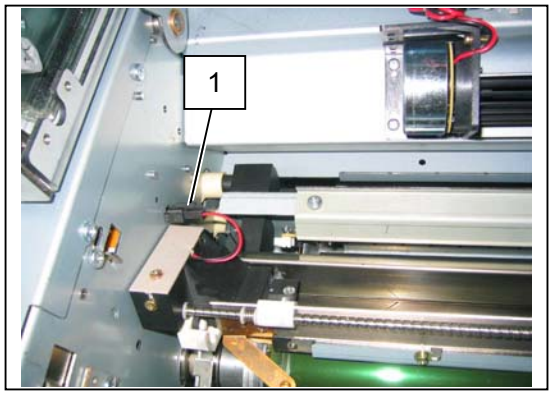
5.5 Image Corona Assembly

5.5.1 Removing Image Corona Assembly

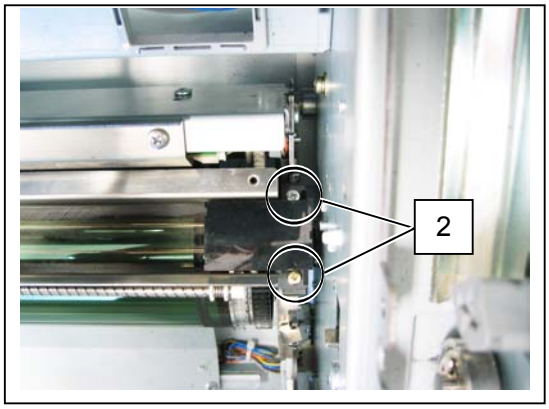
1) Open the Movable Unit. Refer to [5.2.1 Opening Movable Unit] on page 5-11.

> **NOTE**
>
> Check that the Stopper Pin is properly in a lock position.

2) Disconnect the connector of Wire Cleaning Motor (1).



3) Remove the screw (M3x8) (2) from the right side of Image Corona Assembly.



4) Slide the Image Corona Assembly rightward to take it out.

5.5.2 Replacing Corona Wire, Wire Cleaner Assy

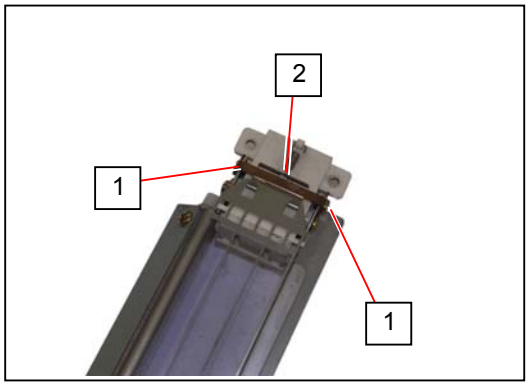
NOTE

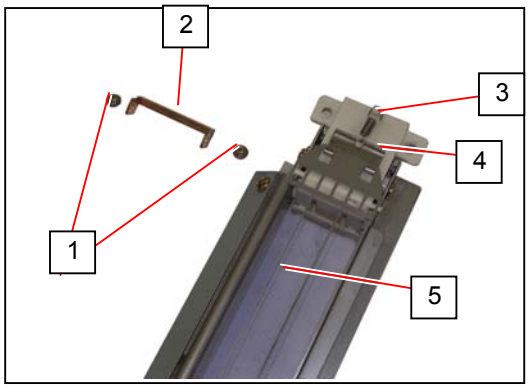
A periodic replacement for the following parts is recommended.

Item	Number of article	Remarks
Corona Wire	2	All of these parts are contained in "Corona Wire Kit" (Z200980010)
Wire Cleaner Assy	1	

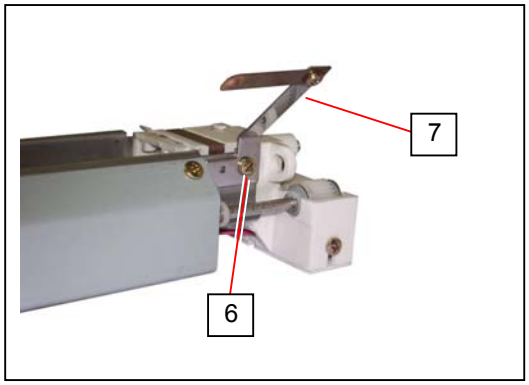
1) Remove Image Corona Assembly. Refer to [5.5.1 Removing Image Corona Assembly] on page 5-67.

2) Remove 2 screws (M3x3) (1) to remove Earth Plate (2).
3) Remove Grid Spring (3) and Bracket (4) to release Grid Plate (5).

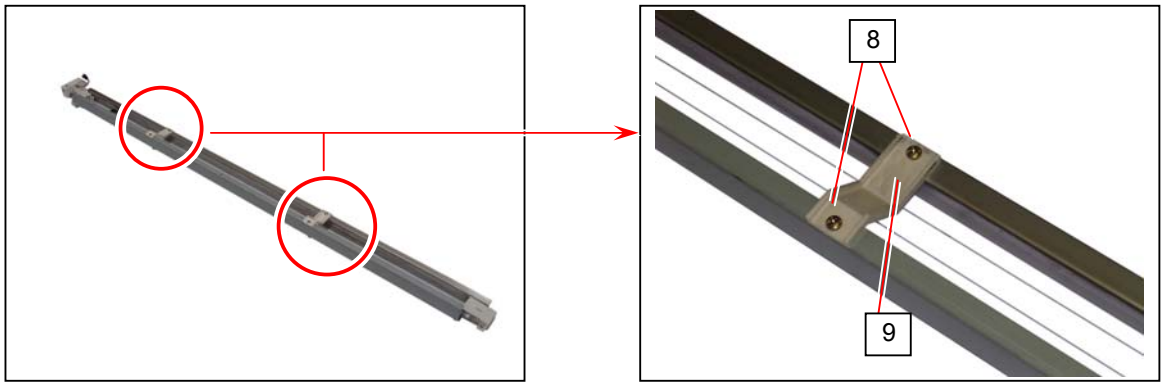




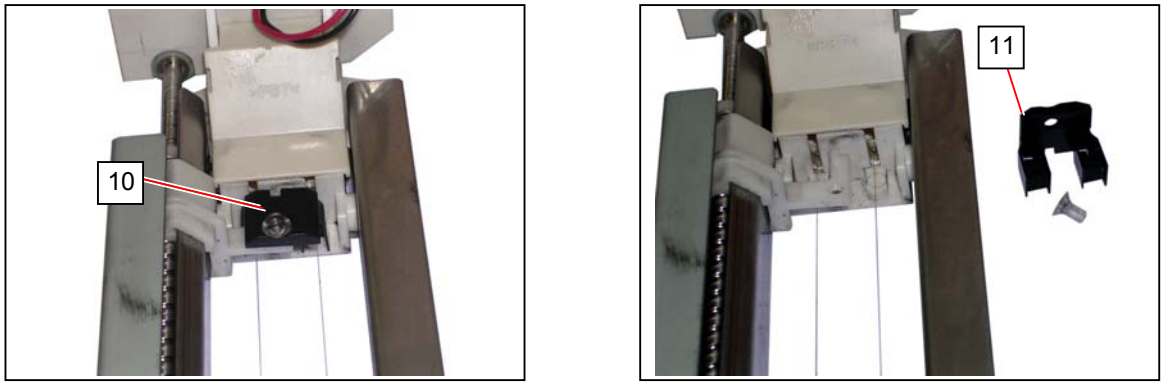
4) Remove 1 screw (6) on the motor side to remove Electrode Plate (7).



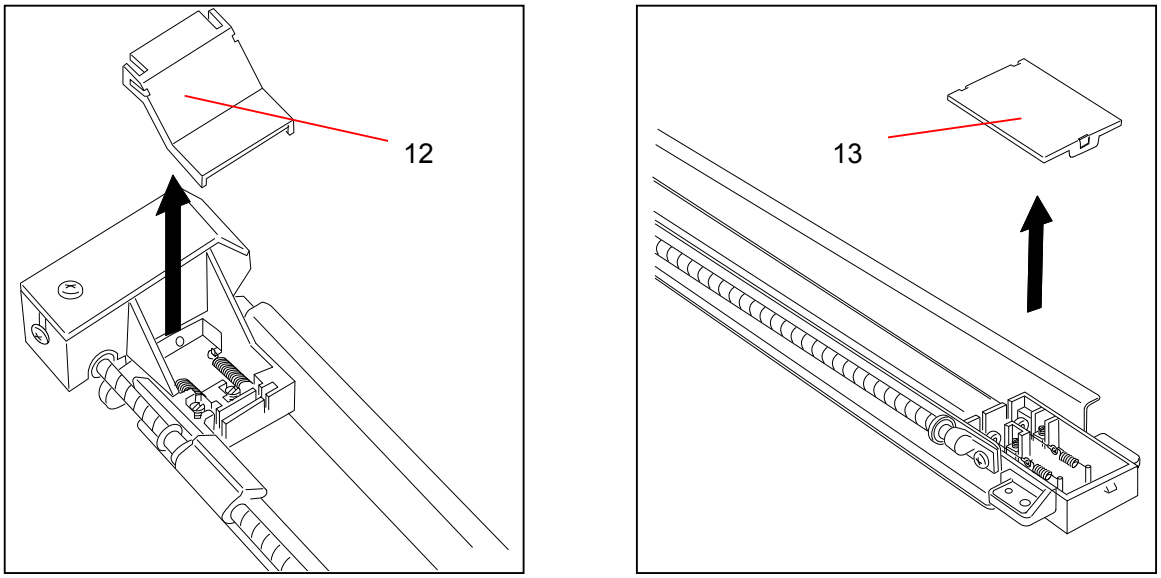
5) Turn over Image Corona Assembly. Remove 4 screws (8) to remove the plastic beams (9).



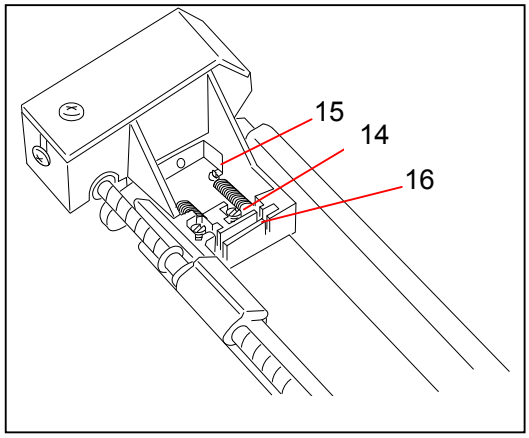
6) Remove 1 plastic screw (10) to remove Wire Cleaner Assy (11).

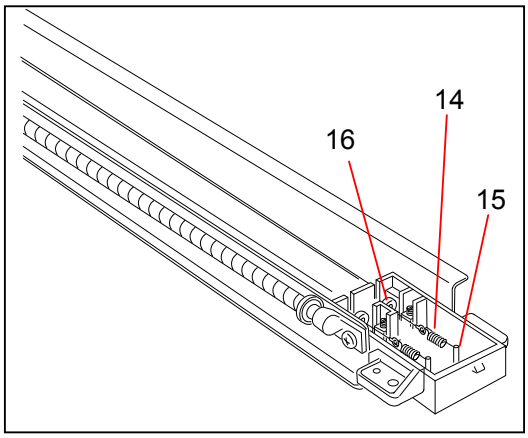


7) Take out the Cover Head L (12) and the Cover Head R (13).



8) Release the Wire Spring (14) from the Wire Hook (15).
9) Remove the Wire Spring from the Corona Wire (16).
10) Remove the Wire Spring from another end as the same as the previous step.
11) Fit the used Wire Spring (15) to the new Corona Wire and fasten it to the Wire Hook.

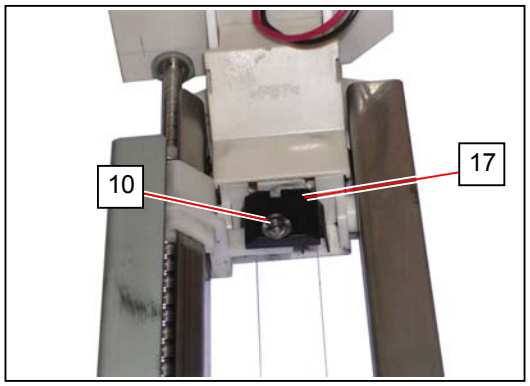


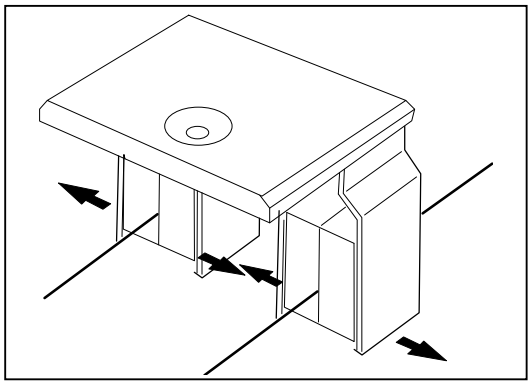


NOTE

For reassembling, be sure that the beads (16) are placed in the proper position.
There is no height adjustment.

12) Install the new Wire Cleaner Assy (17) with the plastic screw (10).





NOTE

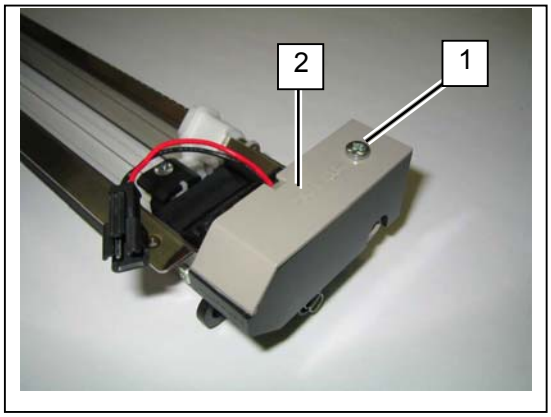
Expand the sponge parts to sandwich the wire to install Wire Cleaner Assy.

13) Return the removed components in position.
Grid Plate can be installed in either face.

5.5.3 Replacing Wire Cleaning Motor (M4)

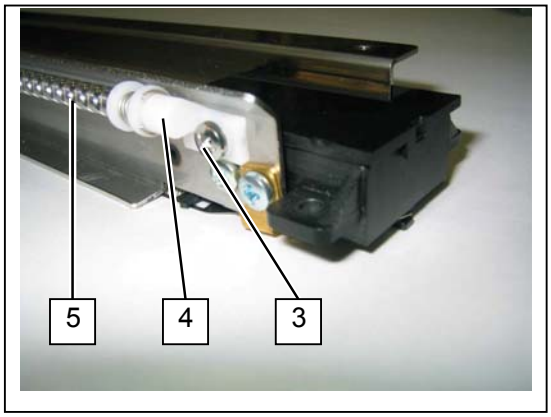
1) Take out the Image Corona Assembly.
Refer to [5.5.1 Removing Image Corona Assembly] on page 5-67.

2) Remove the screw (M3x6) (1) to take out the Cover (2).



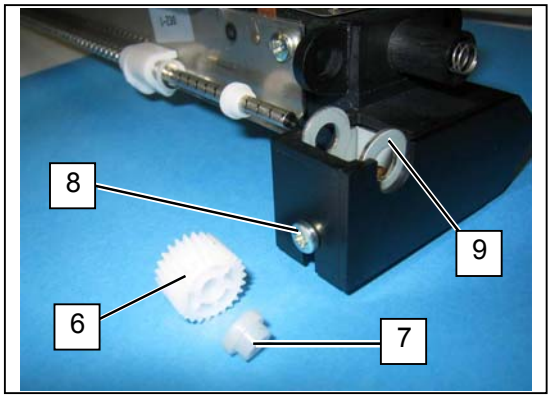
3) Remove the screw (M3x5) (3) to take out the Holder (4).

4) Shift the Screw Shaft (5) rightward to take it out.

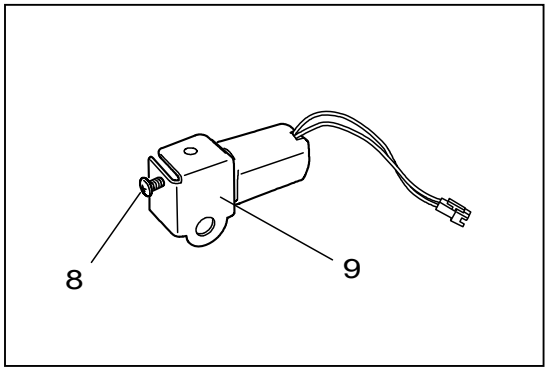


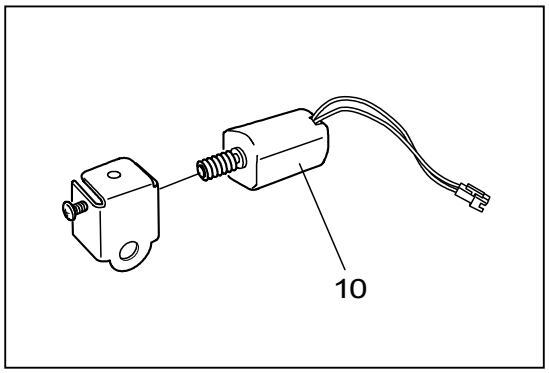
5) Remove the 25T Spur Gear (6) and the Collar (7).

6) Loosen the screw (8) to take out the Wire Cleaning Motor with the Bracket (9).



7) Remove the Wire Cleaning Motor (10) from the Bracket.



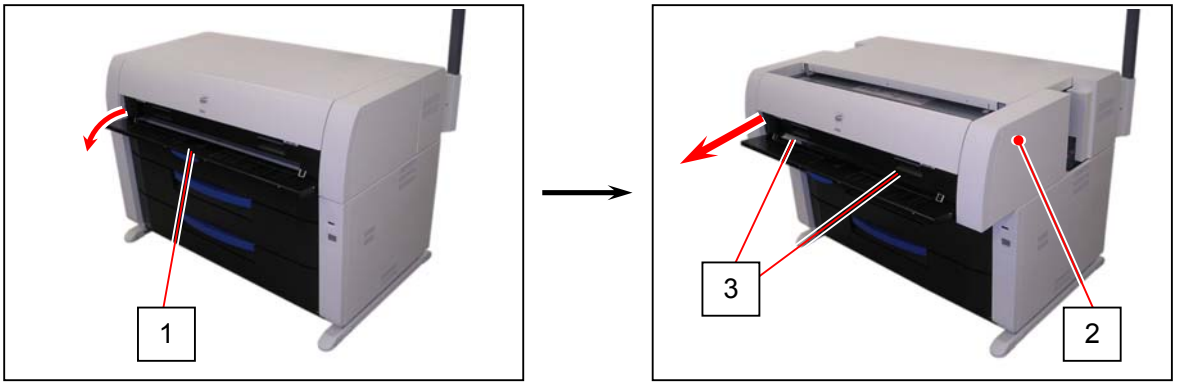


8) Replace the Wire Cleaning Motor with the new one.

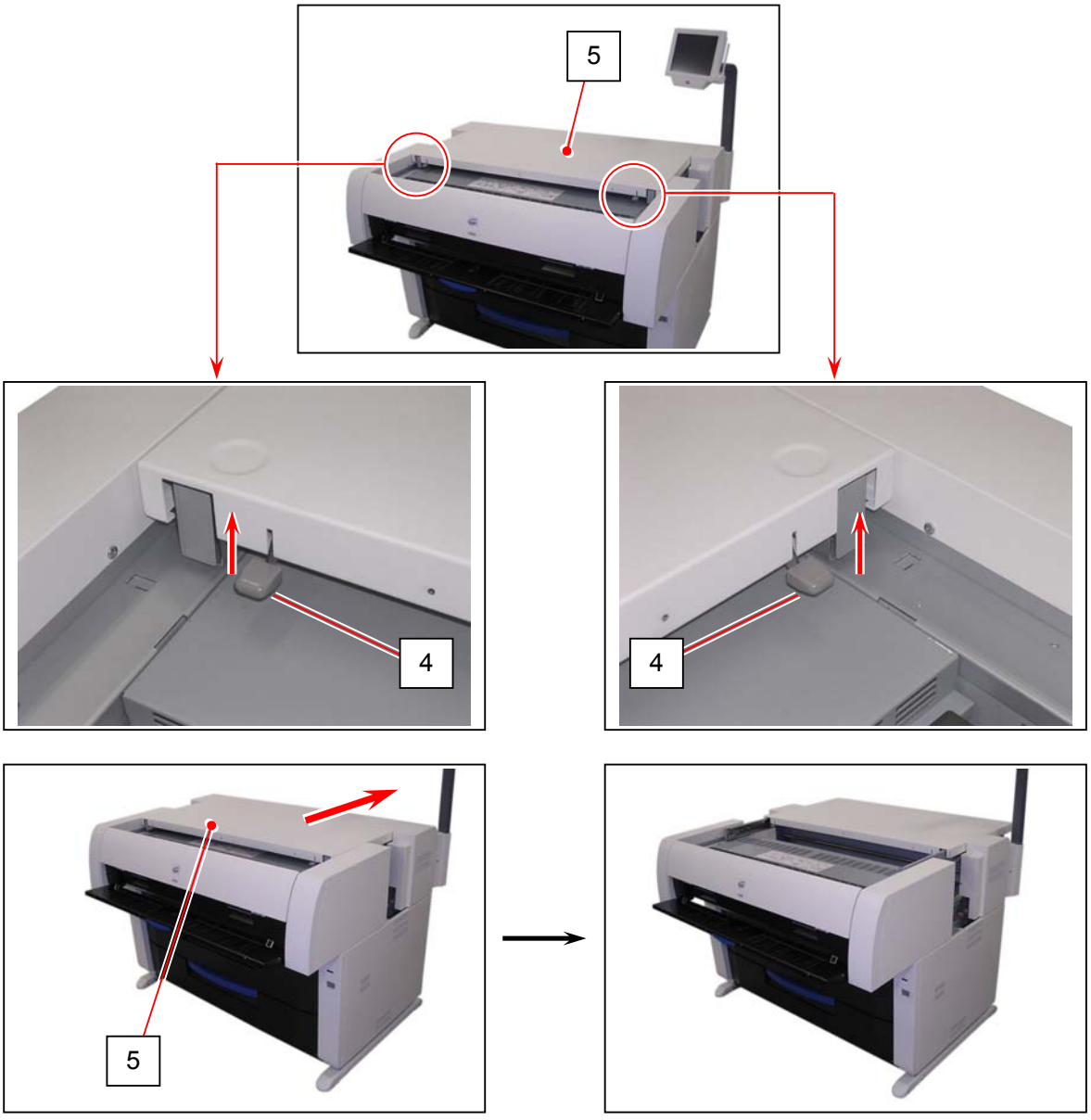
5.6 Transfer/Separation Charger Assembly

5.6.1 Removing Transfer/Separation Charger Assembly

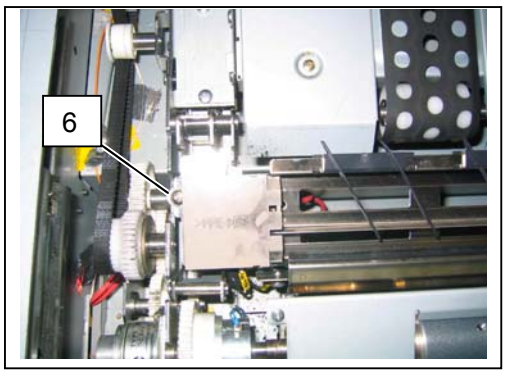
1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).

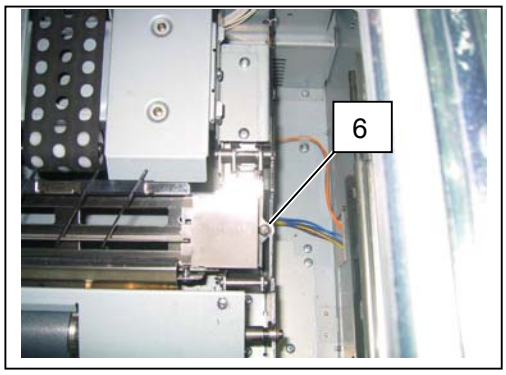


2) Pull up Knobs (4) on both sides, and then open Top Cover (5) by pushing it toward the rear side.



3) Remove the screw (w/Tooth Washer, M4x6) (6) from both sides of Transfer /Separation Charger Assembly, and then take out the Transfer/Separation Charger Assembly.





5.6.2 Replacing Transfer/Separation Corona Wire

NOTE

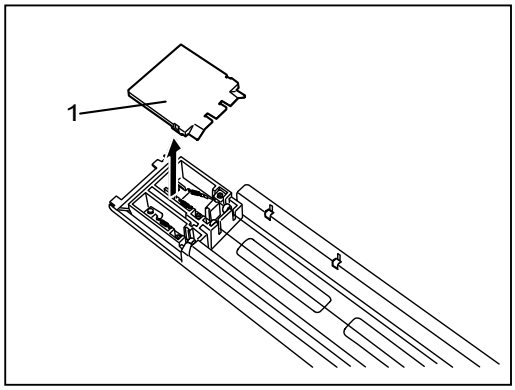
A periodic replacement for the following parts is recommended.

Item	Number of article	Remarks
Corona Wire (Transfer Corona)	1	All of these parts are contained in "Corona Wire Kit" (Z200980010)
Corona Wire Separation Corona	2	

1) Take out the Transfer/Separation Charger Assembly.
Refer to [5.6.1 Removing Transfer/Separation Charger Assembly] on page 5-73.

2) Remove all of the plastic Corona Guards.

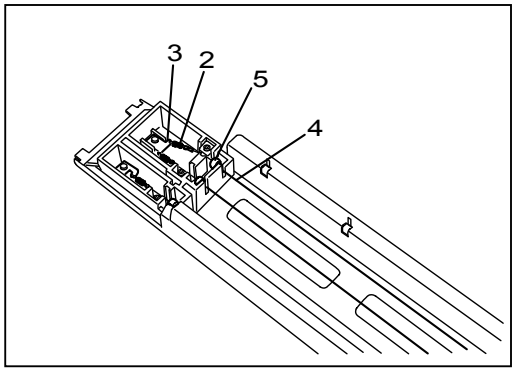
3) Take out the Transfer Cover Head (1) on both sides.



4) Remove the Wire Spring (2) from the Hook (3).

5) Remove the Wire Spring from the other end same as above.

6) Hook the above Wire Springs removed to the both ends of new Corona Wire (4).



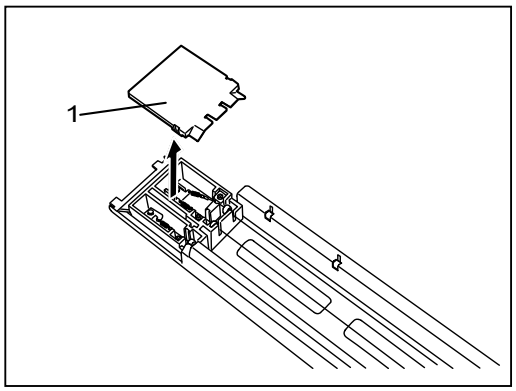
NOTE

For re-assembling, be sure that the beads (5) are in the proper position.

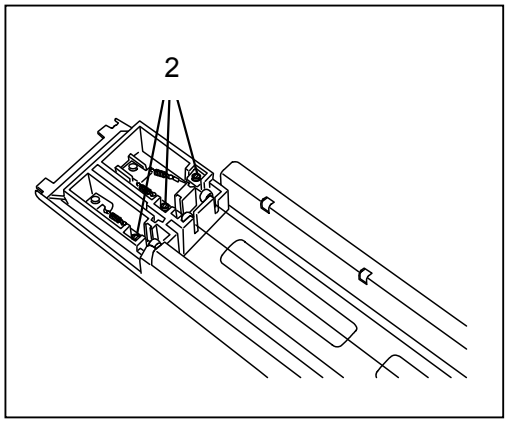
5.6.3 Height Adjustment of Corona Wire

1) Take out the Transfer/Separation Charger Assembly.
   Refer to [5.6.1 Removing Transfer/Separation Charger Assembly] on page 5-73.

2) Take out the Transfer Cover Head (1) on both sides.



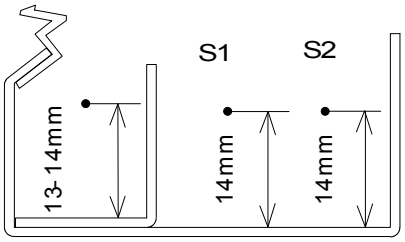
3) Make sure to be kept the specified heights between the bottom of corona house and corona wire by turning the plastic screw (2) with the flat head screw driver (minus).



NOTE

The reference height value is as shown below.

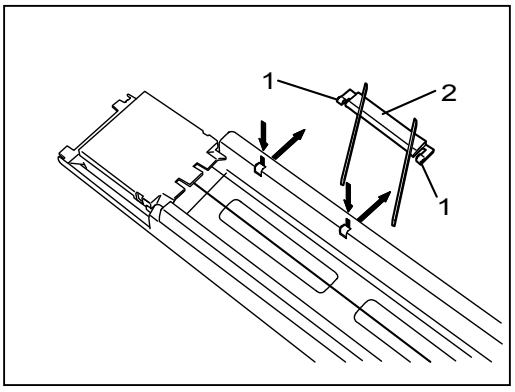
Transfer : 13 – 14mm
Separation : 14mm plus or minus 0.2mm



5.6.4 Replacing Corona Guard

1) Take out the Transfer/Separation Charger Assembly.
   Refer to [5.6.1 Removing Transfer/Separation Charger Assembly] on page 5-73.

2) Press the Boss (1) to release the Corona Guard (2).



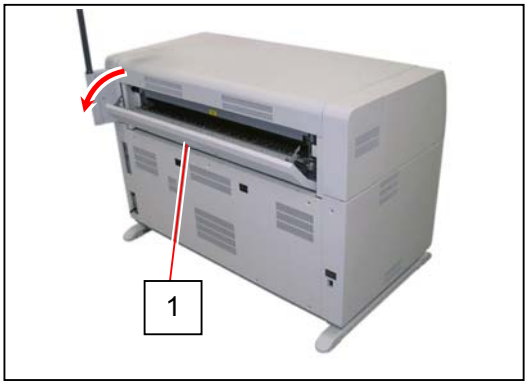
⚠ NOTE

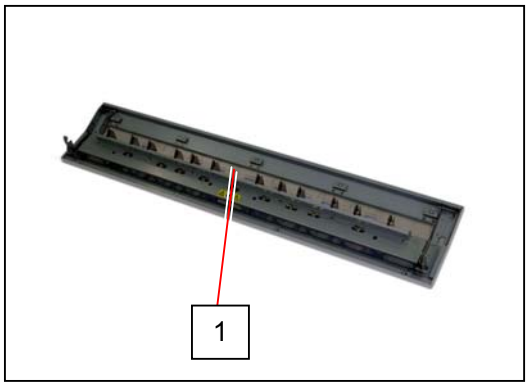
Take care for the fitting direction of Corona Guard; otherwise it might be caused the paper mis-Feeding.
The Corona Guard has the own fitting direction.

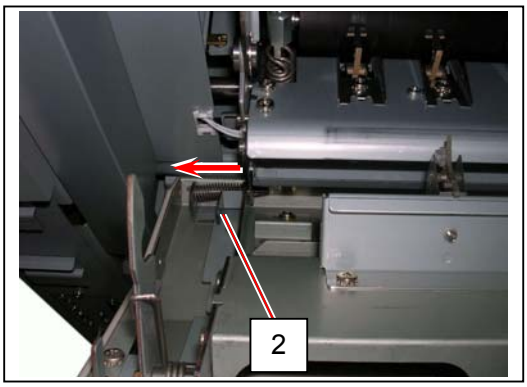
5.7 Fuser Unit

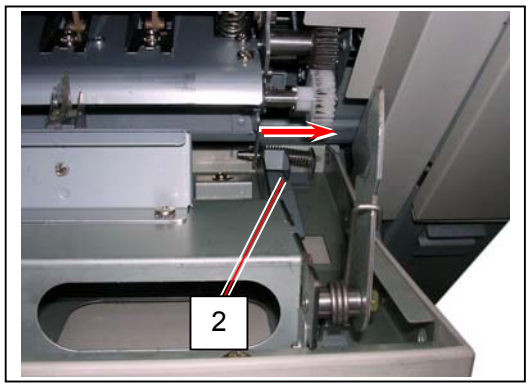
5.7.1 Removing Exit Cover

1) Open Exit Cover (1).
With supporting Exit Cover (1), push Shaft 4 (2) on both sides outward to release them from the hinge holes. Remove Exit Cover (1) from the machine.





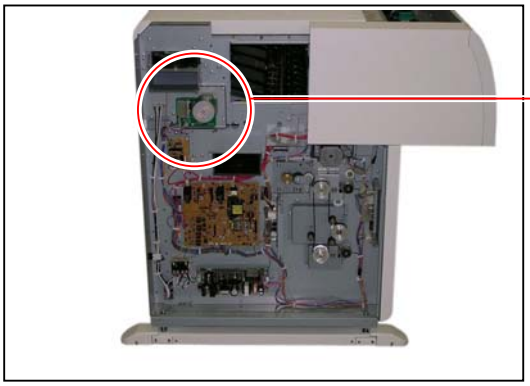


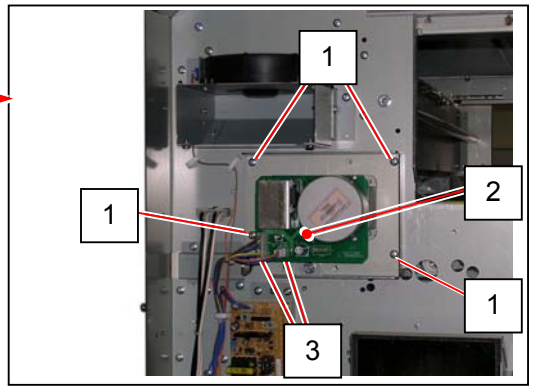


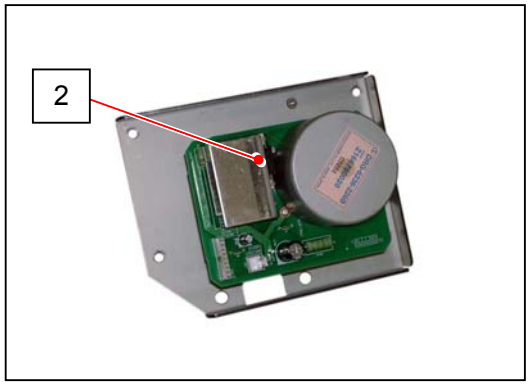
5.7.2 Replacing Fuser Motor

1) Remove Lower Right Cover and Right Rear Cover.
Refer to [5.1.3 Removing Right / Left Rear Cover] on page 5-7.

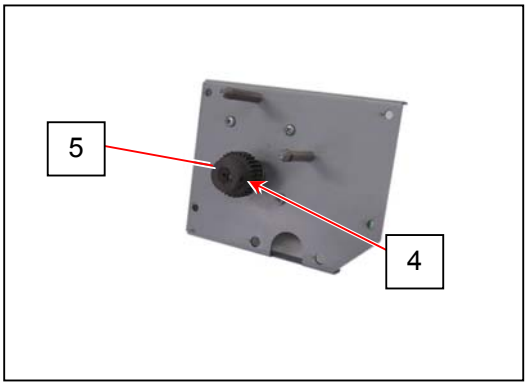
2) Disconnect 2 harnesses (1) from Fuser Motor Assy (2).
Remove 4 Bind Head Screws (M4x6) (3) to remove Fuser Motor Unit.

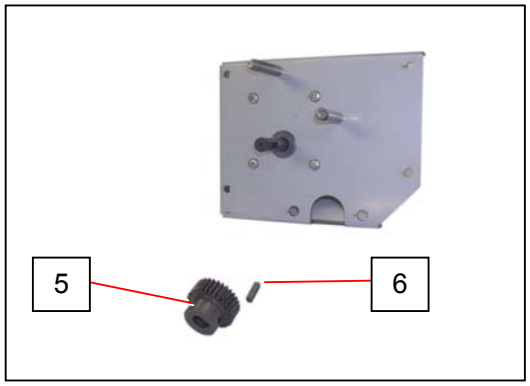




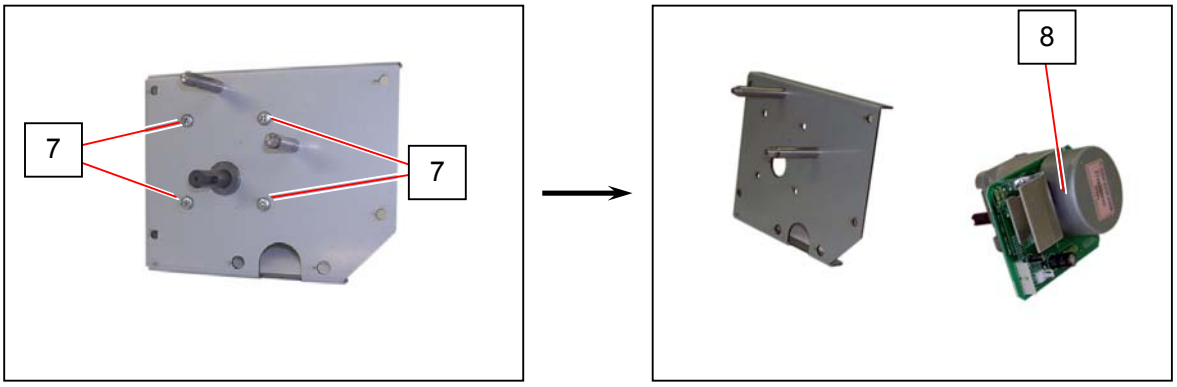


3) Loosen 1 Set Screw w. point (4) to remove 30T Gear (5) and Parallel Key (6).





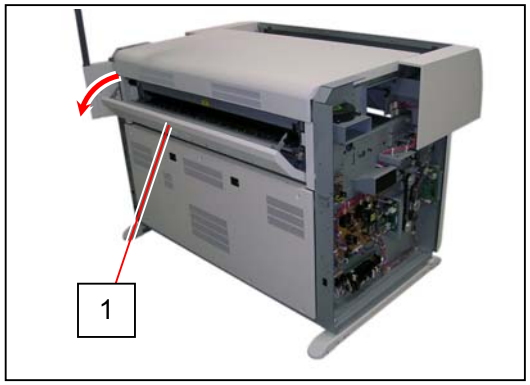
4) Remove 4 Bind Head Screws (M4x12) (7) to remove Fuser Motor (8).



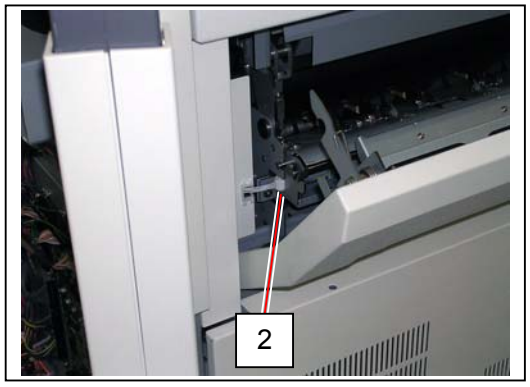
5.7.3 Pulling Out Fuser Unit

1) Remove Fuser Motor Unit from the machine. Refer to [5.7.2 Removing Fuser Motor] on page 5-79.

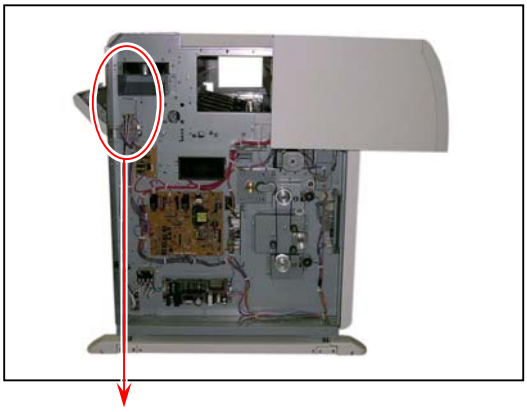
2) Open Exit Cover (1).

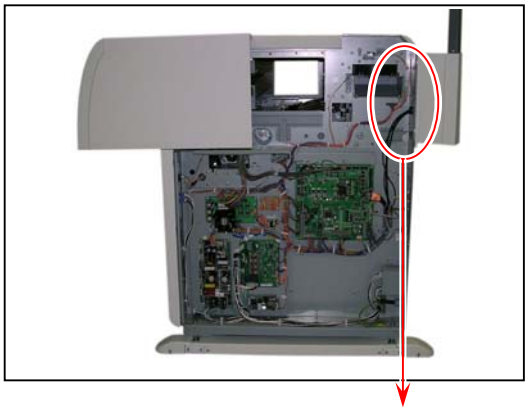


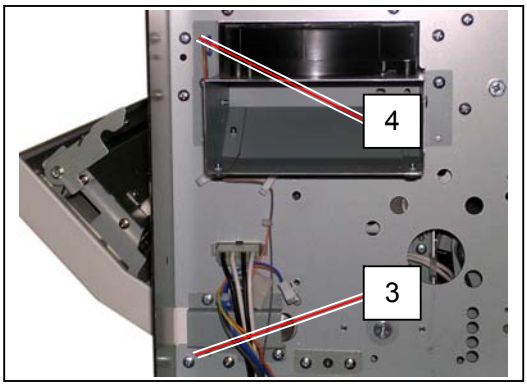
3) Disconnect the white harness (2) on the right rear of the machine.

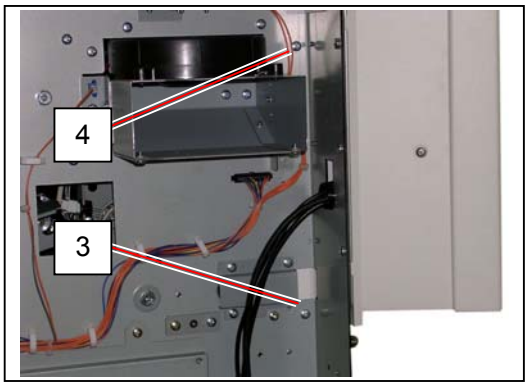


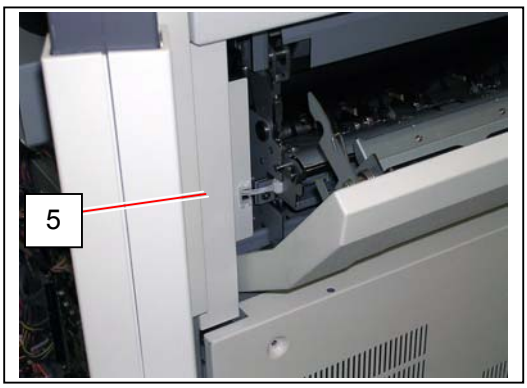
4) On each side, remove 1 Bind Head Screw (M4x6) (3) and 1 Tooth Washer Screw (M4x6) (4) to remove Fuser Side Cover R/L (5).

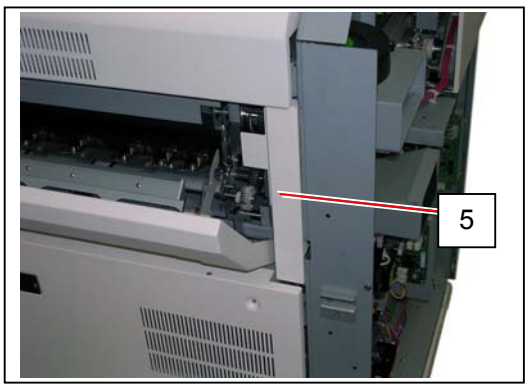


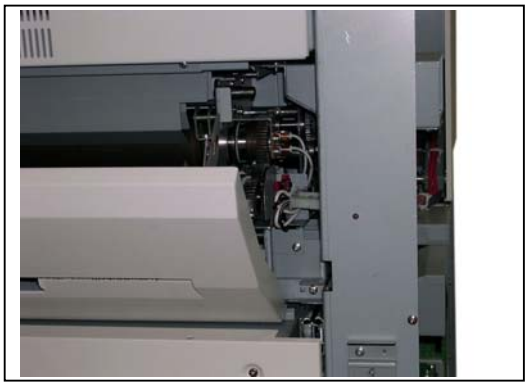




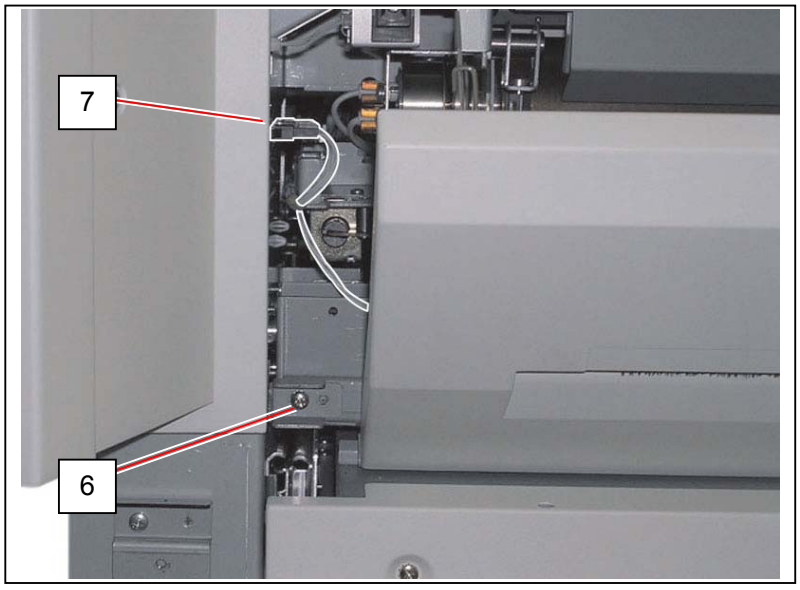


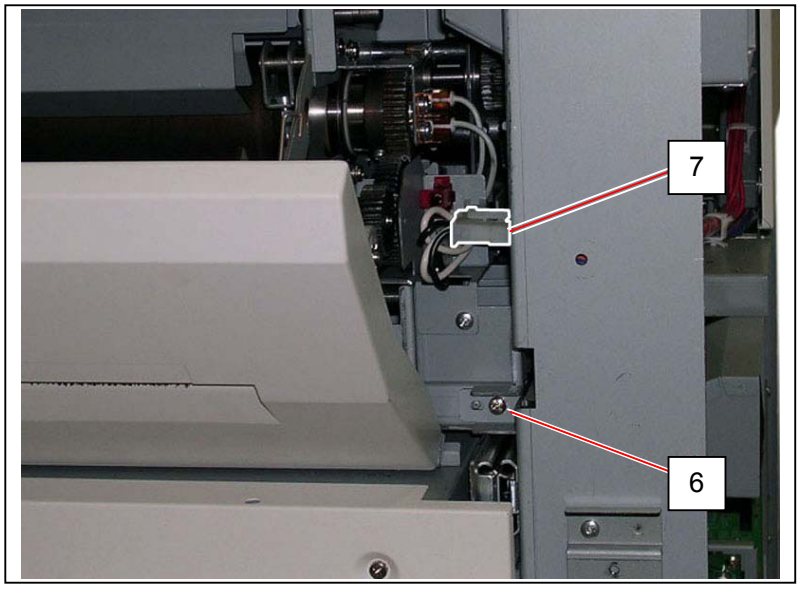




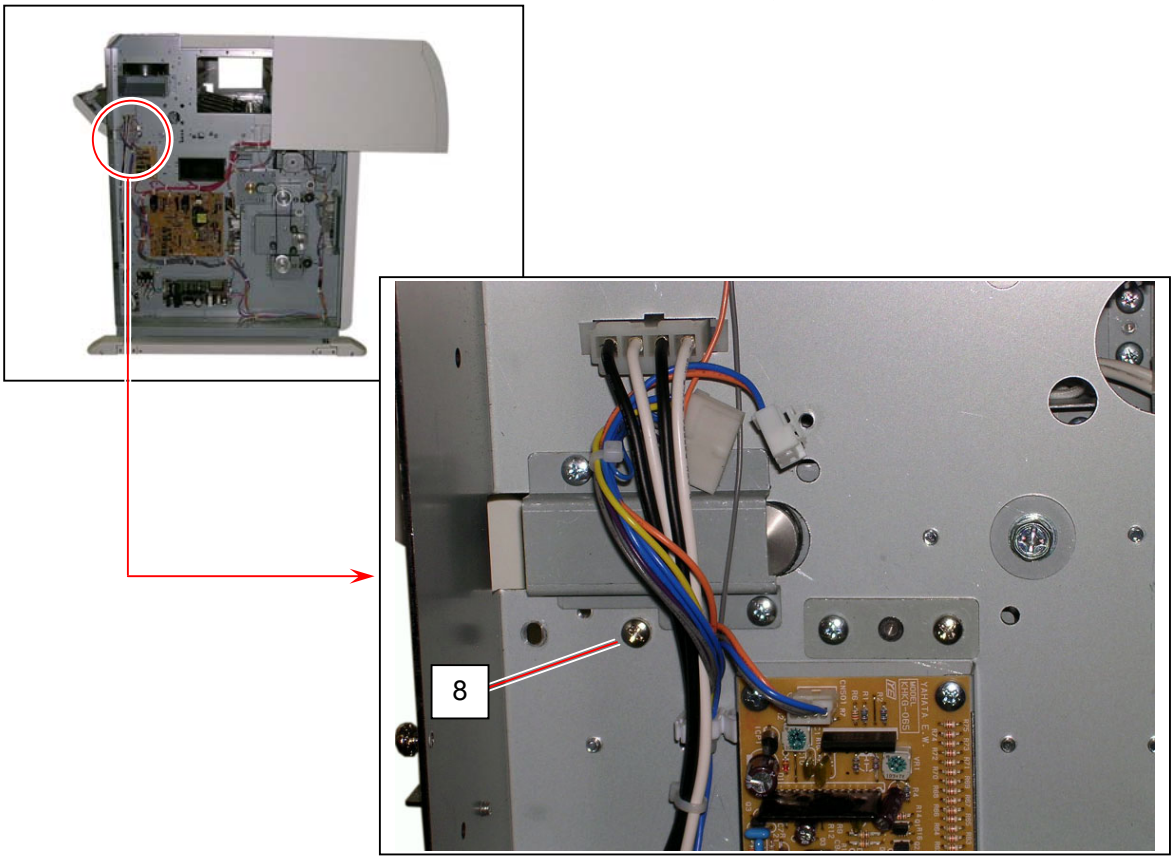


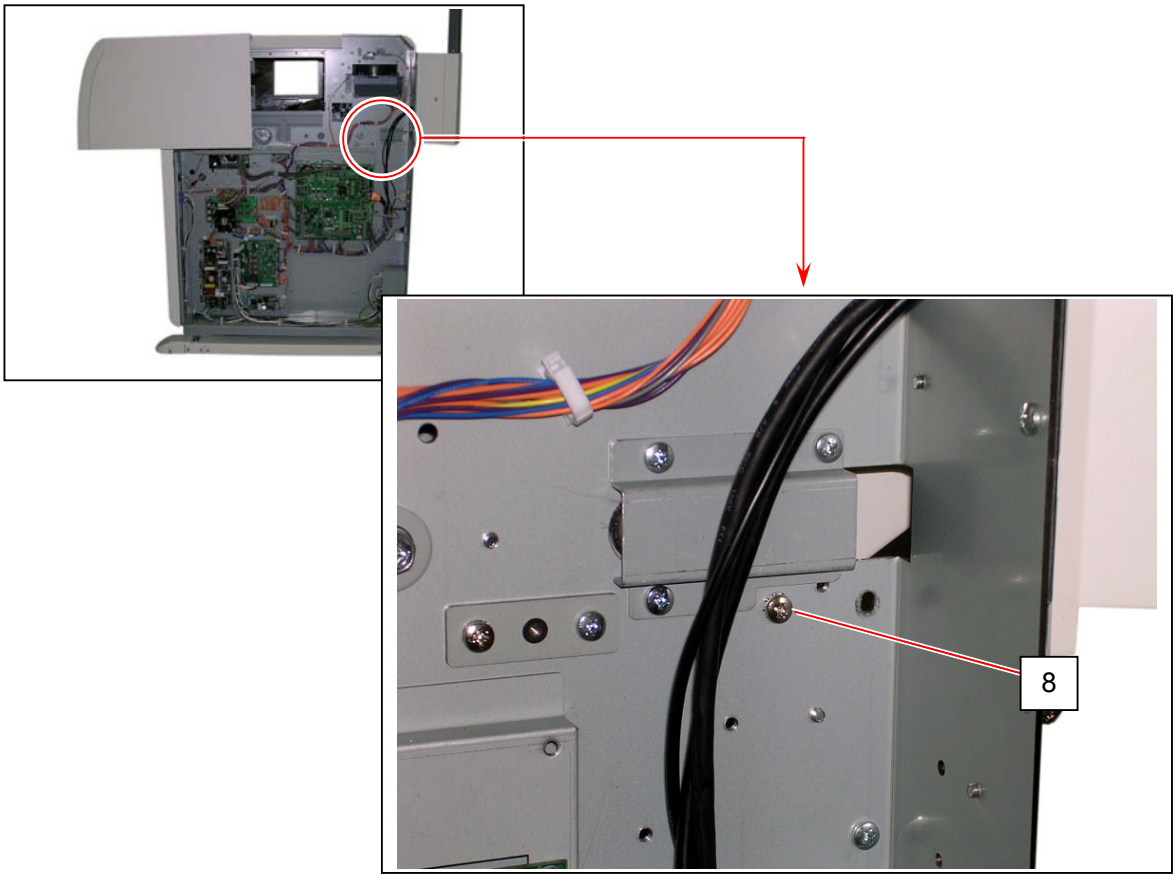
5) On each side, loosen 1 Tooth Washer Screw (M4x6) (6) on Fuser Fixing Bracket and disconnect 1 connector (7).



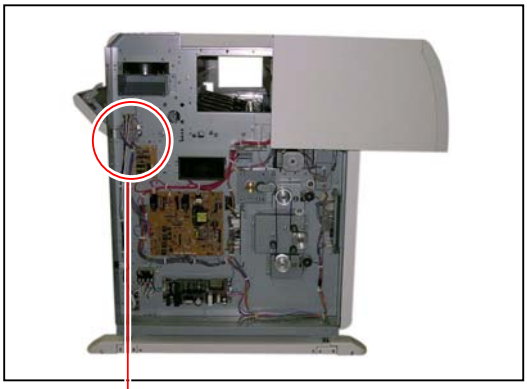


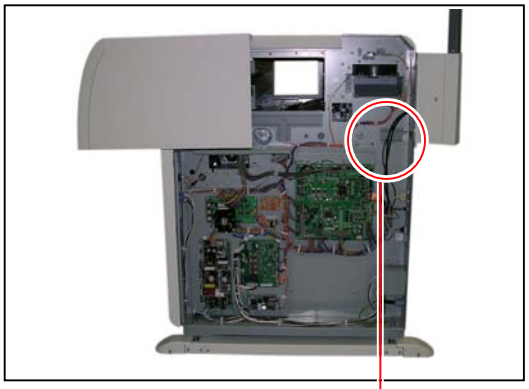
6) On each side, remove 1 Tooth Washer Screw (M4x6) (8) fixing Fuser Fixing Bracket.

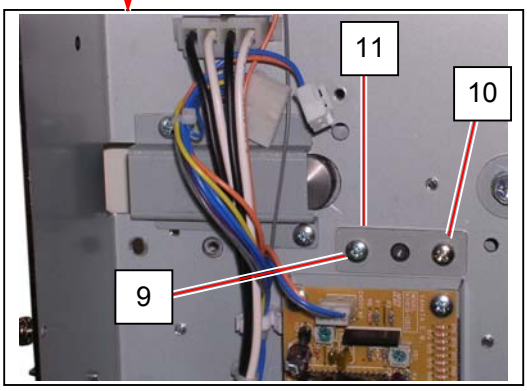


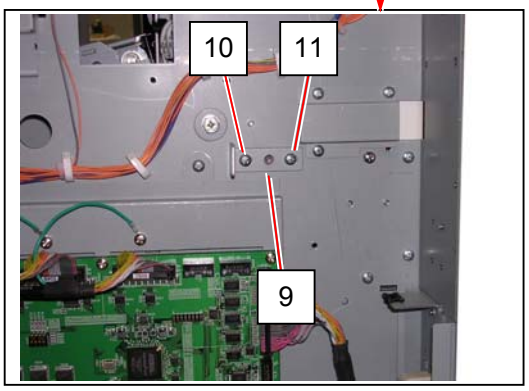


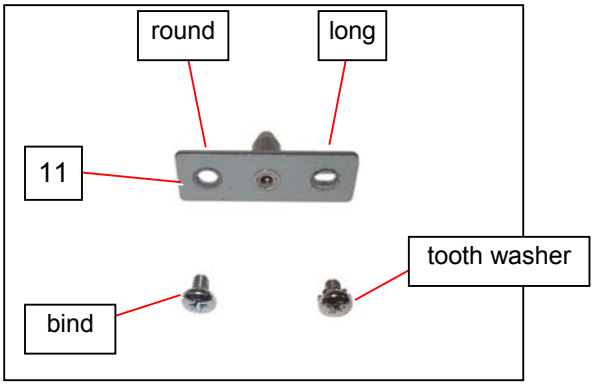
7) On each side, remove 1 Bind Head Screw (M4x6) (9) and 1 Tooth Washer Screw (M4x6) (10) to remove Fuser Set Plate (11).

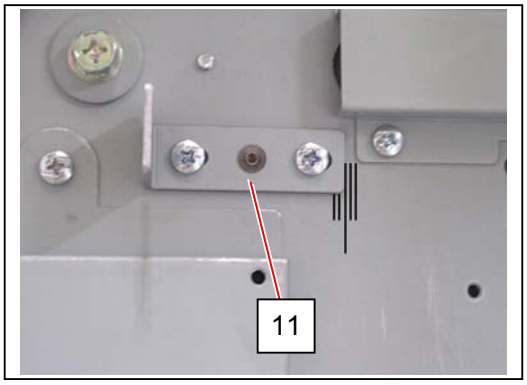










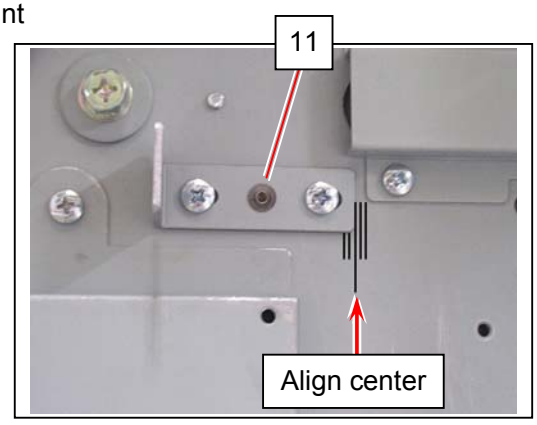


NOTE

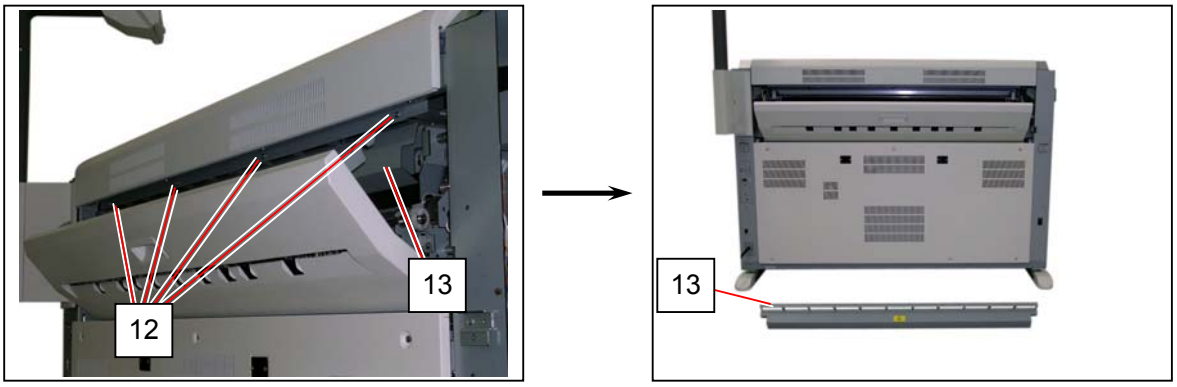
(1) When reassembling, be sure to reinstall 2 Fuser Set Plates (11) first and 2 screws (8) next. Then tighten the screws (6).

(2) The installation direction for Fuser Set Plate is as follows;
- Long Hole: Tooth Washer Screw: Machine Front
- Round Hole: Bind Head Screw: Machine Rear

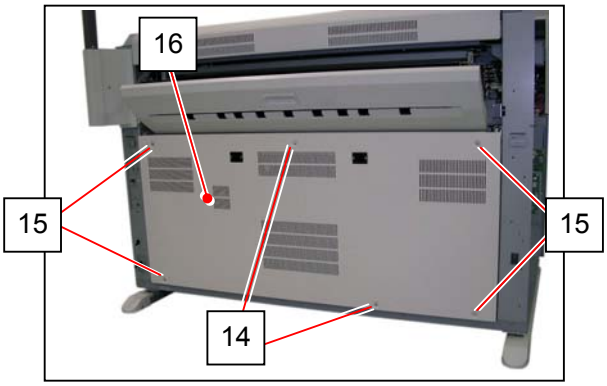
(3) When reassembling, Fuser Set Plate (11) on the right should align with the center scale.



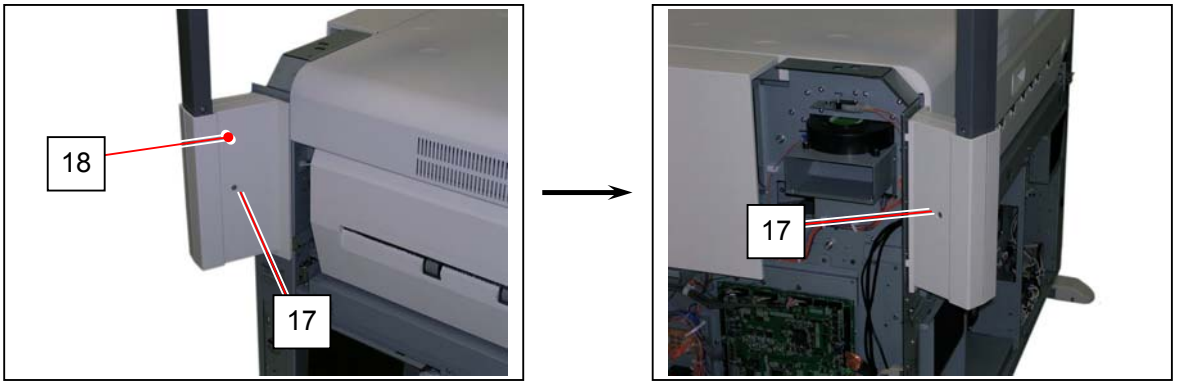
8) Remove 4 Bind Head Screws (M4x6) (12) to remove Fuser Upper Cover (13).



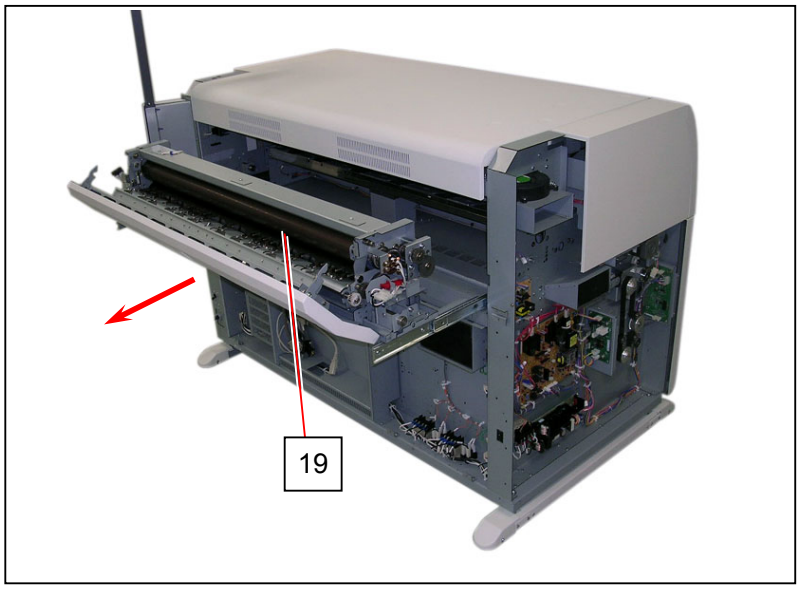
9) Remove 2 Tooth Washer Screws (M4x6) (14) and 4 Bind Head Screws (M4x6) (15) to remove Rear Cover (16).



10) Remove 2 screws (17) from the UI Arm to remove Cover 3 (18).

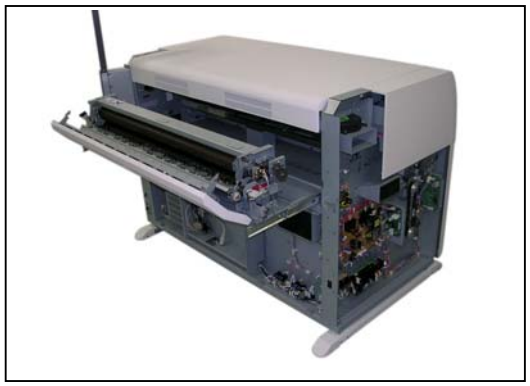


11) Gently pull out Fuser Unit (19).

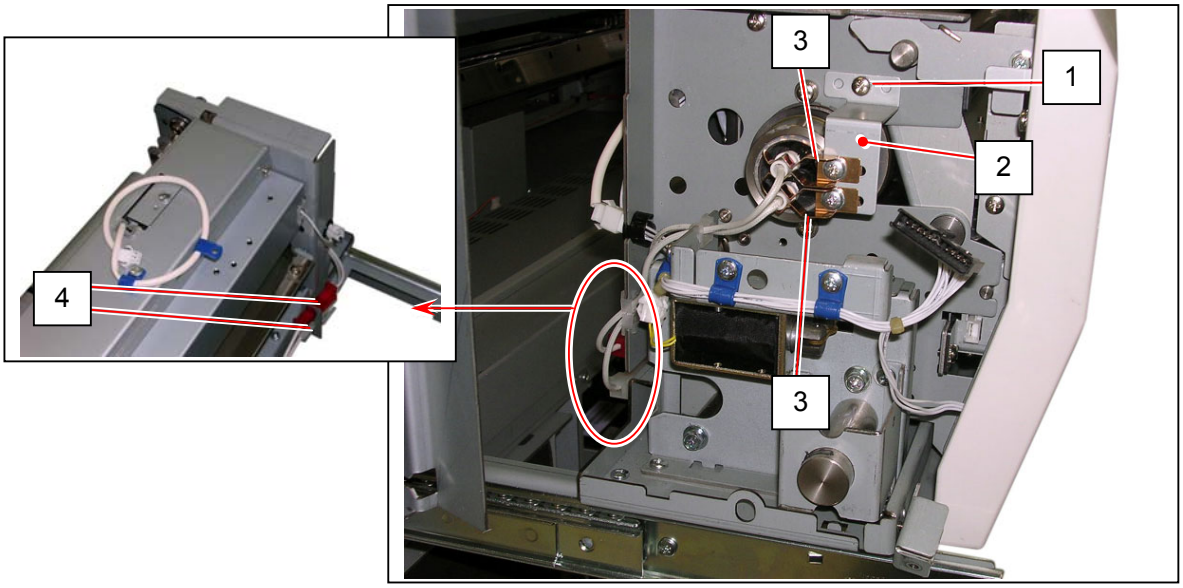


5.7.4 Replacing IR Lamp

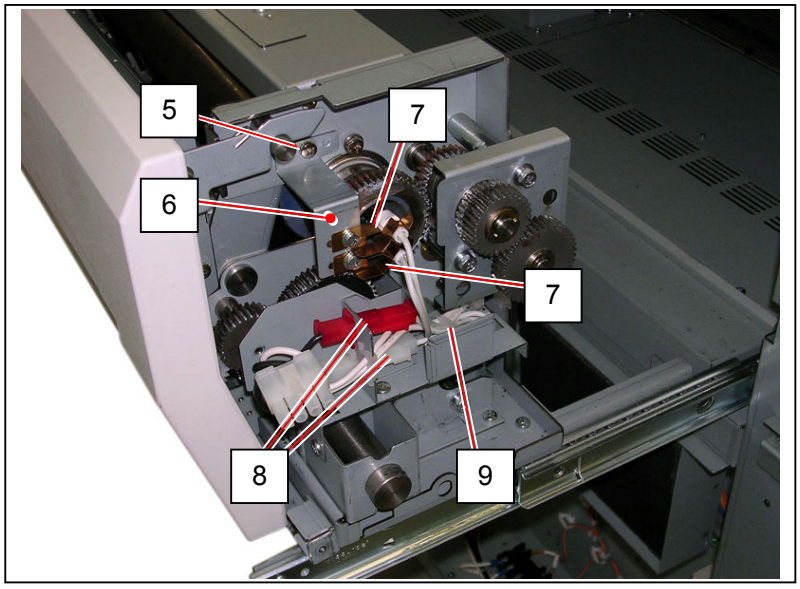
1) Pull out Fuser Unit from the machine.
Refer to [5.7.3 Pulling Out Fuser Unit] on page 5-81.



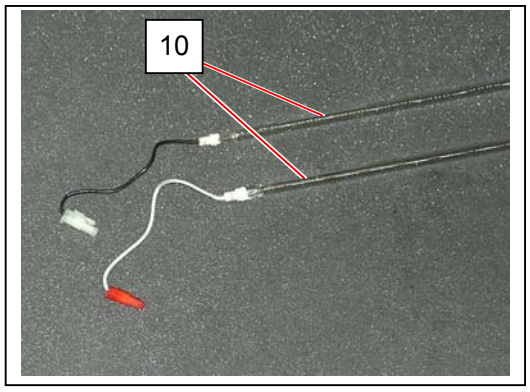
2) On the right (with solenoid), remove 1 Tooth Washer Screw (M4x6) (1) to release Lamp Guide (2) and IR Lamps together.
Release IR Lamps from Lamp Mount (3).
Disconnect 2 connectors (4: red/center, white/sides) of IR Lamp.



3) On the left (with gears), remove 1 Tooth Washer Screw (M4x6) (5) to release Lamp Guide (6) and IR Lamps together.
Release IR Lamps from Lamp Mount (7).
Disconnect 2 connectors (8) of IR Lamp. Release the harnesses from the Wire Saddle (9).



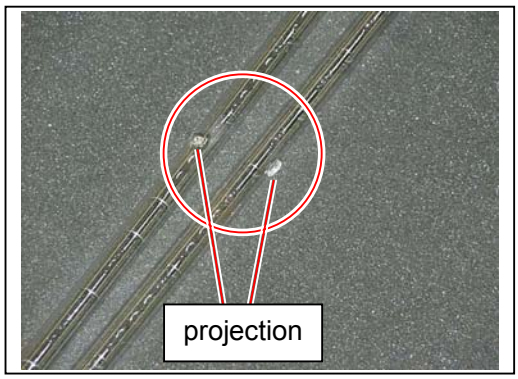
4) Gently pull out IR Lamp (10) in either way.

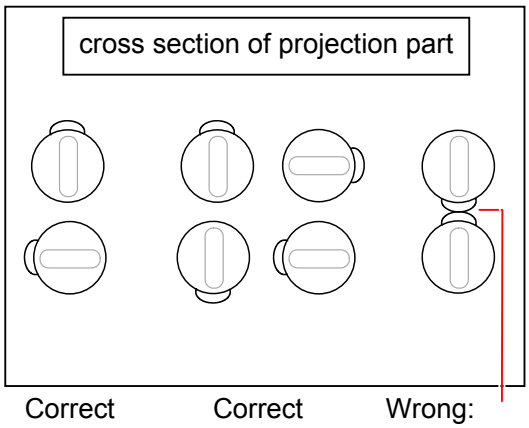


NOTE

(1) Do not touch the glass part with bear hands.

(2) There is a bubble-like projection on the middle glass part of IR Lamp.
When the projections of both IR Lamps touch each other, IR Lamps will be broken because of the vibration or heat.
Make sure to make these projections face to the other directions when you install the IR Lamps.





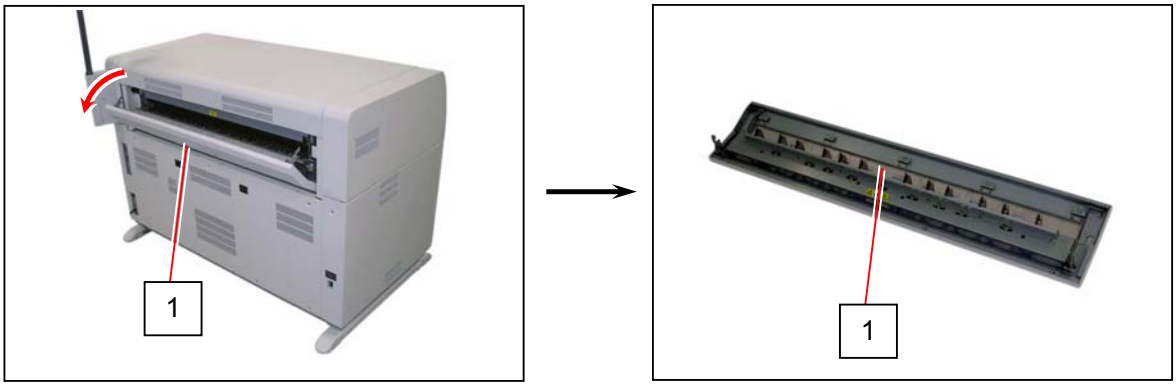
5.7.5 Replacing Recommended Periodic Replacement Parts
(Fuser Roller, Pressure Roller, Separation Finger, Stripper Finger Assy)

NOTE

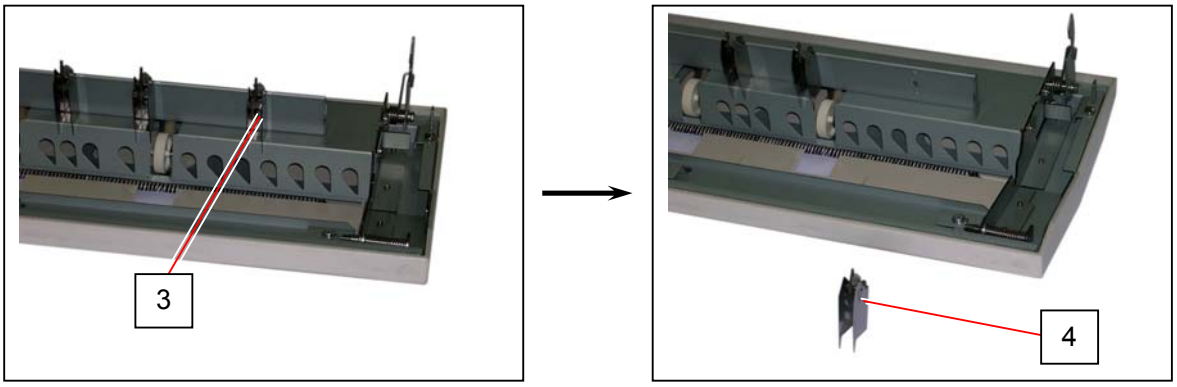
All of the following parts are Fuser Unit components that are recommended to perform periodic replacement at a time.
Refer to this section as well for replacement individual part listed below.

Item	Q'ty	Remarks
Fuser Roller	1	All of these parts are contained in "Fuser Maintenance Kit (7700)" (Z200980090)
Pressure Roller	1	
Separation Finger	17	
Stripper Finger Assy	12	

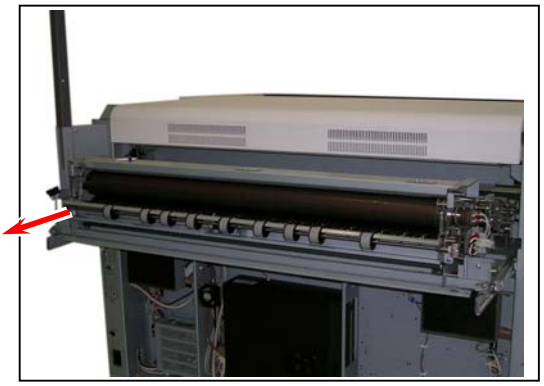
1) Open Exit Cover (1).
With supporting Exit Cover (1), push Shaft 4 (2) on both sides outward to release them from the hinge holes. Remove Exit Cover (1) from the machine.



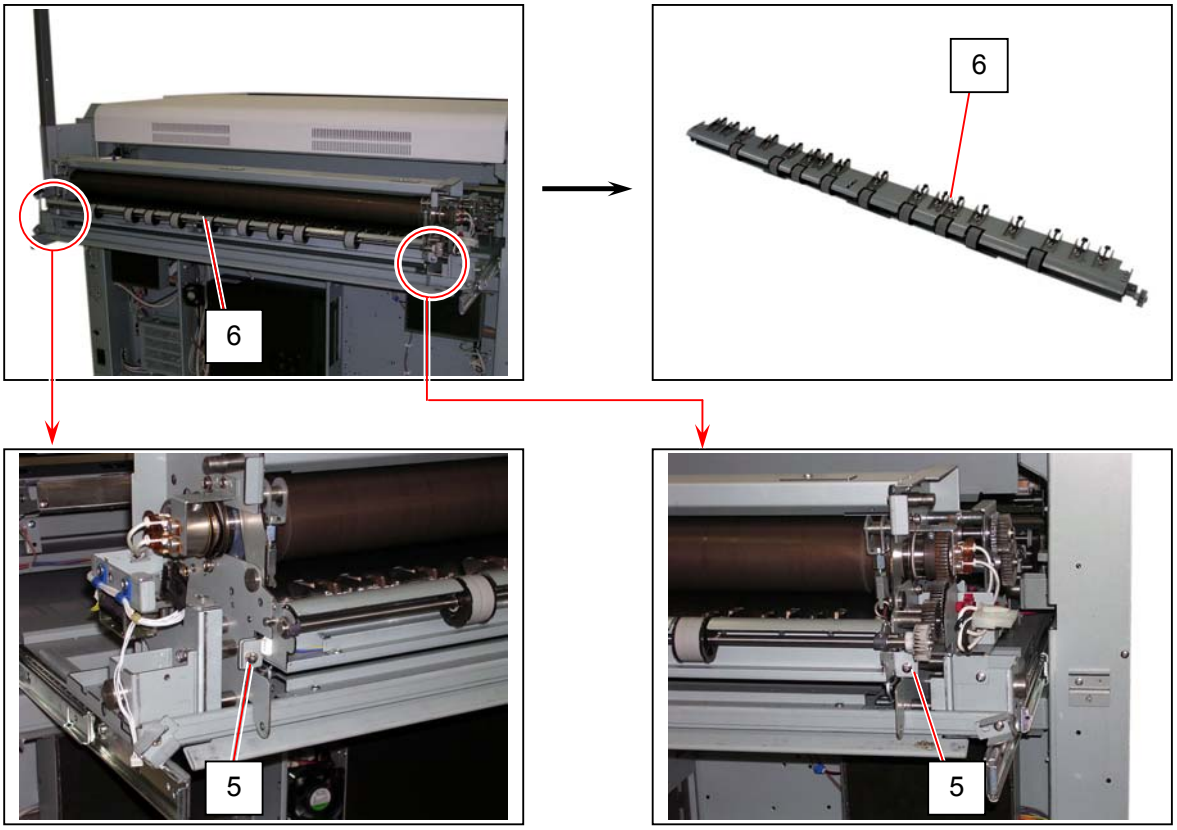
2) Remove 1 Bind Head Screw (M4x6) (3). Replace **Stripper Finger Assembly** (4) with a new one.



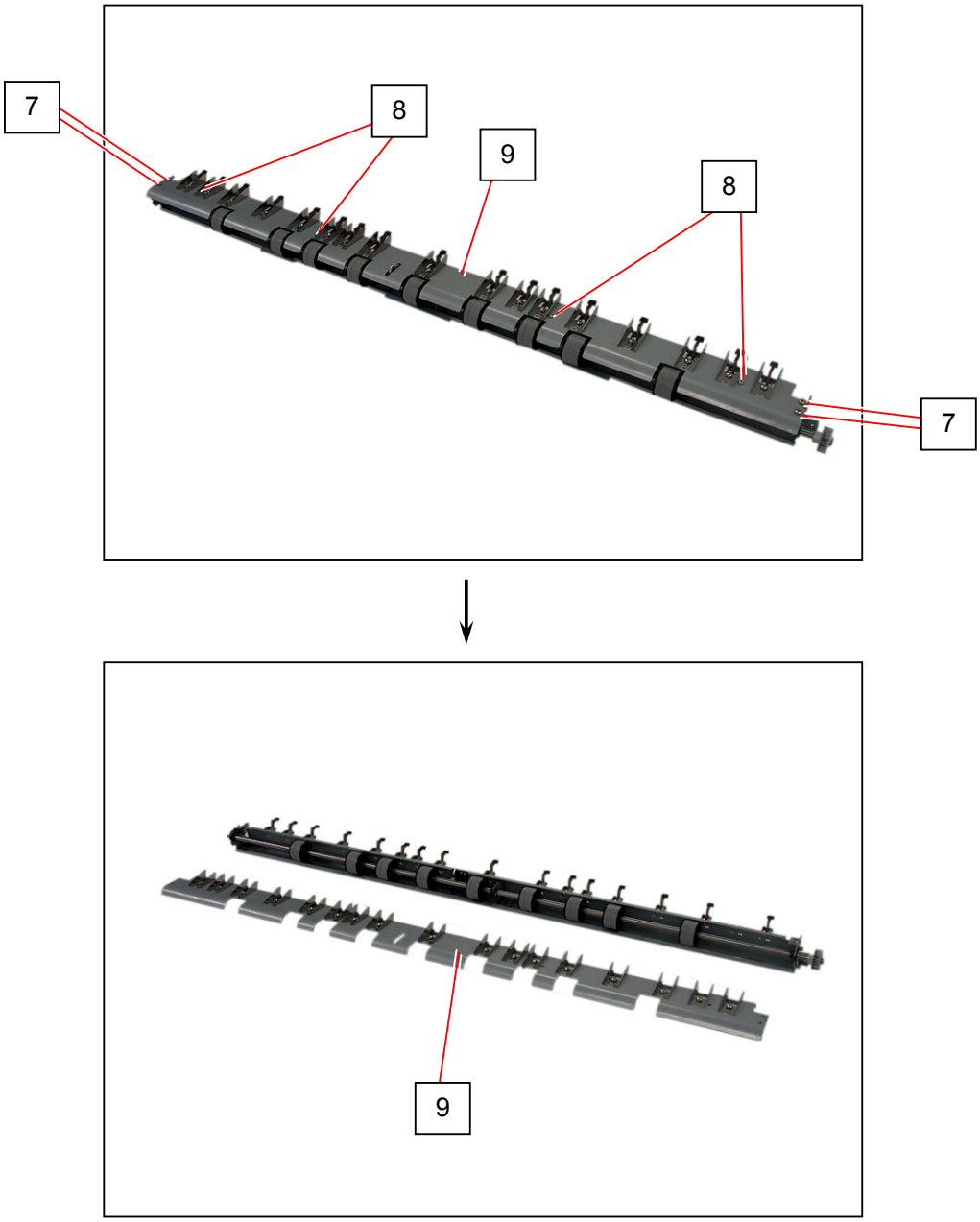
3) Pull out Fuser Unit from the machine.
Refer to [5.7.3 Pulling Out Fuser Unit] on page 5-81.



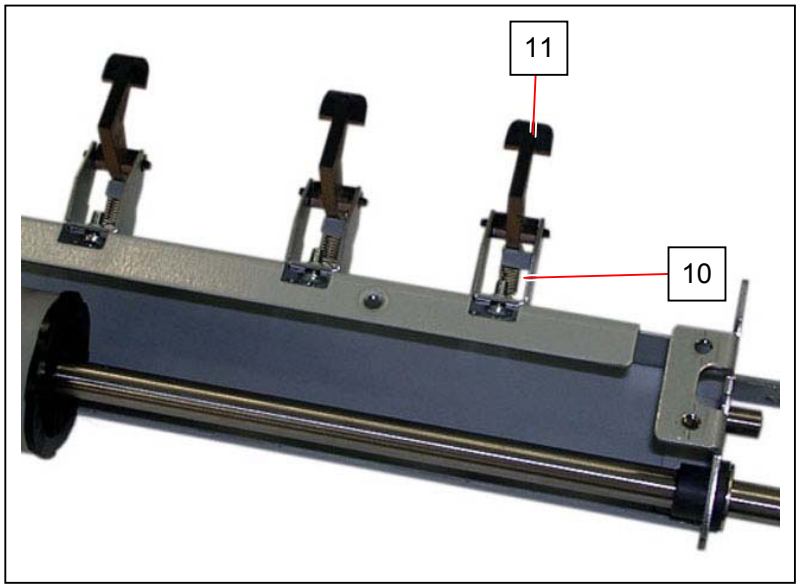
4) Remove 2 Tooth Washer Screws (M4x6) (5) to remove Paper Exit Assy (6).

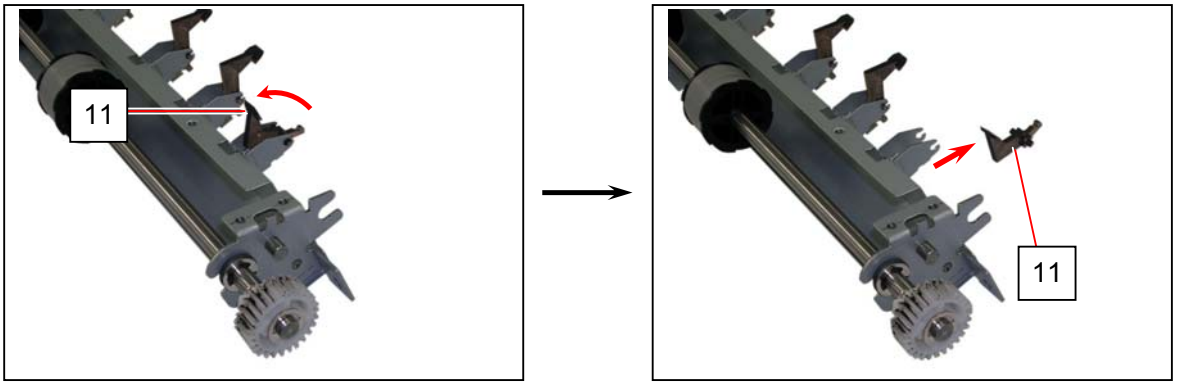


5) Remove 4 Tooth Washer Screws (M4x6) (7) and 4 Bind Head Screws (M3x6) (8) to remove the upper frame (9).

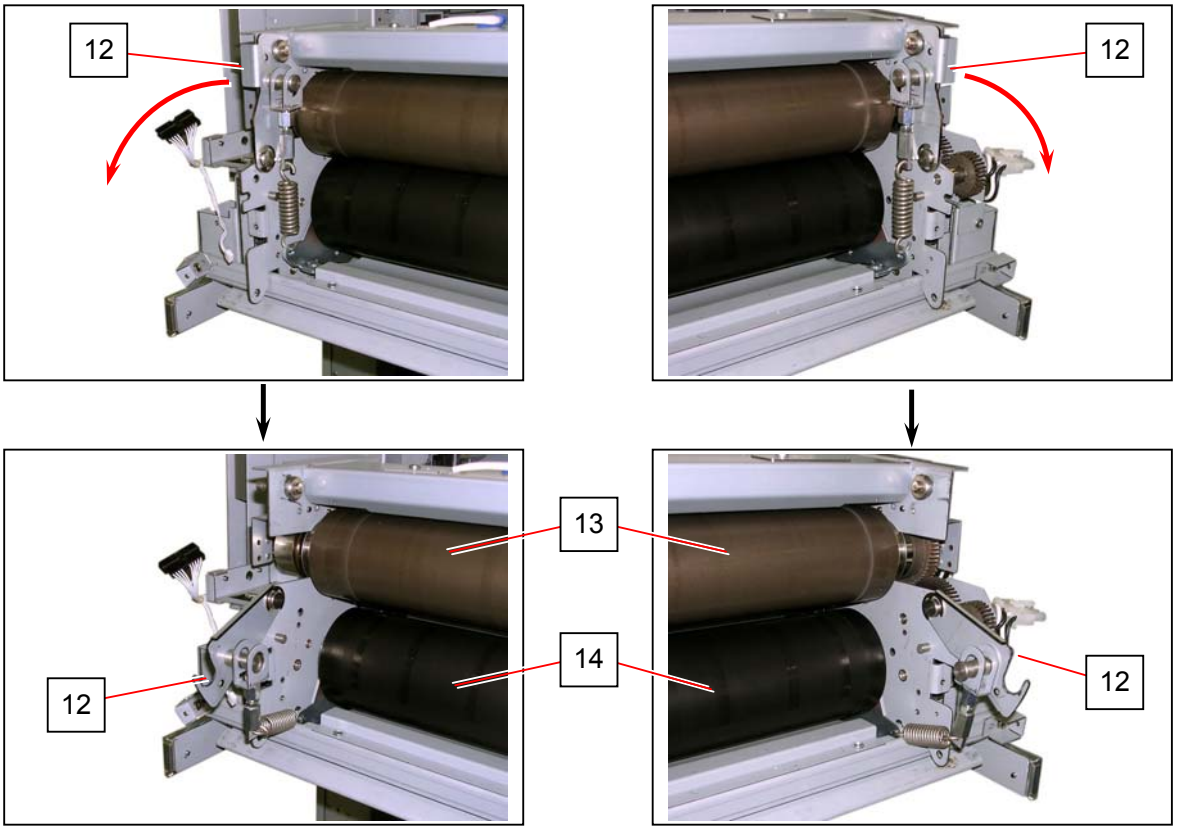


6) Remove Extension Spring (10) from Separation Finger (11).
Turn Separation Finger (11) to the arrow direction. Replace **Separation Finger** with a new one.

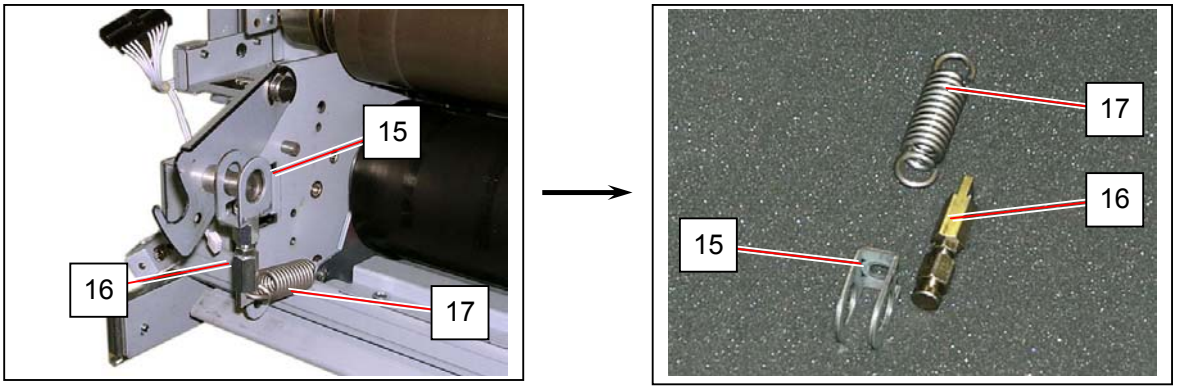




7) (Fuser Unit on the machine) Pull Lever L/R (12) to the rear to decompress Fuser Roller (13). This will allow Pressure Roller (14) to release from Fuser Roller (13).



8) On both sides, remove Spring Hook 3 (15), Spring Hook 1 (16) and Extension Spring A (17).

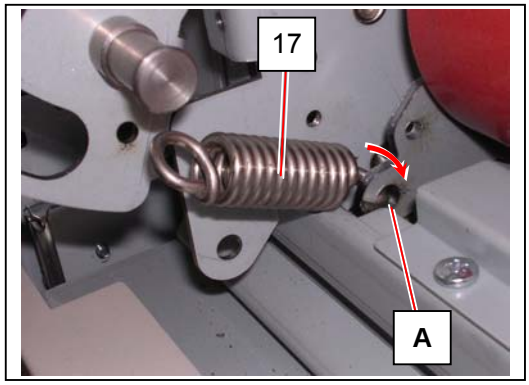


(See the next page)

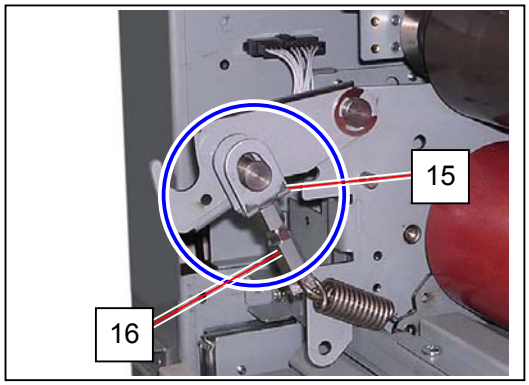
NOTE

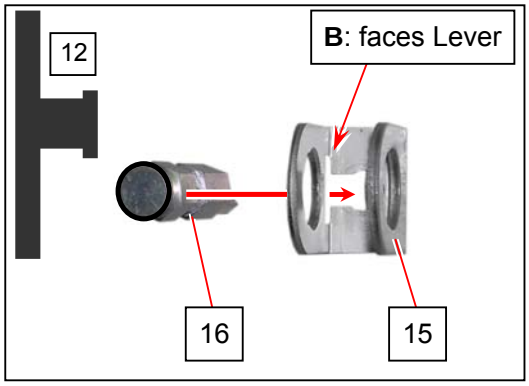
(1) If you disassemble Spring Hook 3 (15), Spring Hook 1 (16) and Extension Spring A (17) at this point, be sure to reinstall them noting the followings.

a) The lower end of Extension Spring A (17) should be inserted into the lower hole (**A**) from outside to inside.

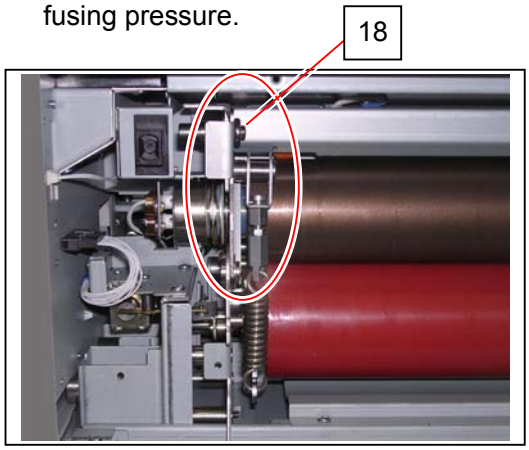


b) The bottom cutting (**B**) of Spring Hook 3 (15) should face Lever L/R (12) so that the top pin of Spring Hook 1 (16) comes into the cutting (**B**) from outside.

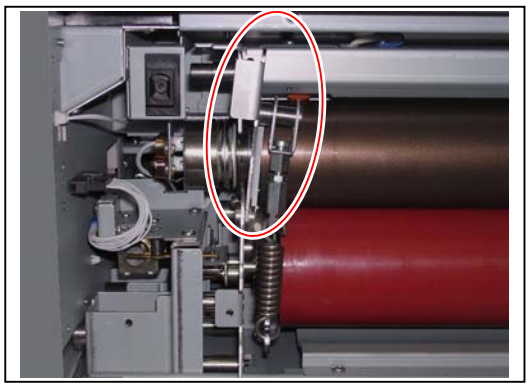




(2) Push Lever L/R (12) onto the pins (18) correctly. Not doing so will obtain an incorrect fusing pressure.

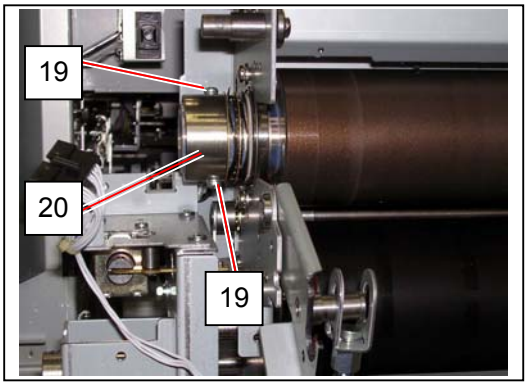


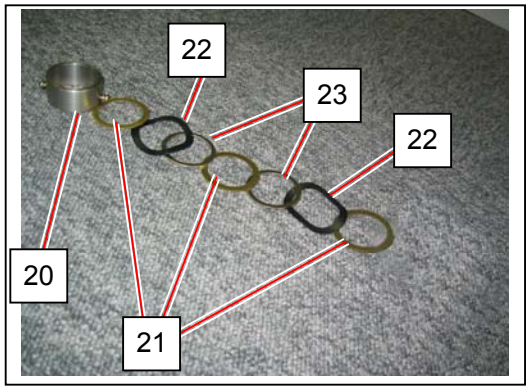
Correct: Lever on Pin (in position)



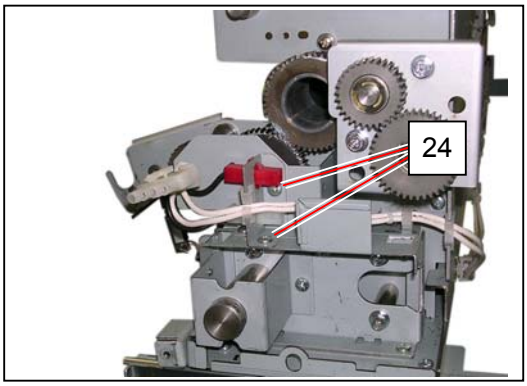
Wrong: Lever out of Pin

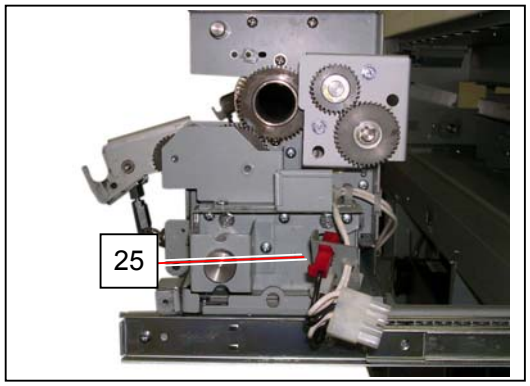
9) On the solenoid side, remove 2 Pan Head Screws (19) to remove Collar (20), Spacer (3 pcs) (21), Wave Washer (2 pcs) (22) and Collar (2 pcs) (23).



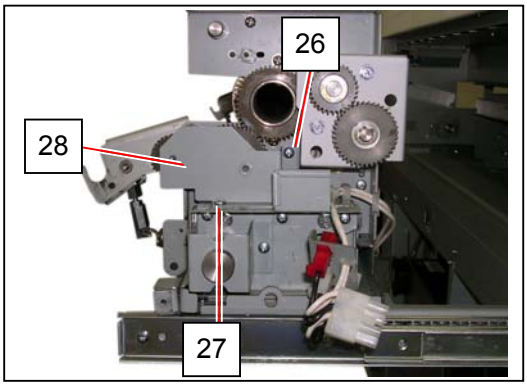


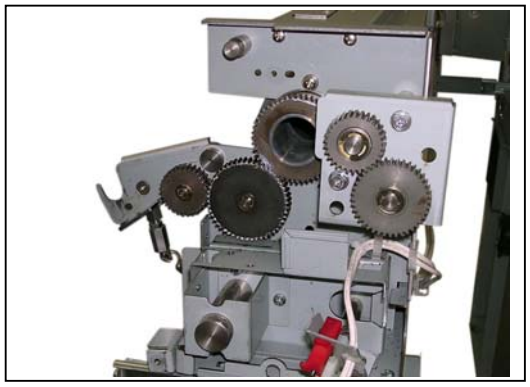
10) On the gear side, remove 2 Bind Head Screws (M4x4) (24) to remove Connector Plate L (25).



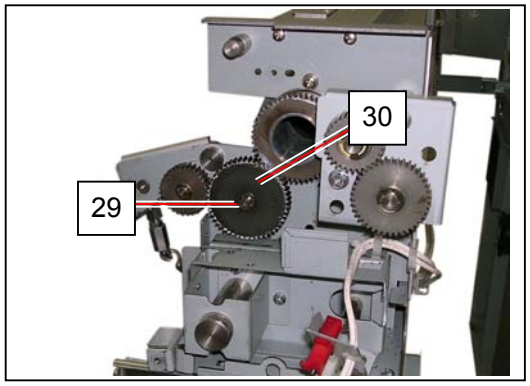


11) Remove 1 Bind Head Screw (M4x6) (26), 1 Bind Head Screw (M4x4) (27) from the top to remove Harness Cover L (28).



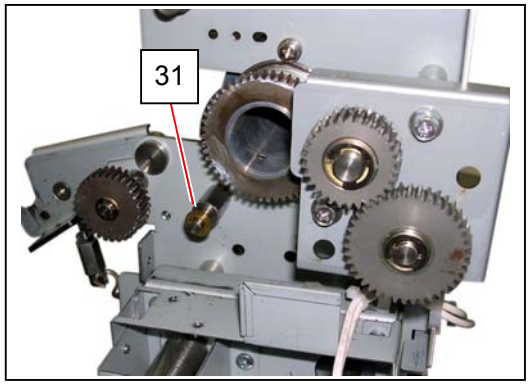


12) Remove Retaining Ring-E (29) to remove 50T Spur Gear (30) blocking Ball Bearing on Fuser Roller shaft.

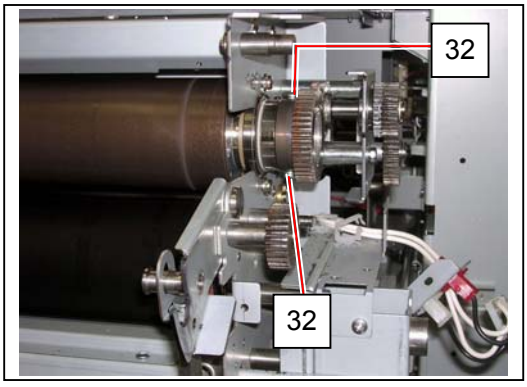


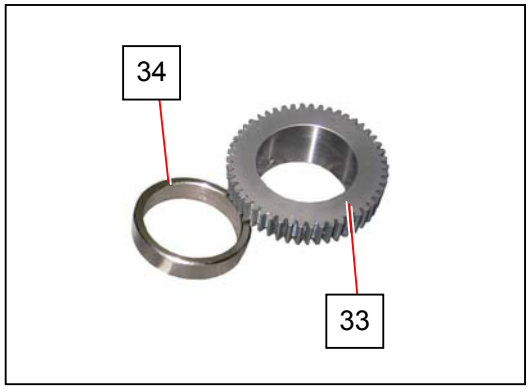
NOTE

Do not lose Shim (31) on the shaft inside 50T Spur Gear.

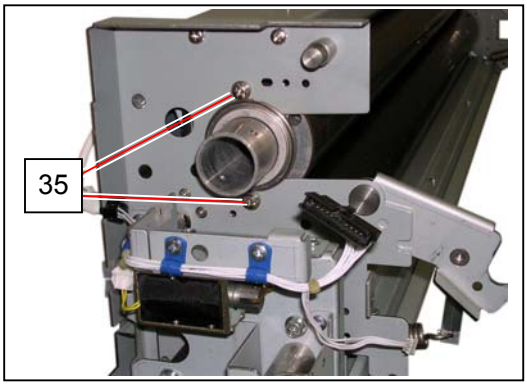


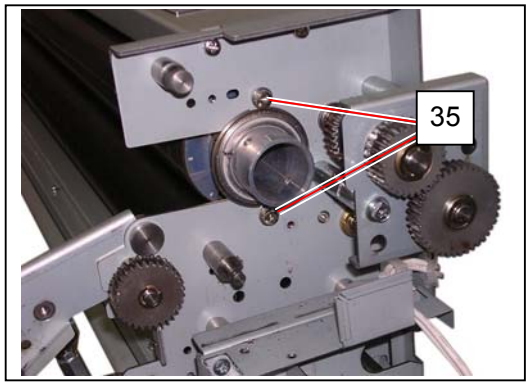
13) Remove 2 Pan Head Screws (32) to remove 50T Gear (33) and Collar 1 (34).

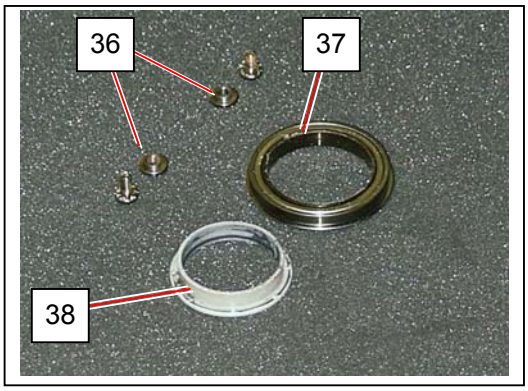




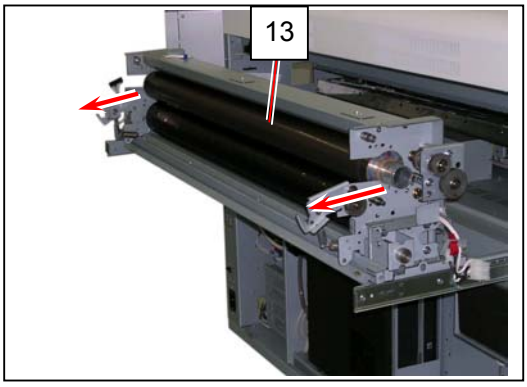
14) Remove 2 Tooth Washer Screws (M4x8) (35) on each side to remove Collar (36), Ball Bearing (37), and Isolate Bushing (38) from Fuser Roller.

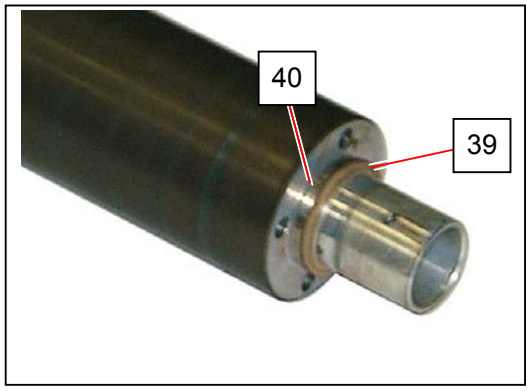






15) Pull Fuser Roller (13) toward you (to the rear) to remove it.
Remove Collar E (39: plastic) and Collar 4 (40: metal) from the right of the machine (gear side of Fuser Unit).
Replace **Fuser Roller** with a new one.



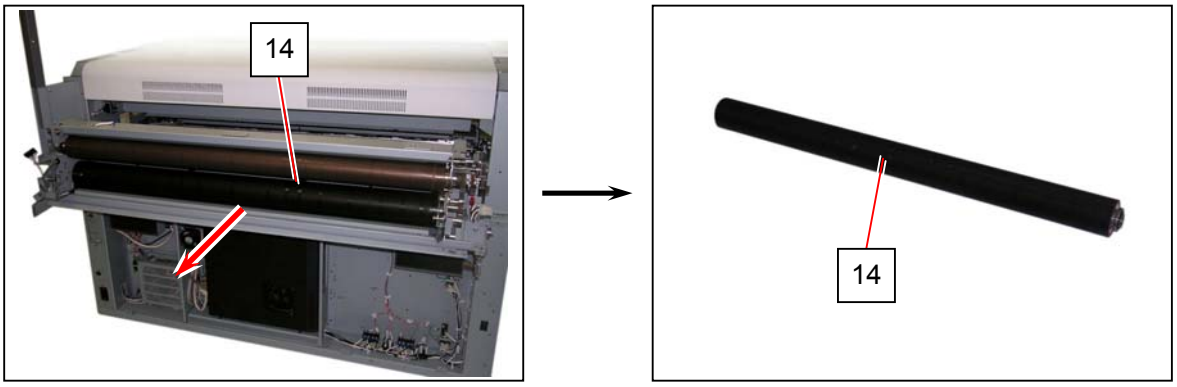


NOTE

(1) You do not have to be care about the direction (left or right) of the Fuser Roller when you install the new one.
However, install the side having Collar E and Collar 4 to the driving side of machine.

(2) Collar E (39: plastic) is not included in recommended periodic replacement part.
Basically you do not have to replace if it is not broken.
But the Collar E is strongly fixed to the Fuser Roller for a long term of usage.
Therefore, it will be broken in many cases if you try to remove it from the Fuser Roller.
Replace with the new one if it is broken.

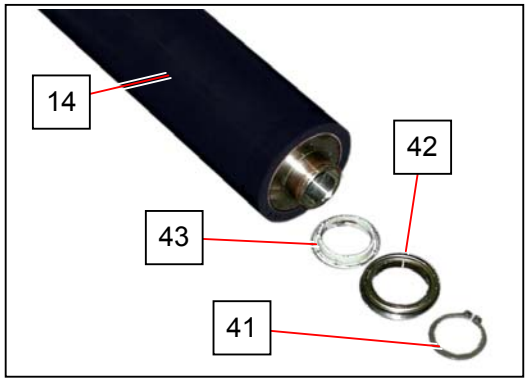
16) Pull Pressure Roller (14) toward you (to the rear) to remove it.



Reference

Pressure Roller can be removed whether Fuser Roller has been installed or removed.

17) Remove C-ring (41), Ball Bearing (42) and Isolate Bushing (43) from each side.
Replace **Pressure Roller** with a new one.

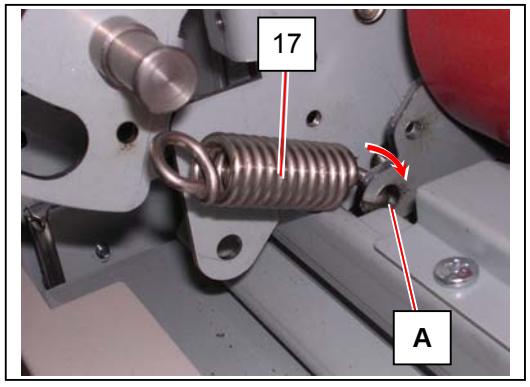


NOTE

(1) Pressure Roller can be installed in either direction.

(2) When reassembling, be sure to reinstall Spring Hook 3 (15), Spring Hook 1 (16) and Extension Spring A (17) noting the followings.

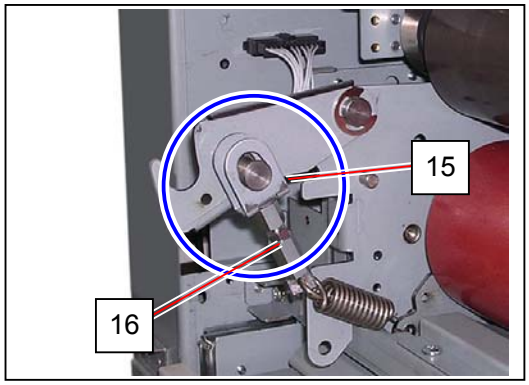
a) The lower end of Extension Spring A (17) should be inserted into the lower hole (**A**) from outside to inside.

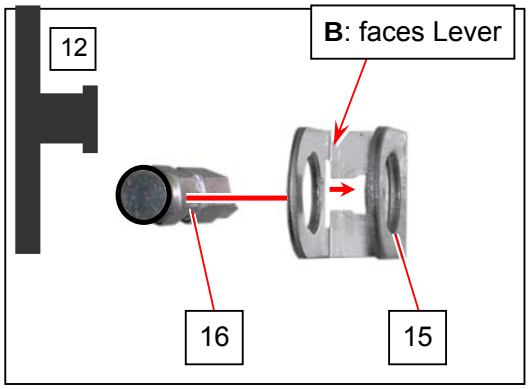


(continued on the next page)

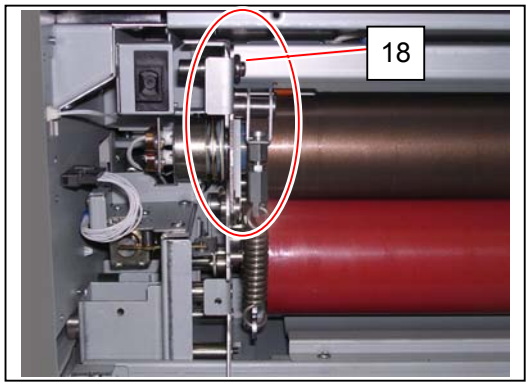
NOTE cont.

b) The bottom cutting (**B**) of Spring Hook 3 (15) should face Lever L/R (12) so that the top pin of Spring Hook 1 (16) comes into the cutting (**B**) from outside.

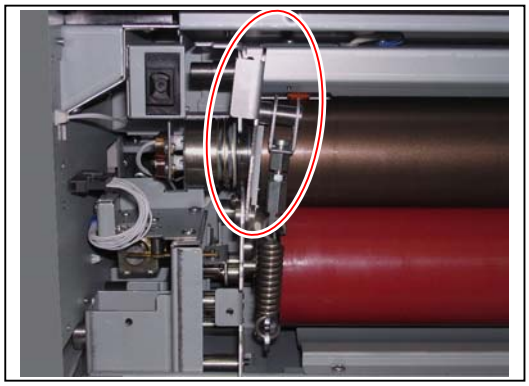




(3) Push Lever L/R (12) onto the pins (18) correctly. Not doing so will obtain an incorrect fusing pressure.



Correct: Lever on Pin (in position)



Wrong: Lever out of Pin

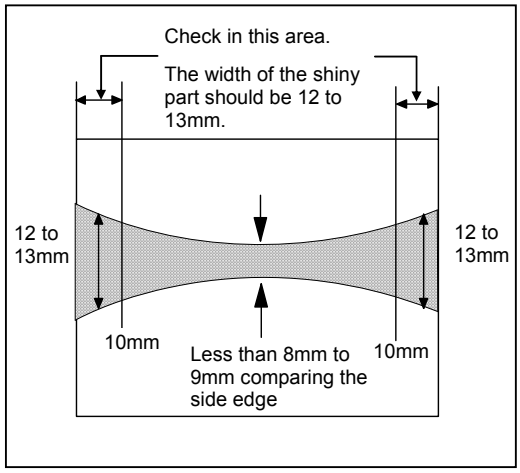
18) Replace all the parts in position.

19) Run a test print with the A0 or 36” paper with the test pattern No.8 with Image Size E.
As for the print length, 297mm or 12” is enough length.

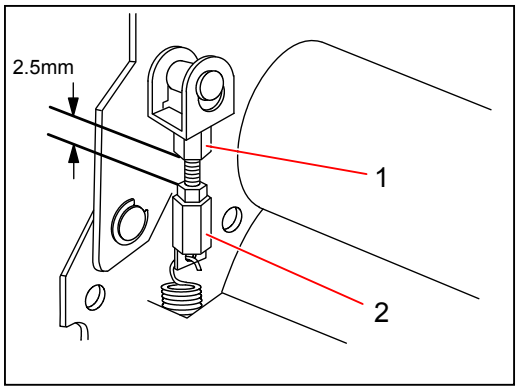
20) As soon as you can see the leading edge of the paper from the exit cover, open the exit cover to make the printer stop.

21) Leave the paper in 30 sec, and pull out the paper from the rear side.

22) Check the shiny part.
The Nip Width should be 12 to 13mm at less than 10mm from the both side edges.
And the nip difference between the both side edges and the center should be less than 8 to 9mm.



23) In case the Nip Width is not proper, adjust the gap between Spring Hook 1 (1: upper) and Spring Hook 2 (2: lower).
It is 2.5mm in usual case.

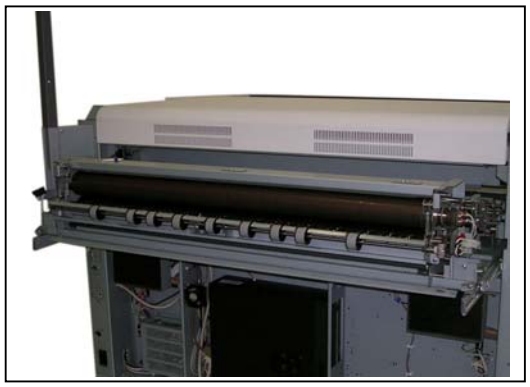


24) Repeat this procedure until it is satisfied.

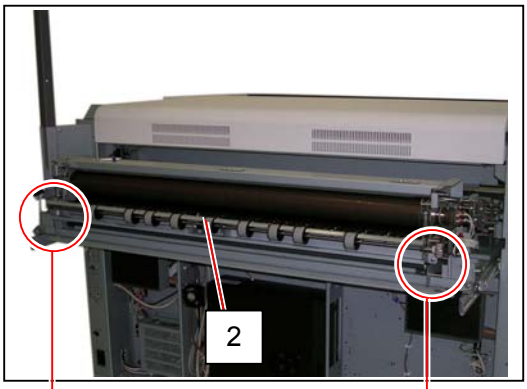
5.7.6 Replacing Pressure Roller

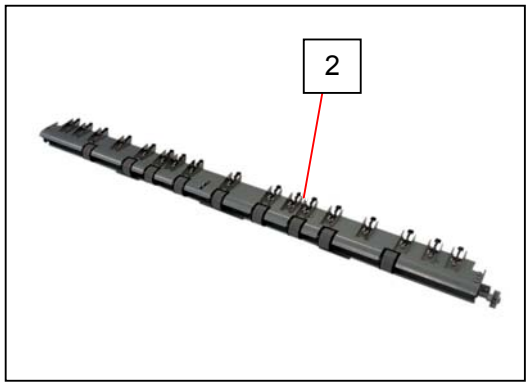
> **NOTE**
>
> This section explains procedure for Pressure Roller individually.
> For periodic replacement, refer to [5.7.5 Replacing Recommended Periodic Replacement Parts] on page 5-90.

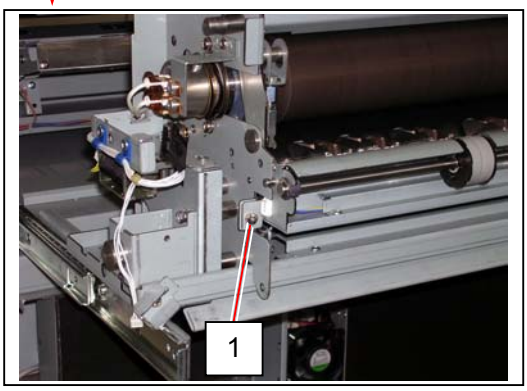
1) Remove Exit Cover and pull out Fuser Unit from the machine.
   Refer to [5.7.3 Pulling Out Fuser Unit] on page 5-81.

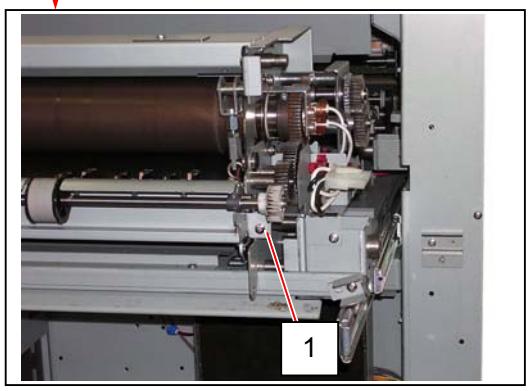


2) Remove 2 Tooth Washer Screws (M4x6) (1) to remove Paper Exit Assy (2).

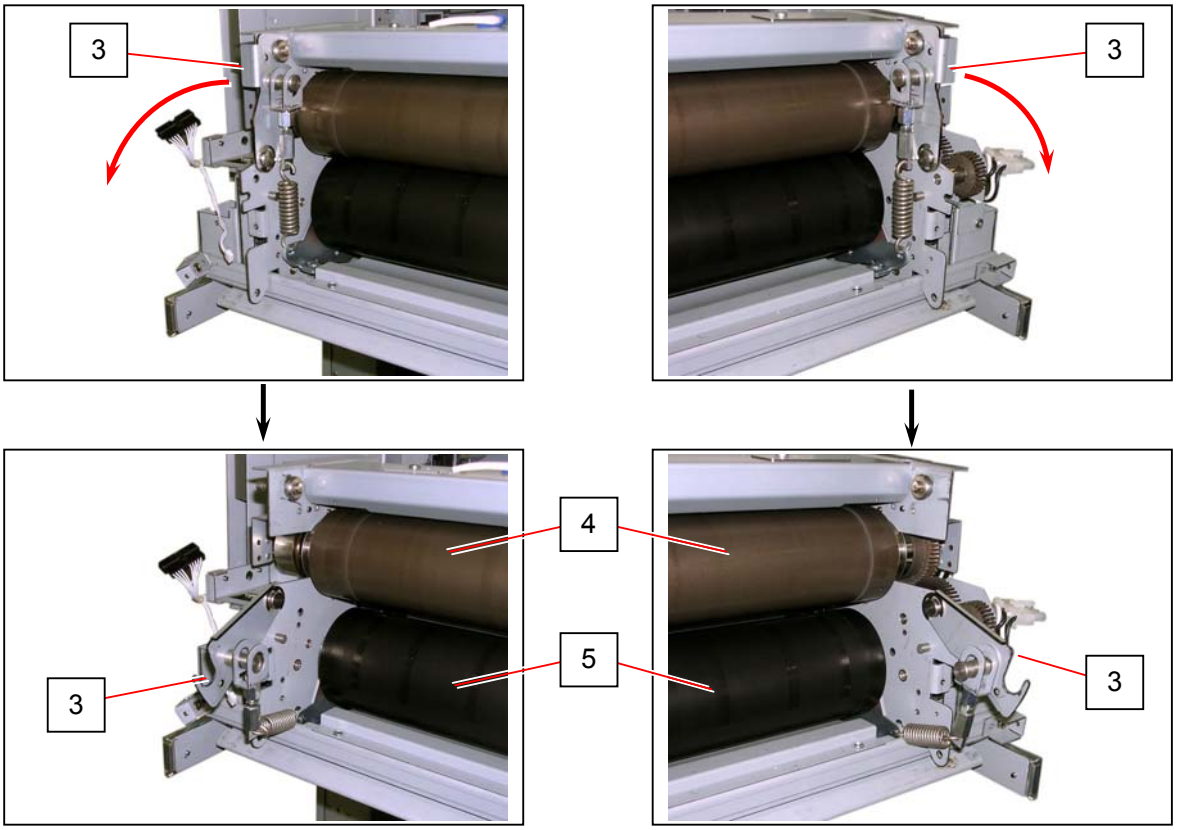




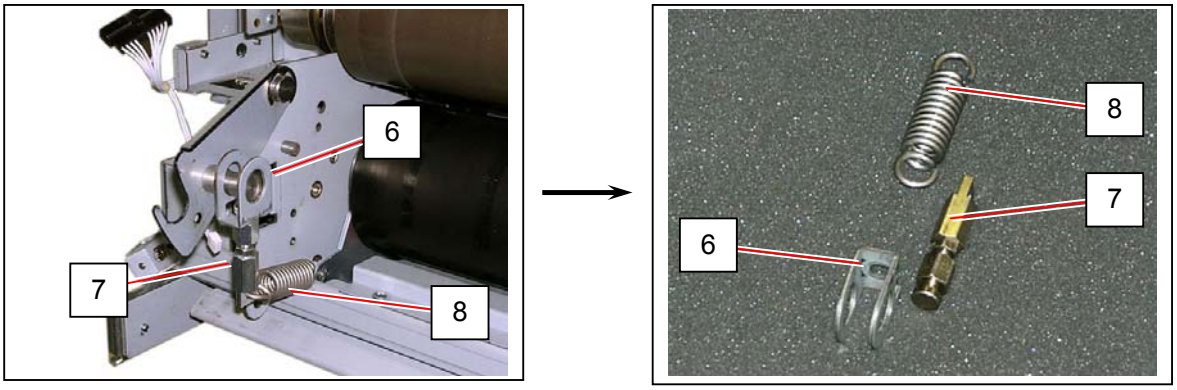




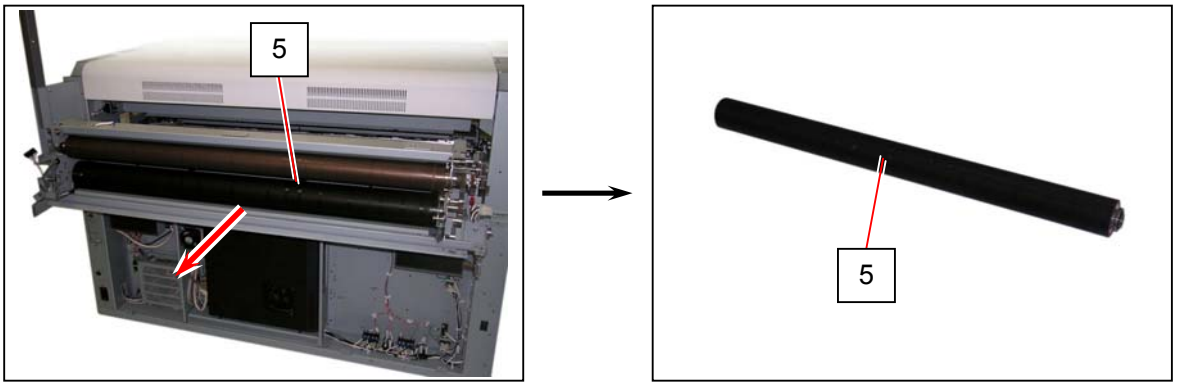
3) Pull Lever L/R (3) to the rear to decompress Fuser Roller (4). This will allow Pressure Roller (5) to release from Fuser Roller (4).



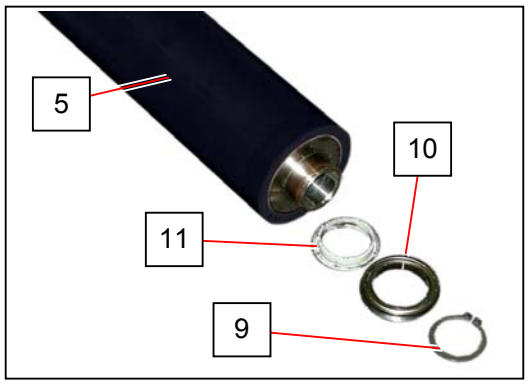
4) On both sides, remove Spring Hook 3 (6), Spring Hook 1 (7) and Extension Spring A (8).



5) Pull Pressure Roller (5) toward you (to the rear) to remove it.



6) On each side, remove C-ring (9), Ball Bearing (10) and Isolate Bushing (11) from Pressure Roller (5). Replace **Pressure Roller** with a new one.

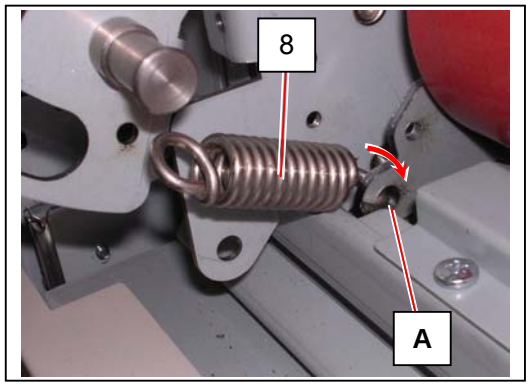


NOTE

(1) Pressure Roller can be installed in either direction.

(2) When reassembling, be sure to reinstall Spring Hook 3 (6), Spring Hook 1 (7) and Extension Spring A (8) noting the followings.

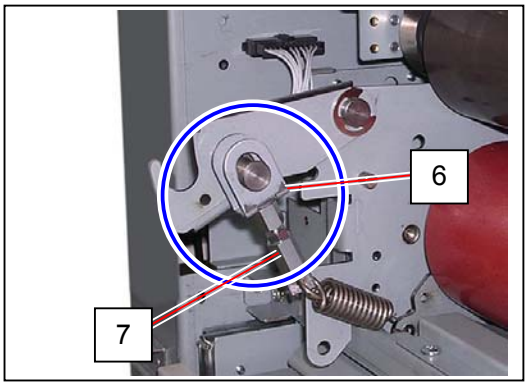
a) The lower end of Extension Spring A (8) should be inserted into the lower hole (**A**) from outside to inside.

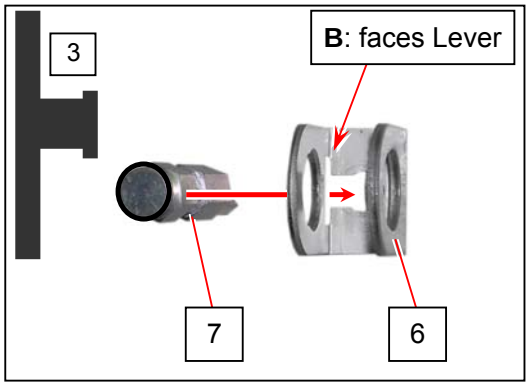


(continued on the next page)

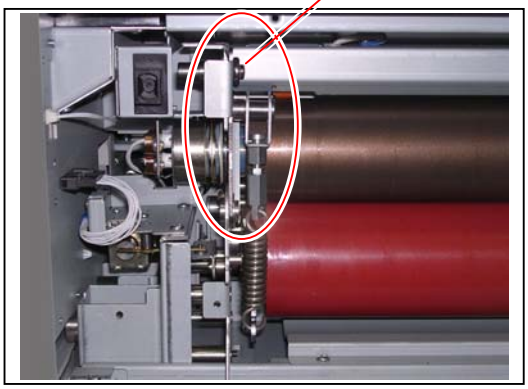
NOTE cont.

b) The bottom cutting (**B**) of Spring Hook 3 (6) should face Lever L/R (3) so that the top pin (14) of Spring Hook 1 (7) comes into the cutting (B) from outside.

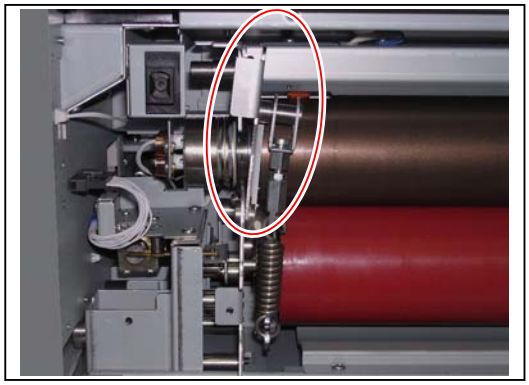




(3) Push Lever L/R (3) onto the pins (12) correctly. Not doing so will obtain an incorrect fusing pressure.



Correct: Lever on Pin (in position)



Wrong: Lever out of Pin

7) Replace all the parts in position.

8) Check the fuser pressure.
See [5.7.7 Fuser Pressure Adjustment (Nip Width Check) on the next page.

5.7.7 Fuser Pressure Adjustment (Nip Width Check)

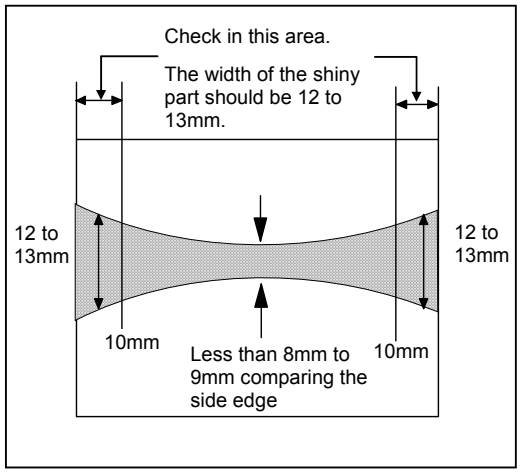
When you replace either of Fuser Roller or Pressure Roller, check that its Nip Width meets an acceptable range.

1) Run a test print with the A0 or 36" paper with the test pattern No.8 with Image Size E.
   As for the print length, 297mm or 12" is enough length.

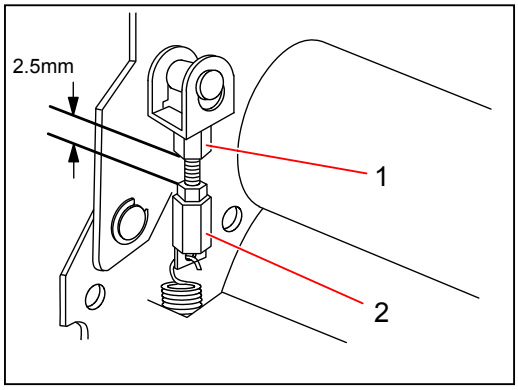
2) As soon as you can see the leading edge of the paper from the exit cover, open the exit cover to make the printer stop.

3) Leave the paper in 30 sec, and pull out the paper from the rear side.

4) Check the shiny part.
   The Nip Width should be 12 to 13mm at less than 10mm from the both side edges.
   And the nip difference between the both side edges and the center should be less than 8 to 9mm.



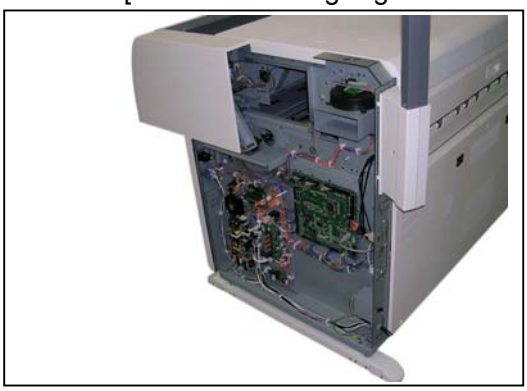
5) In case the Nip Width is not proper, adjust the gap between Spring Hook 1 (1: upper) and Spring Hook 2 (2: lower).
   It is 2.5mm in usual case.



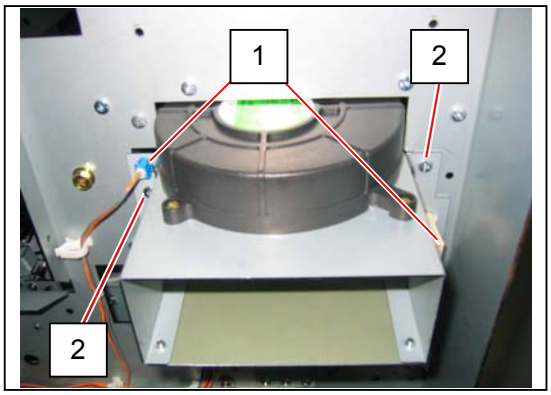
6) Repeat this procedure until it is satisfied.

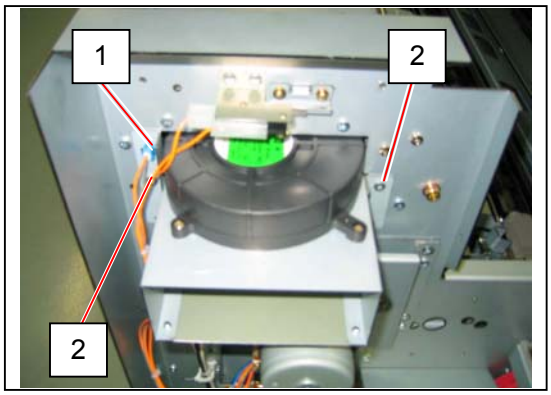
5.7.8 Replacing Fuser Cooling Fan (Fan 1A/Fan 1B)

1) Remove Lower Right Cover and Right Rear Cover. Remove Lower Left Cover and Left Rear Cover. Refer to [5.1.3 Removing Right / Left Rear Cover] on page 5-7.

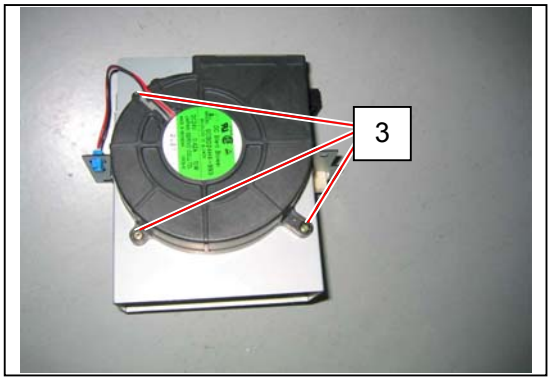


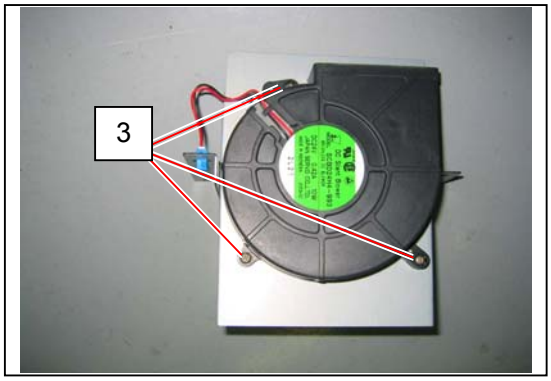
2) Remove the connectors (1) and the screws (M4x6) (2).





3) Remove 3 screws (M3x8) (3) to remove Fuser Cooling Fan.

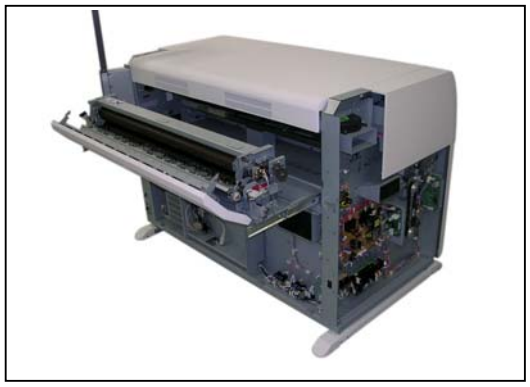




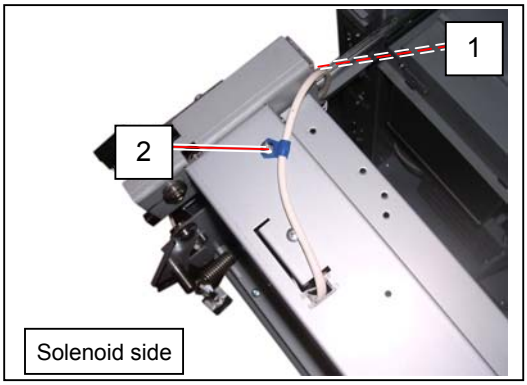
4) Replace the Fuser Cooling Fan with the new one.

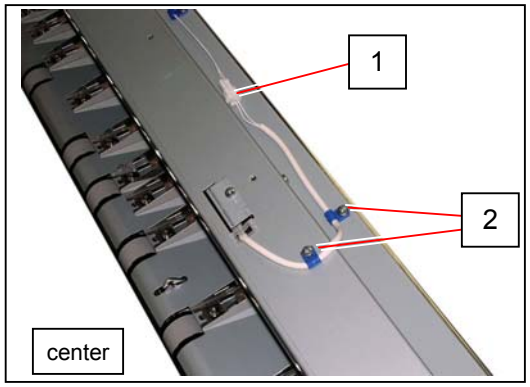
5.7.9 Replacing Thermistor (TH1, TH2)

1) Pull out Fuser Unit from the machine. Refer to [5.7.3 Pulling Out Fuser Unit] on page 5-81.

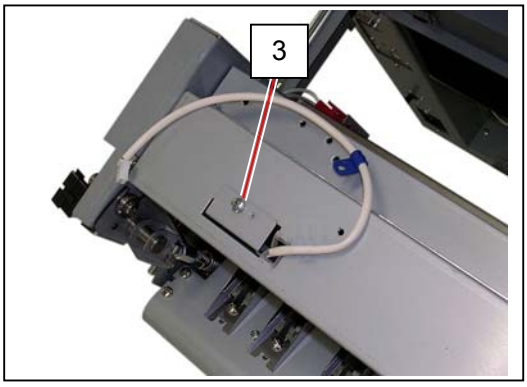


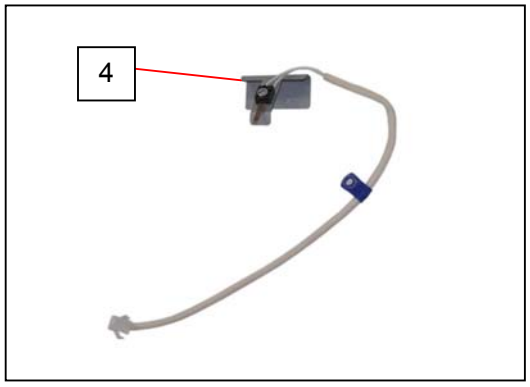
2) Disconnect 1 connector (1). Remove Bind Head Screw(s) (M4x6) (2) to release the harness.

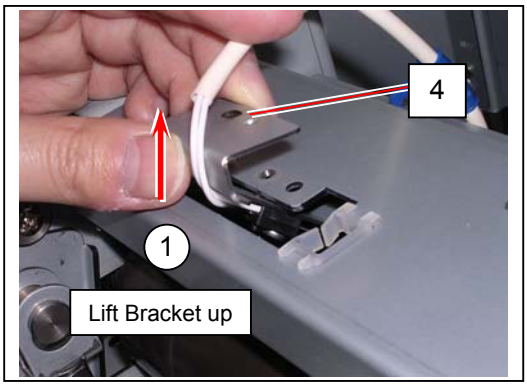


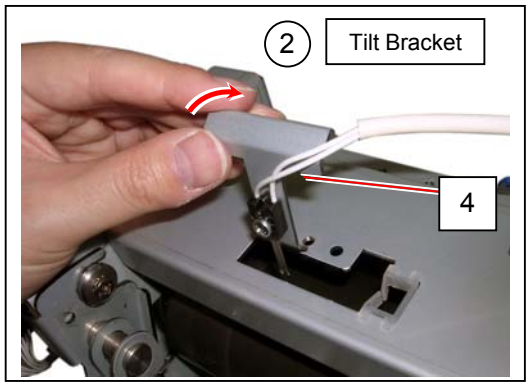


3) Remove 1 Bind Head Screw (M4x6) (3) to remove the thermistor bracket (4).

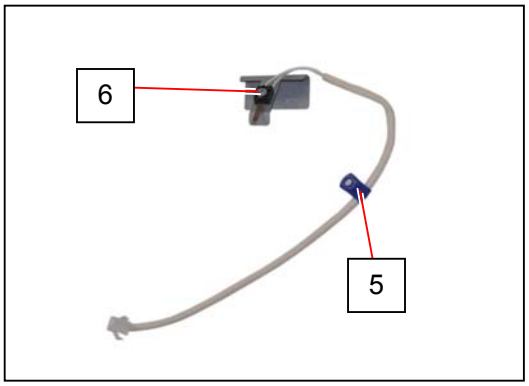








4) Remove wire clamp(s) (5). Replace Thermistor (6) with a new one.

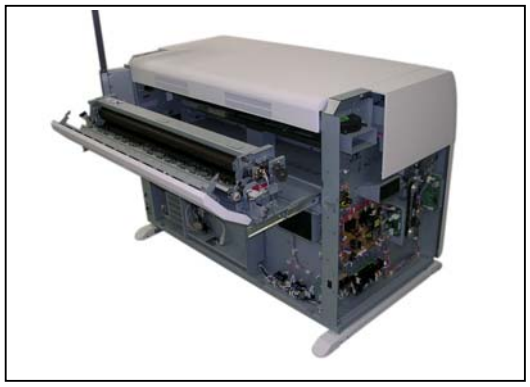


NOTE

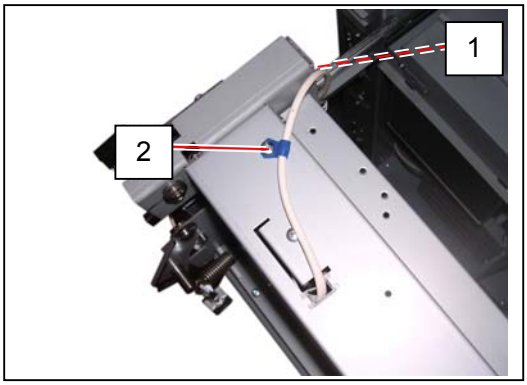
When reassembling, use the boss on the Thermistor's back to place Thermistor in position.

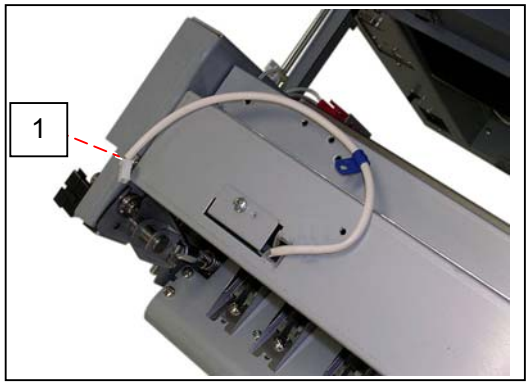
5.7.10 Replacing Thermostat (TS1A, TS1B)

1) Pull out Fuser Unit from the machine. Refer to [5.7.3 Pulling Out Fuser Unit] on page 5-81.

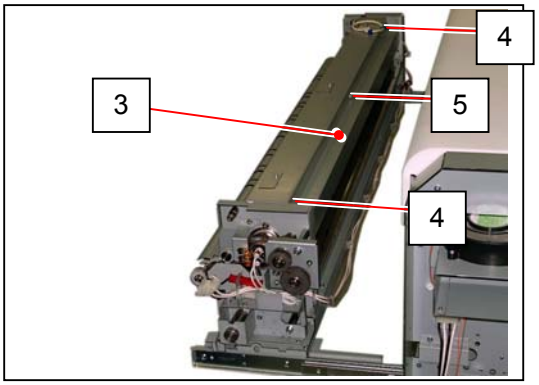


2) Disconnect 1 connector (1). Remove 1 Bind Head Screw (M4x6) (2) to release the harness.



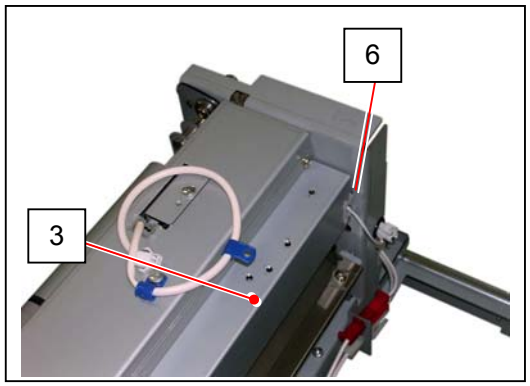


3) With supporting Cover 2 (3), remove 2 Tooth Washer Screws (M4x6) (4) and 1 Bind Head Screw (M4x6) (5). Remove Cover 2 (3).

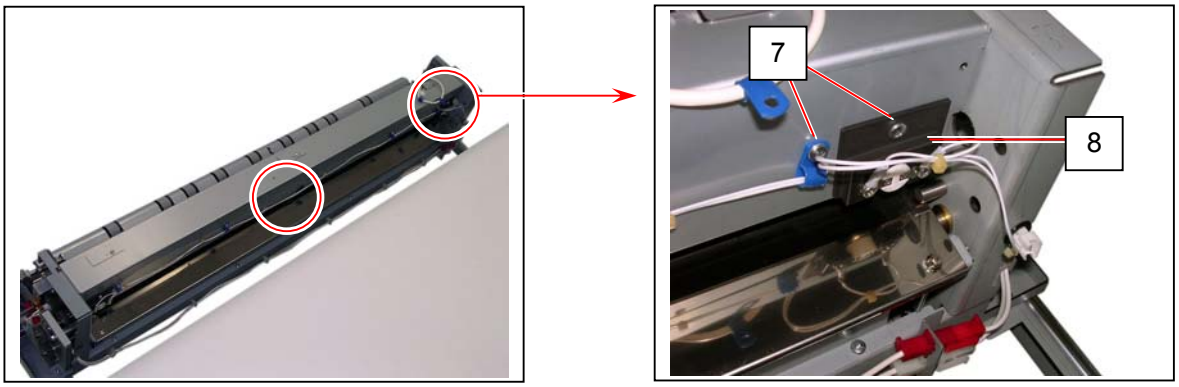


NOTE

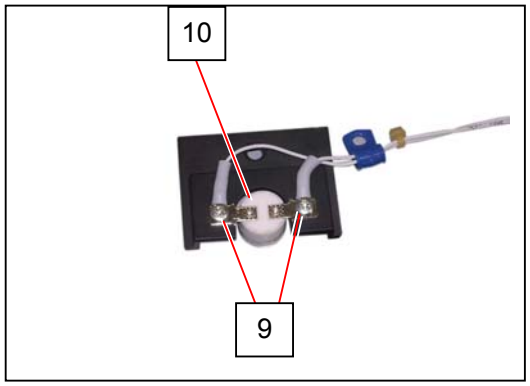
When removing Cover 2 (3), put the harness aside from the edge saddle (6).



4) Remove 2 Bind Head Screws (7) to release the thermostat bracket (8).

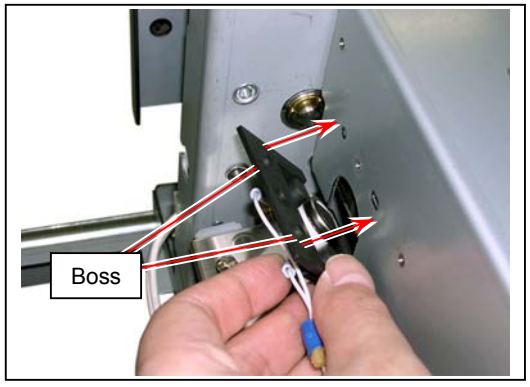


5) Remove 2 Bind Head Screws (M3x4) (9).
Replace Thermostat (TS1A, TS1B) (10) with a new one.



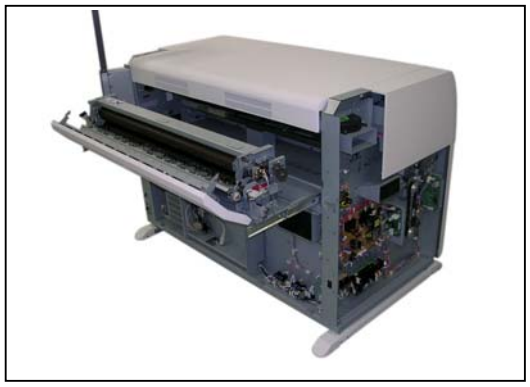
NOTE

When reassembling, use the bosses on the bracket to place the bracket in position.

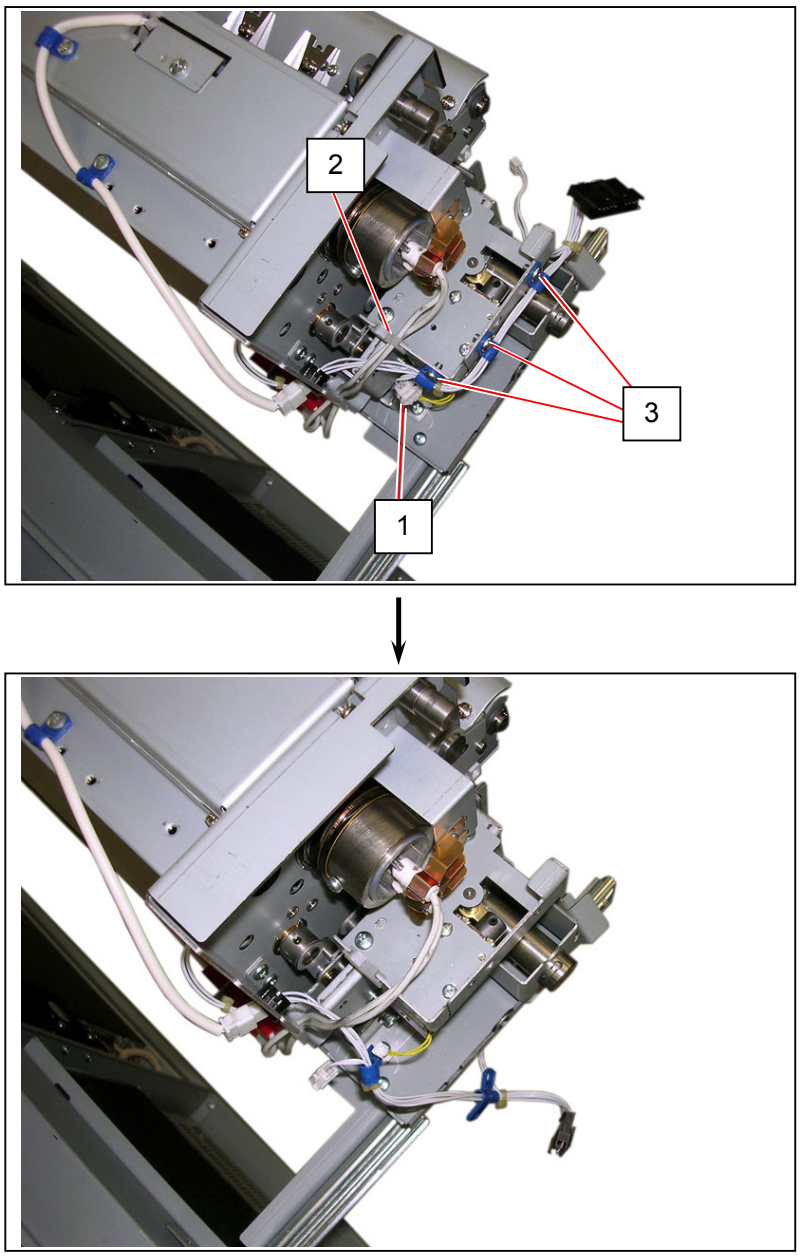


5.7.11 Replacing Fuser Guide Solenoid (SL2)

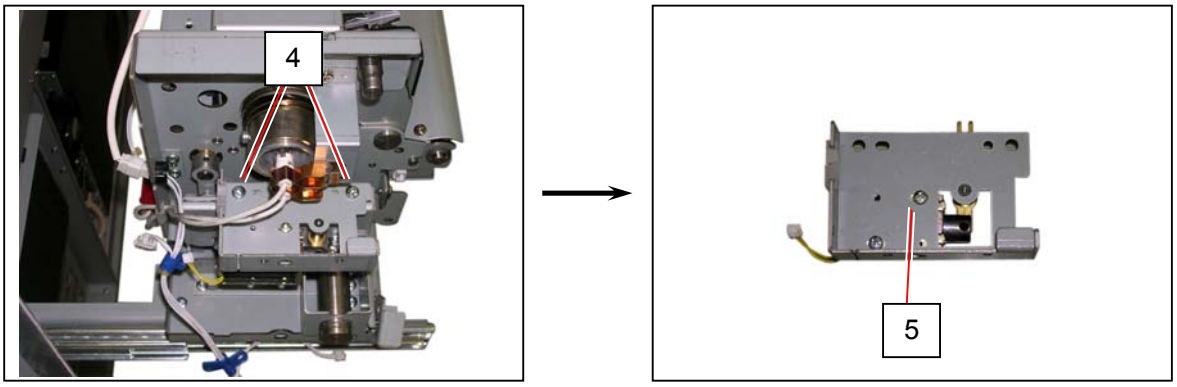
1) Pull out Fuser Unit from the machine. Refer to [5.7.3 Pulling Out Fuser Unit] on page 5-81.



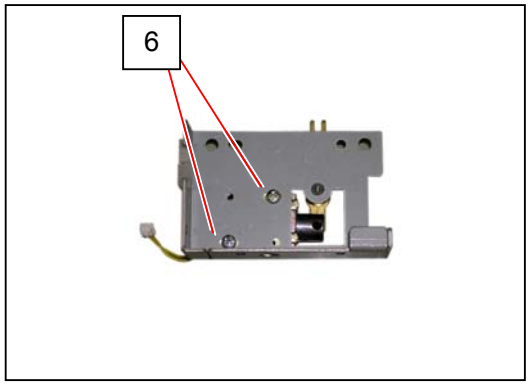
2) Disconnect 1 connector (1). Release IR Lamp harness (2) from the edge saddle. Remove 3 Bind Head Screws (M4x6) (3).



3) Remove 2 Bind Head Screws (M4x6) (4) to remove the solenoid bracket (5).



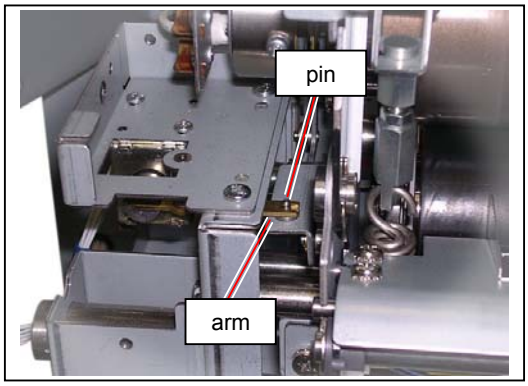
4) Remove 2 screws (M3x6) (6). Replace Fuser Guide Solenoid with a new one.



NOTE

(1) Before removing the screws (6), put a marking to find the initial position of these screws.

(2) When reassembling, make sure that the arm catches the pin properly.

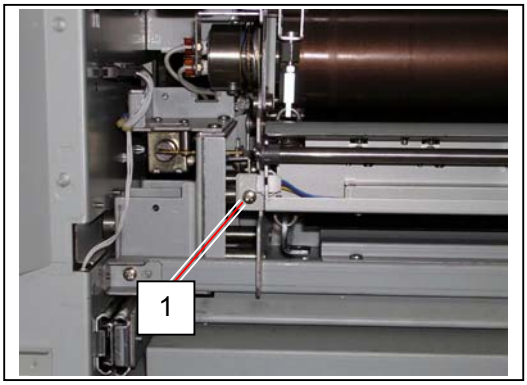


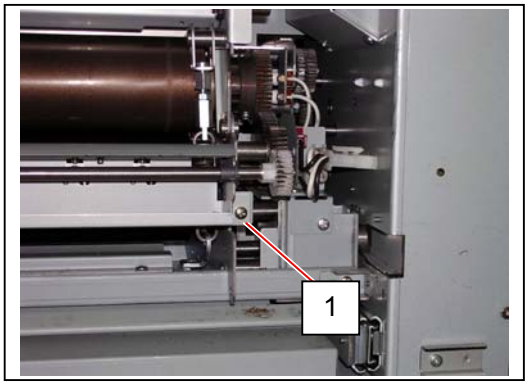
5.7.12 Replacing Separation Finger

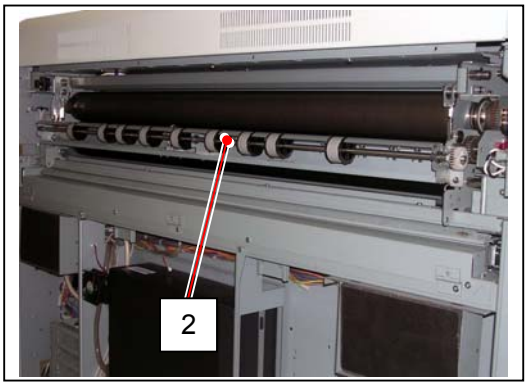
> **NOTE**
>
> This section explains procedure for Separation Finger individually.
> For periodic replacement, refer to [5.7.5 Replacing Recommended Periodic Replacement Parts] on page 5-90.

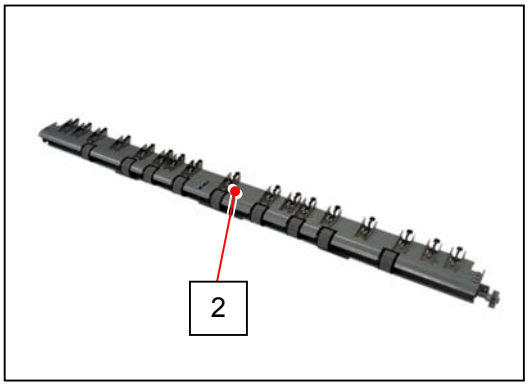
1) Remove Exit Cover. Refer to [5.7.1 Removing Exit Cover] on page 5-78.

2) Remove 2 Tooth Washer Screws (M4x6) (1) to remove Paper Exit Assy (2).

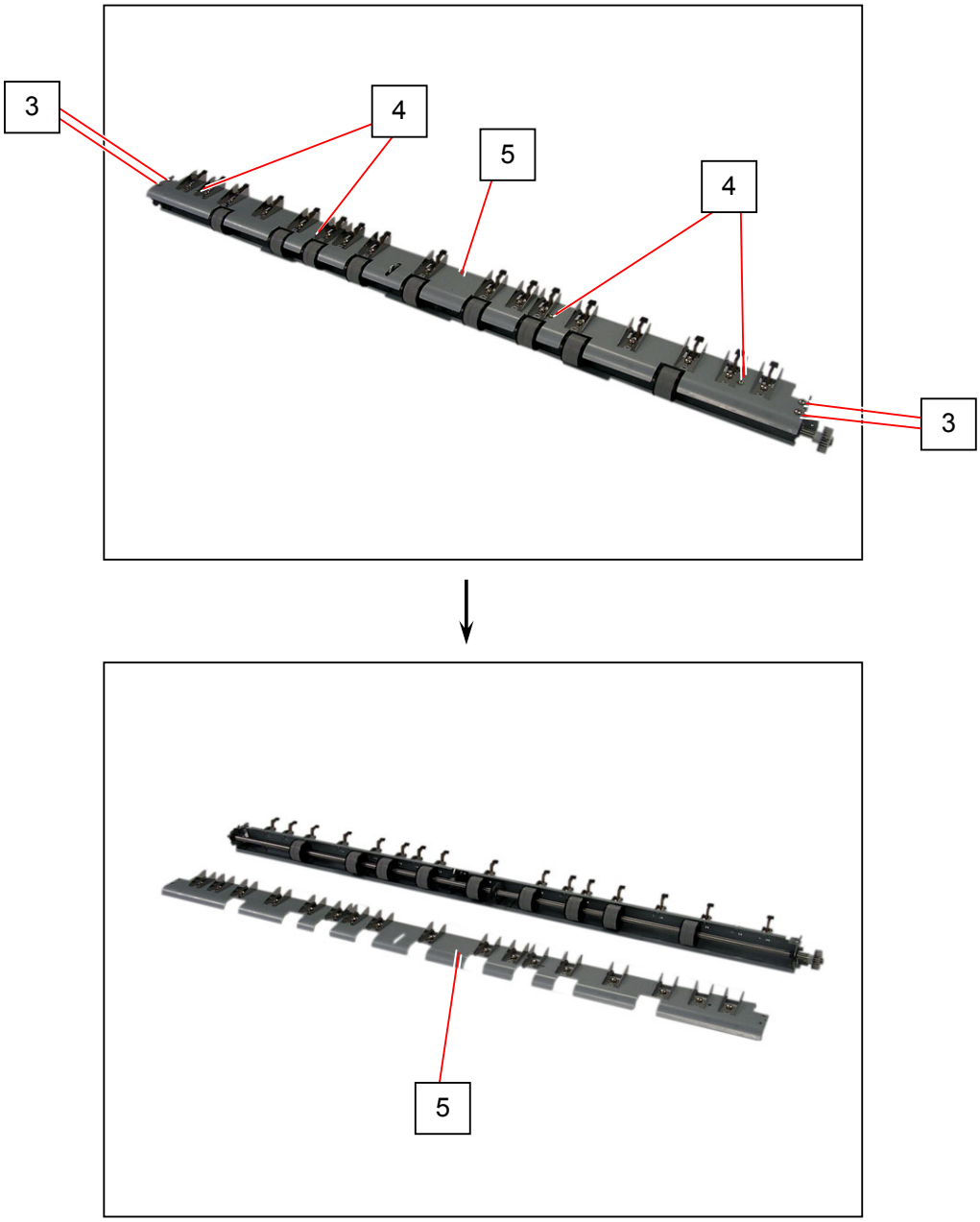




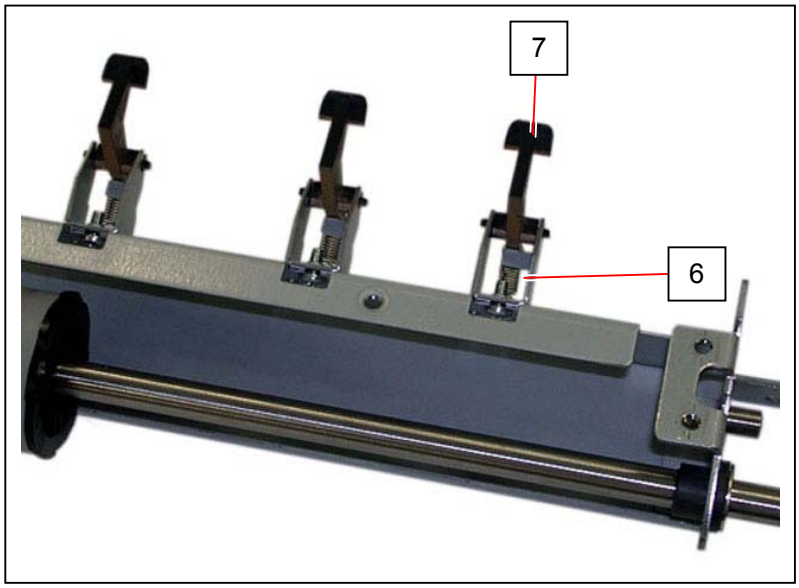


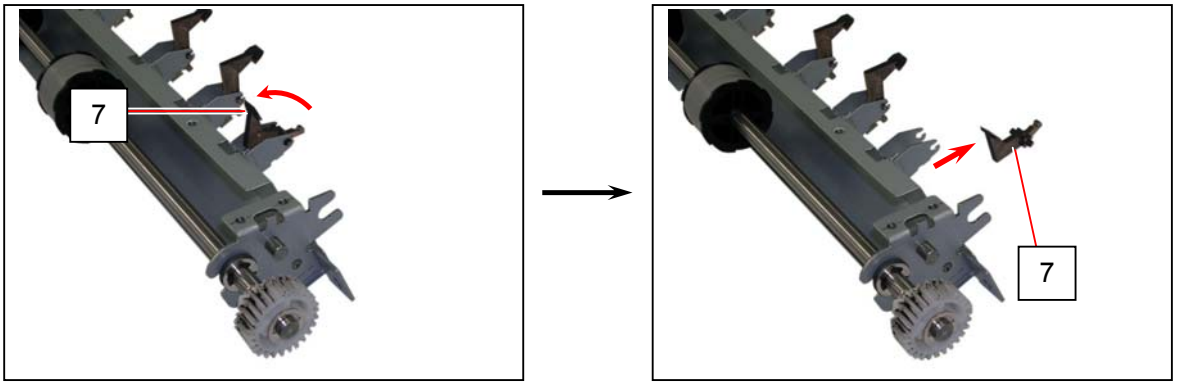


3) Remove 4 Tooth Washer Screws (M4x6) (3) and 4 Bind Head Screws (M3x6) (4) to remove the upper frame (5).



4) Remove Extension Spring (6) from Separation Finger (7).
Lean Separation Finger (7) to the arrow direction. Replace **Separation Finger** with a new one.

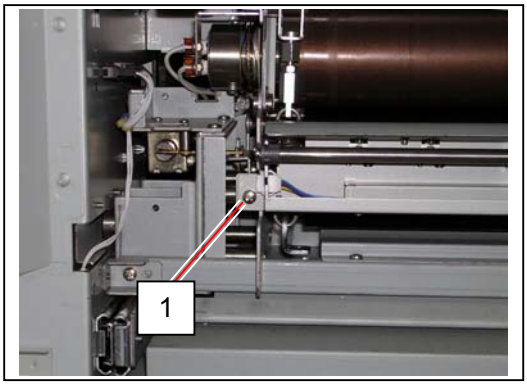


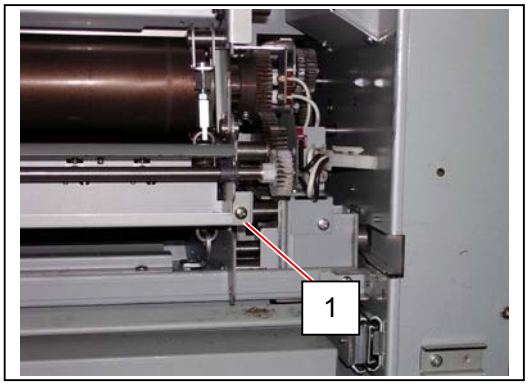


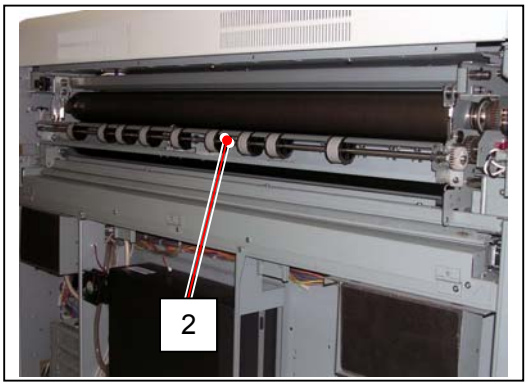
5.7.13 Replacing Exit Sensor (LS2)

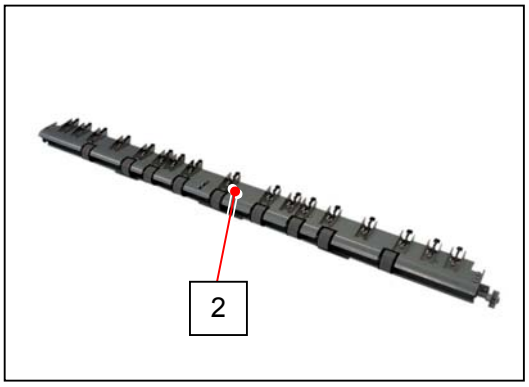
1) Remove Exit Cover. Refer to [5.7.1 Removing Exit Cover] on page 5-78.

2) Remove 2 Tooth Washer Screws (M4x6) (1) to remove Paper Exit Assy (2).

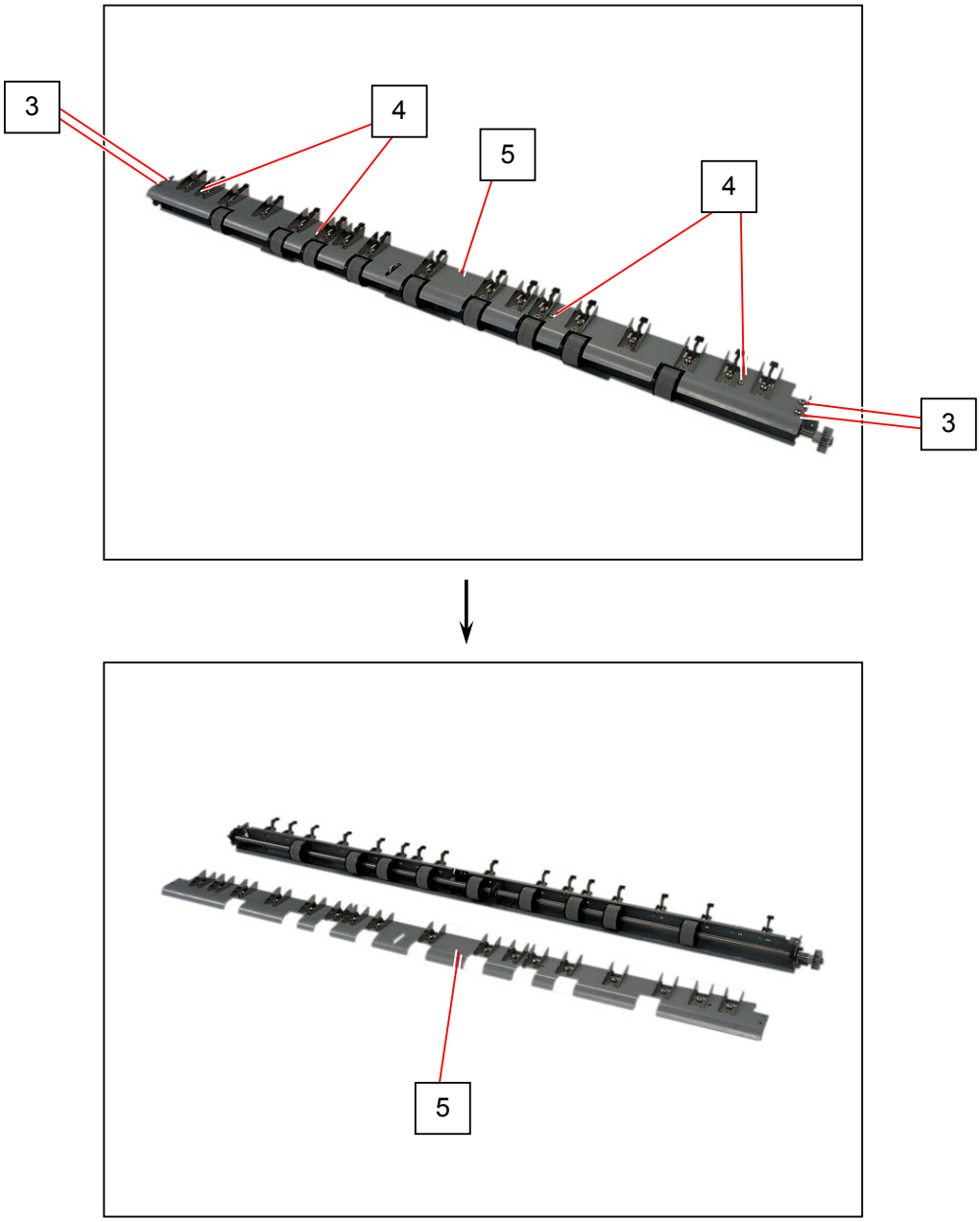




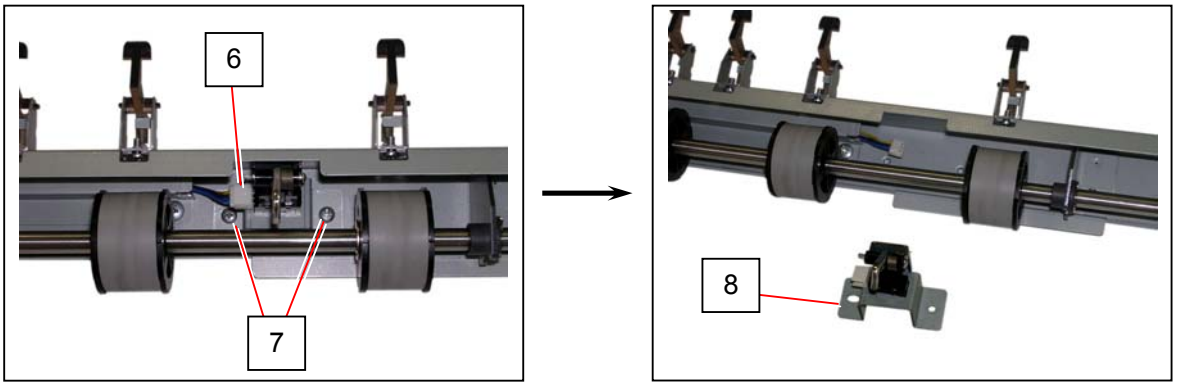




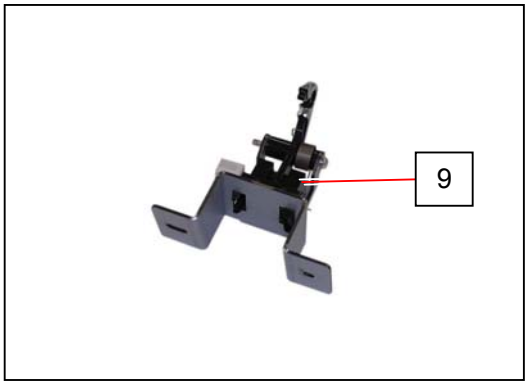
3) Remove 4 Tooth Washer Screws (M4x6) (3) and 4 Bind Head Screws (M3x6) (4) to remove the upper frame (5).



4) Disconnect 1 connector (6). Remove 2 Bind Head Screws (7) to remove the sensor bracket (8).



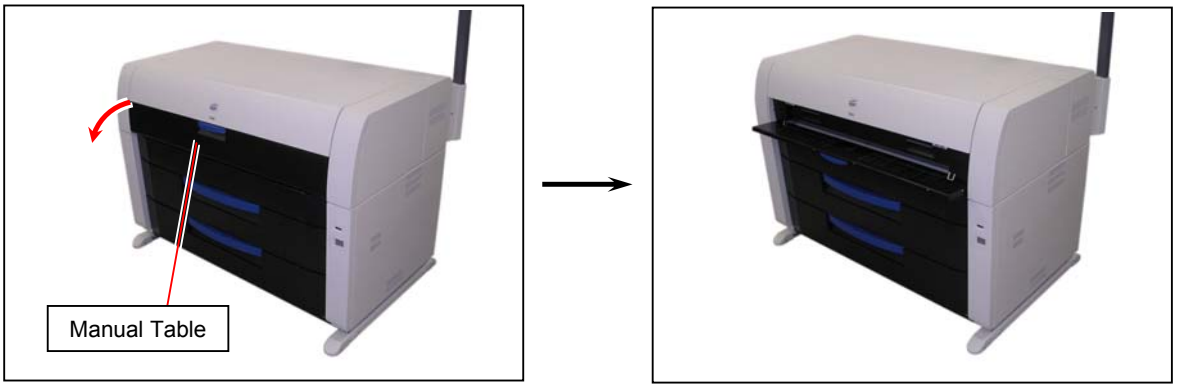
5) Replace Paper Exit Sensor (LS2) (9) with a new one.



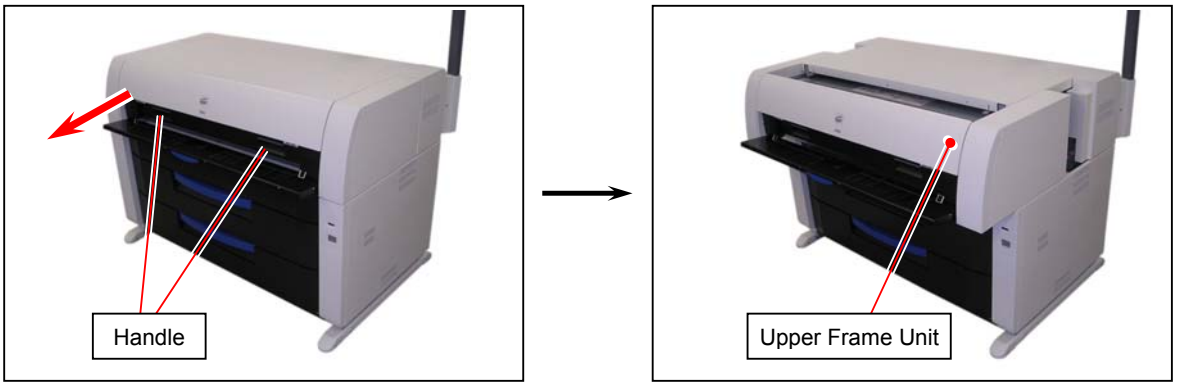
5.8 Developer Unit

5.8.1 Removing Toner Hopper

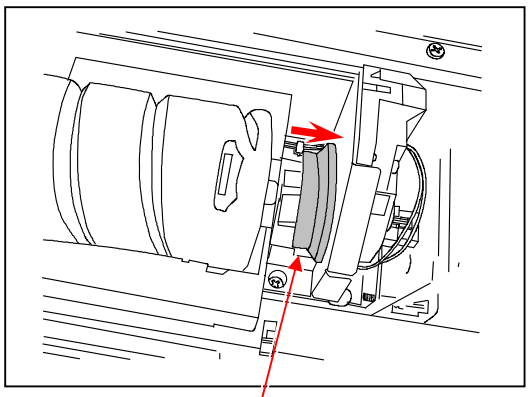
1) Open the Manual Table.



2) Pull out the Upper Frame Unit to your side (front) with holding both handles.



3) Push the Joint rightward to release the Toner Cartridge.
(The joint will be latched on the right.)

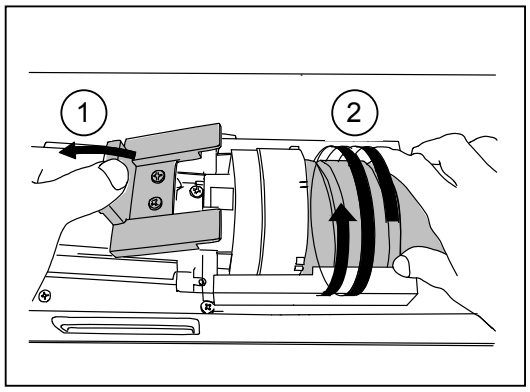


NOTE

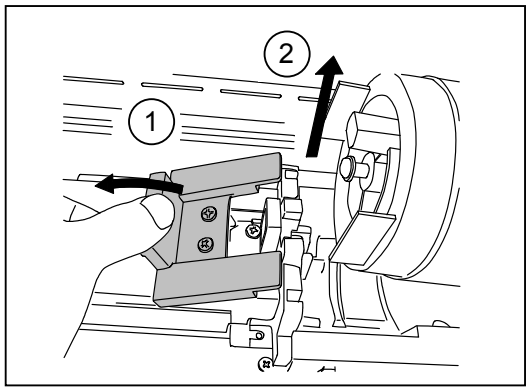
Slide the Joint until it clicks to unlock the toner cartridge.
Not doing so may damage the toner supply system.

4) Press and hold the green lever. Rotate Toner Cartridge body (**not the Cap of Cartridge**) to the arrow direction in order to close the toner supply opening.

Approximately 2 rotations will be enough to close the opening, but rotate Toner Cartridge until it stops completely.



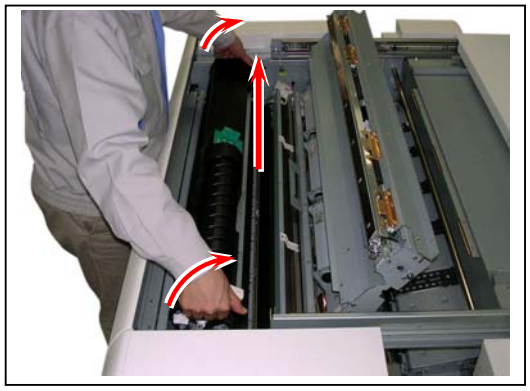
5) Keep pressing the green lever. Lift up Toner Cartridge and remove it.



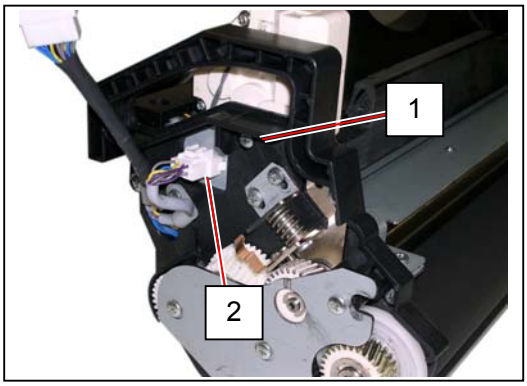
NOTE

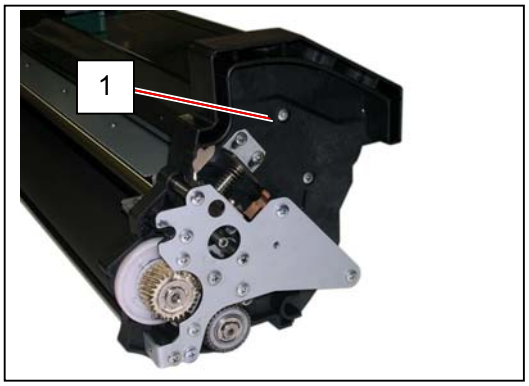
If your hand or your clothing is soiled by toner, dust the toner.
If it is unable to dust it, wash the clothing with the cold water.
(Do not use the hot water at this time because the toner will soak into fiber.)

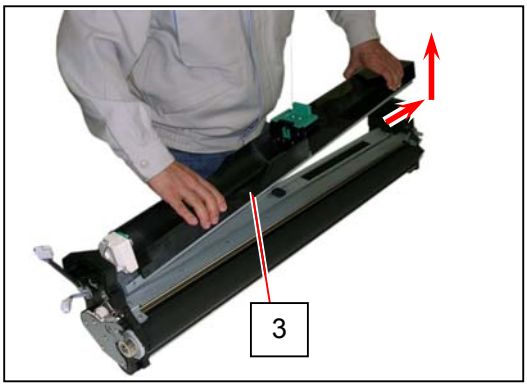
6) Remove Developer Unit from the machine. Refer to [5.2.2 Removing Developer Unit] on page 5-15.

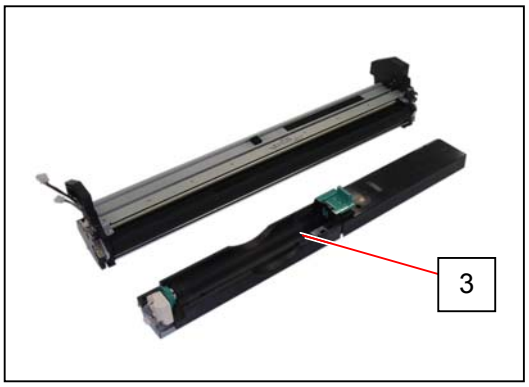


7) Remove 2 screws (M4x14) (1) and 1 connector (2) to remove Toner Hopper (3).









5.8.2 Replacing Recommended Periodic Replacement Parts (Developer Roller, Scraper, Spacer (2), Side Seal R/L)

NOTE

(1) A periodic replacement for the following parts is recommended.
This section shows how to replace all of them in one sequent operation.
Refer to this section as well for replacement individual part listed below.

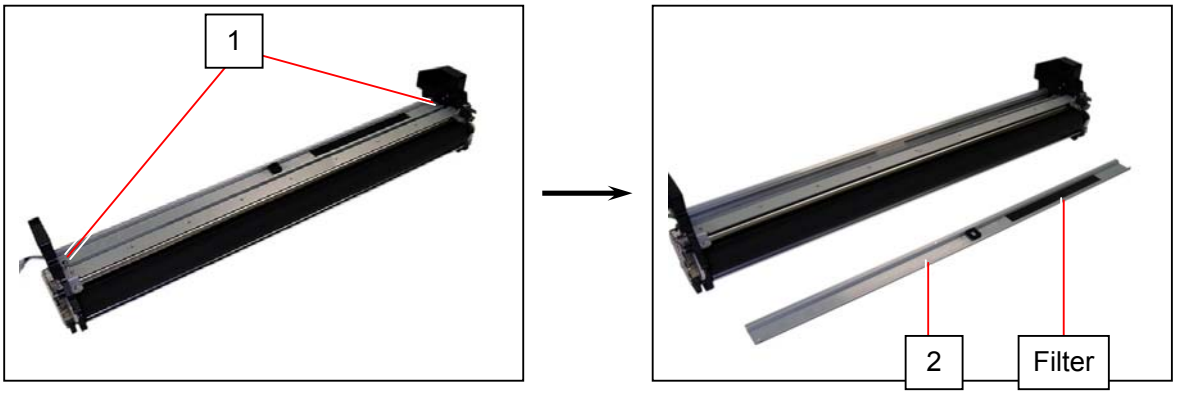
Item	Q'ty	Remarks
Developer Roller	1	All of these parts are contained in "Developer Maintenance Kit" (Z200980030)
Scraper	1	
Side Seal R Assy	1	
Side Seal L Assy	1	
Spacer (2)	2	

(2) Remove all the toner from Developer Unit before replacing the above parts.

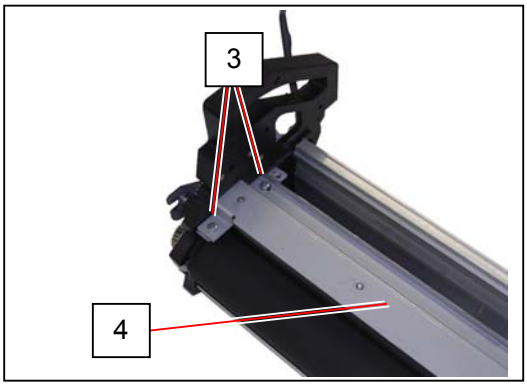
(3) After replacing Developer Roller / toner refreshment, you must reset bias adjustment (Developer/Regulation) by Density Compensation Process with using Clear Mode.

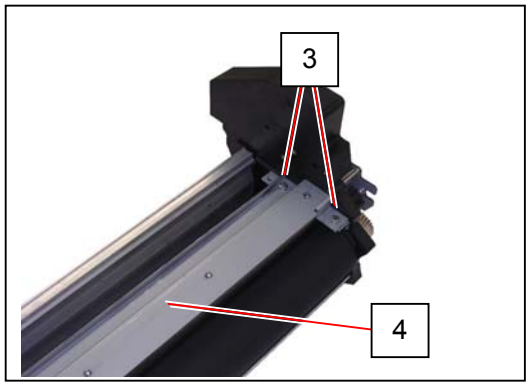
1) Remove Toner Hopper. Refer to [5.8.1 Removing Toner Hopper] on page 5-120.

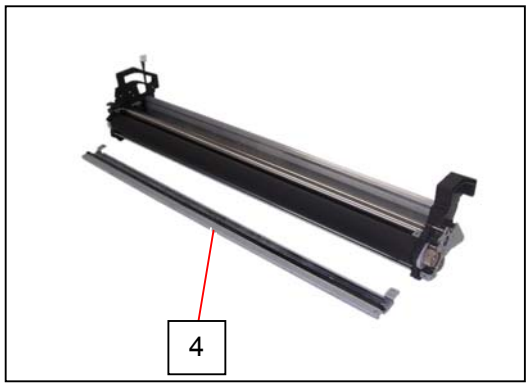
2) Remove 2 screws (M4x6) (1) to remove Toner Cover (2).
Remove toner powders in the filter area to avoid clogging.



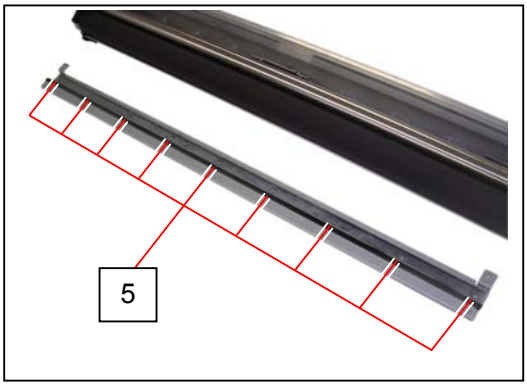
3) Remove 4 screws (M4x6) (3) to remove Blade Assy (4).

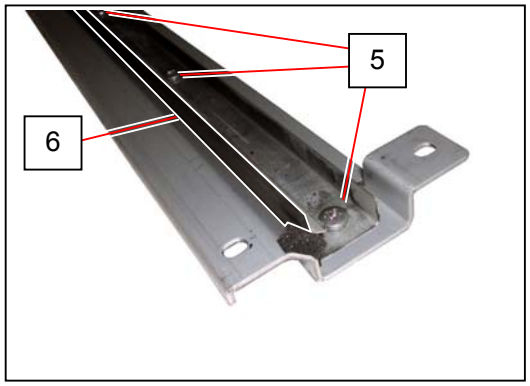




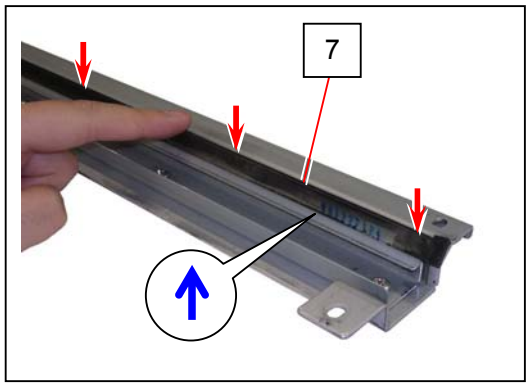


4) Loosen 9 screws (5) from Blade Assy to remove Scraper (6).

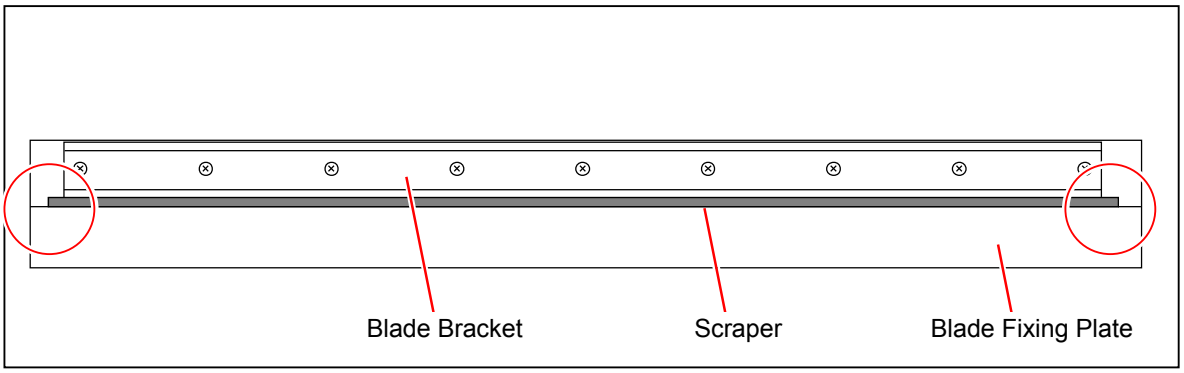


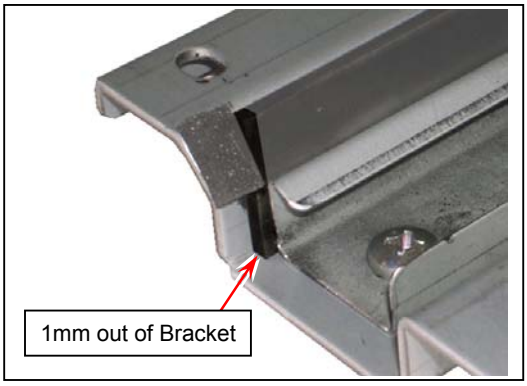


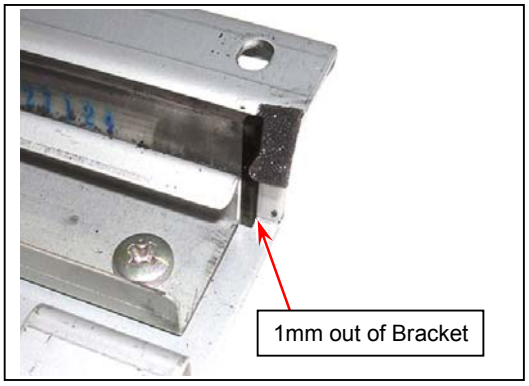
5) Place the new **Scraper** (7) in the middle of Blade Assy so that the arrow mark on Scraper surface directs upward (toward contact point with Blade Roller).
Press Scraper's edge evenly downward to be clamped.

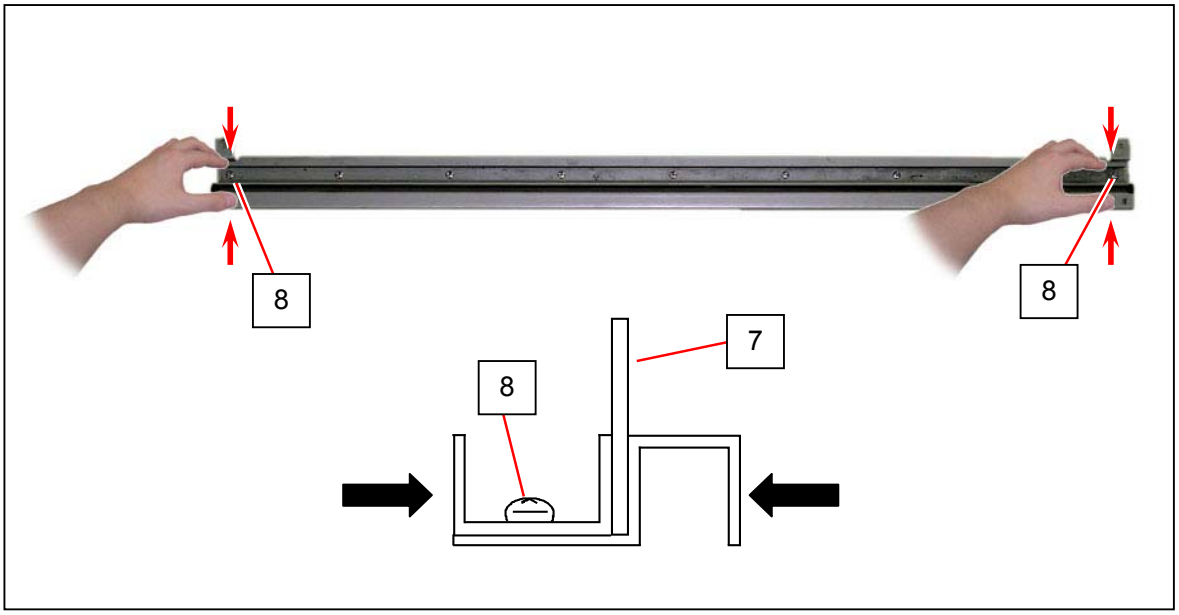


6) Make sure that the edge of Scraper is 1mm out from the side ends of Blade Bracket.
With holding Scraper between Blade Fixing Plate and Blade Bracket, temporarily tighten 2 screws at far ends (8).

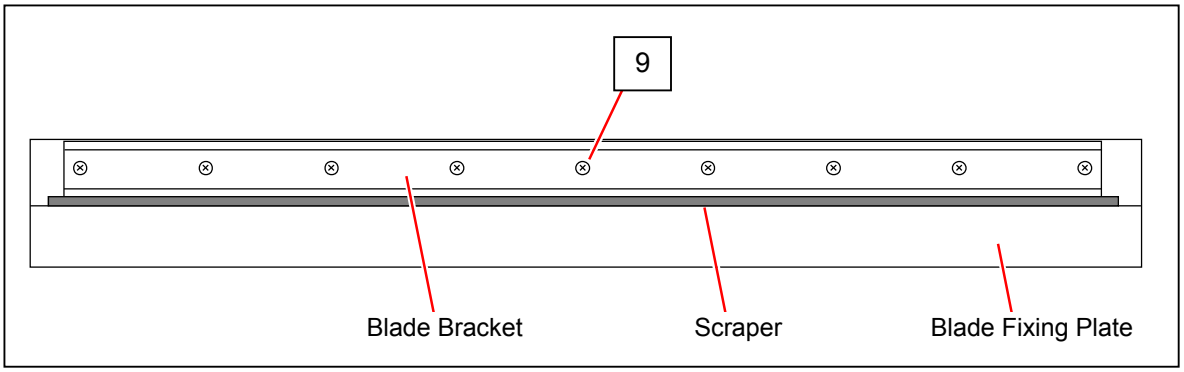


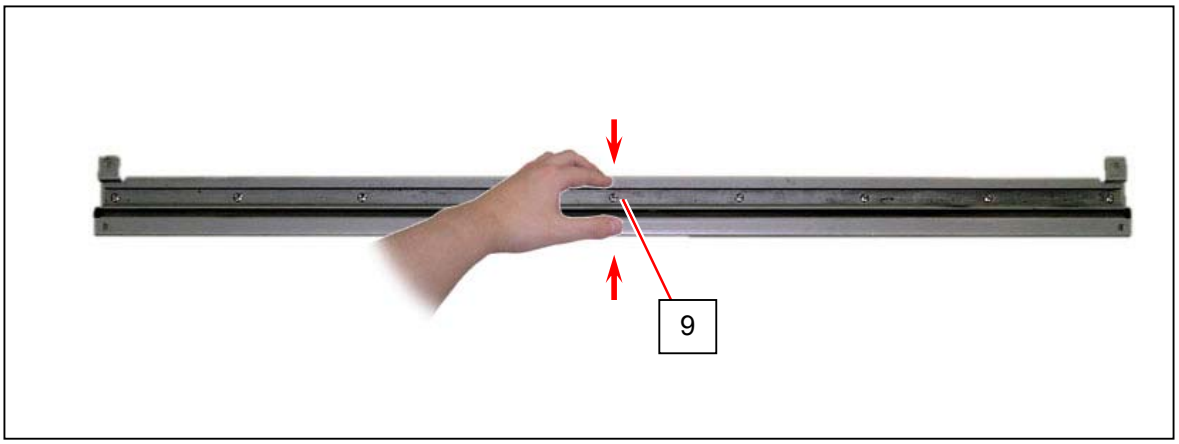




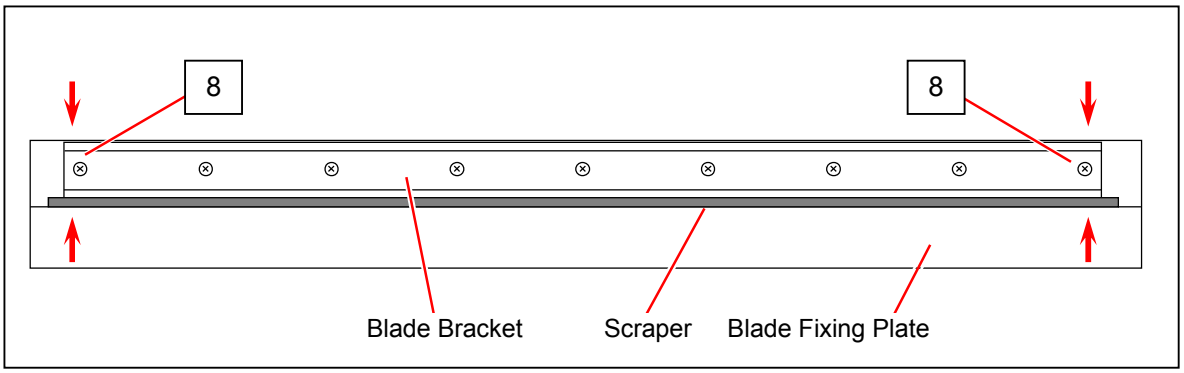


7) With holding Scraper properly between Blade Fixing Plate and Blade Bracket, tighten 1 screw (9) at the center.



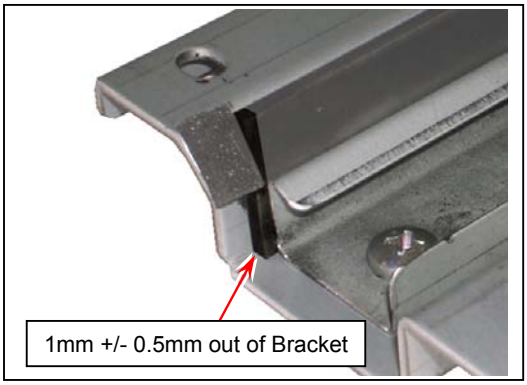


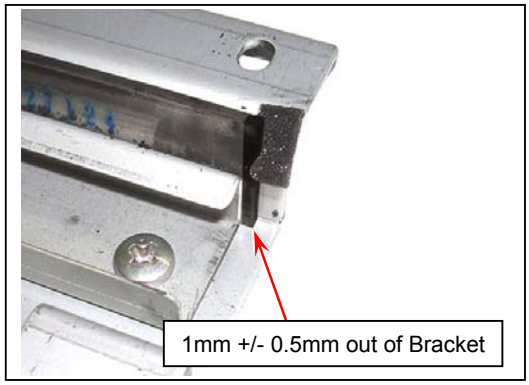
8) Again loosen 2 screws at far ends (8). With holding Scraper properly between Blade Fixing Plate and Blade Bracket, tighten 2 screws (8).



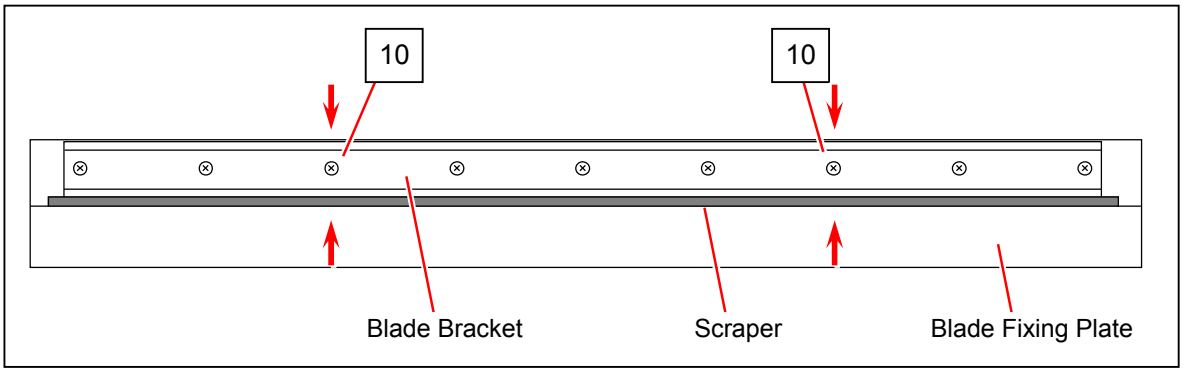
NOTE

Again check that Scraper's side ends should stick out in 1mm +/- 0.5mm.

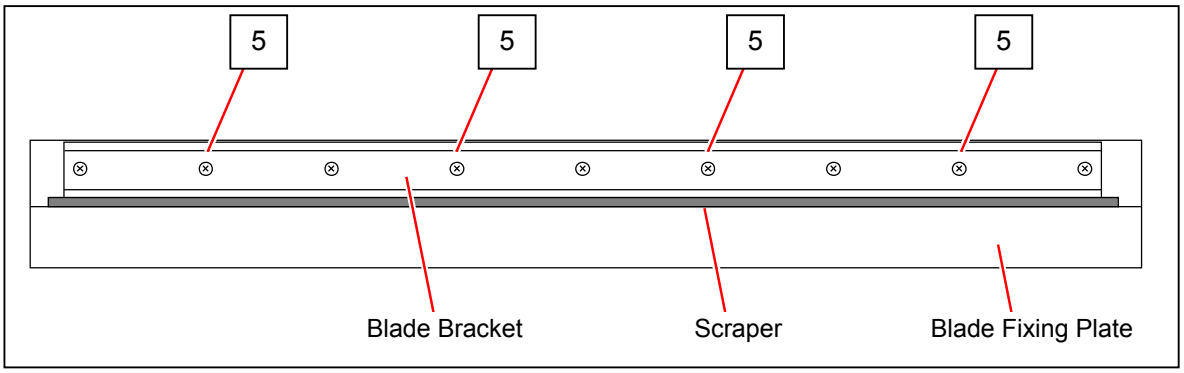




9) With holding Scraper properly between Blade Fixing Plate and Blade Bracket, tighten 2 screws (10) in the middle right/left.



10) Tighten the rest 4 screws (5).
Then carefully check that Scraper's edge is not wavy.
If it is getting wavy, go back to step 5 to correctly install Scraper.

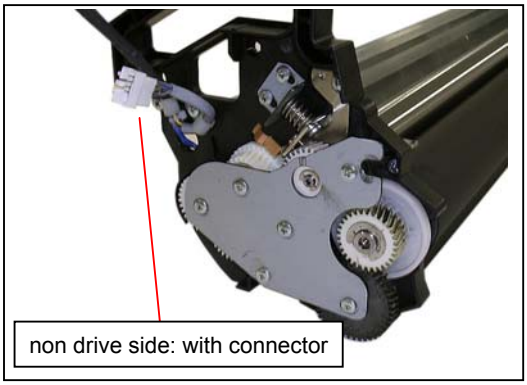


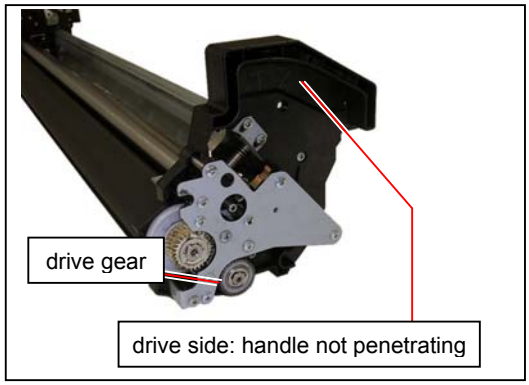
11) Rub the toner powder on the top edge from end to end.

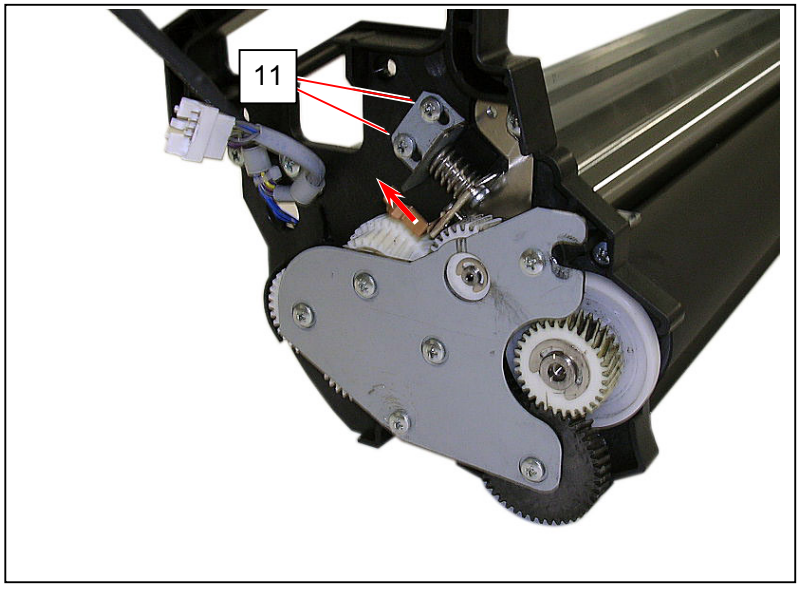
12) On the non drive side, loosen 2 screws (11) to release pressure by Blade Roller.

Reference

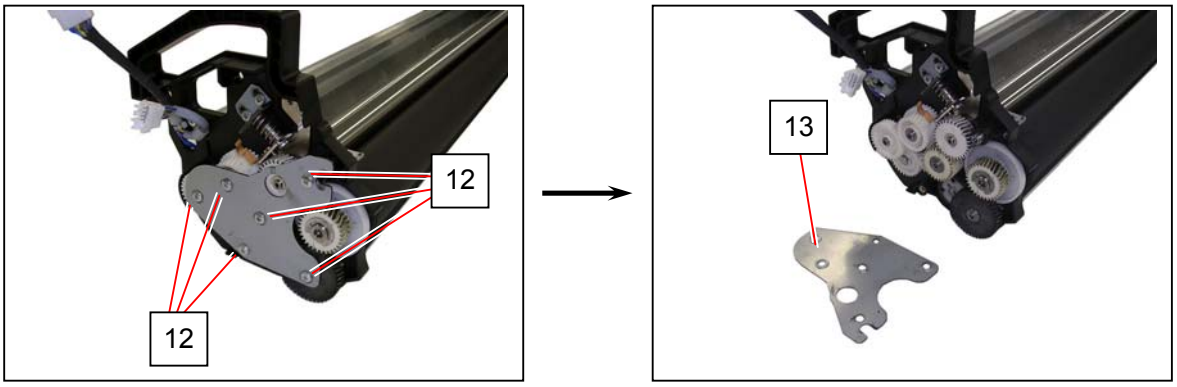
This section explains one side of Developer Unit in the left photo "non drive side", and the other side in the right photo "drive side".



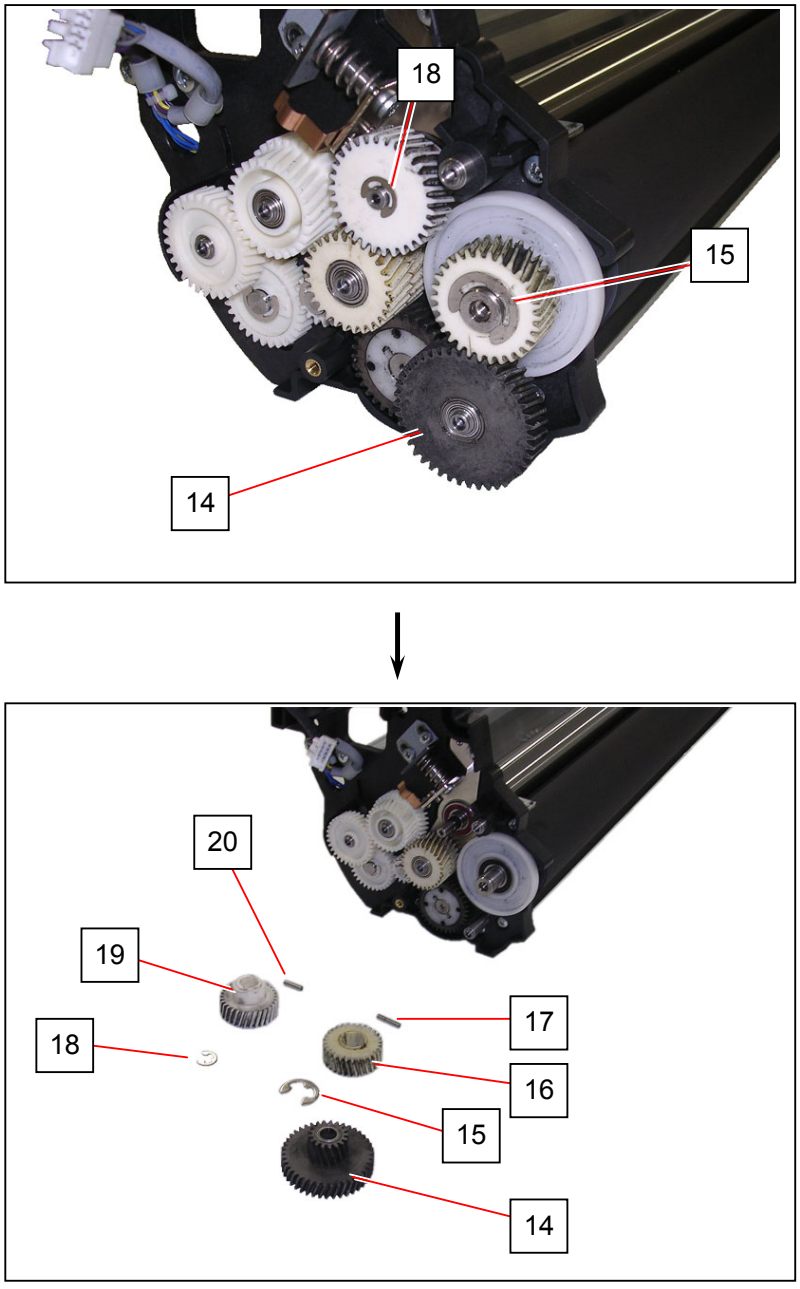




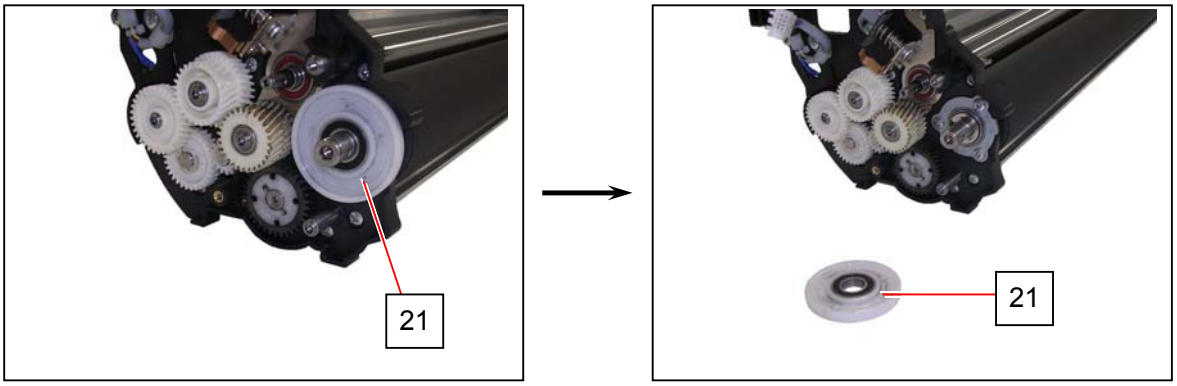
13) Remove 6 screws (M4x6) (12) to remove Plate R (13).



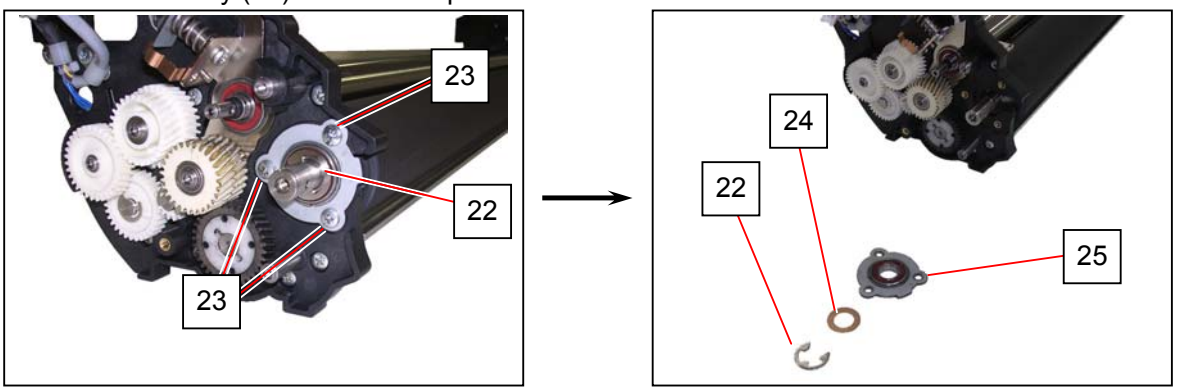
14) Remove 17/42T Helical Gear R (14) with 2 bearings on its both sides.
Remove Retaining Ring-E (E10) (15) to remove 30T Helical Gear R (16) and Parallel Pin (3x15) (17) from Developer Roller shaft.
Remove Retaining Ring-E (E5) (18) to remove 31T Gear (19) and Parallel Pin (3x12) (20) from Blade Roller shaft.



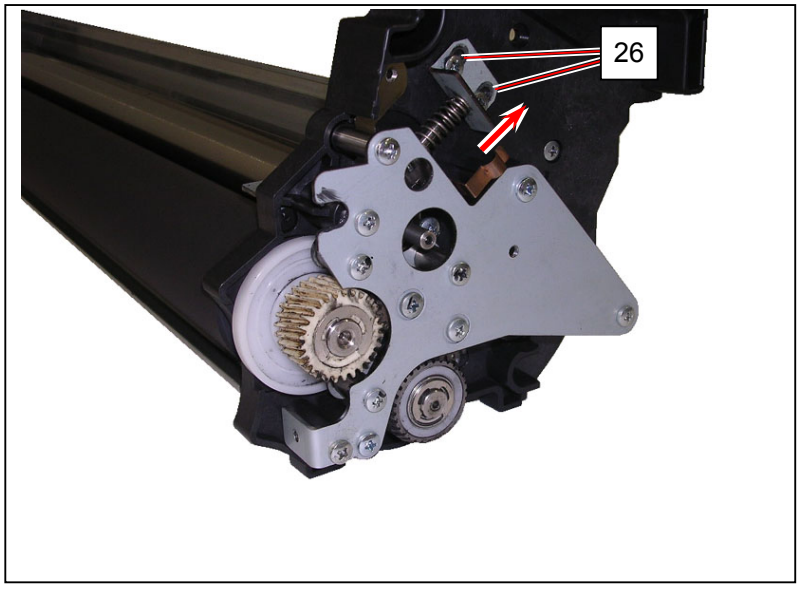
15) Remove Counter Roller (21) from Developer Roller shaft. Clean the contact face of Counter Roller (21) for proper contact with Photoconductive Drum.



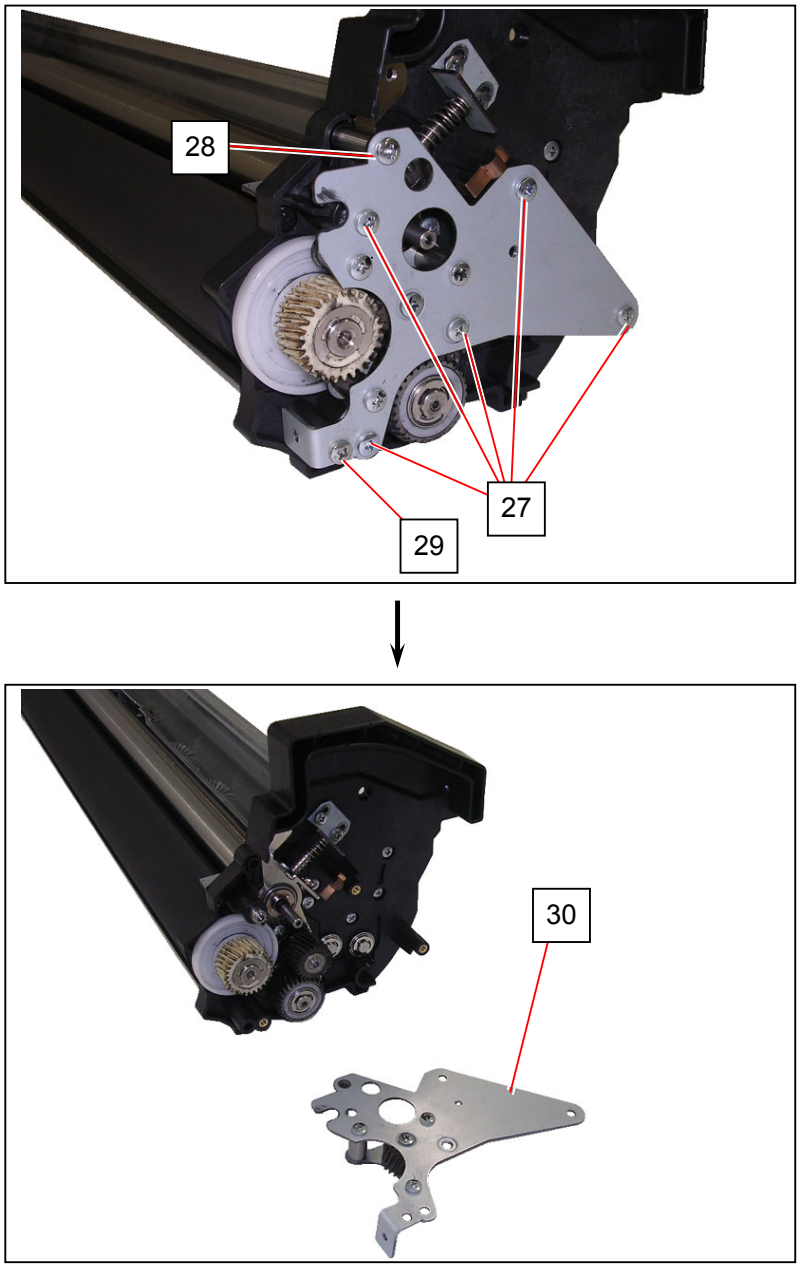
16) Remove Retaining Ring-E (E10) (22) and 3 screws (M4x6) (23) to remove a Thrust Washer (24) and Shaft Plate Assy (25) from Developer Roller shaft.



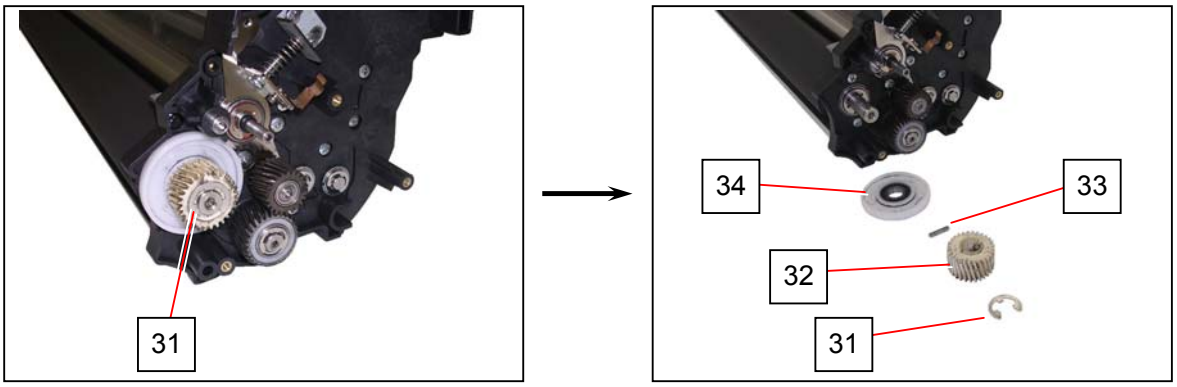
17) On the drive side, loosen 2 screws (26) to release pressure by Blade Roller.



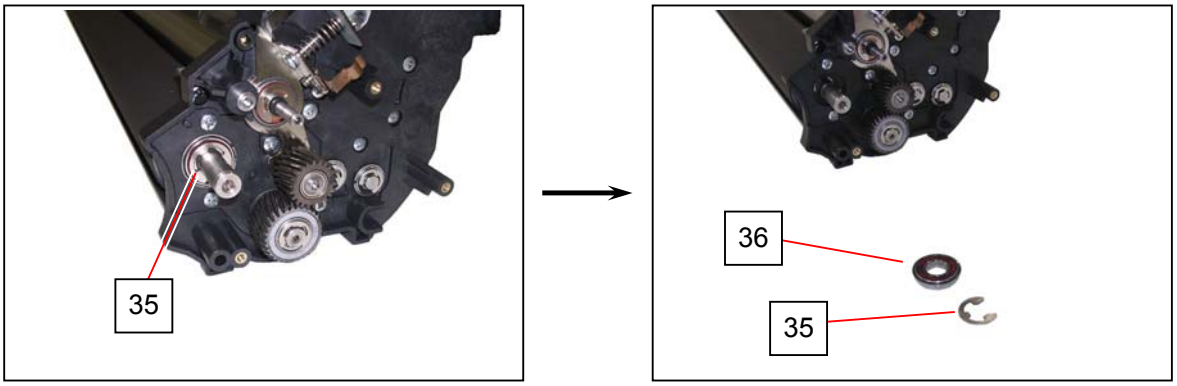
18) Remove 5 screws (M4x6) (27), 1 screw (M4x35) (28) and 1 screw (M4x45) (29) to remove Plate L Assy (30).



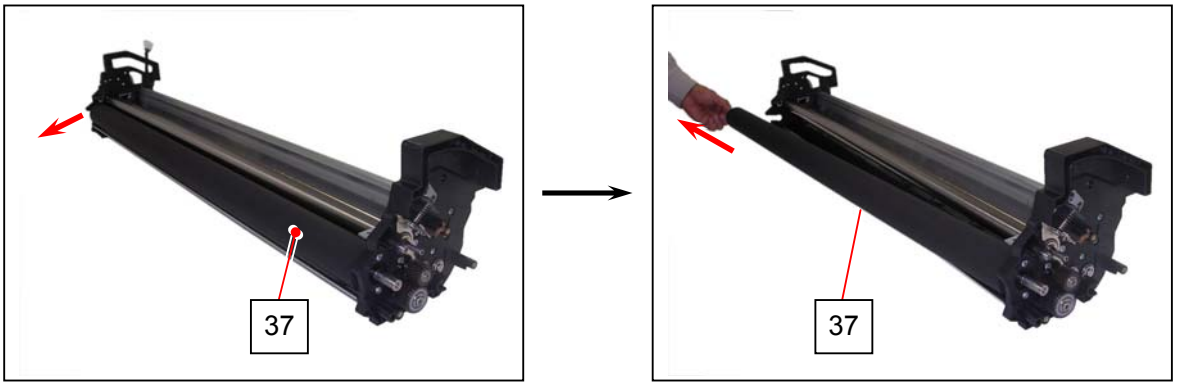
19) Remove Retaining Ring-E (E10) (31) to remove 28T Helical Gear L (32), Parallel Pin (3x15) (33), Counter Roller (34) from Developer Roller shaft.
Clean the contact face of Counter Roller (34) for proper contact with Photoconductive Drum.



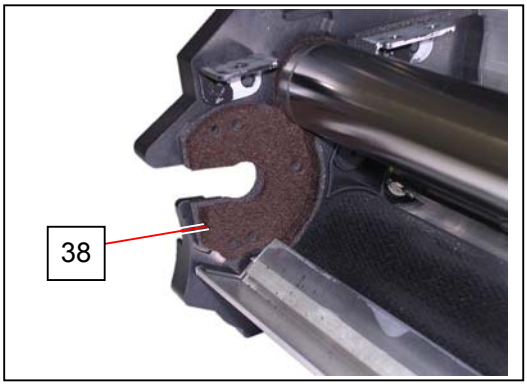
20) Remove Retaining Ring-E (E10) (35) to remove Ball Bearing (36) from Developer Roller shaft.

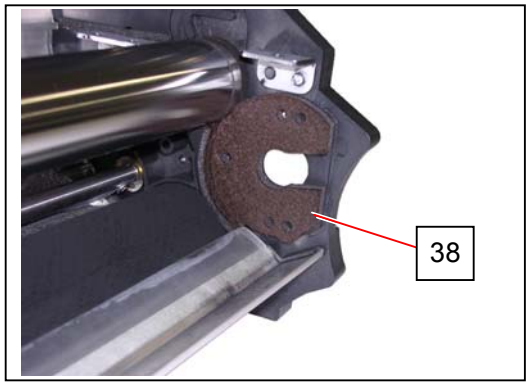


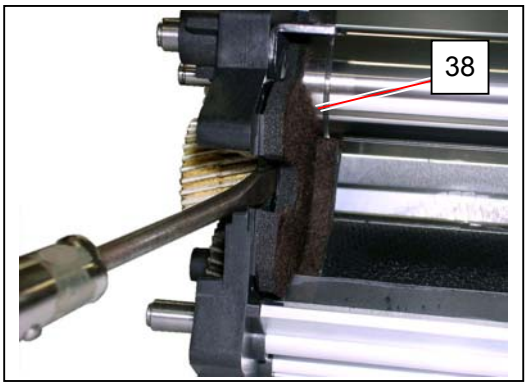
21) Pull the non drive side end of Developer Roller toward you. With supporting the drive side, slide Developer Roller (37) to the non drive side to remove it from Developer Unit.



22) Remove Side Seal R Assy / Side Seal L Assy (38) from Developer Unit.
Replace **Side Seal R Assy** / **Side Seal L Assy** with new ones.





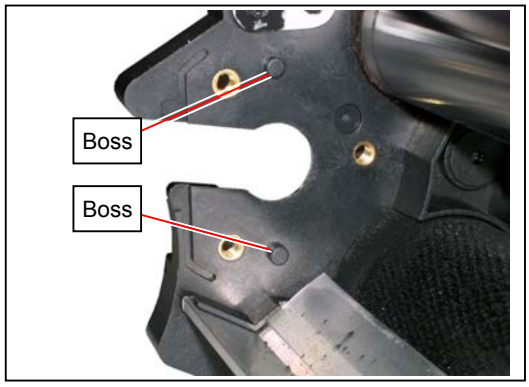


(see the next page)

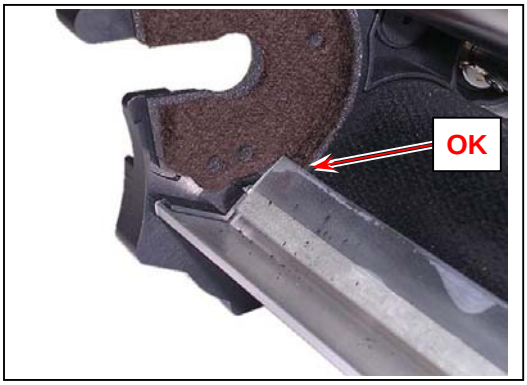
NOTE

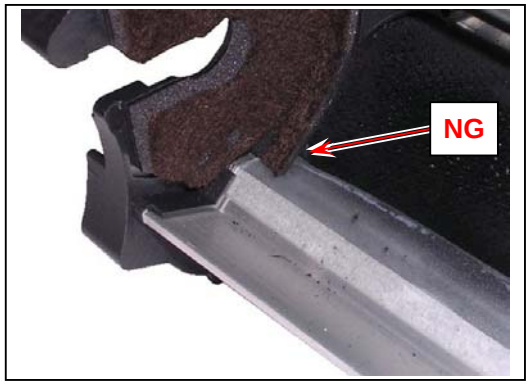
Note the followings when installing.

(1) Use the positioning bosses for correct positioning.
These partly vary from Left / Right.

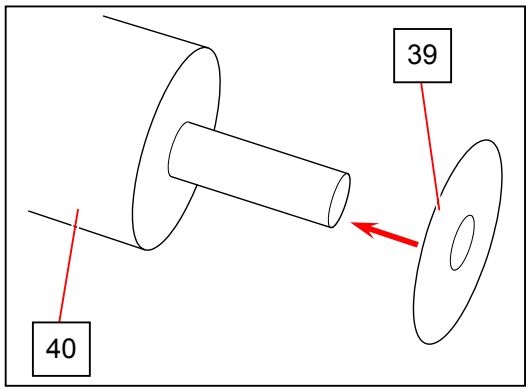


(2) The bottom rim of Side Seal R/L should not ride on the soft plastic seal.

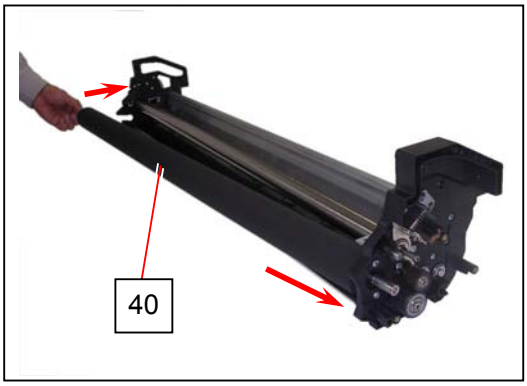




23) Attach **Spacer (2)** (39) onto both ends of the new **Developer Roller** (40).



24) Insert the drive side of Developer Roller (40) to the side plate hole.
With pushing to the drive side, insert another side to the cutting



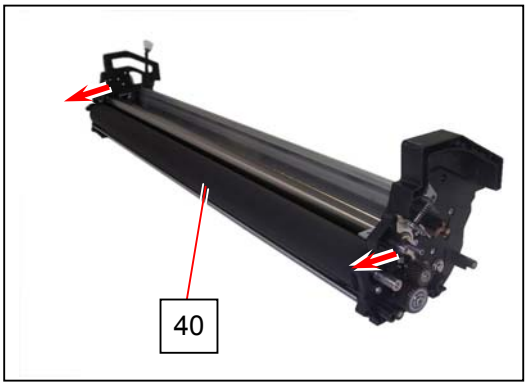
NOTE

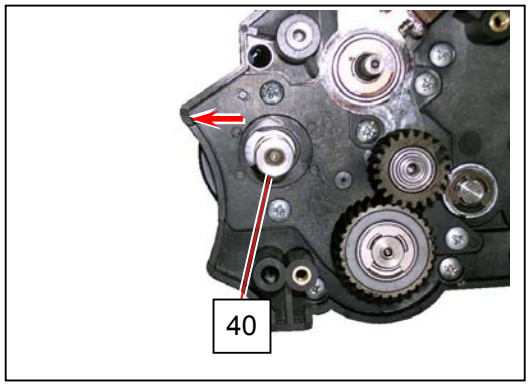
(1) Carry Developer Roller with pinching both shaft ends. Do not touch the rubber surface.

(2) Install Developer Roller in the correct direction.
The shorter shaft end with a weak groove should be placed on the non drive side.

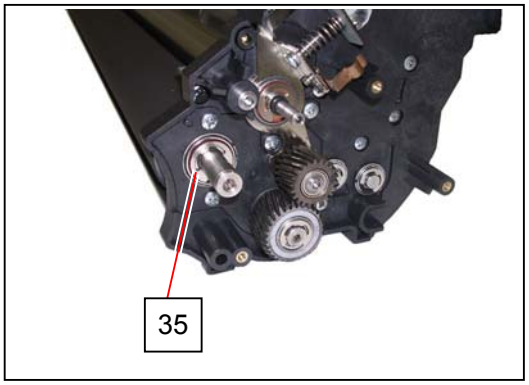
(3) For ease of later steps, adjust Developer Roller so that the penetrating holes for Parallel Pins on the shaft are placed horizontally.

25) Slightly swing Developer Roller (40) toward you to be seated in position.

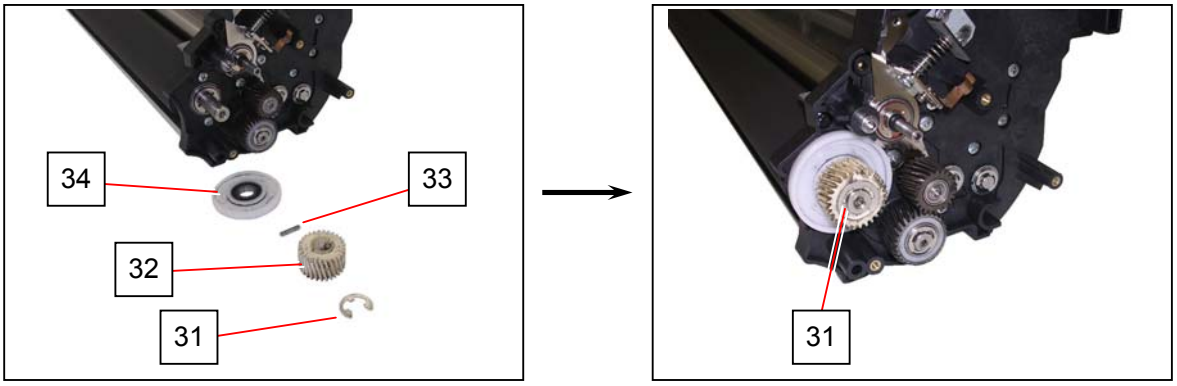




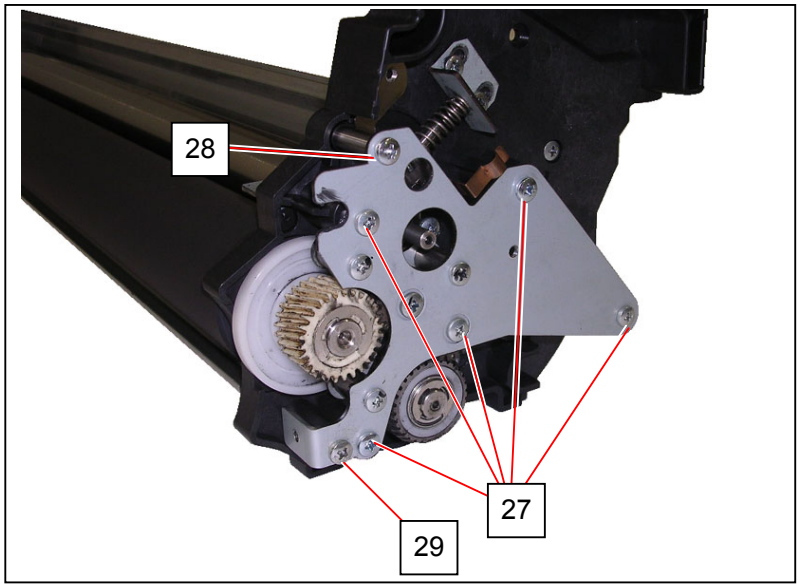
26) On the drive side, return Ball Bearing (36) and Retaining Ring-E (E10) (35) to Developer Roller shaft.



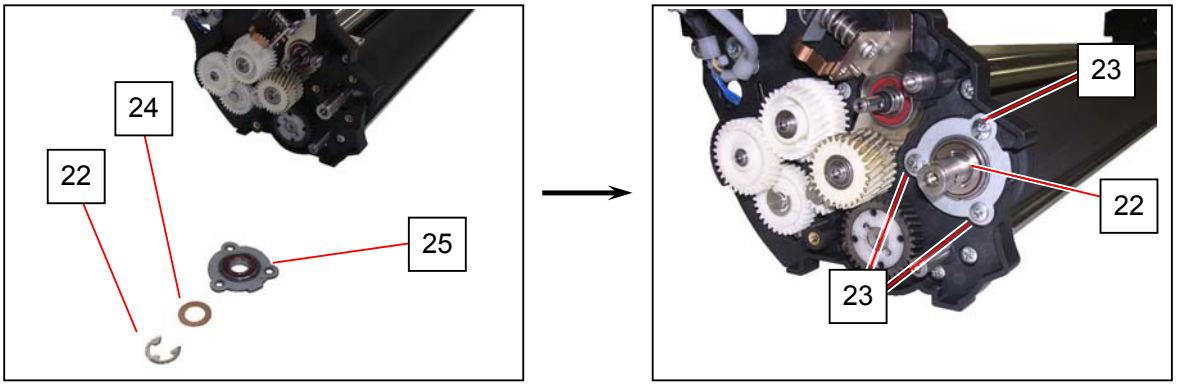
27) Return Counter Roller (34), Parallel Pin (3x15) (33), 28T Helical Gear L (32), Retaining Ring-E (E10) (31) to Developer Roller shaft.



28) Return Plate L Assy (30) and secure it 5 screws (M4x6) (27), 1 screw (M4x35) (28) and 1 screw (M4x45) (29).



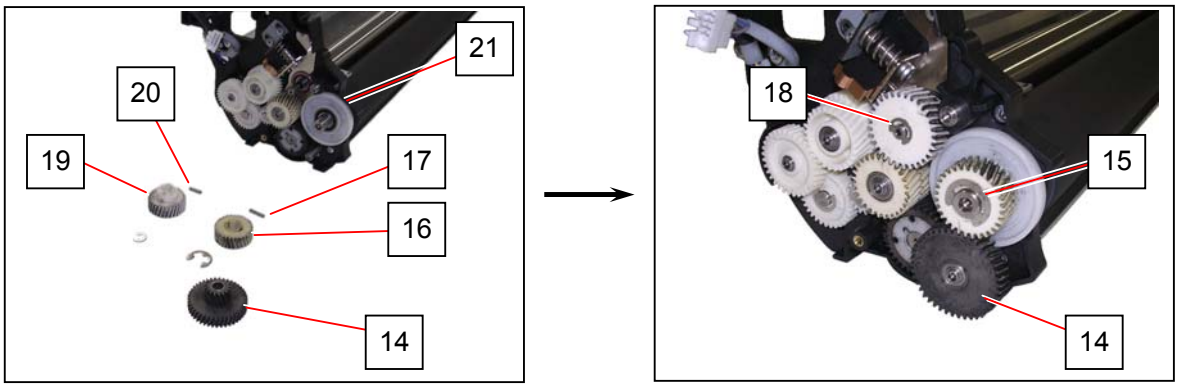
29) On the non drive side, return Shaft Plate Assy (25), a Thrust Washer (24) and Retaining Ring-E (E10) (22) on Developer Roller shaft. Secure Shaft Plate Assy (25) with 3 screws (23).



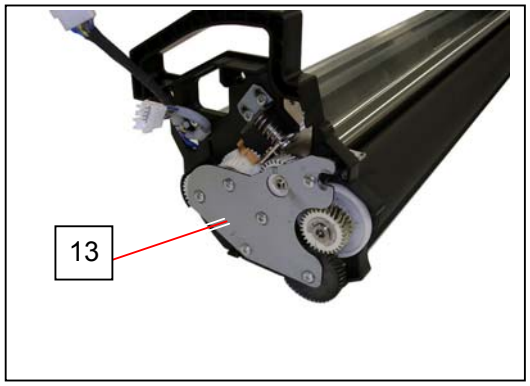
NOTE

Add or remove a proper number of Thrust Washer (24) to remove any backlash on the new Developer Roller.

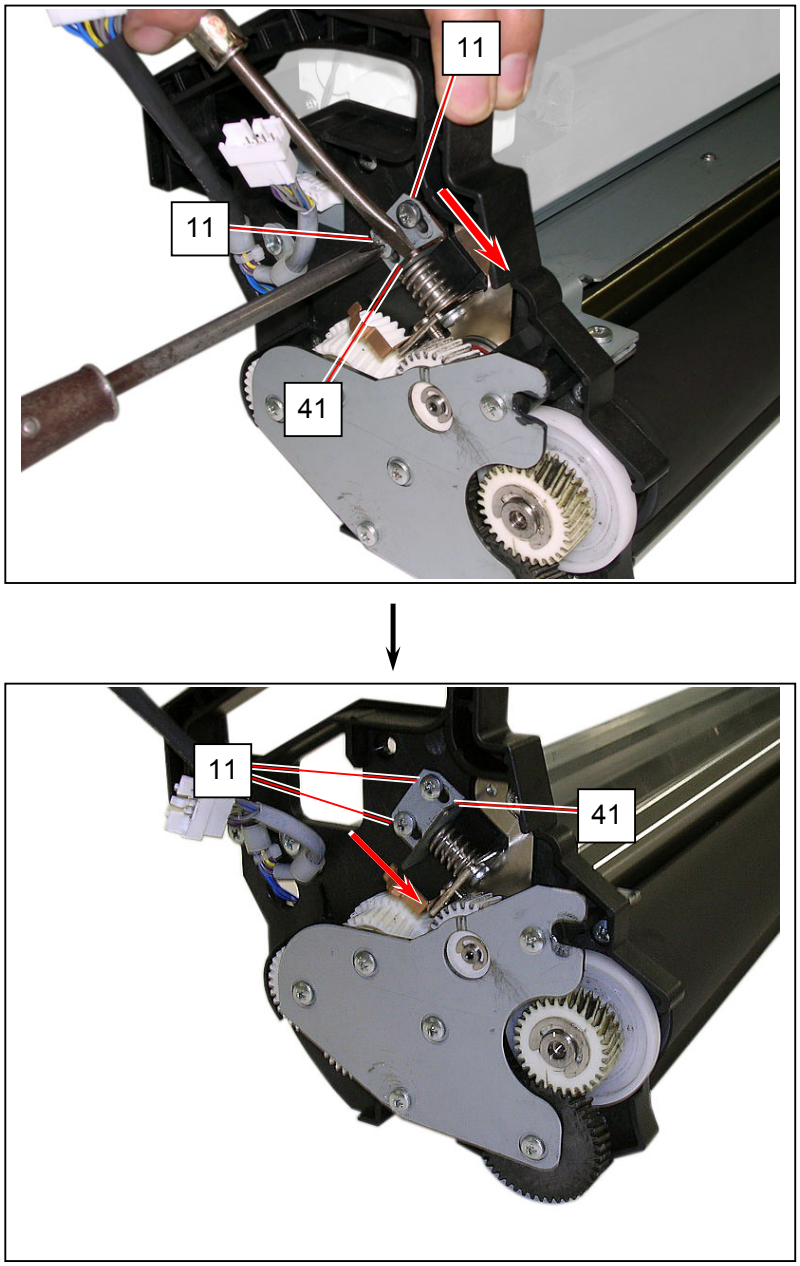
30) Return Counter Roller (21) and 17/42T Helical Gear R (14).
Return Parallel Pin (3x12) (20), 31T Gear (19) and Retaining Ring-E (E5) (18) to Blade Roller shaft.
Return Parallel Pin (3x15) (17), 30T Helical Gear R (16) and Retaining Ring-E (E10) (15) to Developer Roller shaft.



31) Return Plate R (13).



32) Fully thrust the top of the pressure plate (41).
With pushing, tighten 2 screws (11) to make Blade Roller press onto Developer Roller.



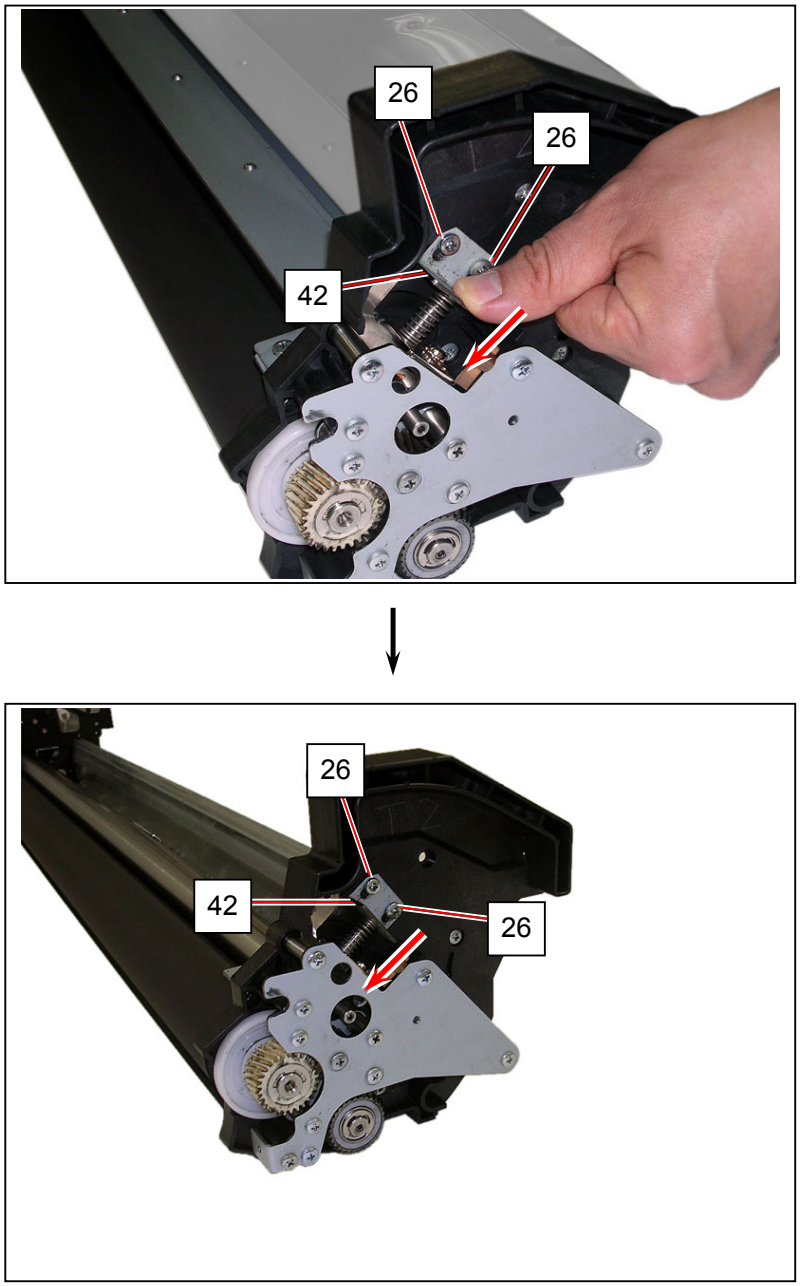
Reference

Use a long flat tip screwdriver to push the drive side Pressure Plate (41).
Put the tip to the top of the Pressure Plate, and push the screwdriver on the grip end with your body. With holding, tighten the screws (11).

NOTE

Incorrect pressurization of Blade Roller for either or both sides makes the toner layer on Developer Roller surface thicker than required. In such a condition, uneven density or dirt by excessive toner may appear on print images.

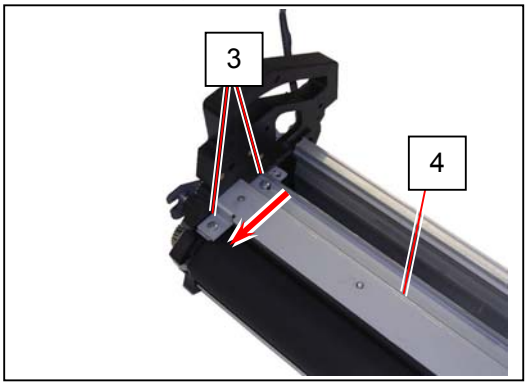
33) On the drive side, fully press the top of the pressure plate (42).
With pushing, tighten 2 screws (26) to make Blade Roller press onto Developer Roller.

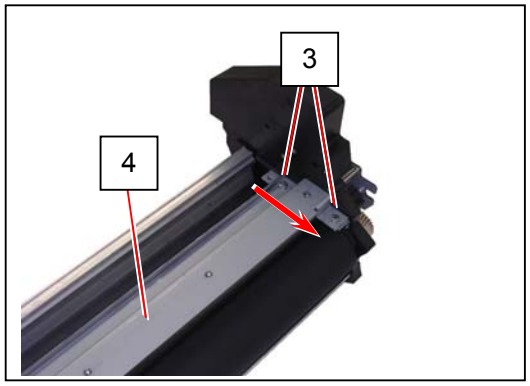


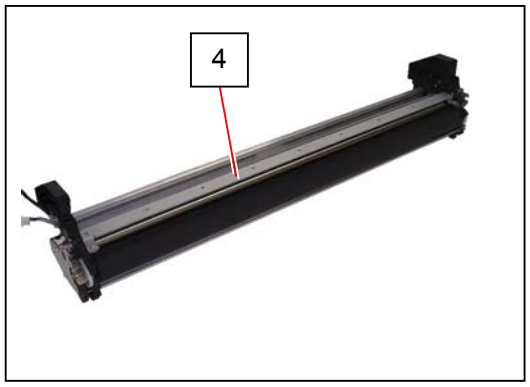
NOTE

Incorrect pressurization of Blade Roller for either or both sides makes the toner layer on Developer Roller surface thicker than required. In such a condition, uneven density or dirt by excessive toner may appear on print images.

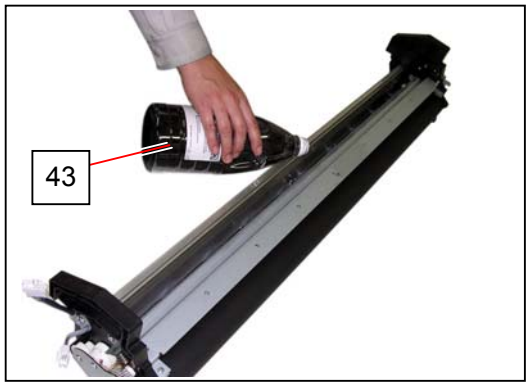
34) Place Blade Assy (4) in position.
With pushing Blade Assy to the arrow direction, tighten 4 screws (3).







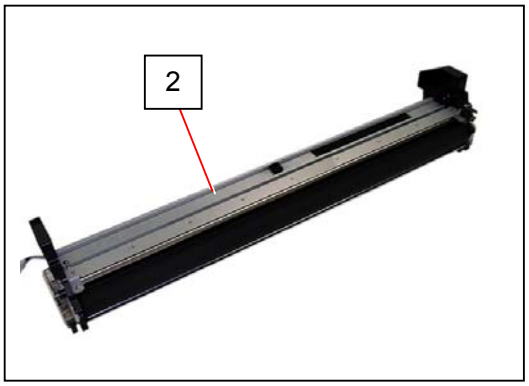
35) Shake a Starting Toner Bottle (500g) (43) well.
Leave it for 10 to 20 seconds to allow it to settle, before opening the bottle cap.
Then pour the Starting Toner into Developer Unit.



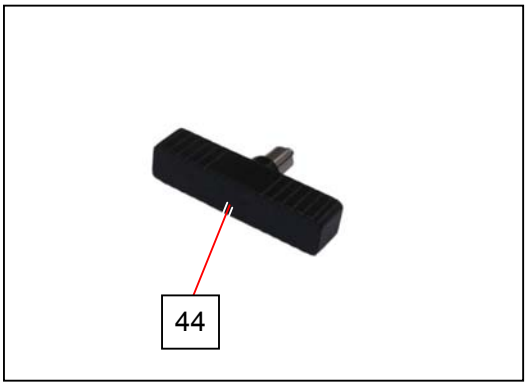
⚠ NOTE

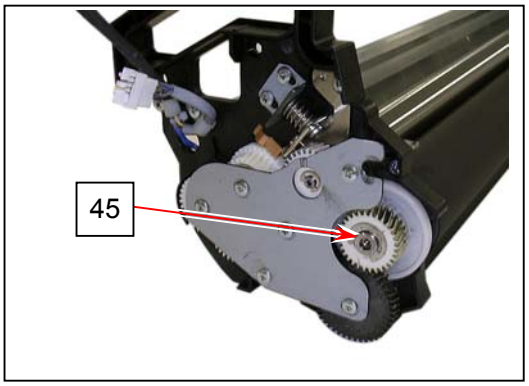
(1) Do not open the bottle cap immediately after shaking, as Starting Toner will disperse into the air.
(2) If your clothes or hands get toner on them, gently dust the toner off.

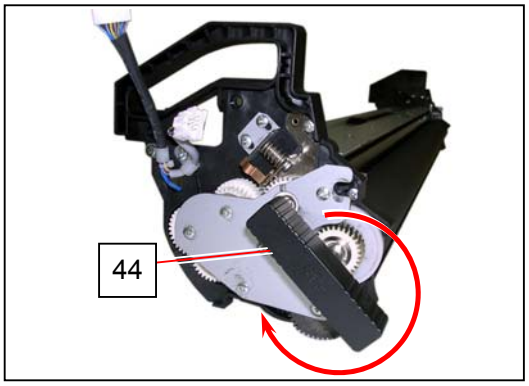
36) Return Toner Cover (2).



37) Insert Handle (44) into the tap hole (45) on Developer Roller shaft, and rotate Handle clockwise so that Developer Roller is covered with the toner. Then remove Handle.





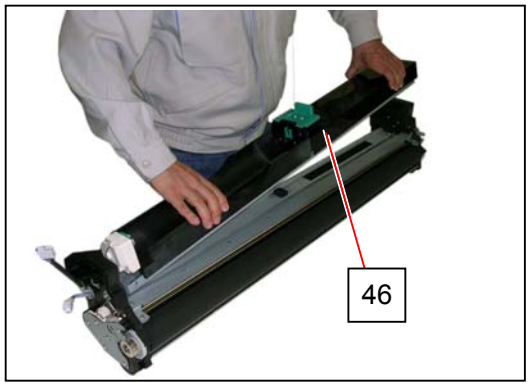


NOTE

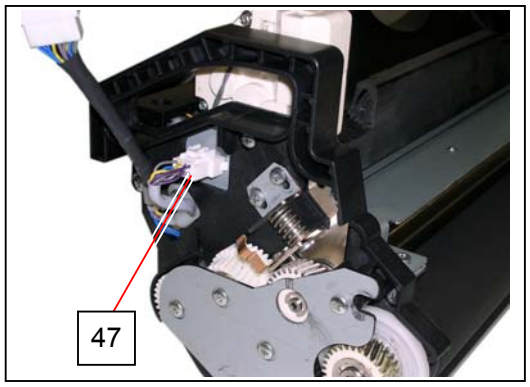
Incorrect pressurization of Blade Roller for either or both sides makes the toner layer on Developer Roller surface thicker than required. In such a condition, uneven density or dirt by excessive toner may appear on print images.
If this happens, perform step 32, 33 and 37.

With the correct pressure, Blade Roller will remove excessive toner on Developer Roller surface to adjust the thickness of the toner layer correctly.

38) Return Toner Hopper (46).

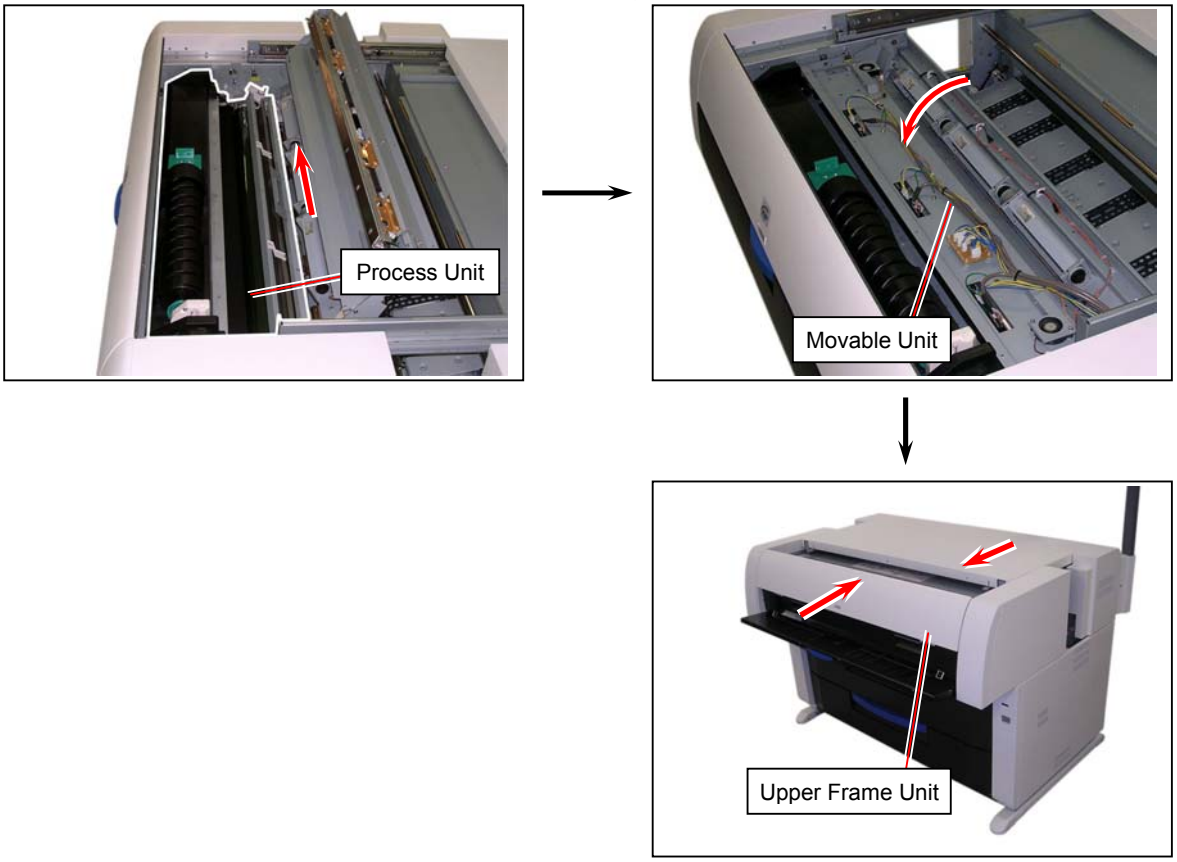


39) Reconnect 1 connector (47).



40) Reinstall Developer Unit to the machine.

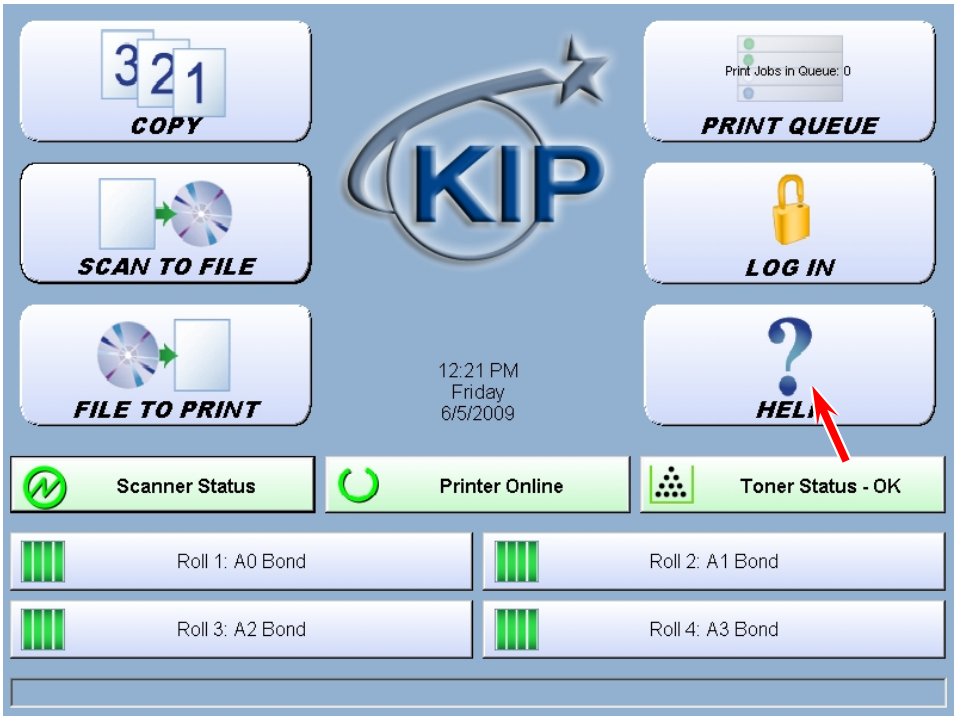
41) Replace Process Unit and Movable Unit. Close Upper Frame Unit.
Refer to [5.2.2 Removing Developer Unit] on page 5-15.



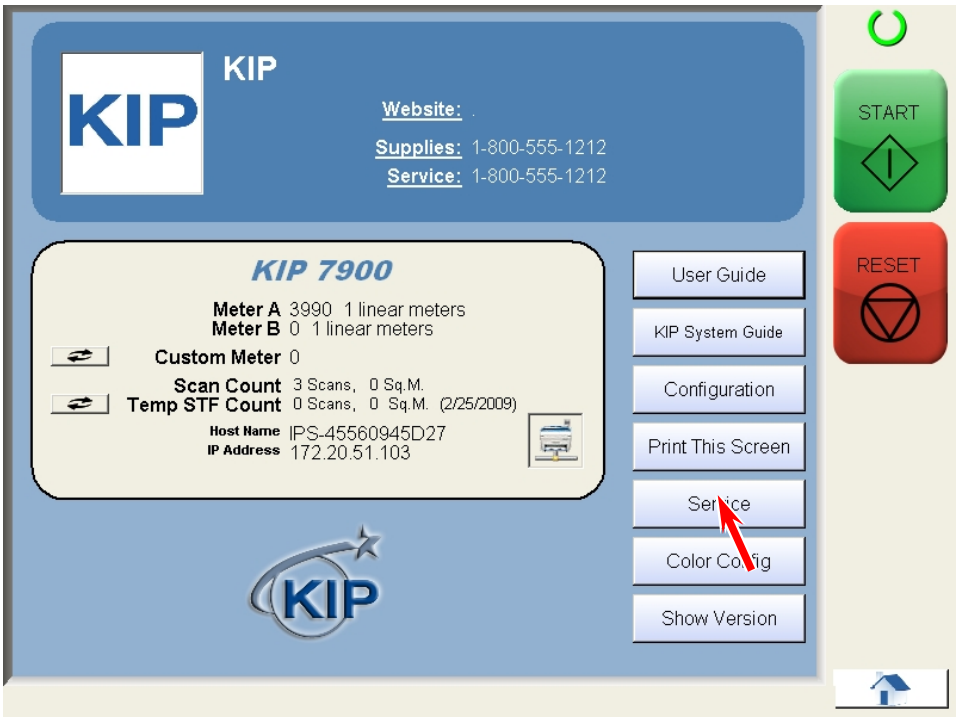
42) Turn on the machine.
Follow the subsequent steps to reset any adjustment of Developer / Regulation Bias by Density Compensation Process.

> **NOTE**
>
> After replacing Developer Roller / toner refreshment, you must reset bias adjustment by Density Compensation Process.
> Otherwise a darker image appears because the adjusted values are too high voltage for the refreshed Developer Unit.

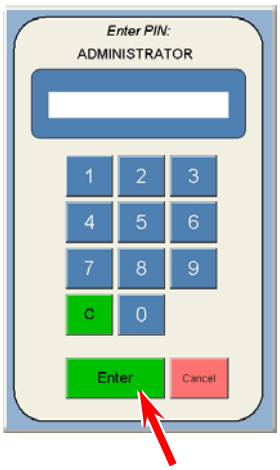
43) Press “? - Help” on Home screen.



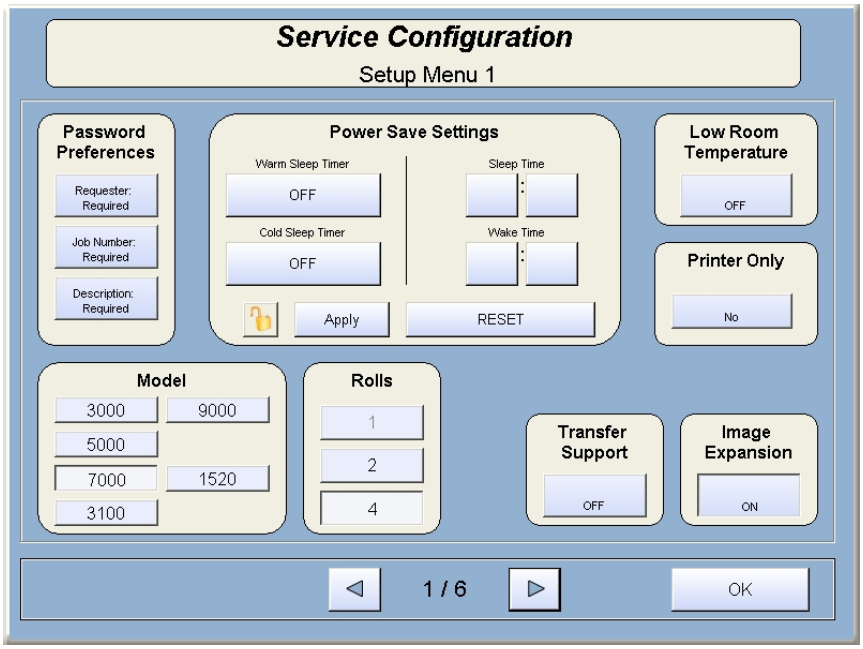
44) Press [Service].



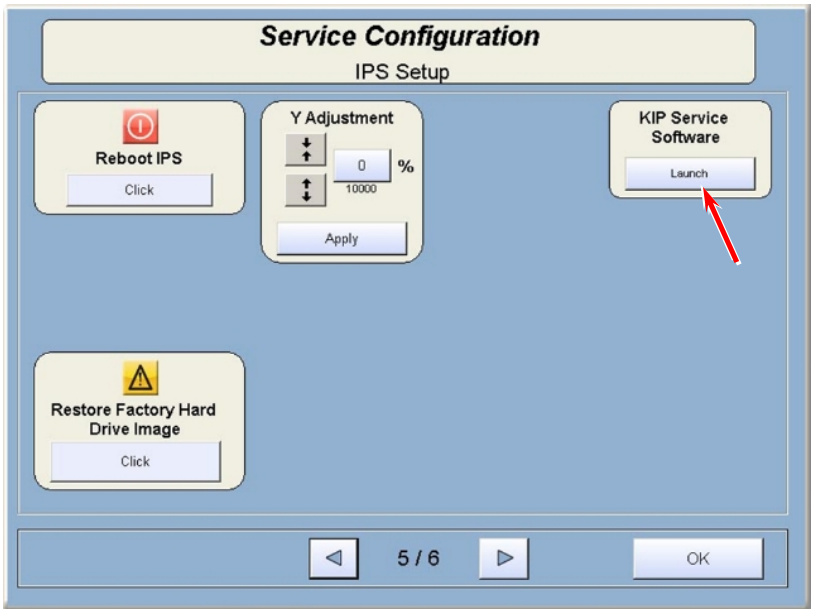
45) On-screen Keypad appears.
Input “8495107” and press [Enter].



46) Service Configuration screen will appear.

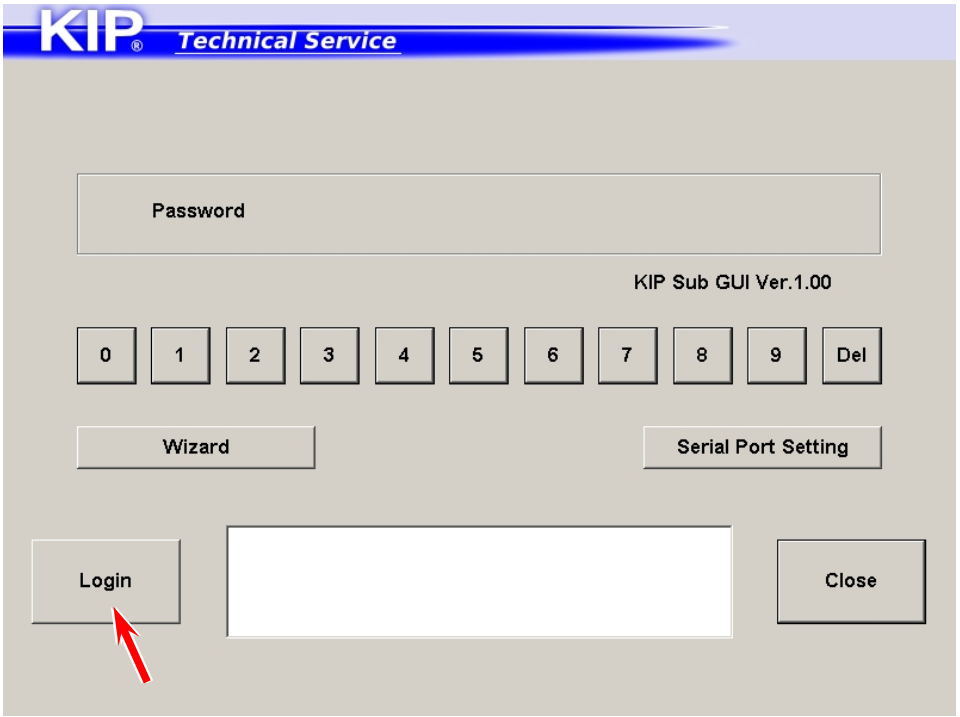


47) Use the arrow keys to open [5/6 IPS Setup]. Press [Launch] in “KIP Service Software”.

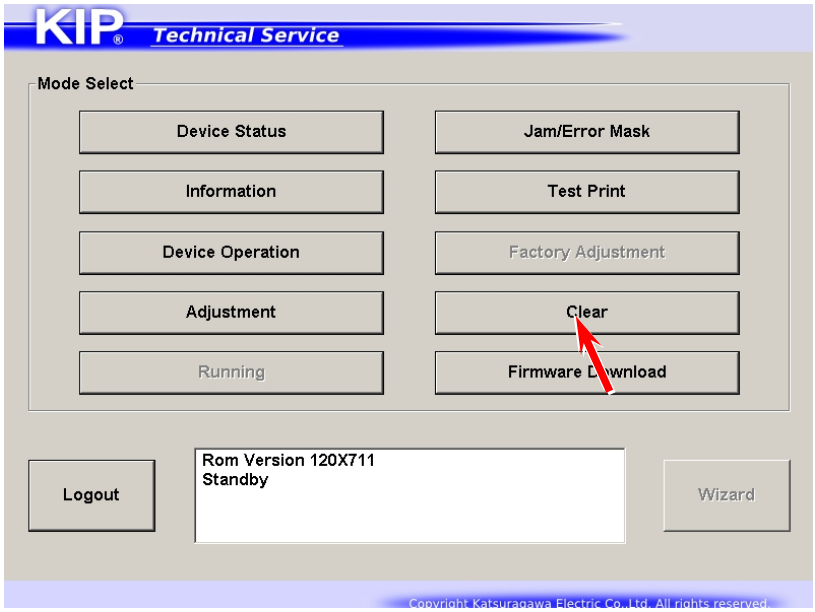


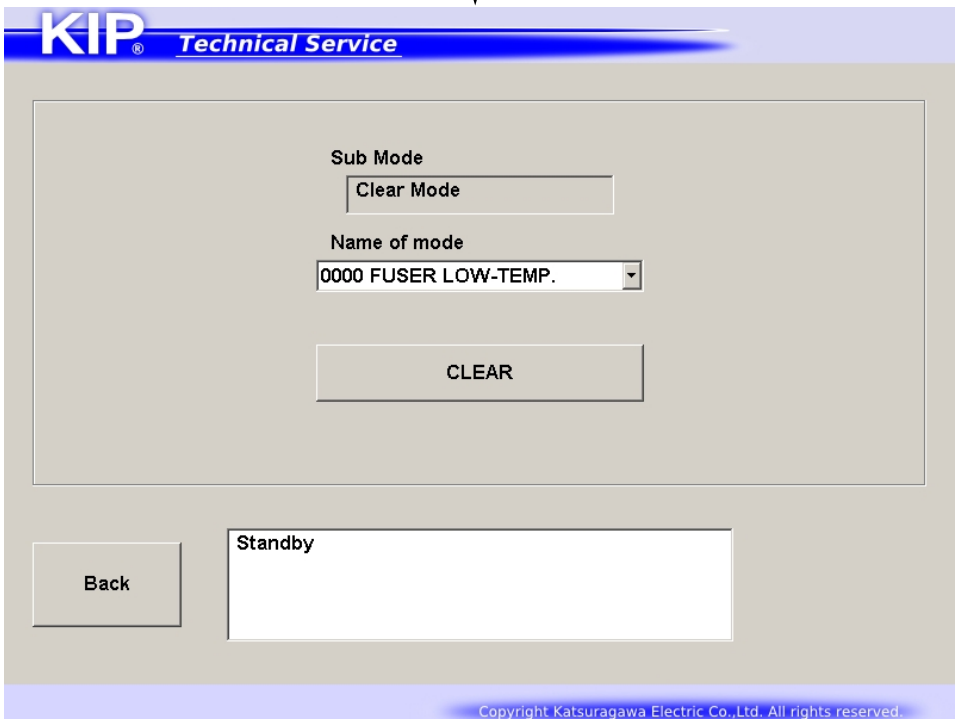
48) Press [Yes].

49) Press [Login] to log in Service Mode.

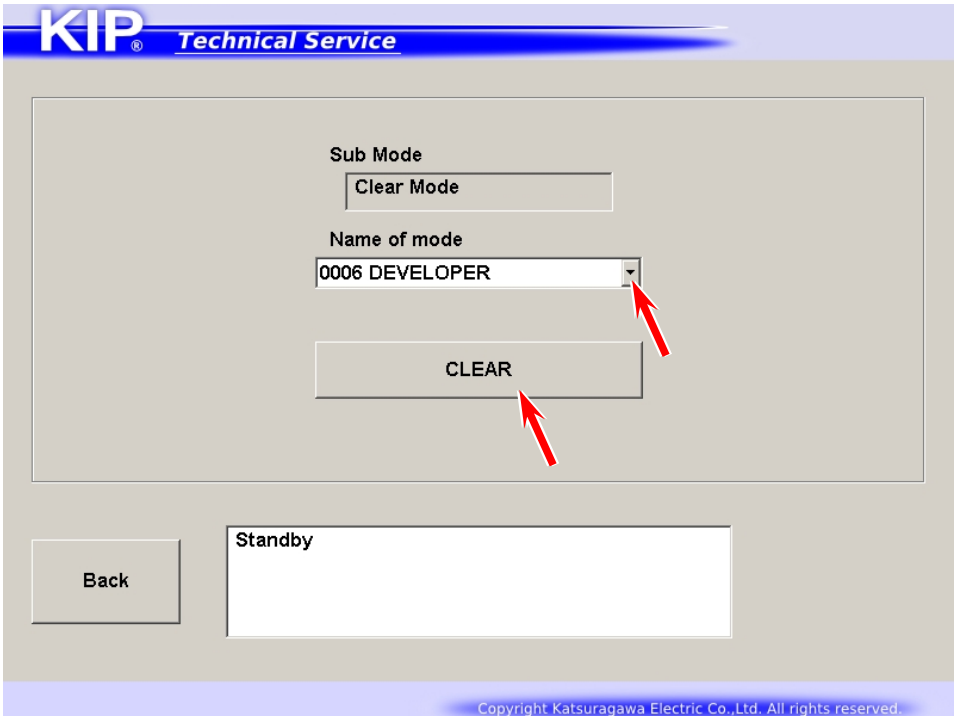


50) Press [Clear] in Service Mode Home.
Clear Target screen appears.





51) Select “0006 Developer” from Name of mode menu. Press [CLEAR].



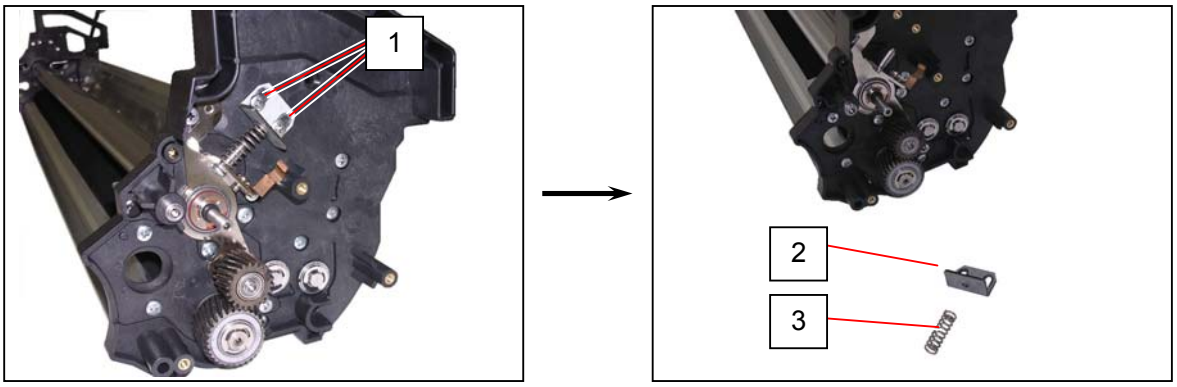
52) Confirmation screen appears.
Press [Agree] to reset Bias Adjustment by Density Compensation Process.
Then the system starts recalculation of the possible best Developer Bias.
(This will take time.)

53) [Agree] will turn deactivated. Press [Return]. The entire Developer Maintenance is completed.

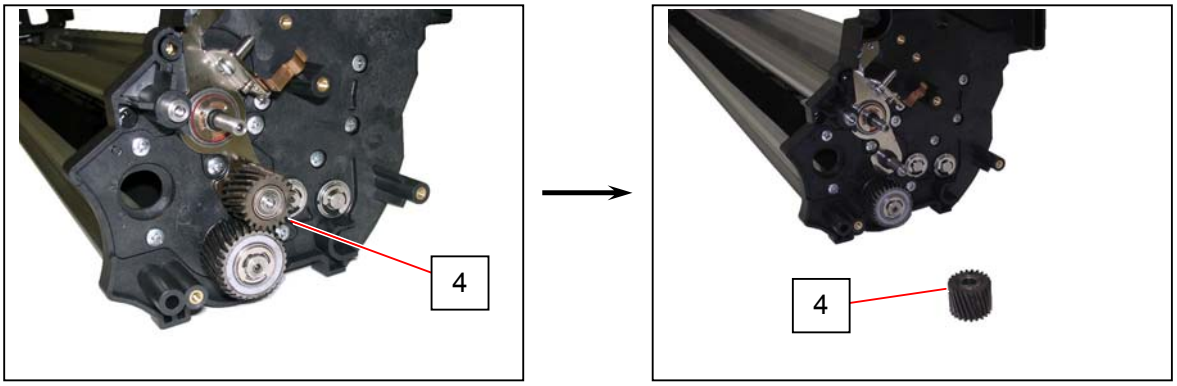
5.8.3 Replacing Toner Supply Roller and Side Seal SU

1) Remove Developer Roller from Developer Unit.
   Refer to [5.8.2 Recommended Periodic Replacement Parts] on page 5-123.

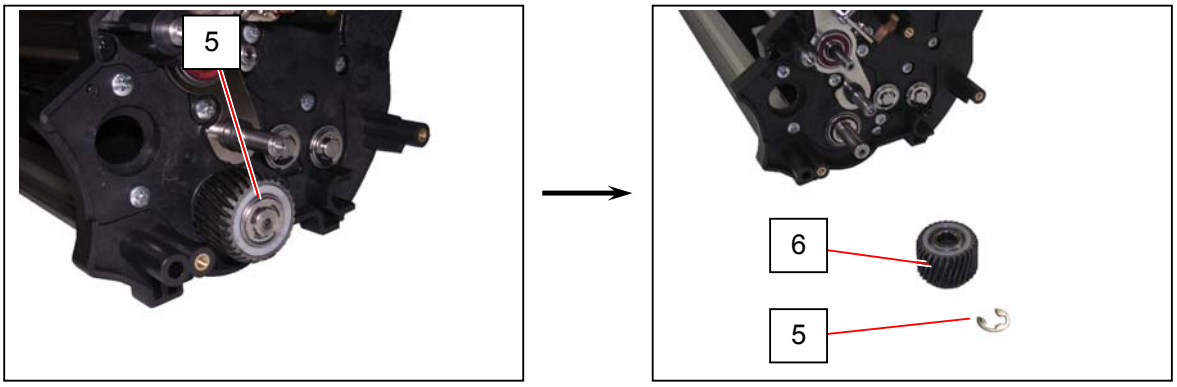
2) On the drive side, remove 2 screws (M4x6) (1) to remove Pressure Plate L (2) and Spring D (3).



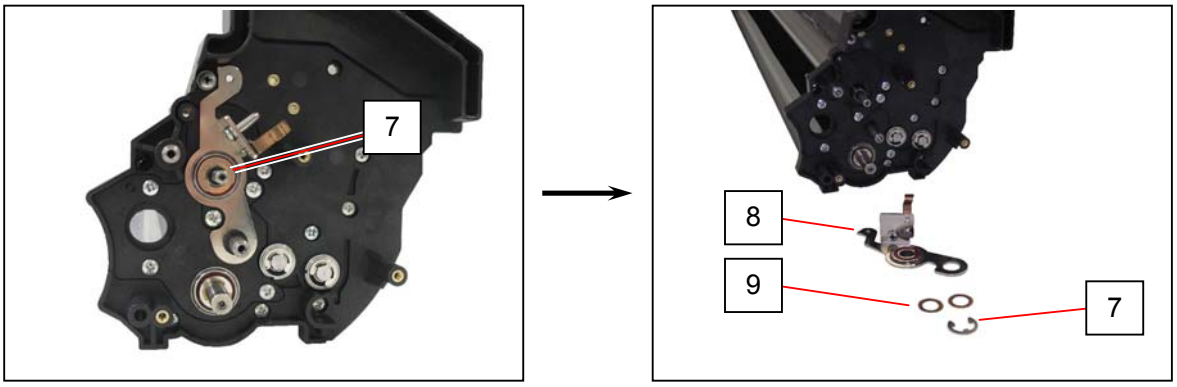
3) Remove 22T Gear (4) and 2 bearings on its both sides.



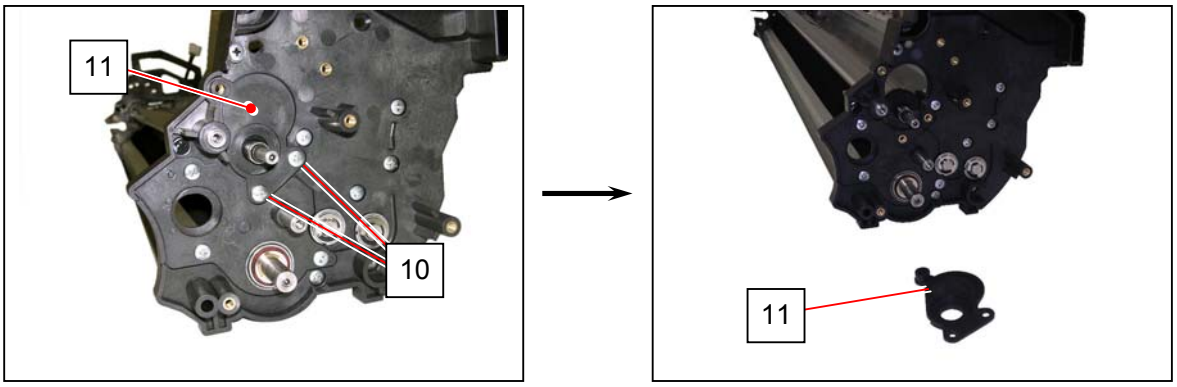
4) Remove Retaining Ring-E (E8) (5) to remove 30T Helical Gear L (6) from Toner Supply Roller shaft.



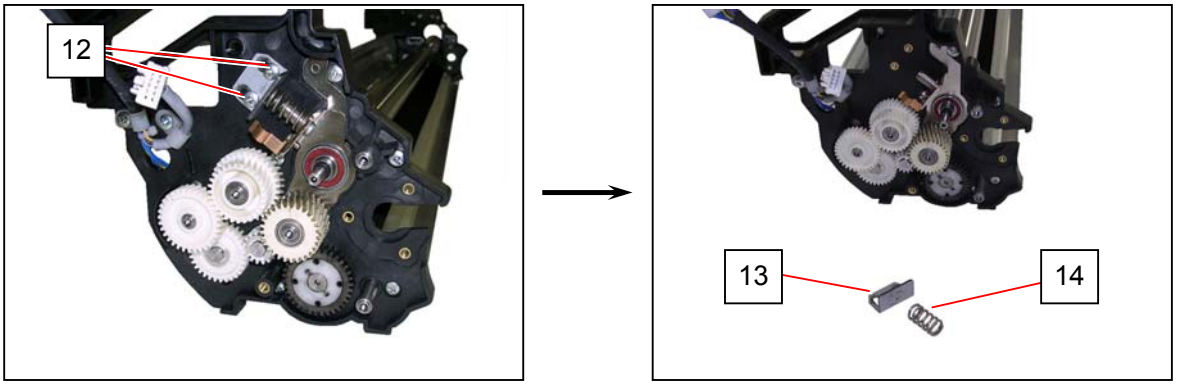
5) Remove Retaining Ring-E (E9) (7) to remove Free Bracket L (8), Thrust Washers (9).



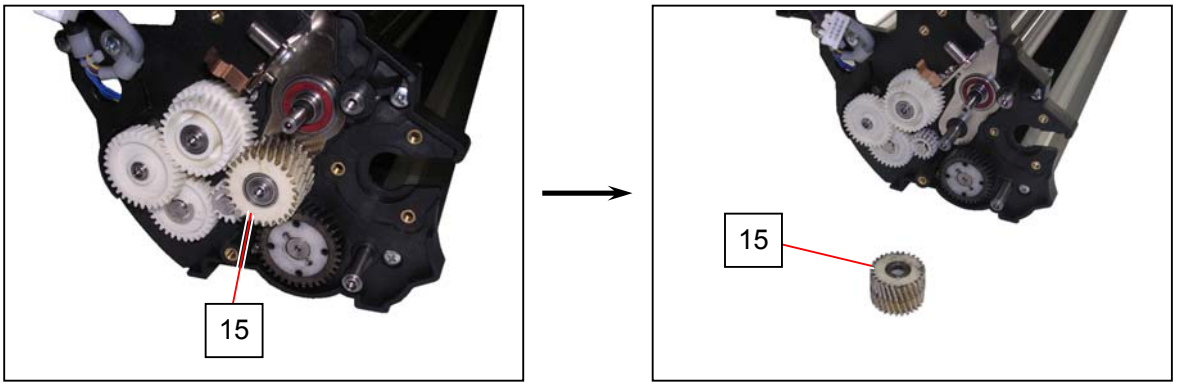
6) Remove 2 screws (M4x6) (10) to remove Support Bracket B (11).



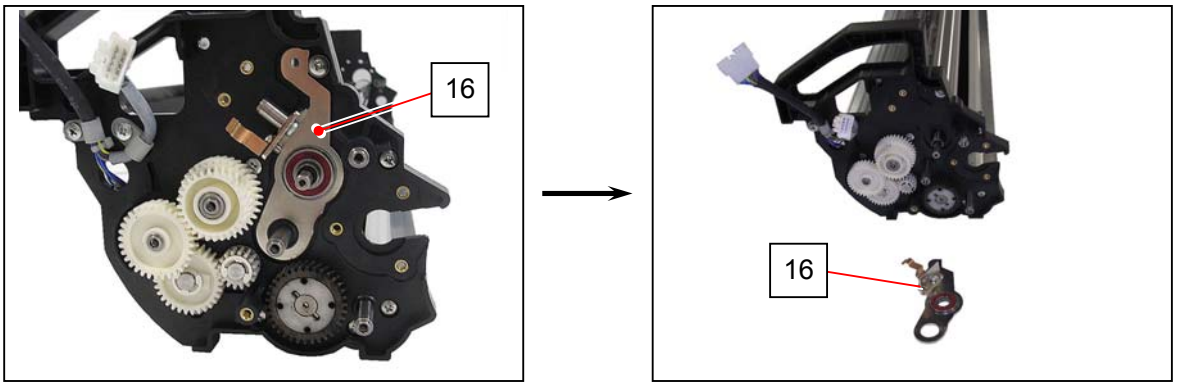
7) <u>On the non drive side</u>, remove 2 screws (M4x6) (12) to remove Pressure Plate R (13) and Spring C (14).



8) Remove 28T Helical Gear R (15).

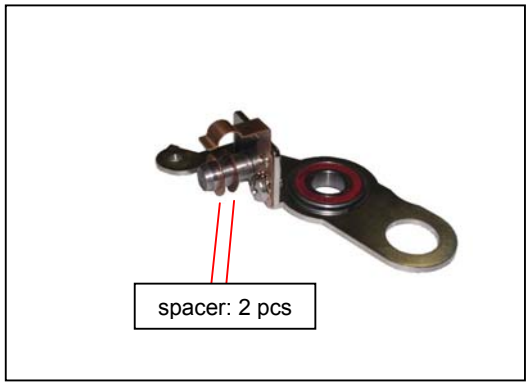


9) Remove Free Bracket R (16).

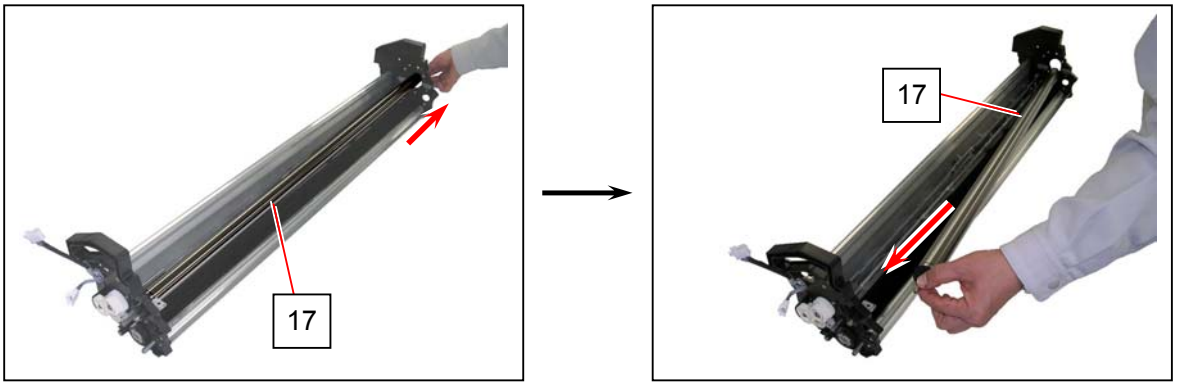


NOTE

Free Bracket R has 2 small spacers on its pin.
Do not lose them.



10) Slightly pull the drive side end of Blade Roller (17) outward. With supporting the end, lift the other end and move Blade Roller to the non drive side. Remove Blade Roller (17) from Developer Unit.



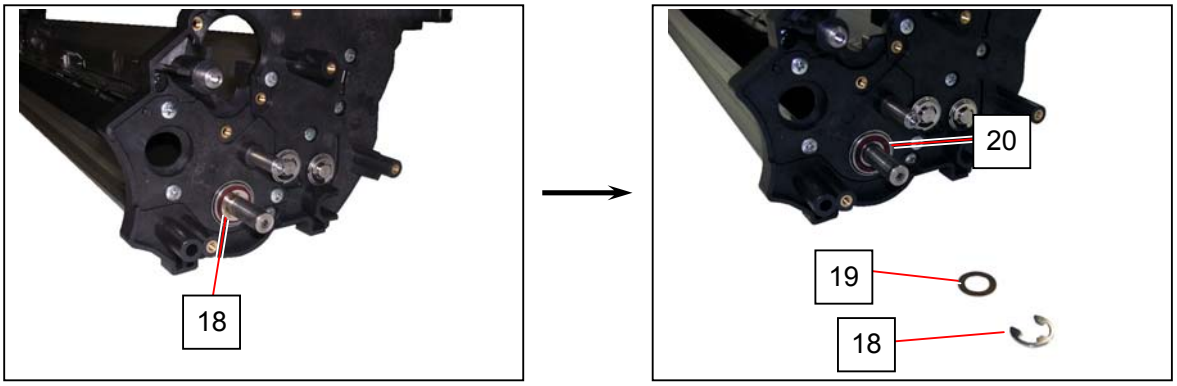
NOTE

(1) Carry Blade Roller with pinching both shaft ends. Do not touch the roller surface.

(2) Install Blade Roller in the correct direction.
One side with a penetrating hole should be placed on the non drive side.

(3) For ease of later steps, adjust Blade Roller so that the penetrating hole for Parallel Pin on the shaft is placed horizontally.

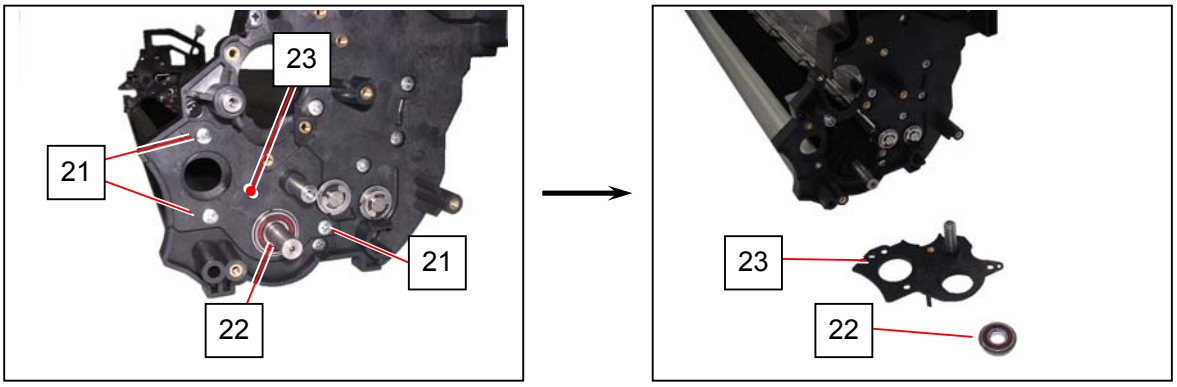
11) On the drive side, remove Retaining Ring-E (E8) (18) to remove a Thrust Washer (19) and Ball Bearing (20).



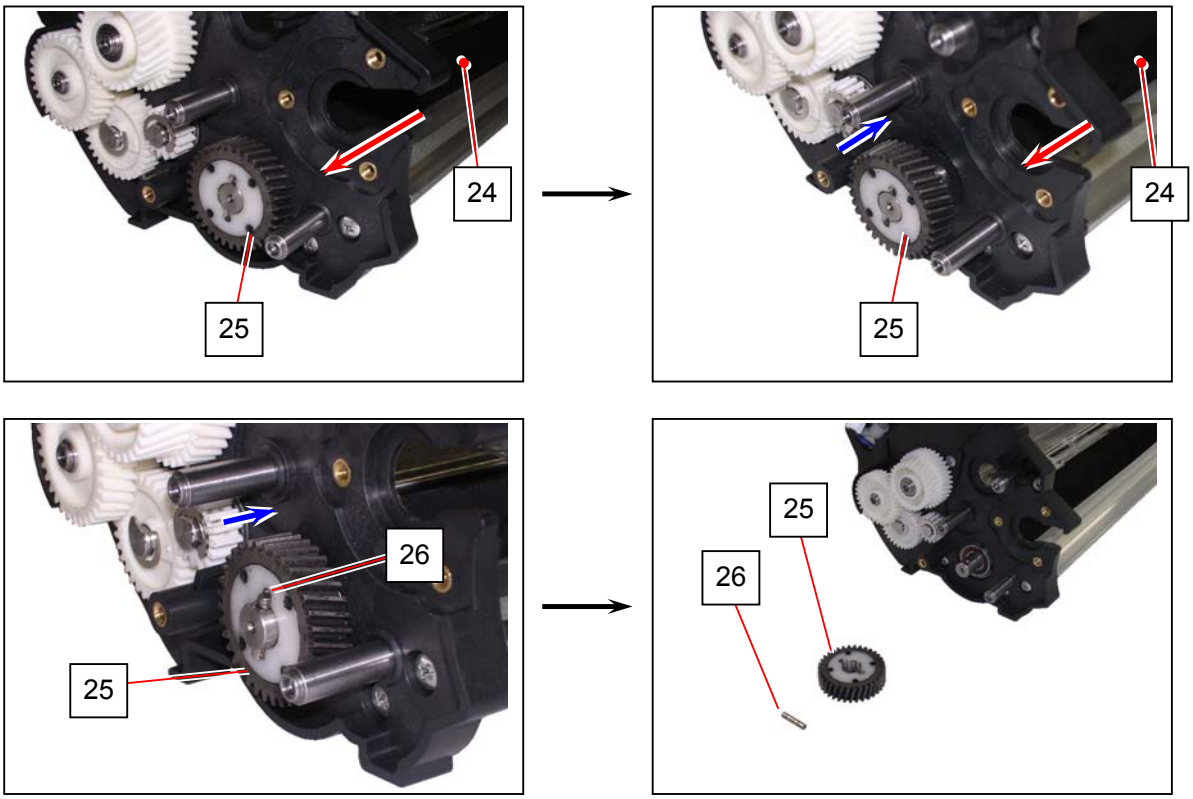
NOTE

When reassembling, add or remove a proper number of Thrust Washer (19) to remove any backlash on the new Toner Supply Roller.

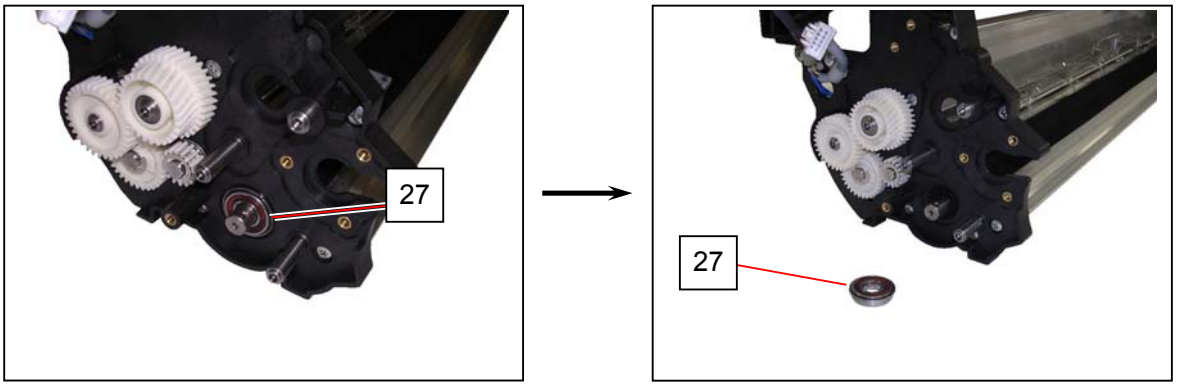
12) Remove 3 screws (M4x6) (21) and Ball Bearing (22) to remove Support Bracket A (23).



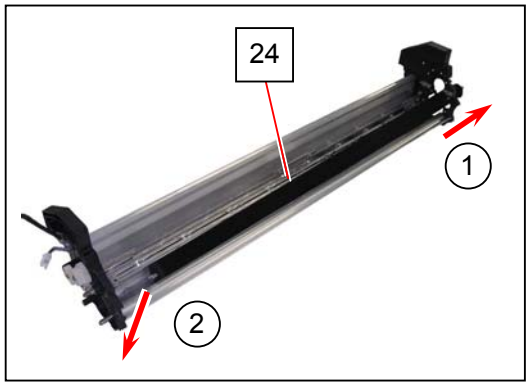
13) With pushing Toner Supply Roller (24) to the non drive side, thrust 34T Helical Gear R (25) to the other side. Remove Parallel Pin (3x15) (26) and 34T Helical Gear R (25) from Toner Supply Roller shaft.



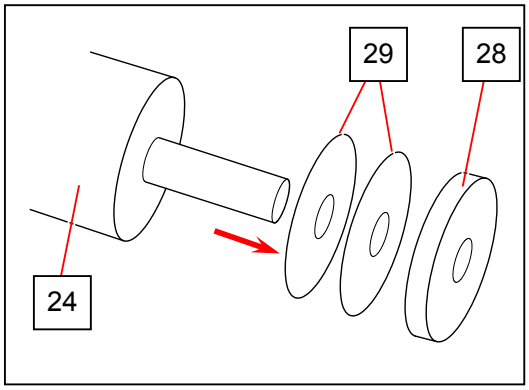
14) Remove Ball Bearing (27) from Toner Supply Roller shaft.



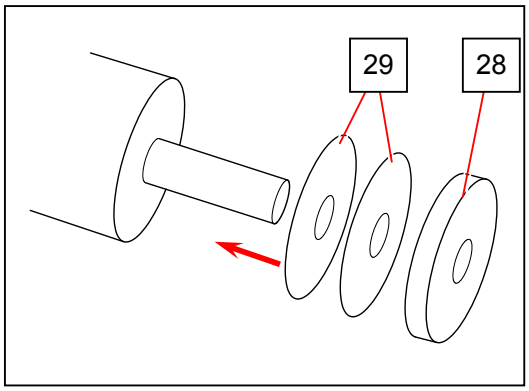
15) Gently pull the drive side end of Toner Supply Roller (24) outward. With supporting the end, lift the other end and move Toner Supply Roller to the non drive side. Remove Toner Supply Roller (24) from Developer Unit.



16) Remove 1 piece of Side Seal SU (28) and 2 pieces of Spacer (1) (29) on each end from the removed Toner Supply Roller (24).



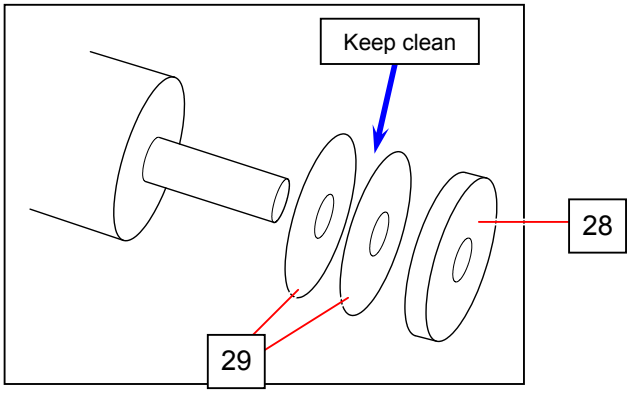
17) Install 1 piece of Side Seal SU (28) and 2 pieces of Spacer (1) (29) on each end to the new **Toner Supply Roller**.



NOTE

(1) Carry Toner Supply Roller with pinching both shaft ends. Do not touch the brush surface.

(2) Do not put the oily substance such as the grease between Spacer (1) (29).
If there is the oily substance between the Spacers, rotate both Spacers together and the Side Seals damage.



(3) Install Toner Supply Roller in the correct direction.
One side with a penetrating hole should be placed on the non drive side.

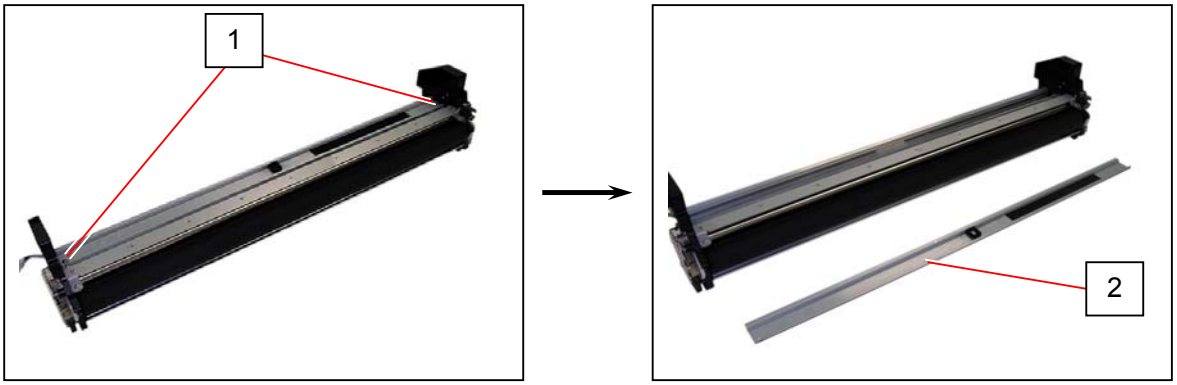
(4) For ease of later steps, adjust Toner Supply Roller so that the penetrating holes for Parallel Pins on the shaft are placed horizontally.

18) Replace all the parts in position.

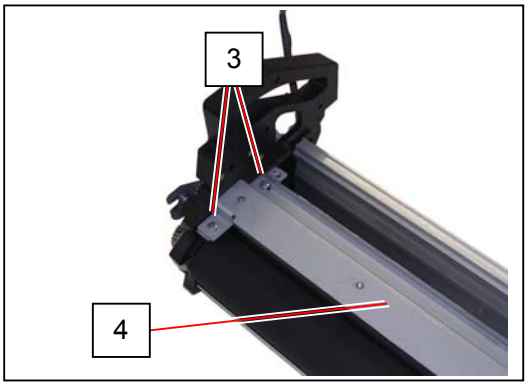
5.8.4 Replacing Blade Roller and Side Seal RE

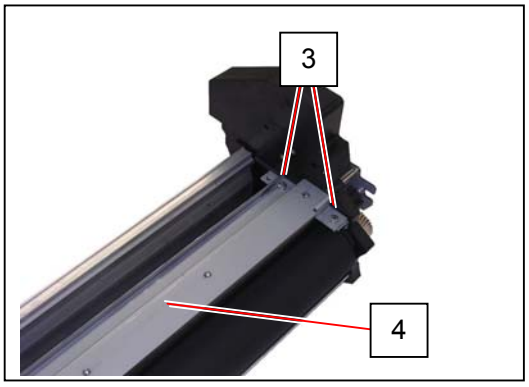
1) Remove Toner Hopper. Refer to [5.8.1 Removing Toner Hopper] on page 5-120.

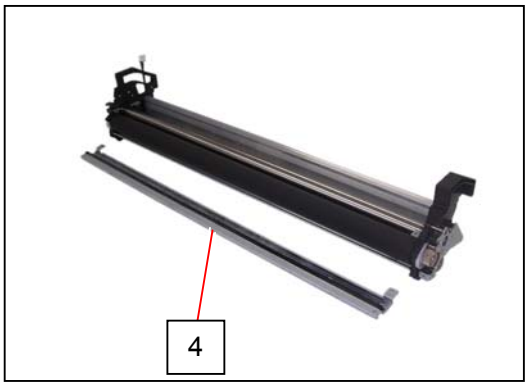
2) Remove 2 screws (M4x6) (1) to remove Toner Cover (2).



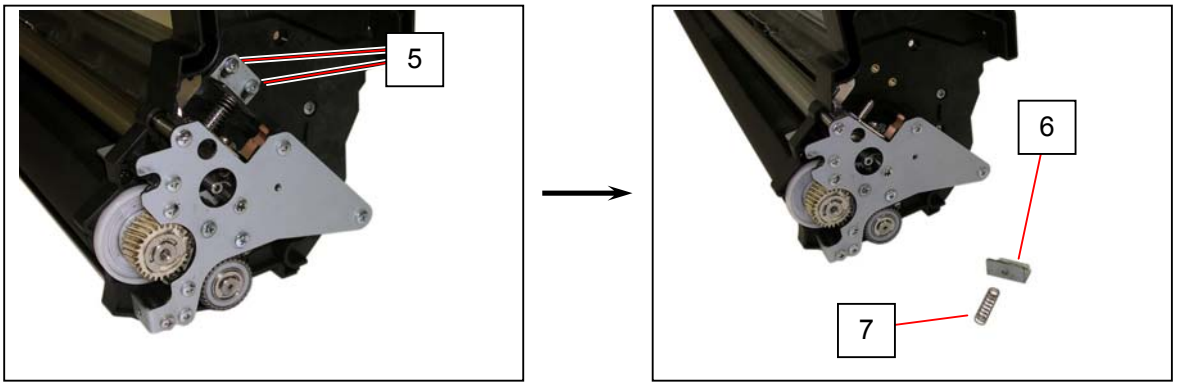
3) Remove 4 screws (M4x6) (3) to remove Blade Assy (4).



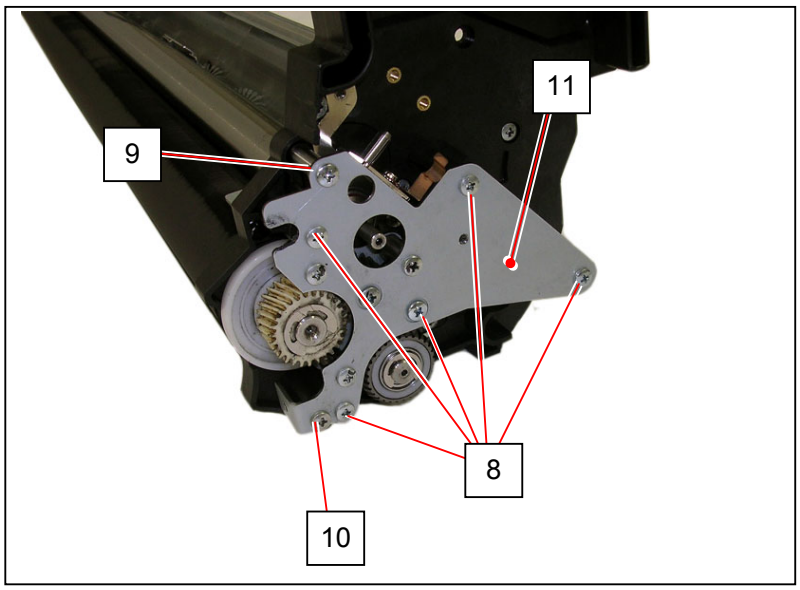




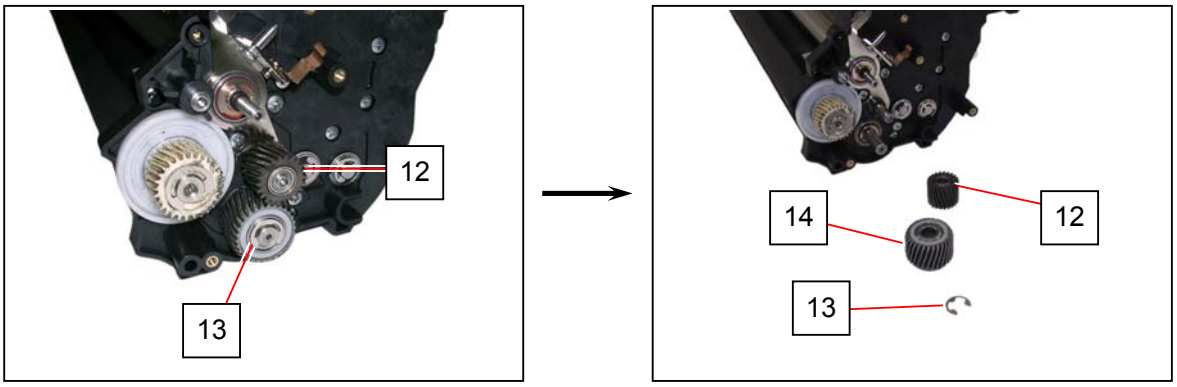
4) On the drive side, remove 2 screws (M4x6) (5) to remove Pressure Plate L (6) and Spring D (7).



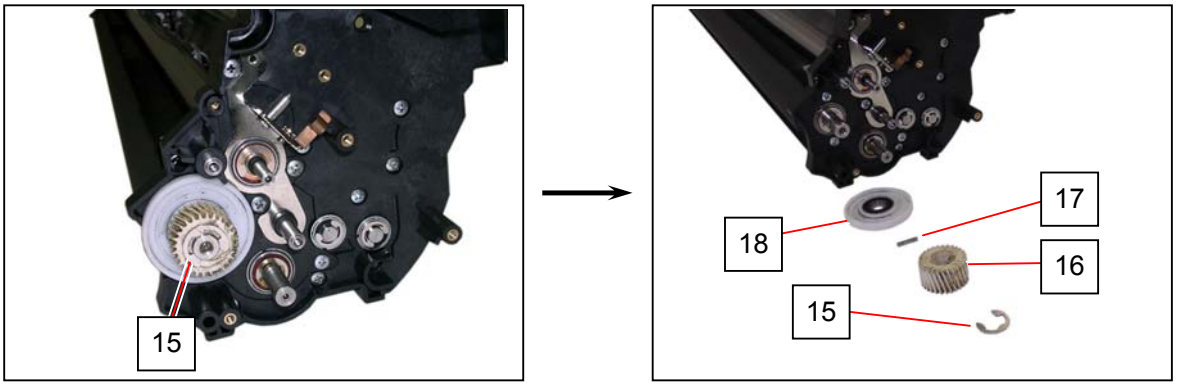
5) On the drive side, remove 5 screws (M4x6) (8), 1 screw (M4x35) (9) and 1 screw (M4x45) (10) to remove Plate L Assy (11).



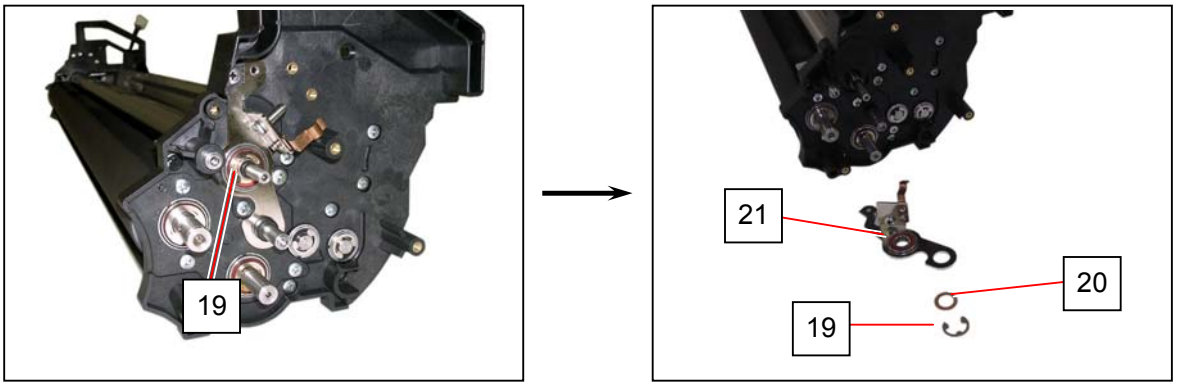
6) Remove 22T Gear (12) with 2 bearings on its both sides.
Remove Retaining Ring-E (E8) (13) to remove 30T Helical Gear L (14) from Toner Supply Roller shaft.



7) Remove Retaining Ring-E (E10) (15) to remove 28T Helical Gear L (16), Parallel Pin (3x15) (17), Counter Roller (18) from Developer Roller shaft.



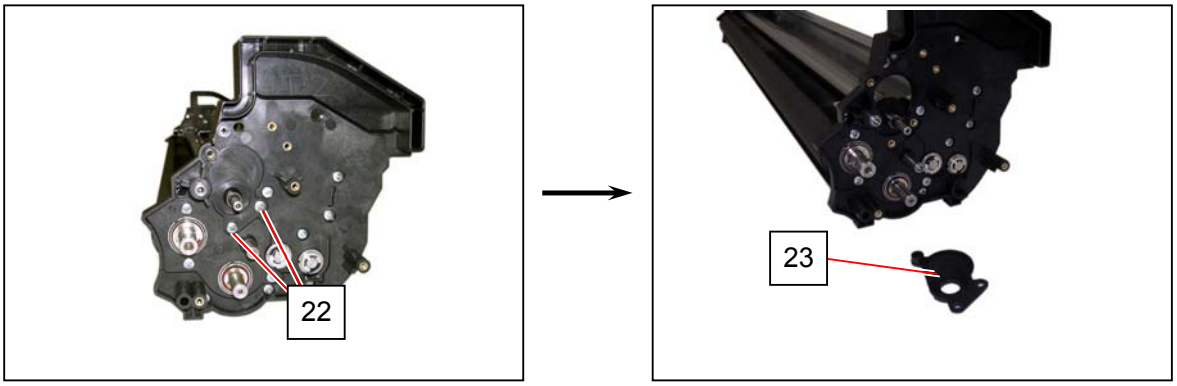
8) Remove Retaining Ring-E (E9) (19) to remove Thrust Washers (21), Free Bracket L (21).



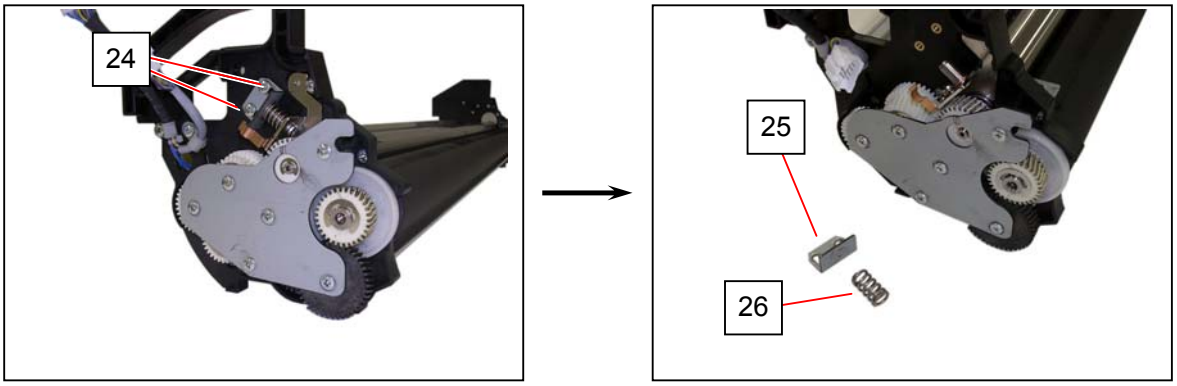
NOTE

When reassembling, add or remove a proper number of Thrust Washer (20) to remove any backlash on the new Blade Roller.

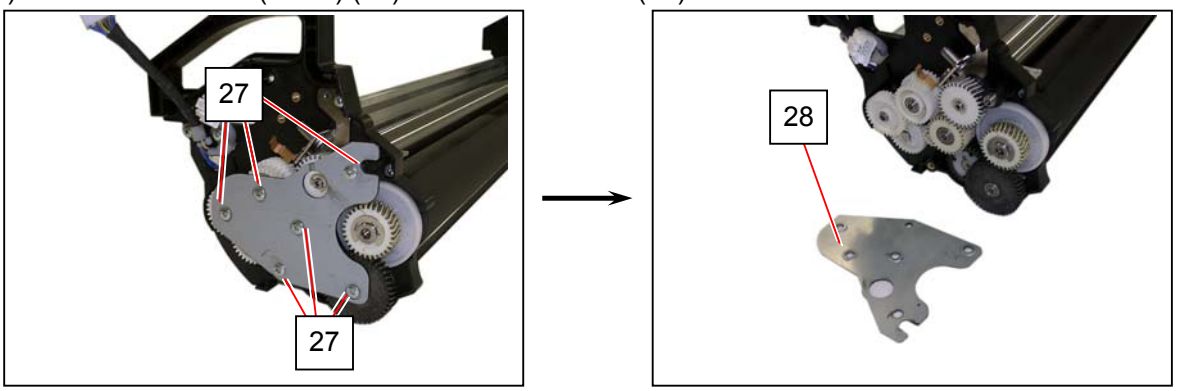
9) Remove 2 screws (M4x6) (22) to remove Support Bracket L (23).



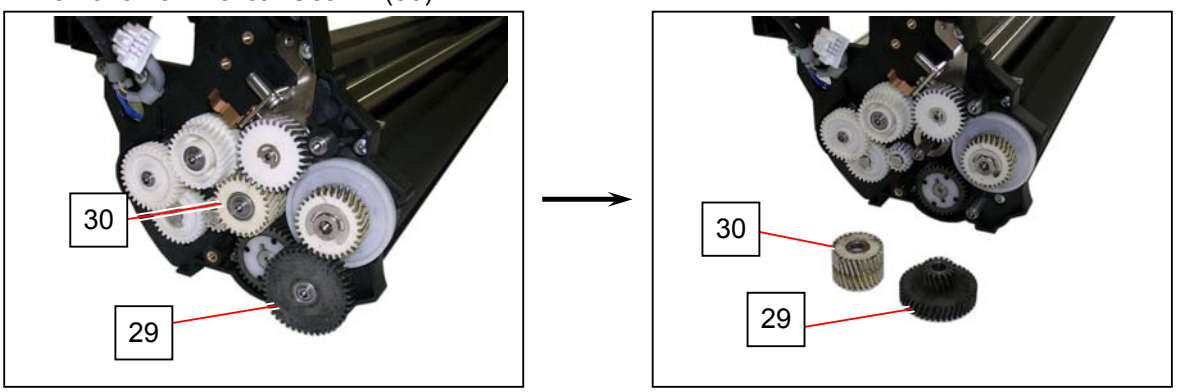
10) On the non drive side, remove 2 screws (M4x6) (24) to remove Pressure Plate R (25) and Spring C (26).



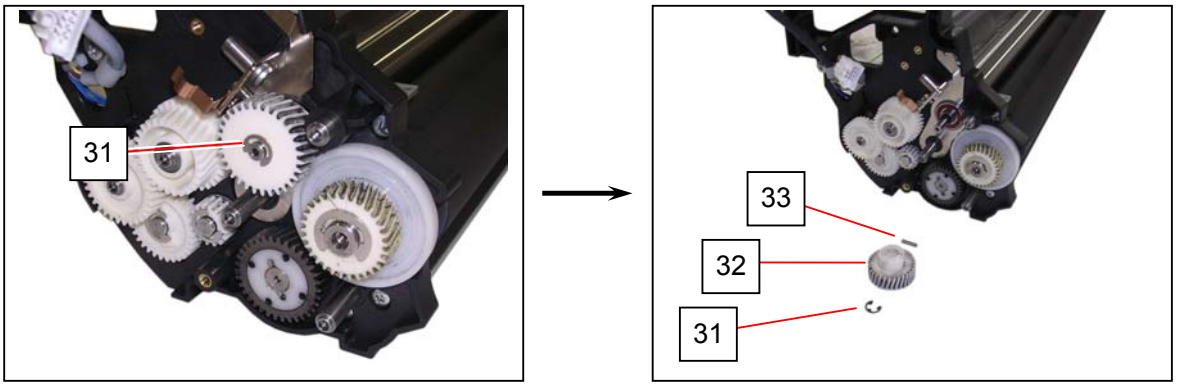
11) Remove 6 screws (M4x6) (27) to remove Plate R (28).



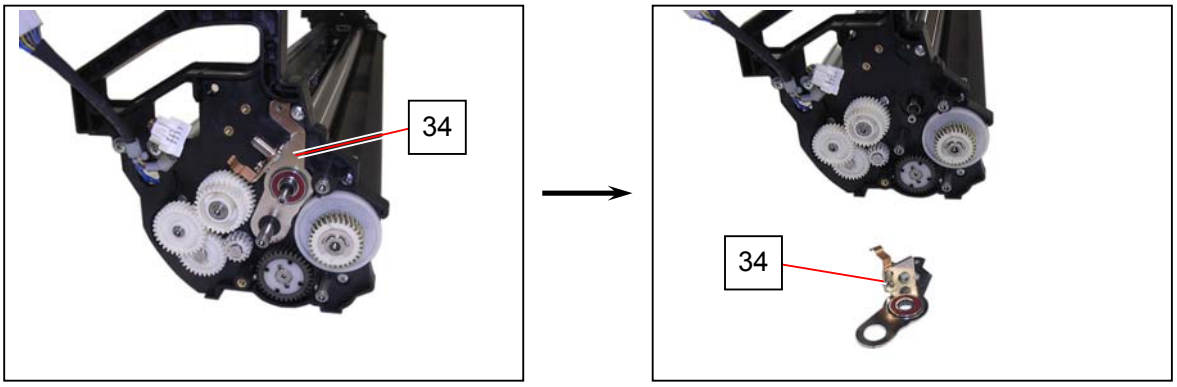
12) Remove 17/42T Helical Gear R (29) with 2 bearings on its both sides.
Remove 28T Helical Gear R (30).



13) Remove Retaining Ring-E (E5) (31) to remove 31T Gear (32) and Parallel Pin (3x12) (33) from Blade Roller shaft.

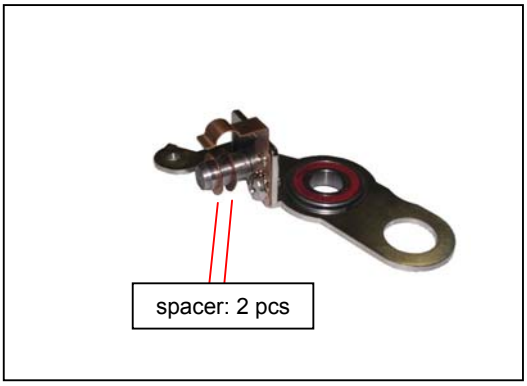


14) Remove Free Bracket R (34).

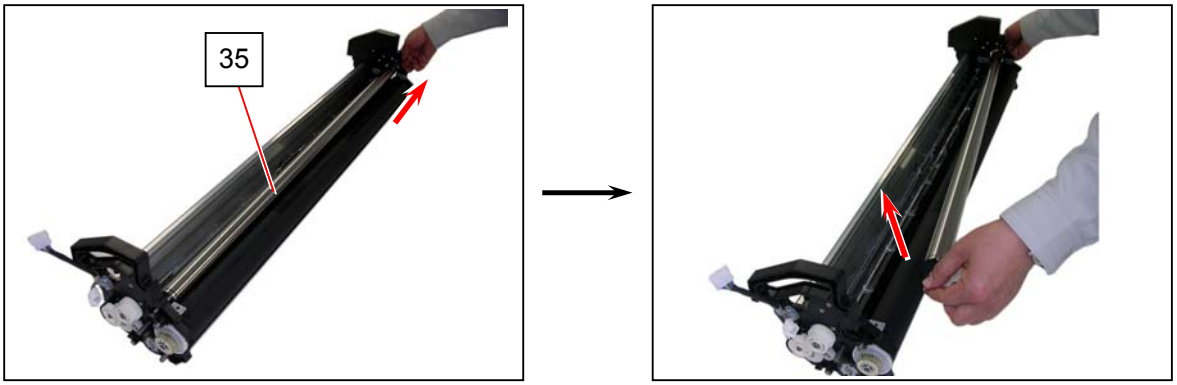


NOTE

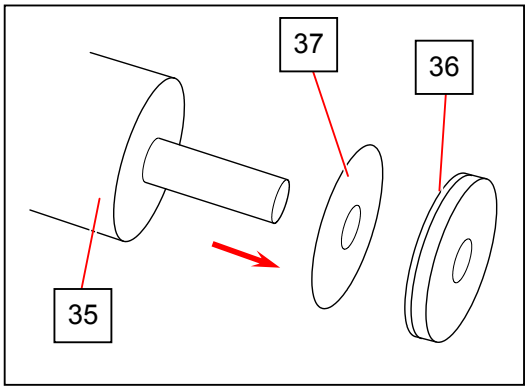
Free Bracket R has 2 small spacers on its pin.
Do not lose them.



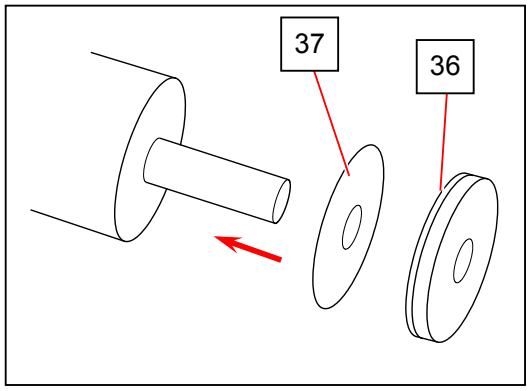
15) Slightly pull the drive side end of Blade Roller (35) outward. With supporting the end, lift the other end and move Blade Roller to the non drive side. Remove Blade Roller (35) from Developer Unit.



16) Remove Side Seal RE (36) and Spacer (3) (37) on each end from the removed Blade Roller (35).



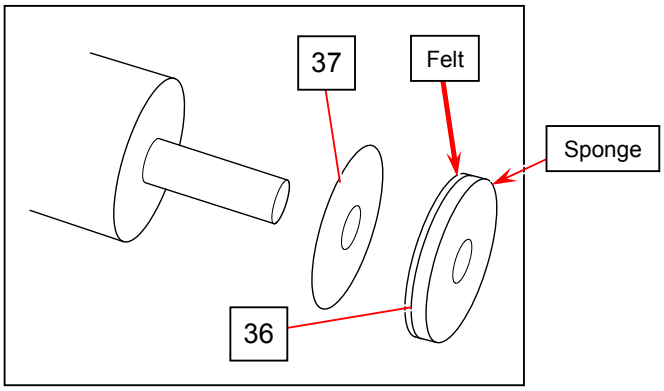
17) Install Side Seal RE (36) and Spacer (3) (37) on each end to the new **Blade Roller**.



NOTE

(1) Carry Blade Roller with pinching both shaft ends. Do not touch the roller surface.

(2) Side Seal RE (36) has felt and sponge layers. When reassembling, the felt face should be placed inside to touch with Spacer (3) (37).



(3) Install Blade Roller in the correct direction.
One side with a penetrating hole should be placed on the non drive side.

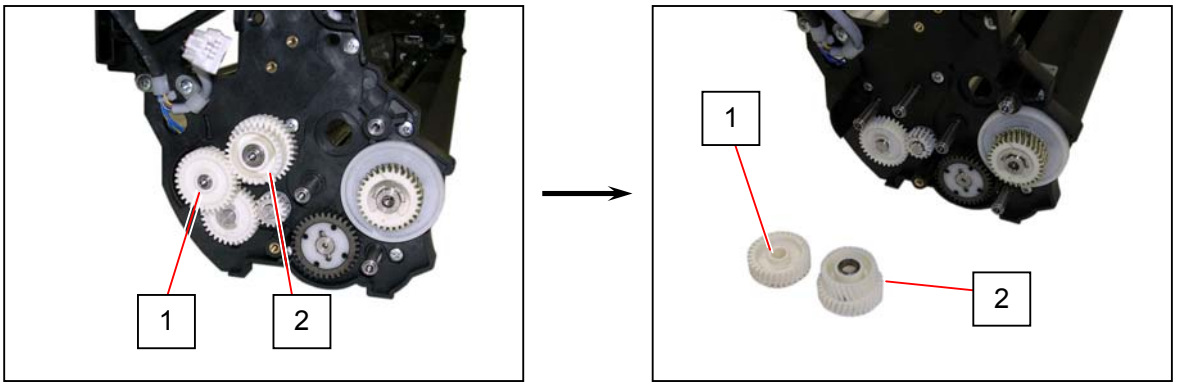
(4) For ease of later steps, adjust Blade Roller so that the penetrating hole for Parallel Pin on the shaft is placed horizontally.

18) Replace all the parts in position.

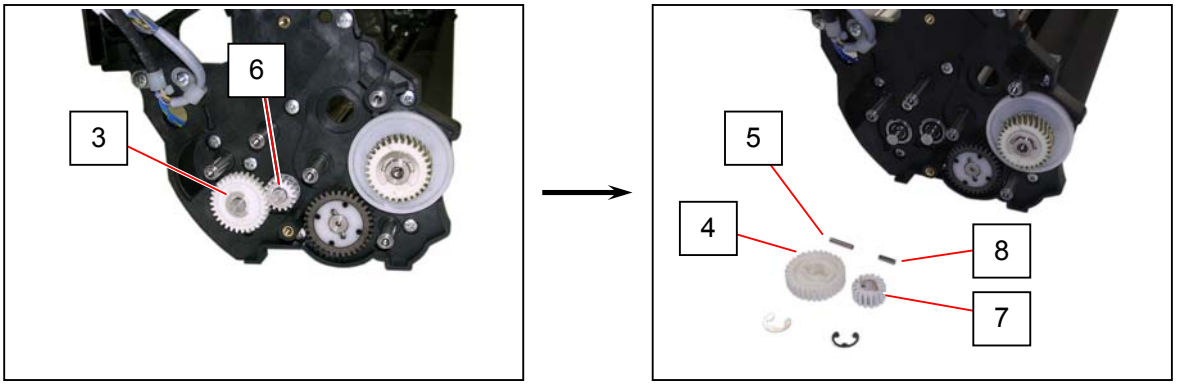
5.8.5 Replacing Screw Sheet

1) Remove Blade Roller from Developer Unit.
Refer to [5.8.4 Replacing Blade Roller] on page 5-157.

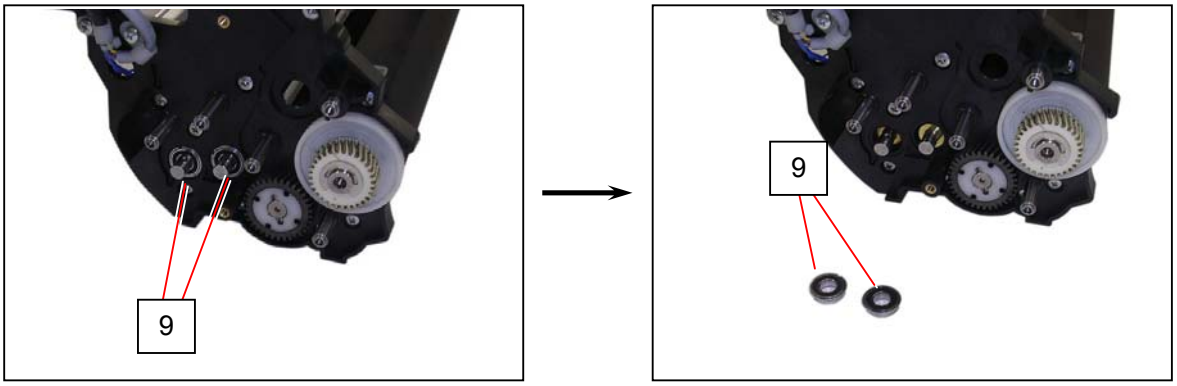
2) On the non drive side, remove Gear 15/32T (1) and Gear 28/34T (2).



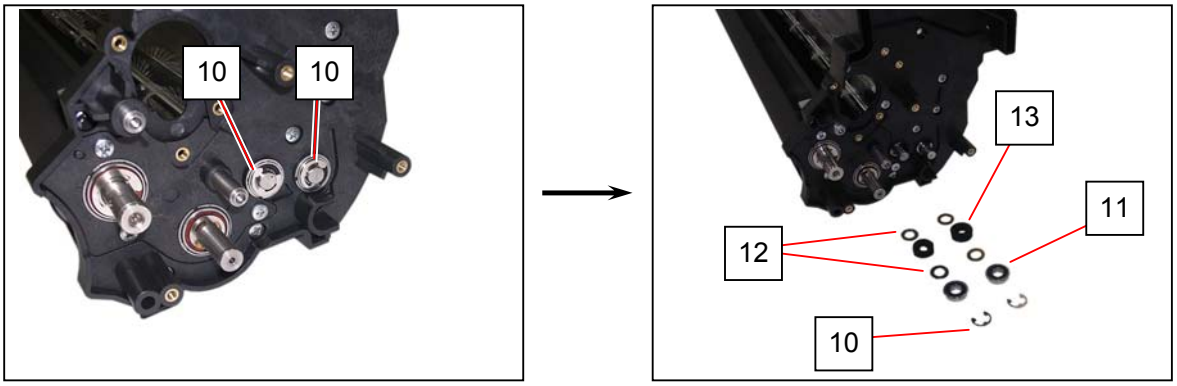
3) Remove Retaining Ring-E (E7) (3) to remove Gear 31T (4) and Parallel Pin (3x15) (5).
Remove Retaining Ring-E (E7) (6) to remove Gear 16T (7) and Parallel Pin (3x10) (8).



4) Remove 2 Ball Bearings (9).

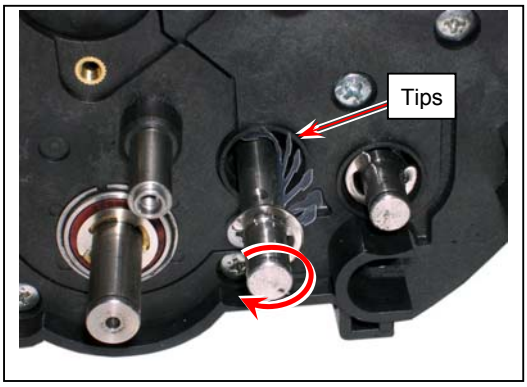


5) On the drive side, remove Retaining Ring-E (E7) (10) to remove Ball Bearing (11), Side Seal (3) (12) and Thrust Washers (13).



NOTE

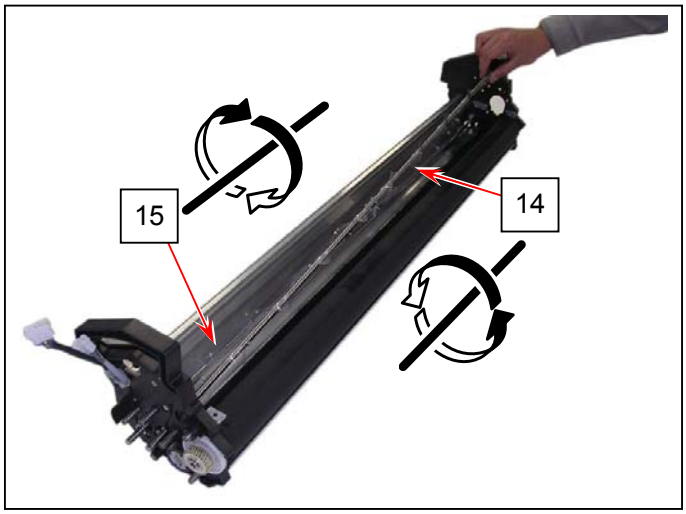
When removing Side Seal (3) or Thrust Washers, the sender screw shaft may stick out from Developer Unit.
Push or pull the shaft with rotating the shaft in the forward roll to the screw sheet's winding direction.



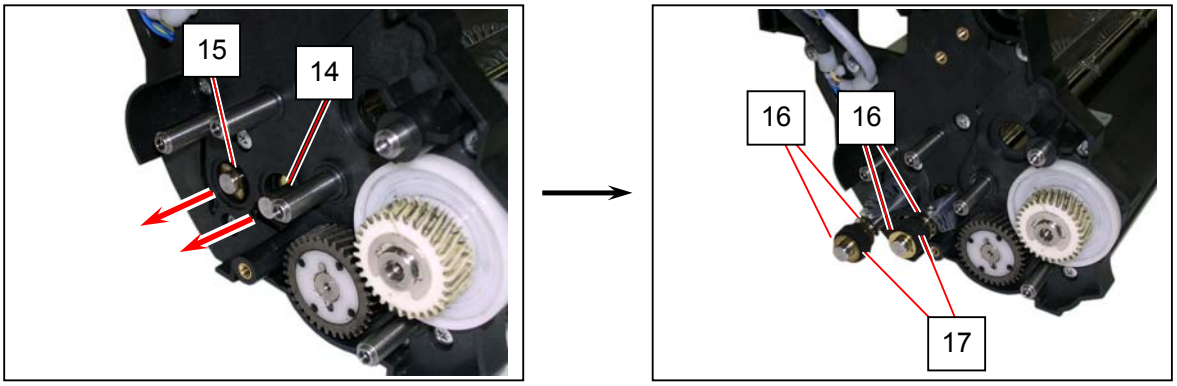
In this example, the shaft should be turned clockwise. If counter clockwise, the tips of the screw sheets will be caught in the hole's edge to damage.

Reference

When you are in front of Developer Roller, the correct roll direction for
- the shaft closer to Toner Supply Roller (14: the near shaft) is "away from you".
- the shaft closer to Toner Sensor (15: the far shaft) is "toward you".

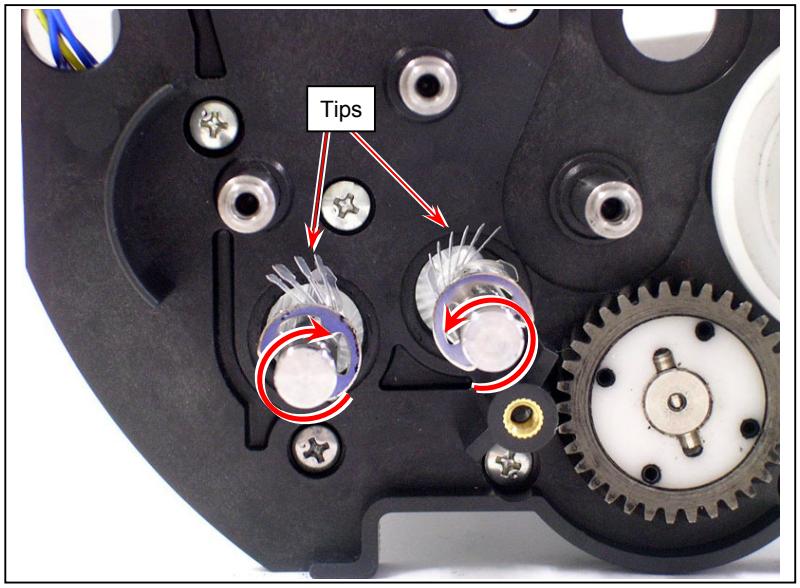


6) With rotating the sender screw shaft (14) (15) in the correct direction, push it to the non drive side to stick out. Remove Thrust Washers (16) and Side Seal (3) (17).

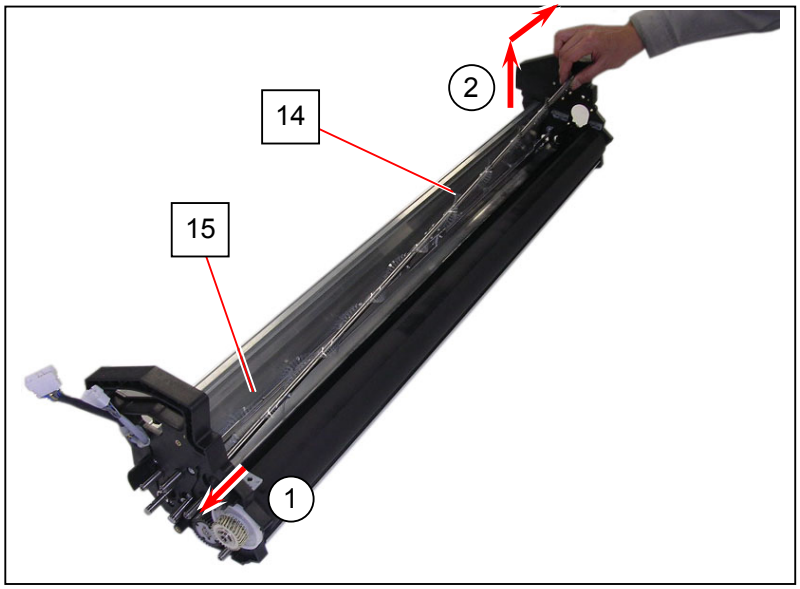


NOTE

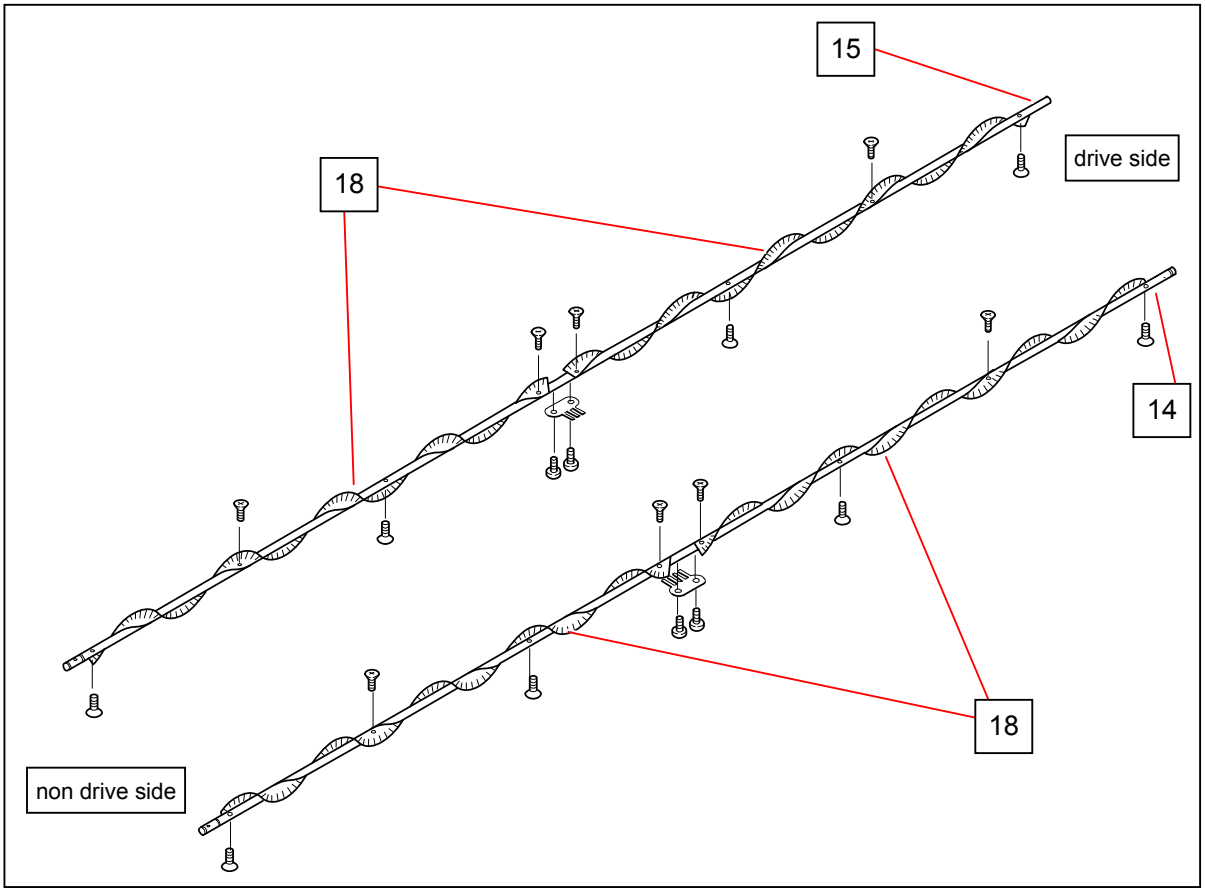
When removing Side Seal (3) or Thrust Washers, the sender screw shaft may stick out from Developer Unit.
Push or pull the shaft with rotating the shaft in the forward roll to the screw sheet's winding direction.
Otherwise, the tips of the screw sheets will be caught in the hole's edge to damage.



7) Slightly pull one end of the sender screw shaft (14) (15) to the other. Lift the other end and remove the shaft from Developer Unit with rotating in the correct direction.



8) (For longer screw sheets)
Remove 4 Flush Head Screws (M3x5) to remove each **Screw Sheet 2** (18).



NOTE

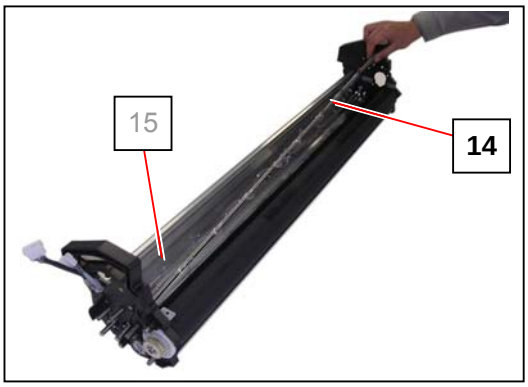
When reassembling, the end with a penetrating hole should be placed to the non drive side. To pass through the holes on Developer Side Plate, push or pull the shaft with rotating in the correct direction.

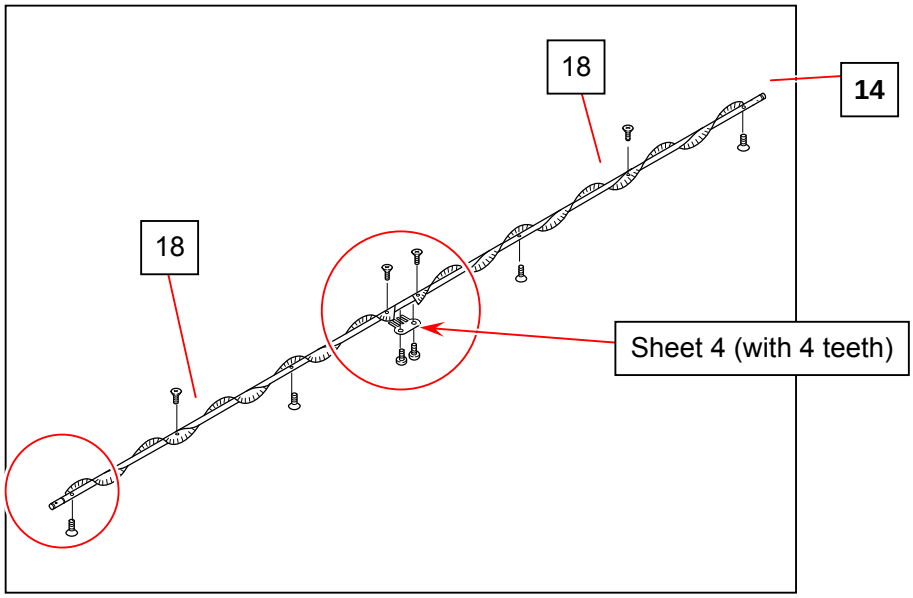
9) Replace **Screw Sheet 2** with a new one.

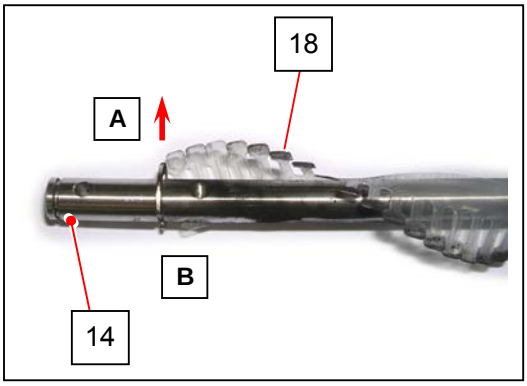
NOTE

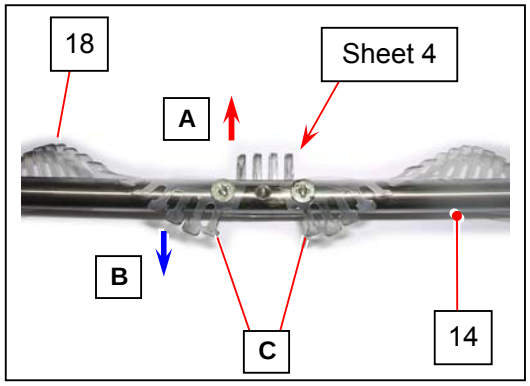
Installation / winding direction for Screw Sheet 2 (18) is as follows.

Shaft (14)
- Sheet 4 (center) and the far end of Screw Sheet 2 are on the same face/direction. (**A**)
- The center/far ends of Screw Sheet 2 are on the opposite face/direction. (**B**)
- The tip at the most center end is smaller. (**C**)





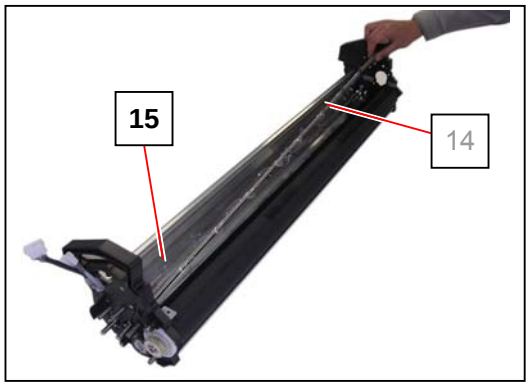


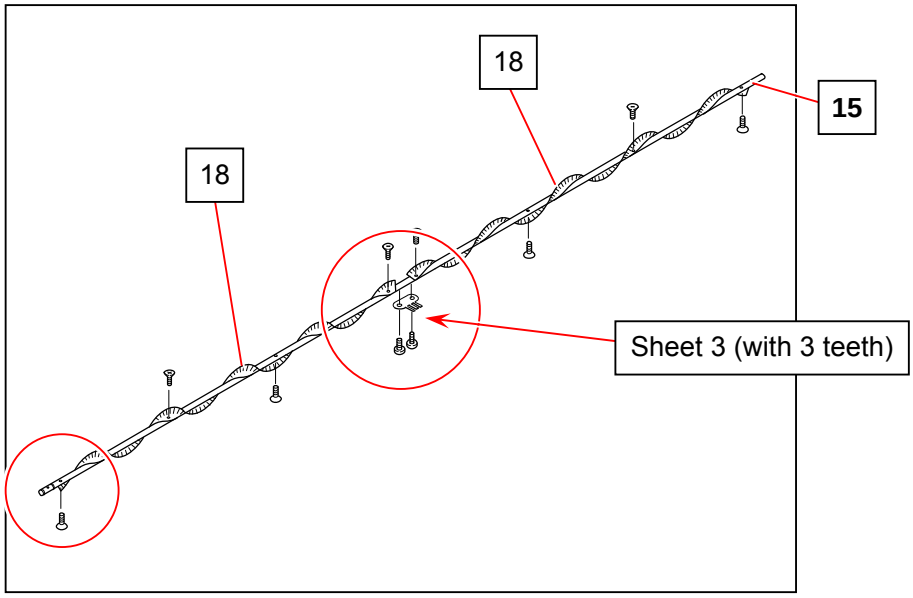


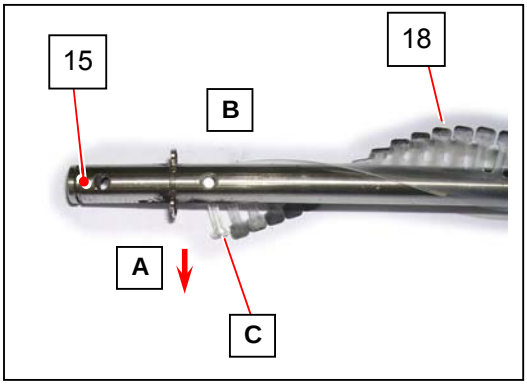
NOTE (cont.)

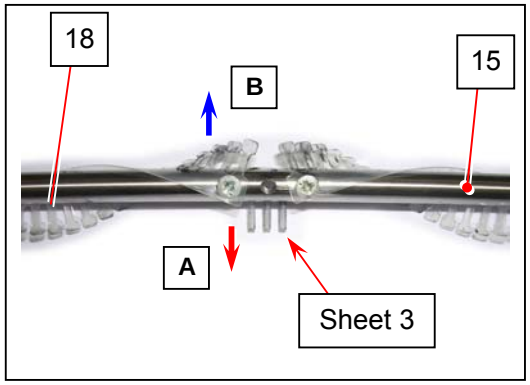
Shaft (15)

- Sheet 3 (center) and the far end of Screw Sheet 2 are on the same face/direction. (**A**)
- The center/far ends of Screw Sheet 2 are on the opposite face/direction. (**B**)
- The tip at the farthest end is smaller. (**C**)

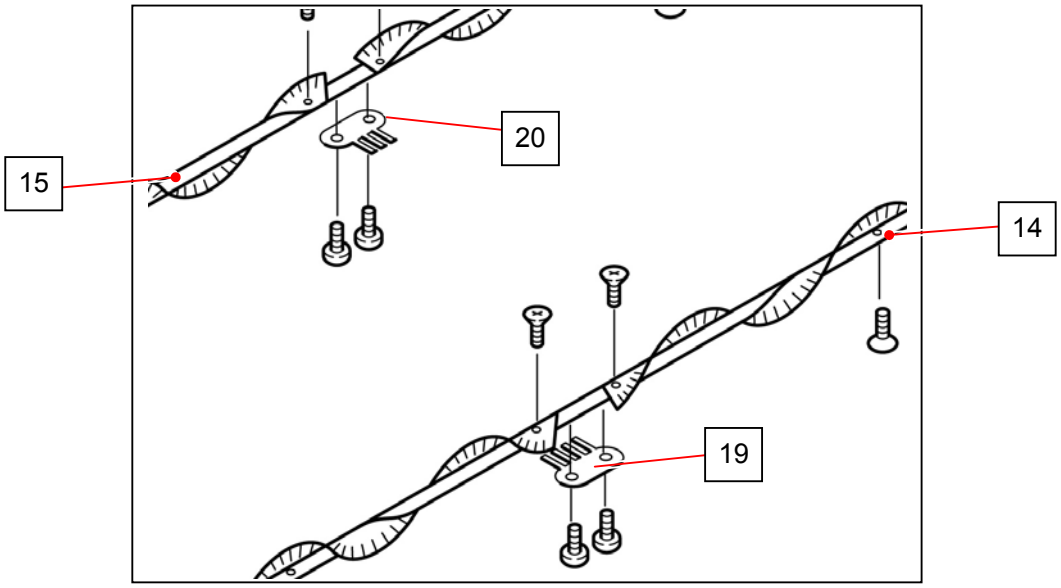








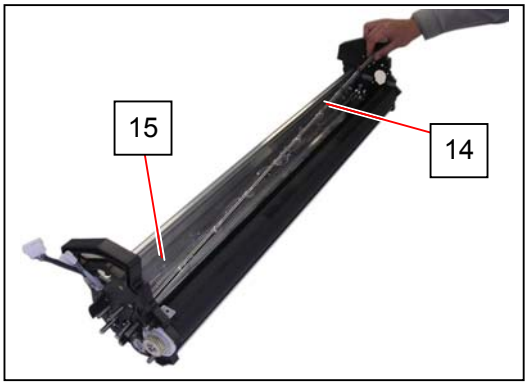
10) (For center sheets)
Remove 2 screws (M3x4) to remove Sheet 4 (19) and Sheet 3 (20).

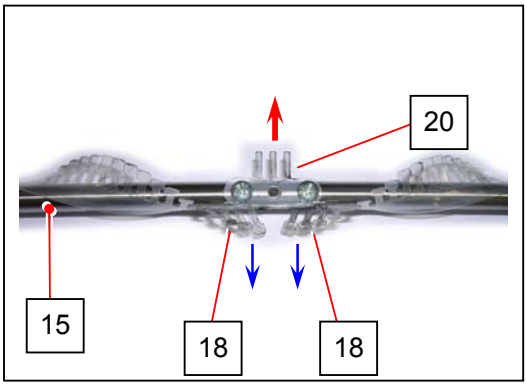


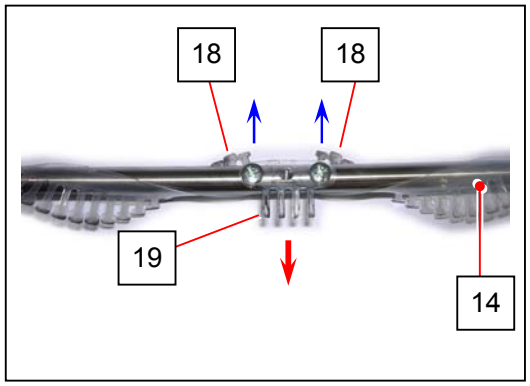
NOTE

(1) Sheet 4 (19) has 4 teeth and Sheet 3 (20) has 3 teeth.

(2) Installation direction is as follows.
Sheet 4 (19) / Sheet 3 (20) and the center ends of Screw Sheet 2 (18) are on the opposite face/direction.



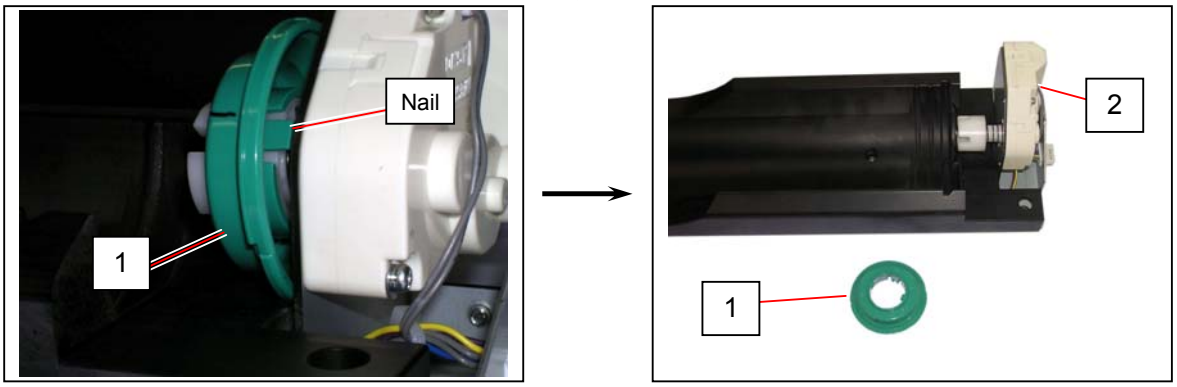




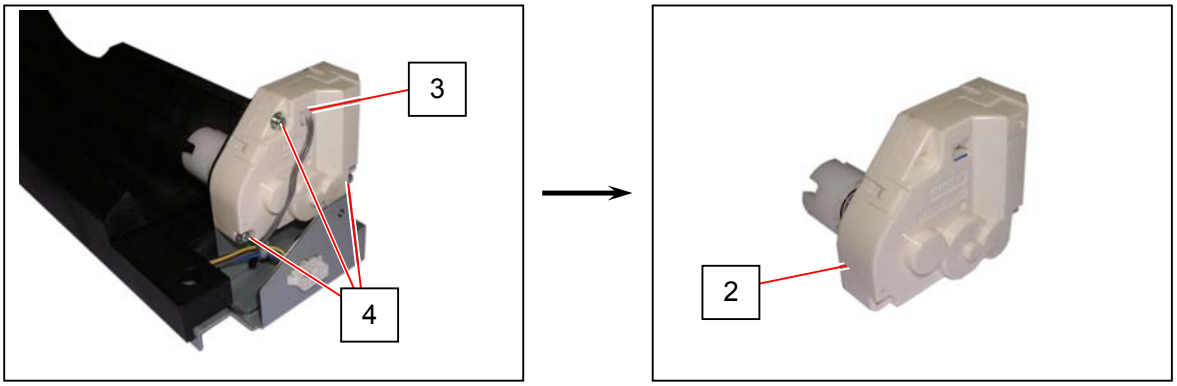
5.8.6 Replacing Toner Supply Motor (M6)

1) Remove Toner Hopper. Refer to [5.8.1 Removing Toner Hopper] on page 5-120.

2) Remove the nail of Joint (1) from Toner Supply Motor (2).



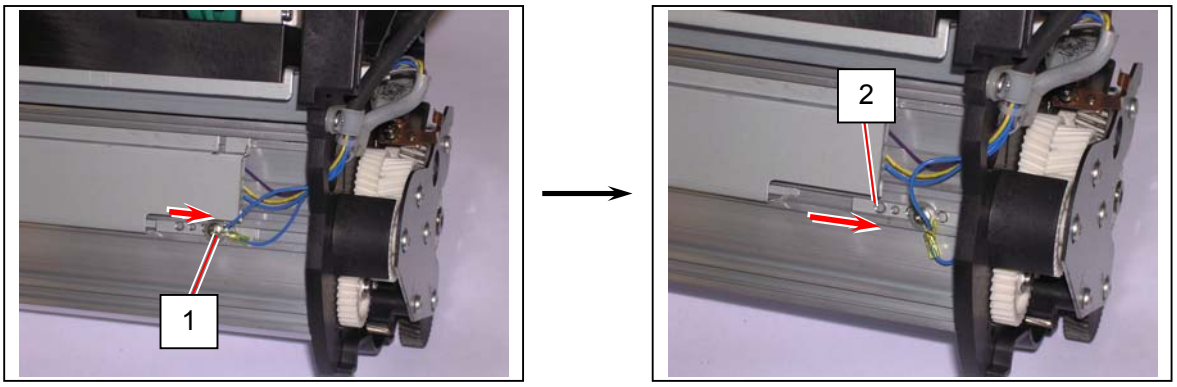
3) Disconnect 1 connector (3). Remove 3 screws (M4x20) (4) to remove Toner Supply Motor (2).



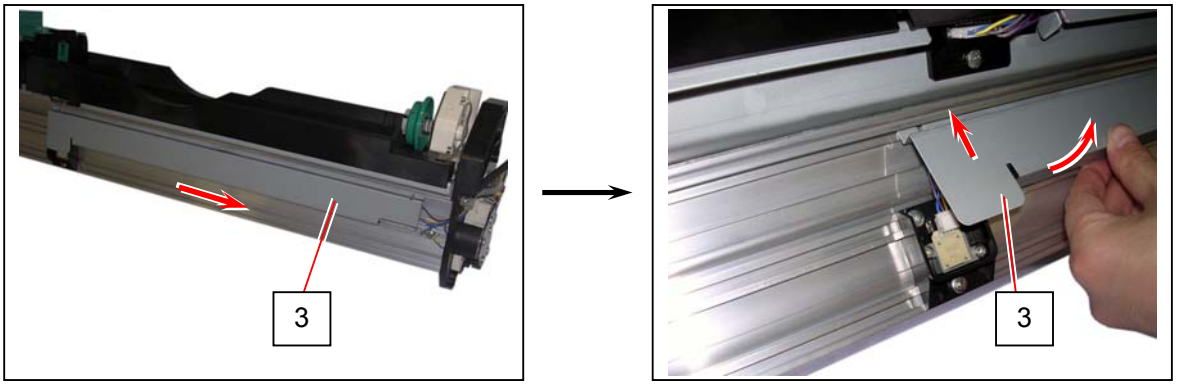
5.8.7 Replacing Toner Sensor (TLS1)

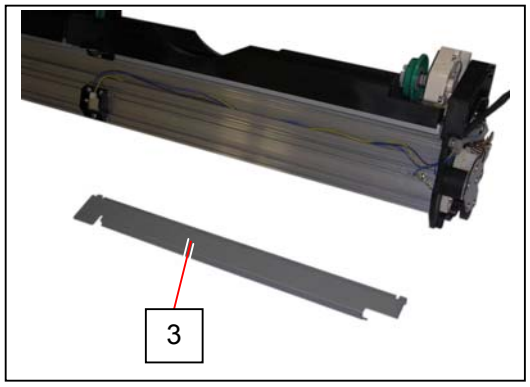
1) Remove Developer Unit.
   Refer to [5.2.2 Removing Developer Unit] on page 5-14.

2) Loosen 1 screw (1) to slide Nut Plate (2) to the non drive side.

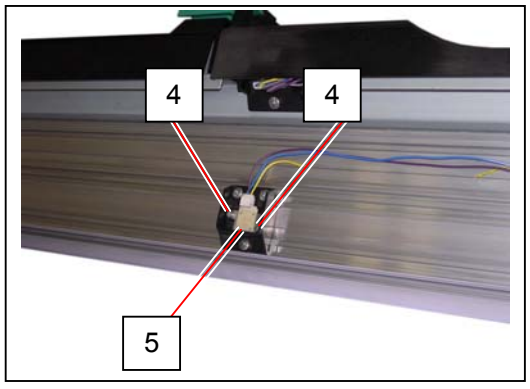


3) Slightly move Harness Cover (3) to the non drive side.
   Push Harness Cover upward to remove it.





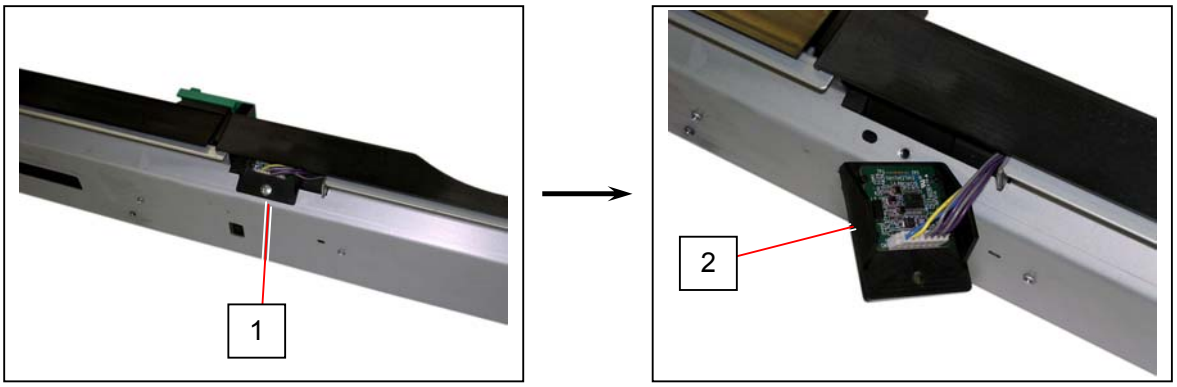
4) Remove 2 screws (4) to remove Toner Sensor (5).



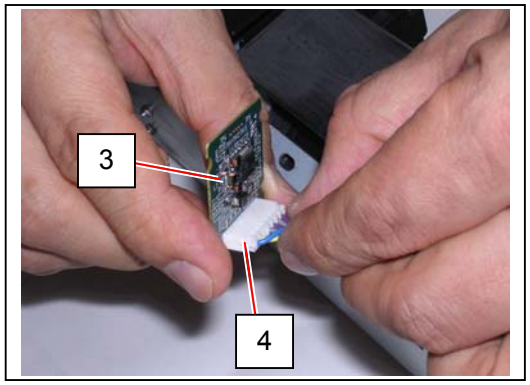
5.8.8 Replacing IC-Tag R (RFID)

1) Remove Toner Hopper. Refer to [5.8.1 Removing Toner Hopper] on page 5-120.

2) Remove 1 screw (1) to release the PCB bracket (2).



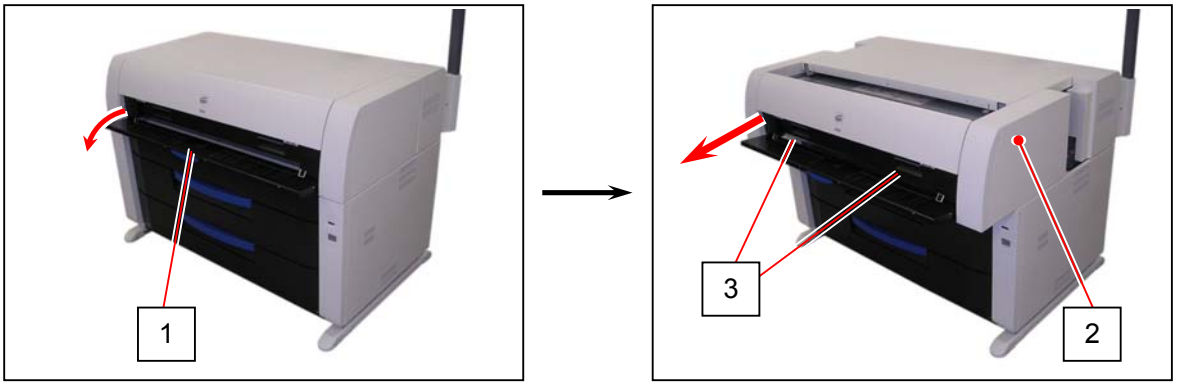
3) Remove IC-Tag R (3) from the bracket.
Disconnect 1 connector (4).
When reassembling, first return IC-Tag R (3) to the bracket (2) and next reconnect the connector (4).



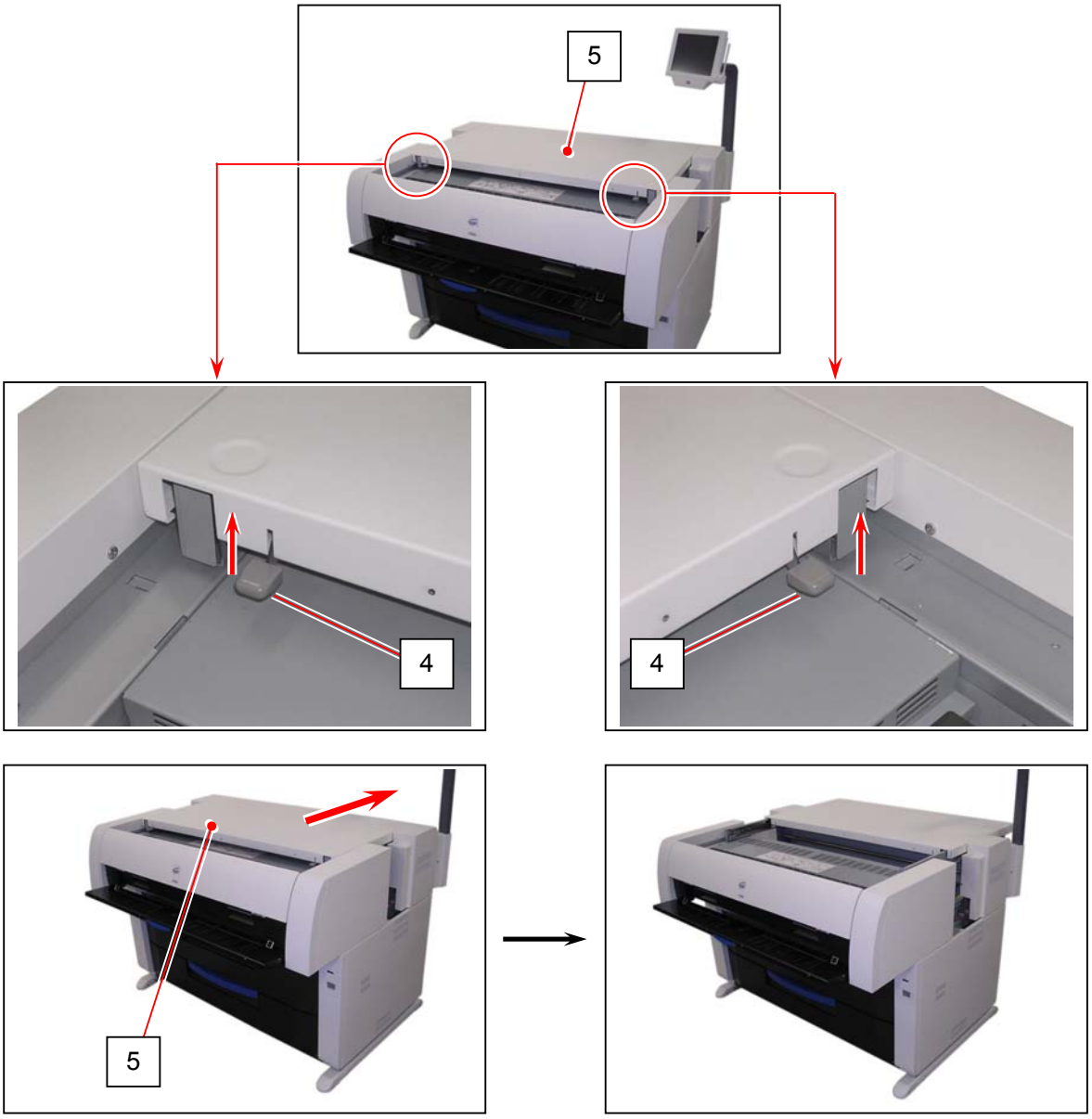
5.9 Internal Feeder Unit

5.9.1 Removing Internal Feeder Unit

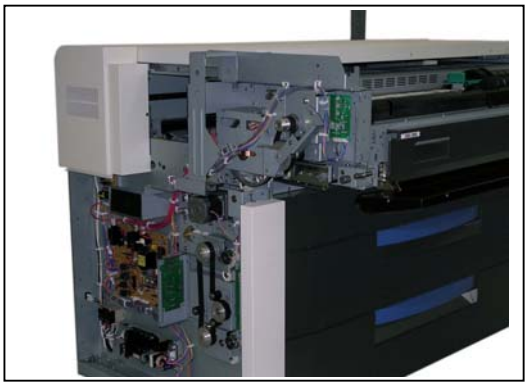
1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).



2) Pull up Knobs (4) on both sides, and then open Top Cover (5) by pushing it toward the rear side.



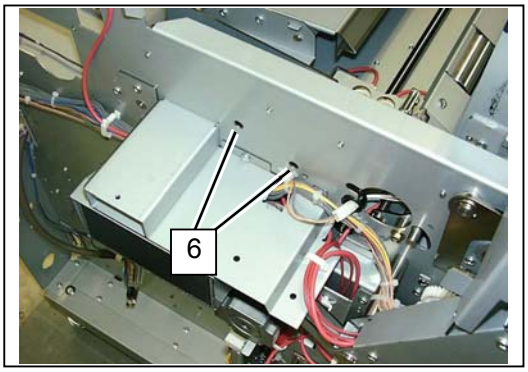
3) Remove Left Front Cover. Refer to [5.1.2 Removing Right / Left Front Cover] on page 5-4.

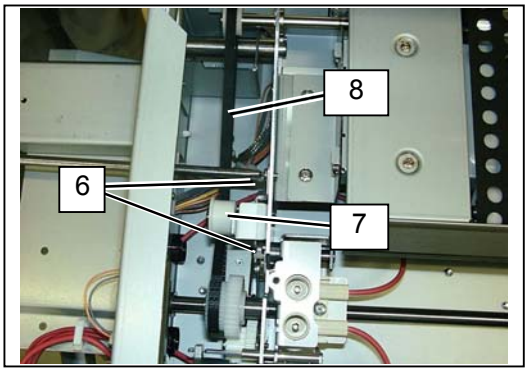


4) Take out the Transfer/Separation Charger Assembly.
Refer to [5.6.1 Removing Transfer/Separation Charger Assembly] on page 5-73.

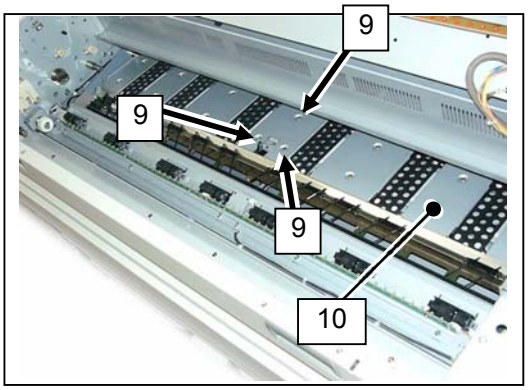
5) Loosen 2 screws (6) of Idling Roller (7) through holes.

6) Remove Timing Belt (8).

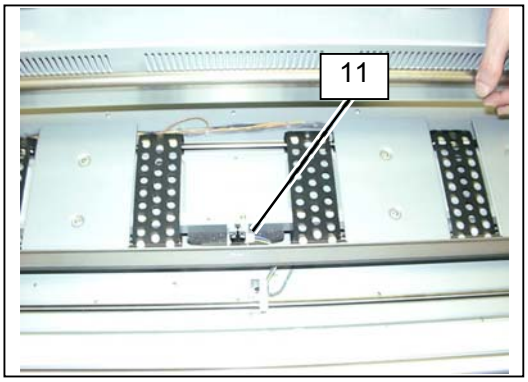




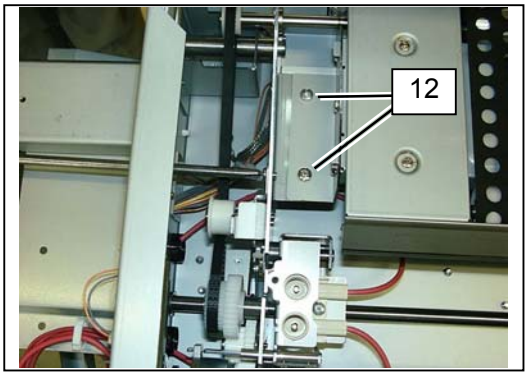
7) Remove 3 screws (M3x6) (9) from the Center Guide Plate of the Internal Feeder Unit (10).

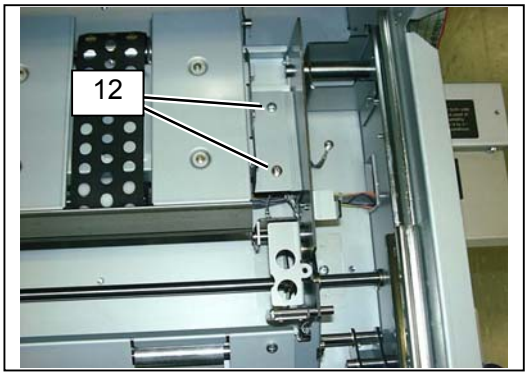


8) Disconnect 1 connector (11) from the Paper Separation Sensor (PH7).



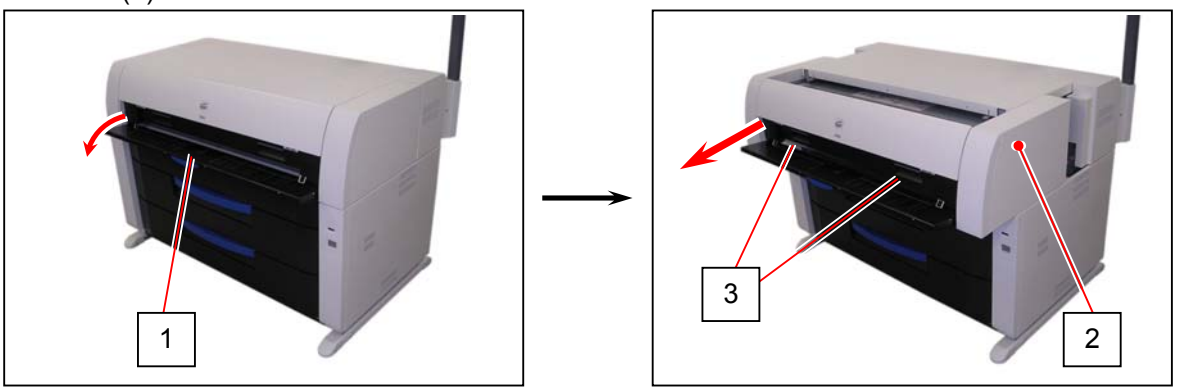
9) Remove 4 screws (M4x6) (12) from both ends to remove the Internal Feeder Unit.



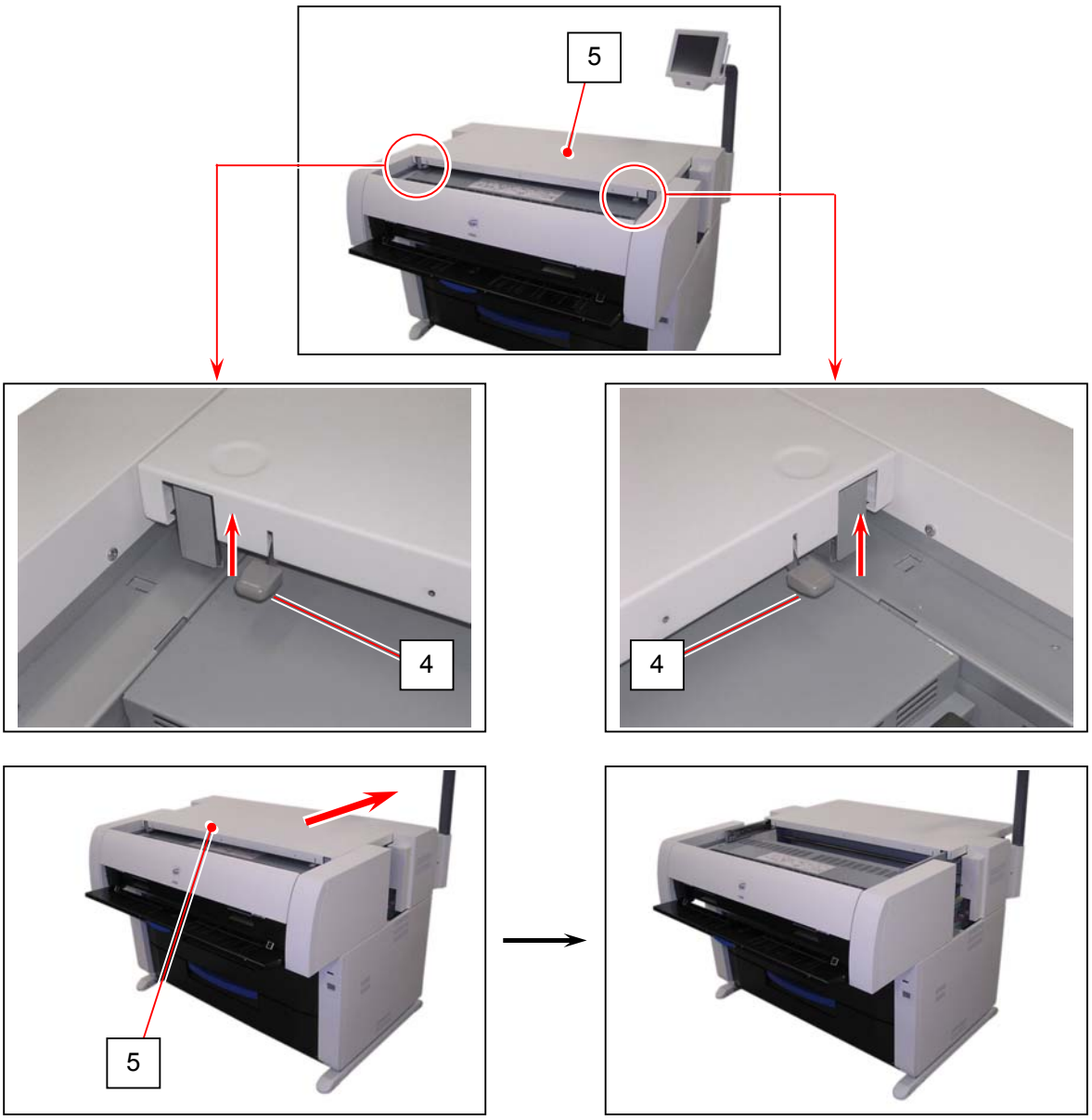


5.9.2 Replacing Paper Separation Sensor (PH7)

1) Open the Manual Table (1), and pull out the Upper Frame Unit (2) frontward with holding both handles (3).

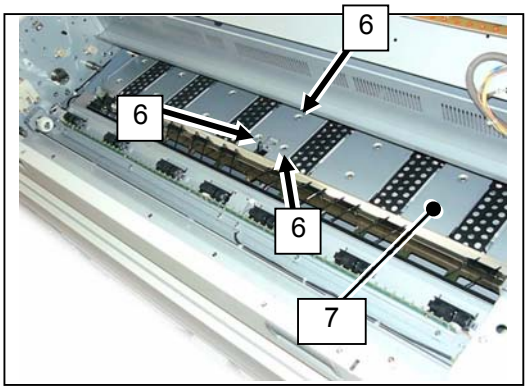


2) Pull up Knobs (4) on both sides, and then open Top Cover (5) by pushing it toward the rear side.

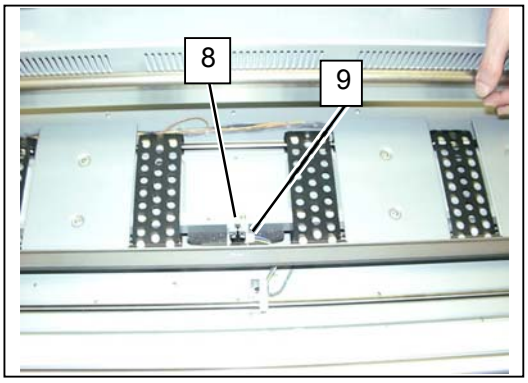


3) Take out the Transfer/Separation Charger Assembly.
Refer to [5.6.1 Removing Transfer/Separation Charger Assembly] on page 5-73.

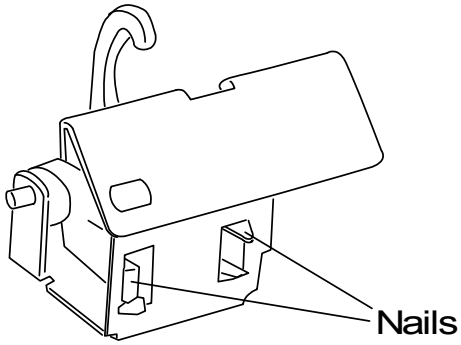
4) Remove 3 screws (M3x6) (6) from the Center Guide Plate of the Internal Feeder Unit (7).



5) Remove 1 screw (M3x6) (8) and disconnect 1 connector (9) from the Paper Separation Sensor (PH7). And then take out the Paper Separation Sensor (PH7) with the Bracket.



6) Press the nails of sensor, and then remove the Paper Separation Sensor from the Bracket.



7) Replace the Paper Separation Sensor with the new one.

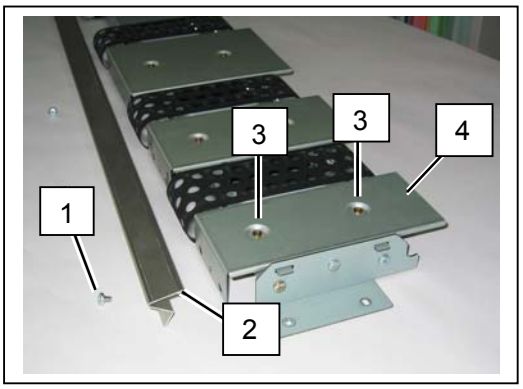
5.9.3 Replacing Feed Belt

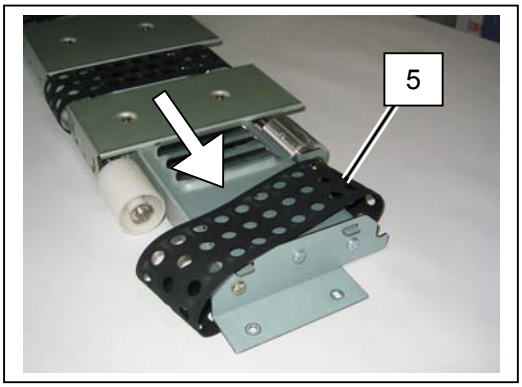
1) Remove the Internal Feeder Unit. Refer to [5.9.1 Removing Internal Feeder Unit] on page 5-173.

2) Remove 6 screws (M4x6) (1) and then remove the Feeder Plate (2).

3) Remove 2 screws (M3x6) (3) and then remove the Feeder Plate (4).

4) Remove the Feed Belt and replace it with the new one.
In case of replacing the inside Feed Belt, follow the same procedure.





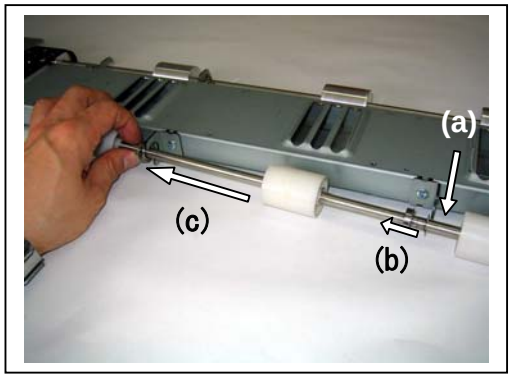
5.9.4 Replacing Feed Roller

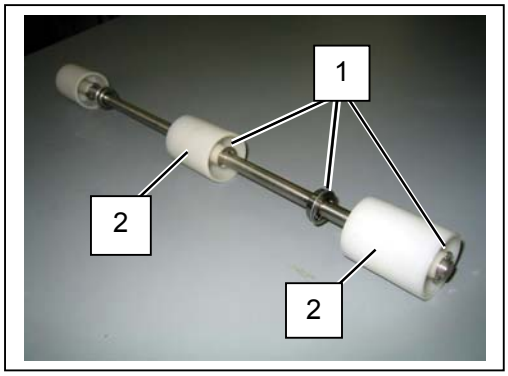
1) Remove 6 Feeder Plates.
(one of 7 Feeder Plates is removed already when the Internal Feeder Unit is removed.)

2) Remove 6 Feed Belts.

3) Shift the shaft to the arrow direction (a) and slide the Bearing to the arrow direction (b).
And then shift the shaft to the arrow direction (c) to remove the Feed Roller Unit.

4) Remove the E-ring (1) and replace the Feed Roller (2) with the new one.





NOTE

Do not lose the Parallel Pin inside the Feed Roller.

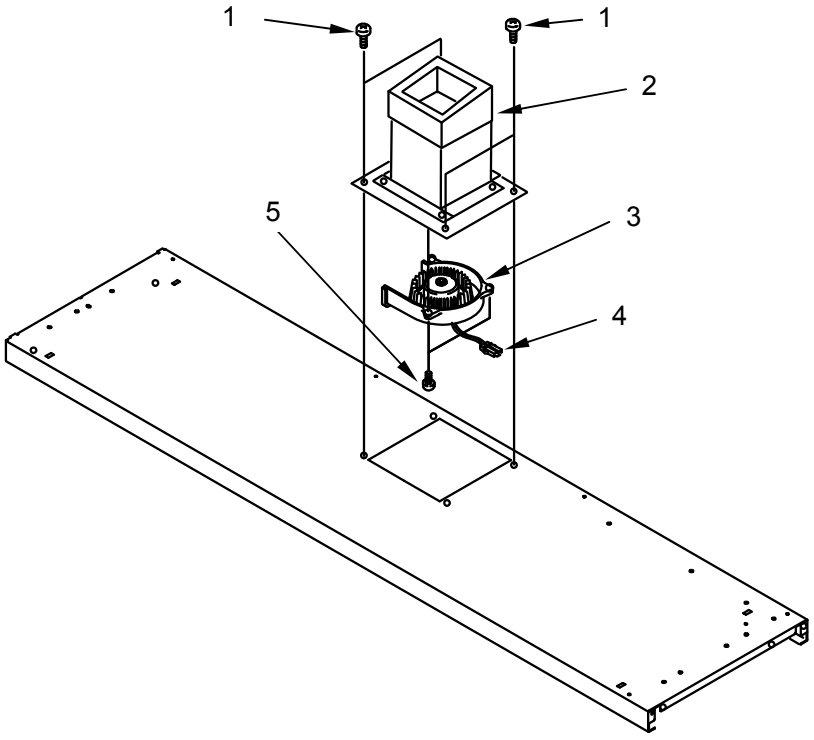
5.9.5 Replacing Separation Fan (Fan2)

1) Remove the Internal Feeder Unit. Refer to [5.9.1 Removing Internal Feeder Unit] on page 5-173.

2) Remove 2 screws (M4x6) (1) from the Fan Bracket (2) to remove the Separation Fan (3) with the Fan Bracket (2).

3) Disconnect the connector (4).

4) Remove 3 screws (M4x12) (5) to take out the Separation Fan (3).



5.10 Paper Feeder Assembly

Reference

(1) This section shows the lower Roll Deck drawer for explanation.
The same procedure is applied to the upper Roll Deck drawer.

(2) This section partly shows Roll Deck removed from the machine for clarification.
It is not necessary for some target parts to remove the entire deck.

(3) This section shows 4 Roll type (2 roll deck drawers) for explanation.

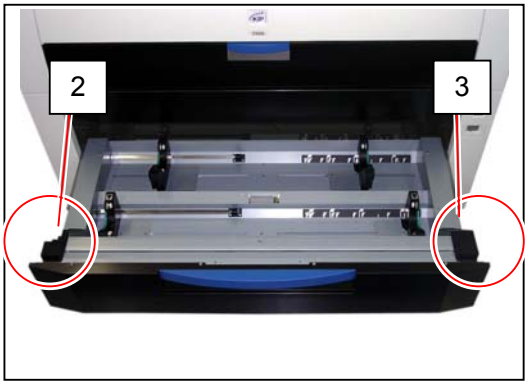
5.10.1 Removing Roll Deck

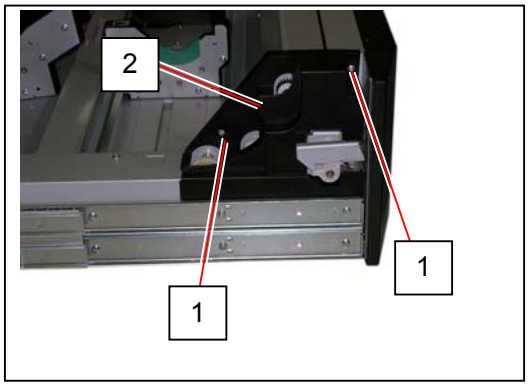
Reference

This section explains removing components on the left. The same procedure is applied to the right unless otherwise noted.

1) Draw out Roll Deck.

2) Remove 4 screws (M4x6) (1) to remove Cover 12 (2) and Cover 13 (3).

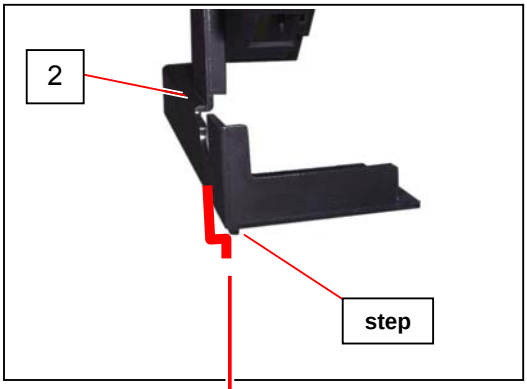


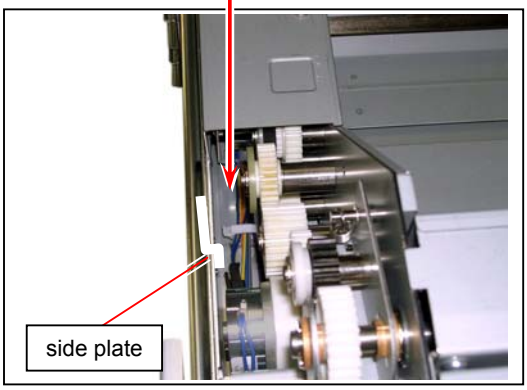


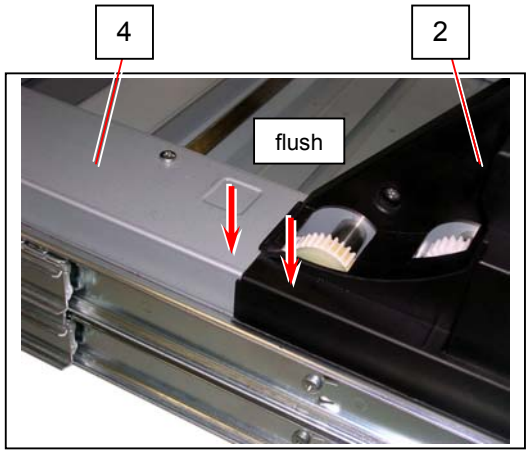
(see the next page)

NOTE

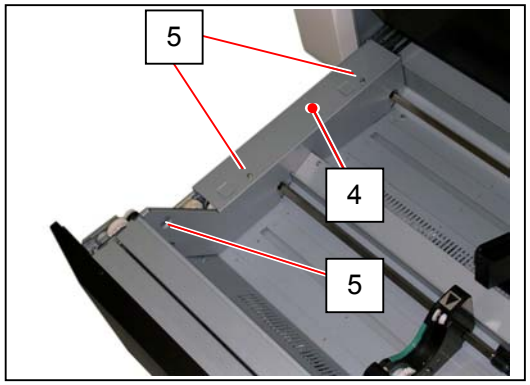
When reassembling, be sure to fit the bottom step on Cover 12 (2) onto the side plate.
Then check that the top rear surface of Cover 12 (2) is flush with Cover 11 (4).



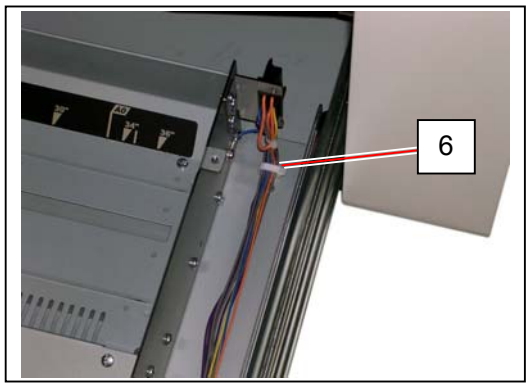




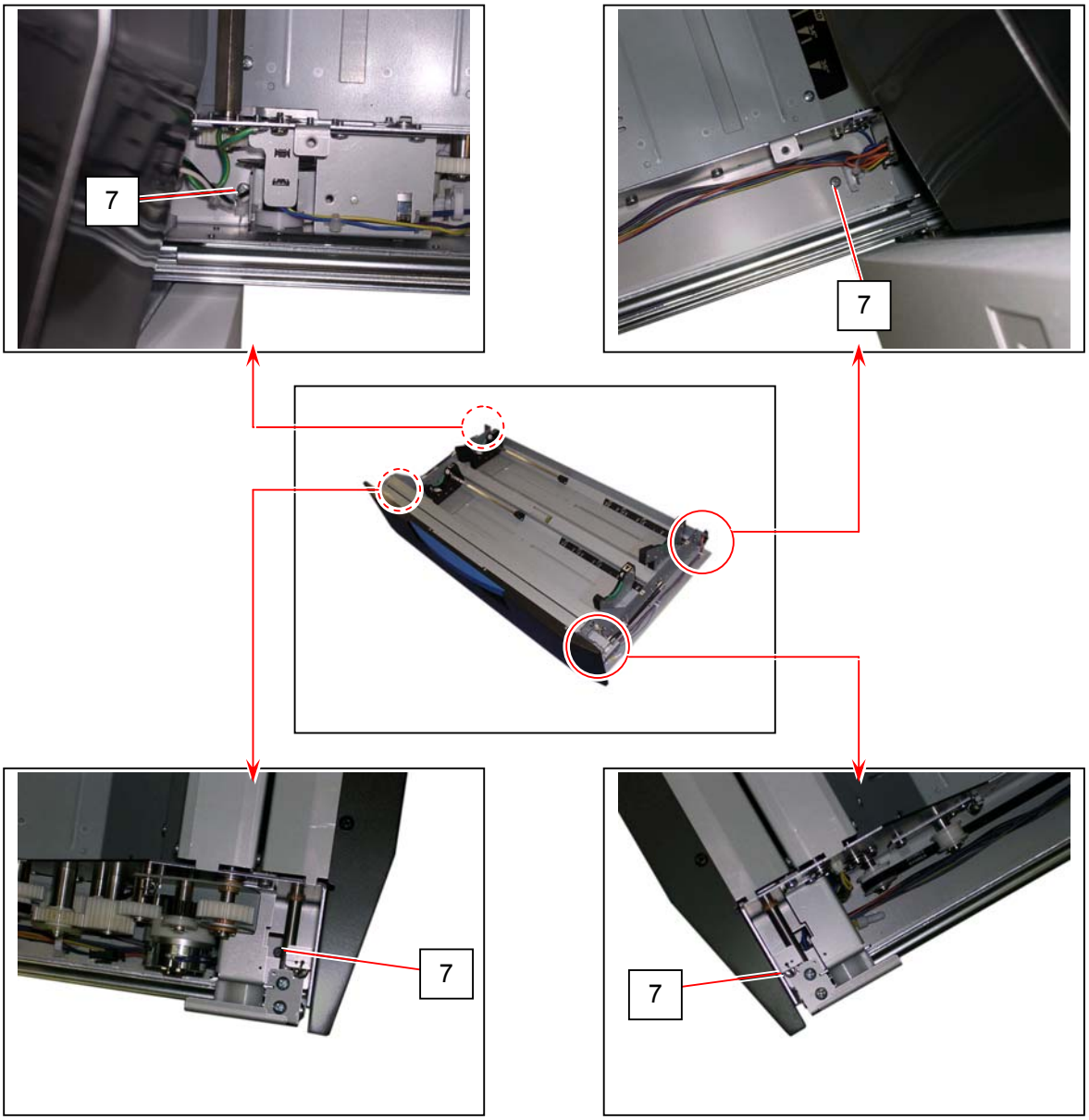
3) Remove 6 screws (M4x6) (5) to remove Cover 11 (4) and Cover 10 (right side).



4) On the right side, open the saddle (6) to release the harness.



5) Remove 4 screws (M4x6) (7).

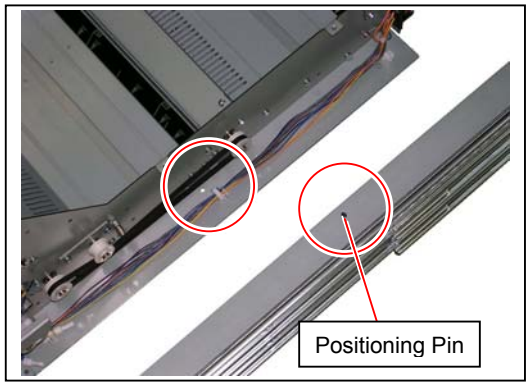


6) Lift Roll Deck up to remove it.

NOTE

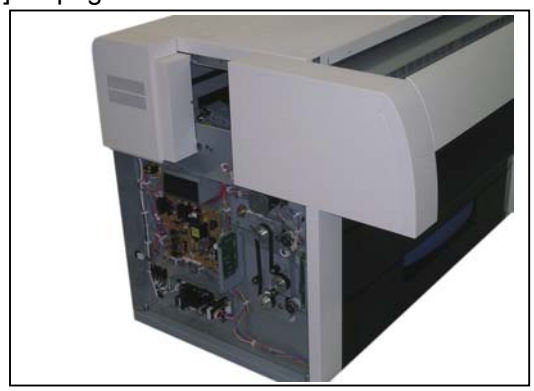
(1) Roll Deck drawer weights about 34kg. Lift it by two persons.

(2) When remounting, locate the deck to fit the positioning pin on the middle of the bottom rail plate into the hole on the deck side.

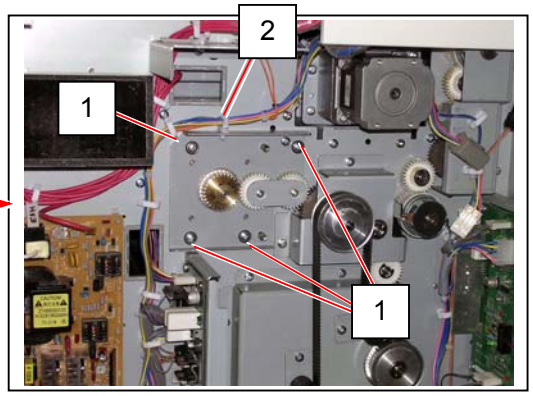


5.10.2 Replacing Feed Motor (M2)

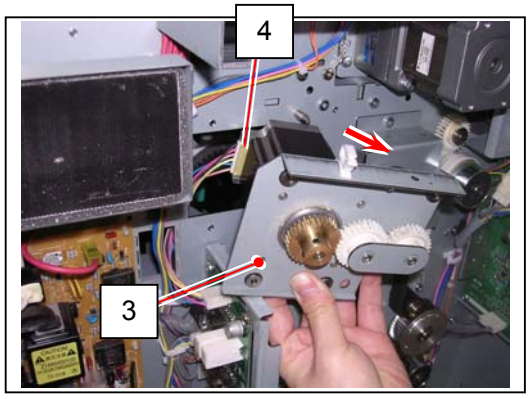
1) Remove Lower Left Cover.
   Refer to [5.1.1 Removing Lower Right / Left Cover] on page 5-3.



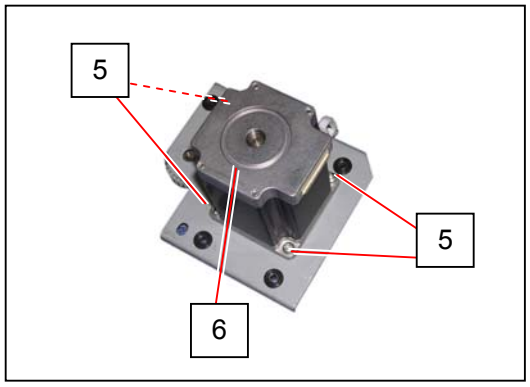
2) Remove 4 screws (1). Open the saddle (2) to release the harness.



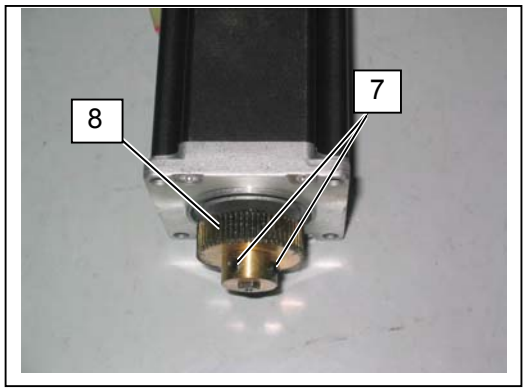
3) Slightly pull Feed Motor Assy (3) toward you (to the left).
   Disconnect 1 connector (4) and then remove Feed Motor Assy (3).



4) Remove 4 screws (M4x10) (5) to remove Feed Motor (6).



5) Remove 2 set screws (7) and 50T Gear (8). Replace the Feed Motor.



5.10.3 Replacing Roll Feed Clutch (MC2A, MC2B, MC2C, MC2D)

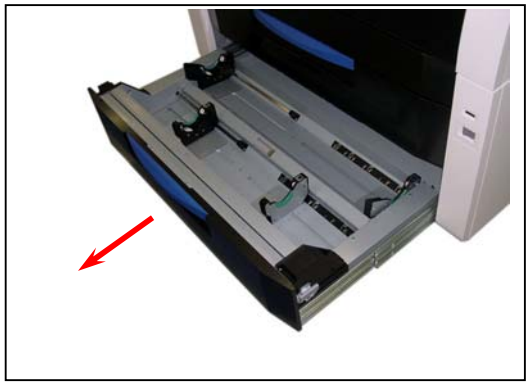
Reference

MC2A: Roll Feed Clutch for Roll 1 (Upper Roll Deck)
MC2B: Roll Feed Clutch for Roll 2 (Upper Roll Deck)
MC2C: Roll Feed Clutch for Roll 3 (Lower Roll Deck)
MC2D: Roll Feed Clutch for Roll 4 (Lower Roll Deck)

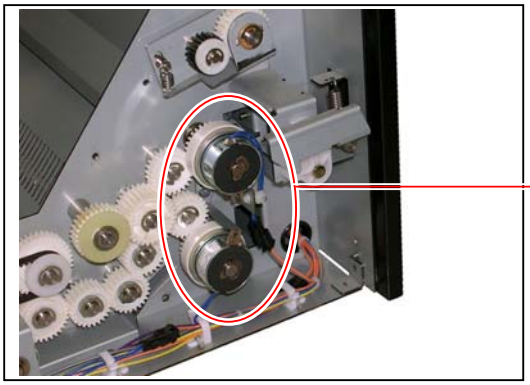
NOTE

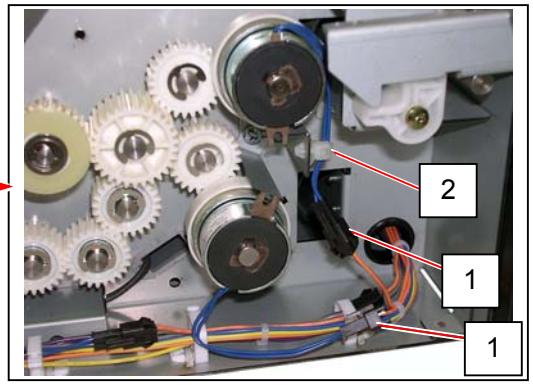
For MC2B or MC2D, it is necessary to remove Roll Deck from the machine.
Refer to [5.10.1 Removing Roll Deck] on page 5-180.

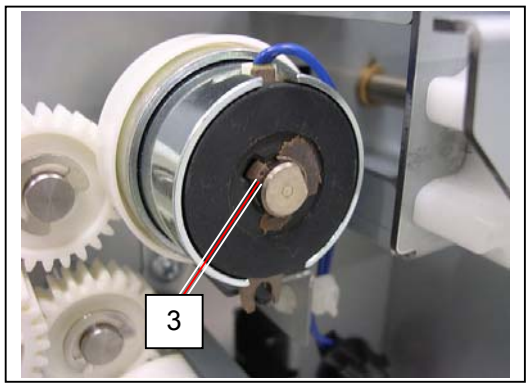
1) Draw out the related Roll Deck.



2) Disconnect 1 connector (1). For MC2B/MC2D, open the saddle (2) to release the harness.
Open the nail (3) a little to remove the Clutch.





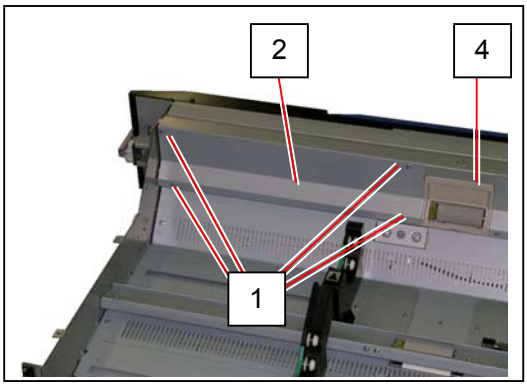


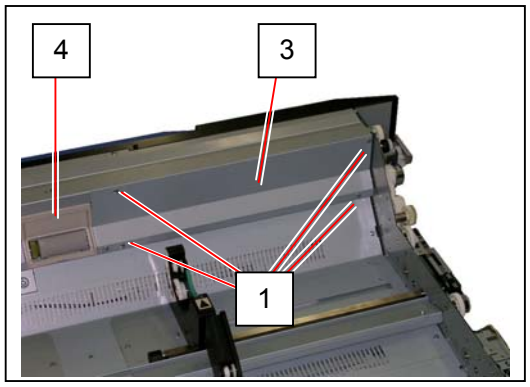
3) Replace the Roll Feed Clutch with the new one.

5.10.4 Replacing Pick-up Roller (Roll 1, Roll 3)

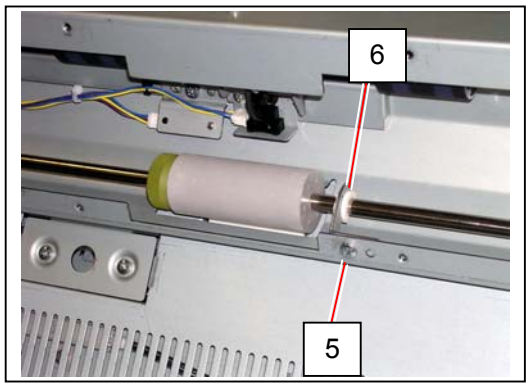
1) Remove the related Roll Feed Clutch. Refer to [5.10.3 Replacing Roll Feed Clutch] on page 5-185.

2) Remove 8 screws (M4x6) (1) to remove Cover (2) and Cover 2 (3).
Then remove Cover 14 (4).

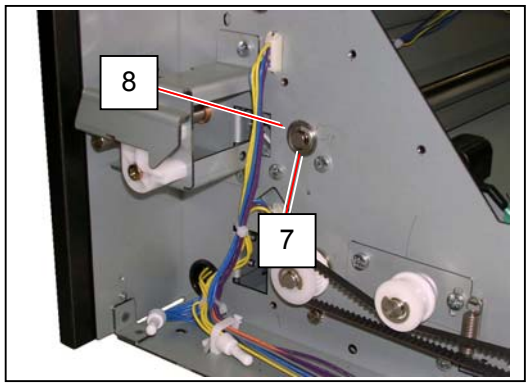




3) Remove 1 screw (M4x6) (5) to remove Bracket (6) with the half moon oilless bearing from the middle of the Pick-up Roller.

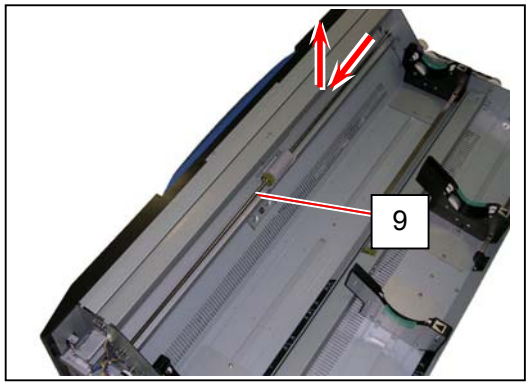


4) Remove Retaining Ring-E (7) and the Ball Bearing (8) from both sides of the Pick-up Roller.



5) Slide Pick-up Roller (9) to the machine right, and remove it from the Roll Deck.

6) Replace the Pick-up Roller with the new one.



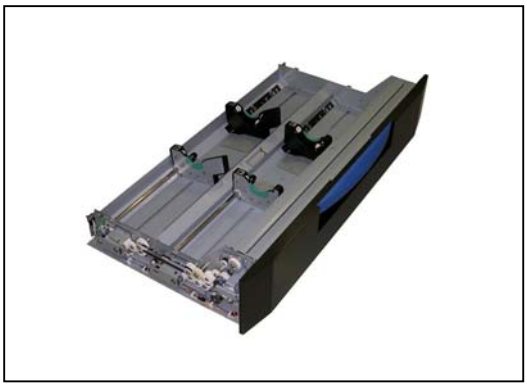
NOTE

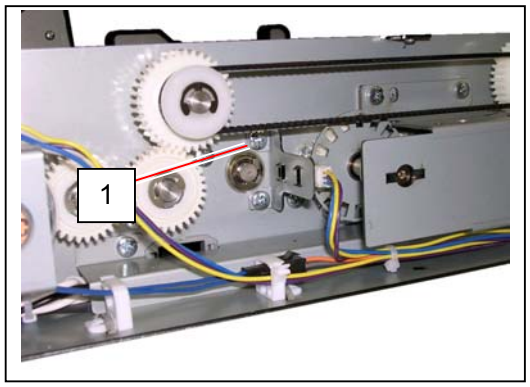
Watch the direction of Gear, the one way clutch is used.

5.10.5 Replacing Pick-up Roller (Roll 2, Roll 4)

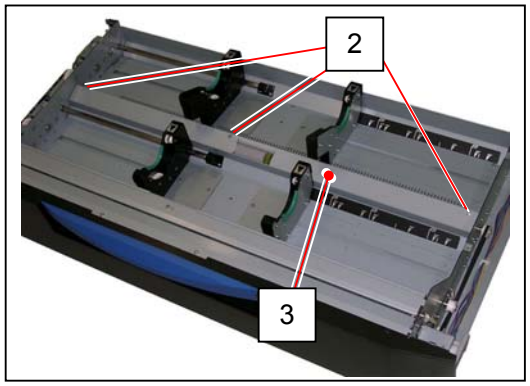
1) Remove Roll Deck from the machine. Refer to [5.10.1 Removing Roll Deck] on page 5-180.

2) Remove 1 screw (1) on the sensor bracket (PH14A/PH14C).

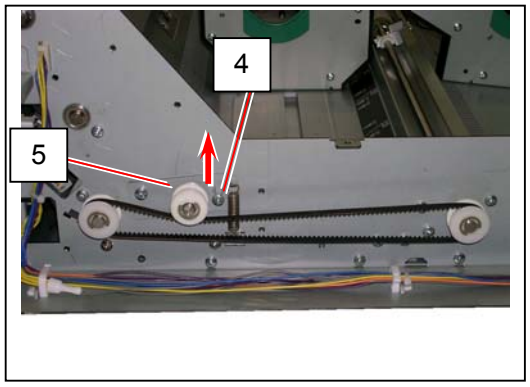




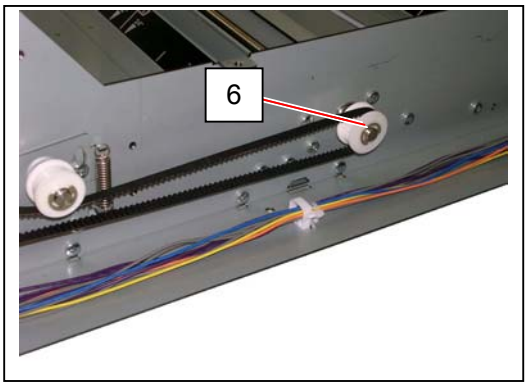
2) Remove 3 screws (M4x6) (2) to remove Pick-up Cover (3).

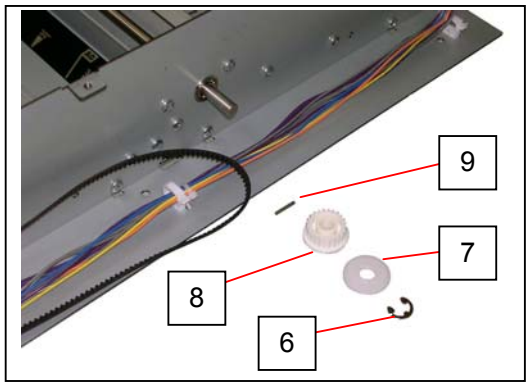


3) Loosen 1 screw (4). Push Pulley (5) upward to release Timing Belt.
With pushing, fix Pulley with the screw (4).

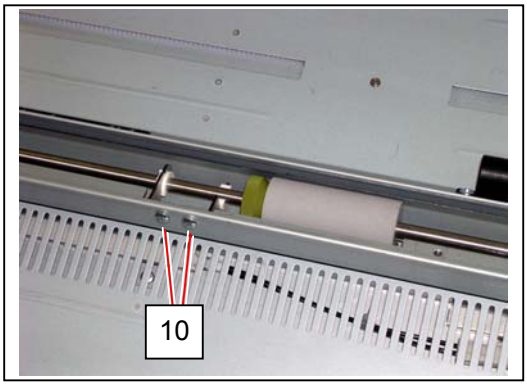


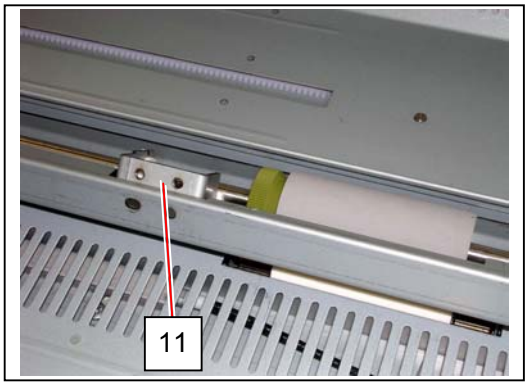
4) Remove Retaining Ring-E (6) to remove Collar (7), Gear (8) and Parallel Pin (9).



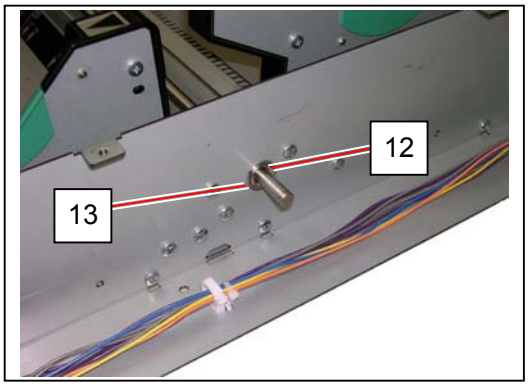


5) Remove 2 screws (M4x6) (10) and the Bracket (11) with 2 pieces of half moon oilless bearings from the middle of Pick-up Roller.

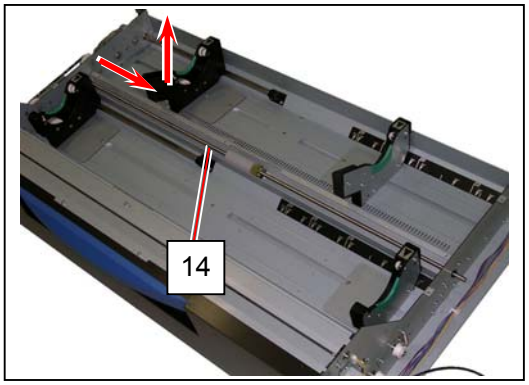




6) Remove the E-ring (12) and the Ball Bearing (13) from both sides of Pick-up Roller.



7) Slide Pick-up Roller (14) to the machine right, and remove it from the Roll Deck.



8) Replace the Pick-up Roller with the new one.

NOTE

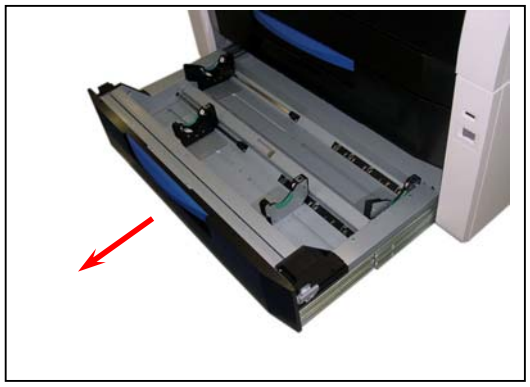
Watch the direction of Gear, the one way clutch is used.

5.10.6 Replacing Paper End Clock Sensor (PH2A, PH2B, PH2C, PH2D)

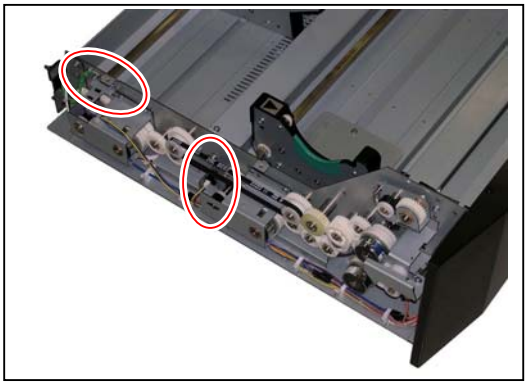
Reference

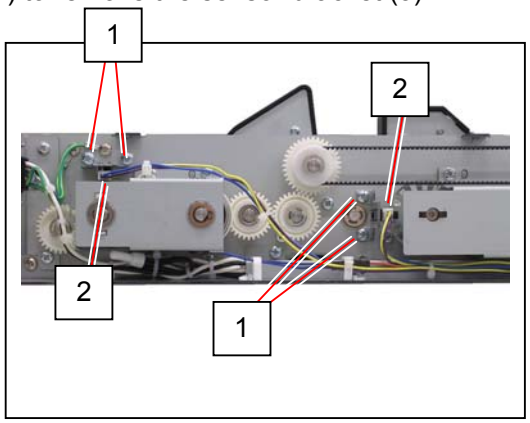
PH2A: Paper End Clock Sensor for Roll 1 (Upper Roll Deck)
PH2B: Paper End Clock Sensor for Roll 2 (Upper Roll Deck)
PH2C: Paper End Clock Sensor for Roll 3 (Lower Roll Deck)
PH2D: Paper End Clock Sensor for Roll 4 (Lower Roll Deck)

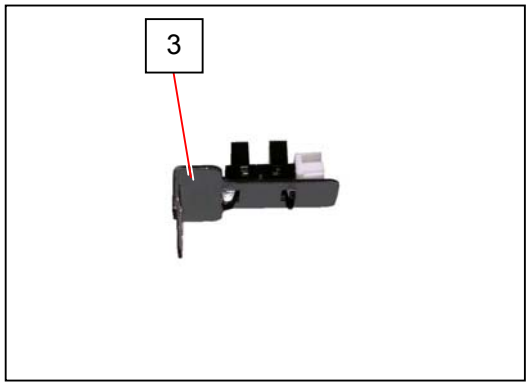
1) Draw out the related Roll Deck.



2) Remove 2 screws (1) and disconnect 1 connector (2) to remove the sensor bracket (3).







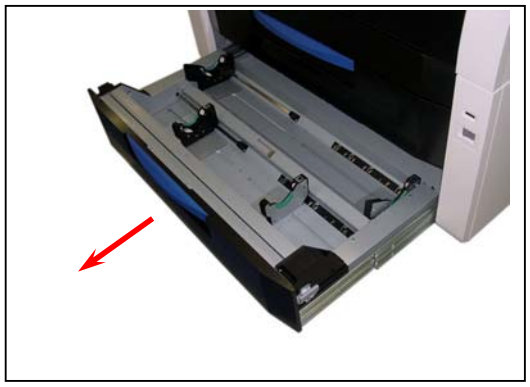
3) Replace Paper End Clock Sensor with the new one.

5.10.7 Replacing Paper Set Sensor (PH1A, PH1C)

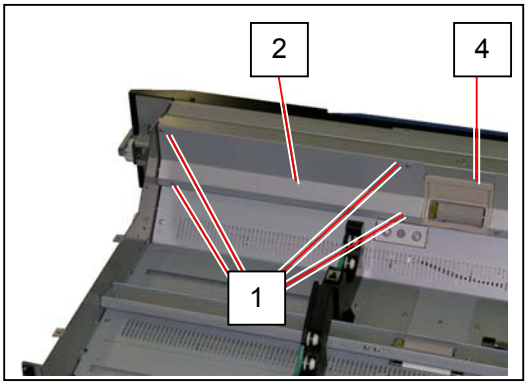
Reference

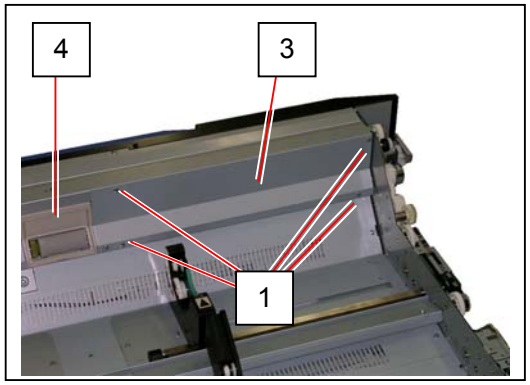
PH1A: Paper Set Sensor for Roll 1
PH1B: Paper Set Sensor for Roll 2
PH1C: Paper Set Sensor for Roll 3
PH1D: Paper Set Sensor for Roll 4

1) Draw out the related Roll Deck.

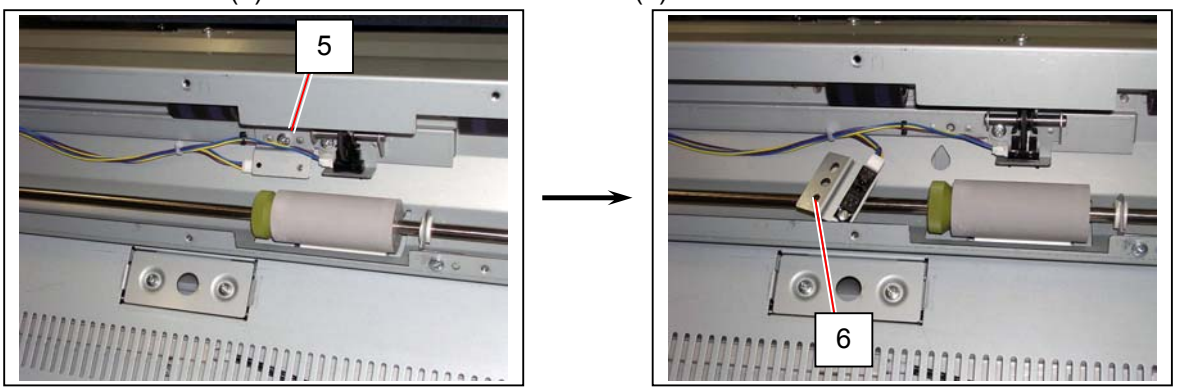


2) Remove 8 screws (M4x6) (1) to remove Cover (2) and Cover 2 (3).
Then remove Cover 14 (4).

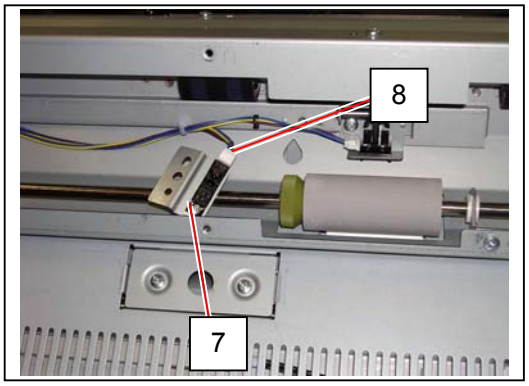




3) Remove 1 screw (5) to release the sensor bracket (6).



4) Remove 1 screw (7) and disconnect 1 connector (8).
Replace Paper Set Sensor (PH1A, PH1C) with a new one.



NOTE

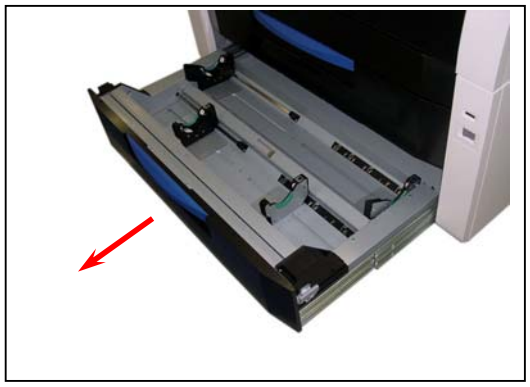
When reassembling, use the bosses to place the sensor bracket in position.

5.10.8 Replacing Paper Set Sensor (PH1B, PH1D)

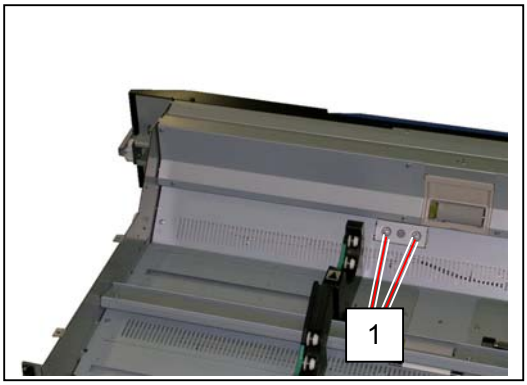
Reference

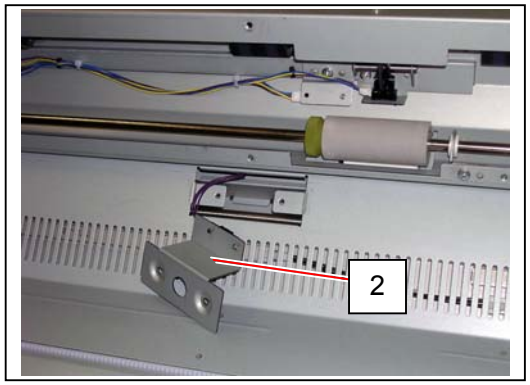
PH1A: Paper Set Sensor for Roll 1 (Upper Roll Deck)
PH1B: Paper Set Sensor for Roll 2 (Upper Roll Deck)
PH1C: Paper Set Sensor for Roll 3 (Lower Roll Deck)
PH1D: Paper Set Sensor for Roll 4 (Lower Roll Deck)

1) Draw out the related Roll Deck.

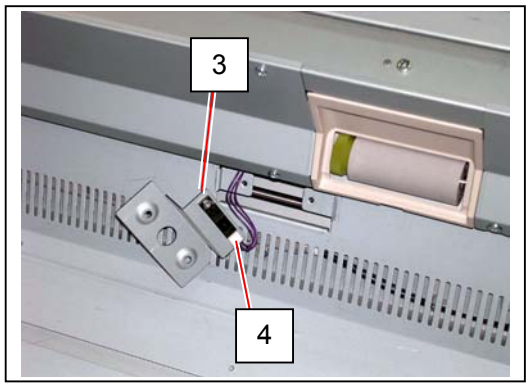


2) Remove 2 screws (1) to release the sensor bracket (2).





3) Remove 1 screw (3) and disconnect 1 connector (4).
Replace Paper Set Sensor (PH1B, PH1D) with a new one.



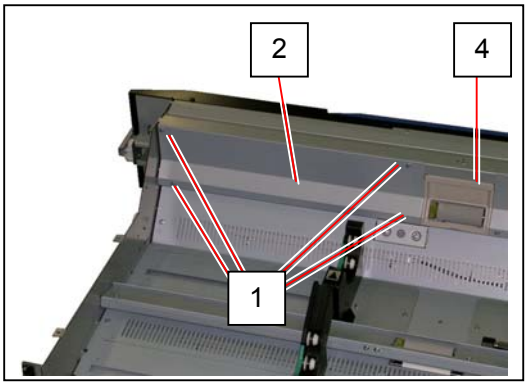
5.10.9 Replacing Feed Sensor (PH14A, PH14B)

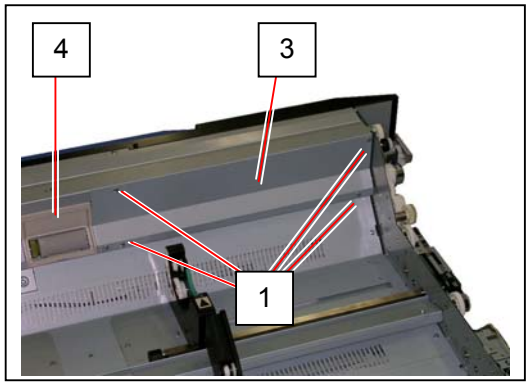
Reference

PH14A: Paper Set Sensor for Roll 1 / 2 (Upper Roll Deck)
PH14B: Paper Set Sensor for Roll 3 / 4 (Lower Roll Deck)

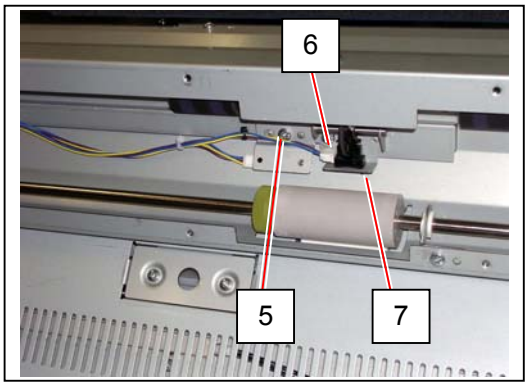
1) Draw out the related Roll Deck.

2) Remove 8 screws (M4x6) (1) to remove Cover (2) and Cover 2 (3).
Then remove Cover 14 (4).



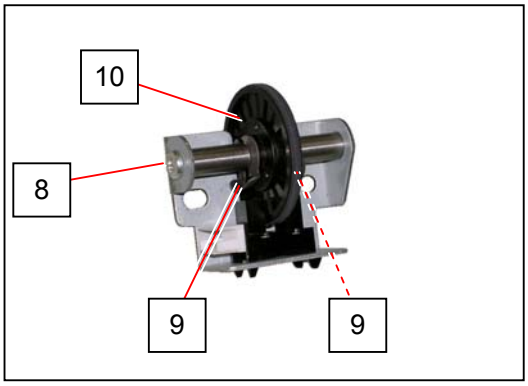


3) Remove 1 screw (5) and disconnect 1 connector (6) to release the sensor bracket (7).



4) Remove 1 screw (8) and 2 KL Clips (9) to remove Encoder 2 Assy (10) and its shaft.

Replace Feed Sensor (PH14A, PH14B) with a new one.



Chapter 6

Maintenance

Page

6.1 PM Schedule 6- 1

6.2 Procedure 6- 2

6.3 Lubrication 6- 3

6.4 Fuse Replacement 6- 5

6.5 Disposal of machine (for only EU Member States) 6- 6

KIP 7700 / KIP 7900 PM Schedule

- Please keep this form with the printer - perform PMs as noted

- As the PM comes due and items replaced or cleaned, please denote in the "C" box

- Please note nomenclature below for "Code" referenece

Part / Description	Item Number		Square Feet X 1000																			
		Code	70	C	140	C	210	C	280	C	350	C	420	C	490	C	560	C	630	C	700	C
Photoconductor	SUP7000-101																				R	
Corona Wires (Kit)	Z200980010	#	C		C		R		C		C		R		C		C		R		C	
Grid Screen	Z035100110	#			C				C				C				C				R	
LED Head		#	C		C		C		C		C		C		C		C		C		C	
Pre Transfer Lamps		#	C		C		C		C		C		C		C		C		C		C	
Developer Space Discs		#	C		C		C		C		C		C		C		C		C		C	
Lube Gears (see Chapter 6 in SM)			L		L		L		L		L		L		L		L		L		L	
Developer Rebuild (Kit)	Z200980030								R								R					
Paper Compartments		@	C		C		C		C		C		C		C		C		C		C	
Vacuum (clean) Interior		@	C		C		C		C		C		C		C		C		C		C	
Filters (Kit)	Z200980020	@			C				C				C				R				C	
Knife		@					C						C						C			
Lubrication Pad (7900 only)	3504020070										L										L	
Fuser (7700 only)	Z200980090		C		C		C		C		C		C		C		C		C		R	
Fuser (7900 only)	Z200980040		C		C		C		C		C		C		C		C		C		C	
Lube Gears (see Chapter 6 in SM)			L		L		L		L		L		L		L		L		L		L	
Thermostat									C								C					
Thermistor									C								C					
Exterior Covers		#	C		C		C		C		C		C		C		C		C		C	

# = Clean and wipe dry	C = Clean	R = Replace	L = Lubricate	
@ = Clean with vacuum, carefully	I = Inspect	A = Adjust position		Part numbers subject to change without notice

r1

KIP 7700 / KIP 7900 PM Schedule

- Please keep this form with the printer - perform PMs as noted

- As the PM comes due and items replaced or cleaned, please denote in the "C" box

- Please note nomenclature below for "Code" referenece

Part / Description	Item Number		Square Feet X 1000																			
		Code	770	C	840	C	910	C	980	C	1050	C	1120	C	1190	C	1260	C	1330	C	1400	C
Photoconductor	SUP7000-101																				R	
Corona Wires (Kit)	Z200980010	#	C		R		C		C		R		C		C		R		C		C	
Grid Screen	Z035100110	#			C				C				C				C				R	
LED Head		#	C		C		C		C		C		C		C		C		C		C	
Pre Transfer Lamps		#	C		C		C		C		C		C		C		C		C		C	
Developer Space Discs		#	C		C		C		C		C		C		C		C		C		C	
Lube Gears (see Chapter 6 in SM)			L		L		L		L		L		L		L		L		L		L	
Developer Rebuild (Kit)	Z200980030				R								R								R	
Paper Compartments		@	C		C		C		C		C		C		C		C		C		C	
Vacuum (clean) Interior		@	C		C		C		C		C		C		C		C		C		C	
Filters (Kit)	Z200980020	@			C				C				R				C				C	
Knife		@					C						C						C			
Lubrication Pad (7900 only)	3504020070										L										L	
Fuser (7700 only)	Z200980090		C		C		C		C		C		C		C		C		C		R	
Fuser (7900 only)	Z200980040		C		C		C		R		C		C		C		C		C		C	
Lube Gears (see Chapter 6 in SM)			L		L		L		L		L		L		L		L		L		L	
Thermostat									C								C					
Thermistor									C								C					
Exterior Covers		#	C		C		C		C		C		C		C		C		C		C	

# = Clean and wipe dry	C = Clean	R = Replace	L = Lubricate	Part numbers subject to change without notice
@ = Clean with vacuum, carefully	I = Inspect	A = Adjust position		

KIP 7700 / KIP 7900 PM Schedule

- Please keep this form with the printer - perform PMs as noted

- As the PM comes due and items replaced or cleaned, please denote in the "C" box

- Please note nomenclature below for "Code" referenece

Part / Description	Item Number		Square Feet X 1000																			
		Code	1470	C	1540	C	1610	C	1680	C	1750	C	1820	C	1890	C	1960	C	2030	C	2100	C
Photoconductor	SUP7000-101																				R	
Corona Wires (Kit)	Z200980010	#	R		C		C		R		C		C		R		C		C		R	
Grid Screen	Z035100110	#			C				C				C				C				R	
LED Head		#	C		C		C		C		C		C		C		C		C		C	
Pre Transfer Lamps		#	C		C		C		C		C		C		C		C		C		C	
Developer Space Discs		#	C		C		C		C		C		C		C		C		C		C	
Lube Gears (see Chapter 6 in SM)			L		L		L		L		L		L		L		L		L		L	
Developer Rebuild (Kit)	Z200980030								R								R					
Paper Compartments		@	C		C		C		C		C		C		C		C		C		C	
Vacuum (clean) Interior		@	C		C		C		C		C		C		C		C		C		C	
Filters (Kit)	Z200980020	@	C		C		C		R		C		C		C		C		C		C	
Knife		@					C						C						C			
Lubrication Pad (7900 only)	3504020070										L										L	
Fuser (7700 only)	Z200980090		C		C		C		C		C		C		C		C		C		R	
Fuser (7900 only)	Z200980040		C		C		C		C		C		C		C		R		C		C	
Lube Gears (see Chapter 6 in SM)			L		L		L		L		L		L		L		L		L		L	
Thermostat									C								C					
Thermistor									C								C					
Exterior Covers		#	C		C		C		C		C		C		C		C		C		C	

# = Clean and wipe dry	C = Clean	R = Replace	L = Lubricate	Part numbers subject to change without notice
@ = Clean with vacuum, carefully	I = Inspect	A = Adjust position		

KIP 7700 / 7900 PM
Procedure every 70,000 square feet

Step #1 - Prepare Machine.

- ❑ Ask User on Printer Performance / Image Quality
- ❑ Run Test Print
- ❑ Locate the "KIP 7x00 PM Schedule" Form
  (check as each item completed. Replace noted items!)
- ❑ Remove Drum (Box)
- ❑ Remove top covers to remove process unit / assemblies.

Step #2 - Corona Units

- ❑ Clean Grid Screen (Simple Green, then rinse with water) let dry on paper towel.
- ❑ Clean 1st Charge wires and case (Glass cleaner)
- ❑ Clean transfer / separation wires and case. (Glass cleaner)
- ❑ Clean Pre-transfer wires and case. (Glass cleaner)

Step #3 - Clean Interior of Printer.

- ❑ Separation fans / air guides.
- ❑ Transport belts.
- ❑ Transfer guide plates etc.

Step #4 - Development Unit.

- ❑ Clean spacing rollers.
- ❑ Vacuum toner dust from end's of developer unit.
- ❑ Vacuum around toner hopper inlet.
- ❑ Lube gears.

Step #5 - L.E.D Print Head.

- ❑ Clean LED Head. (Glass cleaner.)

Step #6 - Paper Decks.

- ❑ Vacuum paper dust.
- ❑ Inspect media spools.

Step #7 - Air Flow.

- ❑ Vacuum Filters.
- ❑ Confirm all fans and blowers are clean.

Step #8 - Fuser Section.

- ❑ Clean upper Nails.
- ❑ Shift upper Nails (left /right / center etc.)
- ❑ Clean lower Nails.
- ❑ Clean and lube gears. (High temp. grease)

Step #9 - Cutter Assembly.

- ❑ Clean paper dust.
- ❑ Apply oil to cutter pad.(for 7900 at interval)

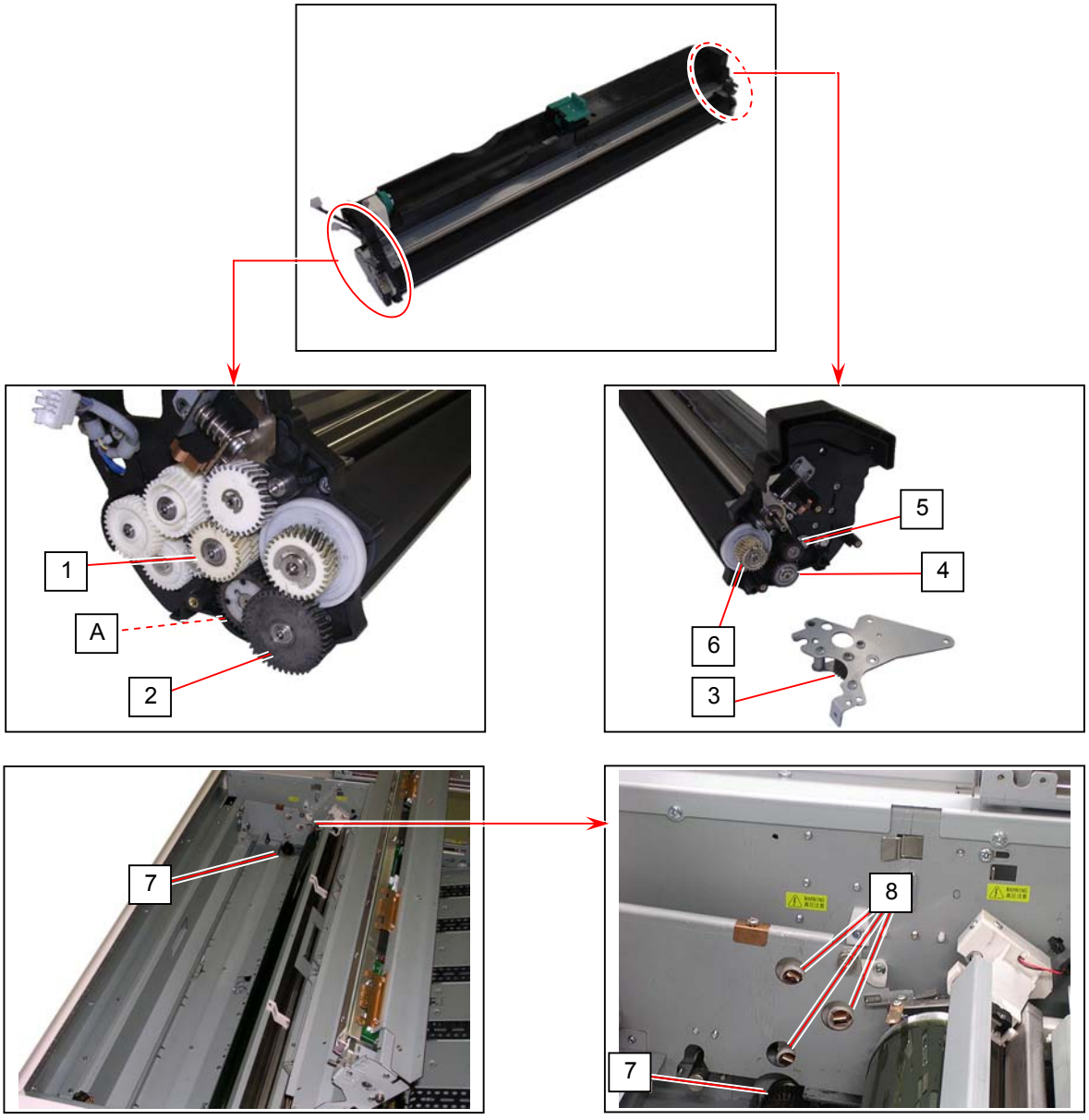
Step #10 Run test pattern #1 and #3 and verify print quality. (save copy)

Step #11 Clean Panels and Covers. Speak with key operator on status.

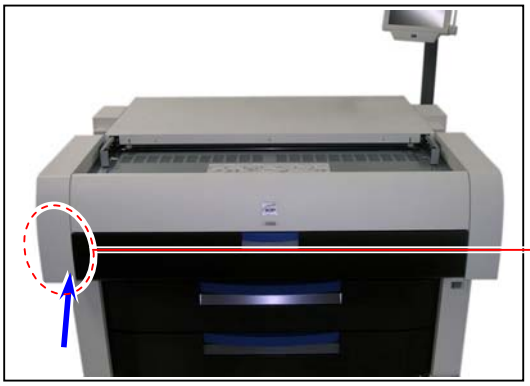
6. 3 Lubrication

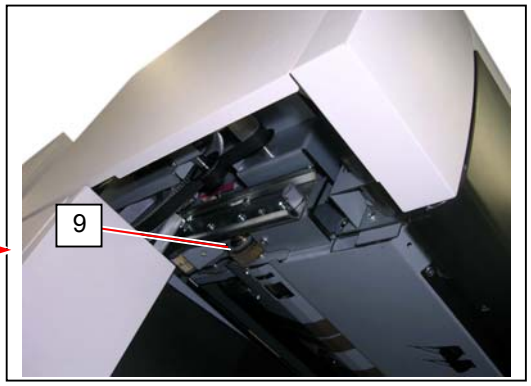
Please apply an adequate amount of grease to the components shown in the following photos.
The recommended Lubrication period is 6,000m^2 / 70,000 ft^2 unless otherwise noted.
Use silicone grease (Shin-Etsu Chemical G501) or its equivalent unless otherwise noted.

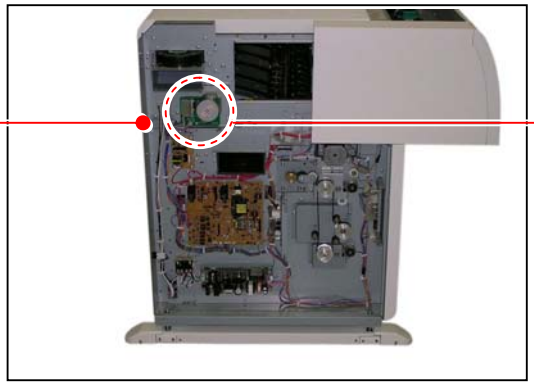
	Part Name	Remarks
1	28T Helical Gear R	It is a difficult location of 34T Helical Gear (A) to apply grease directly.
2	17/42T Helical Gear R	
3	20T Helical Gear L	
4	30T Helical Gear L	
5	22T Helical Gear	
6	28T Helical Gear L	
7	30T Helical Gear	
8	Electrode Plate	every 24,000m^2 / 280,000 ft^2, Conductive grease only

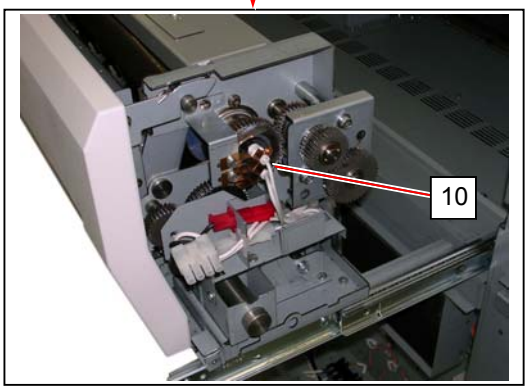


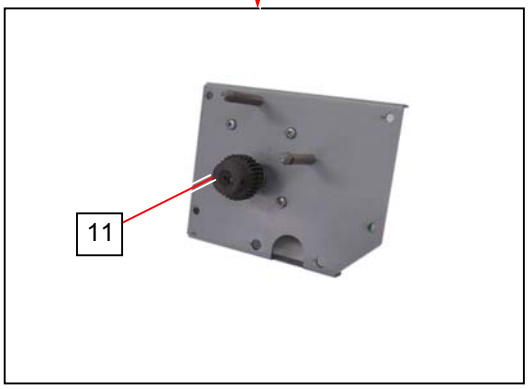
	Part Name	Remarks
9	35T Gear	
10	50T Spur Gear	Heat-proof grease only
11	30T Gear	Heat-proof grease only











6. 4 Fuse Replacement

⚠ NOTE

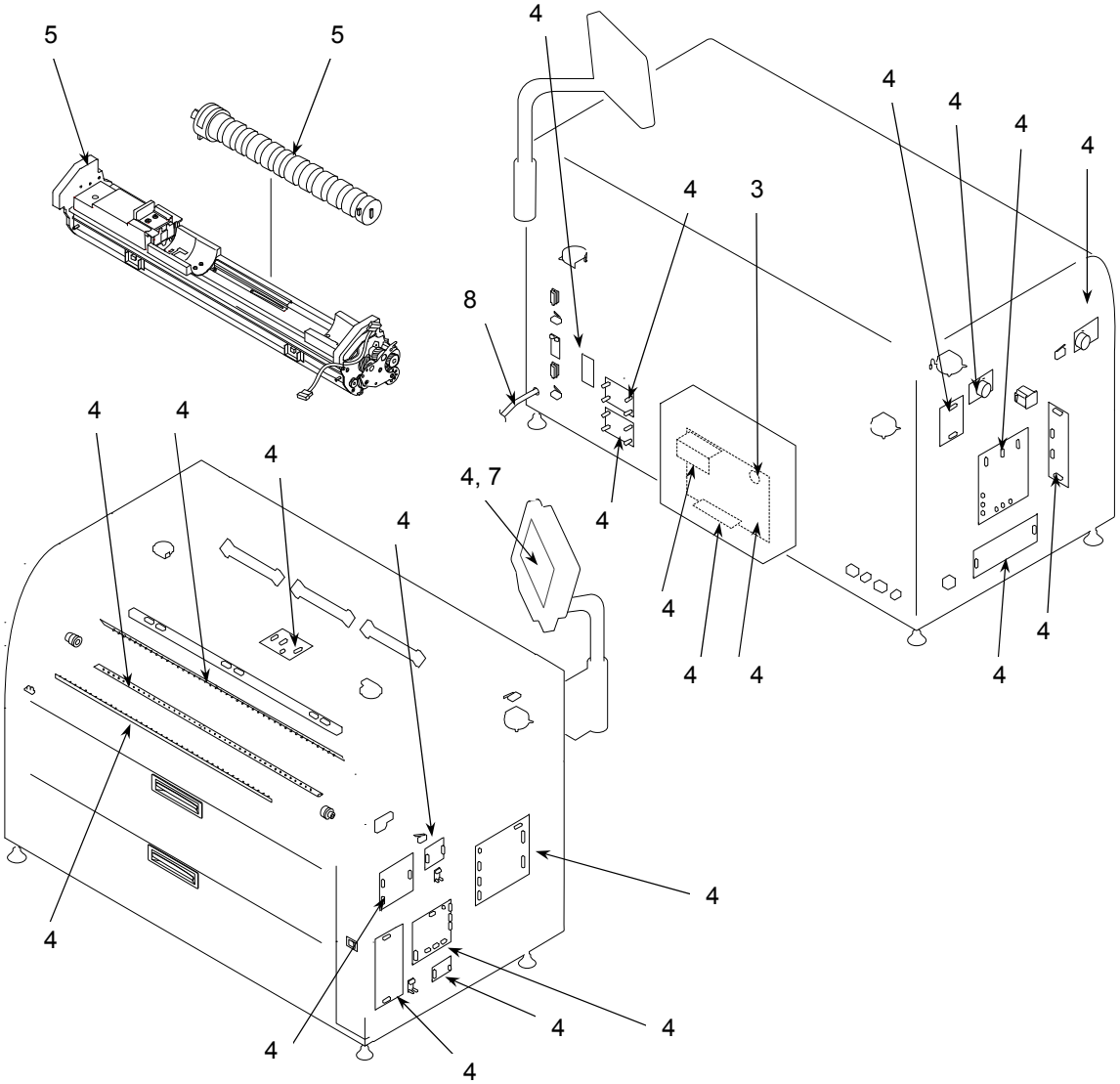
When fuses of the following items are replaced, use the same manufacturer, the same type and the same rated fuse in order to prevent fire hazard.

Part Name	Type	Fuse		
		Manufacturer	Type	Rated
AC Terminal (Primary)	PW12010	Littelfuse	2153.15	3.15A/250V
Fuse PCB (24VDC)	PW9690	Littelfuse	218002	2A/250V
Fuse PCB (24VDC)	PW9690	Littelfuse	218005	5A/250V

6. 5 Disposal of machine (for only EU Member States)

Location of parts which should be removed from the waste machine

1. polychlorinated biphenyls (PCB) containing capacitors in accordance with Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT)(1),
2. mercury containing components, such as switches or backlighting lamps,
3. batteries
4. printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,
5. toner cartridges, liquid and pasty, as well as colour toner,
6. plastic containing brominated flame retardants,
7. liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimeters and all those back-lighted with gas discharge lamps,
8. external electric cables,
9. electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume)



Chapter 7

Troubleshooting

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7. 1 Error Code List

7. 1. 1 Operator Call Errors

Following errors are Operator Call Errors which can be fixed by an operator.

Error Code	Name of the error	Error condition
J - 01	1st Roll Jam	1. The Roll Paper Set Sensor Signal (RPSET1) does not change from H to L within a specified time since the machine has started feeding. 2. The Roll Paper Set Sensor Signal (RPSET1) does not change from L to H within a specified time since the machine has started rewinding.
J - 02	2nd Roll Jam	1. The Roll Paper Set Sensor Signal (RPSET2) does not change from H to L within a specified time since the machine has started feeding. 2. The Roll Paper Set Sensor Signal (RPSET2) does not change from L to H within a specified time since the machine has started rewinding.
J - 03	3rd Roll Jam	1. The Roll Paper Set Sensor Signal (RPSET3) does not change from H to L within a specified time since the machine has started feeding. 2. The Roll Paper Set Sensor Signal (RPSET3) does not change from L to H within a specified time since the machine has started rewinding.
J - 04	4th Roll Jam	1. The Roll Paper Set Sensor Signal (RPSET4) does not change from H to L within a specified time since the machine has started feeding. 2. The Roll Paper Set Sensor Signal (RPSET4) does not change from L to H within a specified time since the machine has started rewinding.
J - 05	Bypass Jam	1. The Paper Gate Sensor Signal (P_GATE) does not change from H to L within a specified time since the paper has started from the specified position. 2. The Paper Gate Sensor Signal (P_GATE) changes from L to H within a specified time since the paper has started, because the cut sheet paper was shorter than specified.
J - 10	Cutter Area Jam	1. Either Cutter Sensor Signal (P_CUT) or Roll Paper Size Signal (SZDATA0) does not change from H to L within a specified time since the machine has started to feed the roll paper from the specified position. 2. Either Cutter Sensor Signal (P_CUT) or Roll Paper Size Signal (SZDATA0) does not change from L to H within a specified time since the machine has started to rewind the roll paper.

Error Code	Name of the error	Error condition
J - 11	Internal Feeder Area Jam	1. Either Paper Entry Sensor Signal (P_ENTR) or Paper Gate Sensor Signal (P_GATE) is L at the time you turn on the machine. 2. The Paper Gate Sensor Signal (P_GATE) does not change from H to L within a specified time since the machine has started feeding the roll paper from the specified position. 3. Feed Sensor Signal (RLNG1/RLNG2) does not change H and L alternately within a specified time since the machine has started feeding the roll paper.
J - 12	Separation Area Jam	1. The Paper Separation Sensor Signal (P_SEPR) is L at the time you turn on the machine. 2. The Paper Separation Sensor Signal (P_SEPR) does not change from H to L within a specified time since the machine has restarted feeding the paper from the specified position during printing.
J - 13	Exit Area Jam (Delay)	1. The Paper Exit Sensor Signal (P_EXIT) does not change from H to L within a specified time since the machine has restarted feeding the paper from the paper stop position during printing.
J - 14	Exit Area Jam (Stay)	1. The Paper Exit Sensor Signal (P_EXIT) is L at the time you turn on the machine. 2. The Paper Exit Sensor Signal (P_EXIT) once changes from H to L during printing. But after that it does not change from L to H within a specified time since the Paper Gate Sensor Signal (P_GATE) has changed from L to H.
J - 21	Outer Device Jam (Delay)	After the Paper reached to the Exit Sensor, when “paper existence signal” is not received from Outer Device (Auto Stacker, Folder, etc.) within the specified time.
J - 22	Outer Device Jam (Stay)	After the Paper left the Exit Sensor, when “paper not-existence signal” is not received from Outer Device (Auto Stacker, Folder, etc.) within the specified time.
U - 01	Upper Roll Deck Open Error	The Upper Roll Deck is opened.
U - 02	Lower Roll Deck Open Error	The Lower Roll Deck is opened.
U - 05	Upper Frame Unit Open Error	Upper Frame Unit is opened.
U - 06	Exit Cover Open Error	Exit Cover is opened.
	Toner Empty	1. There is almost no toner available. 2. The Toner Cartridge being installed is considered to be invalid based on its IC Tag information.
	Roll Replacement	1. No roll media is loaded on the selected Roll Number. 2. The roll media in the selected Roll Number is emptied. 3. There is no suitable roll media that are being required for the proceeding job.

7. 1. 2 Service Call Errors

Following errors are Service Call Errors which can be fixed by service personnel.

Error Code	Name of the error	Error condition
E - 01	Fuser Temperature Rising Error	1. Fuser temperature does not start rising up within 150 seconds since you have turned on the machine. 2. Fuser temperature becomes lower than 80 degrees Centigrade since the machine has idled.
E - 02	Fuser Over Temperature Error	Fuser temperature exceeds 200 degrees Centigrade.
E - 03	Main Motor Error	When Main Motor Speed Detection Signal (MAMTR_LD) remains H more than 3 seconds while Main Motor is rotating.
E - 04	Developer Error	1. Developer Unit Home Position Signal (DEVE-HP) does not change H although 30 seconds has passed since you turned on the machine. 2. Connector (J29) to the Developer Unit is disconnected. (DEVE_CN = "L", when it is connected.)
E - 06	Counter Error	1. The Status Signal continues to be L for more than 100 milliseconds when the Counter is counting. 2. The Status Signal continues to be H for more than 100 milliseconds when the Counter is not counting.
E - 07	Cutter Error	1. In case one of the Cutter Home Position Signal 1 or 2 stays H and the other does not show L when the Cutter Motor is not rotating. 2. It takes longer than 1.5 seconds to move the Cutter from one home position to the another one. 3. When Paper Sensor PH4 (P_CUT) does not change L → H → L after Cutter worked.
E - 14	Fuser Motor Error	When Fuser Motor Speed Detection Signal (FUMTR_LD) remains H more than 3 seconds while Fuser Motor is rotating.
E - 16	Wire Cleaning Error	The Wire Cleaning Motor Over Current Signal (WCMTR_OC) remains H for more than 90 seconds during wire cleaning.
E – 21	Fuser Thermostat Error	1. When the Thermostat is cut off. 2. When Interlock Signal (INTLK1) changes to H.
E - 27	Density Sensor Error	Density Sensor (PH10) failed its initialization because of an abnormal output.
E - 40	Outer Device Error	1. When Error is received while the Outer Device (Auto Stacker, Folder, etc.) is connected. 2. When the Door of the Outer Device (Auto Stacker, Folder, etc.) is opened, or the Outer Device is jammed.
E - 43	RFID Error	1. IC-TAG R is defective. 2. Connection between PW12020 and IC-TAG R is defective.
E – 51	High Voltage Power Source Error	When output detection signal from HVP detects abnormal condition.

7. 2 Troubleshooting against Errors

7. 2. 1 Countermeasures against Operator Call Errors

(J-01) 1st Roll Jam

Cause	Checking order	Checking	Result	Treatment
Setting condition of roll paper	1	Is the roll paper in the 1st Roll set properly?	No	Set it properly.
Paper Set Sensor 1 (PH1A)	2	Check the status of Paper Set Sensor Signal (RPSET1) in the Device Status Mode. (Signal Code: 50) Is it “L” when the roll paper is set? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Set Sensor 1. 2. If the wire has no problem, replace the Paper Set Sensor 1 with the new one.
Roll Feed Sensor 1 (PH2A)	3	Check Clock Signal of Roll Paper (RPCLK1) using Device Status Mode. (Signal Code: 51) Does signal change “L” and “H” alternately, while Roll Paper is fed? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the Belt for Paper End Clock Sensor. 2. If the wire has no problem, replace the Roll Feed Sensor with the new one.
Feed Motor (M2)	4	Draw out Roll Deck, turn Paper Feeding Roller Knob and feed paper approx. 20cm. Leave the tab of the Roll paper outside of the machine, close the Roll Deck. Is the Roll paper drew in approx. 5cm before “J-01” is indicated?	No	1. If the wire has no problem, replace the Driver PCB, “PW12051”. 2. Replace Feed Motor, “M2”.
Fuse PCB (PW9690)	5	Check the voltage at J902B-3 on the Fuse PCB with a multimeter. Is it 24V?	No	Replace the Fuse F902 (5A).
			Yes	Install the Upper Roll Deck and Lower Roll Deck to the machine properly.

(J-02) 2nd Roll Jam

Cause	Checking order	Checking	Result	Treatment
Setting condition of roll paper	1	Is the roll paper in the 2nd Roll set properly?	No	Set it properly.
Paper Set Sensor 2 (PH1B)	2	Check the status of Paper Set Sensor Signal (RPSET2) in Device Status Mode. (Signal Code: 52) Is it "L" when the roll paper is set? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Set Sensor 2. 2. If the wire has no problem, replace the Paper Set Sensor 2 with the new one.
Roll Feed Sensor 2 (PH2B)	3	Check Clock Signal of Roll Paper (RPCLK2) using Device Status Mode. (Signal Code: 53) Does signal change "L" and "H" alternately, while Roll Paper is fed? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the Belt for Paper End Clock Sensor. 2. If the wire has no problem, replace the Roll Feed Sensor 2 with the new one.
Feed Motor (M2)	4	Draw out Roll Deck, turn Paper Feeding Roller Knob and feed paper approx. 20cm. Leave the tab of the Roll paper outside of the machine, close the Roll Deck. Is the Roll paper drew in approx. 5cm before "J-02" is indicated?	No	1. If the wire has no problem, replace the Driver PCB, "PW12051". 2. Replace Feed Motor, "M2".
Fuse PCB (PW9690)	5	Check the voltage at J902B-3 on the Fuse PCB with a multimeter. Is it 24V?	No	Replace the Fuse F902 (5A).
			Yes	Install the Upper Roll Deck and Lower Roll Deck to the machine properly.

(J-03) 3rd Roll Jam

Cause	Checking order	Checking	Result	Treatment
Setting condition of roll paper	1	Is the roll paper in the 3rd Roll set properly?	No	Set it properly.
Paper Set Sensor 3 (PH1C)	2	Check the status of Paper Set Sensor Signal (RPSET3) in Device Status Mode. (Signal Code: 54) Is it "L" when the roll paper is set? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Set Sensor 3. 2. If the wire has no problem, replace the Paper Set Sensor 3 with the new one.
Roll Feed Sensor 3 (PH2C)	3	Check Clock Signal of Roll Paper (RPCLK3) using Device Status Mode. (Signal Code: 55) Does signal change "L" and "H" alternately, while Roll Paper is fed? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the Belt for Paper End Clock Sensor. 2. If the wire has no problem, replace the Roll Feed Sensor 3 with the new one.
Feed Motor (M2)	4	Draw out Roll Deck, turn Paper Feeding Roller Knob and feed paper approx. 20cm. Leave the tab of the Roll paper outside of the machine, close the Roll Deck. Is the Roll paper drew in approx. 5cm before "J-03" is indicated?	No	1. If the wire has no problem, replace the Driver PCB, "PW12051". 2. Replace Feed Motor, "M2".
Fuse PCB (PW9690)	5	Check the voltage at J902B-3 on the Fuse PCB with a multimeter. Is it 24V?	No	Replace the Fuse F902 (5A).
			Yes	Install the Upper Roll Deck and Lower Roll Deck to the machine properly.

(J-04) 4th Roll Jam

Cause	Checking order	Checking	Result	Treatment
Setting condition of roll paper	1	Is the roll paper in the 4th Roll set properly?	No	Set it properly.
Paper Set Sensor 4 (PH1D)	2	Check the status of Paper Set Sensor Signal (RPSET4) in Device Status Mode. (Signal Code: 56) Is it "L" when the roll paper is set? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Set Sensor 4. 2. If the wire has no problem, replace the Paper Set Sensor 4 with the new one.
Roll Feed Sensor 4 (PH2D)	3	Check Clock Signal of Roll Paper (RPCLK4) using Device Status Mode. (Signal Code: 57) Does signal change "L" and "H" alternately, while Roll Paper is fed? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the Belt for Paper End Clock Sensor. 2. If the wire has no problem, replace the Roll Feed Sensor 4 with the new one.
Feed Motor (M2)	4	Draw out Roll Deck, turn Paper Feeding Roller Knob and feed paper approx. 20cm. Leave the tab of the Roll paper outside of the machine, close the Roll Deck. Is the Roll paper drew in approx. 5cm before "J-04" is indicated?	No	1. If the wire has no problem, replace the Driver PCB, "PW12051". 2. Replace Feed Motor, "M2".
Fuse PCB (PW9690)	5	Check the voltage at J902B-3 on the Fuse PCB with a multimeter. Is it 24V?	No	Replace the Fuse F902 (5A).
			Yes	Install the Upper Roll Deck and Lower Roll Deck to the machine properly.

(J-05) Bypass Jam

Cause	Checking order	Checking	Result	Treatment
Setting condition of cut sheet paper	1	Is the cut sheet paper set to the Bypass Feeder properly? Is it longer than 210mm?	No	Set it properly. Use a longer cut sheet paper than 210mm.
Manual Paper Sensor (PH12, PH13)	2	Check the status of Manual Paper Sensor (MP_ENT1 / MP_ENT2) in Device Status Mode. (PH12 : MP_ENT1) Signal Code: 08 (PH13 : MP_ENT2) Signal Code: 09 Is it "L" when the cut sheet paper is set? **NOTE** **Refer to [8.3 Device Status Mode].**	No.	1. Check the wire of Manual Paper Sensors. 2. If the wire has no problem, replace the Manual Paper Sensors with the new one.
Paper Entry Sensor (PH5)	3	Check the status of Paper Entry Sensor Signal (P_ENTR) in Device Status Mode. (Signal Code: 0B) Is it "L" when the cut sheet paper is set? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Entry Sensor. 2. If the wire has no problem, replace the Paper Entry Sensor with the new one.
Paper Gate Sensor (PH6)	4	(See the next page.)		

Cause	Checking order	Checking	Result	Treatment
Paper Gate Sensor (PH6)	4	Check the status of Paper Gate Sensor Signal (P_GATE). Check the voltage at J210-20 on DC Controller PCB (PW12020). Is it “0V” when the Paper Gate Sensor detects the paper?	No	1. Check the wire of Paper Gate Sensor. 2. If the wire has no problem, replace the Paper Gate Sensor with the new one.

(J-10) Cutter Area Jam

Cause	Checking order	Checking	Result	Treatment
Jam	1	Did a jam occur between Cutter Unit and Paper Gate Roller?	Yes	Remove the paper.
Sensors (PH3, PH4, PH5)	2	Check the status of following sensors in Device Status Mode. 1. Roll Size Sensor (PH3) (Signal Code: 0F) 2. Cutter area Sensor (PH4) (Signal Code: 0A) 3. Paper Entry Sensor (PH5) (Signal Code: 0B) Is the status “H” when each sensor does not detect the paper? And is it “L” when each sensor detects the paper? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of sensor of which status is abnormal. 2. If the wire has no problem, replace the abnormal sensor with the new one.
Paper Gate Sensor (PH6)	3	(See the next page.)		
Driving Part	4	(See the next page.)		

Cause	Checking order	Checking	Result	Treatment
Paper Gate Sensor (PH6)	3	Check the status of Paper Gate Sensor Signal (P_GATE). Check the voltage at J210-20 on DC Controller PCB (PW12020). Is it “0V” when the Paper Gate Sensor detects the paper?	No	1. Check the wire of Paper Gate Sensor. 2. If the wire has no problem, replace the Paper Gate Sensor with the new one.
Driving part	4	Select Device Operation Mode, and try to make the following parts work alone. 1. Paper Gate Clutch (MC3) (Signal Code: 28) And also, check whether or not the following parts work by just looking while making a print. 2. Main Motor 3. Roll Feed Motor Is there any part that does not work? **NOTE** **Refer to [8.5 Device Operation Mode]**	Yes	Replace the defective part with the new one.

(J-11) Internal Feeder Area Jam

Cause	Checking order	Checking	Result	Treatment
Jam	1	Did a jam occur at the Internal Feeder Area?	Yes	Remove the paper.
Paper Entry Sensor (PH5)	2	Check the status of Paper Entry Sensor in Device Status Mode. (Signal Code: 0B) Is the status “H” when the Paper Entry Sensor does not detect the paper? And is it “L” when the Paper Entry Sensor detects the paper? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Entry Sensor. 2. If the wire has no problem, replace the Paper Entry Sensor with the new one.
Paper Gate Sensor (PH6)	3	Check the status of Paper Gate Sensor Signal (P_GATE). Check the voltage at J210-20 on DC Controller PCB (PW12020). Is it “0V” when the Paper Gate Sensor detects the paper?	No	1. Check the wire of Paper Gate Sensor. 2. If the wire has no problem, replace the Paper Gate Sensor with the new one.
Driving part	4	(See the next page.)		
Feed Sensor (PH14)	5	(See the next page.)		
	6	(See the next page.)		

Cause	Checking order	Checking	Result	Treatment
Driving part	4	Select Device Operation Mode, and try to make the following parts work alone. 1. Paper Gate Clutch (MC3) (Signal Code: 28) And also, check whether or not the following parts work by just looking while making a print. 2. Main Motor 3. Roll Feed Motor Is there any part that does not work? **NOTE** **Refer to [8.5 Device Operation Mode].**	Yes	Replace the defective part with the new one.
Feed Sensor (PH14A/14B)	5	Check the status of Feed Sensor (RLNG1, RLNG2) in Device Status Mode. (Signal Code: 5e / 5f) Is the status changed “H” and “L” alternately when rotating the feed encoder by hand? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check if there is any problem with the wire connected to the Sensor (PH14). 2. Replace the Sensor (PH14) if there is no problem with the wire.
	6	Does the feed encoder rotate smoothly when feeding media by Feed Knob?	No	Replace the shaft or bracket that supports the feed encoder.

(J-12) Separation Area Jam

Cause	Checking order	Checking	Result	Treatment
Jam	1	Did a jam occur at the Separation Area?	Yes	Remove the paper.
Separation Sensor (PH7)	2	Check the status of Separation Sensor in Device Status Mode. (Signal Code: 0C) Is the status “H” when the Separation Sensor does not detect the paper? And is it “L” when the Separation Sensor detects the paper? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Separation Sensor. 2. If the wire has no problem, replace the Separation Sensor with the new one.
Tr / Sep Corona	3	Is the Corona Head set?	No	Set the Corona Head properly.
		Is the Corona wire broken?	Yes	Replace the Corona wire.
High Voltage Power Supply	4	Is the High Voltage (HV3) applied properly?	No	Replace HV Power Supply.

(J-13) Exit Area Jam (Delay)

Cause	Checking order	Checking	Result	Treatment
Jam	1	Did a jam occur at the Exit Area?	Yes	Remove the paper.
Paper Exit Sensor (PH8)	2	Check the status of Paper Exit Sensor in Device Status Mode. (Signal Code: 0D) Is the status “H” when the Paper Exit Sensor does not detect the paper? And is it “L” when the Paper Exit Sensor detects the paper? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Exit Sensor. 2. If the wire has no problem, replace the Paper Exit Sensor with the new one.

(J-14) Exit Area Jam (Stay)

Cause	Checking order	Checking	Result	Treatment
Jam	1	Did a jam occur between Separation Area and Exit Area?	Yes	Remove the paper.
Paper Exit Sensor (PH8)	2	Check the status of Paper Exit Sensor in Device Status Mode. (Signal Code: 0D) Is the status “H” when the Paper Exit Sensor does not detect the paper? And is it “L” when the Paper Exit Sensor detects the paper? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Paper Exit Sensor. 2. If the wire has no problem, replace the Paper Exit Sensor with the new one.

(J-21) Outer Device Jam (Delay)

Cause	Checking order	Checking	Result	Treatment
Jam	1	Did a jam occur between Outer Device (Auto Stacker, Folder, etc.) and Exit Area?	Yes	1. Remove the paper. 2. Adjust the height of the Outer Device.
Transmission PCB (PW5490) Reception PCB (PW5491)	2	Try to replace each Transmission PCB and Reception PCB. Can you fix the problem?	Yes	OK
			No	Replace the DC Controller PCB with the new one.

(J-22) Outer Device Jam (Stay)

Cause	Checking order	Checking	Result	Treatment
Jam	1	Did a jam occur between the Outer Device (Auto Stacker, Folder, etc) and Exit Area?	Yes	1. Remove the paper. 2. Adjust the height of the Outer Device.

(U-01) Upper Roll Deck Open Error

Cause	Checking order	Checking	Result	Treatment
Upper Roll Deck	1	Is the Upper Roll Deck opened?	Yes	Close it.
Micro Switch (MS3A)	2	Check the status of Deck Switch 1 (MS3A) in Device Status Mode. (Signal Code: 4C) Is the status “L” when the Upper Roll Deck is closed? And is it “H” when the Upper Roll Deck is opened? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Micro Switch (MS3A). 2. If the wire has no problem, replace the Micro Switch (MS3A) with the new one.

(U-02) Lower Roll Deck Open Error

Cause	Checking order	Checking	Result	Treatment
Lower Roll Deck	1	Is the Lower Roll Deck opened?	Yes	Close it.
Micro Switch (MS3B)	2	Check the status of Deck Switch 2 (MS3B) in Device Status Mode. (Signal Code: 4D) Is the status “L” when the Upper Roll Deck is closed? And is it “H” when the Upper Roll Deck is opened? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check the wire of Micro Switch (MS3B). 2. If the wire has no problem, replace the Micro Switch (MS3B) with the new one.

(U-05) Upper Frame Unit Open Error

Cause	Checking order	Checking	Result	Treatment
Upper Frame Unit	1	Is the Upper Frame Unit opened?	Yes	Close it.
Micro Switch (MS2A, MS2B, MS2C)	2	Check the voltage at J112-7 on AC Terminal PCB (PW12010) with a multi-meter. (Check switches in the order as MS2A, MS2B and MS2C.) Is it 24Vdc?	No	Replace the defective switch with the new one.
AC Terminal PCB (PW12010)	3	Check the voltage at J113-8 on AC Terminal PCB (PW12010) with a multi-meter. Device Status Mode Signal Code: 4A Is it 0Vdc?	No	Replace the AC Terminal PCB (PW12010) with the new one.
DC Controller PCB (PW12020)	4	Check the voltage at J207-23 on DC Controller PCB (PW12020) with a multi-meter. Device Status Mode Signal Code: 4A Is it 0Vdc?	No	Replace the DC Controller PCB (PW12020) with the new one.
Wires	5	Check the wires between AC Terminal PCB (PW12010) and DC Controller PCB (PW12020). Are wires connected properly?	No	Connect the wires properly
			Yes	Replace the DC Controller PCB (PW12020) with the new one.

(U-06) Exit Cover Open Error

Cause	Checking order	Checking	Result	Treatment
Exit Cover	1	Is the Exit Cover opened?	Yes	Close it.
Switch (MS1)	2	Check the voltage at J112-4 on AC Terminal PCB (PW12010) with a multi-meter. Is it 24Vdc?	No	Replace the Switch with the new one.
AC Terminal PCB (PW12010)	3	Check the voltage at J113-7 on AC Terminal PCB (PW12010) with a multi-meter. Is it 0Vdc?	No	Replace the AC Terminal PCB (PW12010) with the new one.
DC Controller PCB (PW12020)	4	Check the voltage at J207-22 on DC Controller PCB (PW12020) with a multi-meter. (Signal Code: 49) Is it 0Vdc?	No	Replace the DC Controller PCB (PW12020) with the new one.
Wires	5	Check the wires between AC Terminal PCB (PW12010) and DC Controller PCB (PW12020). Are wires connected properly?	No	Connect the wires properly
			Yes	Replace the DC Controller PCB (PW12020) with the new one.

Toner Empty

Cause	Checking order	Checking	Result	Treatment
Toner Cartridge	1	Is the Toner Cartridge once emptied and reused?	Yes	Use a new, genuine Toner Cartridge.
	2	Does the Toner Cartridge contain almost no toner in it?	No	Replace the Toner Cartridge with a new one.
Toner Motor (M6)	3	Select Device Operation Mode, and try to make the Toner Motor work alone. (Signal Code: 2A) Is the Toner Motor rotated? **NOTE** **Refer to [8.5 Device Operation Mode].**	No	Check the wires among Toner Motor, Driver PCB (PW12050) and DC Controller PCB (PW12020). If there is no problem on wires, replace the Toner Motor with the new one.
Toner Sensor (TLS1)	4	Check that the Toner Sensor is buried under the toner. Then, check the status of Toner Sensor in Device Status Mode. (Signal Code: 0E) Does is it “H” when TLS1 is covered with toner? And is it “L” when TLS1 is not covered with toner? **NOTE** **Refer to [8.3 Device Status Mode].**	No	Replace the Toner Sensor with the new one.
			Yes	Replace the DC Controller PCB (PW12020) with the new one.

Roll Replacement

Cause	Checking order	Checking	Result	Treatment
Roll media	1	Is there any suitable roll media that are being required for the proceeding job? ex) print job specifies “film” but no film in any Roll Decks	No	Load a suitable roll media to any Roll Deck.
	2	Is a roll media in the selected Roll Deck emptied?	Yes	Load a new roll paper.
Setting condition of roll paper	3	Is a roll media in the selected Roll Deck set correctly?	Yes	Set it correctly.
Paper End Clock Sensor	4	Check the status of following sensors in Device Status Mode. 1. Roll Feed Sensor 1 (Signal Code: 51) 2. Roll Feed Sensor 2 (Signal Code: 53) 3. Roll Feed Sensor 3 (Signal Code: 55) 4. Roll Feed Sensor 4 (Signal Code: 57) Is the status switched between “H” and “L” when the roll paper is transported? **NOTE** **Refer to [8.3 Device Status Mode].**	No	1. Check whether the concerning roll media is set properly. 2. Check the wires of each sensor. 3. If there is no problem on media loading and wires, replace the abnormal sensor with a new one.
			Yes	Replace DC Controller PCB (PW12020) with a new one.

7. 2. 2 Countermeasures against Service Call Errors

(E-01) Fuser Temperature Rising Error

Cause	Checking order	Checking	Result	Treatment
Error mask	1	Have you ever masked the error in Jam/Error Mask Mode since "E-01" occurred? **NOTE** **Refer to [8.8 Jam/Error Mask Mode].**	No	Mask "E-01" in Jam/Error Mask Mode.
Wires	2	Are wires connected properly among Heater, SSR1, SSR2 and Thermistor 1?	No	Connect the wires properly.
Heater (H1, H2)	3	Disconnect the Power Cord, and then check the resistance of the Heater with a multi-meter. Is the resistance 50ohms on the Heater?	No	Replace the Heater Unit with the new one.
Thermistor (TH1)	4	Check that the Fuser Unit is colder than 100 degrees Centigrade. Then, check the Fuser Roller Temperature in Information Mode. (Signal Code: 08) Is the analog voltage increasing gradually? **NOTE** **Refer to [8.4 Information Mode].**	No	Replace the Thermistor with the new one.
DC Driver PCB (PW12050) Fuse PCB (PW9690)	5	(See the next page.)		
Relay (RY2, RY3)	6	(See the next page.)		
SSR (SSR1, SSR2)	7	(See the next page.)		

Cause	Checking order	Checking	Result	Treatment
DC Driver PCB (PW12050) Fuse PCB (PW9690)	5	Check that the machine is turned on. Then, check the voltage of orange lead line and gray one, which are on the coil side of Relay (RY2 and RY3). Is the following voltage kept on each lead line? Orange lead line : 24V Gray lead line : 0V	No	Replace the DC Driver PCB (PW12050) with the new one.
		Is the Fuse F903 voltage kept the following voltage?	No	Replace the Fuser PCB (PW9690).
Relay (RY2, RY3)	6	Check that the machine is turned on. Then, check the voltage on the Heater side of Relay (RY2 and RY3). Is the rated voltage kept 230V on that point?	No	Replace the Relay (RY2 or RY3) with the new one.
SSR (SSR1, SSR2)	7	Check that the machine is turned on. Then, check the voltage at J209-1 and J209-2 on the DC Controller PCB (PW12020) with a multimeter. Is it 0V?	Yes	Replace the SSR1 or SSR 2 with the new one.
			No	Replace DC Controller PCB (PW12020) with a new one.
AC Terminal PCB (PW12010)	8	Check the voltage J114-1 and J114-4. Are they equal? Check the voltage J114-2 and J114-5. Are they equal?	No	Replace AC Terminal PCB (PW12010) with the new one.
DC Power Supply (DCP4)	9	Check that the machine is turned on. Then, check the voltage at J110-2 on DC Controller PCB (PW12020) with a multimeter. Is it 24Vdc?	No	Replace DC Controller PCB (PW12020) with a new one.

Note: RY2 - SSR1 - FHEAT_1 : For H1 (inside Fuser Lamp) (J208-15)
RY3 - SSR2 - FHEAT_2 : For H2 (outside Fuser Lamp) (J208-16)

(E-02) Fuser Over Temperature Error

Cause	Checking order	Checking	Result	Treatment
Error mask	1	Have you ever masked the error in Jam/Error Mask Mode since "E-02" occurred? **NOTE** **Refer to [8.8 Jam/Error Mask Mode].**	No	Mask "E-02" in Jam/Error Mask Mode.
Wires	2	Are wires connected properly among SSR1, SSR2, Relay 2, Relay 3, Thermistors and DC Driver PCB?	No	Connect the wires properly.
SSR1, SSR2	3	Check the Fuser temperature in the Enter the Service Mode and select Information Mode. (Signal Code: 13) Does the temperature exceed 200 degrees Centigrade? **NOTE** **Refer to [8.4 Information Mode].**	Yes	Replace the SSR1 or SSR2 with the new one.
Thermistor (TH1)	4	Check that the Fuser Unit is colder than 100 degrees Centigrade. Check the analog voltage sent from Thermistor in Information Mode. (Signal Code: 15) Is the analog voltage 3.00V or larger value? (Reference) When the Fuser temperature reaches the specified degree, the analog voltage becomes about 1V. **NOTE** **Refer to [8.4 Information Mode].**	No	Replace the Thermistor with the new one.

Note: If the temperature exceeds 200 degrees Centigrade, "E-02" is indicated.

(E-03) Main Motor Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Are wires connected properly near Main Motor?	No	Connect the wires properly.
Main Motor (M1)	2	Select Device Operation Mode, and try to make the Main Motor work alone. (Signal Code: 80) Is the Main Motor rotated? **NOTE** **Refer to [8.5 Device Operation Mode].**	No	Replace Main Motor or DC Controller PCB (PW12020) with the new one.

(E-04) Developer Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Are wires connected properly among Deve Home Position Sensor (PH9), DC Controller PCB, Driver PCB (PW12050) and Deve Press Motor (M7)? Is the connector of Developer Unit connected properly?	No	Connect the wires properly.
Deve Press Motor (M7) Driver PCB (PW12050)	2	Turn off the machine, and then turn it on again. Does the Developer Unit move at that time?	No	Replace either Deve Press Motor (M7) or Driver PCB (PW12050) with the new one.
Deve Home Position Sensor (PH9)	3	Check the status of Deve Home Position Sensor in Device Status Mode. (Signal Code: 1B) Then, turn off the machine and turn it on again. Is the status of Deve Home Position Sensor changed from L to H a little later after turning on the machine? **NOTE** **Refer to [8.3 Device Status Mode].**	No	Replace the Deve Home Position Sensor with the new one.

(E-06) Counter Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Are wires connected properly between Counter and DC Controller PCB (PW12020)?	No	Connect the wires properly.
Counter	2	Check the voltage at J208-9 on DC Controller PCB (PW12020) while making a print. Is the voltage at that point changes from 24V to 0V momentarily when the ejected print count is about 1 sq. ft.?	Yes	Replace the Counter with the new one.
			No	Replace DC Controller PCB (PW12020) with a new one.

(E-07) Cutter Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Are wires connected properly between Cutter Motor and Driver PCB (PW7756)?	No	Connect the wires properly.
Cutter Home Position Sensor (PW3185)	2	Check the status of Cutter Home Position Sensor in Device Status Mode. 1. Cutter Home Position 1 (Signal Code: 5B) 2. Cutter Home Position 2 (Signal Code: 5C) Does the signal changes L→H→L within 1.5sec when the Cutter Motor works? (In case of Initialization, within 4sec.) **NOTE** **Refer to [8.3 Device Status Mode].**	No	Replace the Cutter Unit with the new one.
Cutter Motor (M3)	3	Does the Cutter Motor rotate?	No	Replace the Cutter Unit with the new one.
			Yes	Replace the Driver PCB (PW7756) with the new one.

(E-14) Fuser Motor Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Are wires connected properly between Fuser Motor and DC Controller?	No	Connect the wires properly.
Fuser Motor (M4)	2	Select Device Operation Mode, and try to make the Fuser Motor work alone. (Signal Code: 86) Is the Fuser Motor rotated? **NOTE** **Refer to [8.5 Device Operation Mode].**	No	Replace Fuser Motor or DC Controller PCB (PW12020) with the new one.

(E-16) Wire Cleaning Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Are wires between Imaging Charger and Driver PCB (PW12051) connected properly?	No	Connect the wires properly.
Wire Cleaning Motor (M5)	2	Select Device Operation Mode, and try to rotate the Wire Cleaning Motor. (Signal Code: 88) Is the Wire Cleaning Motor rotated? **NOTE** **Refer to [8.5 Device Operation Mode].**	No	Replace the Wire Cleaning Motor with the new one.
			Yes	Replace the Driver PCB (PW12051) with the new one.

(E-21) Fuser Thermostat Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Are wires connected properly among Thermostat, AC Terminal PCB and DC Controller PCB?	No	Connect the wires properly.
Thermostat (TS1A, TS1B)	2	Check the resistance of the Thermostat. Is there any resistance?	No	Replace the Thermostat with the new one.
AC Terminal PCB (PW12010)	3	Check the voltage at J112-1 and J113-6 on the AC Terminal PCB with a multi-meter. Does the voltage of J113-6 show 0Vdc when that of J112-1 shows 24Vdc?	No	Replace the AC Terminal PCB (PW12010) with the new one.
			Yes	Replace the DC Controller PCB (PW12020) with the new one.
Fuse PCB (PW9690)	4	Check the voltage at J902B-1 and Fuse F901 with a multi-meter. Is it 24Vdc?	No	Replace F901 with a new one.
	5	Check the voltage at J208 on DC Controller PCB (PW12020). Is it 24Vdc?	No	Connect the wires properly.

(E-27) Density Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Is the wire between Density Sensor and DC Controller PCB (PW12020) connected properly?	Yes	Connect the wires properly.
Density Sensor (PH10)	2	Can you fix the problem if you replace Density Sensor?	No	Replace DC Controller PCB (PW12020) with a new one.

(E-40) Outer Device Error

Cause	Checking order	Checking	Result	Treatment
Outer Device	1	Did an error occur on the Outer Device (Auto Stacker, Folder, etc.) connecting to the printer as the option?	Yes	Clear the error.
Wires	2	Are wires connected properly among Transmission PCB, Reception PCB and DC Controller PCB?	No	Connect the wires properly.
Transmission PCB (PW5490) Reception PCB (PW5491)	3	Try to replace Transmission PCB or Reception PCB. Can you fix the problem?	Yes	OK
			No	Replace the DC Controller PCB (PW12020) with the new one.
Adjustment Mode No.31.	4	Check for Adjustment Mode No.31. **NOTE** **Refer to [8.6 Adjustment Mode].**		In case Auto Stacker or Folder is not connected, it should be “0”.

(E-43) RFID Error

Cause	Checking order	Checking	Result	Treatment
Wires	1	Is the wire between IC-TAG R and DC Controller PCB (PW12020) connected properly?	Yes	Connect the wires properly.
IC-TAG R (RFID)	2	Can you fix the problem if you replace IC-TAG R?	No	Replace DC Controller PCB (PW12020) with a new one.

(E-51) High Voltage Power Supply Error

Cause	Checking order	Checking	Result	Treatment
Feed Back Signal	1	Check the status of feed back signal from High Voltage Power Supply in Device Status Mode "1", and 1. HV Image Corona feed back (Signal Code: 60) 2. HV Transfer Corona feed back (Signal Code: 61) 3. HV Separation Corona feed back (Signal Code: 62) 4. Dev Bias feed back (Signal Code: 63) Is the status of feed back signal "H" when test print is taken? "H" = normal "L" = abnormal **NOTE** **Refer to [8.3 Device Status Mode].**	Yes	Check if its load is leaked or not. Note: When the test print is finished, all of these items go back to "H".

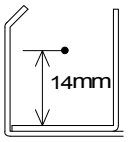
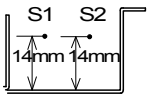
7. 3 Troubleshooting against Image Quality Defect

Each following list shows the method to fix the trouble. When you face to one of the following troubles, refer to the section “Cause” in the list. Following the “Checking order”, answer the question of the “Checking item” by either “Yes” or “No”. If your answer is same with the “Result”, do as mentioned in the “Treatment”.
If your answer is different from the “Result”, go on to the next “Cause”.

Since many adjustments and checks are explained in the Service Mode, refer to the concerning pages in order to understand these adjustments and checks.
(After finishing each treatment, print out Test Patterns No.1 and No.3 for checking whether the defective image is cleared or not. If required, print out another pattern.)

7. 3. 1 Basic Image Adjustment

Before adjustment, check the Specifications of the machine.

	Related VR	Service Mode	Check point		Measurement		Corona Height (L=R)
			Red (+)	Blk (-)			
Image Corona	VR101	Device Operation: Code 78	CP11	GND	-1.6VDC (-1.6mA)		Not adjustable
Grid Plate	---	Adjustment: No.1f	---	---	-700V+/-10V		
Transfer Corona	---	Device Operation: Code 79	---	---			
	---	Adjustment: No.1a (Plain) No.1b (Tracing) No.1c (Film)	---	---	1.3VDC (+1.3mA)		
					1.3VDC (+1.3mA)		
					1.3VDC (+1.3mA)		
Separation Corona	VR302	Device Operation: Code 7a	CP31	CPCOM	4.60 VDC (4.60KVrms)		
	VR303		CP33	GND	-300VDC		
Developer Unit					Printing Cycle	Cleaning Cycle	
Out 2	---	Device Operation: Code 7b	OP2	GND	-200VDC (-200 to -250*)		Developer Roller
	---		OP2	GND		+350VDC CN302-5 = H	
Out 1	VR601	Adjustment: No.15 (Plain) No.16 (Tracing) No.17 (Film)	OP1	OP2	The same voltage with Developer Roller (-100VDC: High Coverage Mode)		Toner Supply Roller
Out 3	---		OP3	OP2	-50VDC (-50 to -140*)		Regulation Roller
Cleaning Roller	VR001	Device Operation: Code 7e	OP5	GND		-500VDC	
	VR002		OP5	GND	+700VDC CN502-3 = H		

***** Developer / Regulation Bias are always under adjustment by Density Compensation Process.

7. 3. 2 Troubles

(1) Too light image (Only the halftone image)

(Print out Test Pattern No.1 and No.3 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
	1	Was this problem cleared after basic image adjustment is done?	Yes	OK
LED Head	2	Is the Lens Array of the LED Head dirty?	Yes	Clean it.
Copying media	3	Can you fix the problem if you use a newly unpacked copying media?	Yes	1. Since the copying media is humidified, advise your customer of proper way to store the copying media. 2. Explain to your customer that in case other than recommended paper is used, there is a possibility that image quality gets worse a little.
Image Corona	4	Is the Image Corona dirty?	Yes	Clean the whole unit, or replace the Corona Wire with the new one.
		Is a proper power supplied to the Image Corona?	No	Adjust or replace the High Voltage Power Supply.
Pre-exposure Lamp	5	Does the Pre-exposure Lamp light up correctly?	No	Check whether the connector is connected or not to the Pre-exposure Lamp. Or check or replace the Pre-exposure Lamp PCB.
Pre-transfer LED	6	Does the Pre-transfer LED light up correctly?	No	Check whether the connector is connected or not to the Pre-transfer LED. Or check or replace the Pre-transfer LED PCB.
Transfer / Separation Corona	7	Is the Transfer / Separation Corona dirty?	Yes	Clean the whole unit, or replace the Corona Wire with the new one.
		Is a proper power supplied to the Transfer Corona?	No	Adjust or replace the High Voltage Power Supply.
Contact Point of the Developer Bias	8	Does the Contact Point of the Developer Bias firmly touch the Developer Unit?	No	Contact it firmly to the Developer Unit. Grease it with the electrically conductive grease.
Developer Bias Power Supply	9	Can you fix the problem if you replace the Developer Bias Power Supply with the new one?	Yes	OK.
Set Position of Developer Unit	10	Is the pushing Cam of the Developer Unit stopping at a correct position?	No	Check Cartridge Motor whether it is pushing Developer Unit properly. Check Developer Pushing Cam.
Developer Unit	11	Is the Developer Roller covered with the toner evenly?	No	Check the Developer Unit for finding out the cause.
			Yes	Replace Photoconductive Drum

(2) Too light image (Halftone and solid black)

(Print out Test Pattern No.1 and No.3 for checking. If required, print out another pattern.)

Cause		Checking order	Checking Item	Result	Treatment
		1	Does the image get better after basic image adjustment is done?	Yes	OK
		2	Turn the Main Switch off during printing cycle. Then slide the Process Unit to right side in order to make Photo Conductive Drum free. Is the image on Photo Conductive Drum normal before transportation?	No	Skip to item 9
Defective Transfer	Transfer / Separation Corona	3	Is the Transfer / Separation Corona set firmly?	No	Set Transfer / Separation Corona firmly.
			Is there a leaking on Transfer / Separation Corona?	Yes	Clean the Transfer / Separation Corona, and set it correctly.
	Copying media	4	Can you fix the problem if you use a newly unpacked copying media?	Yes	1. Since the copying media is humidified, advise your customer of proper way to store the copying media. 2. Explain to your customer that in case other than recommended paper is used, there is a possibility that image quality gets worse a little.
	Lead Wire of HVP (High Voltage Power Supply)	5	Does it have a proper resistance? The resistance of the Lead Wire is approx. 10k-ohms.	No	Replace the Lead Wire.
	Transfer Corona	6	Is a proper voltage supplied to the Transfer Corona?	No	Adjust or replace the High Voltage Power Supply.
	DC Controller	7	Is the signal checked properly?	No	Replace the DC Controller.
	Contact Point of the Developer Bias	8	Does the Contact Point of the Developer Bias firmly touch the Developer Unit?	No	Contact it firmly to the Developer Unit. Grease it with the electrically conductive grease.
Defective Develop-ment	Developer Unit	9	Is the Developer Roller covered with the toner evenly?	No	Check the Developer Unit for finding out the cause.
		10	Is the Developer Unit set properly? (Check that Spacer Roller of Developer Unit is tightly contacted to Photoconductive Drum.)	No	Set Developer Unit properly.
	Set Position of Developer Unit	11	Is the pushing Cam of the Developer Unit stopping at a correct position?	No	Check Cartridge Motor whether it is pushing Developer Unit properly. Check Developer Pushing Cam.
	Toner Sensor	12	Is there enough toner in the Developer Unit?	No	1. Check Toner Sensor. 2. Check connector and conductivity of harness.
				Yes	Replace Photoconductive Drum.

(3) Extremely light image (The whole image)

(Print out Test Pattern No.1 and No.3 for checking. If required, print out another pattern.)

Cause		Checking order	Checking Item	Result	Treatment
		1	Does the image get better after basic image adjustment is done?	Yes	OK
		2	Turn the Main Switch off during printing cycle. Then slide the Process Unit to right side in order to make Photo Conductive Drum free. Is the image on Photo Conductive Drum normal before transportation?	No	Skip to item 9.
Copying media (Film)		3	Is film used for printing?	Yes	Try to validate the Film Mode in the Service Mode. Refer to [8.6.3 (49) Film Mode].
Development Driving System		4	Is the Developer Roller rotating?	No	Check the Driving System of Developer Unit.
Defective Transfer	Transfer / Separation Corona	5	Is the Transfer / Separation Corona set firmly?	No	Set Transfer / Separation Corona firmly.
			Is there a leaking on Transfer / Separation Corona?	Yes	Clean the Transfer / Separation Corona, and set it correctly.
	Lead Wire of HVP	6	Does it have a proper resistance? The resistance of the Lead Wire is approx. 10k-ohms.	No	Replace the Lead Wire.
	HV2	7	Is a proper voltage supplied to the Transfer Corona?	No	Adjust or replace the High Voltage Power Supply.
	DC Controller	8	Is the signal checked properly?	No	Replace the DC Controller.
	Copying media	9	Can you get much darker image if you use a newly unpacked copying media?	Yes	Use a new Roll. Use a different type of material of Roll.
Defective Develop-ment	Developer Unit	10	Is the Developer Unit set properly? (Confirm that Spacer Roller of Developer Unit is tightly contacted to Photoconductive Drum.)	No	Set Developer Unit properly. In case you have removed the Process Unit before turning OFF the Main Switch, Spacing Roller might be not contacted on the Photoconductive Drum.
	Lead Wire of Developer Bias	11	Is the Lead Wire of Developer Bias connected properly?	No	Connect the Lead Wire properly.
	Developer Bias	12	Is a proper Developer Bias supplied to the Developer Unit? Check it during printing, or in the Service Mode.	No	Check the Developer Bias Power Supply or contacts. (Check both ON signal and Analog Input.)
	DC Controller	13	Is the signal checked properly?	No	Replace the DC Controller.

(4) Different copy density

(Print out Test Pattern No.1 and No.3 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Image Corona	1	Is the Image Corona dirty?	Yes	Clean the whole unit, or replace the Corona Wire with the new one.
		Is the wire height much different between both sides?	Yes	Have a same height at both sides.
Set Position of Developer Unit	2	Is the Developer Unit set properly? (Check that Spacer Roller of Developer Unit is tightly contacted to Photo Conductive Drum.)	No	Check the pushing system of Developer Unit.
LED Head	3	Is the LED Head dirty?	Yes	Clean it.
Pre-exposure Lamp	4	Are all lamps of Pre-exposure Lamp light up during printing?	No	1. Replace Pre-exposure Lamp. 2. Replace DC Controller.
Developer Unit	5	Is the Developer Roller covered with the toner evenly?	No	Check if Regulation Roller is cleaned properly.
		Is toner in the Developer Unit even?	Yes	Check the levelling of the machine.

(5) Totally appeared foggy image

(Print out Test Pattern No.1 and No.4 (White) for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
	1	Does the image get better after basic image adjustment is done?	Yes	OK
Developer Unit	2	Is the Developer Roller insulated from the ground?	No	Check the Developer Roller and the connector of Developer Unit.
Image Corona	3	Is the white paper also foggy, when white paper is copied?	Yes	Check High Voltage Power Supply.
Developer Bias	4	Is a proper Developer Bias supplied to the Developer Unit? Check it during printing, or in the Service Mode.	No	Check or replace the Developer Bias Power Supply.
DC Controller	5	Is the signal checked properly?	No	Replace the DC Controller.
Photoconductive Drum	6	Have you used the Drum exceeding its part life?	Yes	Replace the Drum with the new one.

(6) Vertically blurred or foggy black wide line

(Print out Test Pattern No.1 and No.4 (White) for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Image Corona	1	Is the Image Corona dirty?	Yes	Clean the Image Corona Wire. Or clean the whole unit, or replace the Corona Wire with the new one.
		Does the Cleaning Pad stay at left side?	No	Confirm the movement using Device Operation Mode Signal Code 88.
		Does the Cleaning Pad move properly? (approx. 45 seconds for one way)	No	Replace Image Corona Head.
Developer Unit	2	Is the Developer Roller covered with the toner evenly?	No	Check if Regulation Roller is located properly.
External Light	3	Check if light from outside is affecting to the Photoconductive Drum	Yes	Put the cover correctly.

(7) Vertical Clear Black Narrow Line

(Print out Test Pattern No.1 and No.4 (white) for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Image Corona	1	Is there anything like a filament on the Grid Plate? And does it touch the Photoconductive Drum?	Yes	Remove it.
		Is the Image Corona dirty?	Yes	Clean the Image Corona Wire using Device Operation Mode. Or clean the whole unit, or replace the Corona Wire with the new one.
Foreign Object is affecting.	2	Is Foreign Object on Corona or LED Head touching to the Photo Conductive Drum?	Yes	Remove it.
Photoconductive Drum	3	Is there any black line or any damage on the Drum, which corresponds with the position of the black line on the print?	Yes	Clean off the black line. Replace the Drum if it is damaged. 1. If it is scratched, confirm the cause of the scratch before replacement. 2. Check if Transfer Guide is touched on Drum. 3. Check whether or not the Separation Finger is also damaged.

(8) Vertical White Line

(Print out Test Pattern No.1 and No.3 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Image Corona	1	Is there anything like a filament on the Grid Plate? And does it touch the Drum?	Yes	Remove it.
Dirty LED Head	2	Does this problem disappear, when the LED Head is wiped?	Yes	OK
Transfer / Separation Corona	3	Is there any foreign substance or dirtiness on Transfer / Separation Corona?	No	Clean the Transfer / Separation Corona.
Developer Unit	4	Is the Developer Roller covered with the toner evenly?	No	Check the Regulation Roller.
Entrance of Fuser Unit	5	Is there any foreign substance or dirtiness around the entrance of Fuser Unit?	Yes	Remove it.
Photoconductive Drum	6	Is there any damage on the Drum in the circumference direction?	Yes	Clean off the black line. Replace the Drum if it is damaged. 1. If it is scratched, confirm the cause of the scratch before replacement. 2. Check if Transfer Guide is touched on Drum. 3. Check whether or not the Separation Finger is also damaged.

(9) Void of image

(Print out Test Pattern No.1 and No.6 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
	1	Make a half tone image using a Service Mode. Is there any white area in the image?	No	Jump to step 4.
Developer Unit	2	Does it repeat approx. 160mm pitch?	Yes	1. Clean up **Counter Roller**. (For a gap between Drum and Development roller) 2. Clean dried the surface of Developer Roller. 3. In case the surface of Developer Roller is scratched, replace it.
		Does it appear vertically mainly?	Yes	Check if Developer Unit has enough Toner. Check Toner Sensor. 0V when “No Toner”. Device Status Signal Code 0B
Photo Conductive Drum	3	Does the defective image appear on the print at intervals of about 251mm?	Yes	Clean the “Drum”. Replace if “Drum” is scratched. 1. If it is scratched, confirm the cause of the scratch before replacement. 2. Check if Transfer Guide is touched on Drum. 3. Check whether or not the Separation Finger is also damaged.
Copying media	4	Does this problem disappear when new paper is used?	Yes	Use a newly unpacked copying media. Advise your customer of proper way to store the copying media.

(10) Dirt on the back of the copy

(Print out Test Pattern No.1 and No.4 (White) for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
	1	Does the image get better after basic image adjustment is done?	Yes	OK
Developer Unit	2	Is the Toner Receiver of Developer Unit full of toner?	Yes	Clean the Developer Unit.
Transfer Guide	3	Is the Transfer Guide dirty?	Yes	Clean it. Then, check the gap between Transfer Guide and Drum. (1.0mm).
Paper Feeder Unit	4	Is the Feeder Unit dirty?	Yes	Clean it. And check where the toner spills out.
Fuser Unit	5	Is the Entrance Guide Plate dirty?	Yes	Clean it.
		Are the Exit Rollers(both upper and lower) dirty?	Yes	Clean them.

(11) Defective fusing

(Print out Test Pattern No.1 and No.3 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Fuser Unit	1	Does the temperature rise after Main Switch is turned ON?	No	Refer to “E-01” on page 7-23.
Copying media	2	Is the Media Selector adjusted to the material of the actually used copying media?	No	Adjust it properly.
	3	Can you fix the problem if you use a newly unpacked copying media?	Yes	Since the copying media is humidified, advise your customer of proper way to store the copying media.
Fuser Temperature	4	Is the Fuser Temperature selected properly against to the currently used paper, such as weight?	Yes	Check if the Fuser is not burned out. If it is burned out, replace it. Check if the Back up Roller is pressed against to the Fuser Roll.
			No	Select the proper temperature. Then make 10 continuous print using the same media and A0 or wider Roll with #1 test pattern. Check if fusing is done properly.
Print size (small)	5	Is the poor fusing problem occurs when the print size is small?	Yes	Try to compensate the fusing temperature for the small size in the Service Mode. (Increase the setting value.) Refer to [8.6.3 (6b) (6c) (6d) Fuser Temperature Compensation for small size].

(12) Incorrect Image Placement, No Leading Edge

When the image white area exists at 5mm (+/- 2mm) from the leading edge, the printer is normal.
(Print out Test Pattern No.1 and No.6 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Paper Supply Roller Paper Feeding Roller	1	Is the life time of Paper Supply Roller or Paper Feeding Roller of the related deck exceeding the expected life?	Yes	In case it is exceeded the life time, replace to a new Roller.
Paper Gate Clutch (MC3)	2	Is the Paper Gate Clutch working properly without slip?	No	Check or replace the Paper Gate Clutch.
Leading Margin setting	3	Is the Leading Margin setting proper?	No	Check the setting value. If it is not proper, adjust it.

(13) Jitter

(Print out Test Pattern No.1 and No.6 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Drum driving area and Photo Conductive Drum	1	Does the jitter appear on the print at intervals of about 251mm?	Yes	1. Check both Drum Gear and driving gears (80T and 50T). 2. Check scratch mark or foreign substances on the Drum edges, where contacts to **Counter Rollers on Developer Unit.** (For the gap between Drum and Developer Roller)
Developer Roller	2	Does the jitter appear on the print at intervals of about 160mm?	Yes	Check the surface of Developer Roller, if it is scratched or not.
Developer Unit	3	Does this jitter appear every 5.3mm pitch?	Yes	Check 30T Gear and 42/17T Gear at the Driven side.
		Does this jitter appear every 5.7mm pitch?	Yes	Check 4 kinds of Gears at the Drive side.
		Does this jitter appear every 13mm pitch?	Yes	1. Check 34T Gear. 2. Check 28T Gear. 3. Check 31T Gear.

(14) Less sharpened image

(Print out Test Pattern No.1 and No.8 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Dirtiness of LED Head	1	Does this problem disappear if LED Head is cleaned?	Yes	OK
Position of LED Head	2	Does this problem disappear if LED Head is mounted properly?	Yes	OK
			No	Adjust the height using shims.
Transfer / Separation Corona	3	Does this problem disappear if Transfer / Separation Corona is cleaned?	Yes	OK

(15) Uneven image vertically

(Print out Test Pattern No.6 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Image Corona	1	Is the Image Corona Head dirty?	Yes	Clean Image Corona.
Transfer / Separation Corona	2	Does this problem disappear if Transfer / Separation Corona is cleaned?	Yes	OK
Focus of LED Head	3	Does this problem disappear if LED Head is mounted properly?	Yes	OK
		Does this phenomenon show 1/3 of image?	Yes	Adjust the height using Spacers. Refer to [5.2.6 LED Head Focus Adjustment] on page 5-23.
		Does this appear every 8mm pitch?	Yes	Replace LED Head.

(16) Totally white (No image)

(Print out Test Pattern No.1 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Developer Unit Pressure	1	Is the Developer Unit pressed to the Drum during printing?	No	Check the pressure system of Developer Unit.
Developer Unit Driving Area	2	Is Developer Roller rotating during printing?	No	Check the driving system of the Developer Unit.
Developer Bias	3	Is the Electrode Plate connected properly?	No	Make a good connection.
LED Head	4	Is the connector connected firmly to the LED Head?	No	Connect it firmly.
		Turn the Main Switch OFF during printing. Shift the Process Unit to right side in order to make the Drum free. And check if the image on the Drum is normal.	No	Replace the LED Head.
Transfer / Separation Corona	5	Is the Corona Wire of the Transfer Corona broken?	Yes	Replace the Corona Wire with the new one.
		Is the Transfer / Separation Corona set properly?	No	Set the Transfer / Separation Corona firmly.
		Is the Transfer / Separation Corona leaking?	Yes	Check the Transfer / Separation Corona.
Lead Wire of Transfer Corona	6	Is the connection of the Lead Wire correct?	No	Connect it properly.
		Is the resistance of the Lead Wire correct? (It is approx. 10-kohms, normally.)	No	Replace it.
HVP	7	Does this problem disappear if HVP is replaced?	Yes	OK
DC Controller	8	Does this problem disappear if DC Controller is replaced?	Yes	OK

(17) Totally black

(Print out Test Pattern No.1 and No.4 (White) for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Image Corona and High Voltage Power Supply	1	Is the Corona Wire of the Image Corona broken?	Yes	Replace the Corona Wire with the new one.
		Is the tension of the Corona Wire enough?	No	Replace the Corona Wire with the new one.
		Is the Image Corona contacted properly through spring?	No	Check if the spring is deformed.
		Is a proper power supplied to the Image Corona?	No	Adjust the High Voltage Power Supply PCB. Or replace the PCB.
		Is the frame of Image Corona insulated from the ground?	No	Check if the Image Corona is abnormal.
DC Controller	2	Can you fix the trouble if you replace the DC Controller with the new one?	Yes	OK

(18) Creasing

(Print out Test Pattern No.1 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Media	1	Is the actual used media same with the indication of the media?	No	Correct the indication of the media to the actual used media.
	2	Is the problem cleared if the roll media is replaced to the new roll?	Yes	OK Advise your customer of proper way to store the roll media.
	3	Is the Dehumidify Heater ON despite environment is not H/H (High Temperature and High Humidity) condition?	Yes	Turn OFF the Dehumidify Heater.
Electrical Part	4	Check if Fuser Lamp, Separation Fan or Pressure Fans are working correctly.	No	Replace the defective part.
Fuser Entrance Guide	5	Is the Fuser Entrance Guide deformed? (The curve should be symmetric from the center.) Or is the Foreign Substance sticking on the Fuser Entrance Guide?	Yes	Replace the Fuser Entrance Guide. Or remove the Foreign Substance.
Nip Width	6	Are the nip widths of the both sides within the limits? Use Tracing Paper 36” or A0, and test pattern #8E. Limit value is between 11.0mm to 12.0mm.	No	Readjust the nip width. (Refer to [5.7.7 Adjustment of Nip Width] on page 5-105)
Creasing location	7	When two prints are continuously taken, does the 2nd print have also the creasing problem?	Yes	Go to the step 8.
			No	Advise your customer of proper way to store the roll media. (In case the roll is not used anymore, remove the roll from the printer soon, and put it in the bag.)
Fuser Motor Speed	8	(See the next page)		

Cause	Checking order	Checking Item	Result	Treatment
Fuser Motor Speed	8	The long print is made with the same paper width as one of occurring the creasing problem. Plain Paper : 5times long Tracing Paper (Vellum) : 2 times long When is the paper slacking occurred?	Front	Adjust the Fuser Motor Speed faster. Check that there is no vibration or Cutter Shock on the trailing part with making the long print using the same paper width as one of occurring the creasing problem. Plain Paper : 5 times long Tracing/Vellum: 2 times long (Recommended data) <Plain Paper> Adjustment Mode No.38 Size Code A0 or wider : 0 A1 : 1 A2 : 2 A3 : 3 Recommended data : +1 to +2 <Tracing Paper/Vellum> Adjustment Mode No.39 Size Code A0 or wider : 0 A1 : 1 A2 : 2 A3 : 3 Recommended data : +1 to +2
			Rear	Adjust the Fuser Motor Speed faster. Check that there is no vibration or Cutter Shock on the trailing part with making the long print using the same paper width as one of occurring the creasing problem. Plain Paper : 5 times long Tracing/Vellum: 2 times long (Recommended data) <Plain Paper> Adjustment Mode No.3E Size Code A0 or wider : 0 A1 : 1 A2 : 2 A3 : 3 Recommended data : +1 to +2 <Tracing /Vellum(A0 or wider)> Adjustment Mode No.3F Size Code : 0 Recommended data : +1 to +2 <Tracing Paper/Vellum> Adjustment Mode No.39 Size Code A1 : 1 A2 : 2 A3 : 3 Recommended data : +1 to +2

(19) Foggy Image

(Print out Test Pattern No.1 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Media	1	Is the actual used media same with the indication of the media?	No	Correct the indication of the media to the actual used media.
	2	Is the problem cleared if the roll media is replaced to the new roll?	Yes	OK Advise your customer of proper way to store the roll media.
Electrical Part	3	Check if Fuser Lamp, Separation Fan or Pressure Fans are working correctly.	No	Replace the defective part.
Fuser Entrance Guide	4	Is the Fuser Entrance Guide deformed? (The curve should be symmetric from the center.) Or is the Foreign Substance sticking on the Fuser Entrance Guide?	Yes	Replace the Fuser Entrance Guide. Or remove the Foreign Substance.
Nip Width	5	Are the nip widths of the both sides within the limits? Use Tracing Paper 36" or A0, and test pattern #8E. Limit value is between 11.0mm to 12.0mm.	No	Readjust the nip width. Refer to [5.7.7 Nip Width Adjustment] on page 5-105.

(20) Offset

(Print out Test Pattern No.22 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Media	1	Is the actual used media same with the indication of the media?	No	Correct the indication of the media to the actual used media.
	2	Does this problem happen before entering the Fuser Unit?	Yes	Check the Developer Unit and the Transfer Unit. (Fuser Unit is not related at this moment.)
Fuser Unit	3	Does this problem remain after cleaning Heater Roll?	Yes	Decrease the Fuser Temperature of the related media. (-3 to -5 deg C) Then make 10 continuous print using the same media and A0 or wider Roll with #1 S0 test pattern. Check if fusing is done properly.
			No	Finish

Note: In case Paper Jam has happened, next few prints may have this Offset problem after handling the jammed paper.

(21) Cutter Shock (Disturbance of image like “black belt” at about 190mm from trailing edge)

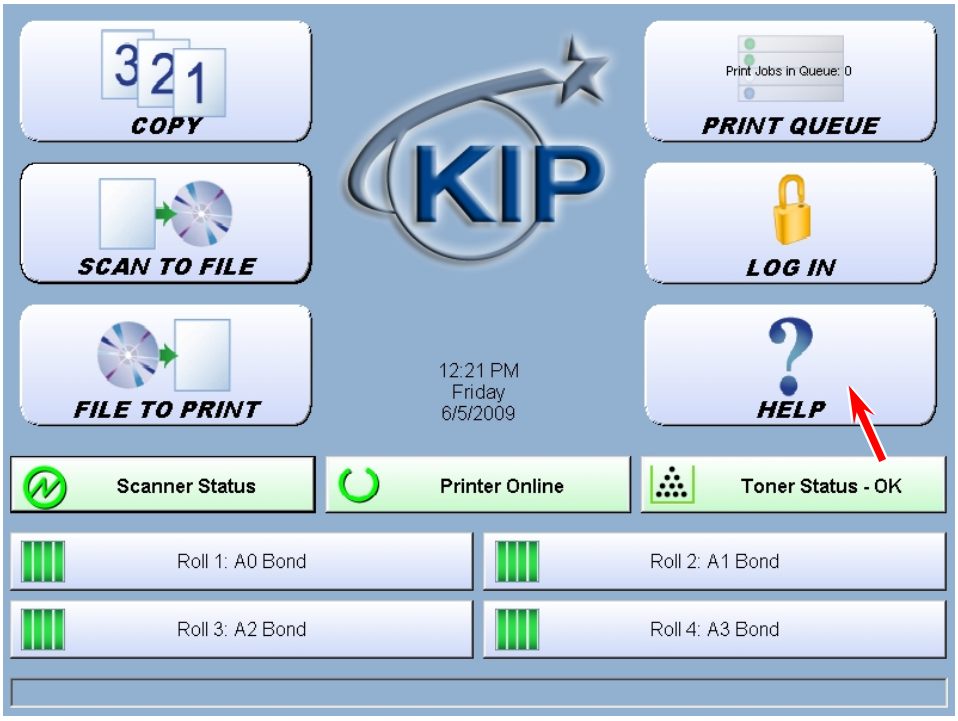
(Print out Test Pattern No.1 for checking. If required, print out another pattern.)

Cause	Checking order	Checking Item	Result	Treatment
Media	1	Is the actual used media same with the indication of the media?	No	Correct the indication of the media to the actual used media.
Fuser Motor Speed	2	Is the Cutter operation normal? (Cutter takes 0.8 sec or longer from starting to stop.)	Yes	Decrease the Fuser Motor Speed. (Recommended data) <Plain Paper> Adjustment Mode No.3E Size Code A0 or wider : 0 A1 : 1 A2 : 2 A3 : 3 Recommended data : -1 to -2 <Tracing /Vellum(A0 or wider)> Adjustment Mode No.3F Size Code : 0 Recommended data : -1 to -2 <Tracing Paper/Vellum> Adjustment Mode No.4-39 Size Code A1 : 1 A2 : 2 A3 : 3 Recommended data :-+1 to -2
			No	Check the cause and remove the problem.
Amount of paper slack at Cutter region	3	Try to increase or decrease the setting value for Adjustment Mode No.4d (Adjustment of paper slack at Cutter region) in the Service Mode. Can you fix the problem? (Increase or decrease the setting value 1(one) each by step. Do not decrease the setting value under 75.)	Yes	Finish

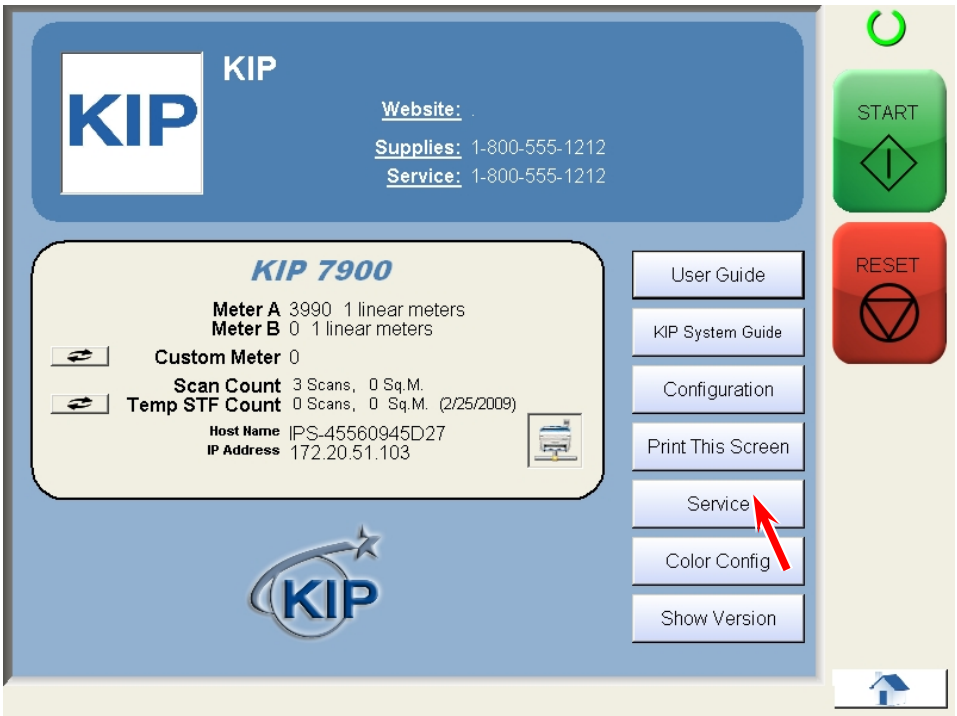
7. 4 Touch Screen Calibration

If the cursor position in the screen does not correctly match the tapped position on the panel, the touch screen should be calibrated so that the cursor is located directly underneath your finger or a stylus.

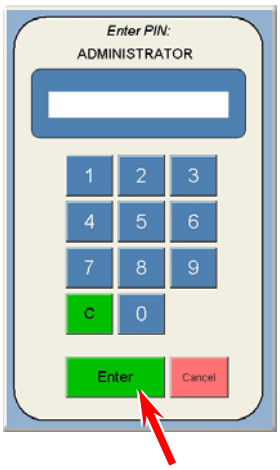
1. Press “? - Help” on Home screen.



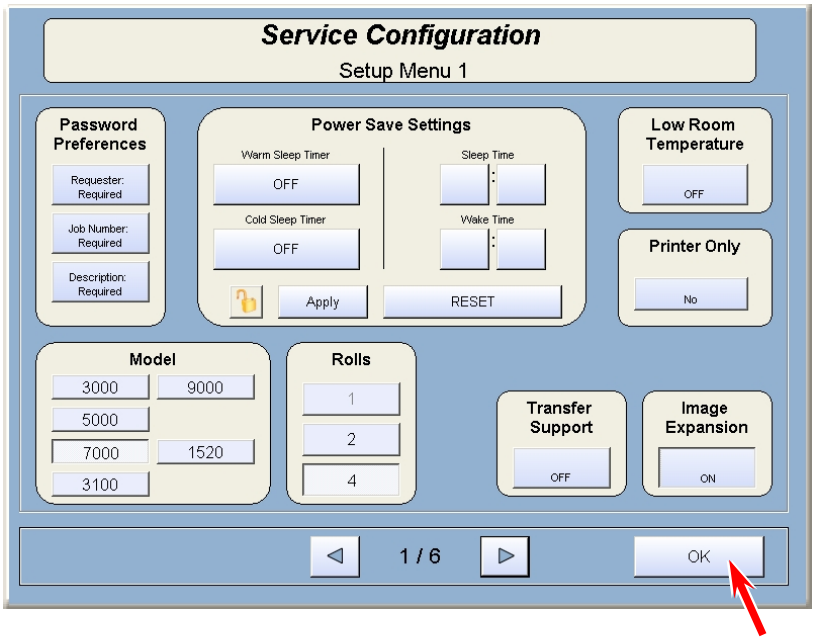
2. Press [Service].



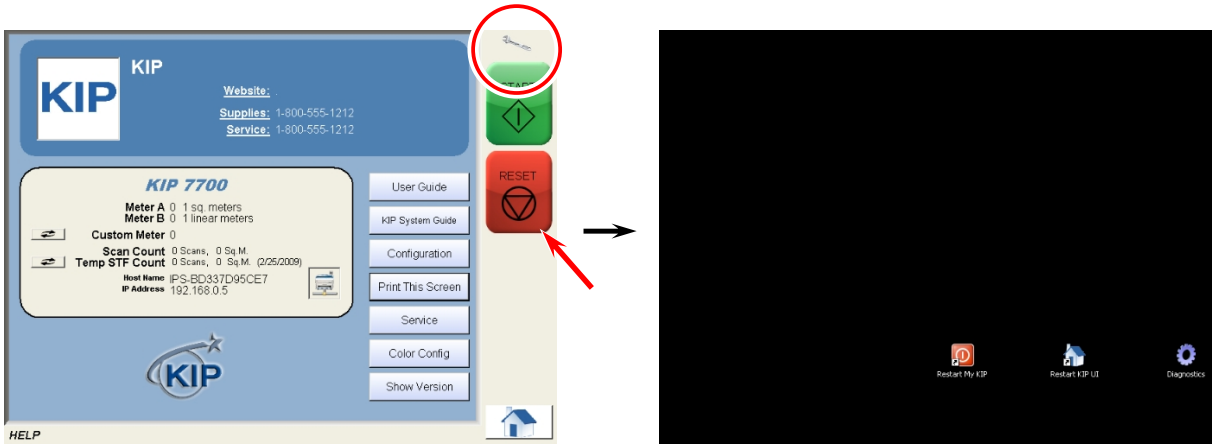
3. On-screen Keypad appears.
   Input “8495107” and press [Enter].



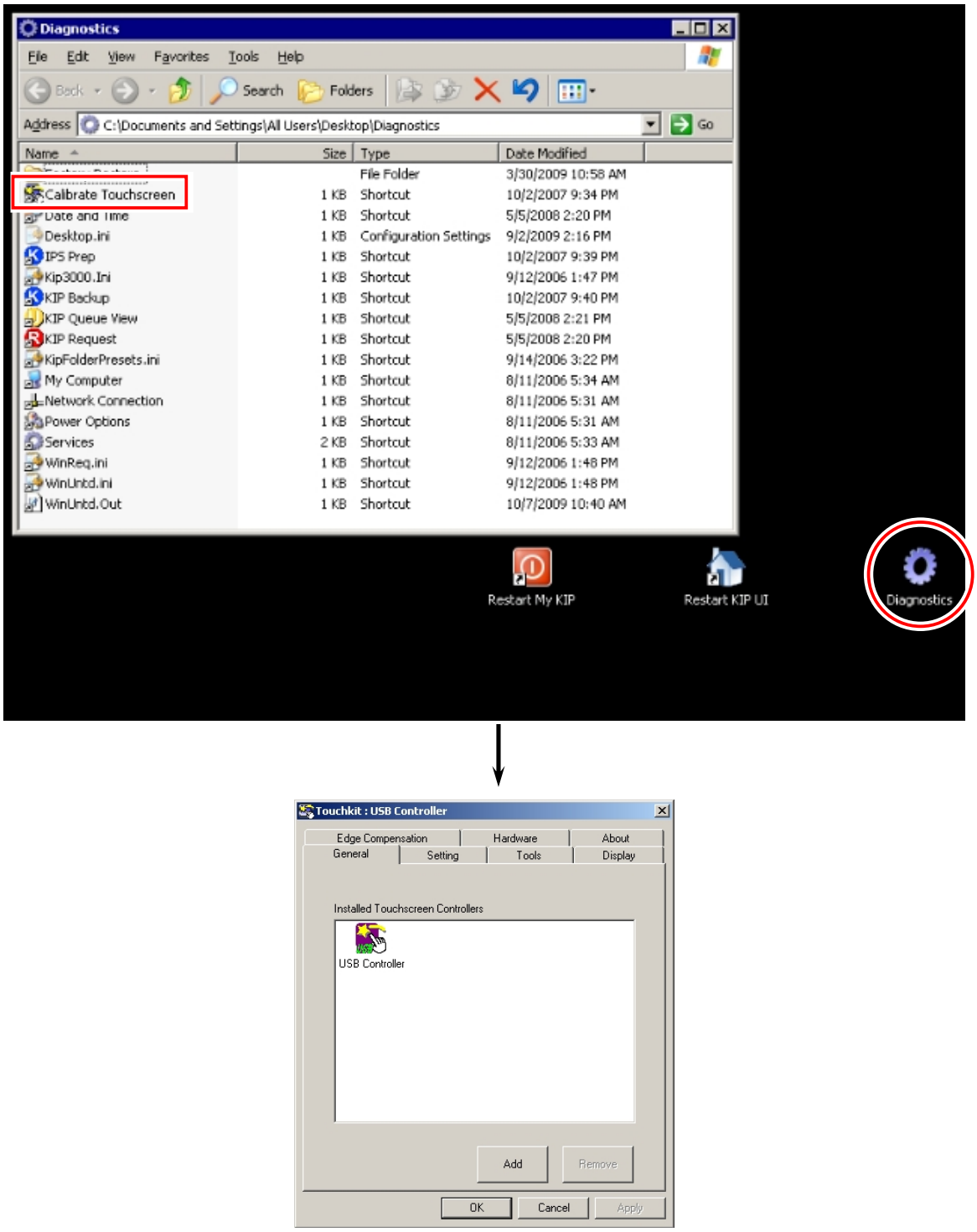
4. Service Configuration screen is displayed. Press [OK].



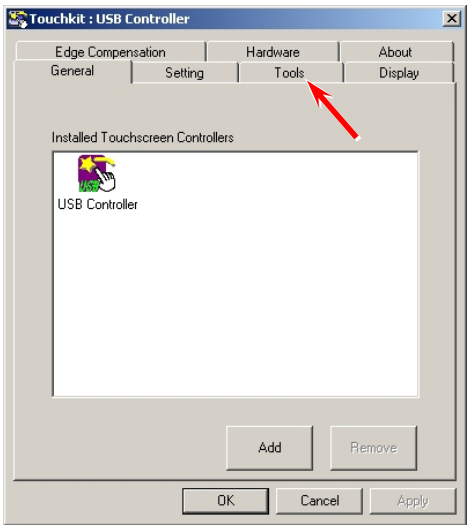
5. Make sure that a wrench symbol is indicated at the upper right of the screen.
   Press [Reset] to close UI operation window.



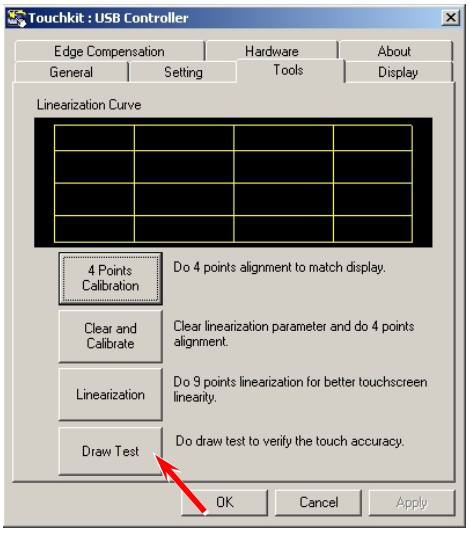
6. Tap Diagnostics folder twice as a double-click.
   Run the shortcut “Calibrate Touchscreen” for touch screen calibration.



7. Select [Tools] tab.



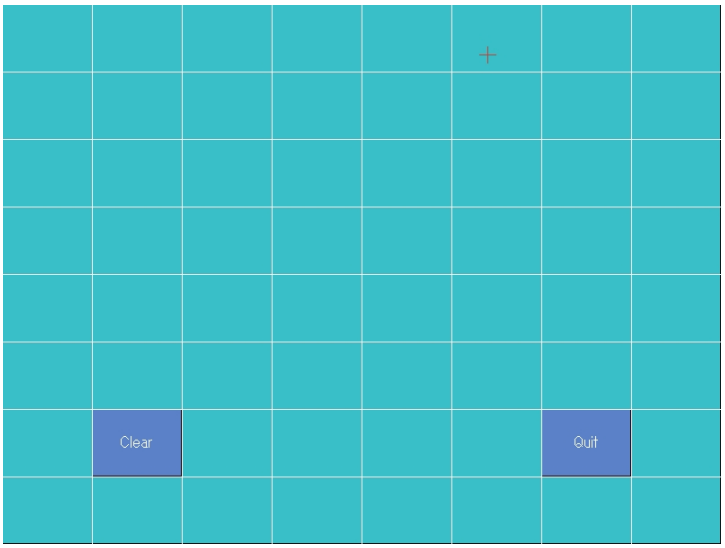
8. Press [Draw Test] to check that the touch screen correctly detects a tapped position.



NOTE

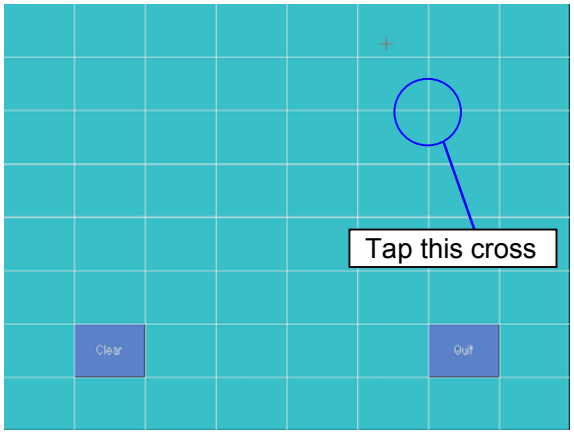
Using a stylus is recommended for easy and accurate touch screen calibration.
Do not use any sharp instrument.

9. Test screen will appear.

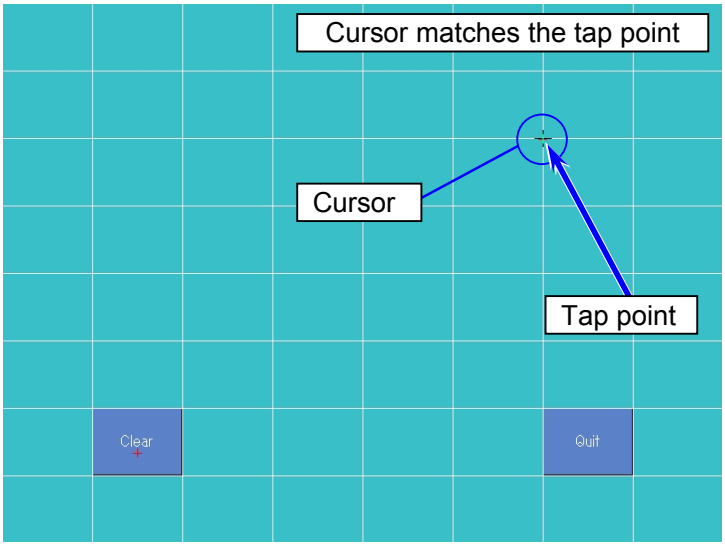


10. Tap a certain point and check the cursor appears directly underneath a stylus.

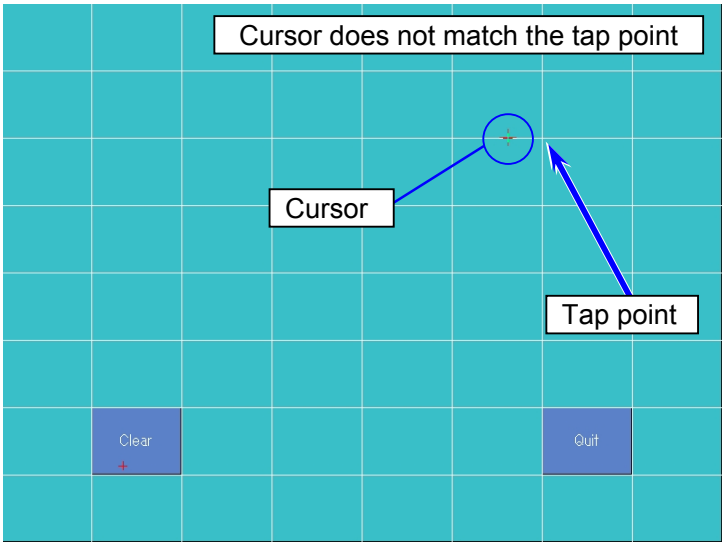
For example, suppose you tap the point shown the next figure.



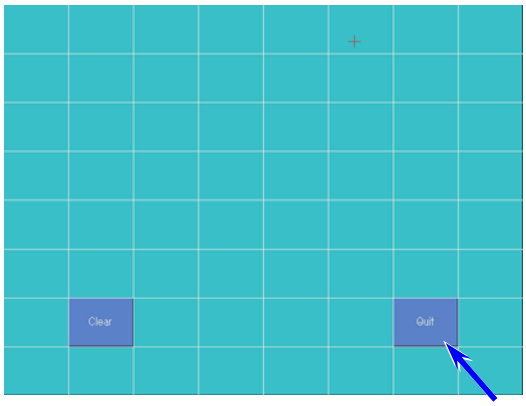
The cursor will appear just underneath the tapped point in a correct condition (calibration is not necessary).



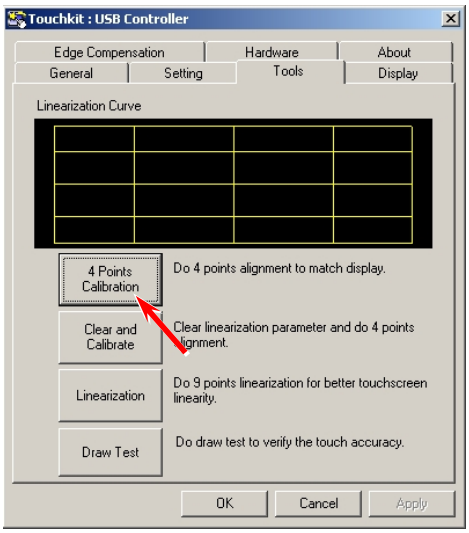
If the cursor appears an unintended position, the touch screen should be calibrated.



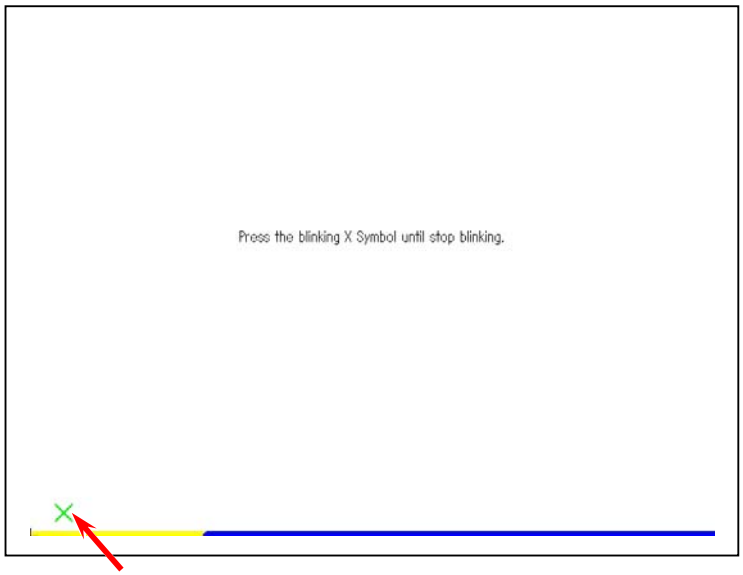
11. Tap [Quit] to close Test screen.



12. Press [4 Points Calibration].



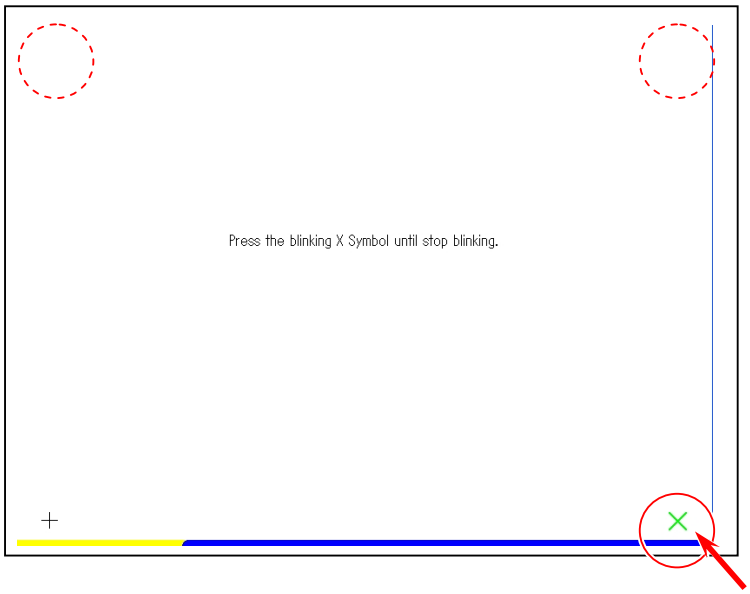
13. On Calibration screen, a blinking X symbol on the bottom left can be seen.
Press the X until it stops blinking with a beep.



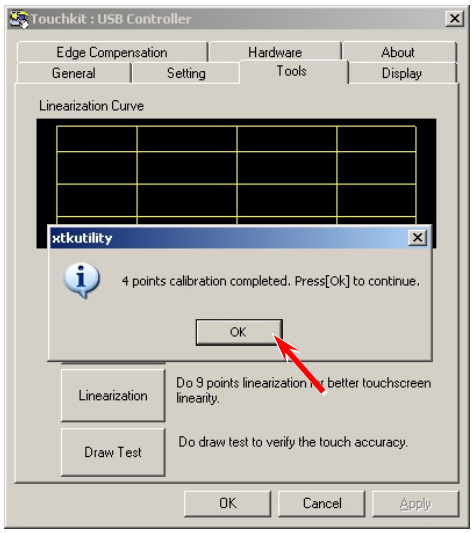
NOTE

Press the X symbol for several seconds before the progress bar at the bottom reaches the end.

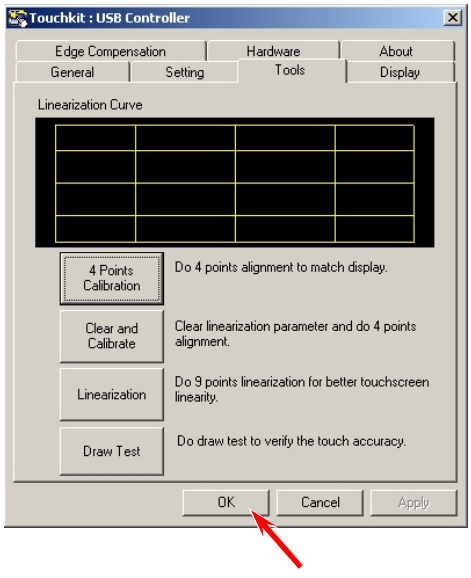
14. The X disappears and the next one will come in the following order:
    bottom right, top right, top left.
    Perform the same way for the other 3 points.



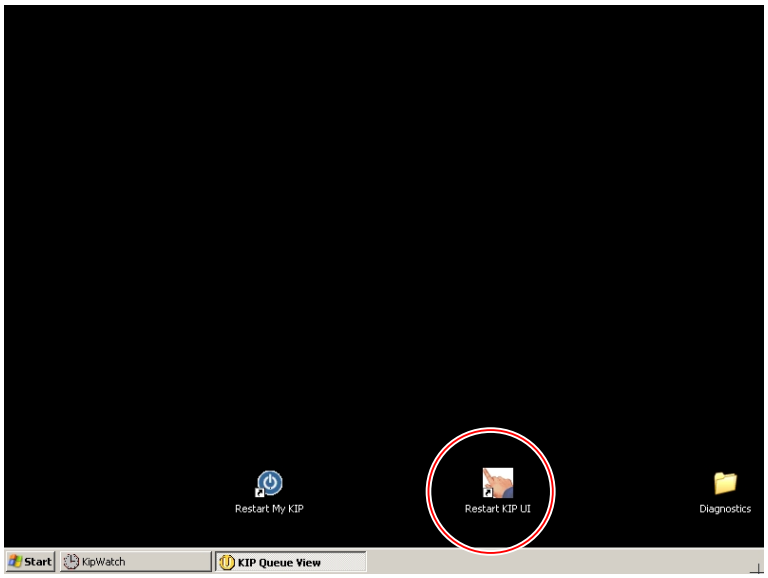
15. When all the 4 points are pressed successfully, Calibration screen disappears and the following dialog appears. Press [OK].



16. Press [OK] to finish touch screen calibration.



17. Run the shortcut “Restart KIP UI” for KIP UI operation.



Chapter 8

Service Mode / Utility

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8. 1 General Information of Service Mode

The system is equipped with advanced functions for field service to easily achieve its best performance.

Service Mode contains the following categories.

- Device Status Mode
- Information Mode
- Device Operation Mode
- Adjustment Mode
- Running Mode
- Jam/Error Mask Mode
- Test Print Mode
- Factory Adjustment Mode
- Clear Mode
- Firmware Update Mode

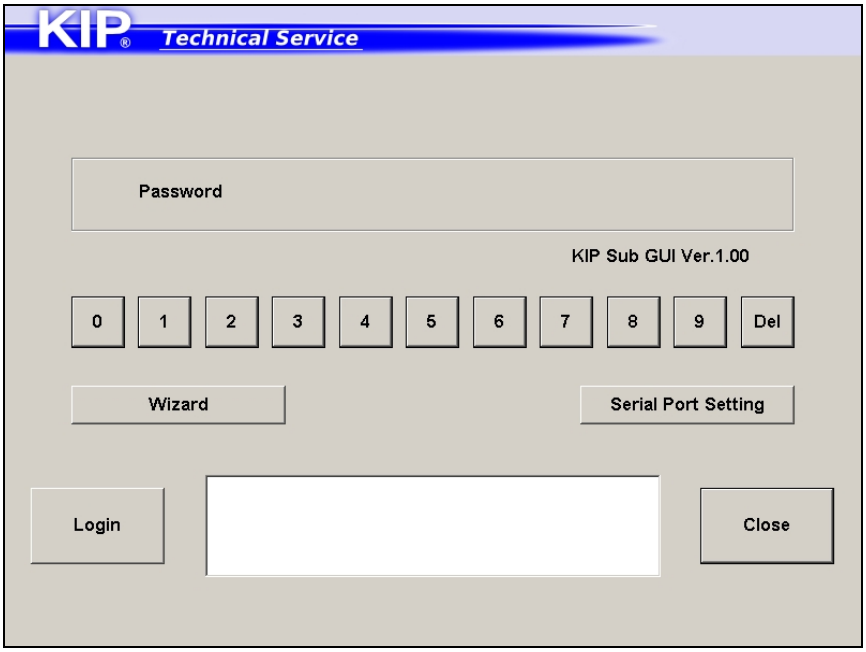
Reference

“KIP SubGUI” acts as an interface to efficiently utilize any functions in Service Mode.
For further information about how to operate KIP SubGUI, see the next page.

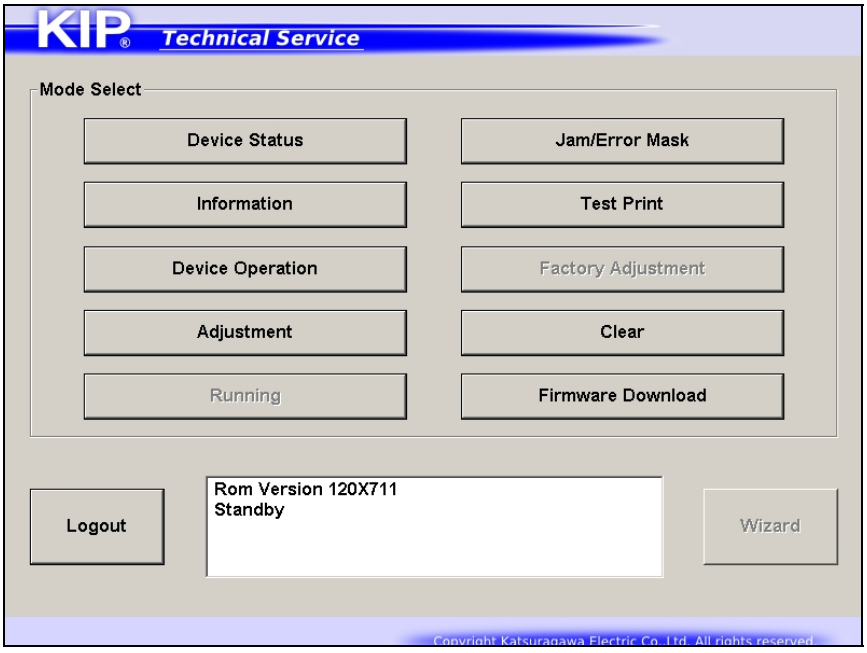
8. 2 KIP SubGUI Overview

KIP SubGUI is an integrated utility application that provides intuitive operability by using Touch Screen.
KIP SubGUI is included in the controller and operates as an interface for monitoring, checking and setting configuration for field service.

Canceling the UI program (controlling user operation such as Copy screen) allows Touch Screen to be free to use Desktop on the controller's operating system.
Launch KIP SubGUI and now it is ready to access the printer's Service Mode.

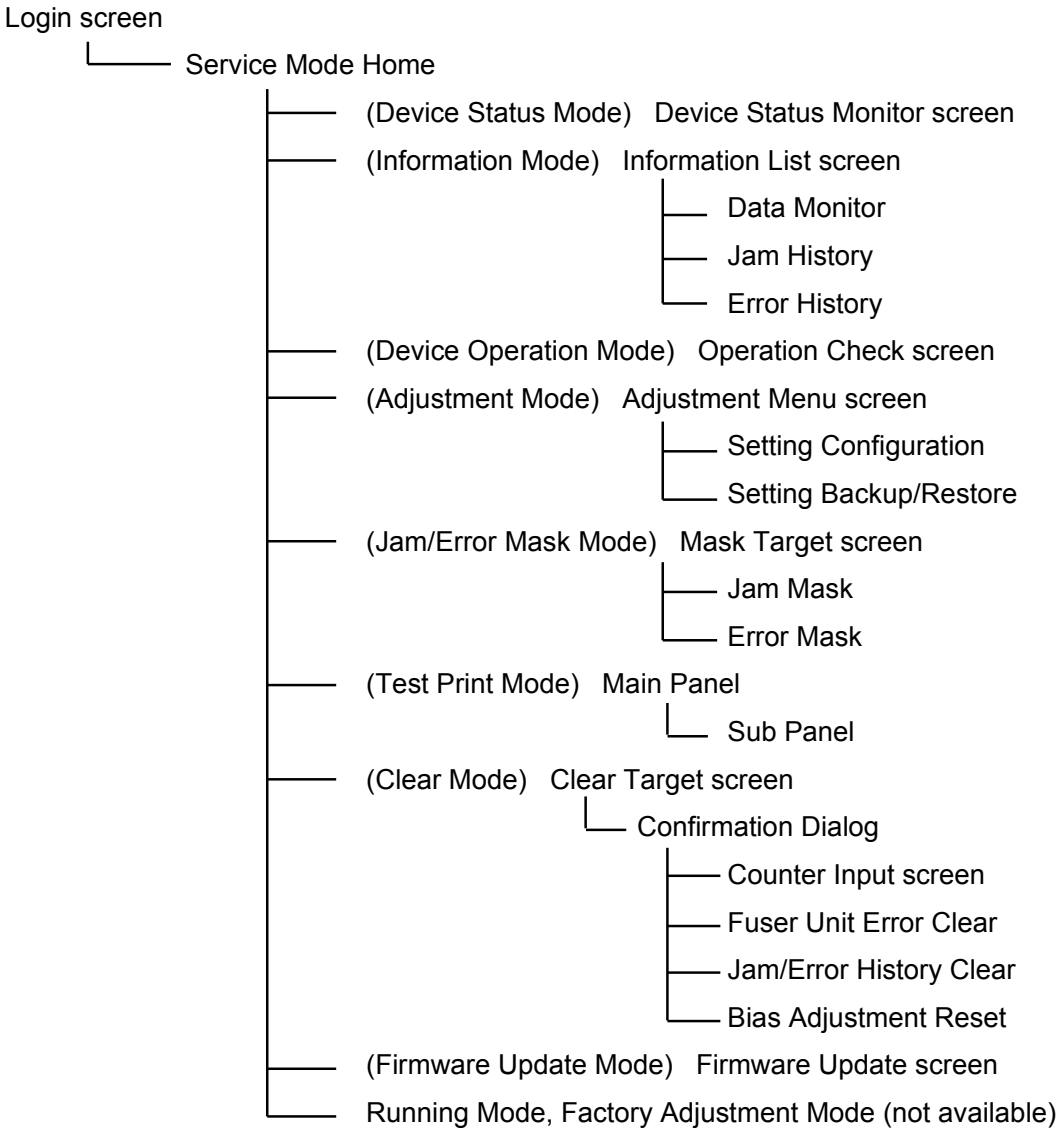


KIP SubGUI Login Screen



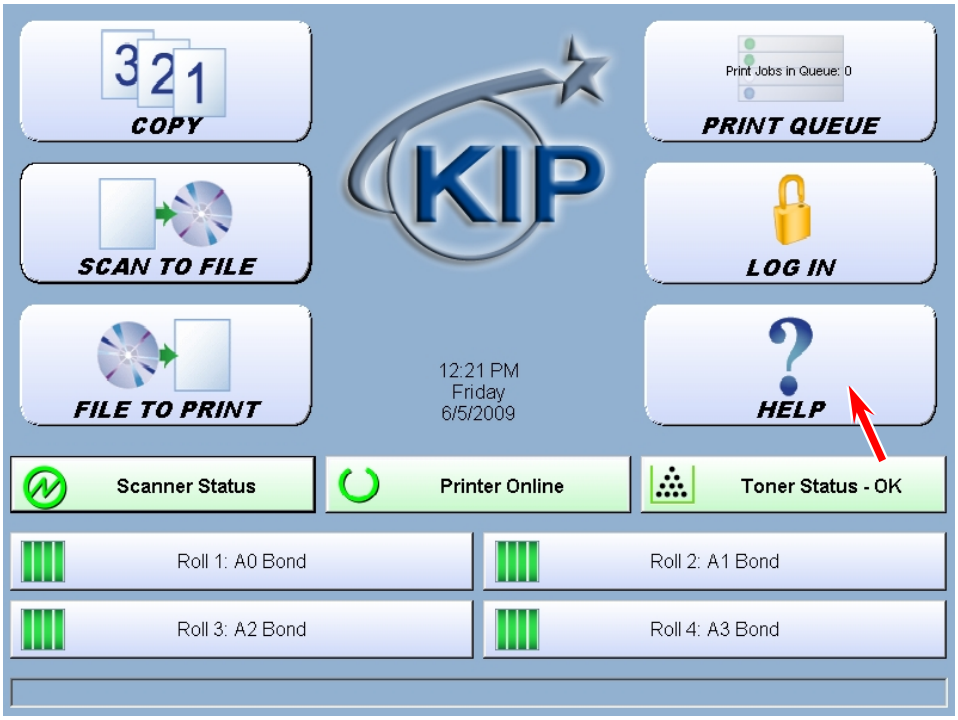
Kip SubGUI Service Mode Home

KIP SubGUI Tree Diagram of screen menu hierarchy

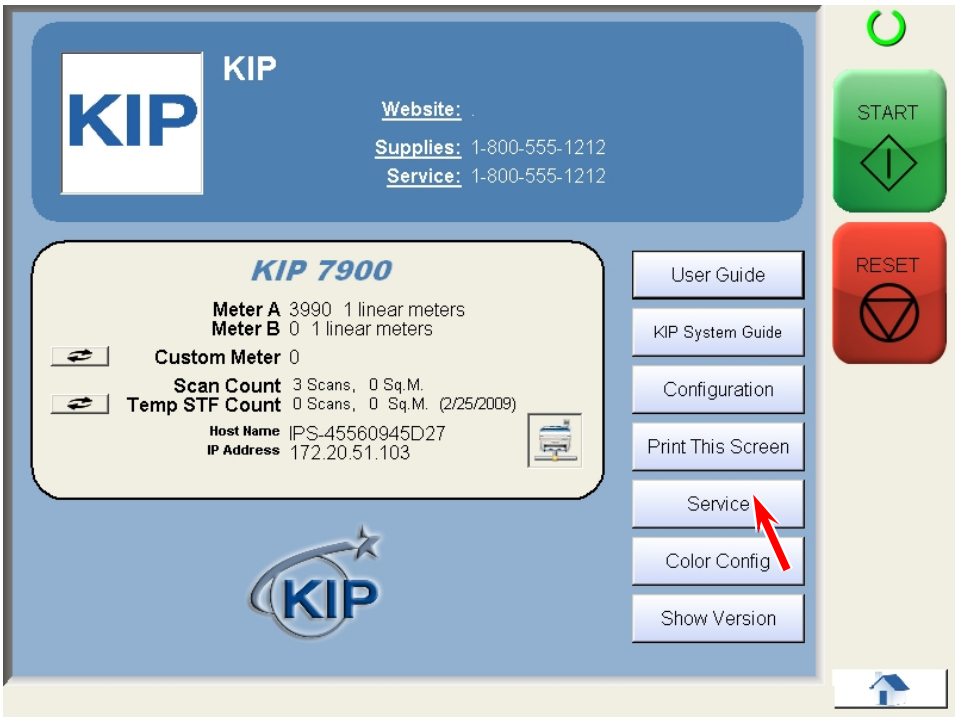


8. 2. 1 Launching KIP SubGUI

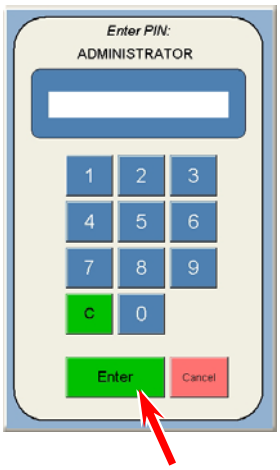
1. Press “? - Help” on Home screen.



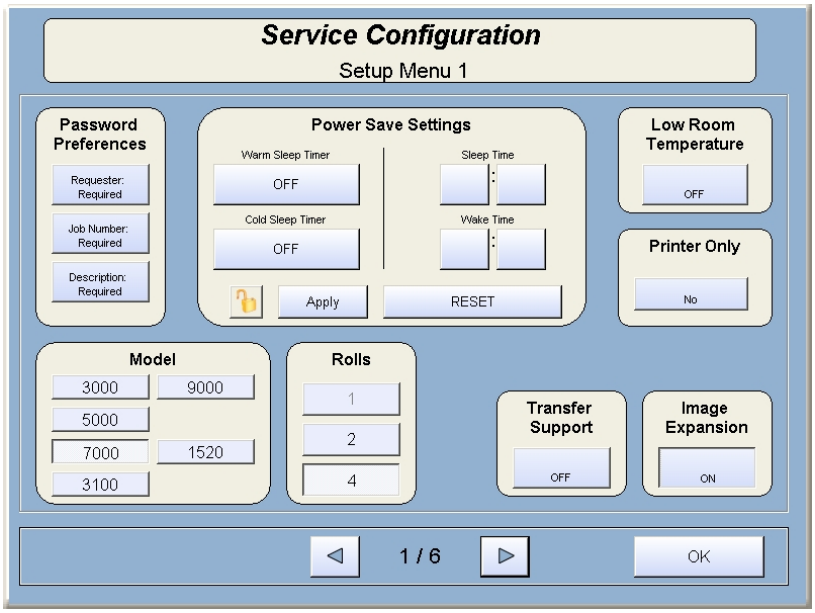
2. Press [Service].



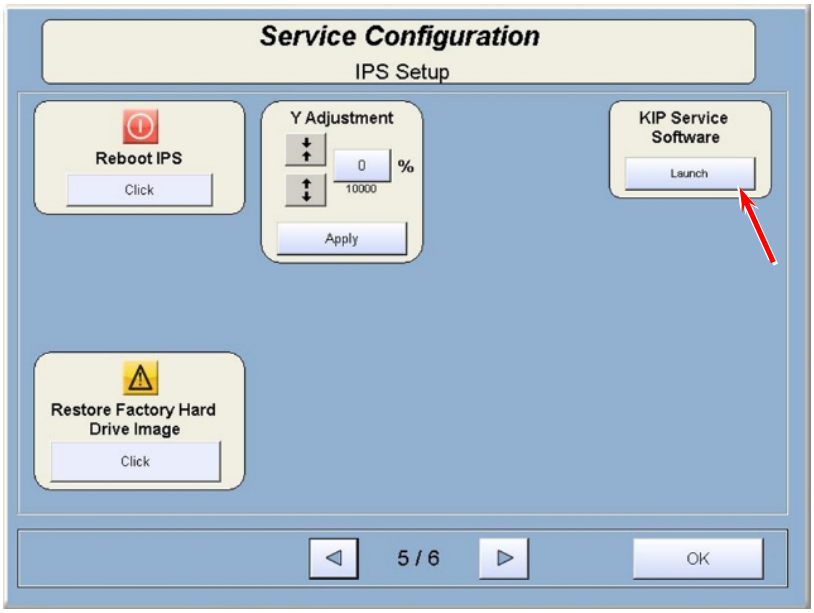
3. On-screen Keypad appears.
   Input “8495107” and press [Enter].



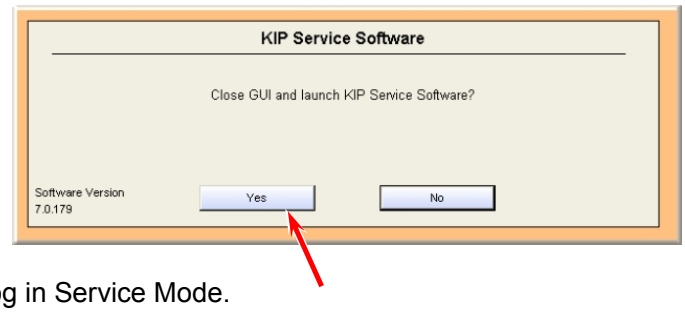
4. Service Configuration screen will appear.



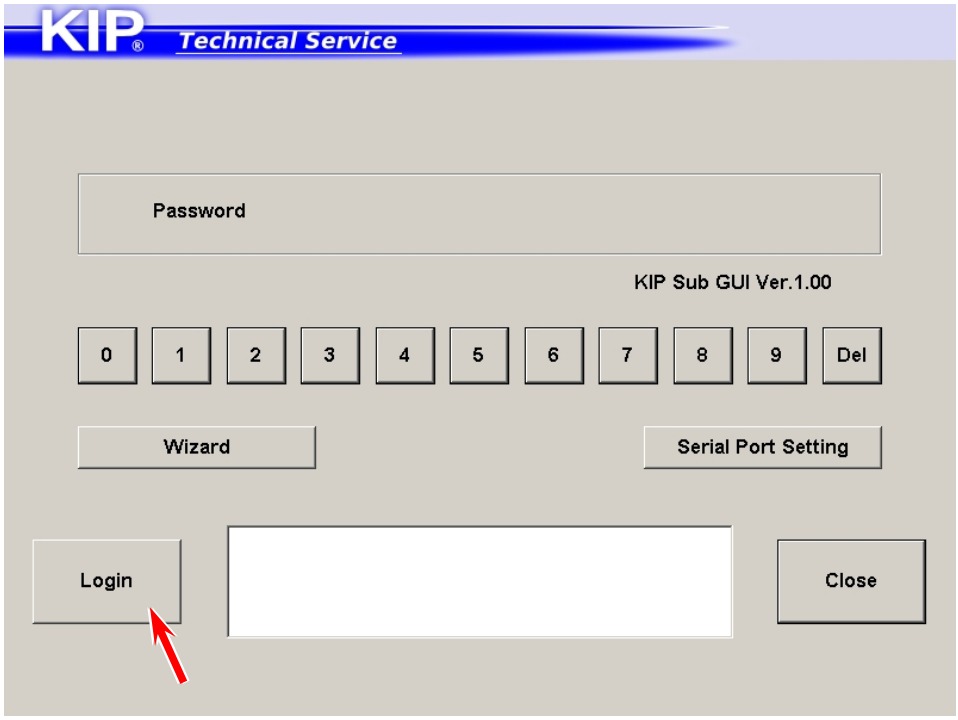
5. Use the arrow keys to open [5/6 IPS Setup]. Press [Launch] in “KIP Service Software”.



6. Press [Yes].

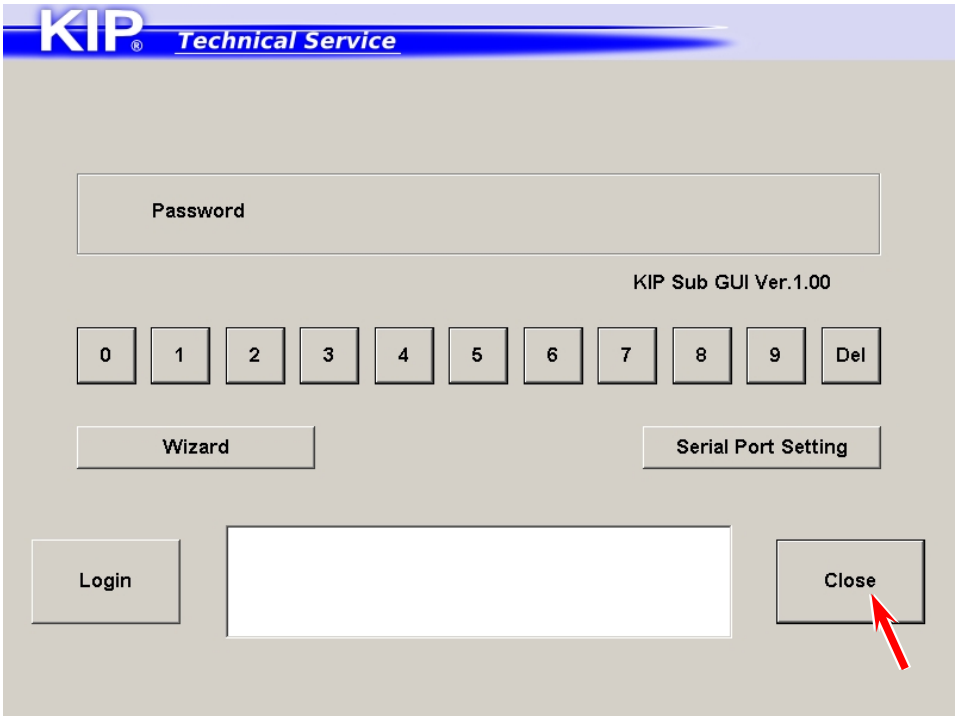


7. Press [Login] to log in Service Mode.



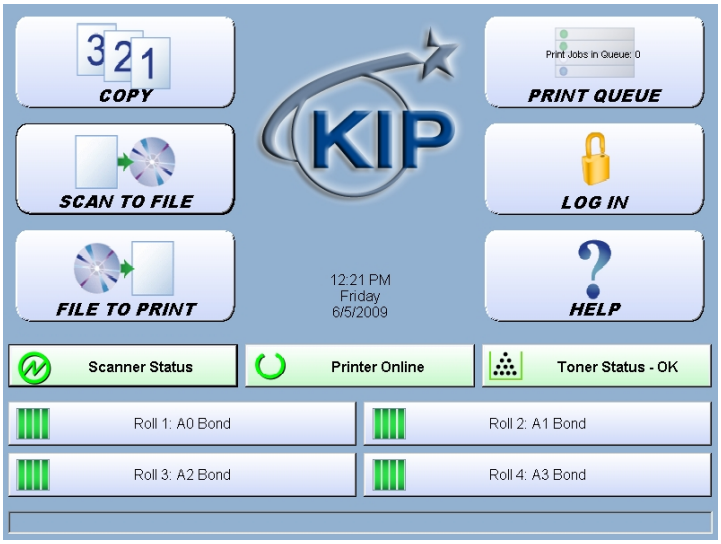
8. 2. 2 Closing KIP SubGUI

1. Return to Service Mode Home. Press [Logout].
2. In Login screen, press [Close].

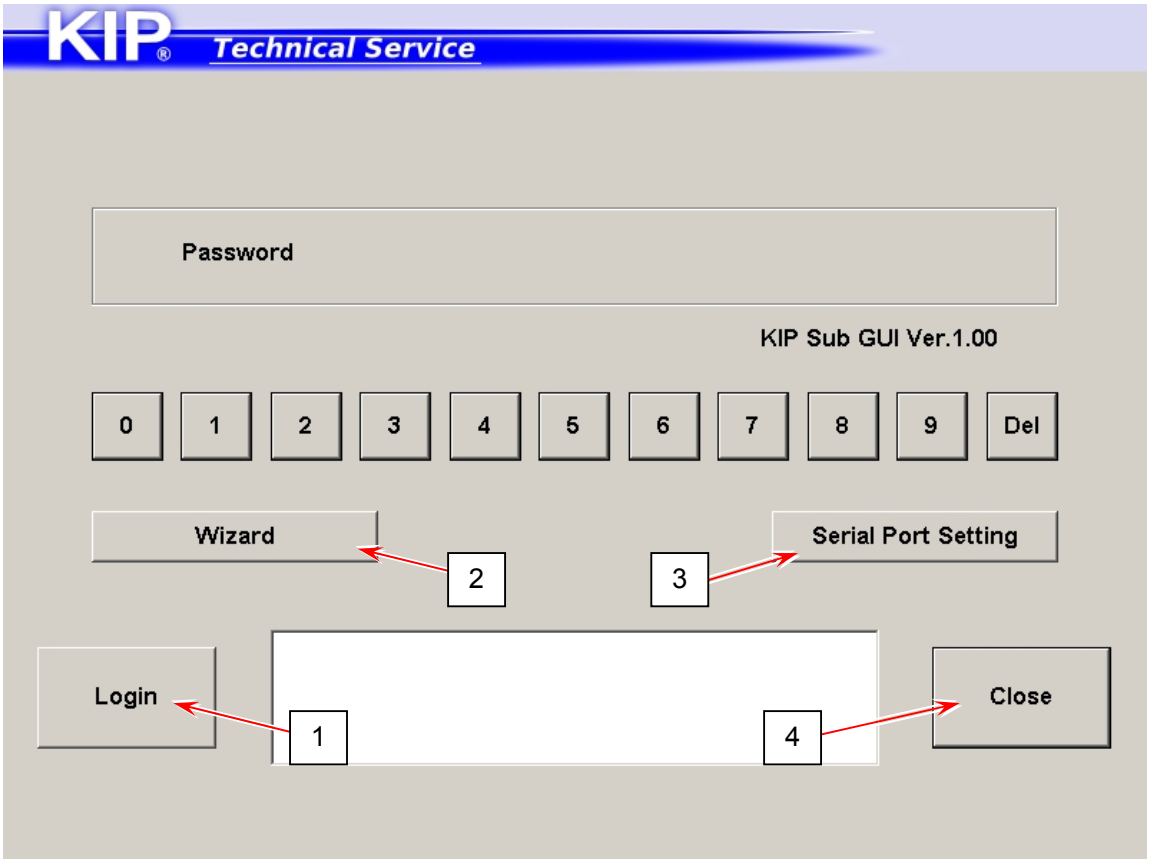


Reference

Closing “KIP SubGUI.exe” automatically invoke UI Home screen to be ready for user operation.

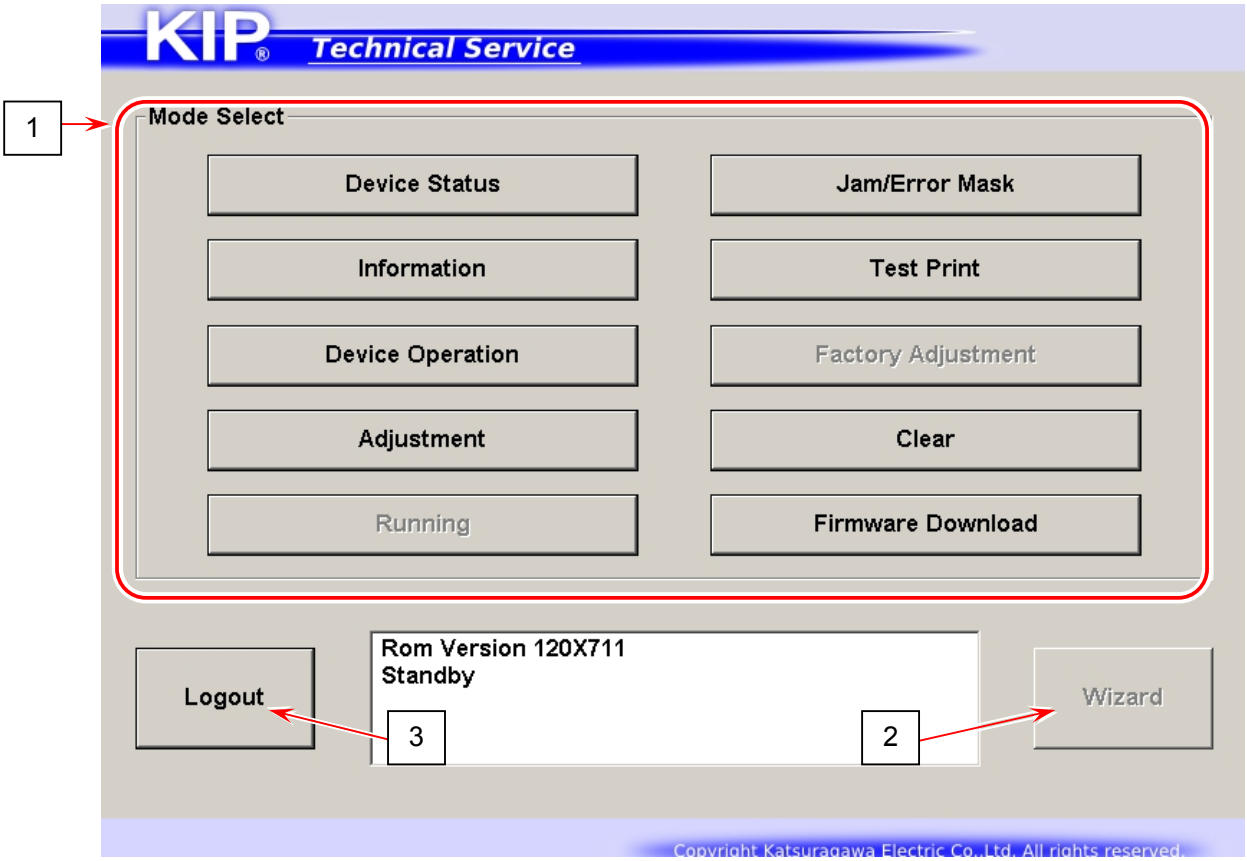


8. 2. 3 Log In screen



	Name	Function
1	Login	Log in Service Mode
2	Wizard	not available
3	Serial Port Setting	Configures Communication Port Settings between the controller and DC Controller PCB It is not necessary to use this button in normal condition.
4	Close	Press here to close KIP SubGUI.

8. 2. 4 Service Mode Home



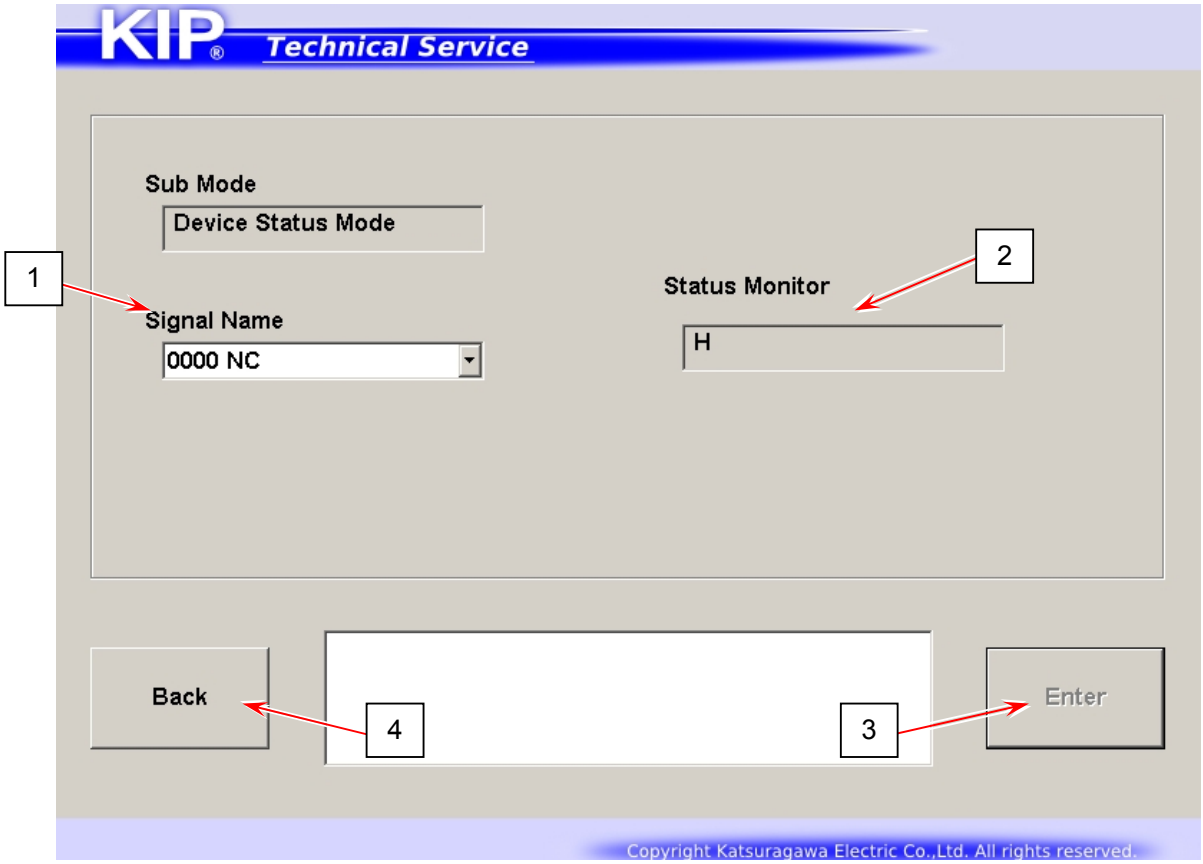
	Name	Function
1	Mode Select	Press one of Mode Category buttons that you want to enter.
2	Wizard	not available
3	Logout	Press here to log out Service Mode. Returns to Log In screen

Device Status	Input / Output signal monitor
Information	Analog data status monitor
Device Operation	Electric device check
Adjustment	Printer settings
Running	not available
Jam/Error Mask	Disables jam/error detection
Test Print	Test pattern plot command
Factory Adjustment	not available
Clear	Clears history, error status Changes counter value
Firmware Download	Sends firmware program to printer

8. 3 Device Status Mode

It is possible to monitor the status of any device signal input to / output from DC Controller PCB with making prints.
For information about Signal Codes, Signal Names and their contents, see [8.3.2 Input / Output Signal List] on page 8-14.

Device Status Monitor screen

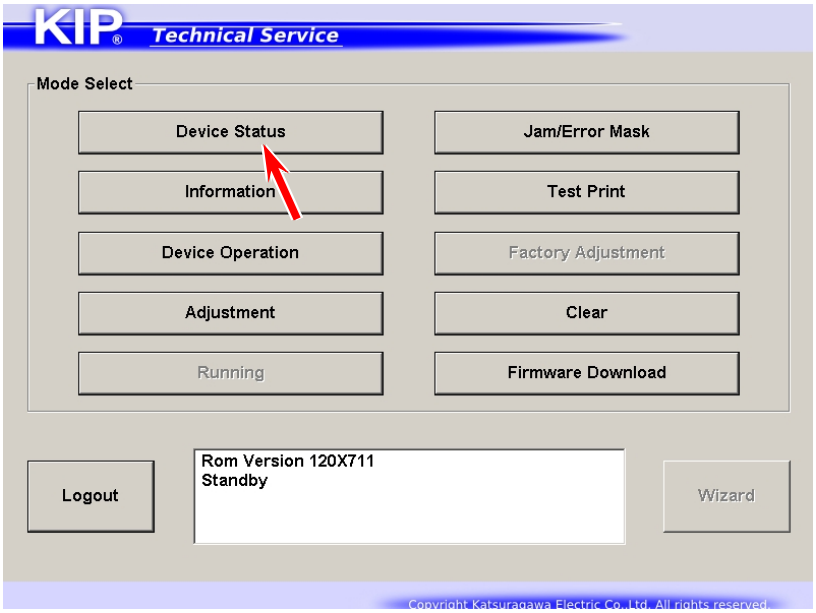


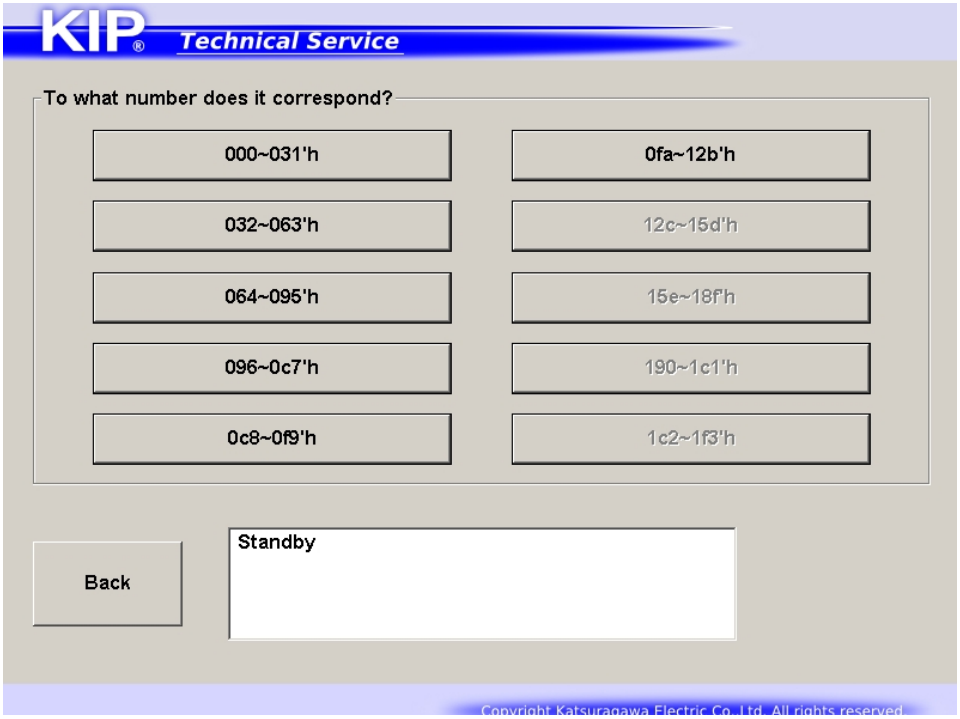
	Name	Function
1	Signal Name	Displays Signal Code/Name in drop-down menu Specify one item that you want to monitor.
2	Signal Monitor	Displays the current status of the selected signal
3	Enter	not available
4	Back	Returns to Service Mode Home

For procedures to monitor device status, follow the instruction on the next page.

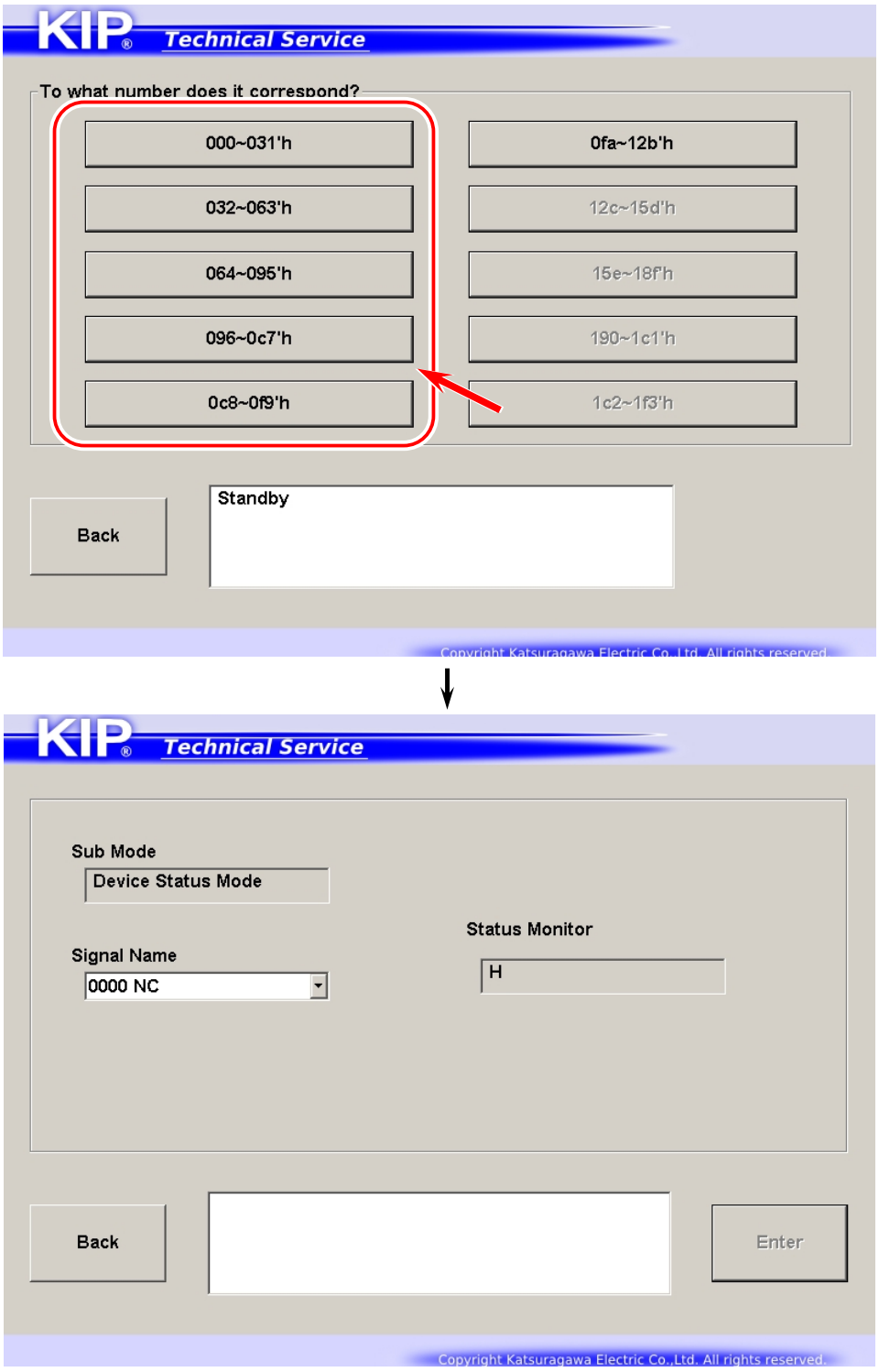
8. 3. 1 Monitoring Device Status

1. Press [Device Status] in Service Mode Home.
   Signal Code Group screen appears.





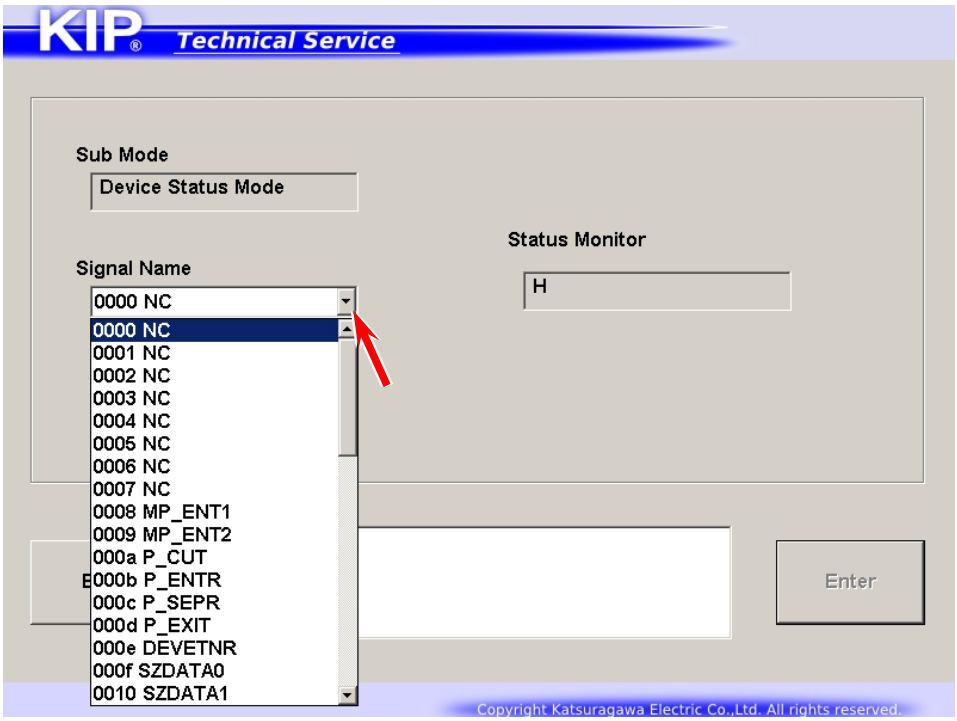
2. Press one Code Group button that contains the signal code that you want to monitor.
   Device Status Monitor screen appears.



Reference

For Signal Name/Code, see [8.3.2 Input / Output Signal List] on page 8-14.

3. Specify one signal item that you want to monitor from Signal Name menu.



4. The current status of the device you have chosen is displayed in Status Monitor.

8. 3. 2 Input / Output Signal List

Signal Code	Signal Name	IC	Pin	Connector	Signal Contents	Condition	I/O
00		IC7	10	J210-8			I
01		IC7	11	J210-9			I
02		IC7	12	J210-10			I
03		IC7	13	J210-11			I
04		IC7	14	J210-12			I
05		IC7	15	J210-13			I
06		IC7	16	J210-14			I
07		IC7	17	J210-15			I
08	MP_ENT1	IC7	20	J210-16	Paper Sensor (By-Pass)	L: Paper exist	I
09	MP_ENT2	IC7	21	J210-17	Paper Sensor (By-Pass)	L: Paper exist	I
0a	P_CUT	IC7	22	J210-18	Paper Sensor (After Cutter)	L: Paper exist	I
0b	P_ENTR	IC7	23	J210-19	Paper Sensor (Before Gate Roller)	L: Paper exist	I
0c	P_SEPR	IC7	24	J209-9	Paper Sensor (Separation Area)	L: Paper exist	I
0d	P_EXIT	IC7	25	J209-10	Paper Sensor (Exit Area)	H: Paper exist	I
0e	DEVETNR	IC7	26	J209-11	Developer: Toner Remaining Volume	L: No Toner	I
0f	SZDATA0	IC7	27	J209-12	Paper Width Data 0	H: Paper exist	I
10	SZDATA1	IC7	30	J209-13			I
11	SZDATA2	IC7	31	J209-14			I
12	SZDATA3	IC7	32	J209-15			I
13	SZDATA4	IC7	33	J209-16			I
14	SZDATA5	IC7	34	J209-17			I
15	SZDATA6	IC7	35	J209-18			I
16	SZDATA7	IC7	36	J209-19			I
17	SZDATA8	IC7	37	J209-20			I
18		IC7	40	J209-21			I
19		IC7	41	J209-22			I
1a		IC7	42	J209-23			I
1b	DEVE_HP	IC7	43	J209-25	Developer Home Position	H: Home Position	I
1c	DEVE_CN	IC7	44	J209-28	Developer Connector Connection Signal	L: Connected	I
1d	LNGCNT1_FB	IC7	45	-	Counter Feed Back Signal	H: CNT UP	I
1e	LNGCNT2_FB	IC7	46	-	Counter Feed Back Signal		I
1f	LNGCNT3_FB	IC7	47	-	Counter Feed Back Signal		I
20	DVPSMTR	IC7	50	J211-1	Developer pressure Motor Control Signal	H: Driving	O
21	SEPFAN	IC7	51	J211-2	Separation Fan Control Signal	H: Driving	O
22	FUFAN_H	IC7	52	J211-3	Fuser Cooling Fan Control Signal (High Seed)	H: High Speed Driving	O
23	FUFAN_L	IC7	53	J211-4	Fuser Cooling Fan Control Signal (Low Seed)	H: Low Speed Driving	O
24	LEDFAN	IC7	54	J211-5	Led Head Cooling Fan Control Signal	H: Driving	O
25	PRSFAN	IC7	55	J211-6	Fuser press Fan Control Signal	H: Driving	O
26	FU_SL	IC7	56	J211-7	Fuser Guide Solenoid	H: Driving	O
27	CUT_SL	IC7	57	J211-8	Cutter Oil Supply Solenoid	H: Driving	O
28	GATECL	IC7	60	J211-9	Gate Clutch Control Signal	H: Driving	O
29	GATEBK	IC7	61	J211-10	Gate Brake Control Signal	H: Driving	O
2a	TNRMTR	IC7	62	J211-11	Toner Supply Motor Control Signal	H: Driving	O
2b	RY_HEATER	IC7	63	J211-12	Fuser Heater Relay Control Signal	H: Driving	O
2c	LED_SEP	IC7	64	J211-13	Eraser Lamp Control Signal	H: ON	O
2d		IC7	65	J211-14			O
2e	FUFAN_EX	IC7	66	J211-15	Fuser Cooling Fan Control Signal (Exhaustion)	H: Driving	O
2f		IC7	67	J211-16			O
30	RPFD1	IC7	70	J211-17	Roll Paper Feed Clutch Control Signal 1	H: Driving	O
31	RPFD2	IC7	71	J211-18	Roll Paper Feed Clutch Control Signal 2	H: Driving	O
32	RPFD3	IC7	72	J211-19	Roll Paper Feed Clutch Control Signal 3	H: Driving	O
33	RPFD4	IC7	73	J211-20	Roll Paper Feed Clutch Control Signal 4	H: Driving	O
34	SIGOUT	IC7	74	J211-21	Stacker Transmission Signal	Clock	O
35	RPREV1	IC7	75	J211-22	Roll Paper Pick Up Control Signal 1	H: Driving	O
36	RPREV2	IC7	76	J211-23	Roll Paper Pick Up Control Signal 2	H: Driving	O

Signal Code	Signal Name	IC	Pin	Connector	Signal Contents	Condition	I/O
37	RPREV3	IC7	77	J211-24	Roll Paper Pick Up Control Signal 3	H: Driving	O
38	RPREV4	IC7	80	J211-25	Roll Paper Pick Up Control Signal 4	H: Driving	O
39		IC7	81	J211-26			O
3a		IC7	82	J211-27			O
3b		IC7	83	J211-28			O
3c		IC7	84	J211-29			O
3d		IC7	85	J211-30			O
3e		IC7	86	J211-31			O
3f		IC7	87	J211-32			O
40	ACTV_LED	IC7	90	-	CPU Operation Confirmation Signal	Flashing (100msec)	O
41		IC7	91	-			O
42		IC7	92	-			O
43		IC7	93	-			O
44		IC7	94	-			O
45		IC7	95	-			O
46		IC7	96	-			O
47		IC7	97	-			O
48	INTLK1	IC8	10	J207-21	Interlock Signal 1 (Thermostat)	H: Thermostat Open	I
49	INTLK2	IC8	11	J207-22	Interlock Signal 2 (Fuser Cover)	H: Door Open	I
4a	INTLK3	IC8	12	J207-23	Interlock Signal 3 (Door)	H: Door Open	I
4b	POW_ST	IC8	13	J207-24	Power Status Signal	L: Operation	I
4c	DECKSW1	IC8	14	J207-25	Paper Deck Open Signal 1	H: Door Open	I
4d	DECKSW2	IC8	15	J207-27	Paper Deck Open Signal 2	H: Door Open	I
4e		IC8	16	J207-29			I
4f		IC8	17	J207-30			I
50	RPSET1	IC8	20	J206-7	Roll Paper Set Data	L: Paper exist	I
51	RPCLK1	IC8	21	J206-8	Roll Paper Existence Data	H/L: Operation	I
52	RPSET2	IC8	22	J206-9	Roll Paper Set Data	L: Paper exist	I
53	RPCLK2	IC8	23	J206-10	Roll Paper Existence Data	H/L: Operation	I
54	RPSET3	IC8	24	J206-11	Roll Paper Set Data	L: Paper exist	I
55	RPCLK3	IC8	25	J206-12	Roll Paper Existence Data	H/L: Operation	I
56	RPSET4	IC8	26	J206-13	Roll Paper Set Data	L: Paper exist	I
57	RPCLK4	IC8	27	J206-14	Roll Paper Existence Data	H/L: Operation	I
58	MAMTR_LD	IC8	30	J206-15	Main Motor Constant Speed Detection Signal	L: Constant Seed	I
59	FUMTR_LD	IC8	31	J206-16	Fuser Motor Constant Speed Detection Signal	L: Constant Seed	I
5a	WCMTR_OC	IC8	32	J206-17	Wire Cleaning Motor Over Current Signal	L: Over Current detected	I
5b	CUTHP1	IC8	33	J206-18	Cutter Home Position	L: Home Position	I
5c	(CUTHP2)	IC8	34	J206-19	Cutter Home Position	L: Home Position	I
5d	SIGIN	IC8	35	J206-20	Stacker Transmission Signal	Clock	I
5e	RLNG1	IC8	36	J206-21	Upper Deck Feed Length Signal	H/L: Operation	I
5f	RLNG2	IC8	37	J206-22	Lower Deck Feed Length Signal	H/L: Operation	I
60	HVIM_FB	IC8	40	J206-23	Image Corona Feed Back Signal	H: Normal	I
61	HVTR_FB	IC8	41	J206-24	Transfer Corona Feed Back Signal	H: Normal	I
62	HVSP_FB	IC8	42	J206-25	Separation Corona Feed Back Signal	H: Normal	I
63	HVBS_FB	IC8	43	J206-26	Developer Bias Feed Back Signal	H: Normal	I
64		IC8	44	J206-27			I
65		IC8	45	J206-28			I
66		IC8	46	J206-29			I
67	TEST_SW	IC8	47	J206-30	TEST PRINT SW Signal	L: prints	I
68	RY_DC	IC8	50	J208-1	Relay Control Signal 24Vdc	H: Relay ON	O
69	SW_COIL	IC8	51	J208-3	Power Switch Off Signal	H: OFF	O
6a		IC8	52	J208-5			O
6b		IC8	53	J208-7			O
6c		IC8	54	J208-8			O
6d	LNGCNT1	IC8	55	J208-9	Counter Control Signal 1		O
6e	LNGCNT2	IC8	56	J208-11	Counter Control Signal 2		O
6f	LNGCNT3	IC8	57	J208-13	Counter Control Signal 3		O
70	F_HEAT1	IC8	60	J208-15	Heater Control Signal 1	H: Heating	O

Signal Code	Signal Name	IC	Pin	Connector	Signal Contents	Condition	I/O
71	F_HEAT2	IC8	61	J208-16	Heater Control Signal 2	H: Heating	O
72	LED_IMG	IC8	62	J208-17	Eraser Lamp Control Signal	H: ON	O
73	LED_TR	IC8	63	J208-19	Pre-Transfer Lamp	H: ON	O
74	DEHUM	IC8	64	J208-21	Dehumidify Heater Relay Control Signal	L: Dehumidifier ON	O
75	SLEEP	IC8	65	J208-23	Sleep Mode Signal	H: Sleep Mode activated	O
76		IC8	66	J208-24			O
77	DENS_TRG	IC8	67	-	Density Sensor Control	H: ON	O
78	HV_IMG	IC8	70	J208-25	High Voltage Power Source Control Signal (Image)	H: Applied	O
79	HV_TR	IC8	71	J208-26	High Voltage Power Source Control Signal (Transfer)	H: Applied	O
7a	HV_SEP	IC8	72	J208-27	High Voltage Power Source Control Signal (Separation)	H: Applied	O
7b	HV_BIAS	IC8	73	J208-28	High Voltage Power Source Control Signal (Developer Bias)	H: Applied	O
7c	BIAS_SW	IC8	74	J208-29	High Voltage Power Source Polarity Control Signal (Developer Bias)	H: Negative	O
7d	HV_CL	IC8	75	J208-30	High Voltage Power Source Control Signal (Cleaning)	H: Applied	O
7e	CL_SW	IC8	76	J208-31	High Voltage Power Source Polarity Control Signal (Cleaning)	H: Negative	O
7f	HV_GRID	IC8	77	J208-32	High Voltage Power Source Control Signal (Grid)	H: Applied	O
80	MAMTR	IC8	80	J207-1	Main Motor Control Signal	H: Driving	O
81	MAMTR_DIR	IC8	81	J207-2	Main Motor Direction Control	H: Forward	O
82	MAMTR_SB	IC8	82	J207-3	Main Motor Brake Signal	H: Braking	O
83	FDMTR_PD1	IC8	83	J207-4	Paper Feed Motor Current Control 1	H: Driving	O
84	FDMTR_PD2	IC8	84	J207-5	Paper Feed Motor Current Control 2	H: Driving	O
85	FDMTR_DIR	IC8	85	J207-6	Paper Feed Motor Direction Control Signal	H: Forward	O
86	FUMTR	IC8	86	J207-7	Fuser Motor Control Signal	H: Driving	O
87	MPFD	IC8	87	J207-8	Manual Feed Clutch Control Signal	H: Driving	O
88	WCMTR_ST	IC8	90	J207-9	Wire Cleaning Motor Control Signal	L: Driving	O
89	WCMTR_1	IC8	91	J207-10	Wire Cleaning Motor Control Signal	H: Forward	O
8a	WCMTR_2	IC8	92	J207-11	Wire Cleaning Motor Control Signal	H: Reverse	O
8b	CUTMTR/ CUTMTR_ST	IC8	93	J207-12	Cutter Motor Control Signal	H/L: Operation	O
8c	CUTMTR_RST/ CUTMTR1	IC8	94	J207-13	Cutter Motor Reset Signal	H: Hold L: Forward	O
8d	/(CUTMTR2)	IC8	95	J207-14	Cutter Motor Control Signal	H/L: Operation	O
8e	DECK1_FD	IC8	96	J207-15	Deck Driving Clutch Control Signal 1	H: Driving	O
8f	DECK2_FD	IC8	97	J207-16	Deck Driving Clutch Control Signal 2	H: Driving	O
90	IPRNT	IC1	10			I/F	I
91	AD A	IC1	11				O
92	AD B	IC1	12				O
93	AD C	IC1	13				O
94	*DA Clock	IC1	14		D/A control (clock)		O
95	*DA Di	IC1	15		D/A control (D i)		O
96	*DA BS1	IC1	16		D/A control (BS)		O
97	*DA BS2	IC1	17		D/A control (BS)		O
98	NC						
99	NC						
9a	NC						
9b	NC						
9c	NC						
9d	MAMTRCLK	IC1	25	J210-1	Main Motor Clock Signal	clock	O
9e	FDMTRCLK	IC1	26	J210-2	Paper Feed Motor Clock Signal	clock	O
9f	NC						
a0	NC						
a1	NC						
a2	NC						
a3	NC						
a4	IPCUT	IC1	IRQ0			I/F	I

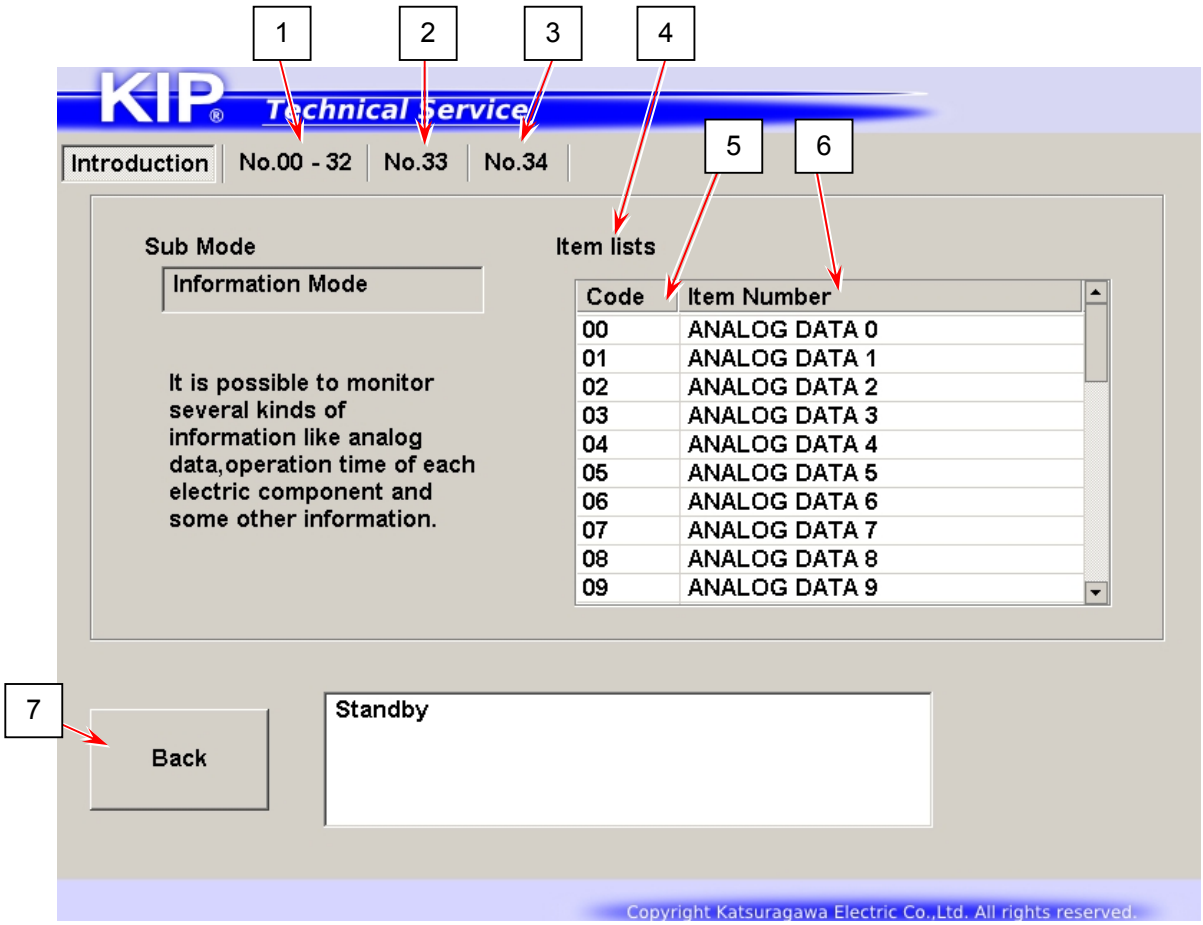
Signal Code	Signal Name	IC	Pin	Connector	Signal Contents	Condition	I/O
a5	COMSTB	IC1	IRQ1			I/F	I
a6	P_GATE	IC1	IRQ3	J210-20	Paper Sensor (After Gate Roller)	L: exists	I
a8	IPRDY	I/F				I/F	O
a9	IPREQ	I/F				I/F	O
aa	IBUSY	I/F				I/F	O
ab	PAGEBL	I/F				I/F	O
ac	TSTPRT	I/F				I/F	O
ad	P.EXIT	I/F				I/F	O
ae	(RESERVED)						
af	(RESERVED)						
b0	(RESERVED)	SW					
b1	(RESERVED)	SW					
b2	(RESERVED)	SW					
b3	(RESERVED)	SW					
b4	(RESERVED)	SW					
b5	(RESERVED)	SW					
b6	NC						
b7	(RESERVED)	SW					
b8	(RESERVED)	SW					
b9	(RESERVED)	SW					
ba	(RESERVED)	SW					
bb	(RESERVED)	SW					
bc	(RESERVED)	SW					
bd	(RESERVED)	SW					
be	NC						
bf	NC						
c0	NC						
c1	NC						
c2	NC						
c3	NC						
c4	NC						
c5	NC						
c6	NC						
c7	NC						
c1 | ff	NC						

8. 4 Information Mode

It is possible to monitor the analog voltage input sent by devices (such as Thermistor) to DC Controller PCB. It is also possible to monitor the current Fuser temperature which is calculated from the input voltage.

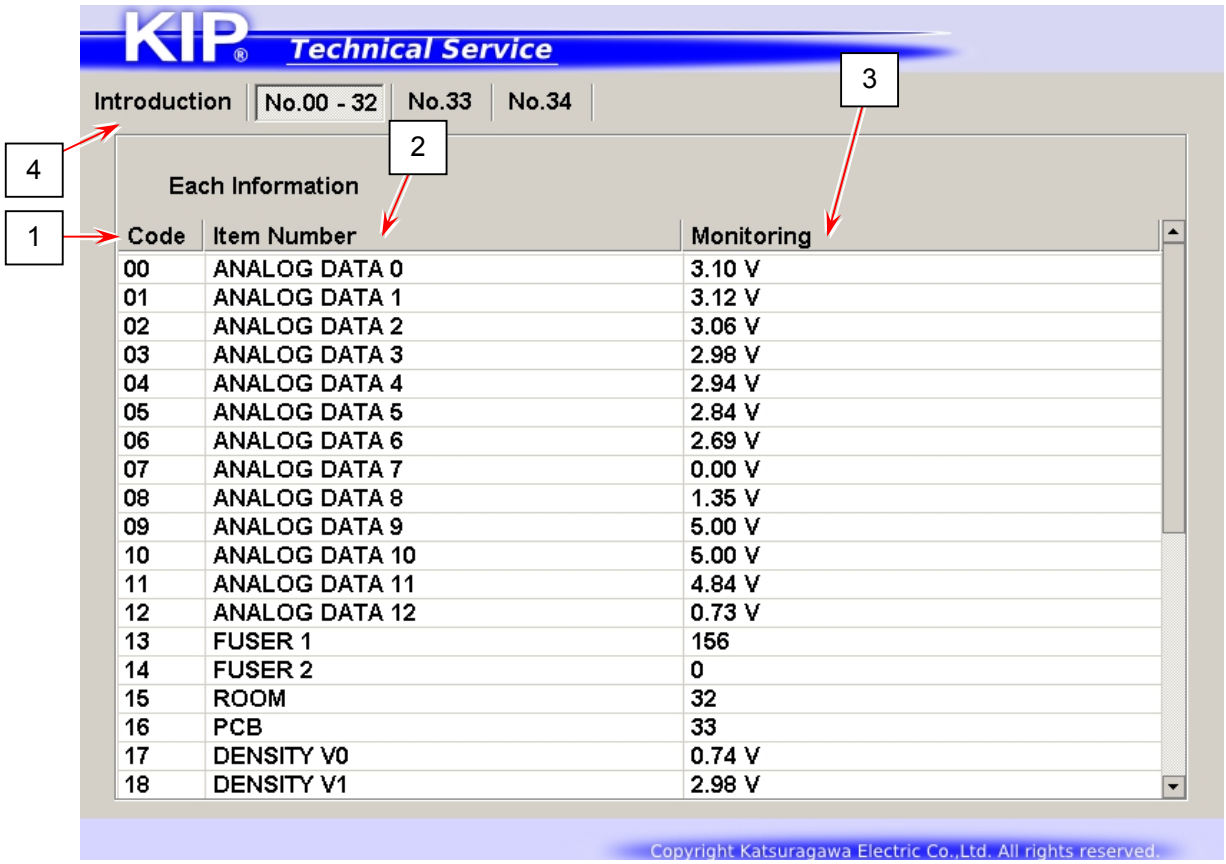
Information Mode includes the list of the latest 100 jam / service call error records.

Information List screen



	Name	Function
1	No.00 - 32	Switches to Data Monitor screen
2	No.33	Switches to Jam History screen
3	No.34	Switches to Error History screen
4	Item List	List of Data items and codes
5	Code	Data Code 00 to 32
6	Item Number	Explains the contents of the item
7	Back	Returns to Service Mode Home

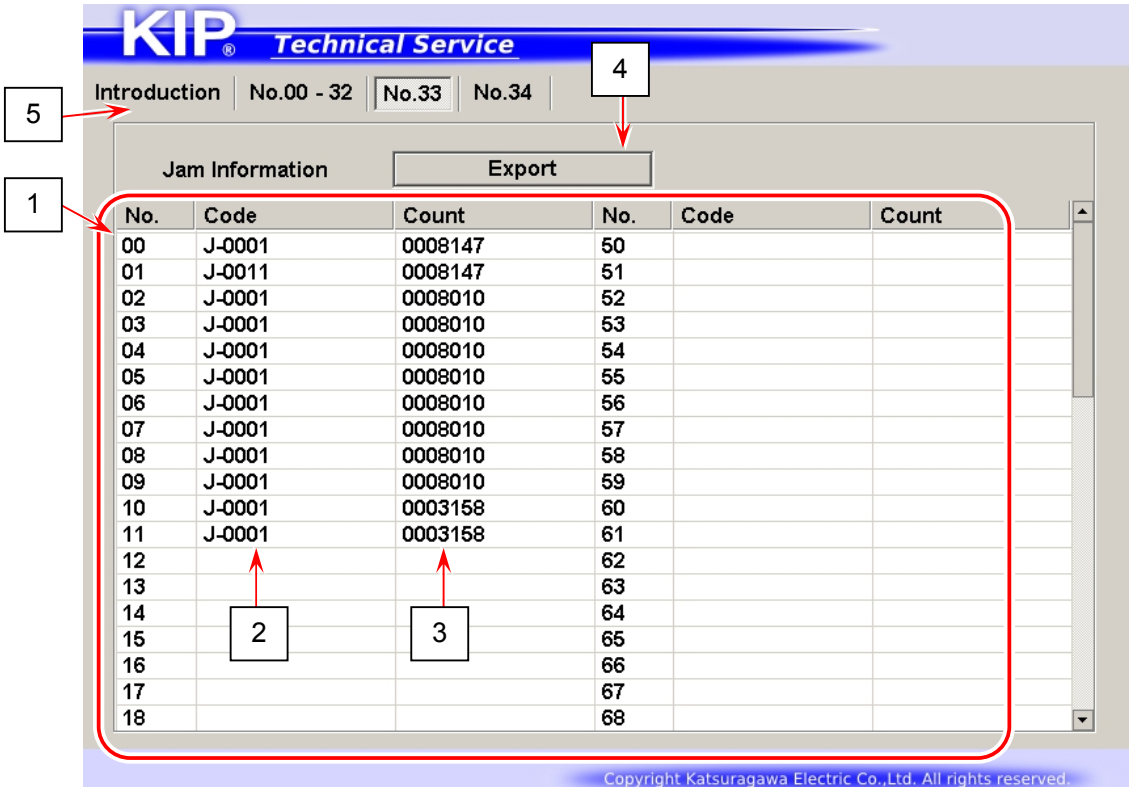
Data Monitor screen



	Name	Function
1	Code	Data Code 00 to 32
2	Item Number	Explains the contents of the listed items
3	Monitoring	Displays the current Analog Voltage and its calculated value for the items to be monitored
4	Introduction	Returns to Data List screen

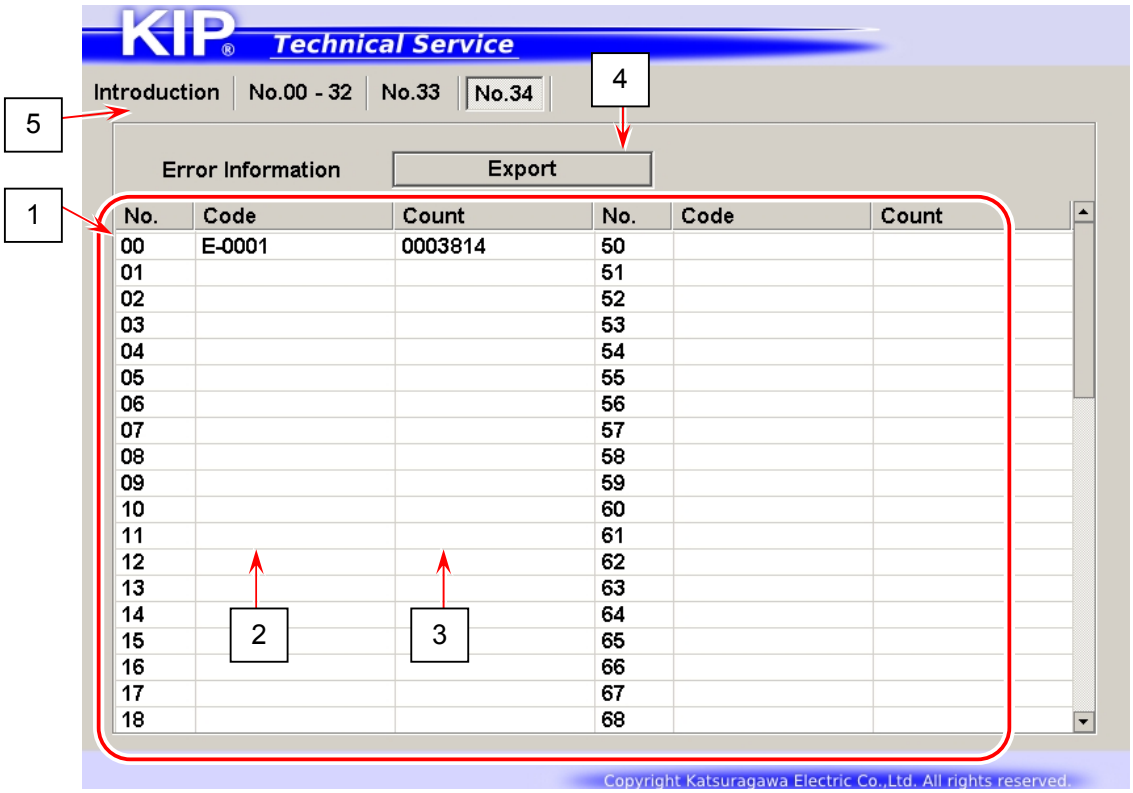
For information about items to be monitored, see [8.4.2 List of Analog Data Monitor] on page 8-24.

Jam History screen



	Name	Function
1	Jam Information	Displays the latest 100 jam records
2	Code	Displays Jam Code “J-****”
3	Count	Displays the counter value that the concerning jam occurred
4	Export	Saves the records as a file
5	Introduction	Returns to Data List screen

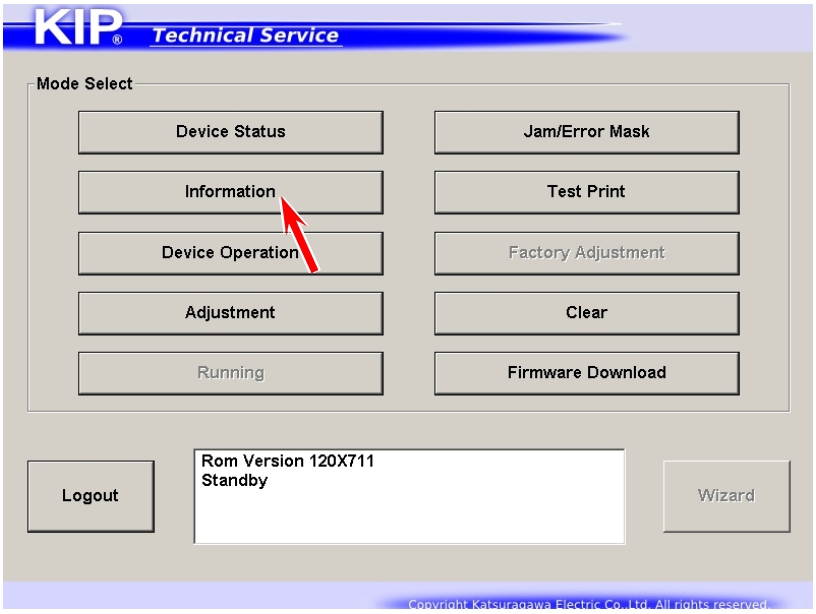
Error History screen

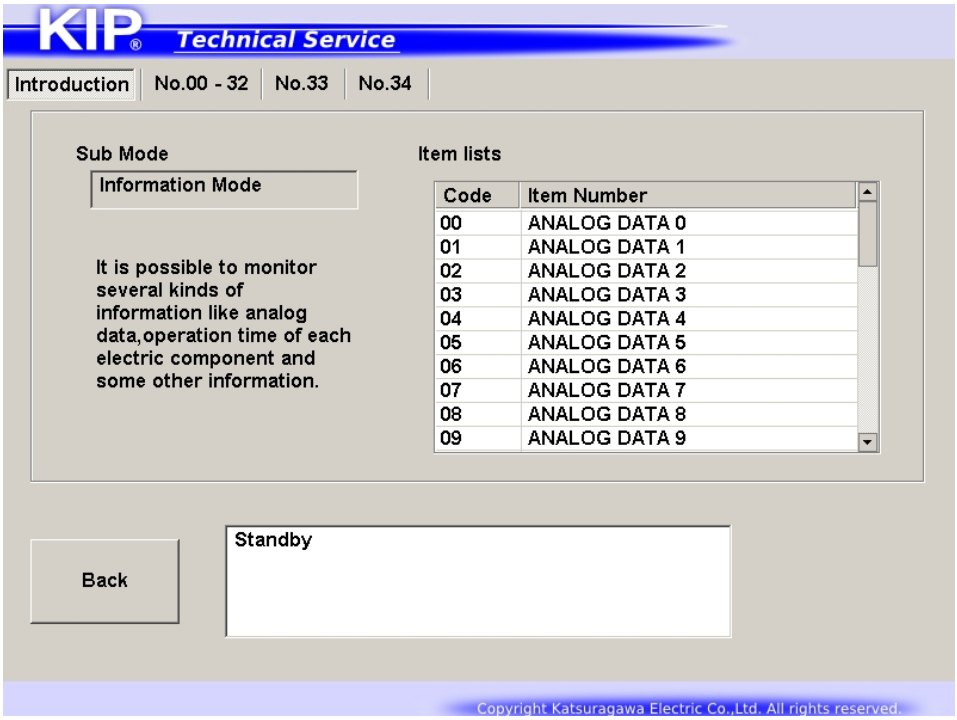


	Name	Function
1	Error Information	Displays the latest 100 service call error records
2	Code	Displays Jam Code “E-****”
3	Count	Displays the counter value that the concerning error occurred
4	Export	Saves the records as a file
5	Introduction	Returns to Data List screen

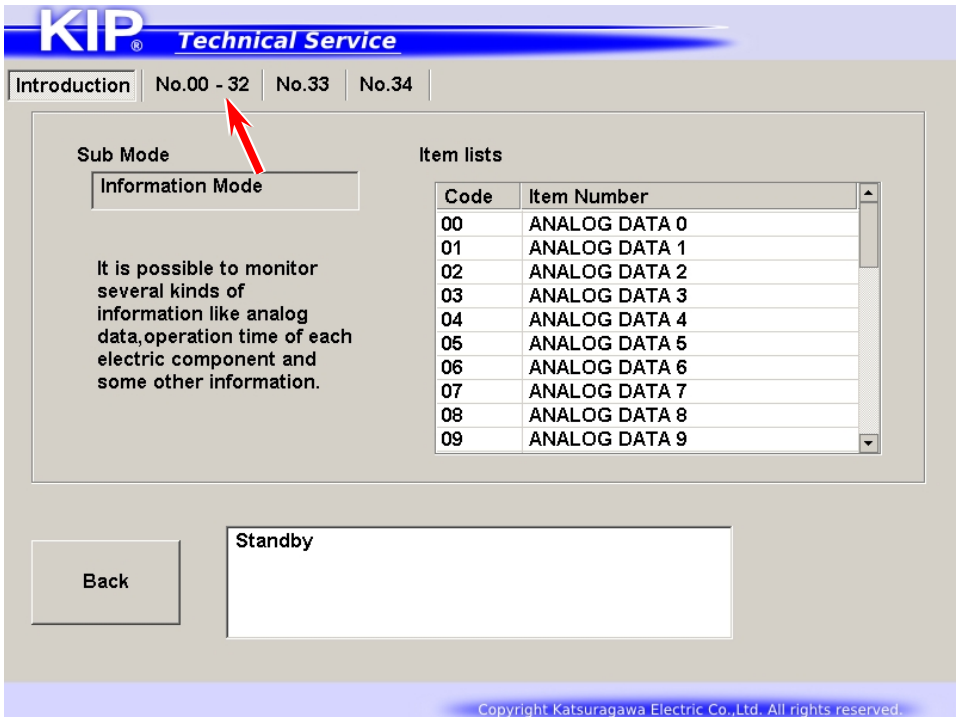
8. 4. 1 Monitoring Analog Data

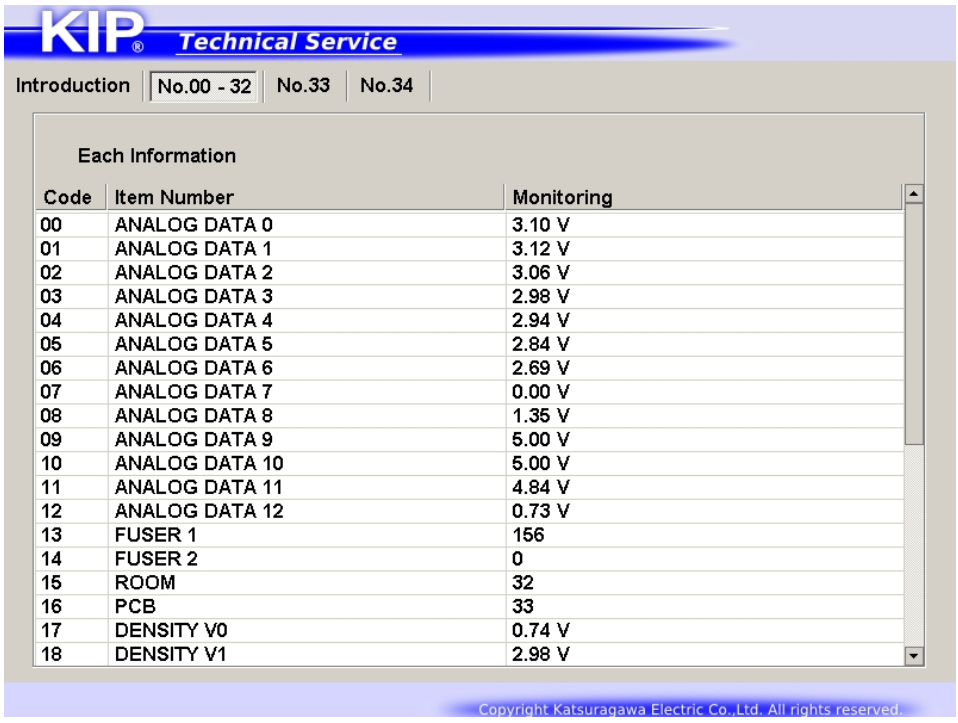
1. Press [Information] in Service Mode Home.
   Data List screen appears.





2. To monitor any available Analog Data value, open [No.00 - 32] tab to display Data Monitor screen.





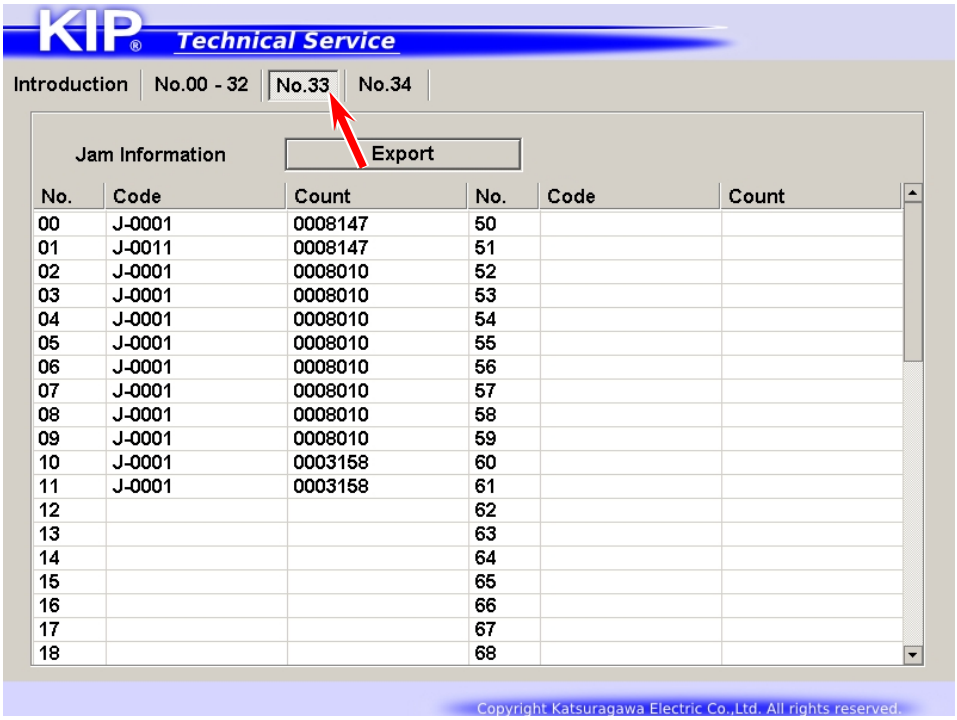
8. 4. 2 List of Analog Data Monitor

Data Code	Contents	Unit	Remarks
00	(Reserved)		
01	Room Temperature Input		
02	(Reserved)		
03	(Reserved)		
04	(Reserved)		
05	(Reserved)		
06	(Reserved)		
07	GND	[V]	
08	Fuser Temperature 1 Input (TH1)	[V]	
09	Fuser Temperature 2 Input (TH2)	[V]	
10	(Reserved)	[V]	
11	High Voltage Analog Output	[V]	
12	Density Sensor Analog Output (PH10)	[V]	
13	Fuser Temperature 1	Centigrade	Calculated Value
14	Fuser Temperature 2	Centigrade	Calculated Value
15	(Reserved)		
16	Room Temperature	Centigrade	Calculated Value
17	Density Sensor Output 1	[V]	
18	Density Sensor Output 2	[V]	
19	Density Sensor Output 3	[V]	
20	Density Sensor Standard Output	Hex.	
21	Developer Current Monitor 1	[V]	
22	Developer Current Monitor 2	[V]	
23	Developer Current Monitor 3	[V]	
24	Density Sensor Output 3-1	[V]	
25	Density Sensor Output 3-2	[V]	
26	Density Sensor Output 3-3	[V]	
27	Density Sensor Output 3-4	[V]	
28	Density Sensor Output 3-5	[V]	
29	Density Sensor Output 3-6	[V]	
30	Developer Bias Output Voltage	Hex.	
31	Total Count	[m]	stored on PW12020 (DC Controller PCB)
32	Counter A	*[ft^2 / m^2]	- links with the hardware counter - stored on PW12020 (DC Controller PCB)

* depends on the setting values in the following items.
- Hardware Counter Unit (ANSI / ISO) (Adjustment Mode No.95)
- Hardware Counter Unit (Detail) (Adjustment Mode No.2f)

8. 4. 3 Browsing Jam History

To browse the machine's jam history, open [No.33] tab to display Jam History screen.



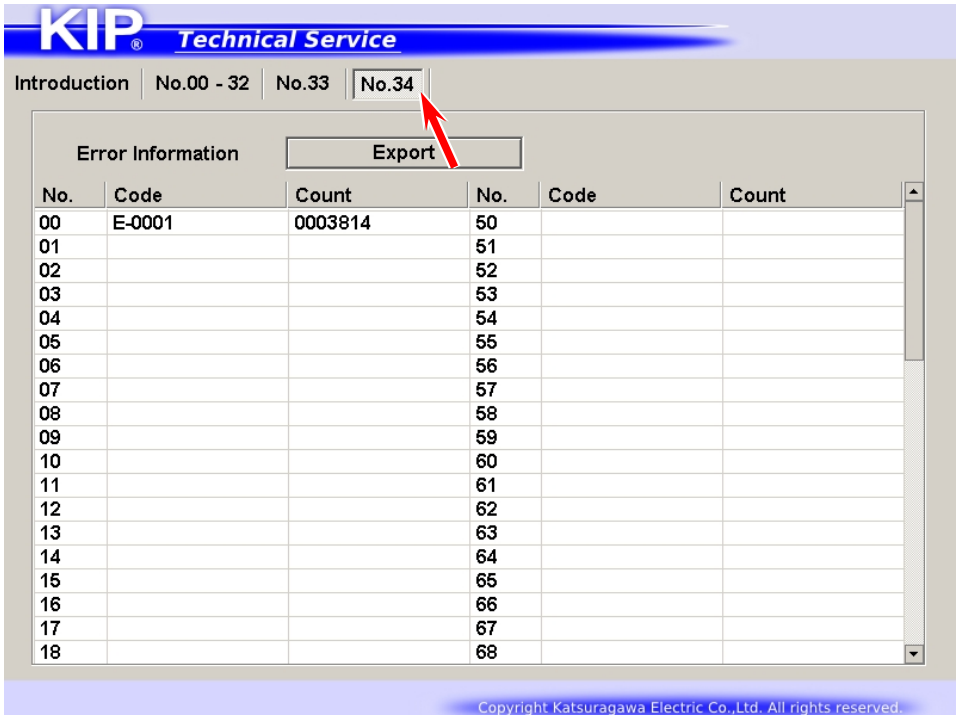
[Export] creates "jaminfo.dat" that contains the currently recorded Jam History.

Reference

To clear the entire jam history record, see [8.11.1 Clearing Fuser Error, Jam/Error History] on page 8-112.

8. 4. 4 Browsing Error History

To browse the machine's service call error history, open [No.34] tab to display Error History screen.



[Export] creates "errinfo.dat" that contains the currently recorded Error History.

Reference

To clear the entire service call error history record, see [8.11.1 Clearing Fuser Error, Jam/Error History] on page 8-112.

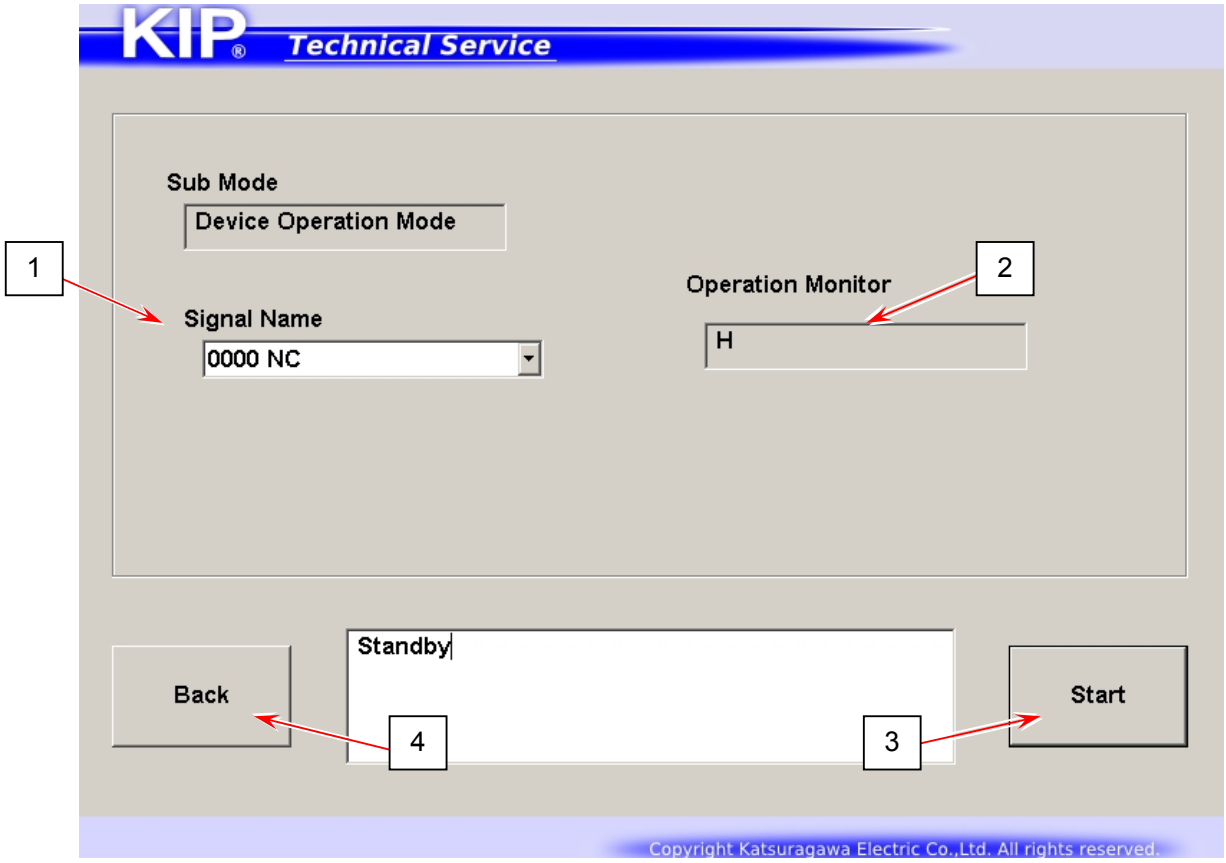
8. 5 Device Operation Mode

It is possible to operate several electrical components independently, such as motor, clutch, and fans.
Device Status Mode can be used to check whether DC Controller PCB correctly outputs the signal to each component, and also used to check whether such electrical component operates correctly.

Reference

For Signal Codes, Signal Names and their contents, see [8.3.2 Input / Output Signal List] on page 8-14.

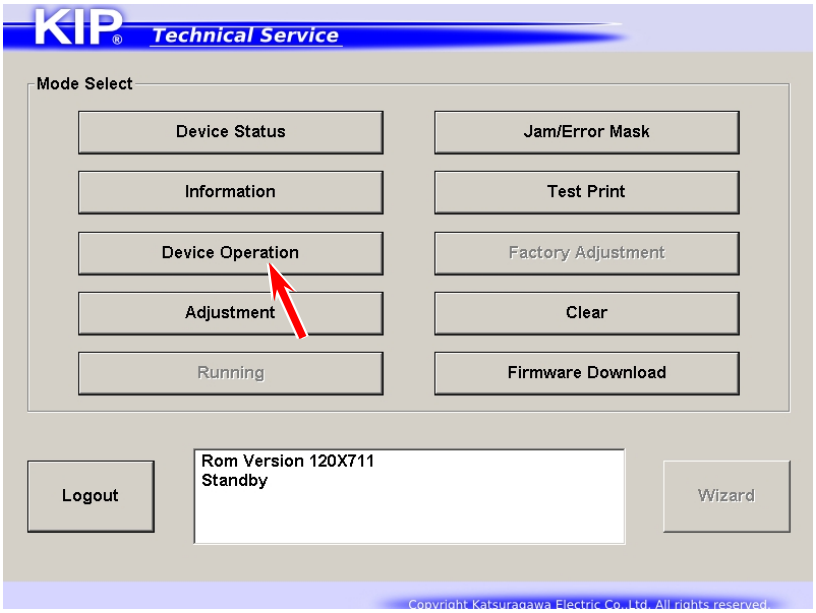
Operation Check screen

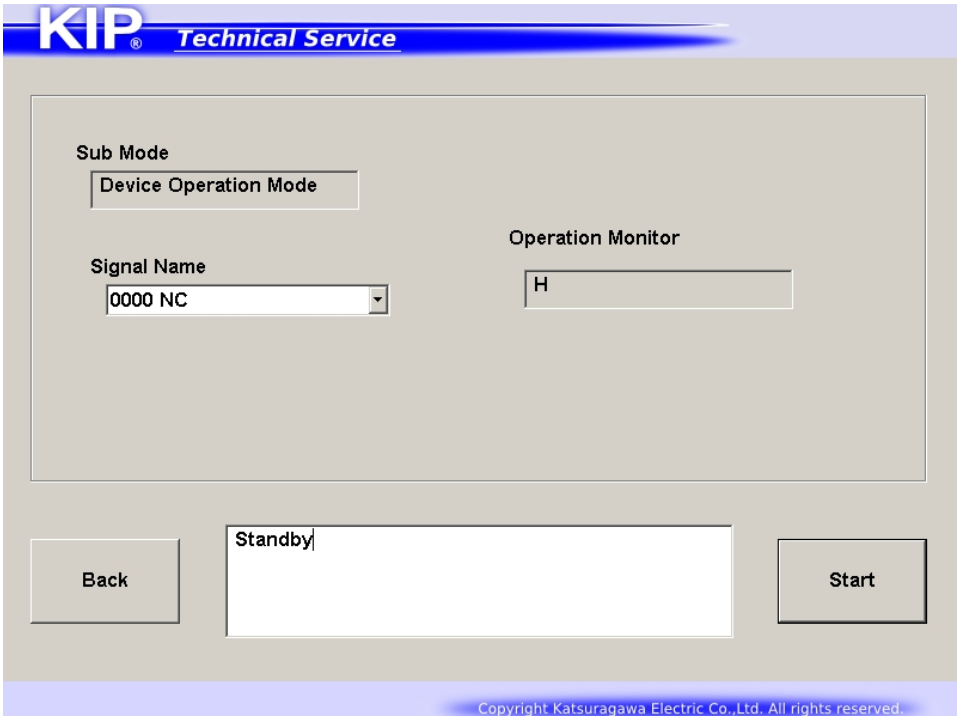


	Name	Function
1	Signal Name	Displays Signal Code/Name in drop-down menu Specify one item that you want to check.
2	Operation Monitor	Displays the current status of the selected signal
3	Enter	Operates the electric device you have chosen not available for sensors
4	Back	Returns to Service Mode Home

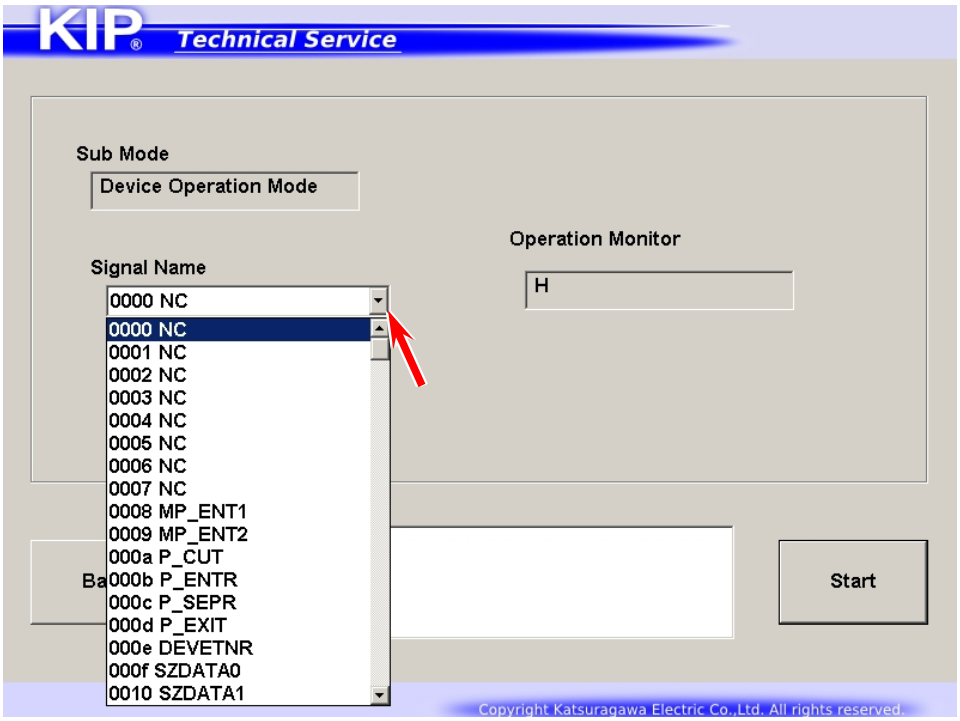
8. 5. 1 Checking Device Operation

1. Press [Device Operation] in Service Mode Home.
   Operation Check screen appears.





2. Specify one signal item that you want to monitor from Signal Name menu.



3. The current status of the device you have chosen is displayed in Operation Monitor. Press [Enter] to operate / stop the device alone alternately.

Reference

For Signal Codes, Signal Names and their contents, see [8.3.2 Input / Output Signal List] on page 8-14. The list can be used in common.

NOTE

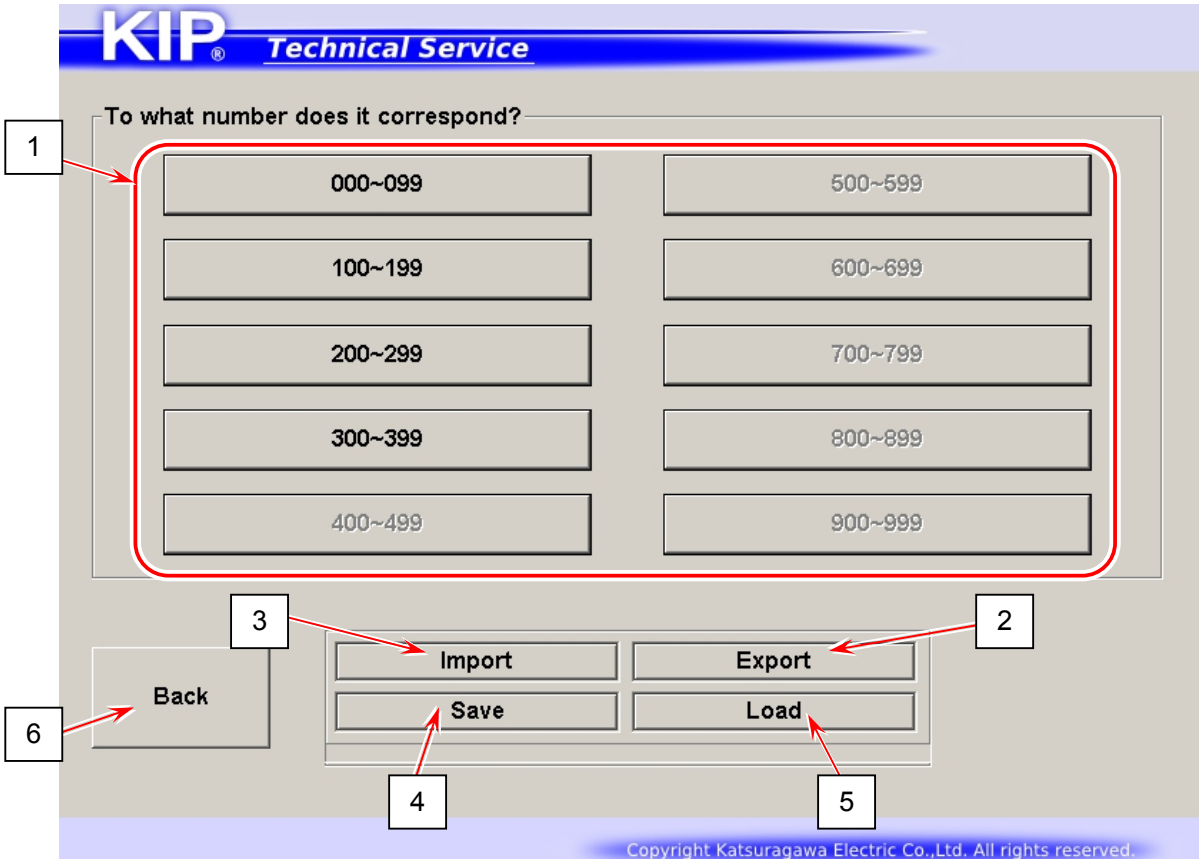
(1) It may take longer time to refresh Operation Monitor than Signal Monitor in Device Status Mode.

(2) It is possible to use Device Operation Mode to monitor some devices (such as sensors) that does not drive / operate alone.

8. 6 Adjustment Mode

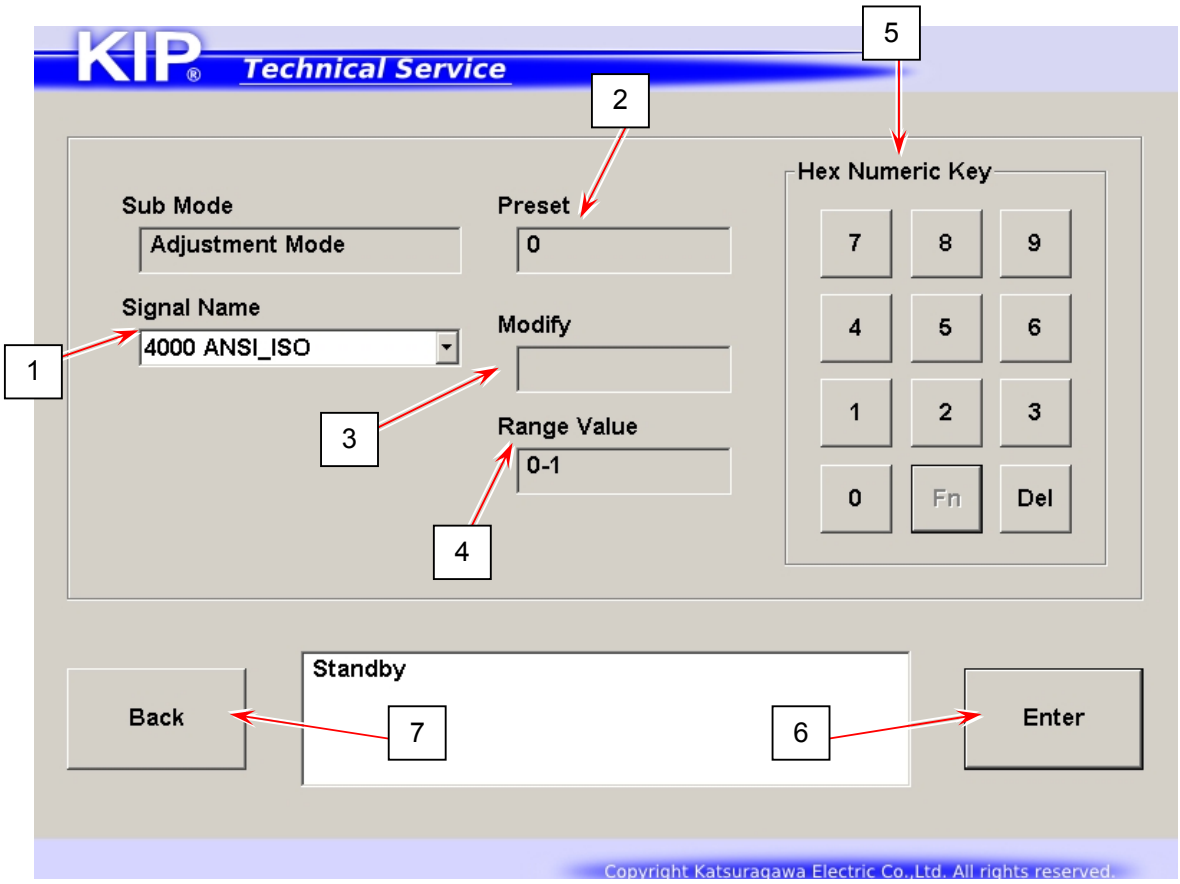
It is possible to configure fundamental settings on the printer.
Every setting item has the corresponding Sub Mode Number.

Adjustment Menu screen



	Name	Function
1	Sub Mode Number Group Button	Press one Code Group button that contains the signal code that you want to configure.
2	Export	Stores the current parameters in a RAM file for backup measure
3	Import	Reads parameters stored in RAM file
4	Save	Applies the parameters read by [Import]
5	Load	Reads the current parameters on the printer
6	Back	Returns to Service Mode Home

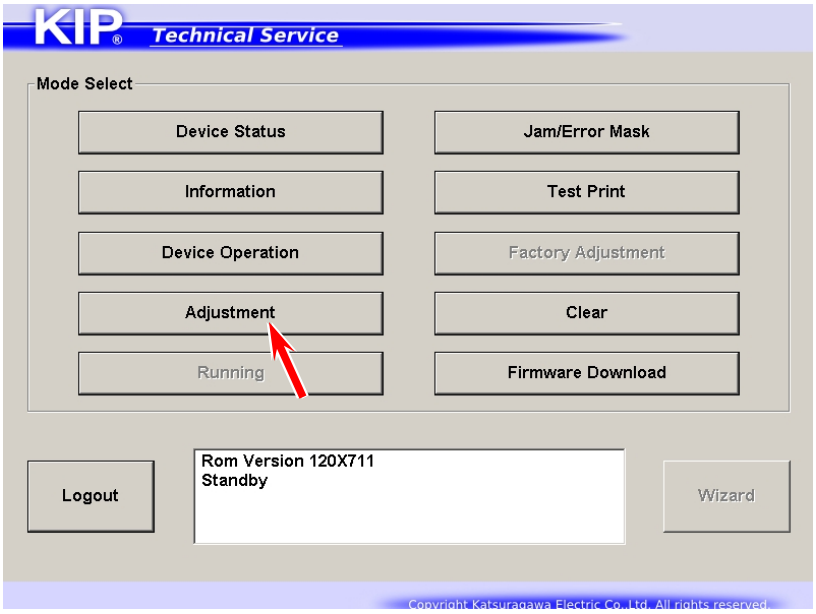
Setting Configuration screen

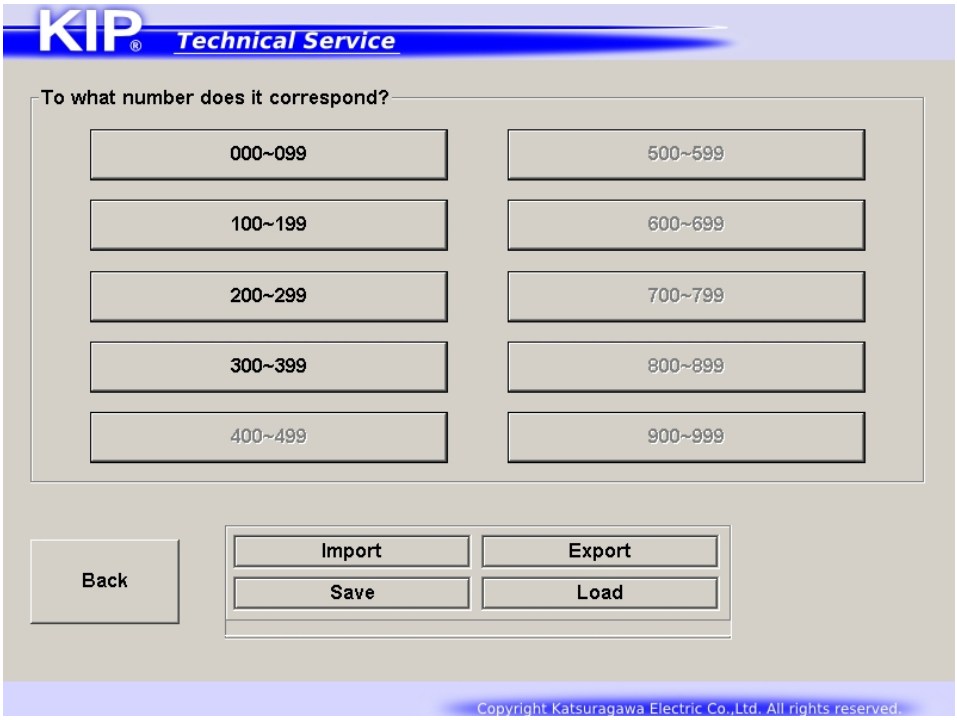


	Name	Function
1	Signal Name	Displays Signal Code/Name in drop-down menu Specify one item that you want to configure.
2	Preset	Displays the current value of the selected item
3	Modify	Displays an input value by using On-screen Keypad
4	Range Value	An input value must be set within this range.
5	Numeric Key	Use On-screen Keypad to input a value to be configured.
6	Enter	Applies a value in “Modify” to the selected item
7	Back	Returns to Service Mode Home

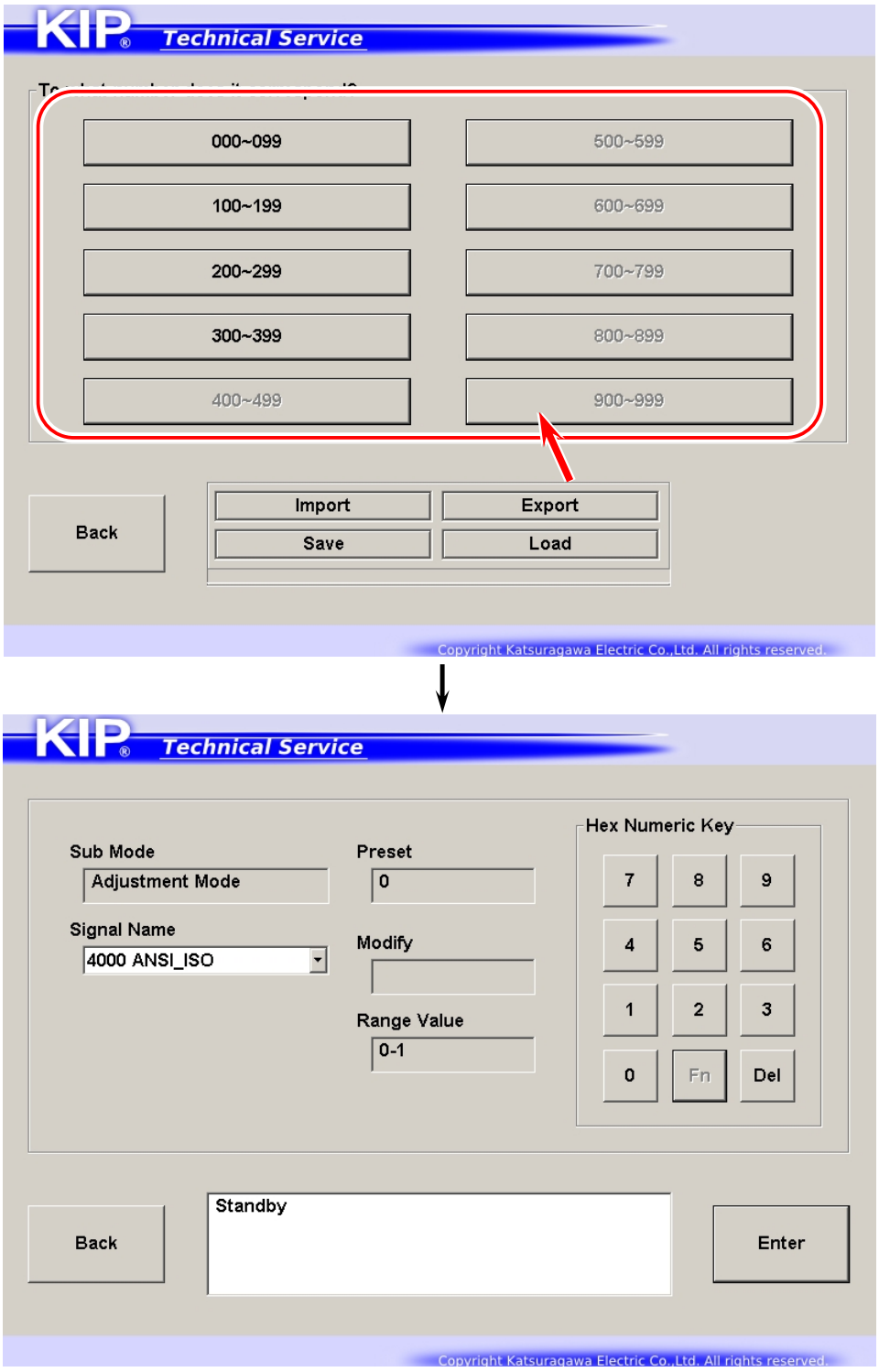
8. 6. 1 Changing Setting Value

1. Press [Adjustment] in Service Mode Home.
   Adjustment Menu screen appears.





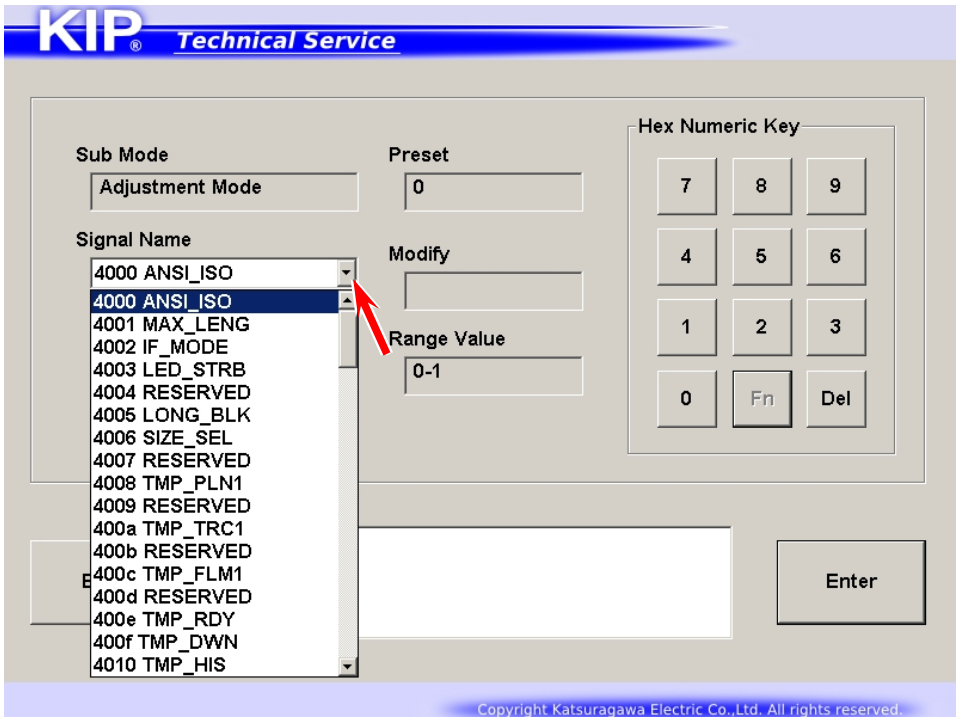
2. Press one Code Group button that contains the signal code that you want to configure.
   Setting Configuration screen appears.



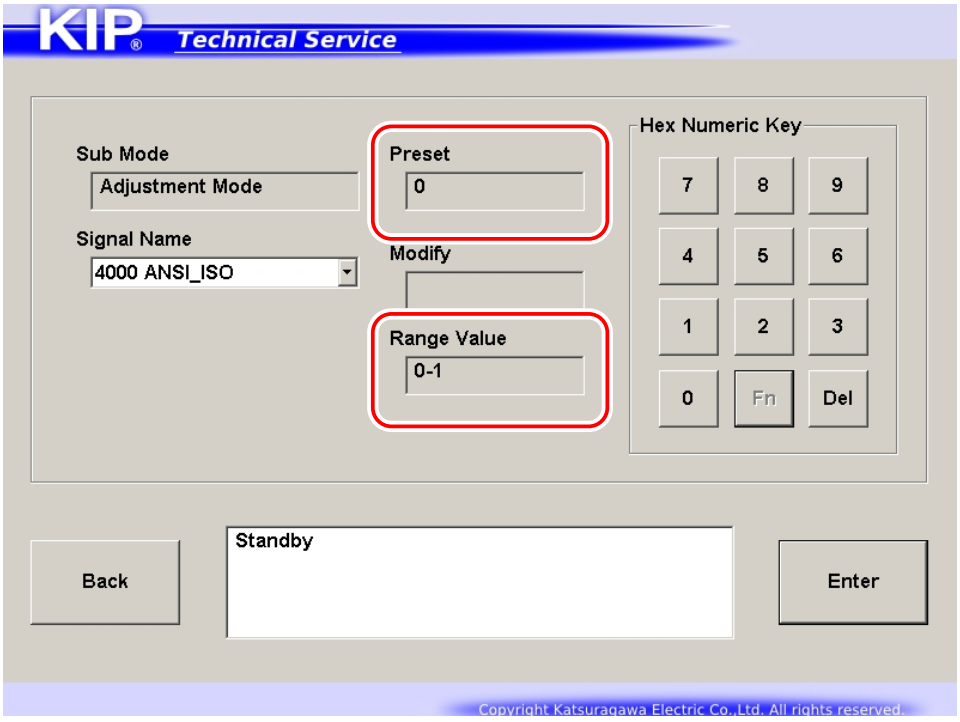
Reference

For correspondence between Signal Name/Code and Code Group button,
see [8.6.2 Setting Item List] on page 8-37.

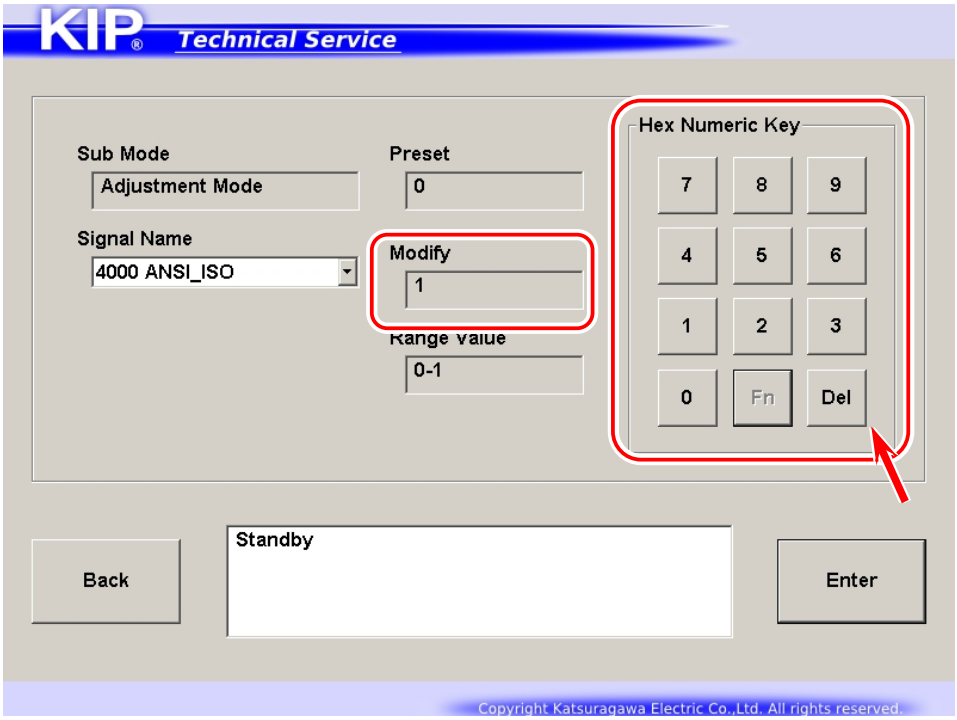
3. Specify one signal item that you want to configure from Signal Name menu.



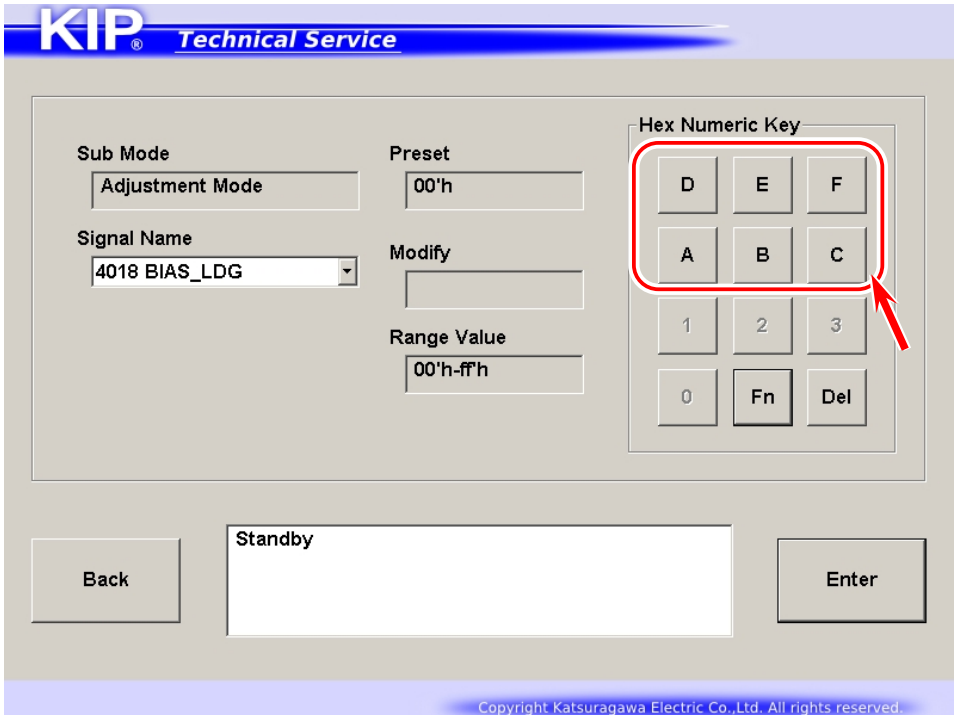
4. The current value and available setting range of the item you have chosen are displayed.



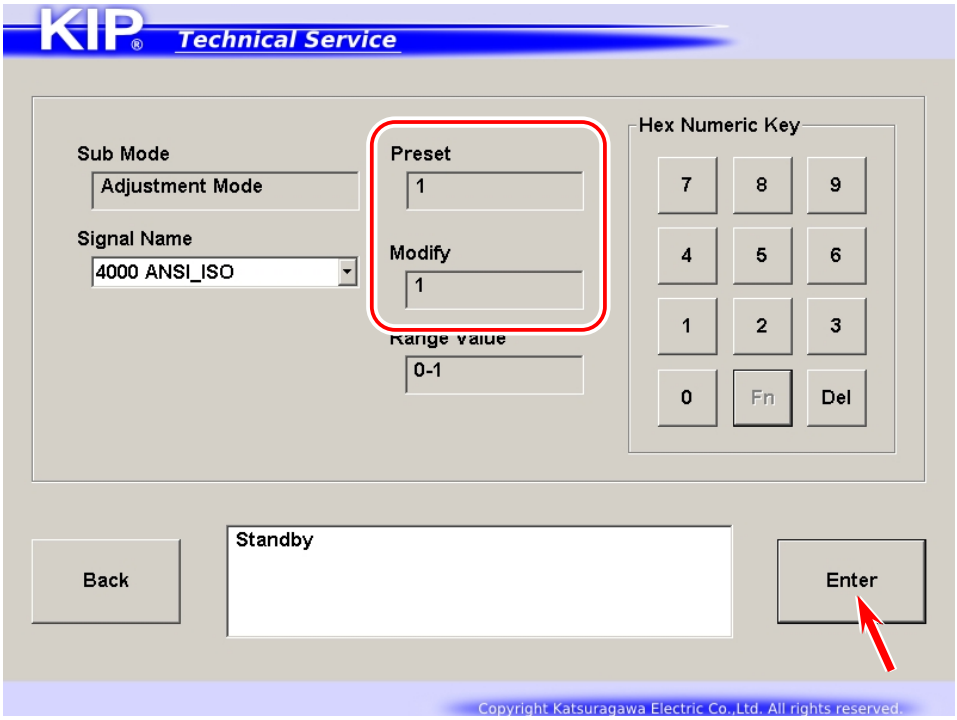
5. To change a setting value, input a desired value with On-screen Keypad.
   The value will be displayed in “Modify” area.



The setting item you have chosen is in hexadecimal, press [Fn] to input alphabetic characters A to F.



6. Press [Enter] to apply the new value to the printer.
   The value in “preset” area will be changed to the new value.



8. 6. 2 Setting Item List

* **Grayed** items will be rarely used for field service.

Sub Mode Number		Contents of Setting	Default Value	Range	Unit of Value	page
	00	Metric / Inch	-	0 - 1		8- 40
	01	Maximum Cut Length	0	0 - 2		8- 41
	02	Interface Board Setting	-	-		8- 41
	03	LED Head Strobe Time	40	0 - 64	microsec	8- 42
	04	(Reserved)	-	-		
	05	Trailing Margin for Long Print	0	0 - 1		8- 42
	06	Special Roll Size (ISO)	-	0 - 2		8- 43
	07	(Reserved)	-	-		
	08	Fusing Temperature (Plain)	153	100 - 180	Centigrade	8- 44
	09	(Reserved)	-	-		
	0a	Fusing Temperature (Tracing)	150	100 - 180	Centigrade	8- 43
	0b	(Reserved)	-	-		
	0c	Fusing Temperature (Film)	160	100 - 180	Centigrade	8- 43
	0d	(Reserved)	-	-		
	0e	Temperature Gap to be Ready	0	0 - 30	Centigrade	8- 44
	0f	Down Sequence Temperature Adjustment	10	5 - 30	Centigrade	8- 45
	10	Fusing Temperature Cycle (Ripple)	2	1 - 10	Centigrade	8- 46
	11	Fuser Temperature Overshoot	10	0 - 30	Centigrade	8- 47
	12	Warm up Time Setting	297	90 - 600	sec	8- 47
	13	Fuser Temperature (Idling)	130	100 - 180	Centigrade	8- 48
	14	Fuser Temperature (Warm Sleep)	120	50 - 180	Centigrade	8- 48
	15	Developer Bias (Plain)	-	00 - FF	Hex.	8- 49
	16	Developer Bias (Tracing)	-	00 - FF	Hex.	8- 49
	17	Developer Bias (Film)	-	00 - FF	Hex.	8- 49
	18	Developer Temporal Bias (Front Image)	10	00 - FF	Hex.	8- 49
	19	Developer Temporal Bias (After Print)	10	00 - FF	Hex.	8- 50
000	1a	Transfer Corona Analog Voltage (Roll, Plain)	-	-	Hex.	8- 50
|	1b	Transfer Corona Analog Voltage (Roll, Tracing)	-	-	Hex.	8- 50
099	1c	Transfer Corona Analog Voltage (Roll, Film)	-	-	Hex.	8- 50
	1d	Leading Registration (Roll)	11	1 - 20	mm	8- 51
	1e	Leading Registration (Cut Sheet)	10	1 - 20	mm	8- 51
	1f	Grid Analog Setting	-	000 - 500	Hex.	8- 51
	20	Cut Length Adjustment for Roll 1 (Plain)	-	1 - 30	mm	8- 52
	21	Cut Length Adjustment for Roll 1 (Tracing)	-	1 - 30	mm	8- 52
	22	Cut Length Adjustment for Roll 1 (Film)	-	1 - 30	mm	8- 52
	23	Cut Length Adjustment for Roll 1 (Signal Cut: Plain)	7	1 - 30	mm	8- 52
	24	Cut Length Adjustment for Roll 1 (Signal Cut: Tracing)	7	1 - 30	mm	8- 52
	25	Cut Length Adjustment for Roll 1 (Signal Cut: Film)	7	1 - 30	mm	8- 52
	26	Trailing Margin (Roll)	15	1 - 300	mm	8- 54
	27	Trailing Margin (Cut Sheet)	66	1 - 300	mm	8- 54
	28	Side Margin	9	0 - 30	mm	8- 55
	29	Transfer Corona ON timing (Roll)	10	1 - 100	mm	8- 56
	2a	Transfer Corona OFF timing (Roll)	70	1 - 300	mm	8- 57
	2b	Separation Corona OFF Timing (Plain)	60	0 - 99	mm	8- 57
	2c	Separation Corona OFF Timing (Tracing)	60	0 - 99	mm	8- 57
	2d	Separation Corona OFF Timing (Film)	60	0 - 99	mm	8- 57
	2e	Dehumidify Heater Setting	2	0 - 2		8- 58
	2f	Count Unit Advanced Setting	0	0 - 3		8- 58
	30	Key Card setting	0	0 - 2		8- 59
	31	Optional Device Setting	0	0 - 1		8- 59
	32	Number of Roll Deck	4	1 - 4		8- 59
	33	User Mode Permission	1	0 - 1		8- 60
	34	Main Motor Speed	40	0 - 80	%	8- 60
	35	Feed Motor speed (Plain)	40	0 - 80	%	8- 61
	36	Feed Motor speed (Tracing)	40	0 - 80	%	8- 61
	37	Feed Motor speed (Film)	40	0 - 80	%	8- 61
	38	Fuser Motor speed (Plain)	-	0 - 80	%	8- 61

Sub Mode Number		Contents of Setting	Default Value	Range	Unit of Value	page
000 - 099	39	Fuser Motor speed (Tracing)	-	0 - 80	%	8- 61
	3a	Fuser Motor speed (Film)	-	0 - 80	%	8- 61
100 | 199	3b	Fuser Motor 2nd Speed Switch Timing (Plain)	-	0 - 80	mm	8- 62
	3c	Fuser Motor 2nd Speed Switch Timing (Tracing)	-	0 - 80	mm	8- 62
	3d	Fuser Motor 2nd Speed Switch Timing (Film)	-	0 - 80	mm	8- 62
	3e	Fuser Motor 2nd Speed (Plain)	-	0 - 80	%	8- 62
	3f	Fuser Motor 2nd Speed (Tracing)	-	0 - 80	%	8- 62
	40	Fuser Motor 2nd Speed (Film)	40	0 - 80	%	8- 62
	41	Fuser Motor 3rd Speed Switch Timing (Plain)	0	0 - 80	mm	8- 63
	42	Fuser Motor 3rd Speed Switch Timing (Tracing)	0	0 - 80	mm	8- 63
	43	Fuser Motor 3rd Speed Switch Timing (Film)	0	0 - 80	mm	8- 63
	44	Fuser Motor 3rd Speed (Plain)	40	0 - 80	%	8- 63
	45	Fuser Motor 3rd Speed (Tracing)	40	0 - 80	%	8- 63
	46	Fuser Motor 3rd Speed (Film)	40	0 - 80	%	8- 63
	47	Toner Supply Volume Adjustment	10	1 - 240	Sec	8- 64
	48	Down Sequence Shift Time caused by Toner	0	0 - 100	Sec	8- 64
	49	Film Mode ON/OFF	0	0 - 1		8- 64
	4a	Transfer Corona ON timing (Cut Sheet)	10	1 - 100	mm	8- 65
	4b	Transfer Corona OFF timing (Cut Sheet)	70	1 - 300	mm	8- 66
	4c	Trailing Margin (Short Interval Mode, Roll)	-	1 - 300	mm	8- 67
	4d	Adjustment of paper slack at Cutter region (Roll 1)	-	70 - 99	mm	8- 67
	4e	Fuser Motor Speed (right after Drum)	0	0 - 100	%	8- 67
	4f	Print Wait Setting (Numbers of Sheet)	20	1 - 250	Number of Sheet	8- 68
	50	Print Wait Setting (Time)	30	0 - 180	sec	8- 68
	51	Fuser Temperature Compensation (Side) (Upper limit: Side Lamp remains OFF)	0	0 - 10	Centigrade	8- 69
	52	Fuser Temperature Compensation (Side) (Lower limit: Side Lamp remains ON)	1	0 - 10	Centigrade	8- 69
	53	Fuser Temperature Compensation (Center) (Upper limit: Center Lamp remains OFF)	0	0 - 10	Centigrade	8- 70
	54	Fuser Temperature Compensation (Center) (Lower limit: Center Lamp remains ON)	1	0 - 10	Centigrade	8- 70
	55	(Reserved)	-			
	56	Transfer Corona Analog Voltage (Cut Sheet: Plain)	-	00 - FF	Hex.	8- 71
	57	Transfer Corona Analog Voltage (Cut Sheet: Tracing)	-	00 - FF	Hex.	8- 71
	58	Transfer Corona Analog Voltage (Cut Sheet: Film)	-	00 - FF	Hex.	8- 71
	59	Cut Length for Roll 2 (Plain)	-	1 - 30	mm	8- 72
	5a	Cut Length for Roll 2 (Tracing)	-	1 - 30	mm	8- 72
	5b	Cut Length for Roll 2 (Film)	-	1 - 30	mm	8- 72
	5c	Cut Length Adjustment for Roll 2 (Signal Cut: Plain)	7	1 - 30	mm	8- 72
200 | 299	5d	Cut Length Adjustment for Roll 2 (Signal Cut: Tracing)	7	1 - 30	mm	8- 72
	5e	Cut Length Adjustment for Roll 2 (Signal Cut: Film)	7	1 - 30	mm	8- 72
	5f	Cut Length Adjustment for Roll 3 (Plain)	-	1 - 30	mm	8- 73
	60	Cut Length Adjustment for Roll 3 (Tracing)		1 - 30	mm	8- 73
	61	Cut Length Adjustment for Roll 3 (Film)	-	1 - 30	mm	8- 73
	62	Cut Length Adjustment for Roll 3 (Signal Cut: Plain)	7	1 - 30	mm	8- 73
	63	Cut Length Adjustment for Roll 3 (Signal Cut: Tracing)	7	1 - 30	mm	8- 73
	64	Cut Length Adjustment for Roll 3 (Signal Cut: Film)	7	1 - 30	mm	8- 73
	65	Cut Length Adjustment for Roll 4 (Plain)	-	1 - 30	mm	8- 74
	66	Cut Length Adjustment for Roll 4(Tracing)	-	1 - 30	mm	8- 74
	67	Cut Length Adjustment for Roll 4(Film)	-	1 - 30	mm	8- 74
	68	Cut Length Adjustment for Roll 4 (Signal Cut: Plain)	7	1 - 30	mm	8- 74
	69	Cut Length Adjustment for Roll 4 (Signal Cut: Tracing)	7	1 - 30	mm	8- 74
	6a	Cut Length Adjustment for Roll 4 (Signal Cut: Film)	7	1 - 30	mm	8- 74
	6b	Fusing Temperature Compensation (Plain, Small)	0	0 - 20	mm	8- 75
	6c	Fusing Temperature Compensation (Tracing, Small)	0	0 - 20	mm	8- 75
	6d	Fusing Temperature Compensation (Film, Small)	0	0 - 20	mm	8- 75

Sub Mode Number		Contents of Setting	Default Value	Range	Unit of Value	page
	6e	Toner Supply Timing Adjustment	5	1 - 40	sec	8- 75
	6f	Adjustment of paper slack at Cutter region (Roll 2)	-	70 - 99	mm	8- 75
	70	Adjustment of paper slack at Cutter region (Roll 3)	-	70 - 99	mm	8- 75
	71	Adjustment of paper slack at Cutter region (Roll 4)	-	70 - 99	mm	8- 75
	72	Separation Lamp ON Selection	0	0 - 7		8- 76
	73	Fuser Guide Solenoid A1 Switch	0	0 - 1		8- 76
	74	(Reserved)	-	-	-	
	75	(Reserved)	-	-	-	
	76	Toner Empty Timing Adjustment	20	1 - 40	sec	8- 77
200	77	Toner Supply Roller Bias	-	000 - 500	Hex.	8- 77
|	78	Regulation Bias	-	000 - 500	Hex.	8- 77
299	79	Density Compensation ON/OFF	1	0 - 1		8- 78
	7a	Density Sensor Standard Output	-	000 - 3FF	Hex.	8- 80
	7b	Density Sensor Analog Voltage	-	000 - 500	Hex.	8- 80
	7c	Density Sensor Output Monitor	6	1 - 9		8- 80
	7d	Target Density	-	000 - 3FF	Hex.	8- 81
	7e	Density Measure Patch Adjustment	41	10 - 8F	Hex.	8- 81
	7f	Density Measure Interval	1	0 - 99	hour	8- 81
	80	Developer Bias Increment for Bias Adjustment	-	00 - ff	Hex.	8- 82
	81	Developer Bias Increment Total	00	00 - ff	Hex.	8- 82
	82	Regulation Bias Increment for Bias Adjustment	40	00 - ff	Hex.	8- 83
	83	Regulation Bias Increment Total	-	000 - 500	Hex.	8- 83
	84	Regulation Bias Increment Maximum	140	000 - 500	Hex.	8- 83
	85	Developer Reference Bias	-	00 - FF	Hex.	8- 84
	86	Density Measure Extra Check	1	0 - 1		8- 85
	87	Density Range for Extra Check	01	00 - 0F	Hex.	8- 85
	88	Regulation Temporal Bias (after Development)	000	000 - 500	Hex.	8- 85
	89	Minimum Developer Bias (absolute value)	B3	00 - FF	Hex.	8- 86
	8a	Maximum Developer Bias (absolute value)	94	00 - FF	Hex.	8- 86
	8b	Transfer Voltage Switch Timing to Trailing Edge	1	0 - 100	mm	8- 86
	8c	Transfer Voltage applied to Trailing Edge (Plain)	-	00 - ff	Hex.	8- 87
	8d	Transfer Voltage applied to Trailing Edge (Tracing)	-	00 - ff	Hex.	8- 87
300	8e	Transfer Voltage applied to Trailing Edge (Film)	-	00 - ff	Hex.	8- 87
|	8f	Toner Supply Bias (High Coverage Mode)	03B	000 - 500	Hex.	8- 87
399	90	Cut Length (Upper Roll Deck)	10	0 - 30	mm	8- 88
	91	Cut Length (Lower Roll Deck)	10	0 - 30	mm	8- 88
	92	Cut Length Compensation (Upper Roll Deck)	-	0 - 999	mm	8- 89
	93	Cut Length Compensation (Lower Roll Deck)	-	0 - 999	mm	8- 89
	94	Regulation Bias (High Coverage Mode)	00	00 - FF	Hex.	8- 89
	95	Count Unit Setting (ANSI/ISO Toggle)	-	0 - 1		8- 89
	96	Fuser Motor Speed Switch Timing at Trailing Edge	0	0 - 100	mm	8- 90
	97	Fuser Motor Speed for Trailing Edge (Plain)	0	0 - 100	%	8- 90
	98	Fuser Motor Speed for Trailing Edge (Tracing)	0	0 - 100	%	8- 90
	99	Fuser Motor Speed for Trailing Edge (Film)	0	0 - 100	%	8- 90
	9a	HV Error Invalid Mode ON/OFF	0	0 - 1		8- 90
	9b	Drum Reverse Time	1	0 - 10	ms	8- 91
	9c	Feed Motor Speed (Advanced) 1st/Roll 1, 3/Large			%	8- 92
	9d	Feed Motor Speed (Advanced) 2nd/Roll 1, 3/Large		0 - 80	%	8- 92
	9e	Feed Motor Speed (Advanced) 1st/Roll 1, 3/Small		0 - 80	%	8- 92
	9f	Feed Motor Speed (Advanced) 2nd/Roll 1, 3/Small		0 - 80	%	8- 92
	a0	Feed Motor Speed (Advanced) 1st/Roll 2, 4/Large		0 - 80	%	8- 92
	a1	Feed Motor Speed (Advanced) 2nd/Roll 2, 4/Large		0 - 80	%	8- 92
	a2	Feed Motor Speed (Advanced) 1st/Roll 2, 4/Small		0 - 80	%	8- 92
	a3	Feed Motor Speed (Advanced) 2nd/Roll 2, 4/Small		0 - 80	%	8- 92
	a4	(Reserved)				

8. 6. 3 Setting Item Explanation

General Notice for Setting Item Explanation

- Reserved Setting Items (displayed “NC” in KIP SubGUI) are skipped in this section.

- Some settings have a set of size code category. In this section, such Sub Mode items are described as follows.
  Note that a roll media with the size code “4” (marked *) is out of specification.

Example: (15) (16) (17) Developer Bias

Sub Mode No.	Media Type	Setting Range
15	Plain Paper	00 – FF [Hexadecimal]
16	Tracing Paper / Vellum	
17	Film	

Example: (1d) Leading Registration (Roll)

Sub Mode No.	Contents
0.1d	A0 / 30” or wider Roll media
1.1d	A1 / 22” / 24” wide Roll media
2.1d	A2 / 17” / 18” wide Roll media
3.1d	A3 / 11” / 12” wide Roll media
4.1d*	A4 / 8.5” / 9” wide Roll media

- Frequently referred section list

Contents	Sub Mode No.
Hardware Counter Unit	First: No.95 (page 8-89) Next: No.2f (page 8-58)
Maximum Print Length	No.01 (page 8-41)
Finishing Device	----- Configuration available on the UI
Auto Stacker	No.31 (page 8-89)
Cut Length	First: No.90, 91 (page 8-88) Next: No. 92, 93 (page 8-89) as needed: No. 20 to 25 (page 8-52) 59 to 6a (page 8-72 to 74)

(00) Metric / Inch (for size format)

It is possible to specify the size format of paper.

Setting Value	Set of size format selection
0	Metric (ISO)
1	Inch (ANSI)

⚠ NOTE

“Metric / Inch” (No.00) effects only to the size format selection available in the UI screen.
This does not effect to the count unit.
The count unit is determined based on "Hardware Counter Unit (ANSI / ISO)” (No.95) and Hardware Counter Unit (Detail) (No.2f).

(01) Maximum Cut Length

It is possible to specify the maximum cut length.

Setting Value	Contents
0	6m
1	24m
2	Unlimited

NOTE

We will not guarantee the print quality if the print is longer than the following sizes.

A0 / 36” plain paper ..... 6.0 m
Other sizes of plain paper ..... 5x standard size
Tracing paper ..... 2x standard size
Film ..... 1x standard size

(02) Interface Board Setting

NOTE

Setting change is allowed to factory-use only. Keep the value unchanged from the default.

This is the setting how to set the function of Interface Board.

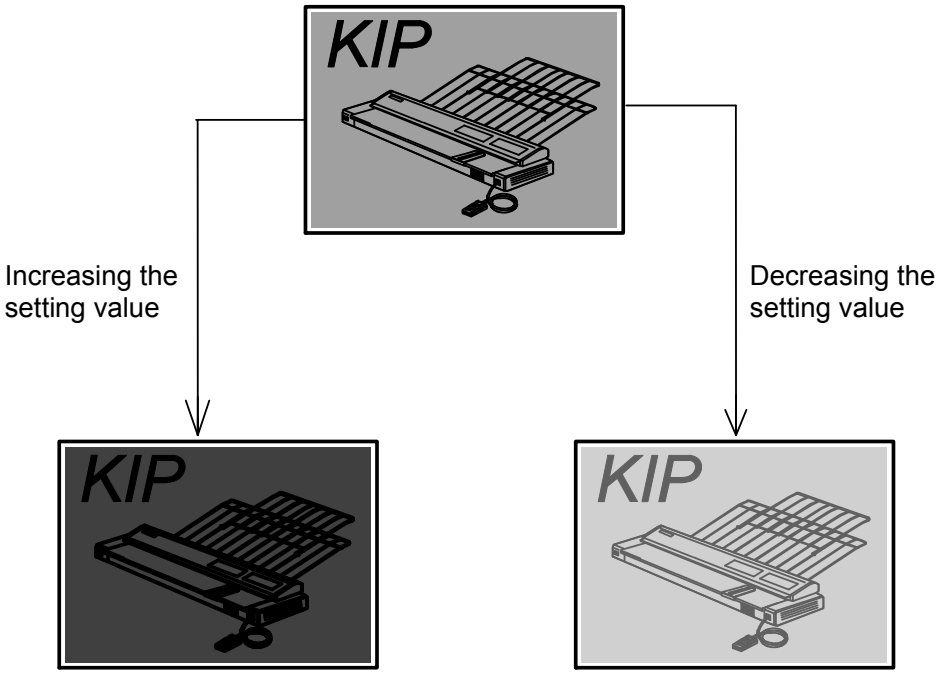
Default	Setting Value
01	00 - FF

(03) LED Head Strobe Time

It is possible to decide the LED Head strobe time (lighting time).
This setting is the standard strobe time for LED head.
The setting unit is “microsecond”, and the setting range is from 0 to 64.

Setting Range	Unit
0 - 64	microsecond

If you increase the setting value, the LED Head will light up longer than before.
The image density gets darker as the result of it.



(05) Trailing Margin for Long Print

It is possible to add a white margin (approximately 230mm) on the trailing edge when long print is taken, due to ignore the cutter shock.
Selectable setting values are “0” or “1”.

Setting Value	Contents
0	No additional white margin
1	Adds the white margin.

(06) Special Roll Size (ISO)

This is a mode to make it possible to use the following kinds of irregular roll paper.
However, note that it is available to use the following irregular rolls only in case of selecting "0" Metric Format (ISO) in Sub Mode No. 00.

Selectable setting values are "0", "1" and "2".

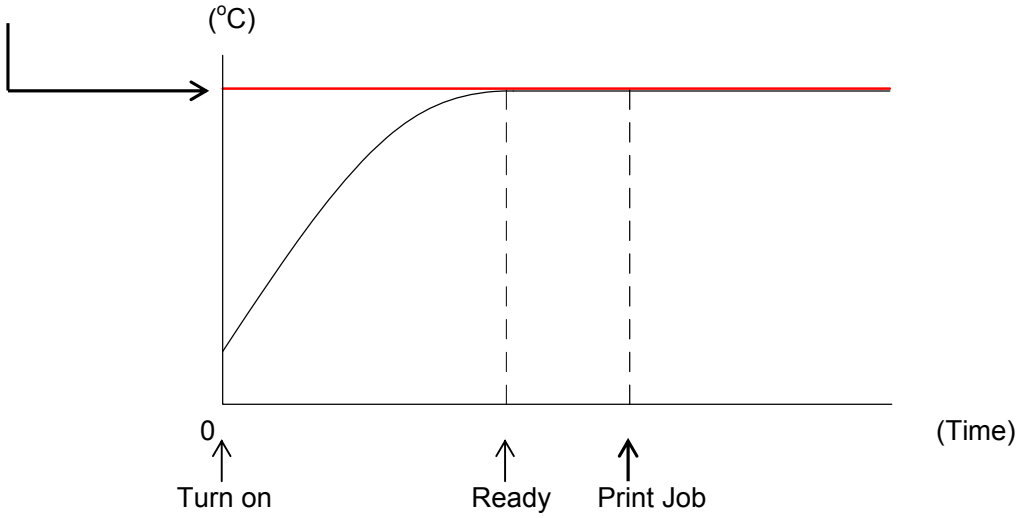
Setting Value	Roll size	Size Indication
0	900mm wide roll paper becomes available to use.	900
1	891mm wide roll paper becomes available to use.	891
2	880mm wide roll paper becomes available to use.	880

(08) (0a) (0c) Fusing Temperature

It is possible to adjust the fusing temperature.
The setting unit is "degree Centigrade", and the setting range is from 100 to 180.

Sub Mode No.	Media Type	Setting Range
08	Plain Paper	100 – 180 degrees Centigrade
0a	Tracing Paper / Vellum	
0c	Film	

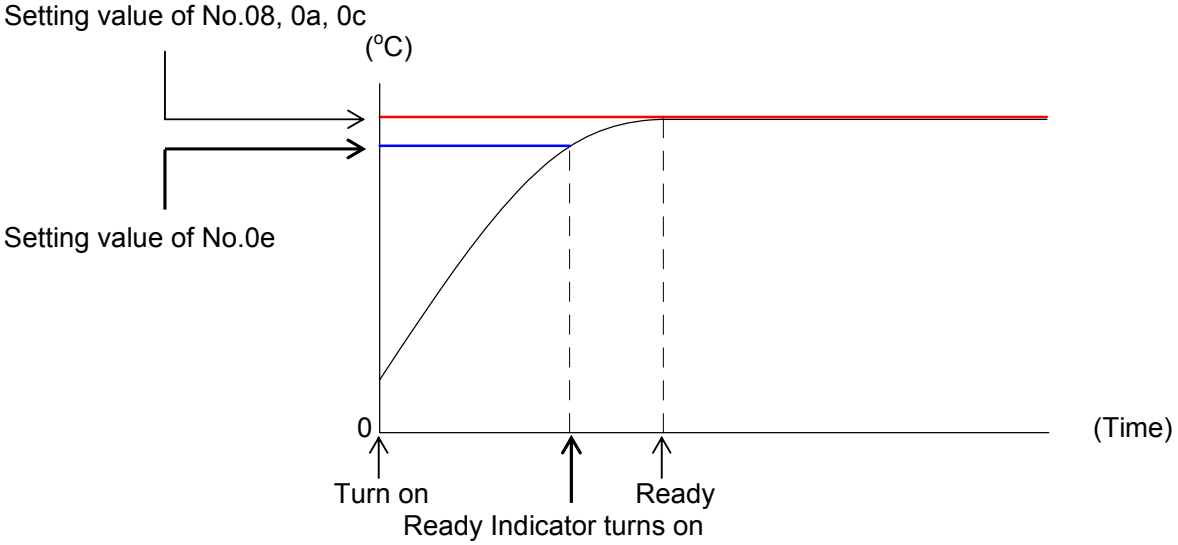
Setting value of No.08, 0a, 0c



(0e) Temperature Gap to be Ready

It is possible to make this printer “Ready” before reaching the actual set temperature.
The setting unit is “degree Centigrade”, and the setting range is from 0 to 30.
This function is effective only when Fuser Roller is enough cooled such as the first turn-on in the morning.

Setting Range	Unit
0 - 30	Centigrade



(0f) Down Sequence Temperature Adjustment

If the temperature of this fuser goes down during printing, and exceeds a certain limit, the printer goes into “Down Sequence” in order to recover the ability of fusing.
One of the conditions to enter “Down Sequence” is to compare the gap between actual temperature and the control temperature. In case this gap exceeds 10 degrees Centigrade, it enters in the “Down Sequence”.
Since it is possible to set this temperature gap in the service mode, we can avoid entering in the “Down Sequence” unnecessarily due to the difference of individual machine.

If you increase the setting value, this machine does not enter to the “Down Sequence” so easily. Instead, you should be careful that “non-fused” might happen.

The setting unit is “degree Centigrade”, and the setting range is from 5 to 30.

Setting Range	Unit
5 - 30	Centigrade

⚠ NOTE

This printer may take “Down Sequence” in case of the low voltage of Power Source or the first copy in the cold morning when the wide format is printed.

(10) Fusing Temperature Cycle (Ripple)

It is possible to decide the range of fusing temperature cycle (ripple).
The setting unit is “degree Centigrade”, and the setting range is from 1 to 10.

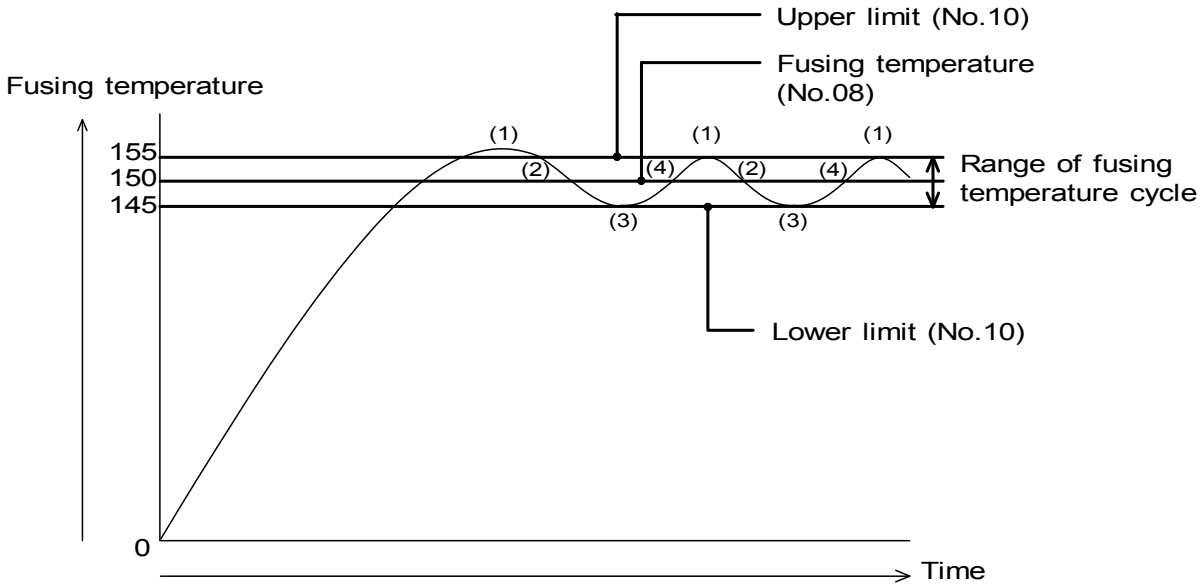
Setting Range	Unit
1 - 10	Centigrade

The upper limit and the lower limit are decided by the following formula.

Fusing temperature (Setting value of No.08 / 0a / 0c) + Setting value of No.10 = Upper limit
Fusing temperature (Setting value of No.08 / 0a / 0c) - Setting value of No.10 = Lower limit

(Example)
When the fusing temperature for the plain paper is specified as “150 degrees Centigrade” in No.08 and the setting value of “No.10” is “5”, the upper limit is 155 degrees Centigrade while lower limit is 145 degrees centigrade.
Temperature is controlled as follows.

1) When the fusing temperature rises up to the upper limit (155 degrees C), the machine stops heating up the Fuser Element.
   It corresponds to (1) in the following figure.
2) Fusing temperature will fall little by little.
   It corresponds to (2) in the figure.
3) When the temperature falls down to the lower limit (145 degrees C), the machine starts heating up the Fuser Element again.
   It corresponds to (3) in the figure.
4) Fuser Element is heated up until its temperature reaches the upper limit.
   It corresponds to (4) in the figure.
5) The fusing temperature is kept almost constant within 10 degrees of range by repeating (1) to (4) many times.



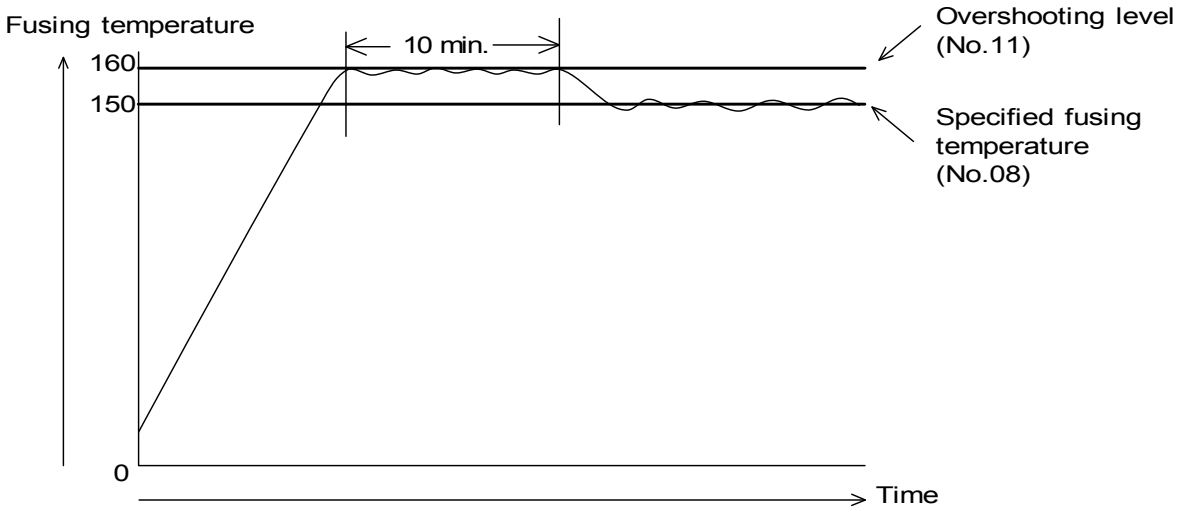
(11) Fuser Temperature (Overshoot)

When you turn on the machine, the Fuser Element is heated up so that its temperature should some degree overshoot the fusing temperature decided in Sub Mode No.08 / 0a / 0c.
In this No.11 it is possible to specify how much degree the temperature of Fuser should overshoot the specified fusing temperature.
This condition is kept for 10 minutes.
The setting unit is "degree Centigrade, and the setting range is from 0 to 30.

Setting Range	Unit
0 - 30	Centigrade

Supposing the fusing temperature decided in No.08 is 150 degrees Centigrade and you select "10" as the setting value in this No.11, the Fuser Element is heated up to 160 degrees Centigrade at the time of warming up.

150 (Fusing temperature decided in No.08) + 10 (Setting value of No.11) = 160



(12) Warm up Time Setting

When you turn on the machine, Fuser Roller is heated up till the specified temperature in Sub Mode No.08 / 0a / 0c.
However, if No.12 is set at a "certain" seconds and its time is expired, following calculation will be done.

[Value of No.08, 0a or 0c] – [Value of No.0e]

And if the actual Fuser Temperature exceeds this result, this machine becomes "Ready".

The setting unit is "second", and the setting range is from 90 to 600.

Setting Range	Unit
90 - 600	second

Supposing the fusing temperature decided in No.08 is 150 degrees centigrade.
And you select "10" as the setting value in Sub Mode No.0e, while you select "150" as the setting value in Sub Mode No.12.

150 (value of Sub Mode No.08) – 10 (value of Sub Mode No.0e) = 140

When Fuser Roller is heated up to 140 degrees Centigrade after the time of Sub Mode No. 12 is expired, this machine becomes "Ready" condition.

(13) Fuser Temperature (Idling)

When you turn on the machine, the Fuser Element is heated up till the specified temperature in Sub Mode No.08 / 0a / 0c.
When the Fuser Temperature exceeds this value of Sub Mode No.13, “Idling” starts and Fuser Roller starts to rotate.

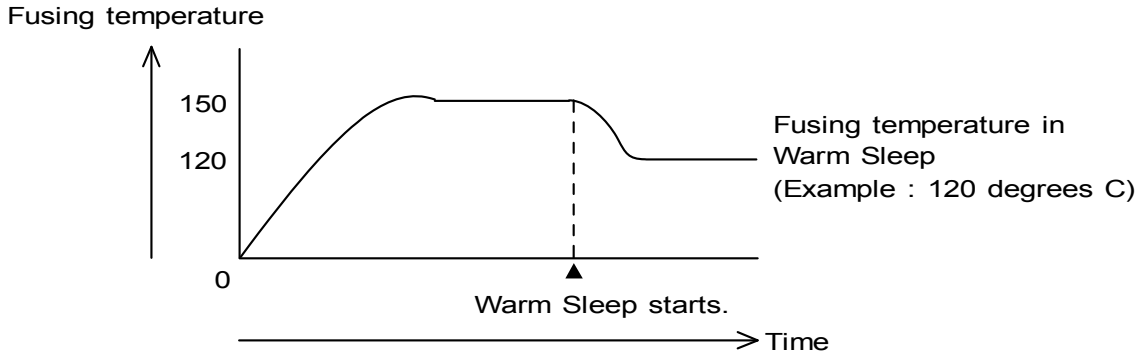
The setting unit is “degree Centigrade”, and the setting range is from 100 to 180.

Setting Range	Unit
100 - 180	Centigrade

(14) Fuser Temperature (Warm Sleep)

It is possible to decide how much degree of fusing temperature should be kept in the Warm Sleep.
The setting unit is “degree Centigrade”, and the setting range is from 50 to 180.

Setting Range	Unit
50 - 180	Centigrade



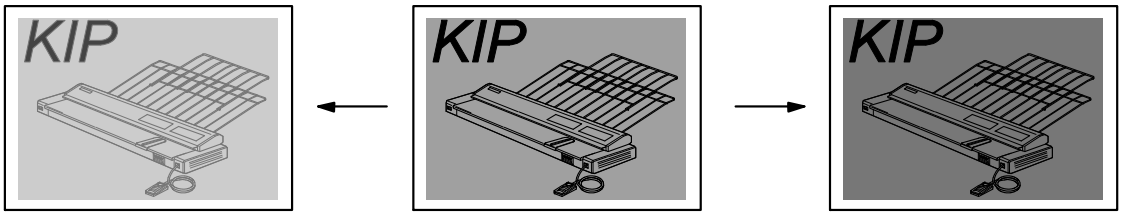
(15) (16) (17) Developer Bias

It is possible to make the print density darker or lighter by adjusting Developer Bias (Negative).
The print density becomes lighter if you increase the setting value.

The setting unit is “Hexadecimal”, and the setting range is from 00 to FF.

Sub Mode No.	Media Type	Setting Range
15	Plain Paper	00 – FF [Hexadecimal]
16	Tracing Paper / Vellum	
17	Film	

Setting value is increased. Setting value is decreased.



NOTE

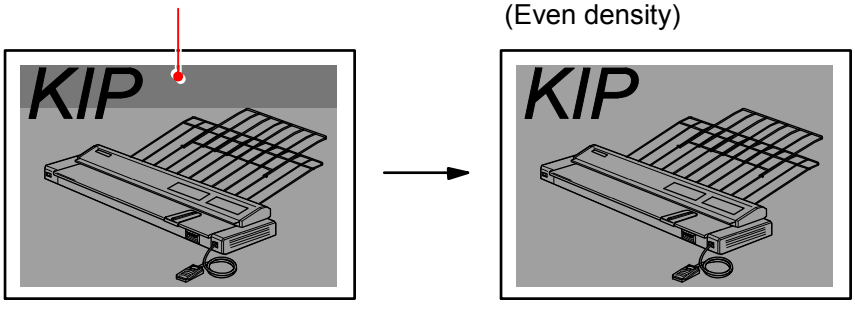
Please adjust the Developer Bias while checking the actual voltage with the multi-meter.

(18) Developer Temporal Bias (Front Image)

It is possible to adjust Developer Bias for the top 251mm area of image.
The setting unit is “Hexadecimal”, and the setting range is from 00 to FF.
If you decrease the setting value, the top 251mm area of print image gets lighter.

Setting Range	Unit
00 - FF	Hexadecimal

Density of leading area is darker. Setting value is increased. (Even density)



NOTE

There may be the case that the density of leading area, which corresponds to the 1st revolution of Drum, is darker than other area.
In this case compensate the Developer Bias to have even density on both areas.

(19) Developer Temporal Bias (After Print)

It is possible to adjust the Developer Bias after the Print Cycle is finished.
The setting unit is “Hexadecimal”, and the setting range is from 00 to FF.
If you decrease the setting value, Drum is kept cleaned.

Setting Range	Unit
00 - FF	Hexadecimal

(1a) (1b) (1c) Transfer Corona Analog Voltage (Roll)

It is possible to adjust the analog voltage (TR_ANLG) that controls the high-voltage current supplied to the Transfer Corona.
The setting unit is “Hexadecimal”, and the setting range is from 00 to FF.
These settings are applied in the roll media feeding mode.

Sub Mode No.	Media Type	Setting Range
1a	Plain Paper	00 – FF [Hexadecimal]
1b	Tracing Paper / Vellum	
1c	Film	

If you increase the setting value, the print image gets a little darker.

⚠ NOTE

Please adjust Transfer Corona Analog Voltage while checking the actual voltage with the multi-meter.

(1d) (1e) Leading Registration

It is possible to adjust the vertical (paper feeding direction) position of print image against the paper.
You can specify the image position for each roll size, each manual feed paper independently.
The setting unit is “mm”, and this setting varies based on media.

Sub Mode No.	Width	Media Source	Setting Range	Unit
0.1d	A0 / 30” or wider	Roll media	1 – 20	mm
1.1d	A1 / 22” / 24”			
2.1d	A2 / 17” / 18”			
3.1d	A3 / 11” / 12”			
4.1d*	A4 / 8.5” / 9”			
0.1e	A0 / 30” or wider	Cut Sheet		
1.1e	A1 / 22” / 24”			
2.1e	A2 / 17” / 18”			
3.1e	A3 / 11” / 12”			
4.1e	A4 / 8.5” / 9”			

*** DO NOT USE. The concerning media type/width combination is out of specification.**

If you increase the setting value, it becomes earlier to start feeding the paper from the Registration Roller. As the result of it, the image is shifted toward the trailing edge of paper.

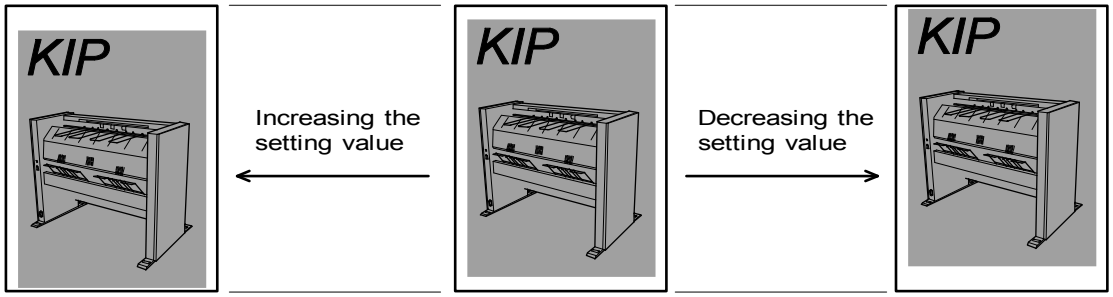


Image is shifted toward the trailing edge.

Image is shifted toward the leading edge.

(1f) Grid Analog Setting

It is possible to adjust the voltage of Grid Plate (GRID_ANLG).
The setting unit is “Hexadecimal”, and the setting range is from 000 to 500.

Setting Range	Unit
000 – 500	Hexadecimal

If you increase the setting value, the voltage of Grid Plate is decreased.

(20) (21) (22) (23) (24) (25) Cut Length Adjustment (Roll 1)

It is possible to adjust the cut length for each media type/width individually.
The setting unit is “mm”, and the setting range is from 1 to 30.

This item effects only to a roll media loaded to Roll 1.

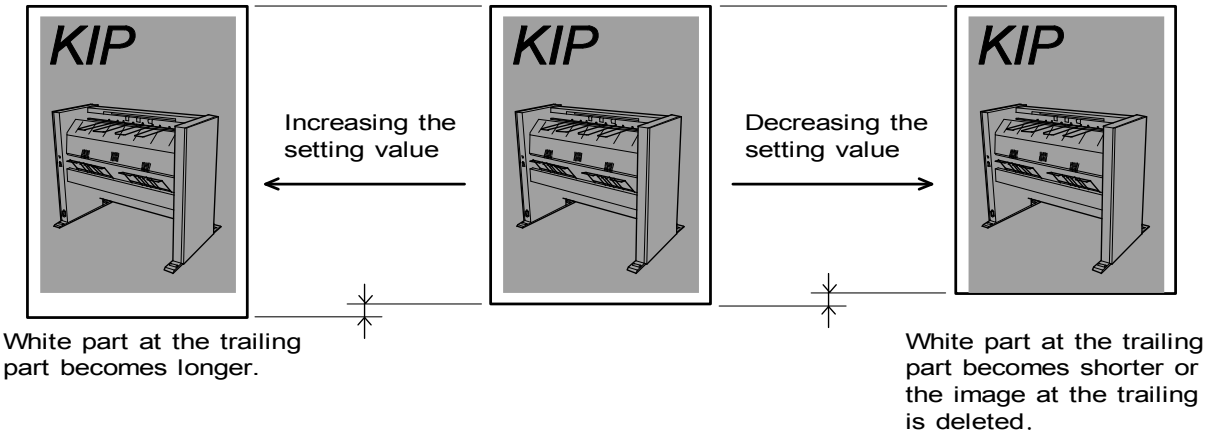
Sub Mode No.	Width	Media Type	Cut method	Setting Range	Unit
0.20	A0 / 30” or wider	Plain	Synchro Cut Standard Cut	1 – 30	mm
1.20	A1 / 22” / 24”				
2.20	A2 / 17” / 18”				
3.20	A3 / 11” / 12”				
4.20*	A4 / 8.5” / 9”				
0.21	A0 / 30” or wider	Tracing / Vellum			
1.21	A1 / 22” / 24”				
2.21	A2 / 17” / 18”				
3.21	A3 / 11” / 12”				
4.21*	A4 / 8.5” / 9”				
0.22	A0 / 30” or wider	Film			
1.22	A1 / 22” / 24”				
2.22	A2 / 17” / 18”				
3.22	A3 / 11” / 12”				
4.22*	A4 / 8.5” / 9”				
0.23	A0 / 30” or wider	Plain	Signal Cut		
1.23	A1 / 22” / 24”				
2.23	A2 / 17” / 18”				
3.23	A3 / 11” / 12”				
4.23*	A4 / 8.5” / 9”				
0.24	A0 / 30” or wider	Tracing / Vellum			
1.24	A1 / 22” / 24”				
2.24	A2 / 17” / 18”				
3.24	A3 / 11” / 12”				
4.24*	A4 / 8.5” / 9”				
0.25	A0 / 30” or wider	Film			
1.25	A1 / 22” / 24”				
2.25	A2 / 17” / 18”				
3.25	A3 / 11” / 12”				
4.25*	A4 / 8.5” / 9”				

*** DO NOT USE. The concerning media type/width combination is out of specification.**

(See the next page)

If you increase the setting value, it is delayed to cut the roll paper.
As the result, white part at the trailing part of the print becomes longer.

If you decrease the setting value, it is advanced to cut the roll paper.
As the result, white part at the trailing part of the print becomes shorter or the some image at the trailing part is deleted.



⚠ NOTE

The basis of Cut length is generally adjusted in Cut Length (No.90, 91) and Cut Length Compensation (No. 92, 93).
This Sub Mode should be used only when you want to adjust cut length against individual media type/width in Roll 1 media.

Reference

Standard Cut is a method to determine the print length to be cut depending on the selected media width. For example a print with the media in 841mm width is cut in 594mm or 1,189mm in length according to the length given by the plot data.

Synchro Cut determines the print length depending on the length information included in the plot command. Print length always matches the length given by the plot data.

In these two methods, print length is already given at plot start time.

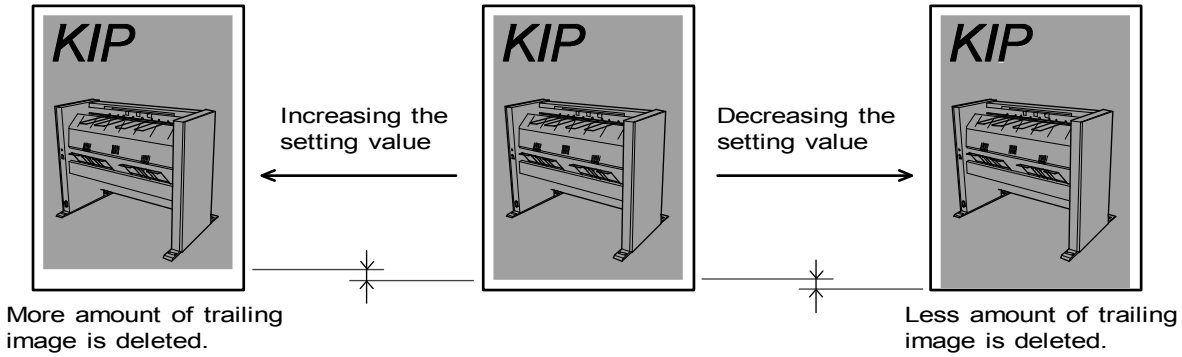
In Signal Cut, print length is not given at plot start time and will be determined during printing.

(26) (27) Trailing Margin

It is possible to specify where to finish creating the image at the trailing part.
The setting unit is “mm”, and the setting range is from 1 to 300.

Sub Mode No.	Media	Setting Range	Unit
26	Roll Paper (P_CUT signal to Image Data end)	1 – 300	mm
27	Manual Feed Paper (MP_ENT2 signal to Image Data end)		

If you increase the setting value, creating the image will be finished earlier.
As the result of it, more trailing image will be deleted from the printout.



⚠ NOTE

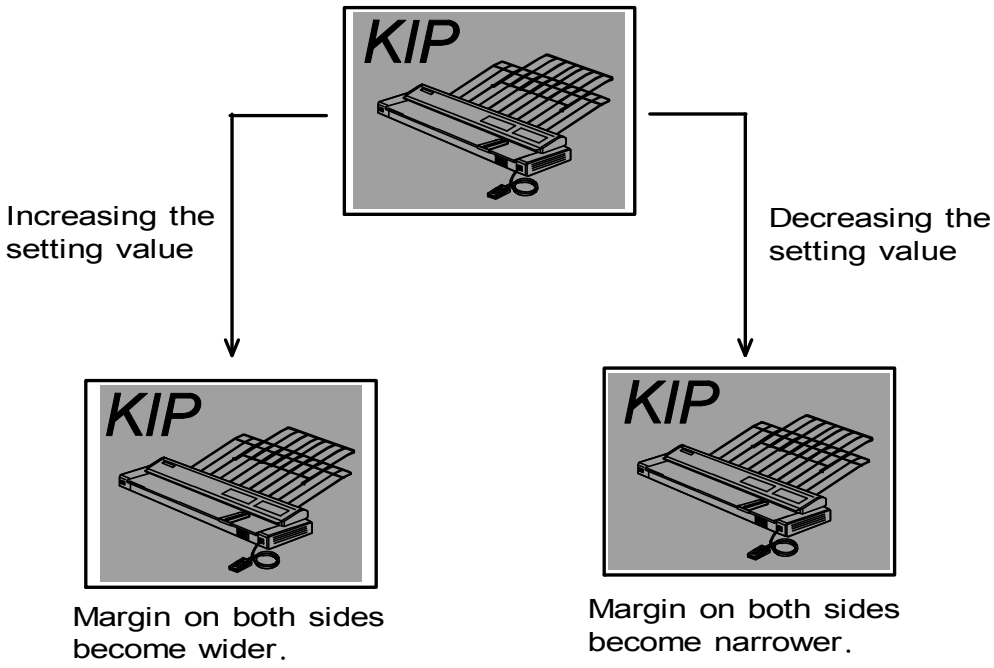
Some trailing image may be lost if you decrease the value too much.

(28) Side Margin

It is possible to specify the amount of margins on both sides of print.
The setting value “1” stands for 0.3387mm, and the setting range is from 0 to 30.

Setting Range	Unit
0 - 30	0 – 10.16 mm (0.3387mm step)

If you increase the setting value, margins on both sides become wider.



⚠ NOTE

Image quality created with a reduced side margin (less than 3 in the setting value) is not guaranteed.

(29) Transfer Corona ON Timing (Leading Edge)

It is possible to adjust the timing that the Transfer Corona starts discharging during the print cycle. The setting unit is “mm”, and the setting range is from 1 to 100.

Setting Range	Unit
1 - 100	mm

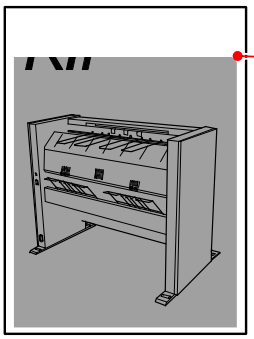
If you increase the setting value, the timing that the Transfer Corona starts discharging is delayed. It means more amount of leading image (toner image) is not transferred to the paper but remains on the Drum.
As the result, the printout has a longer white margin on its leading part.
(Increasing the setting value by “1”, white part on the print gets 1mm longer.)

NOTE

You may lose some leading image as the following example if you increase the setting value too much, because the timing to start discharging is too much delayed.

Normal

Setting value is increased too much.



Transfer Corona starts discharging at this point.

(2a) Transfer Corona OFF Timing (Trailing Edge)

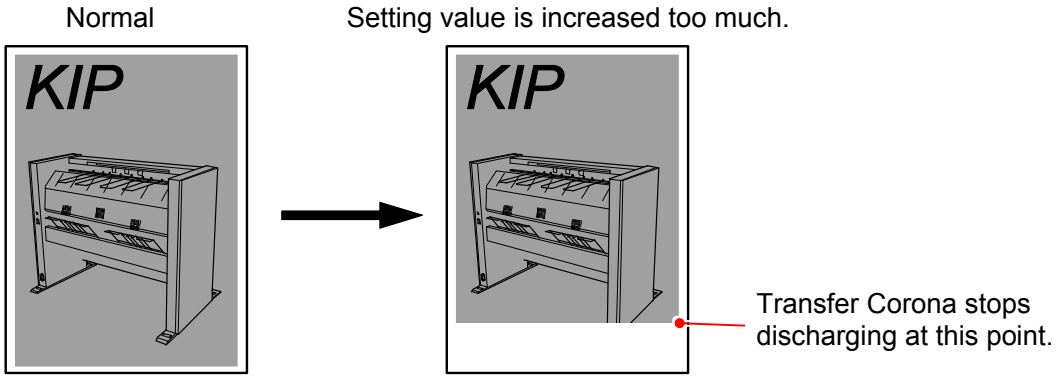
It is possible to adjust the timing that the Transfer Corona stops discharging during the print cycle. The setting unit is “mm”, and the setting range is from 1 to 300.

Setting Range	Unit
1 - 300	mm

If you decrease the setting value, the timing that the Transfer Corona stops discharging becomes earlier. It means more amount of trailing image (toner image) is not transferred to the paper but remains on the Drum.
As the result, the printout has a longer white margin on its trailing part.
(Decreasing the setting value by “1”, white part on the print gets 1mm longer.)

NOTE

You may lose some trailing image as the following example if you decrease the setting value too much, because the Transfer Corona stops discharging too early.



(2b) (2c) (2d) Separation Corona OFF Timing

It is possible to adjust the timing that the Separation Corona stops discharging after the trailing edge of the paper passes the position of Paper Entry Sensor (PH5).
The setting unit is “mm”, and the setting range is from “0” to “99”.

Sub Mode No.	Media Type	Setting Range	Unit
2b	Plain Paper	0 – 99	mm
2c	Tracing Paper / Vellum		
2d	Film		

When the value is selected at “0”, the function of Separation Corona OFF Timing turns invalid. (Note that Separation Corona is always applied during the interval of continuous print.)

If you decrease the setting value smaller than “60”, Separation Corona turns OFF earlier than the trailing edge of the paper. The trailing Image becomes clearer as a result.

(2e) Dehumidify Setting

It is possible to decide in which condition Dehumidify Heater should work.
Selectable setting values are “0”, “1” and “2”.
The contents of setting values are as follows.

Setting Value	Contents
0	Dehumidify Heater works only when the Power Switch is OFF.
1	Dehumidify Heater always works except during print cycle.
2	Dehumidify Heater always works.

⚠ NOTE

The printer should be plugged in order to operate Dehumidify Heater on the printer power off.

(2f) Hardware Counter Unit (Detail)

It is possible to specify the counting unit detail of the hardware counter (and Counter A).
Selectable setting values are “0”, “1”, “2” and “3”.
The contents of setting values are as follows.

Setting Value	Count Unit (metric) available with No.95 set to “0”	Count Unit (inch) available with No.95 set to “1”
0	1 meter	1 feet
1	0.1 meter	1 square feet
2	1 square meter	not available
3	0.1 square meter	not available

⚠ NOTE

(1) Which count unit selection (Metric/Inch selection) to be activated depends on “Hardware Counter Unit (ANSI / ISO)” (No.95).

(2) No.2f is the final decision to configure and fix the count unit.
“Metric / Inch” (No.00) and the size format selection in Configuration on the UI screen does not effect to the count unit.

(3) We recommend you to decide the count unit at the time of installation and not to change it later because it does not mean as a total counter, if you change the unit in between.

(30) Key Card Setting

It is possible to decide the Key Card setting.
Selectable setting values are “0”, “1” and “2”.
The contents of setting values are as follows.

Setting Value	Contents
0	Key Card is not used.
1	Key Card counts the length of print. 1 count corresponds to 10cm.
2	Key Card counts the number of prints. Every print size is counted distinctly.

(31) Optional Device Setting

This mode is to confirm whether Optional Device such as an auto stacker is connected or not behind of the printer through infrared communication.
Selectable values are “0” and “1”.
The contents of setting values are as follows.

Setting Value	Contents	Remarks
0	Ordinary	When the Optional Device is connected, communication is held automatically, and is possible to print.
1	Optional Device is connected.	In case the communication between Optional Device is failed, Error Code “**E-40**” is displayed.

(32) Number of Roll Deck

This setting makes the machine recognize how many Roll Decks the Paper Feeding Unit has.
Available values are “2” and “4”.

Setting Value	Contents
1 - 4	Number of Roll Deck equipped on the printer

(33) User Mode Permission

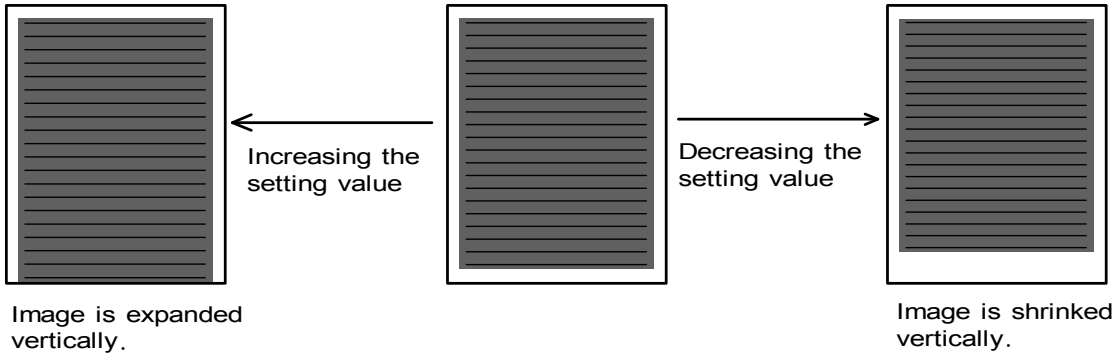
This Sub Mode is not available. Keep the setting value unchanged from the default.

(34) Main Motor Speed

It is possible to adjust the speed of Main Motor to rotate.
The setting unit is "%", and the setting range is from -2.00 to +2.00 in 0.05 % increment.

Setting Range	Unit [%]
0 – 80	-2.00 – +2.00 (0.05% step)

If you increase the setting value, the Main Motor rotates faster.
As the result, the image is a little expanded vertically.



⚠ NOTE

The Main Motor Speed is the basis for many other print settings. Thus you will have to re-adjust all of the concerning settings if you change the Main Motor Speed.

(35) (36) (37) Feed Motor Speed

It is possible to adjust the speed of Paper Feeding Motor to rotate.
The setting unit is "%", and the setting range is from -2.00 to 2.00 in 0.05 % increment.

Sub Mode No.	Media Type	Setting Range
35	Plain Paper	0 – 80 (0.05% step) (-2.00 – +2.00%)
36	Tracing Paper/Vellum	
37	Film	

If you increase the setting value, the Paper Feeding Motor rotates faster.

> **⚠ NOTE**
>
> This setting is not used for KIP 7700. Feeding Motor Speed is configured in Paper Feeding Motor Speed 2 (No.9c to a3).

(38) (39) (3a) Fuser Motor Speed

It is possible to adjust the speed of Fuser Motor to rotate.
The setting unit is "%", and the setting range is from -2.00 to 2.00 in 0.05 % increment.
If you increase the setting value, the Fuser Motor rotates faster.

Sub Mode No.	Width	Media Type	Setting Range
0.38	A0 / 30" or wider	Plain	0 – 80 (0.05% step) (-2.00 – +2.00%)
1.38	A1 / 22" / 24"		
2.38	A2 / 17" / 18"		
3.38	A3 / 11" / 12"		
4.38*	A4 / 8.5" / 9"		
0.39	A0 / 30" or wider	Tracing / Vellum	
1.39	A1 / 22" / 24"		
2.39	A2 / 17" / 18"		
3.39	A3 / 11" / 12"		
4.39*	A4 / 8.5" / 9"		
0.3a	A0 / 30" or wider	Film	
1.3a	A1 / 22" / 24"		
2.3a	A2 / 17" / 18"		
3.3a	A3 / 11" / 12"		
4.3a*	A4 / 8.5" / 9"		

*** DO NOT USE. The concerning media type/width combination is out of specification.**

(3b) (3c) (3d) Fuser Motor 2nd Speed Switch Timing

It is possible to adjust the timing to switch to 2nd speed of Fuser Motor to rotate.
The setting range is from 0 to 4.0m with 50mm step.
This exited paper length is counted from the position of "Exit Sensor".
If you increase the setting value, the 2nd speed starts later than before.

Sub Mode No.	Width	Media Type	Setting Range
0.3b	A0 / 30" or wider	Plain	0 – 80 (50mm step) (0 – 4m)
1.3b	A1 / 22" / 24"		
2.3b	A2 / 17" / 18"		
3.3b	A3 / 11" / 12"		
4.3b*	A4 / 8.5" / 9"		
0.3c	A0 / 30" or wider	Tracing / Vellum	
1.3c	A1 / 22" / 24"		
2.3c	A2 / 17" / 18"		
3.3c	A3 / 11" / 12"		
4.3c*	A4 / 8.5" / 9"		
0.3d	A0 / 30" or wider	Film	
1.3d	A1 / 22" / 24"		
2.3d	A2 / 17" / 18"		
3.3d	A3 / 11" / 12"		
4.3d*	A4 / 8.5" / 9"		

*** DO NOT USE. The concerning media type/width combination is out of specification.**

⚠ NOTE

Setting Switch Timing to "0" disables the subsequent Fuser Motor Speed switch.

(3e) (3f) (40) Fuser Motor 2nd Speed

It is possible to adjust the 2nd speed of Fuser Motor to rotate.
The setting unit is "%", and the setting range is from -2.00 to +2.00 in 0.05 % increment.
If you increase the setting value, the Fuser Motor rotates faster.
The 2nd speed is applied after the print passes in a given distance by 2nd Switch Timing (No.3b, 3c, 3d).

Sub Mode No.	Width	Media Type	Setting Range
0.3e	A0 / 30" or wider	Plain	0 – 80 (0.05% step) (-2.00 – +2.00%)
1.3e	A1 / 22" / 24"		
2.3e	A2 / 17" / 18"		
3.3e	A3 / 11" / 12"		
4.3e*	A4 / 8.5" / 9"		
0.3f	A0 / 30" or wider	Tracing / Vellum	
1.3f	A1 / 22" / 24"		
2.3f	A2 / 17" / 18"		
3.3f	A3 / 11" / 12"		
4.3f*	A4 / 8.5" / 9"		
0.40	A0 / 30" or wider	Film	
1.40	A1 / 22" / 24"		
2.40	A2 / 17" / 18"		
3.40	A3 / 11" / 12"		
4.40*	A4 / 8.5" / 9"		

*** DO NOT USE. The concerning media type/width combination is out of specification.**

(41) (42) (43) Fuser Motor 3rd Speed Switch Timing

It is possible to adjust the timing to switch to 3rd speed of Fuser Motor to rotate.
The setting range is from 0 to 16.0m with 0.2m step.
This exited paper length is counted from the point of “Exit Sensor”.
If you increase the setting value, the 3rd speed starts later than before.

Sub Mode No.	Width	Media Type	Setting Range
0.41	A0 / 30” or wider	Plain	0 – 80 (200mm step) (0 – 16m)
1.41	A1 / 22” / 24”		
2.41	A2 / 17” / 18”		
3.41	A3 / 11” / 12”		
4.41*	A4 / 8.5” / 9”		
0.42	A0 / 30” or wider	Tracing / Vellum	
1.42	A1 / 22” / 24”		
2.42	A2 / 17” / 18”		
3.42	A3 / 11” / 12”		
4.42*	A4 / 8.5” / 9”		
0.43	A0 / 30” or wider	Film	
1.43	A1 / 22” / 24”		
2.43	A2 / 17” / 18”		
3.43	A3 / 11” / 12”		
4.43*	A4 / 8.5” / 9”		

*** DO NOT USE. The concerning media type/width combination is out of specification.**

> **⚠ NOTE**
>
> Setting Switch Timing to “0” disables the subsequent Fuser Motor Speed switch.

(44) (45) (46) Fuser Motor 3rd Speed

It is possible to adjust the 3rd speed of Fuser Motor to rotate.
The setting unit is “%”, and the setting range is from -2.00 to +2.00 in 0.05 % increment.
If you increase the setting value, the Fuser Motor rotates faster.
The 3rd speed is applied after the print passes in a given distance by 3rd Switch Timing (No.41, 42, 43).

Sub Mode No.	Width	Media Type	Setting Range
0.44	A0 / 30” or wider	Plain	0 – 80 (0.05% step) (-2.00 – +2.00%)
1.44	A1 / 22” / 24”		
2.44	A2 / 17” / 18”		
3.44	A3 / 11” / 12”		
4.44*	A4 / 8.5” / 9”		
0.45	A0 / 30” or wider	Tracing / Vellum	
1.45	A1 / 22” / 24”		
2.45	A2 / 17” / 18”		
3.45	A3 / 11” / 12”		
4.45*	A4 / 8.5” / 9”		
0.46	A0 / 30” or wider	Film	
1.46	A1 / 22” / 24”		
2.46	A2 / 17” / 18”		
3.46	A3 / 11” / 12”		
4.46*	A4 / 8.5” / 9”		

*** DO NOT USE. The concerning media type/width combination is out of specification.**

(47) Toner Supply Volume Adjustment

It is possible to adjust the toner volume to supply. (The period to supply toner at one time.)
The setting unit is “second”, and the setting range is from 1 to 240.
If you increase the setting value, the toner is supplied much longer time.

Setting Range	Unit
1 - 240	second

(48) Down Sequence Shift Time caused by Toner

This Sub Mode is not available. Keep the setting value unchanged from the default.

Setting Range	Default
0 - 100	0

(49) Film Mode ON/OFF

It is possible to validate the Film Mode.
Validate it when the toner image can not be transferred well onto the film due to its characteristic.

Transfer result may get better if you validate the Film Mode, because the Separation Corona does not discharge in this case.

Setting Value	Contents
0	Film Mode disabled
1	Film Mode enabled Transfer result may become better because Separation Corona does not work.

(4a) Transfer Corona ON Timing (Cut Sheet)

It is possible to adjust the timing that the Transfer Corona starts discharging during the print cycle. The setting unit is “mm”, and the setting range is from 1 to 100.

Setting Range	Unit
1 - 100	mm

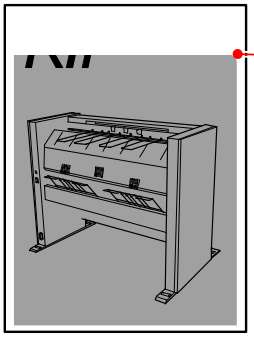
If you increase the setting value, the timing that the Transfer Corona starts discharging is delayed. It means more amount of leading image (toner image) is not transferred to the paper but remains on the Drum.
As the result, the printout has a longer white margin on its leading part.
(Increasing the setting value by “1”, white part on the print gets 1mm longer.)

NOTE

You may lose some leading image as the following example if you increase the setting value too much, because the timing to start discharging is too much delayed.

Normal

Setting value is increased too much.



Transfer Corona starts discharging at this point.

(4b) Transfer Corona OFF Timing (Cut Sheet)

It is possible to adjust the timing that the Transfer Corona stops discharging during the print cycle. The setting unit is “mm”, and the setting range is from 1 to 300.

Setting Range	Unit
1 - 300	mm

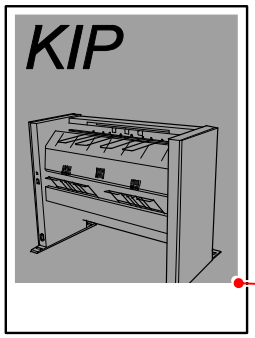
If you decrease the setting value, the timing that the Transfer Corona stops discharging becomes earlier. It means more amount of trailing image (toner image) is not transferred to the paper but remains on the Drum.
As the result, the printout has a longer white margin on its trailing part.
(Decreasing the setting value by “1”, white part on the print gets 1mm longer.)

NOTE

You may lose some trailing image as the following example if you decrease the setting value too much, because the Transfer Corona stops discharging too early.

Normal

Setting value is increased too much.

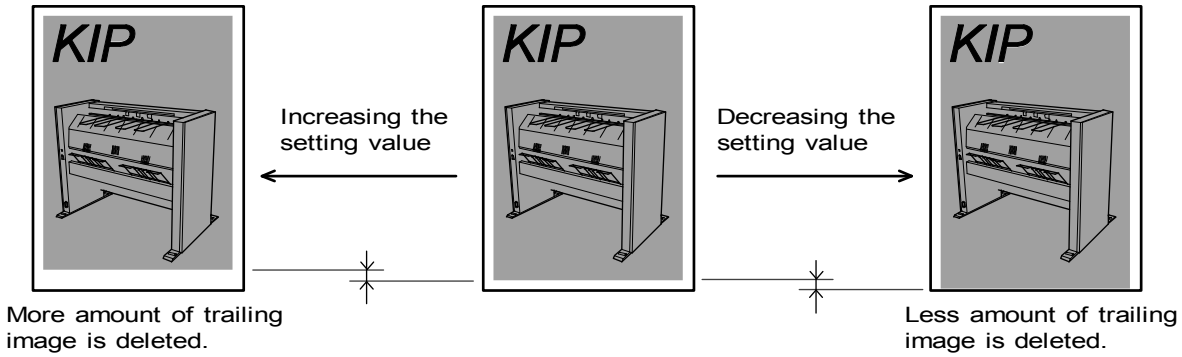


(4c) Trailing Margin (Short Interval mode, Roll)

In case of Short Interval Mode is selected, It is possible to specify where to finish to create the image at the trailing part.
(Distance between P_CUT signal and image end timing)
The setting unit is “mm”, and the setting range is from 1 to 300.

Setting Range	Unit
1 – 300	mm

If you decrease the setting value, creating the image will be finished earlier.
As the result of it, more trailing image will be deleted from the printout.



NOTE

As of the firmware version 120X01A, Short Interval Mode is not available.

(4d) Adjustment of Paper Slack at Cutter Region (Roll 1)

This Sub Mode is not available. Keep the setting value unchanged from the default.

(4e) Fuser Motor Speed (right after Drum)

Fuser Motor speed (last part of the paper) is adjusted.
After the paper trailing edge left from the Drum, Fuser Motor speed is adjusted until the paper is exited.
The setting unit is “0.1%”, and the setting range is from 0 to 100.
If you increase the setting value, the Fuser Motor rotates faster.

Setting Range	Unit
0 - 100	0 – 10.0% (0.1% step)

(4f) Print Wait Setting (Numbers of Sheet)

In case of making the large size prints (A0, 30” or wider) after making the number of prints that is more than the setting value of this Sub Mode with the middle size roll (A1, A2, 24”, 22” 18” or 17”), the printer becomes “Wait” condition for the seconds which is set on the Sub Mode No. 50.

This mode is effective only when H/H Environment Setting Mode is set to ON.
The setting unit is number of prints, and the setting range is from 1 to 250.

Setting Range	Unit
1- 250	Number of prints

This Sub Mode is useful to eliminate the foggy image problem when large format is printed right after small was taken.

> **NOTE**
>
> As of the firmware version 120X01A, H/H Environment Setting Mode is not available.

(50) Print Wait Setting (Time)

In case of making the large size prints (A0, 30” or wider) after making the number of prints that is more than the setting value of the Sub Mode No. 49 with the middle size roll (A1, A2, 24”, 22” 18” or 17”), the printer becomes “Wait” condition for the seconds which is set on this Sub Mode.

This mode is effective only when User Mode “A” (H/H Environment Setting Mode) is set at ON.
The setting unit is “second”, and the setting range is from 0 to 180.
If “0” is selected, this function becomes invalid.

Setting Range	Unit
0 - 180	second

This Sub Mode is useful to eliminate the foggy image problem when large format is printed right after small was taken.

This Sub Mode is not available. Keep the setting value unchanged from the default.

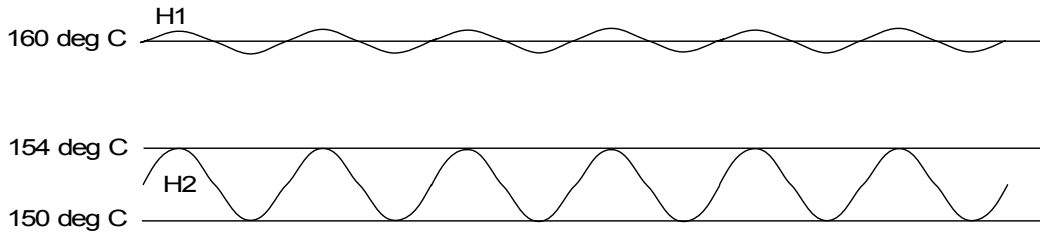
(51) (52) Fusing Temperature Adjustment (Side)

H2 (Fuser Lamp, Side) is controlled between [(Set Temperature) – (value of Sub Mode No. "51")] and [(Set Temperature) – (value of Sub Mode No. "52")], only during printing.

[(Set Temperature) – (value of Sub Mode No. "51")] set the OFF temperature of H2.
[(Set Temperature) – (value of Sub Mode No. "52")] set the ON temperature of H2.

(Example)
If the setting temperature is set at 160, No. 51 = 06 and No. 52 = 10, H2 is controlled between (160-06) and (160-10), namely between 154 and 150 degrees Centigrade.

Fuser Temperature is controlled as shown below.



Therefore, generally the value of Sub Mode No. 51 should be smaller than the value of No. 52.
If the value of No. 51 is set larger than the value of No. 52, temperature of H2 is controlled around the value of [(Set Temperature) – (value of Sub Mode No. "52")].

The setting unit is "degree Centigrade", and the setting range is from 0 to 10.

Sub Mode No.	Setting Range	Condition
51	0 – 10 degrees C	H2 OFF temperature compensation
52	0 – 10 degrees C	H2 ON temperature compensation

This Sub Mode is useful to eliminate the foggy image problem when large format is printed right after small was taken.

Note: Normally the Fuser Lamps work as follows.

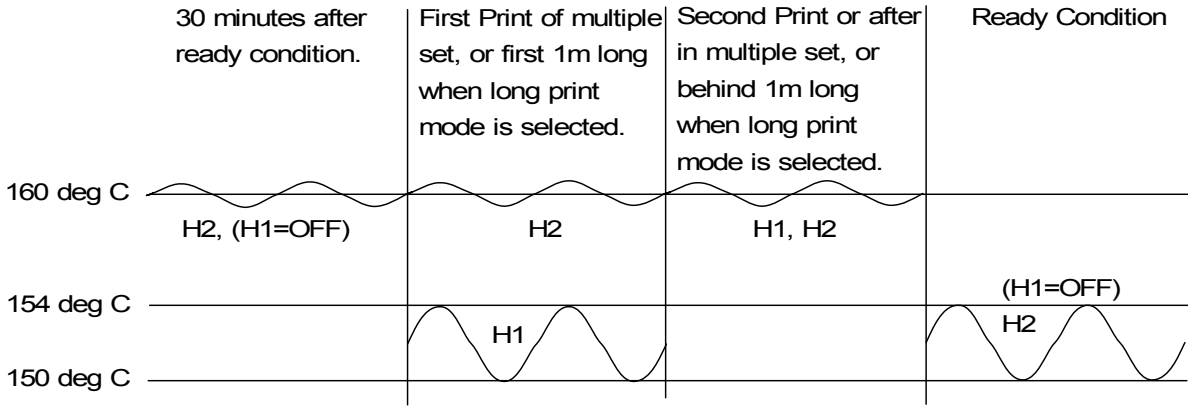
Fuser Lamps	Warm up	Idling	Printing
H1	Working	Not working	Working
H2	Working	Working	Working

(53) (54) Fusing Temperature Adjustment (Center)

This mode is effective only when User Mode "A" (H/H Environment Setting Mode) is set at ON.
In case A0, 30" or wider roll is selected 30 minutes later after power is turned on, the temperature of H1 (Center) is controlled between [(Set Temperature) – (value of Sub Mode No. "53")] and [(Set Temperature) – (value of Sub Mode No. "54")], only when the first print is taken of the multi print or first 1m long of the long paper when long print is selected.

[(Set Temperature) – (value of Sub Mode No. "53")] set the OFF temperature of H1.
[(Set Temperature) – (value of Sub Mode No. "54")] set the ON temperature of H1.

(Example)
If the setting temperature is set at 160, No. 53 = 06 and No. 54 = 10, H1 is controlled between (160-06) and (160-10), namely between 154 and 150 degrees Centigrade.



Therefore, generally the value of Sub Mode No. 53 should be smaller than the value of No. 54.
If the value of No. 53 is set larger than the value of No. 54, temperature of H1 is controlled around the value of {(Set Temperature) – (value of Sub Mode No. "54")}.

The setting unit is "degree Centigrade", and the setting range is from 0 to 10.

Sub Mode No.	Setting Range	Condition
53	0 – 10 degrees	H1 OFF temperature compensation
54	0 – 10 degrees	H1 ON temperature compensation

This Sub Mode is useful to eliminate the foggy image problem when large format is printed after long idling time.

(56) (57) (58) Transfer Corona Analog Voltage (Cut Sheet)

It is possible to adjust the analog voltage (TR_ANLG) that controls the high-voltage current supplied to the Transfer Corona.
The setting unit is “Hexadecimal”, and the setting range is from 00 to FF.
These settings are applied in the manual feeding mode.

Sub Mode No.	Media Type	Setting Range
56	Plain Paper	00 – FF [Hexadecimal]
57	Tracing Paper / Vellum	
58	Film	

If you increase the setting value, the print image gets a little darker.

⚠ NOTE

Please adjust Transfer Corona Analog Voltage while checking the actual voltage with the multi-meter.

(59) (5a) (5b) (5c) (5d) (5e) Cut Length Adjustment (Roll 2)

It is possible to adjust the cut length for each media type/width individually.
The setting unit is “mm”, and the setting range is from 1 to 30.

This item effects only to a roll media loaded to Roll 2.

Sub Mode No.	Width	Media Type	Cut method	Setting Range	Unit
0.59	A0 / 30” or wider	Plain	Synchro Cut Standard Cut	1 – 30	mm
1.59	A1 / 22” / 24”				
2.59	A2 / 17” / 18”				
3.59	A3 / 11” / 12”				
4.59*	A4 / 8.5” / 9”				
0.5a	A0 / 30” or wider	Tracing / Vellum			
1.5a	A1 / 22” / 24”				
2.5a	A2 / 17” / 18”				
3.5a	A3 / 11” / 12”				
4.5a*	A4 / 8.5” / 9”				
0.5b	A0 / 30” or wider	Film			
1.5b	A1 / 22” / 24”				
2.5b	A2 / 17” / 18”				
3.5b	A3 / 11” / 12”				
4.5b*	A4 / 8.5” / 9”				
0.5c	A0 / 30” or wider	Plain	Signal Cut		
1.5c	A1 / 22” / 24”				
2.5c	A2 / 17” / 18”				
3.5c	A3 / 11” / 12”				
4.5c*	A4 / 8.5” / 9”				
0.5d	A0 / 30” or wider	Tracing / Vellum			
1.5d	A1 / 22” / 24”				
2.5d	A2 / 17” / 18”				
3.5d	A3 / 11” / 12”				
4.5d*	A4 / 8.5” / 9”				
0.5e	A0 / 30” or wider	Film			
1.5e	A1 / 22” / 24”				
2.5e	A2 / 17” / 18”				
3.5e	A3 / 11” / 12”				
4.5e*	A4 / 8.5” / 9”				

*** DO NOT USE. The concerning media type/width combination is out of specification.**

If you increase the setting value, it is delayed to cut the roll paper.
As the result, white part at the trailing part of the print becomes longer.

If you decrease the setting value, it is advanced to cut the roll paper.
As the result, white part at the trailing part of the print becomes shorter or the some image at the trailing part is deleted.

⚠ NOTE

(1) The basis of Cut length is generally adjusted in Cut Length (No.90, 91) and Cut Length Compensation (No. 92, 93).
This Sub Mode should be used only when you want to adjust cut length against individual media type/width in Roll 2 media.

(2) For sample images of the usage, and information about cut method, refer to “Cut Length Adjustment (Roll 1)” (No.20) on page 8-52.

(5f) (60) (61) (62) (63) (64) Cut Length Adjustment (Roll 3)

It is possible to adjust the cut length for each media type/width individually.
The setting unit is “mm”, and the setting range is from 1 to 30.

This item effects only to a roll media loaded to Roll 3.

Sub Mode No.	Width	Media Type	Cut method	Setting Range	Unit
0.5f	A0 / 30” or wider	Plain	Synchro Cut Standard Cut	1 – 30	mm
1.5f	A1 / 22” / 24”				
2.5f	A2 / 17” / 18”				
3.5f	A3 / 11” / 12”				
4.5f*	A4 / 8.5” / 9”				
0.60	A0 / 30” or wider	Tracing / Vellum			
1.60	A1 / 22” / 24”				
2.60	A2 / 17” / 18”				
3.60	A3 / 11” / 12”				
4.60*	A4 / 8.5” / 9”				
0.61	A0 / 30” or wider	Film			
1.61	A1 / 22” / 24”				
2.61	A2 / 17” / 18”				
3.61	A3 / 11” / 12”				
4.61*	A4 / 8.5” / 9”				
0.62	A0 / 30” or wider	Plain	Signal Cut		
1.62	A1 / 22” / 24”				
2.62	A2 / 17” / 18”				
3.62	A3 / 11” / 12”				
4.62*	A4 / 8.5” / 9”				
0.63	A0 / 30” or wider	Tracing / Vellum			
1.63	A1 / 22” / 24”				
2.63	A2 / 17” / 18”				
3.63	A3 / 11” / 12”				
4.63*	A4 / 8.5” / 9”				
0.64	A0 / 30” or wider	Film			
1.64	A1 / 22” / 24”				
2.64	A2 / 17” / 18”				
3.64	A3 / 11” / 12”				
4.64*	A4 / 8.5” / 9”				

*** DO NOT USE. The concerning media type/width combination is out of specification.**

If you increase the setting value, it is delayed to cut the roll paper.
As the result, white part at the trailing part of the print becomes longer.

If you decrease the setting value, it is advanced to cut the roll paper.
As the result, white part at the trailing part of the print becomes shorter or the some image at the trailing part is deleted.

⚠ NOTE

(1) The basis of Cut length is generally adjusted in Cut Length (No.90, 91) and Cut Length Compensation (No. 92, 93).
This Sub Mode should be used only when you want to adjust cut length against individual media type/width in Roll 3 media.

(2) For sample images of the usage, and information about cut method, refer to “Cut Length Adjustment (Roll 1)” (No.20) on page 8-52.

(65) (66) (67) (68) (69) (6a) Cut Length Adjustment (Roll 4)

It is possible to adjust the cut length for each media type/width individually.
The setting unit is “mm”, and the setting range is from 1 to 30.

This item effects only to a roll media loaded to Roll 4.

Sub Mode No.	Width	Media Type	Cut method	Setting Range	Unit
0.65	A0 / 30” or wider	Plain	Synchro Cut Standard Cut	1 – 30	mm
1.65	A1 / 22” / 24”				
2.65	A2 / 17” / 18”				
3.65	A3 / 11” / 12”				
4.65*	A4 / 8.5” / 9”				
0.66	A0 / 30” or wider	Tracing / Vellum			
1.66	A1 / 22” / 24”				
2.66	A2 / 17” / 18”				
3.66	A3 / 11” / 12”				
4.66*	A4 / 8.5” / 9”				
0.67	A0 / 30” or wider	Film			
1.67	A1 / 22” / 24”				
2.67	A2 / 17” / 18”				
3.67	A3 / 11” / 12”				
4.67*	A4 / 8.5” / 9”				
0.68	A0 / 30” or wider	Plain	Signal Cut		
1.68	A1 / 22” / 24”				
2.68	A2 / 17” / 18”				
3.68	A3 / 11” / 12”				
4.68*	A4 / 8.5” / 9”				
0.69	A0 / 30” or wider	Tracing / Vellum			
1.69	A1 / 22” / 24”				
2.69	A2 / 17” / 18”				
3.69	A3 / 11” / 12”				
4.69*	A4 / 8.5” / 9”				
0.6a	A0 / 30” or wider	Film			
1.6a	A1 / 22” / 24”				
2.6a	A2 / 17” / 18”				
3.6a	A3 / 11” / 12”				
4.6a*	A4 / 8.5” / 9”				

*** DO NOT USE. The concerning media type/width combination is out of specification.**

If you increase the setting value, it is delayed to cut the roll paper.
As the result, white part at the trailing part of the print becomes longer.

If you decrease the setting value, it is advanced to cut the roll paper.
As the result, white part at the trailing part of the print becomes shorter or the some image at the trailing part is deleted.

⚠ NOTE

(1) The basis of Cut length is generally adjusted in Cut Length (No.90, 91) and Cut Length Compensation (No. 92, 93).
This Sub Mode should be used only when you want to adjust cut length against individual media type/width in Roll 4 media.

(2) For sample images of the usage, and information about cut method, refer to “Cut Length Adjustment (Roll 1)” (No.20) on page 8-52.

(6b) (6c) (6d) Fusing Temperature Compensation (Small Size)

It is possible to specify the compensation value of fusing temperature for making the small size prints.
The setting unit is “degree Centigrade”, and the setting range is from 0 to 20.

If the fusing temperature (specified in No.08 to 0d) is “150 degrees centigrade” and you specify “10” for the compensation value for the small size, the actual temperature for small size print becomes “160 degrees centigrade”.

Sub Mode No.	Media Type	Setting Range	Unit
6b	Plain paper	0 - 20	Centigrade
6c	Tracing paper / Vellum		
6d	Film		

(6e) Toner Supply Timing Adjustment

It is possible to specify the period that the Toner Supply Motor starts supplying toner from Toner Cartridge to Developer Unit once “Toner Empty” detected.
The setting value “1” stands for 3 seconds, and the setting range is from 1 to 20.

Setting Range	Unit
1 - 20	3 seconds / 1 step

(6f) (70) (71) Adjustment of Paper Slack at Cutter Region (Roll 2 / 3 / 4)

This Sub Mode is not available. Keep the setting value unchanged from the default.

(72) Separation Lamp ON Selection

There may be the case that some type of printing paper has a difficulty in paper separation.
In this case, it is possible to assist paper separation by lighting the Separation Lamp.
It is possible to decide to which type of paper the Separation Lamp should light.
Selectable values are from 1 to 7.

Setting Value	Contents
1	Separation Lamp lights for plain paper.
2	Separation Lamp lights for tracing paper.
3	Separation Lamp lights for plain paper and tracing paper.
4	Separation Lamp lights for film.
5	Separation Lamp lights for plain paper and film.
6	Separation Lamp lights for tracing paper and film.
7	Separation Lamp lights for all kinds of paper.

	1	2	3	4	5	6	7
Plain Paper	X		X		X		X
Tracing Paper		X	X			X	X
Film				X	X	X	X

Reference

Sometimes you can avoid “defect of transfer (light image)” by making Separation Lamp work.
So if you feel the print image is too light, try to make it work.
You may be able to fix the problem.

(73) Fuser Guide Solenoid A1 Switch

It is possible to specify the operation of Solenoid which moves the Fuser Entrance Guide.
The initial setting value is “0”. Change the value to “1” in case that Tracing Paper A1 gets creases.
This function is only for EU model. For US model, this is not available.

Setting Value	Working condition
0	Solenoid operates for tracing paper A0 / 30” and wider
1	Solenoid operates for tracing paper A1 / 22” and wider

(76) Toner Empty Timing Adjustment

It is possible to specify the period that “Toner Empty” is indicated after Toner Sensor detects toner empty.
The setting value “1” stands for 3 seconds, and the setting range is from 1 to 20.

Setting Range	Unit
1 - 40	3 seconds / 1 step

(77) Toner Supply Roller Bias

> **⚠ NOTE**
>
> This Sub Mode does not function.
> Change of this setting has no effect to the machine operation.

It is possible to make bias adjustment for Toner Supply Roller.

Setting Range	Unit
000 - 500	Hex.

(78) Regulation Bias

It is possible to make the print density darker or lighter by adjusting Regulation Bias (Center).
The print density becomes darker if you increase the setting value.

Setting Range	Unit
000 - 500	Hex.

This Sub Mode is not available. Keep the setting value unchanged from the default.

> **⚠ NOTE**
>
> Please adjust the Developer Bias while checking the actual voltage with the multi-meter.

(79) Density Compensation ON/OFF

It is possible to decide whether Density Compensation Process is enabled.

Setting Value	Contents
0	Density Compensation Process is disabled.
1	Density Compensation Process is enabled.

Reference

Under Density Compensation Process, the system adjusts Developer Bias, Regulation Bias in order to obtain a satisfactory image density accordingly.

The process detail is as follows.
Note that certain voltage values below in *Italic* are used for example.

1. While Density Compensation is set to ON (No.79), this process starts at a regular interval of Main Motor operating time (No.7f).

2. Several halftone patches (No.79) are created on Drum by Developer Roller with Reference Developer Bias L (-200V) (No.85). Density Sensor detects halftone density by reading the patches. The system calculates the average against Reference Developer Bias L.

3. The system perform the same thing with Reference Developer Bias H (-250V). Again the system calculates the average against Reference Developer Bias H.

➔ Set of step 2 and 3 is called “Density Measure”.

4. Based on the 2 average values, the system calculates the best voltage value for the subsequent Developer Bias to obtain the target density (No.7d).
   Thus, Developer Bias is automatically adjusted accordingly.

➔ This is called “(Developer) Bias Adjustment”.

(example)
The current Developer Bias is *-205V*, and the calculated best voltage for Developer Bias is *-210V*. Thus Developer Bias is automatically adjusted to *-210V*.

5. If the possible best value is out of the set range (No.89, 8a), Developer Bias adjustment is suspended.

(continued on the next page)

Reference

(cont.)

6. If the possible best value for Developer Bias exceeds the higher limit (No.8a), the system judges that the current Developer Bias is not sufficient for Developer Roller to carry enough amount of toner.
   In this case Regulation Bias is adjusted 30V higher (No.82). Thus the bias gap between Developer Roller and Regulation Roller increases and this gives much more toner for development.

➔ This is called "(Regulation) Bias Adjustment".

(example)
The current Developer Bias is *-245V*, and the calculated best voltage for Developer Bias is *-255V* (exceeding the higher limit). Thus Developer Bias Adjustment is suspended.

Normally Regulation Bias is 50V higher than Developer Bias. In the case above, Regulation Bias increases 30V (80V total against Developer Bias).

Current Developer Bias	*-245V*
Higher Limit	-250V
Possible best voltage for Developer Bias	*-260V* **out of range**
Current Regulation Bias (against Developer Bias)	*50V* higher

→ increases 30V

7. After Regulation Bias Adjustment (30V increasing), Density Measure is done on <u>all</u> the Reference Developer Bias (No.85) one by one. Finally Developer Bias is now recalculated.

➔ This is called "Developer Bias Recalculation".

(example)
As Regulation Roller increases 30V than before, the toner layer on Developer Roller's surface. Then Developer Bias is not required so high voltage than before. Thus Developer Bias is recalculated and adjusted from *-245V* to *-220V*.

8. This will be applied to the opposite situation. If the possible best value for Developer Bias exceeds the lower limit (No.89), the system judges that the current Developer Bias has been sufficient for Developer Roller to carry enough amount of toner.
   In this case Regulation Bias is adjusted 30V lower (No.82). Thus the bias gap between Developer Roller and Regulation Roller decreases and this reduces amount of toner for development.

➔ This is also called "(Regulation) Bias Adjustment".

Current Developer Bias	*-205V*
Lower Limit	-200V
Possible best voltage for Developer Bias	*-195V* **out of range**
Current Regulation Bias (against Developer Bias)	*80V* higher

→ decreases 30V

9. After Regulation Bias Adjustment (30V decreasing), Density Measure is done on <u>all</u> the Reference Developer Bias (No.85) one by one. Finally Developer Bias is now recalculated.

➔ This is also called "Developer Bias Recalculation".

(7a) Density Sensor Standard Output

> **⚠ NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to change the default analog output of Density Sensor.
"Density Sensor Standard Output" (No.7a) and "Density Sensor Analog Voltage" (No.7b) are used for Density Measure.

Setting Range	Unit
000 - 3FF	Hex.

(7b) Density Sensor Analog Voltage

> **⚠ NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to change the current analog output of Density Sensor.
"Density Sensor Standard Output" (No.7a) and "Density Sensor Analog Voltage" (No.7b) are used for Density Measure.

Setting Range	Unit
000 - 500	Hex.

(7c) Density Sensor Output Monitor

> **⚠ NOTE**
>
> This setting is factory-use only. Keep the value unchanged from the default value.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to change the mode to monitor the default analog output of Density Sensor.

Setting Value	Default
1 - 9	6

(7d) Target Density

> **NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to change Target Density to be obtained by bias adjustment in Density Compensation Process.

Setting Range	Unit
000 - 3FF	Hex.

(7e) Density Measure Patch Adjustment

> **NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to adjust the density for halftone patches which are created for Density Measure.

Default	Setting Range	Unit
41	10 - 8F	Hex.

(7f) Density Measure Interval

> **NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to change an interval of Density Measure.
When Main Motor operation time reaches a specified period in this setting, Density Measure will run.
There are 2 kind of the trigger to check Main Motor operation time whether the period passes.

(1) At the time of turning on the machine
(2) After completion of the current print queue

Default	Setting Range	Unit
1	0 - 99	Hour

(80) Developer Bias Increment for Bias Adjustment

> **⚠ NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to change the amount (increment) of Developer Bias Adjustment.
Developer Bias will be adjusted in a given increment configured in this Sub Mode.

Setting Range	Unit
00 - FF	Hex.

(81) Developer Bias Increment Total

> **⚠ NOTE**
>
> This setting can be used for checking purpose only.
> Setting change is allowed to factory-use only. Keep the value unchanged from the default.

It is possible to check the total amount (increment) of currently applied Developer Bias Adjustment by Density Compensation Process.

Setting Range	Unit
00 - FF	Hex.

(82) Regulation Bias Increment for Bias Adjustment

> **⚠ NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to change the amount (increment) of Regulation Bias Adjustment.
Regulation Bias will be adjusted in a given increment configured in this Sub Mode.

The default voltage value of the increment is about 30V (corresponding to “40” in the setting value).

Default	Setting Range	Unit
40	00 - FF	Hex.

(83) Regulation Bias Increment Total

> **⚠ NOTE**
>
> This setting can be used for checking purpose only.
> Setting change is allowed to factory-use only. Keep the value unchanged from the default.

It is possible to check the total amount (increment) of currently applied Regulation Bias Adjustment by Density Compensation Process.

Setting Range	Unit
000 - 500	Hex.

(84) Regulation Bias Increment Maximum

> **⚠ NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to check the total amount (increment) of currently applied Regulation Bias Adjustment by Density Compensation Process.

The default voltage value of the increment is about 140V.

Setting Range	Unit
000 - 500	Hex.

(85) Developer Reference Bias

> **NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default. Changing the value may result in malfunction of Density Compensation Process.

It is possible to define the 6 values for Developer Reference Bias analog voltage.

Sub Mode No.	Contents	Setting Range
0.85	Developer Reference Bias (1)	00 – FF [Hexadecimal]
1.85	Developer Reference Bias (2)	
2.85	Developer Reference Bias L	
3.85	Developer Reference Bias H	
4.85	Developer Reference Bias (3)	
5.85	Developer Reference Bias (4)	

> **Reference**
>
> Developer Reference Bias L & H are used at the regular Density Measure.
>
> There are 2 situations that all of the 6 Developer Reference Bias (not only a set of L & H) are used at certain Density Measure. This is called Density Measure Recalculation.
> - The possible best value for Developer Bias according to the latest Density Measure exceeds the limit.
> - Developer Clear in Clear Mode to reset any bias adjustment after Developer Roller replacement.

(86) Density Measure Extra Monitor

> **NOTE**
>
> This setting is factory-use only. Keep the value unchanged from the default value.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to determine whether to activate an extra monitor function for sensibility check of Density Sensor.

Setting Value	Contents
0	Density Measure Extra Check is disabled.
1	Density Measure Extra Check is enabled.

(87) Density Adjustment for Extra Check

> **NOTE**
>
> This setting is factory-use only. Keep the value unchanged from the default value.
> Changing the value may result in malfunction of Density Compensation Process.

It is possible to adjust a certain density setting for sensibility check of Density Sensor.

Default	Setting Range	Unit
01	00 - 0F	Hex.

(88) Regulation Temporal Bias (after Developing)

It is possible to adjust Regulation Bias applied from the end of developing step to the end of the print cycle.

The printer's process system does not require as large amount of toner as during the print cycle. (Requires only the minimum amount to cover Developer Roller with a thinner toner layer than usual)

To reduce the toner on Developer Roller, Regulation Bias is temporarily lowered to the same voltage as Developer Roller (setting value "000") just after the end of developing step. Then it lasts up to the end of the print cycle.
With the coming of the next print job, Regulation Bias is reset to the previous level, thus the amount of toner will recover.

Default	Setting Range	Unit
000	000 - 500	Hex.

(89) Minimum Developer Bias

> **⚠ NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default. Changing the value may result in malfunction of Density Compensation Process.

It is possible to consist of the set range for Developer Bias Adjustment. This Sub Mode is to determine the minimum (lower limit as absolute value) Developer Bias.

The default voltage value of the increment is about -200V.

Setting Range	Unit
00 - FF	Hex.

(8a) Maximum Developer Bias

> **⚠ NOTE**
>
> This setting has been factory-adjusted. Keep the value unchanged from the default. Changing the value may result in malfunction of Density Compensation Process.

It is possible to consist of the set range for Developer Bias Adjustment. This Sub Mode is to determine the maximum (upper limit as absolute value) Developer Bias.

The default voltage value of the increment is about -250V.

Setting Range	Unit
00 - FF	Hex.

(8b) Transfer Voltage Switch Timing at Trailing Edge

It is possible to adjust the analog voltage on Transfer Corona at a given timing for the trailing edge.

This Sub Mode determines when to switch to “Transfer Voltage Applied to Trailing Edge” (No.8c, 8d, 8e). The timing is defined as a distance after the trailing edge passes the position of Paper Entry Sensor (PH5).
Decreasing the value makes the switch timing earlier.

Setting Range	Unit
0 - 100	mm

(8c) (8d) (8e) Transfer Voltage applied to Trailing Edge

It is possible to adjust the analog voltage on Transfer Corona at a given timing for the trailing edge.

This Sub Mode determines the analog voltage on Transfer Corona to be applied after “Transfer Voltage Switch Timing at Trailing Edge” (No.8b).
Decreasing the value makes toner transfer less efficient at the trailing edge.

Sub Mode No.	Media Type	Setting Range
8c	Plain Paper	00 – FF [Hexadecimal]
8d	Tracing Paper / Vellum	
8e	Film	

(8f) Toner Supply Roller Bias (High Coverage Mode)

> **⚠ NOTE**
>
> This Sub Mode does not function.
> Change of this setting has no effect to the machine operation.

It is possible to make bias adjustment for Toner Supply Roller during High Coverage Mode.

Setting Range	Unit
000 - 500	Hex.

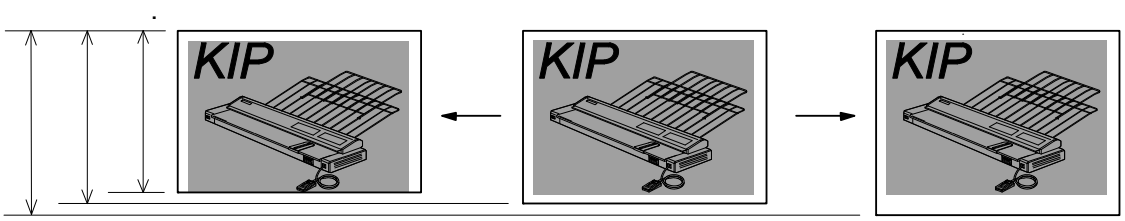
This Sub Mode is not available. Keep the setting value unchanged from the default.

(90) (91) Cut Length

It is possible to make the print length longer or shorter.
If you increase the setting value by “+1”, the print length becomes approximately 1mm longer.

Sub Mode No.	Media Source	Setting Range	Unit
90	Upper Roll Deck (Roll 1, Roll 2)	0 – 30	mm
91	Lower Roll Deck (Roll 3, Roll 4)		

Setting value is increased. Setting value is decreased



Cut length

⚠ NOTE

This Sub Mode (No.90, 91) is a fundamental parameter to determine the cut length.
This is applied to all print jobs regardless of media type/width.

Changing this will require re-adjustment of Cut Length Compensation (No.92, 93) and Cut Length Adjustment (No.20 to 25, 59 to 6a).

To adjust the cut length in some cases, first change this, and next check and adjust Cut Length Compensation (No.92, 93). Moreover, check and adjust Cut Length Adjustment (No.20 to 25, 59 to 6a) as needed.

(92) (93) Cut Length Compensation

It is possible to compensate the cut length for prints longer than 1,189mm / 48” with a roll media.
Increasing the value by 1 makes the print length approximately 0.2mm per 1 meter long shorter.

Sub Mode No.	Media Source	Setting Range	Unit
90	Upper Roll Deck (Roll 1, Roll 2)	0 – 999	mm
91	Lower Roll Deck (Roll 3, Roll 4)		

(94) Regulation Bias (High Coverage Mode)

It is possible to make the print density darker or lighter by adjusting Regulation Bias (Center).
The print density becomes darker if you increase the setting value.

Setting Range	Unit
000 - 500	Hex.

This Sub Mode is not available. Keep the setting value unchanged from the default.

⚠ NOTE

Please adjust Regulation Bias while checking the actual voltage with the multi-meter.

(95) Hardware Counter Unit (ANSI / ISO)

It is possible to specify the counting unit principle of the hardware counter (and Counter A).
Selectable setting values are “0” or “1”.
The contents of setting values are as follows.

Setting Value	Count Unit
0	Metric unit selection is available.
1	Inch unit selection is available

⚠ NOTE

(1) This Sub Mode activates only either unit selection of Metric/Inch for the count unit.
The count unit will be fixed by “Hardware Counter Unit (Detail)” (No.2f).

(2) **“Metric / Inch” (No.00) and the size format selection in Configuration on the UI screen does not effect to the count unit.**

(3) We recommend you to decide the count unit at the time of installation and not to change it later because it does not mean as a total counter, if you change the unit in between.

(96) Fuser Motor Speed Switch Timing at Trailing Edge

It is possible to adjust Fuser Motor Speed at a given timing for the trailing edge.

This Sub Mode determines when to switch to “Fuser Motor Speed for Trailing Edge” (No.97, 98, 99). The timing is defined as a distance after the trailing edge passes the position of Paper Entry Sensor (PH5).
Decreasing the value makes the switch timing earlier.

Setting Range	Unit
0 - 100	mm

(97) (98) (99) Fuser Motor Speed for Trailing Edge

It is possible to adjust Fuser Motor Speed at a given timing for the trailing edge.

This Sub Mode determines Fuser Speed to be applied after “Fuser Motor Speed Switch Timing at Trailing Edge” (No.96).
Increasing the value makes Fuser Motor rotate faster at the trailing edge.

Sub Mode No.	Media Type	Setting Range
97	Plain Paper	0 – 80 (0.05% step) (-2.00 – +2.00%)
98	Tracing Paper / Vellum	
99	Film	

(9a) Disable HV Error Detection Mode ON/OFF

Disable HV Error Detection Mode is an error mask against high voltage error.
This allows the system to always ignore HV Error (E-51). Note that a mask condition lasts until setting it OFF manually.

Setting Value	Contents
0	HV Error Invalid Mode disabled
1	HV Error Invalid Mode enabled

⚠ NOTE

TAKE GREAT CARE. The system ignores high voltage error with ANY CAUSE until setting Disable HV Error Detection Mode OFF manually.

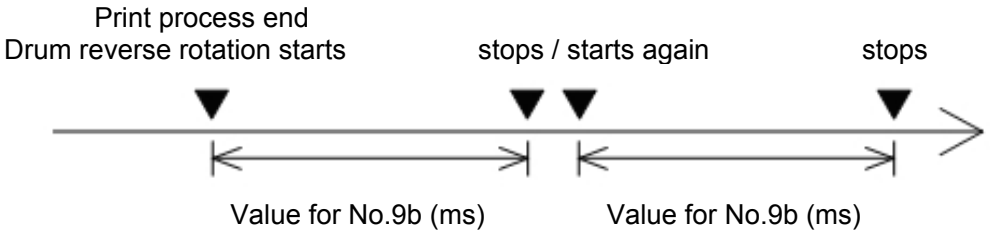
(9b) Drum Reverse Time

It is possible to change the period for the Drum reverse rotation.

Developer Roller is strongly pressed to the Drum and that may cause an indentation on Developer Roller's surface. Thus after a certain period Developer Unit is released from the Drum. To ensure the release, the Drum makes a reverse rotation in a given period twice after finishing a job.

Setting a bigger value for No.9b makes the reverse rotation period longer.

Setting Range	Unit
0 - 10	10ms



Reference

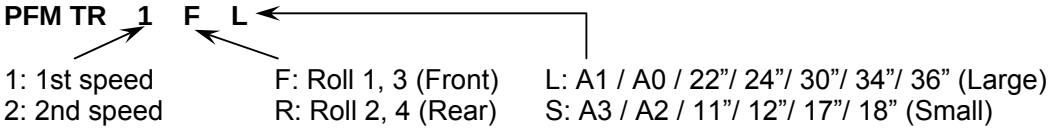
Drum reverse rotations may cause a black line about 50mm below the leading edge on a print. Setting a smaller value will reduce such a line.

(9c)(9d)(9e)(9f)(a0)(a1)(a2)(a3) Feed Motor Speed (Advanced)

It is possible to change the Paper Feeding Motor Speed.

Setting Range	Unit [%]
0 – 80	-2.00 – +2.00 (0.05% step)

Item name displayed in KIP SubGUI means as follows.



Sub Mode No.		Roll Deck	Media Width
9c	1st	(F) Roll 1, 3	(L) A1 / A0 / 22”/ 24”/ 30”/ 34”/ 36”
9d	**2nd**		
9e	1st		(S) A3 / A2 / 11”/ 12”/ 17”/ 18”
9f	**2nd**		
a0	1st	(R) Roll 2, 4	(L) A1 / A0 / 22”/ 24”/ 30”/ 34”/ 36”
a1	**2nd**		
a2	1st		(S) A3 / A2 / 11”/ 12”/ 17”/ 18”
a3	**2nd**		

Reference

“1st speed” is a fixed parameter as the standard speed for Paper Feeding Motor.
“2nd speed” is used for a long print in more than standard cut length.

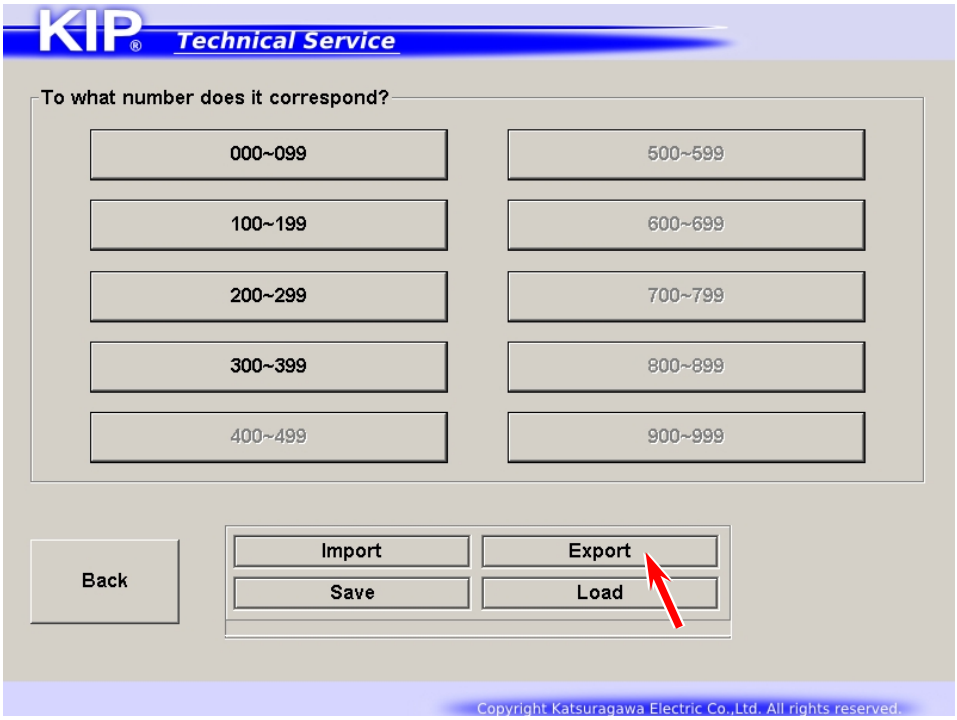
If such prints have a crease or image void, adjusting "2nd speed” may resolve the situation.

8. 6. 4 Creating Backup

It is possible to save the current parameters in Adjustment Mode as RAM file.
RAM file can be used for backup measure.

> **NOTE**
>
> Prior to any attempts at significant changes on Adjustment Mode, export the current parameters to .RAM file.

1. Press [Export] in Adjustment Menu screen.



2. Specify a place to save the current parameter as a file.
   You can choose “*.ram” or “*.txt” as the file format to be saved.

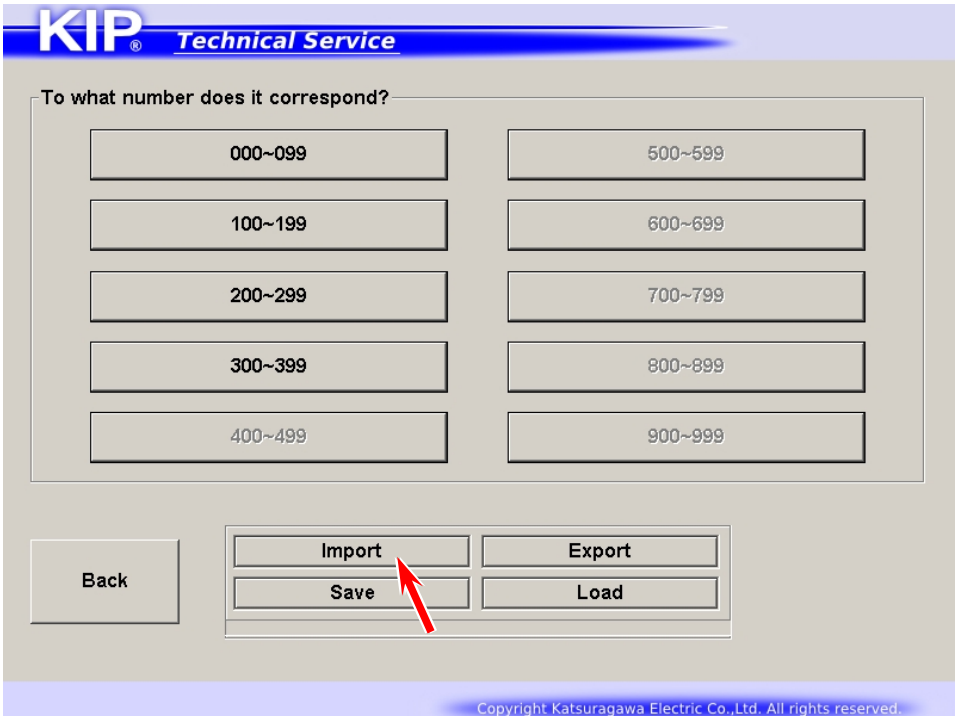
   *.ram is used for backup of the current parameter. You can use it to import the parameter to machines.
   *.txt” is only used for simplified confirmation with an appropriate application such as Notepad.

8. 6. 5 Restoring Configuration from Backup

It is possible to restore the parameters by using a RAM file that has been saved before.
This can be used for the following possible cases.

- If the current parameters have loss or damage of data.
- To apply parameters of a certain printer to another.

1. Press [Import] in Adjustment Menu screen.

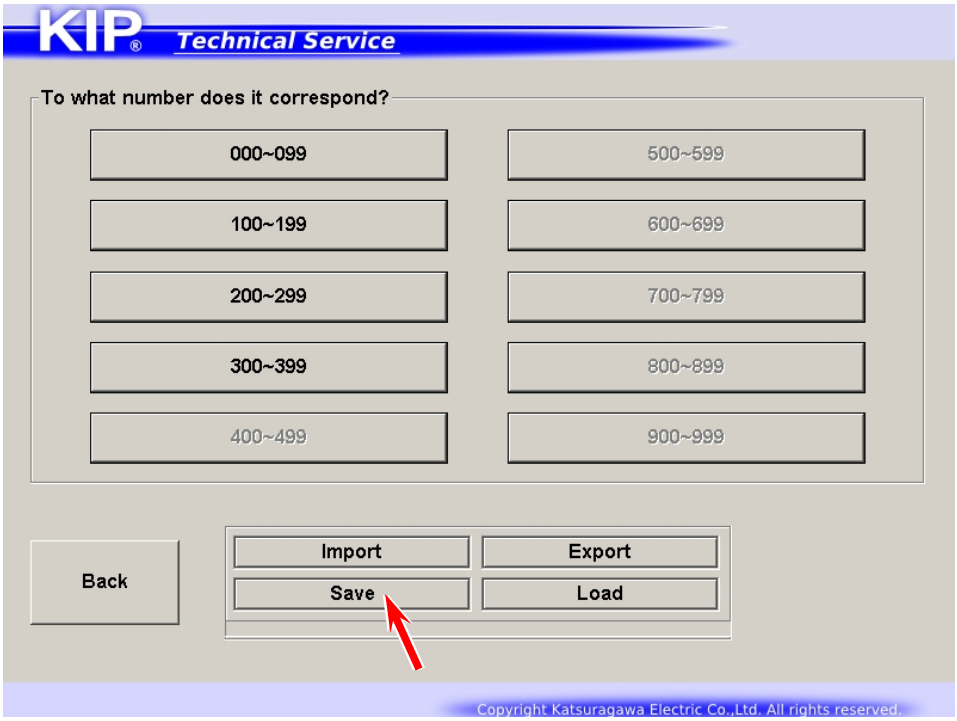


2. Locate and open a RAM file that you want to apply.

3. The system reads all the parameters in the RAM file.
   Then the parameters will be applied to **"Preset"** area.

> **NOTE**
>
> **At this point, KIP SubGUI just reads and displays the parameters in the RAM file, but the parameters do not take effect on the printer yet.**
>
> Follow the later step to apply the read parameters to the printer.

4. Press [Save]. After confirmation, the read parameters will be sent to the printer.



8. 7 Running Mode

In Running Mode, the printer takes usual printing operation with no print media loaded.
If you install any roll media, it is transported and ejected from the printer as usual as normal print.
Note that the printer will continue printing till the media empty.

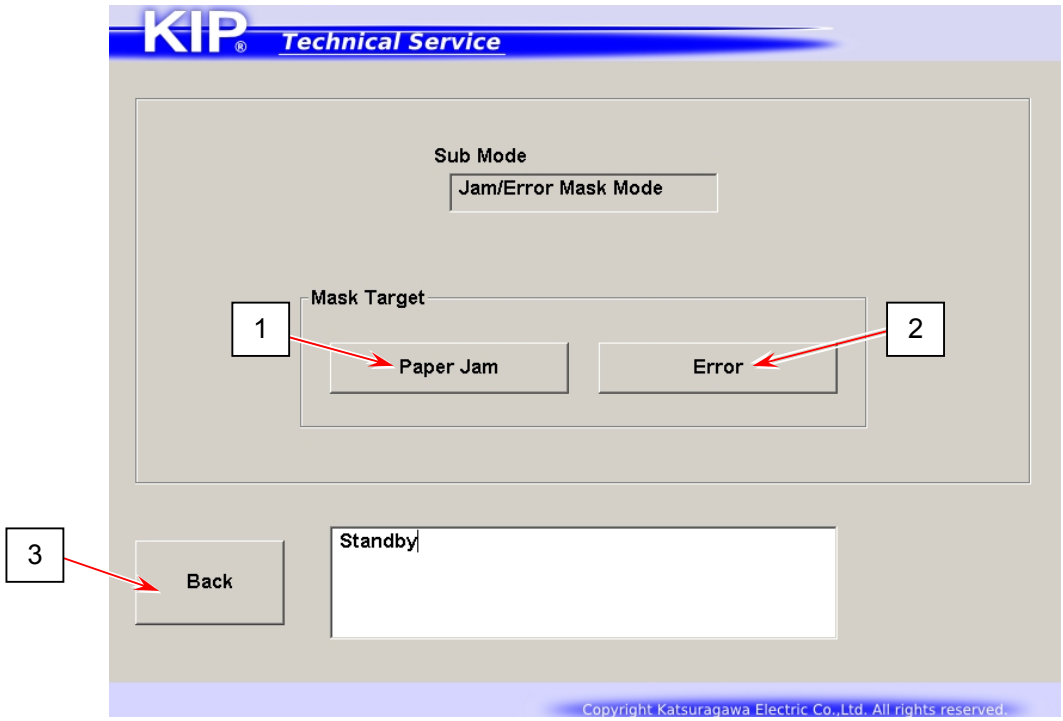
> **NOTE**
>
> Running Mode is not available in Service Mode. Factory Use Only.

8. 8 Jam/Error Mask Mode

If the printer indicates any error (J-****/E-****), it is possible to mask (ignore, not to detect) it in Jam/Error Mask Mode. The error (J-****/E-****) you have chosen to mask will not be detected by masking. You can temporarily operate the printer as usual as normal condition even if a cause of the error is not removed yet.

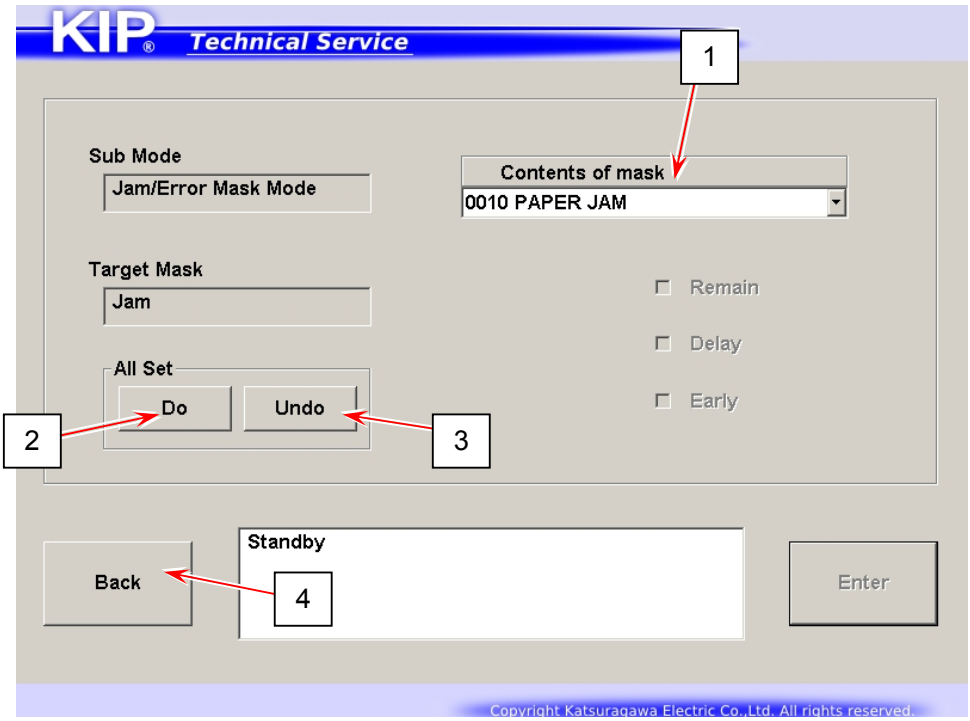
> **NOTE**
>
> Masking condition will be automatically canceled once you quit KIP SubGUI or turn off the printer.

Mask Target screen



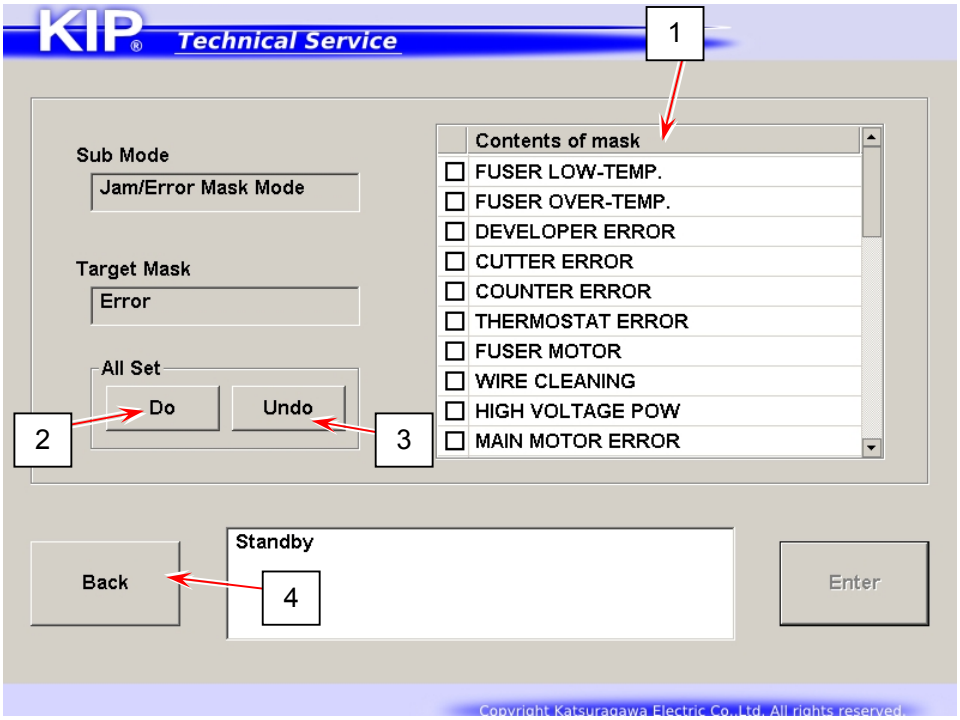
	Name	Function
1	Paper Jam	Switches to Jam Mask screen
2	Error	Switches to Error Mask screen
3	Back	Returns to Service Mode Home

Jam Mask screen



	Name	Function
1	Contents of Mask	Displays Mask items in drop-down menu Choose one item that you want to mask. **NOTE:** No individual mask item is available on KIP 7700. All the jam detection sensors ignore any jams.
2	Do	Starts jam masking against “Remain”/”Delay”/”Early”
3	Undo	Cancels jam masking against “Remain”/”Delay”/”Early”
4	Back	Returns to Service Mode Home

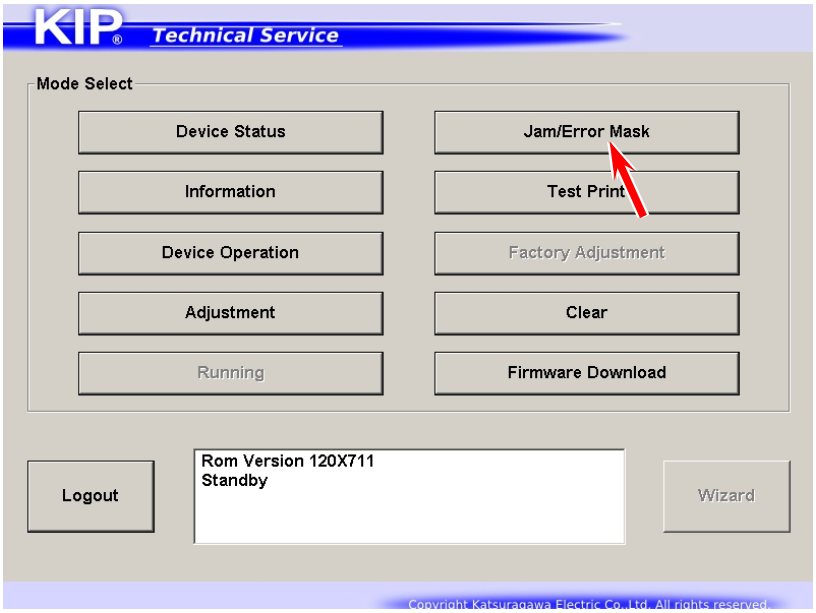
Error Mask screen

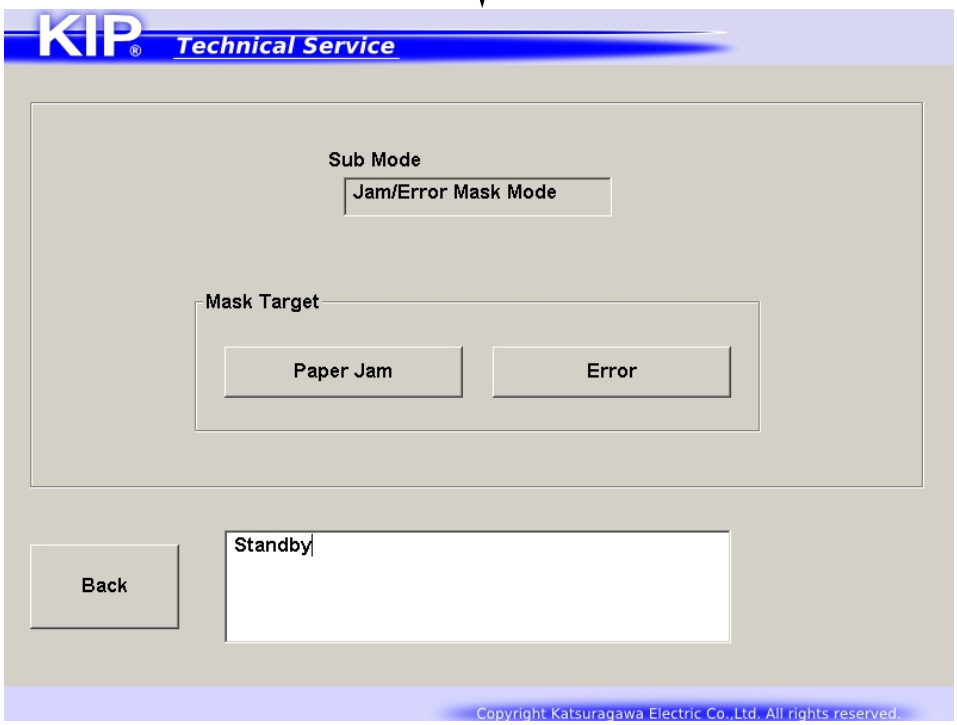


	Name	Function
1	Contents of Mask	Displays Mask items in the list Select a mask target(s) that you want to mask. Starts error masking while an item(s) is checked
2	Do	Starts error masking against all the items
3	Undo	Cancels error masking against checked items
4	Back	Returns to Service Mode Home

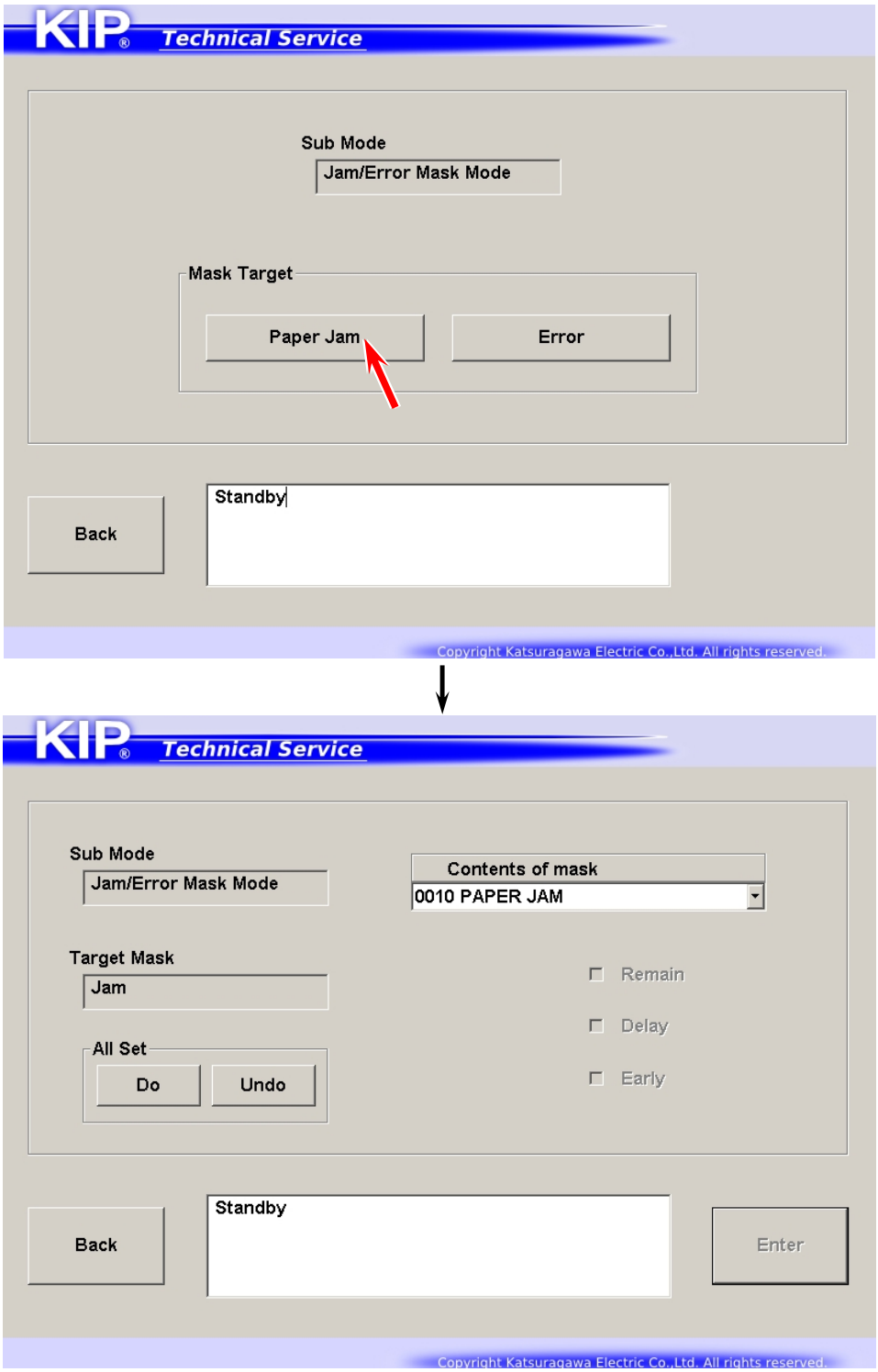
8. 8. 1 Masking Jam

1. Press [Jam Error Mask] in Service Mode Home.
   Mask Target screen appears.

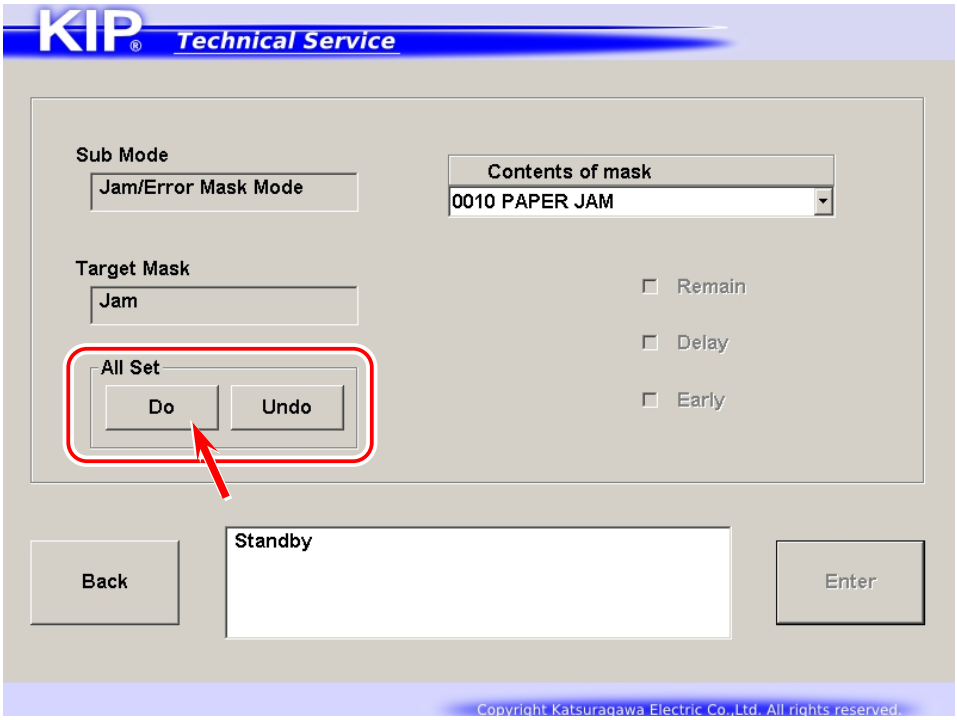




2. Press [Paper Jam].



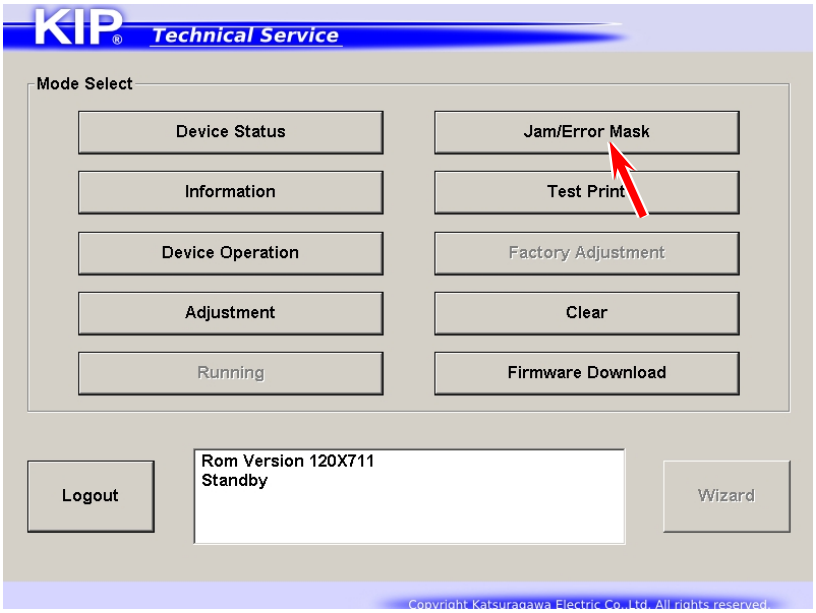
3. Press [Do] to start jam masking.
   All the jam detection sensors ignore any media jam.

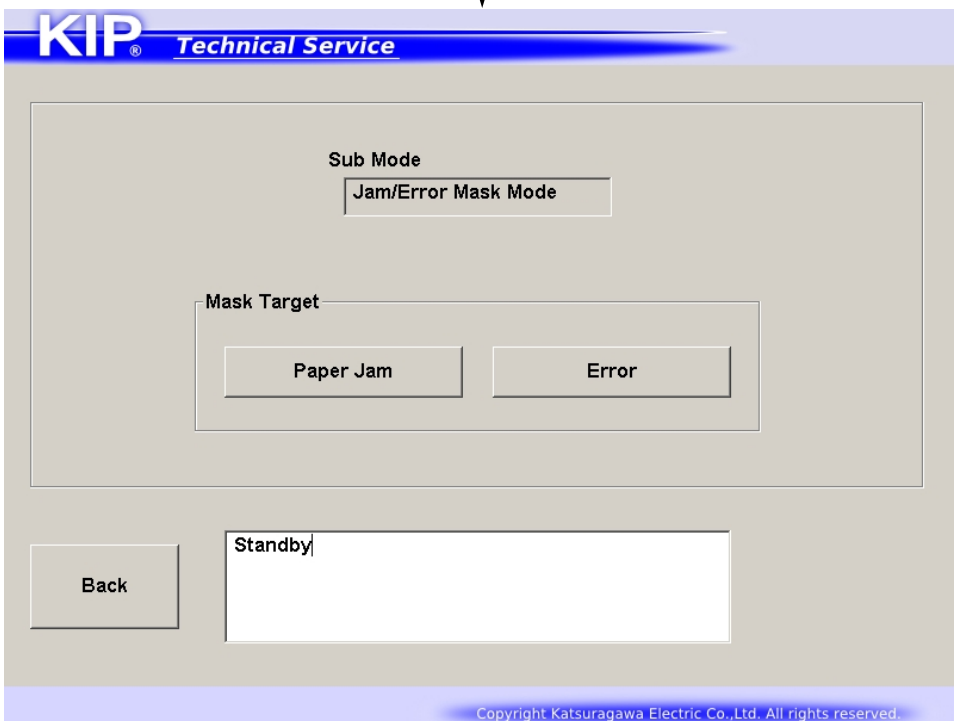


4. To cancel the masking condition, press [Undo].

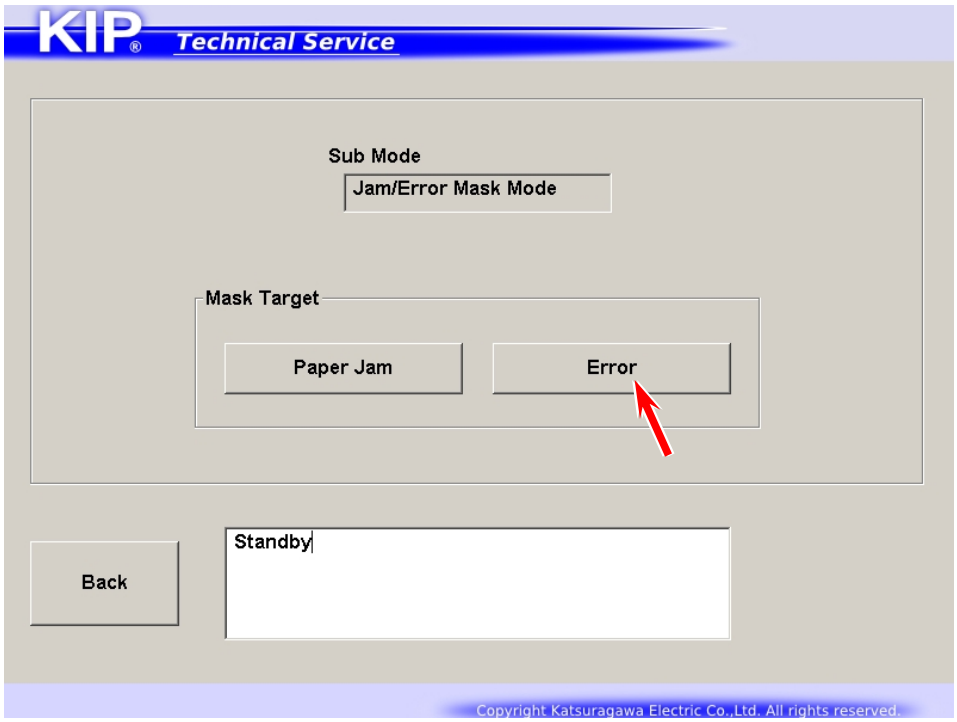
8. 8. 2 Masking Errors

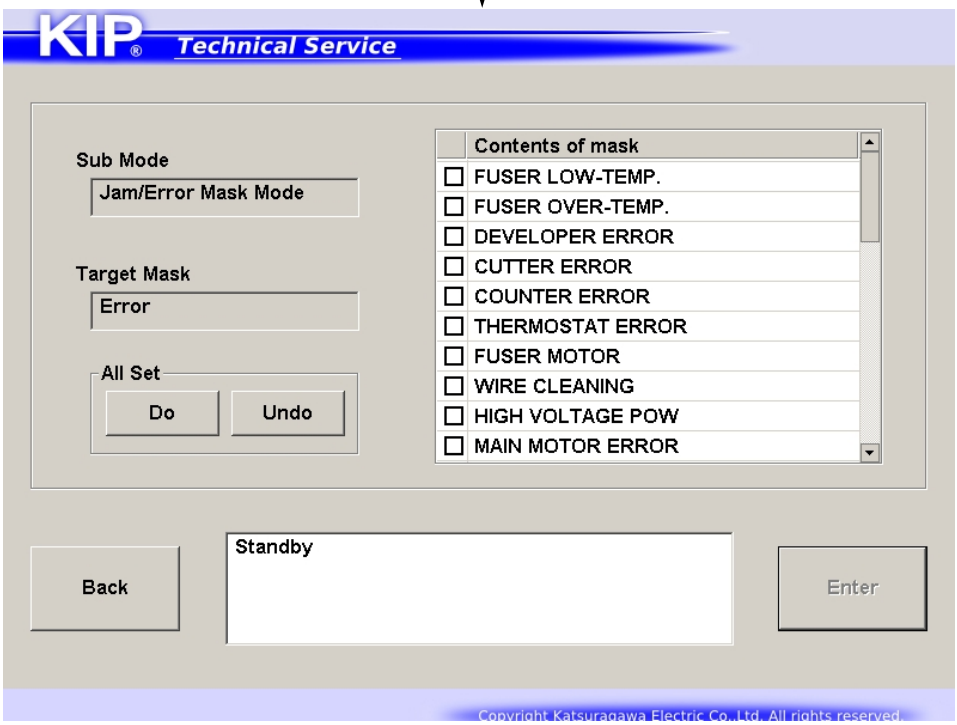
1. Press [Jam Error Mask] in Service Mode Home.
   Mask Target screen appears.



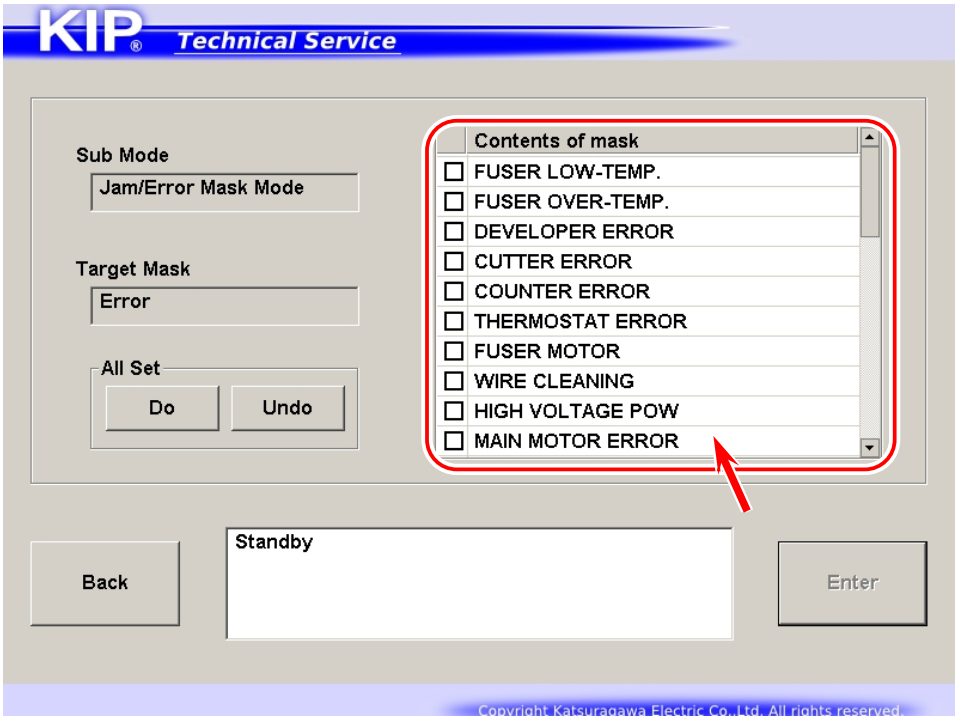


2. Press [Paper Jam].





3. Check items that you want to mask. Errors on the selected device(s) are not detected.



4. To cancel the masking condition, remove the check or press [Undo].

> **NOTE**
>
> No “Door Open” mask is available.

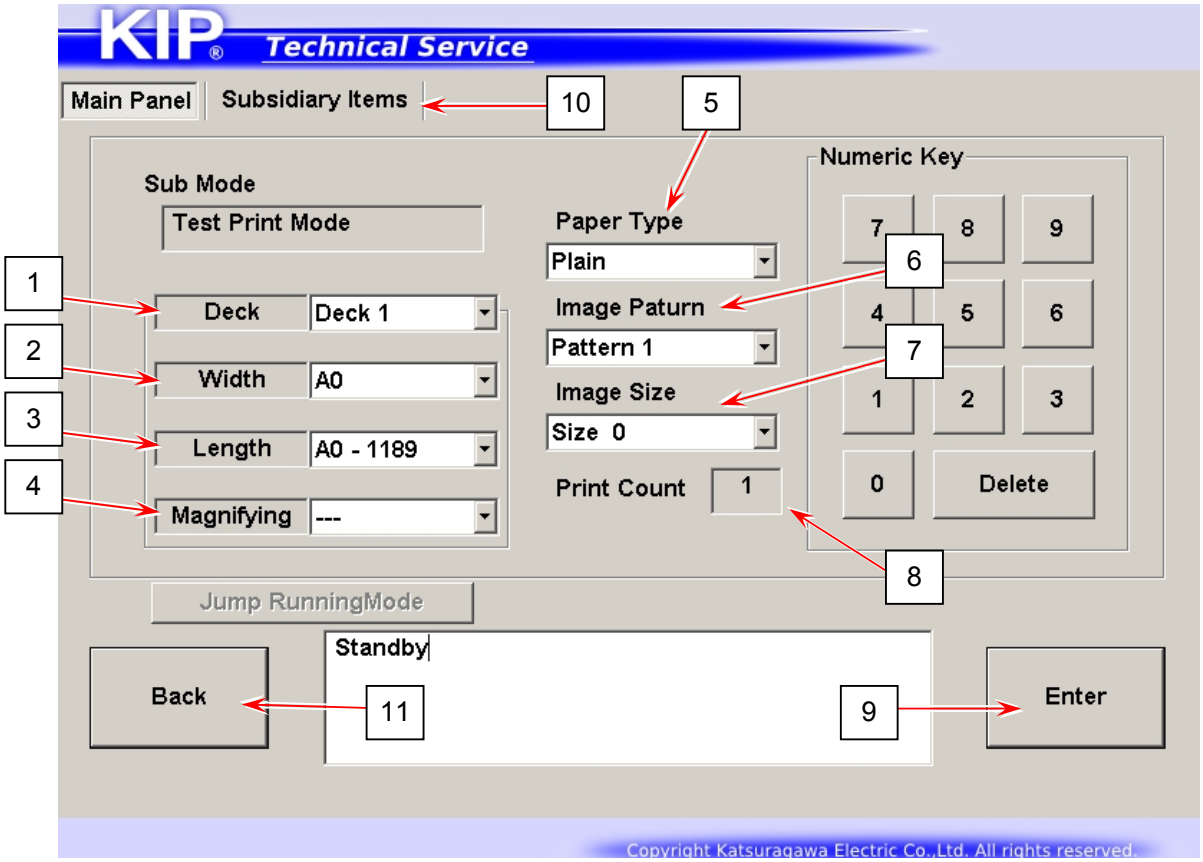
8. 8. 3 Mask List

Contents of mask	Name of error	Error Code
Fuser Low-Temp.	Fuser Temperature Rising Error	E-0001
Fuser Over-temp.	Fuser Over Temperature Error	E-0002
Developer Error	Developer Unit Set Error	E-0004
Cutter Error	Cutter Home Position Error	E-0007
Counter Error	Counter Error	E-0006
Thermostat Error	Fuser Thermostat Error	E-0021
Fuser Motor	Fuser Motor Error	E-0014
Wire Cleaning	Wire Cleaning Motor Error	E-0016
High Voltage Power	High Voltage Power Source Error	E-0051
Main Motor Error	Main Motor Error	E-0003
Paper Jam	Paper Jam	J-****
Out of Paper 1	Roll 1 Empty	---
Out of Paper 2	Roll 2 Empty	---
Out of Paper 3	Roll 3 Empty	---
Out of Paper 4	Roll 4 Empty	---
Out of Toner	Toner Empty	---

8. 9 Test Print Mode

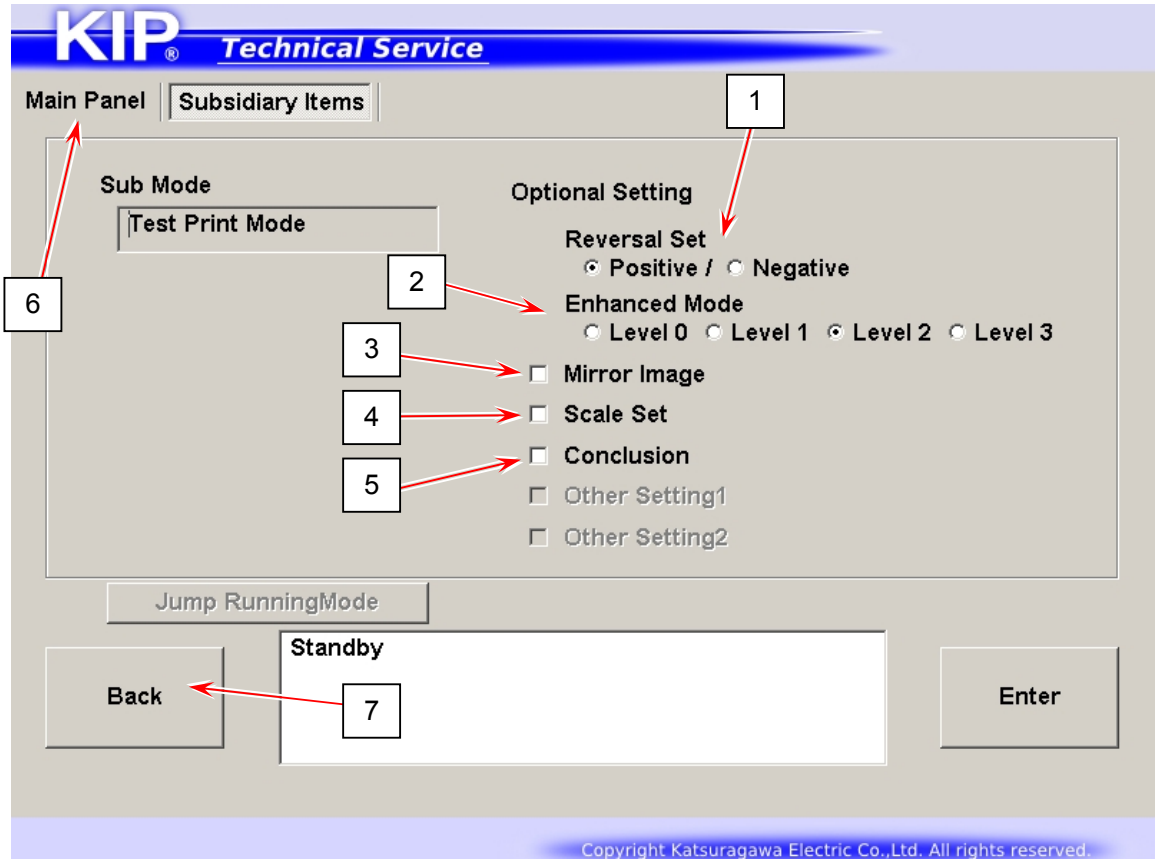
It is possible to output some built-in test patterns as a stand alone plotter.
No external device (controller / scanner / network connection) is required for test pattern plotting.

Main Panel screen



	Name	Function
1	Deck	Displays media source in drop-down menu Choose one item that you want to use for test print.
2	Width	Displays media width of the selected media source in drop-down menu You can set a different width from the actual media.
3	Length	Displays print length of the test print in drop-down menu Specify one item for test print.
4	Magnifying	The print length will extend *n* times specified in “Magnifying”.
5	Paper Type	Displays media type in drop-down menu Specify one media type of the selected media source.
6	Image Pattern	Displays built-in image pattern number in drop-down menu Specify one pattern that you want to plot.
7	Image Size	Specify a size code for repeated pattern size.
8	Print Count	Displays the number of sheets to be plotted You can change the number by using On-screen Keypad.
9	Enter	Starts the configured test print
10	Subsidiary Items	Switches to Subsidiary Items screen
11	Back	Returns to Service Mode Home

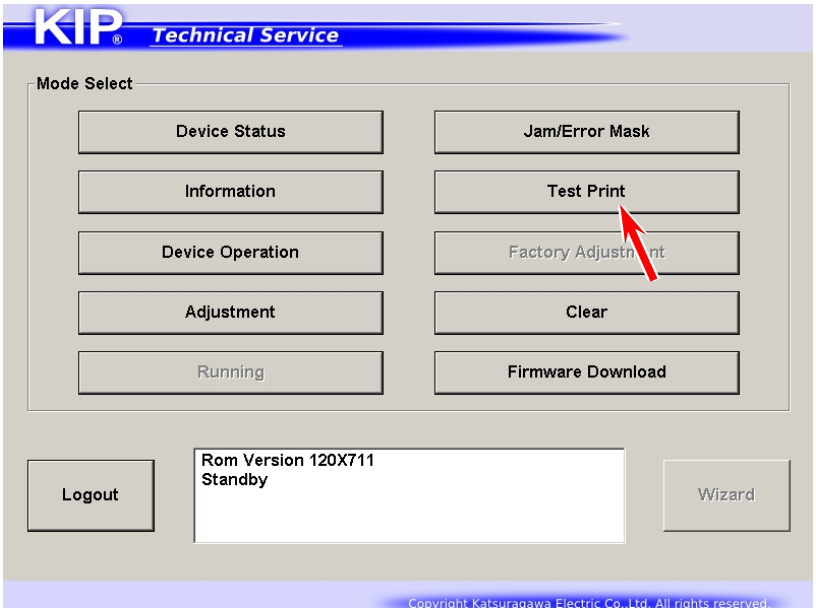
Subsidiary Items screen

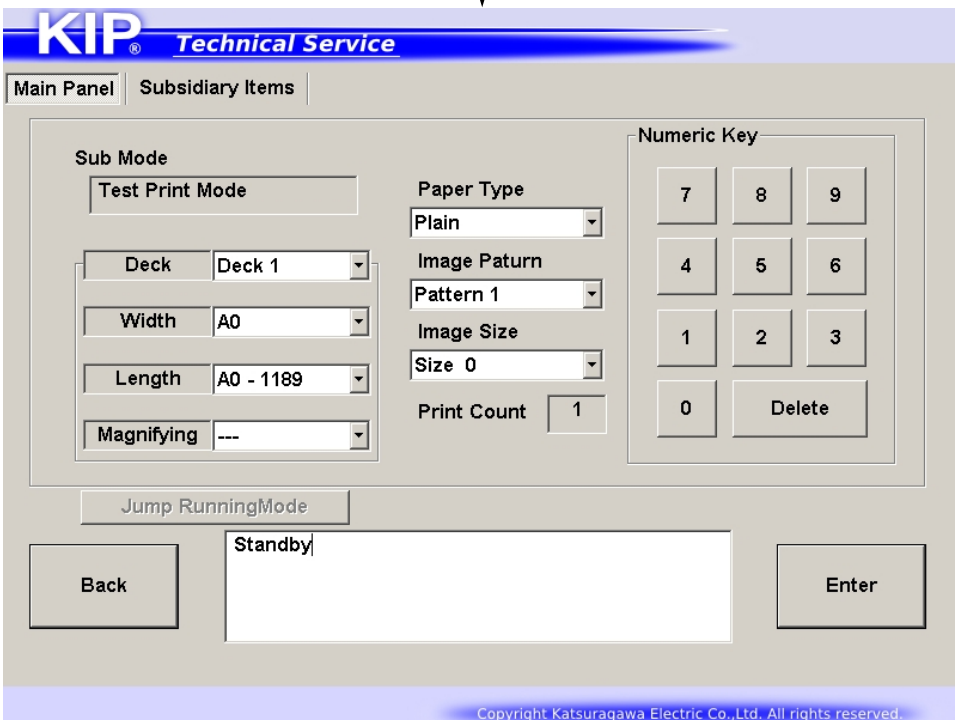


	Name	Function
1	Reversal Set	Choose “Negative” for B/W inverting.
2	Enhanced Mode	Displays Dot Enhancement Level
3	Mirror Image	Enables horizontal reverse image
4	Scale Set	Enables scales to be printed on the test print
5	Conclusion	Switches between “*n* sheets x 1” continuous print to “ 1 sheet x *n* times” singular prints
6	Main Panel	Switches to Main Panel screen
7	Back	Returns to Service Mode Home

8. 9. 1 Making Test Print

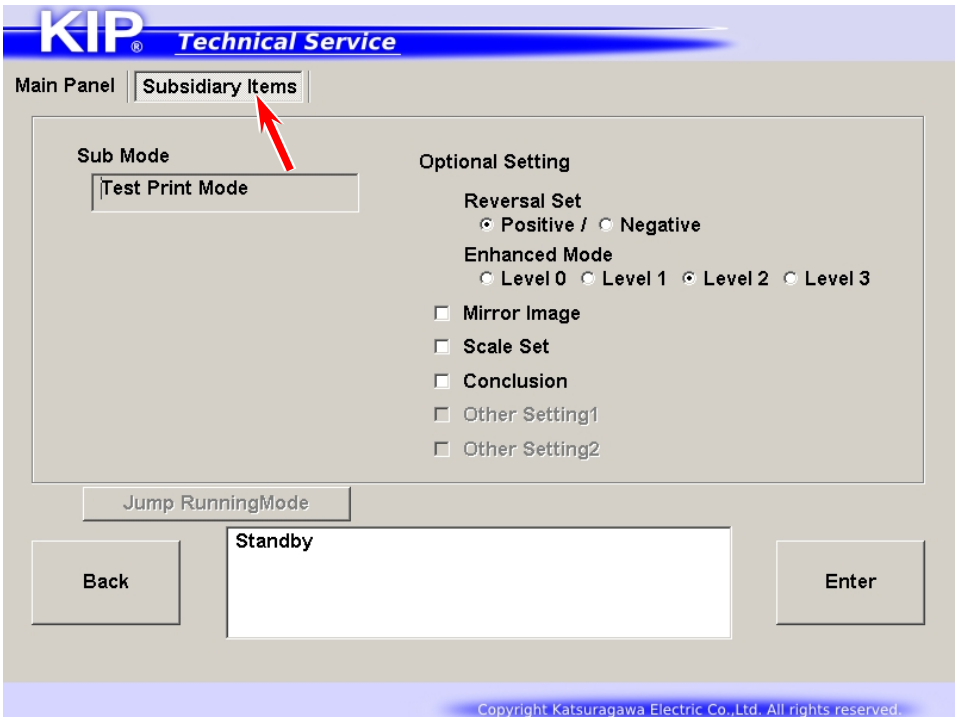
1. Press [Test Print] in Service Mode home.





2. Configure a test print job.
   In Main Panel tab, you can configure media source, type, length, image pattern selection, number of sheets.

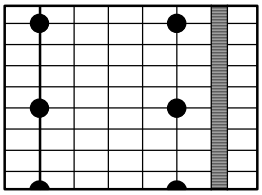
3. If necessary, open Subsidiary Items tab to configure some other settings.



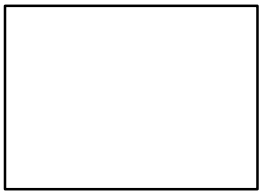
4. Press [Enter] to start printing the configured test print.

8. 9. 2 Built-in Test Pattern

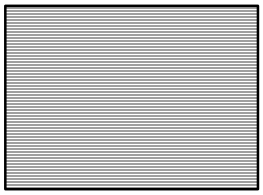
Pattern No.1



Pattern No.4

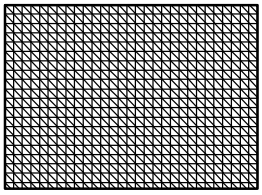


Pattern No.7



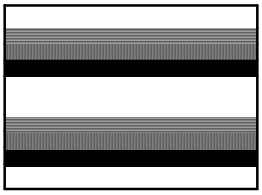
Pattern No.2

Pattern No.5

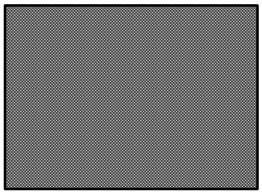


Pattern No.8

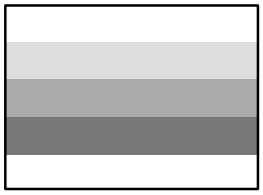
Pattern No.3



Pattern No.6



Pattern No.9



8. 10 Factory Adjustment Mode

This mode is mainly used at factory for adjustment and product operation test.

> **NOTE**
>
> Factory Adjustment Mode is not available in Service Mode. Factory Use Only.

8. 11 Clear Mode

Clear Mode has “reset” or “clear” functions to some recorded status from the memory.

(1) Clears the following recorded status and history.
- Fuser Temperature Rising Error (E-0001)
- Fuser Over Temperature Error (E-0002)
- Jam History
- Error History

(2) Resets bias adjustment by Density Compensation Process

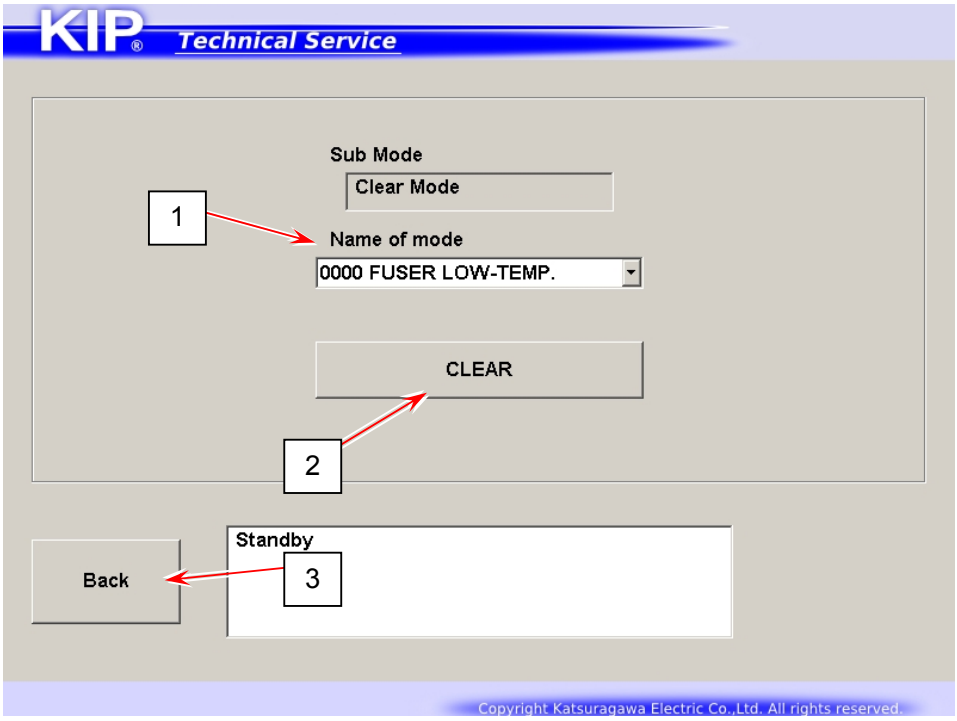
(3) Any other operations such as
- modifying/restoring Counter value for Total Count (stored in the memory, linear meter)
- modifying/restoring Counter value for Counter A (in conjunction with the hardware counter)
- Toner Supply Mode (toner supply/leveling in Developer Unit, use only machine’s initial setup)

NOTE

Fuser Temperature Rising Error (E-0001) and Fuser Over Temperature Error (E-0002) do not disappear automatically even if you remove any cause of these errors.

You should clear the error in Clear Mode to allow the printer to be ready for printing.

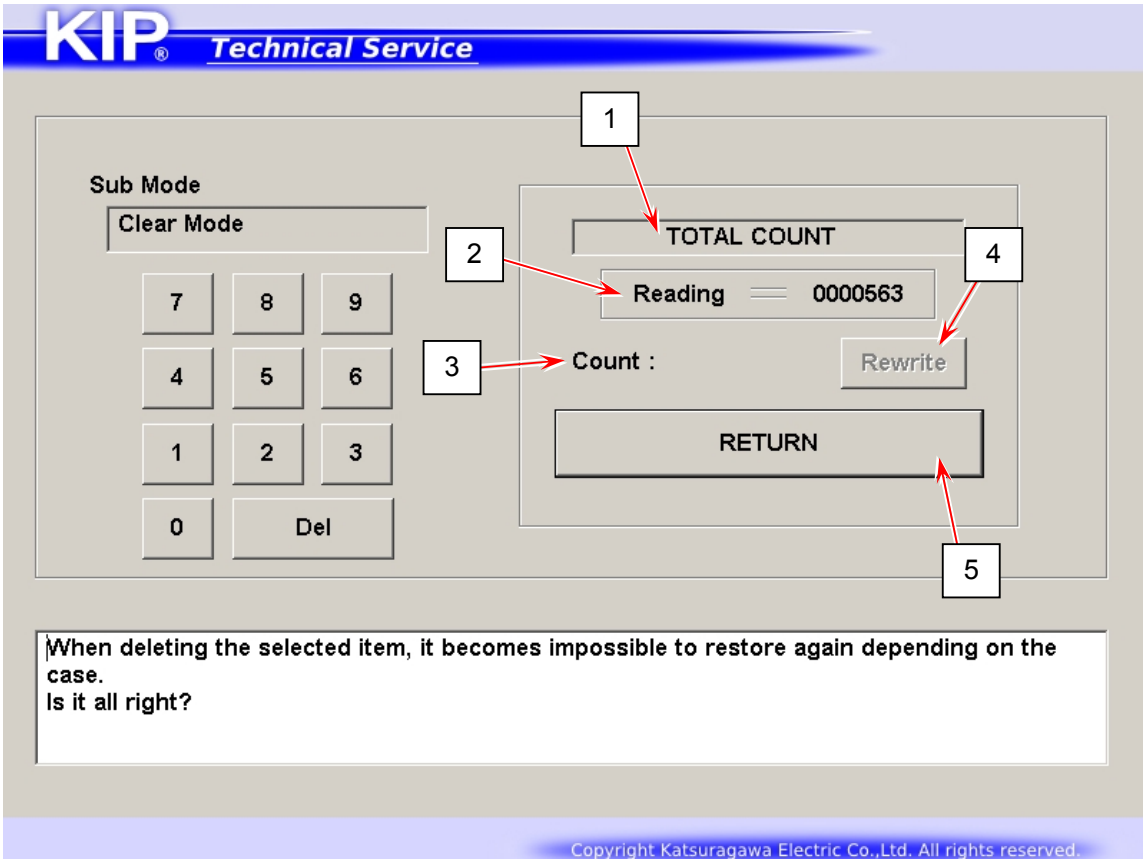
Clear Target screen



	Name	Function
1	Name of Mode	Displays items to be cleared in drop-down menu Choose one item that you want to clear.
2	Clear	Switches to Confirmation screen Clear is not executed immediately once you press [Clear].
3	Back	Returns to Service Mode Home

Item No.	Clear Item	Contents
0000	Fuser Low-Temp	Clears a recorded E-0001 status from the memory
0001	Fuser Over-Temp	Clears a recorded E-0002 status from the memory
0002	Jam History	Clears Jam records J-**** from the memory
0003	Error History	Clears Error records E-**** from the memory
0004	Total Count	Changes the counter value for Total Count
0005	Counter A	Changes the counter value for Counter A
0006	Developer	Initializes and readjusts Developer / Regulation Bias
0007	Toner S	Starts toner supply/leveling in Developer Unit

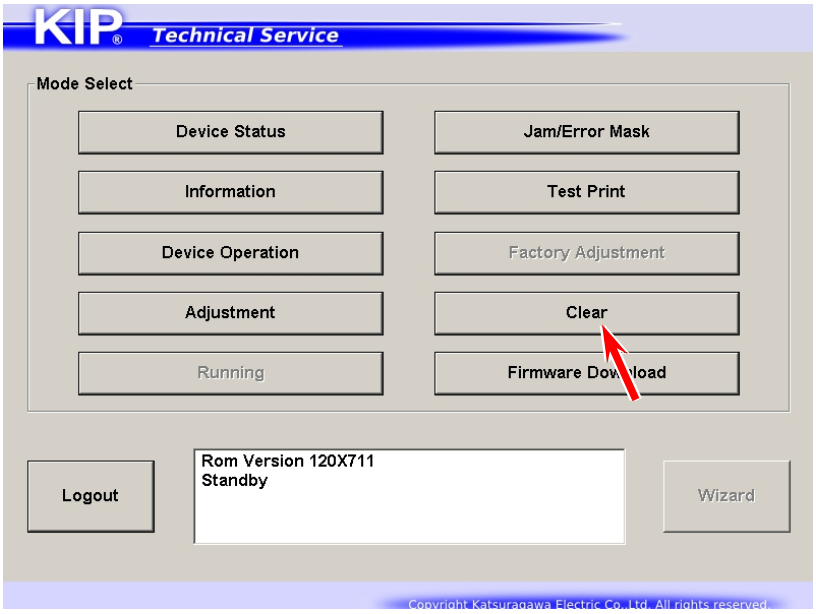
Counter Input screen

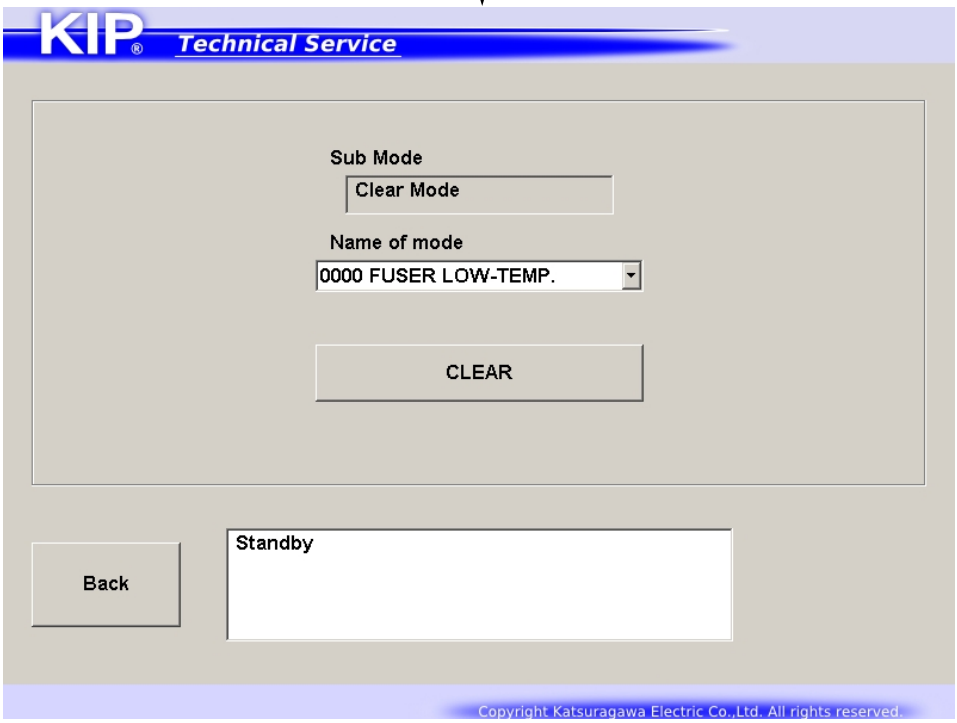


	Name	Function
1	Counter Name	Displays the counter name you have chosen
2	Reading	Displays the current counter value stored in the memory
3	Count	Displays an input counter value by using On-screen Keypad
4	Rewrite	Applies a new counter value in “Count” to the selected counter
5	Return	Returns to Clear Target screen

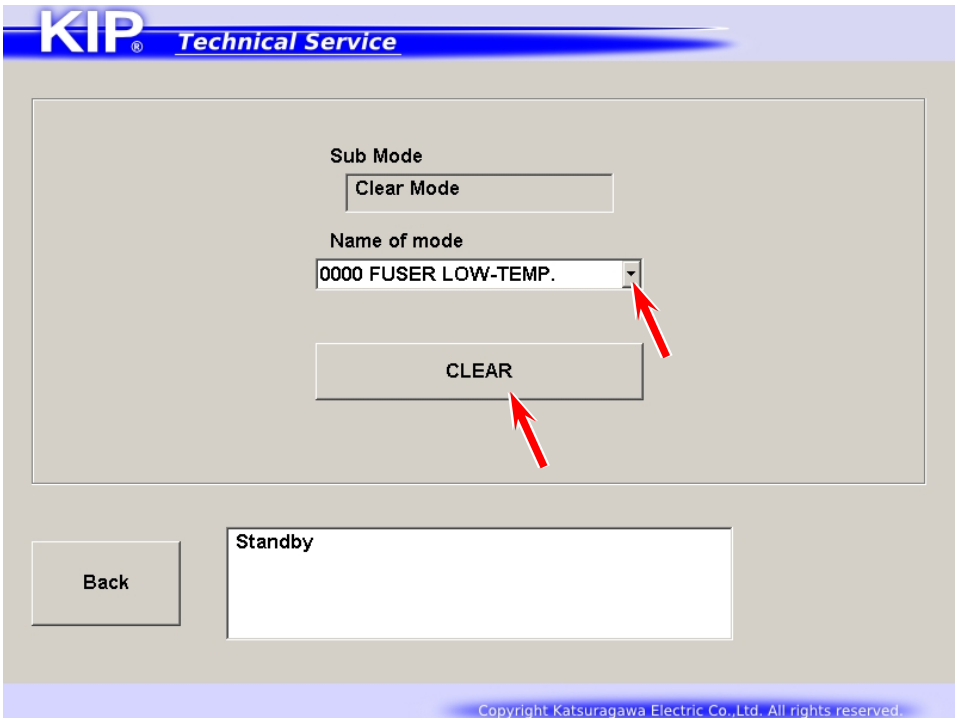
8. 11. 1 Clearing Fuser Error, Jam/Error History

1. Press [Clear] in Service Mode Home.
   Clear Target screen appears.



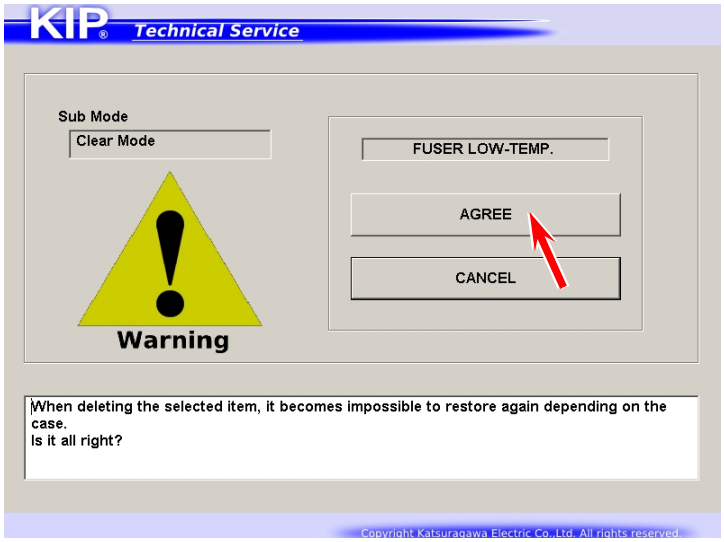


2. Specify one item that you want to use from Name of mode menu. Press [CLEAR].



Item No.	Clear Item	Contents
0000	Fuser Low-Temp	Clears a recorded E-0001 status from the memory
0001	Fuser Over-Temp	Clears a recorded E-0002 status from the memory
0002	Jam History	Clears Jam records J-**** from the memory
0003	Error History	Clears Error records E-**** from the memory
0004	Total Count	Changes the counter value for Total Count
0005	Counter A	Changes the counter value for Counter A
0006	Developer	Initializes and readjusts Developer / Regulation Bias
0007	Toner S	Starts toner supply/leveling in Developer Unit

3. Confirmation screen appears.
Press [Agree] to clear the concerning record(s).

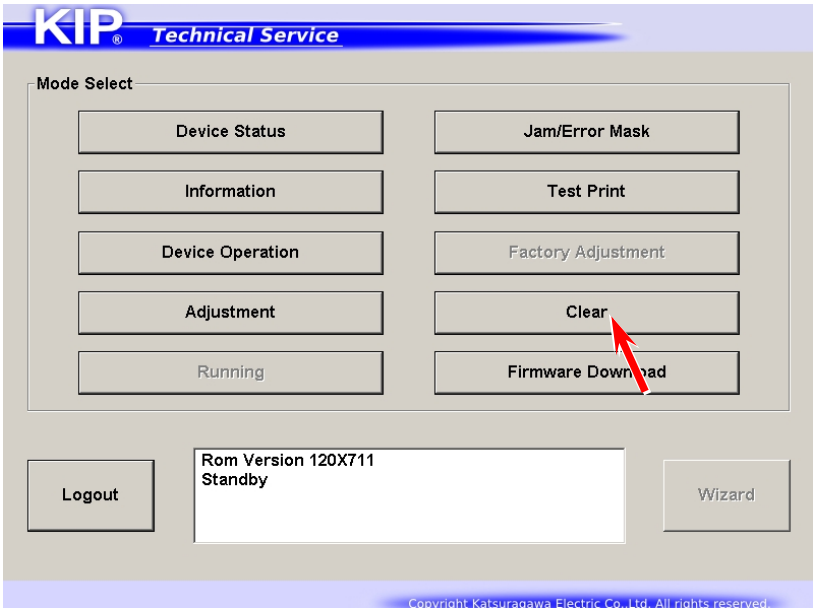


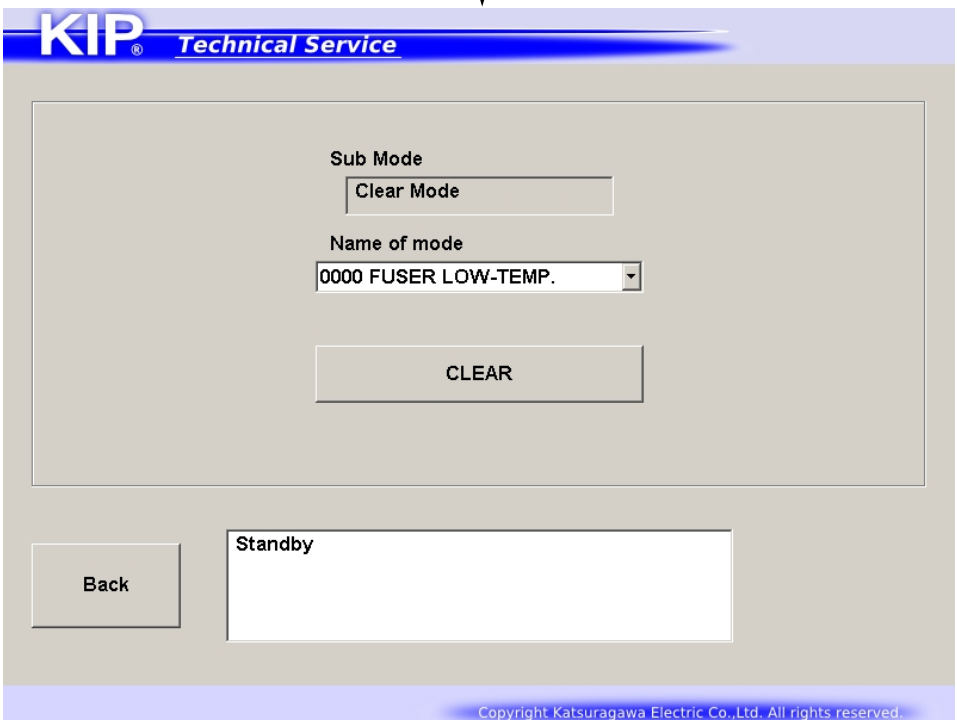
4. Once you press [Agree], it will turn deactivated. Press [RETURN].

8. 11. 2 Reset of Bias Adjustment by Density Compensation Process

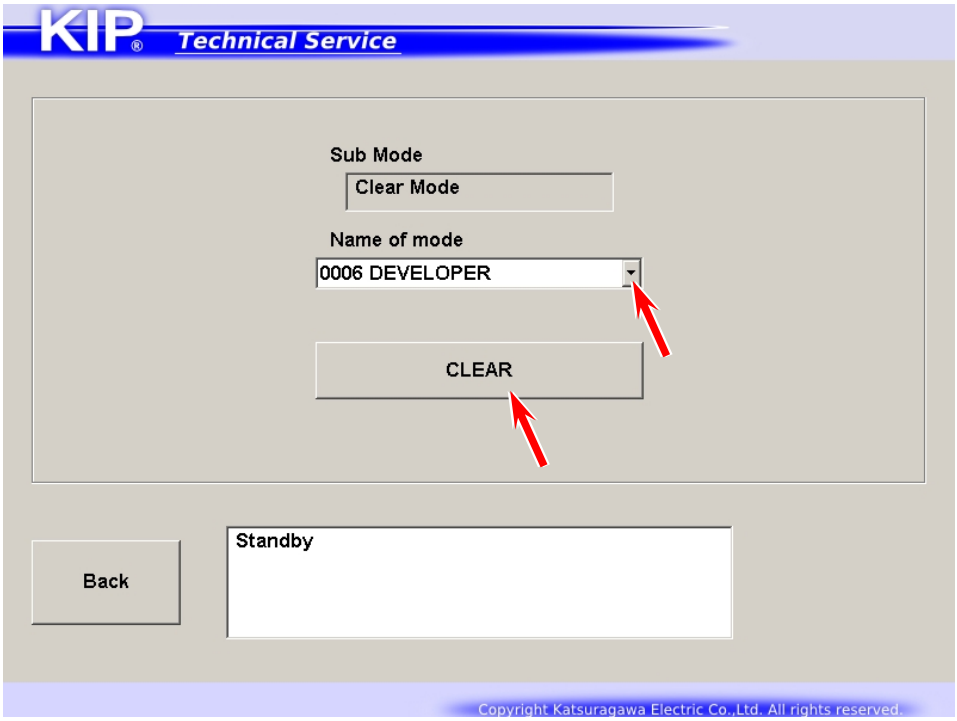
> **NOTE**
>
> After replacing Developer Roller / toner refreshment, you must reset bias adjustment by Density Compensation Process.
> Otherwise a darker image appears because the adjusted values are too high voltage for the refreshed Developer Unit.

1. Press [Clear] in Service Mode Home.
   Clear Target screen appears.



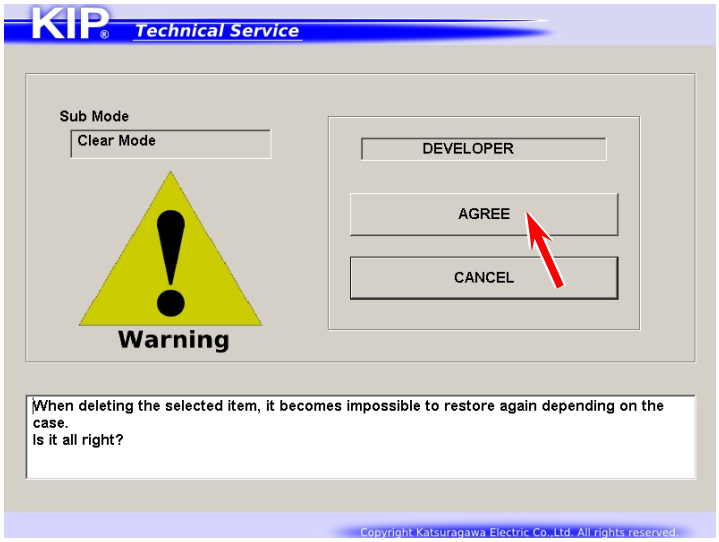


2. Select [0006 Developer] from Name of mode menu. Press [CLEAR].



Item No.	Clear Item	Contents
0000	Fuser Low-Temp	Clears a recorded E-0001 status from the memory
0001	Fuser Over-Temp	Clears a recorded E-0002 status from the memory
0002	Jam History	Clears Jam records J-**** from the memory
0003	Error History	Clears Error records E-**** from the memory
0004	Total Count	Changes the counter value for Total Count
0005	Counter A	Changes the counter value for Counter A
0006	Developer	Resets and readjusts Developer / Regulation Bias
0007	Toner S	Starts toner supply/leveling in Developer Unit

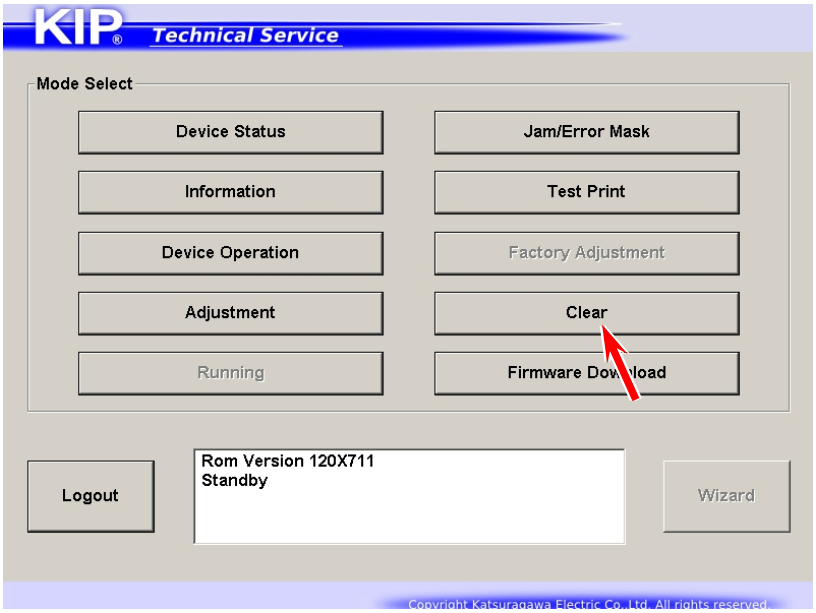
3. Confirmation screen appears.
Press [Agree] to reset Bias Adjustment by Density Compensation Process.
Then the system starts recalculation of the possible best Developer/Regulation Bias.
(This will take time.)

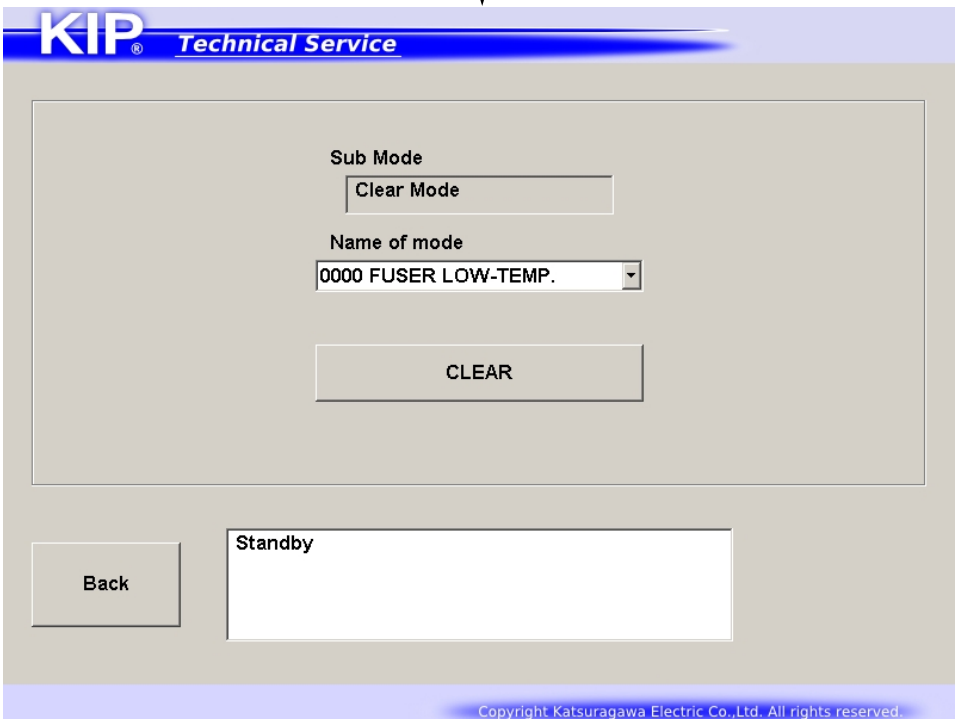


4. Once you press [Agree], it will turn deactivated. Press [RETURN].

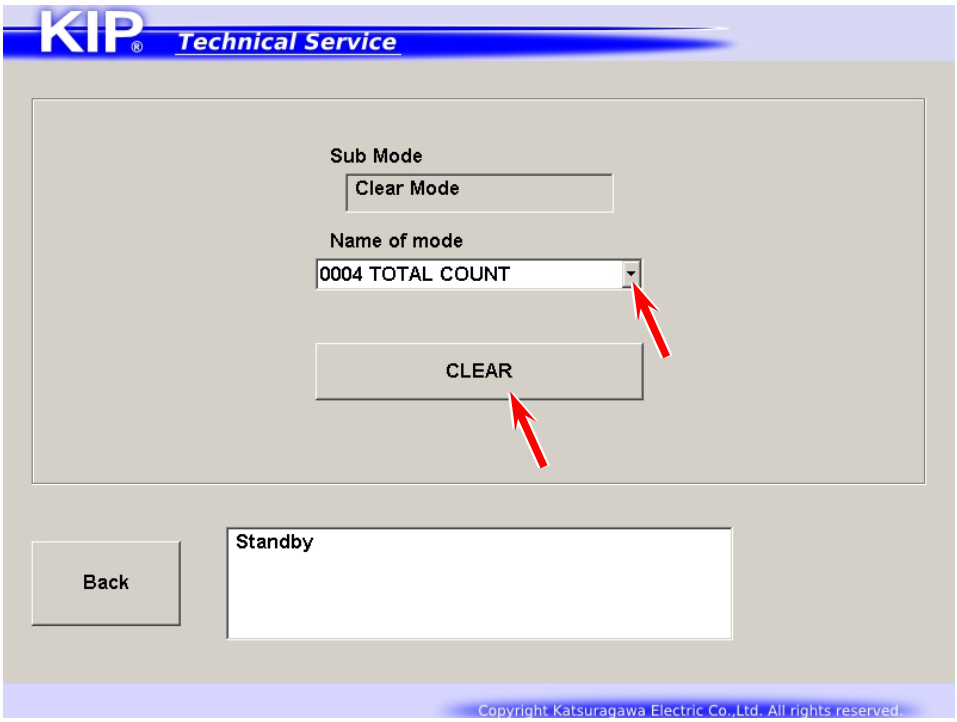
8. 11. 3 Changing Counter Value

1. Press [Clear] in Service Mode Home.
   Clear Target screen appears.





2. Specify one item that you want to use from Name of mode menu. Press [CLEAR].

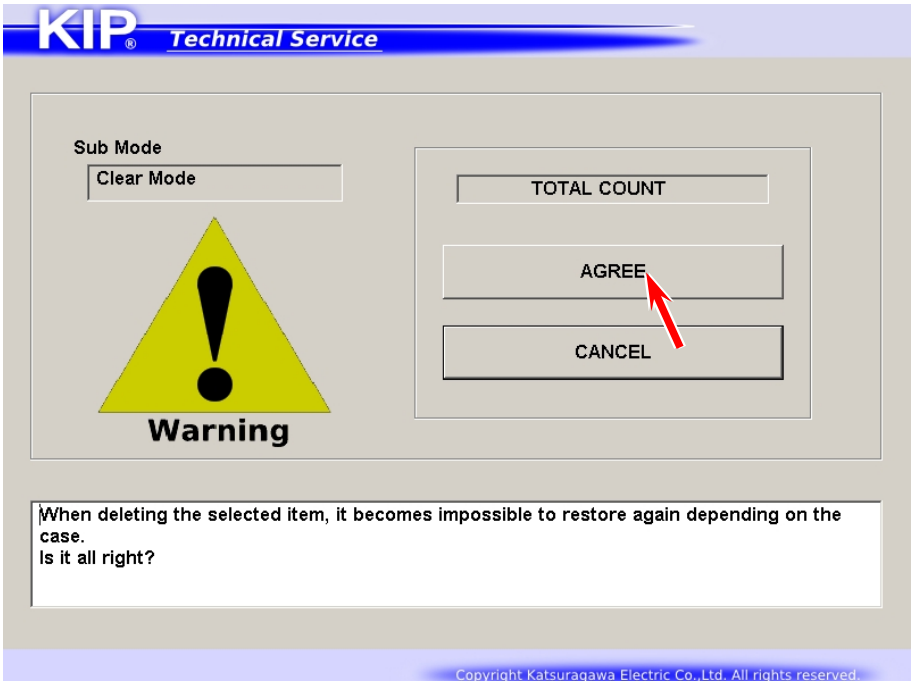


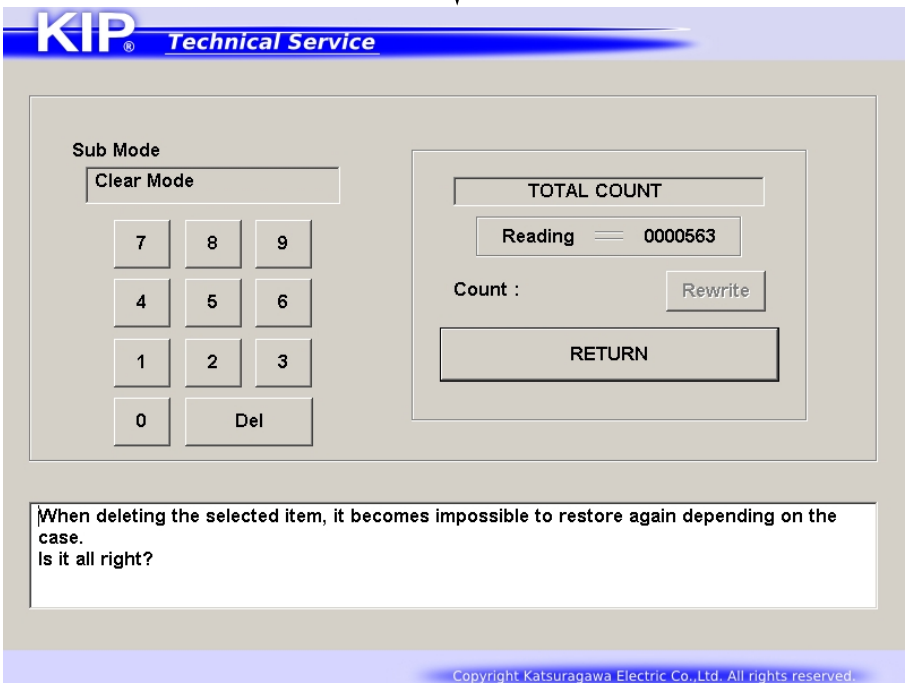
Item No.	Clear Item	Contents
0000	Fuser Low-Temp	Clears a recorded E-0001 status from the memory
0001	Fuser Over-Temp	Clears a recorded E-0002 status from the memory
0002	Jam History	Clears Jam records J-**** from the memory
0003	Error History	Clears Error records E-**** from the memory
0004	Total Count	Changes the counter value for Total Count
0005	Counter A	Changes the counter value for Counter A
0006	Developer	Initializes and readjusts Developer / Regulation Bias
0007	Toner S	Starts toner supply/leveling in Developer Unit

3. Confirmation screen appears.

Reference

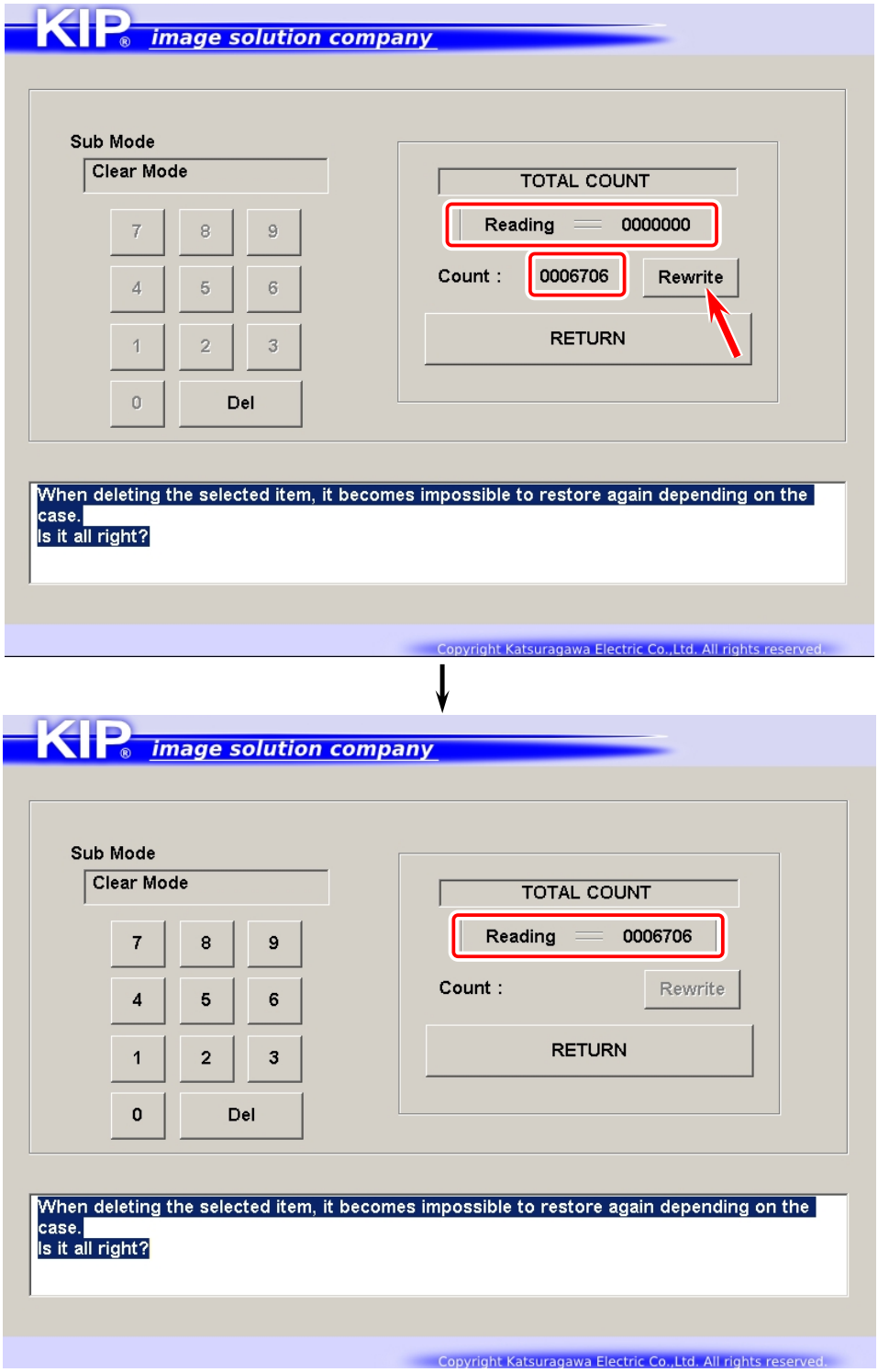
For “Total Count” and “Counter A”, pressing [Agree] switches to Counter Input screen.
This does not effect to the current counter value.





4. Input a desired value with On-screen Keypad.
   The value is displayed in “Count” area.
   Once you input a seven digit value, [Rewrite] will be activated.
   Press [Rewrite] to apply the new value to the printer.
   The value in “Reading” area will be changed to the new value.

   Example: 0000000 → 0006706

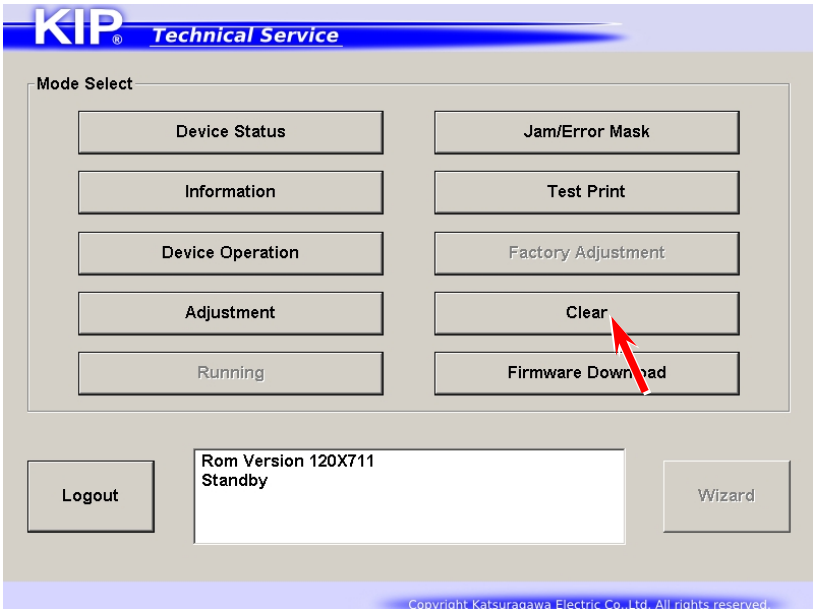


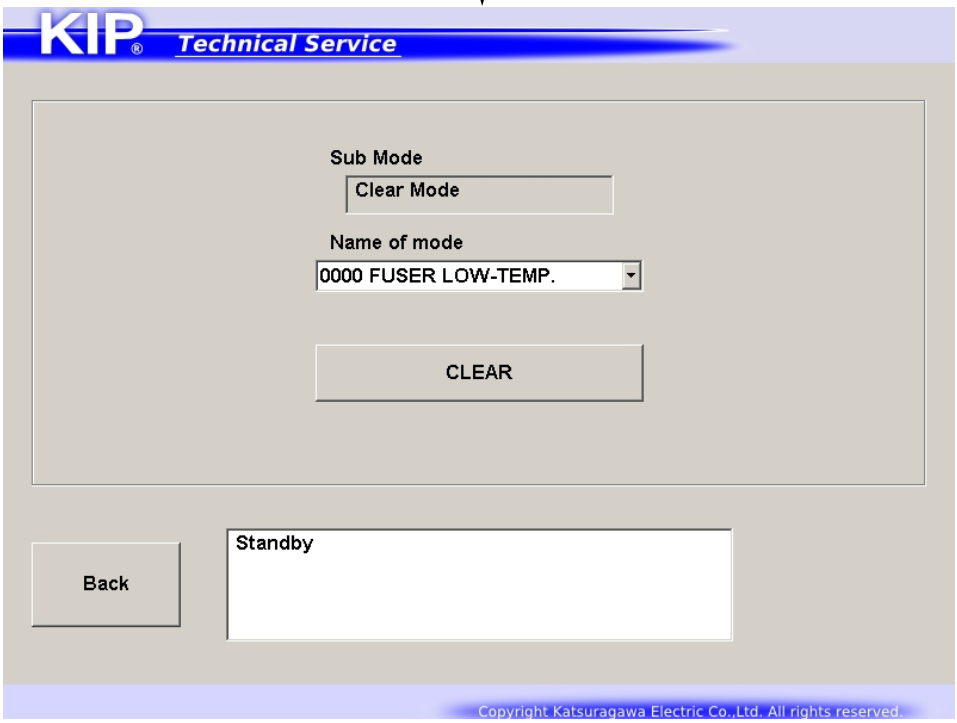
4. Press [RETURN].

8. 11. 4 Toner Supply Mode (Use only for machine initial setup)

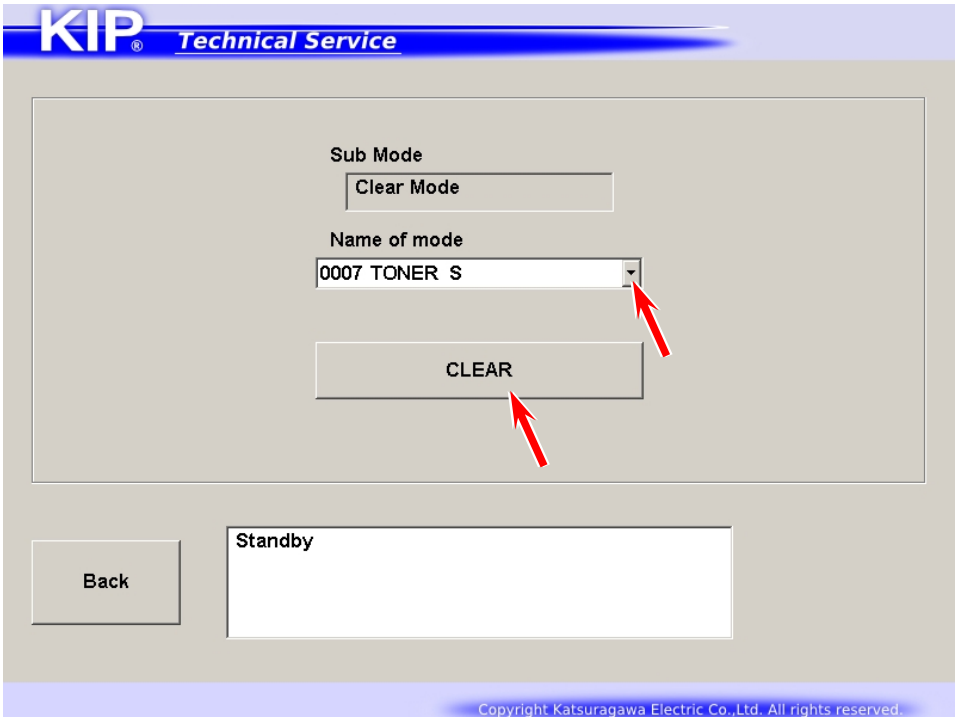
> **NOTE**
>
> Toner Supply Mode (toner supply / leveling in Developer Unit) should be used only for machine's initial setup.

1. Press [Clear] in Service Mode Home.
   Clear Target screen appears.



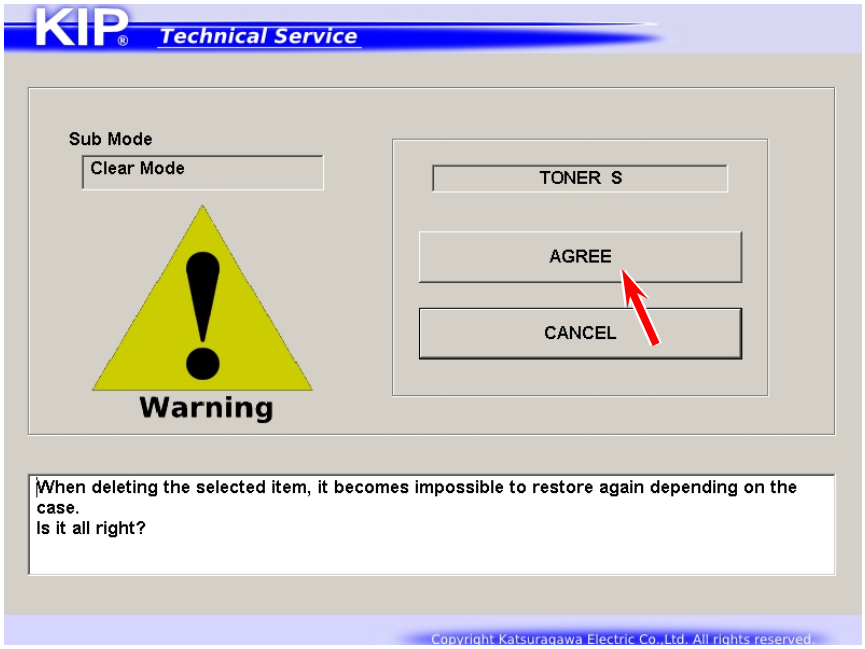


2. Select [0007 Toner S] from Name of mode menu. Press [CLEAR].

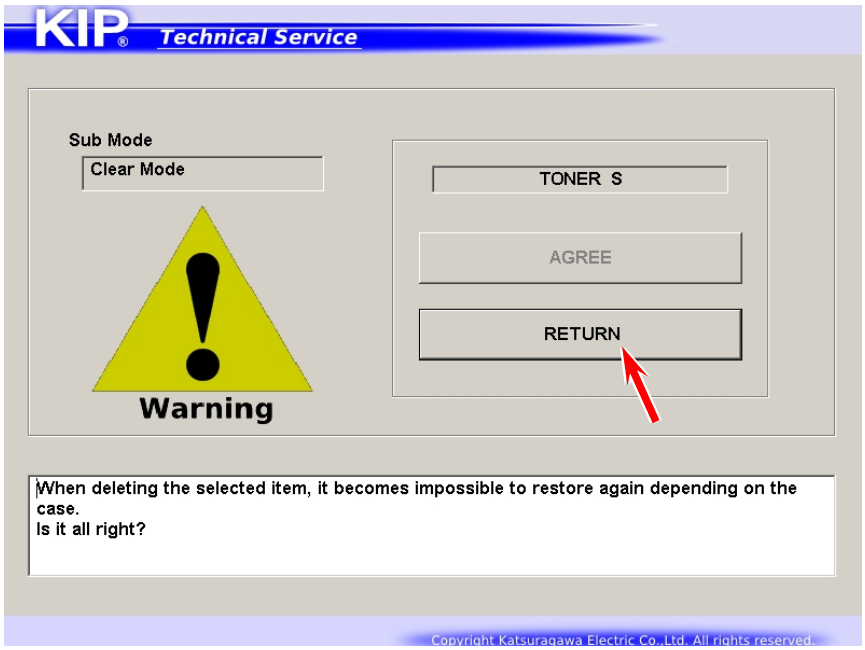


Item No.	Clear Item	Contents
0000	Fuser Low-Temp	Clears a recorded E-0001 status from the memory
0001	Fuser Over-Temp	Clears a recorded E-0002 status from the memory
0002	Jam History	Clears Jam records J-**** from the memory
0003	Error History	Clears Error records E-**** from the memory
0004	Total Count	Changes the counter value for Total Count
0005	Counter A	Changes the counter value for Counter A
0006	Developer	Resets and readjusts Developer / Regulation Bias
0007	Toner S	Starts toner supply/leveling in Developer Unit

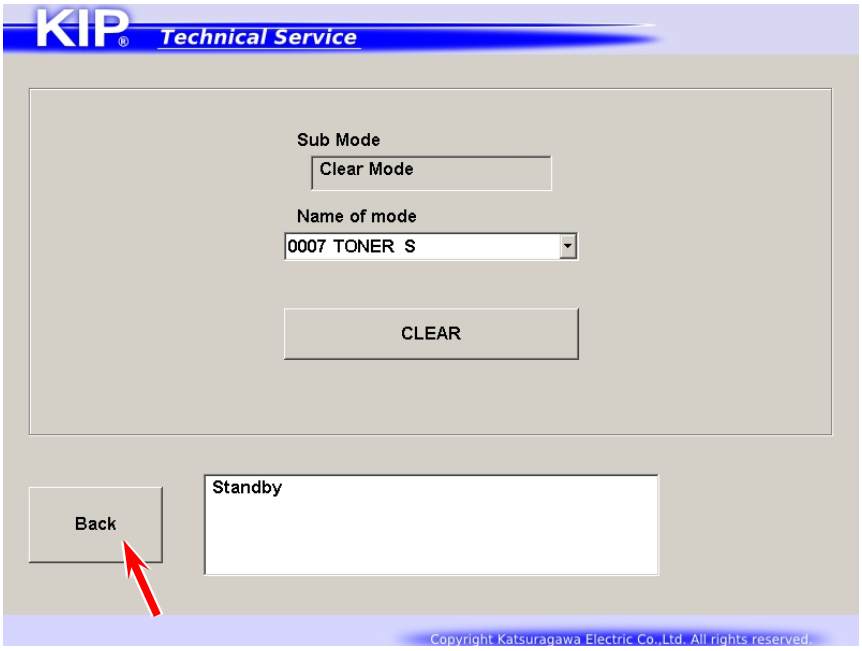
3. Confirmation screen appears. Press [Agree].
Toner supply / leveling starts. This will tale about 7 minutes to complete.



4. Once you press [Agree], it will turn deactivated. Press [Return].



5. The screen goes back to Clear Target Screen. The status window shows “warm up” during toner supply / leveling.
   After the completion (in 7 minutes), it changes to “standby”. Then press [Back].



NOTE

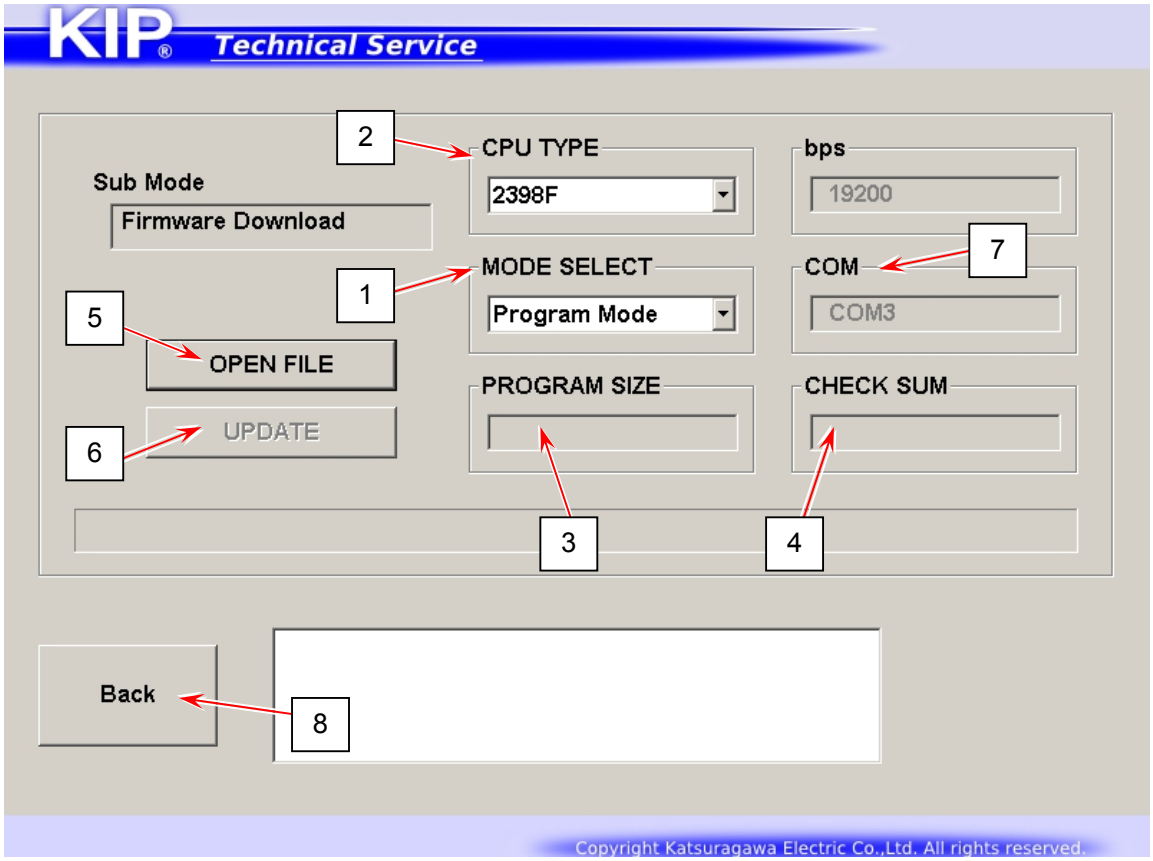
The toner supply / leveling can be canceled just in case of abnormality on the machine by performing step 2 and 3.

8. 12 Firmware Update Mode

You can send a new version firmware program provided by the manufacturer to the printer.
Note that the firmware program is named “120X##*.mot”.
(US: 120X##A, EU: 120X##E, ## stands for the version number)

> **NOTE**
>
> A firmware update does not effect to the current parameters. They remain unchanged.
> But please be sure to make a backup in .RAM prior to any firmware update just in case.

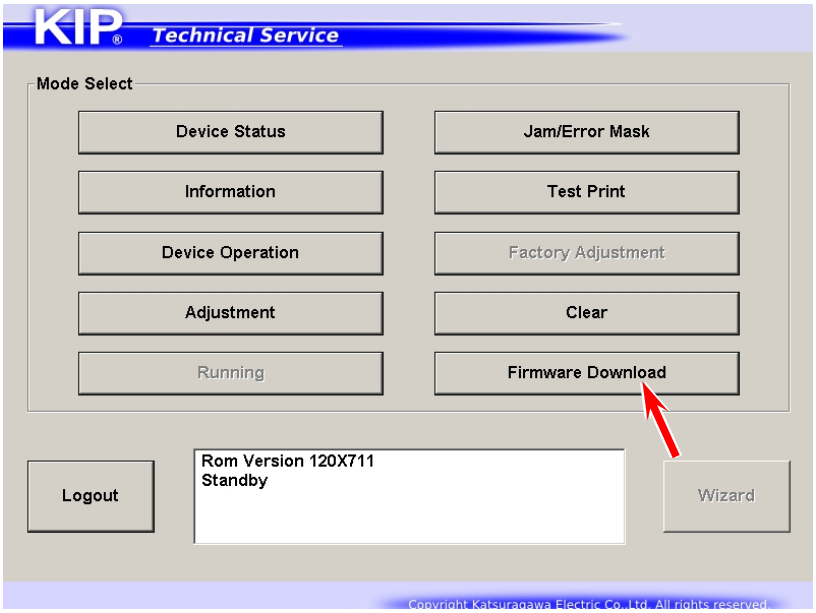
Firmware Update screen

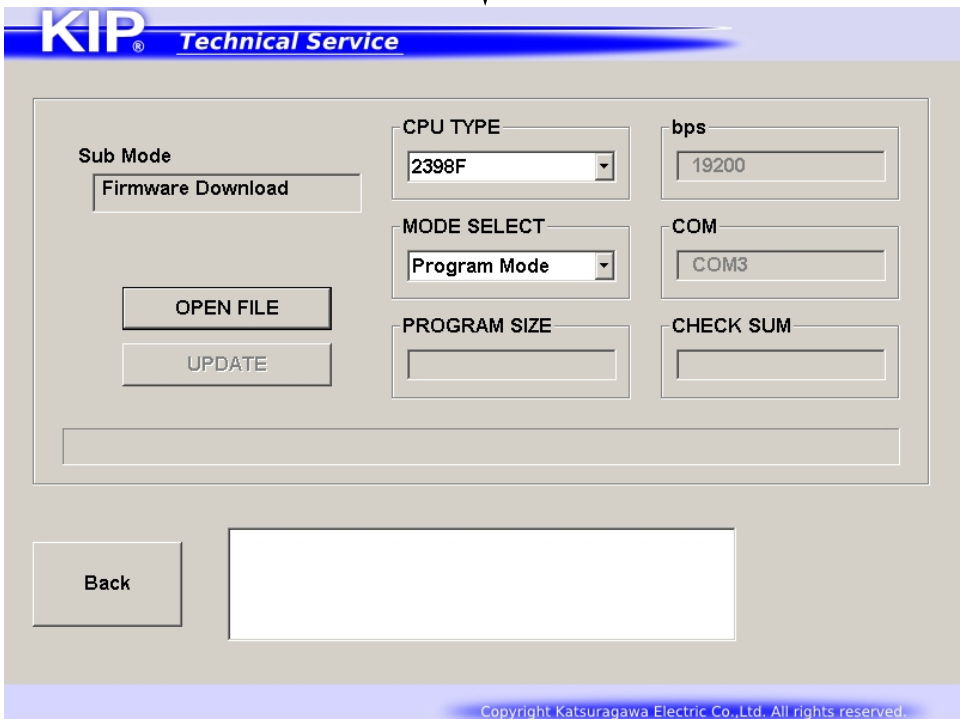


	Name	Function
1	Mode Select	Use “Program Mode” only.
2	CPU Type	Use “2398F” only.
3	Program Size	Displays the file size of a selected firmware program (.mot fie)
4	Checksum	Displays the checksum of a selected .mot file
5	Open File	Locates a .mot file that you want to send to the printer
6	Update	Sends a selected .mot file to the printer
7	COM	Displays a COM port number on the controller to be used for communication that has been configured in Serial Port Setting of Log In screen
8	Back	Returns to Service Mode Home

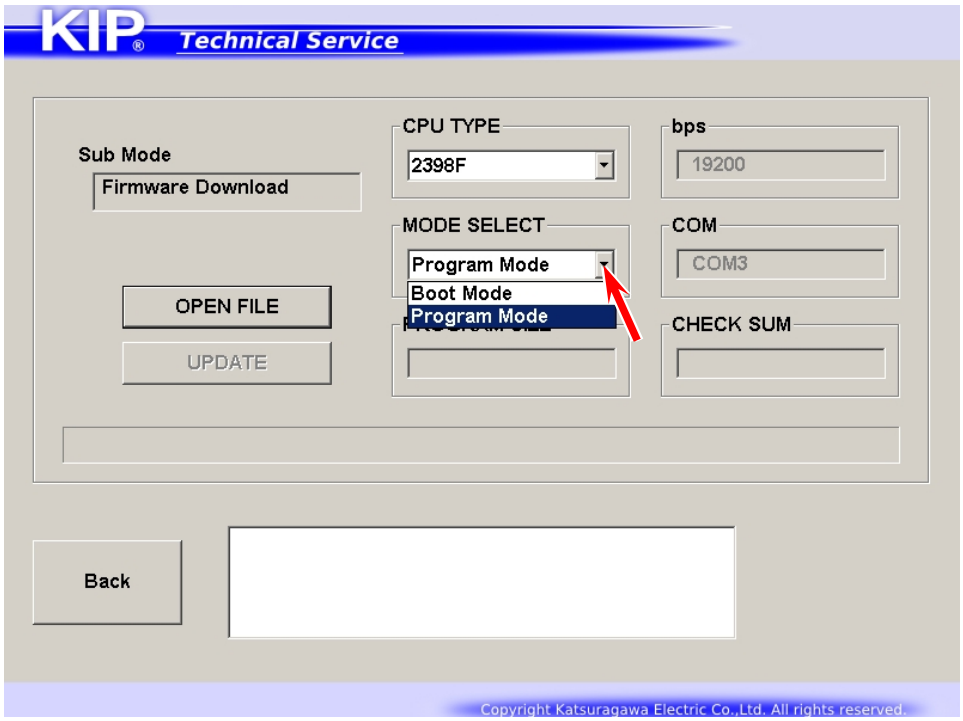
8. 12. 1 Sending Firmware to Printer

1. Press [Firmware Download] in Service Mode Home.
   Firmware Update screen appears.

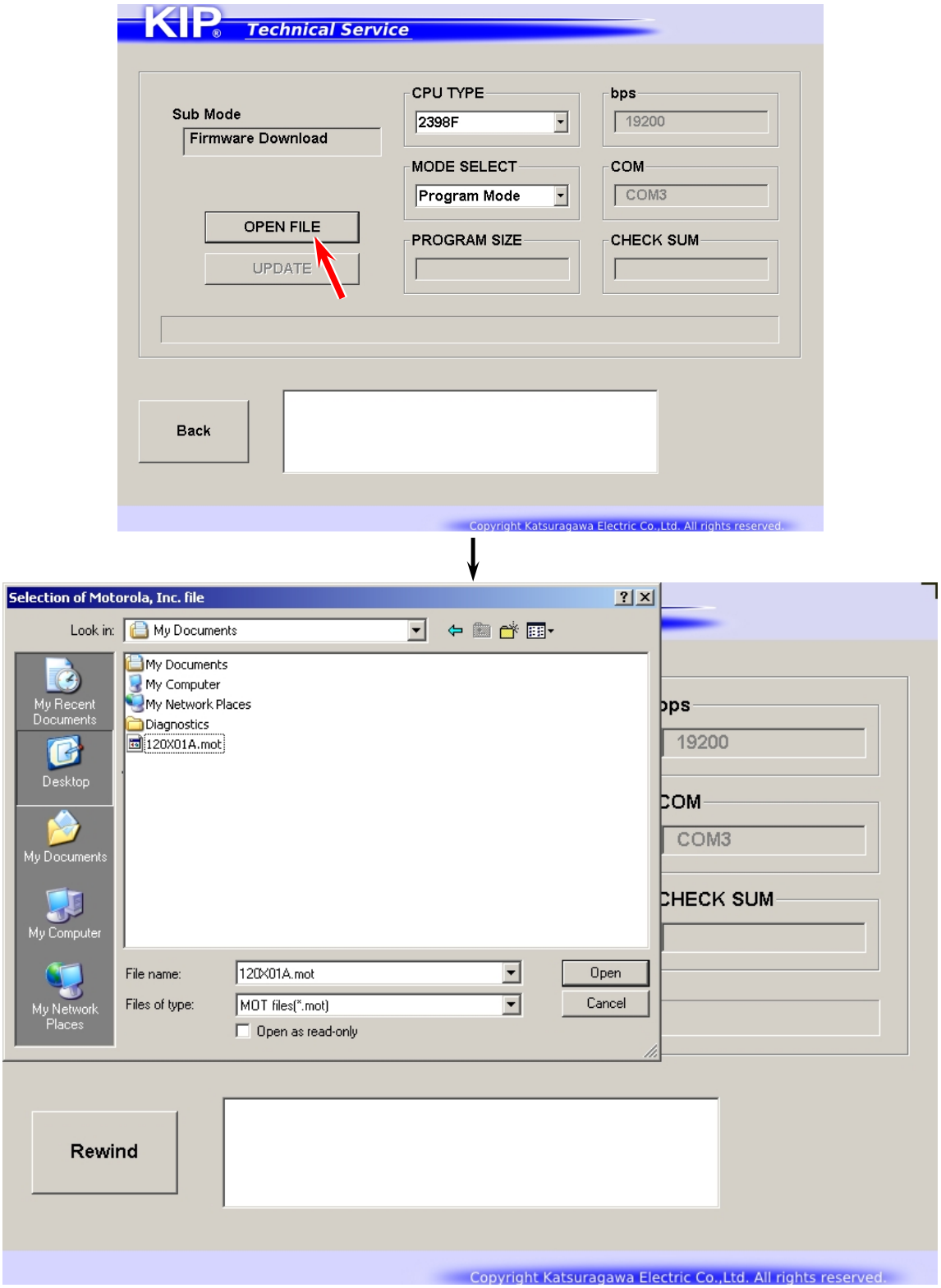




2. Choose “Program Mode” from Mode Select menu if not displayed.



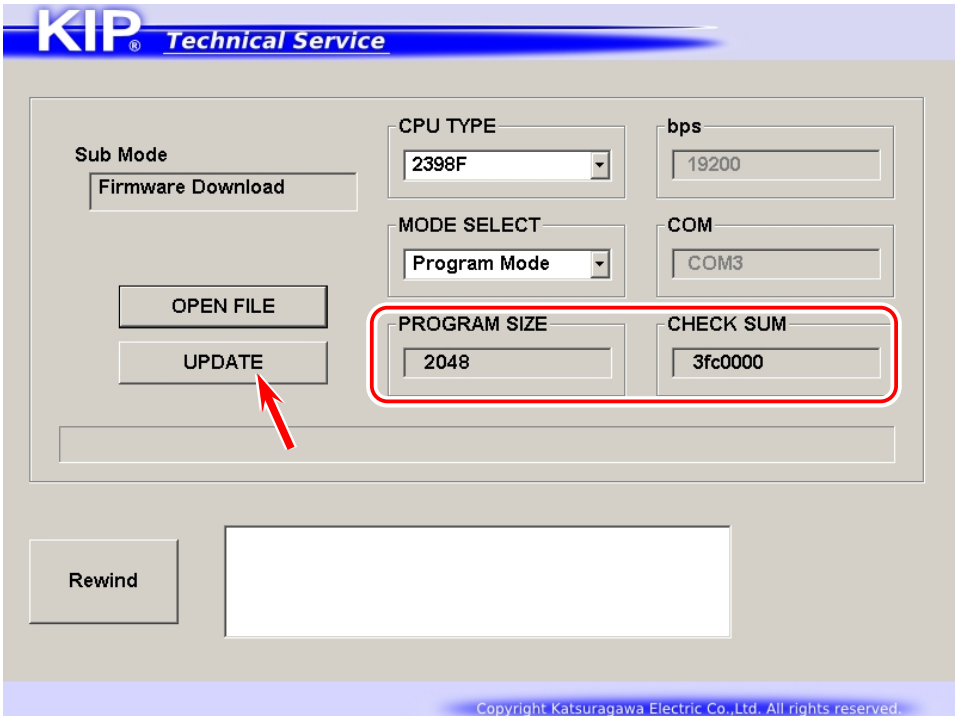
3. Press [Open File] to locate and open a .mot file that you want to apply.



NOTE

For KIP 7700, its firmware program is always named as follows.
"120X##B.mot (US)**"/ "120X##F.mot** (EU)**"**
Do not open any other file.

4. Check for the program size and its checksum of the .mot file you have chosen.
   Press [Update] to send it to the printer.



NOTE

(1) “Program Size” and “Checksum” vary by the firmware version.
A new .mot file’s checksum is provided in readme.txt that comes with the .mot file.

(2) If you accidentally send an incorrect file to the printer, send a correct one when the current transmission is completed.

Chapter 9

Appendix

Page

9.1 Option Kit 9- 1

9. 1. 1 High Capacity Print Tray Kit 9- 1

9.2 Schematic Wiring around Controller 9-28

9.3 Power Cord Instruction 9-29

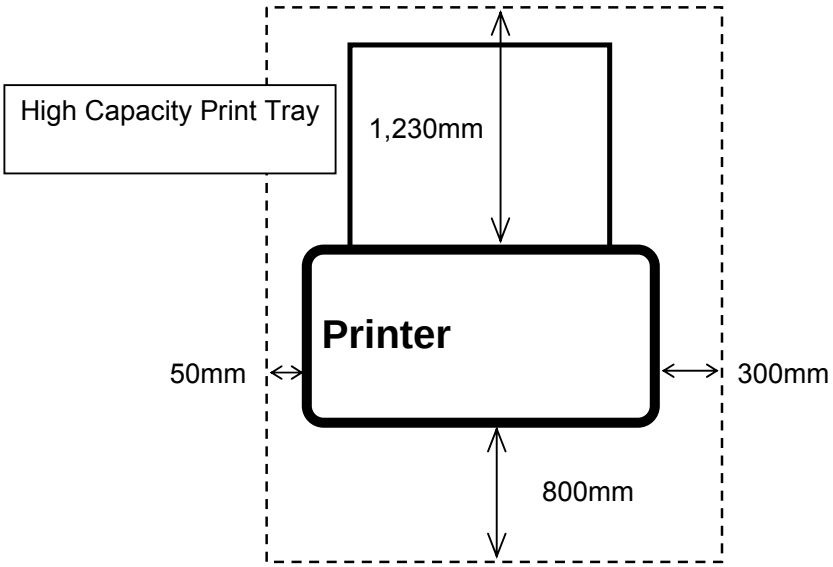
9.4 Overall Circuit Diagram 9-30

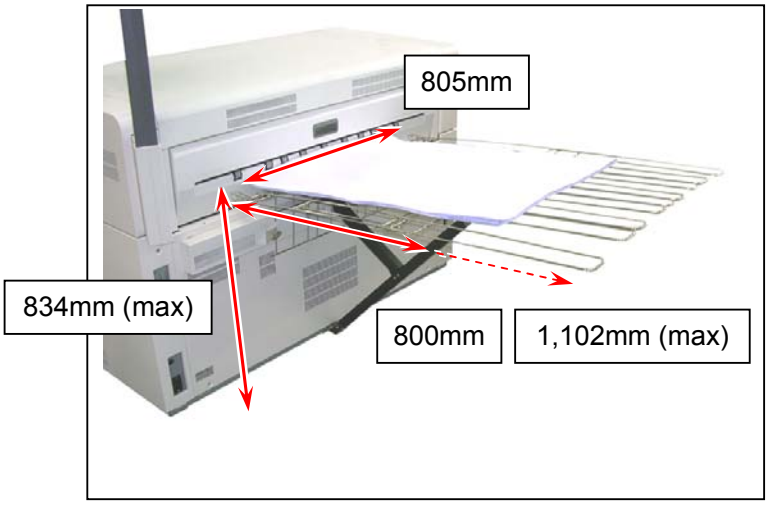
9. 1 Option Kit

9. 1. 1 High Capacity Print Tray Kit

Installation Requirement

Keep ample space around the equipment to ensure comfortable operation.
(Refer to the following figure.)

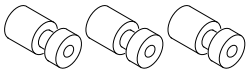
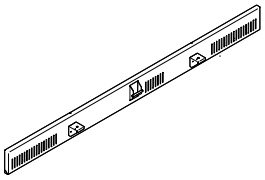
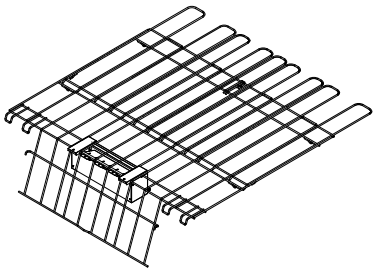
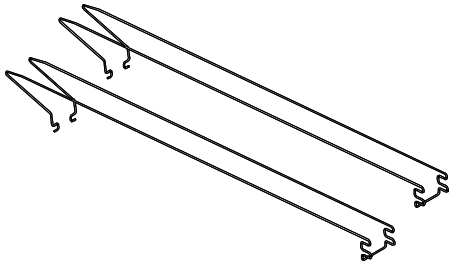
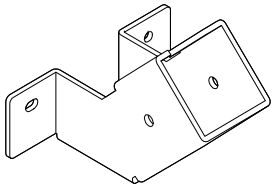
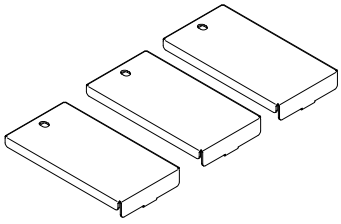


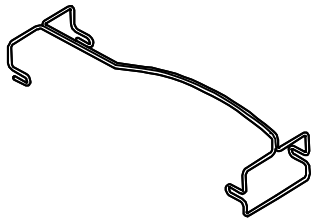
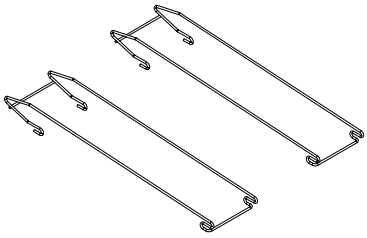
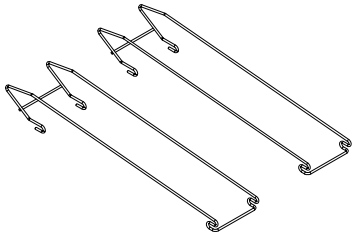
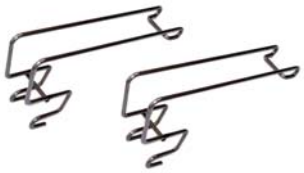


Tray's actual dimension with mounted to the printer

List of Contents

Check that the following parts are included in the package.

Fixing Pin 	3	Beam 2 Assy	1
Beam Assy 	1	Beam 3	1
Exit Tray Assy 	1	Tray 	2
Bracket 10 	1	Bracket 6 	3

Tray 3 	1	Tray 2  (shorter than Tray 4)	2
Tray 4  (taller than Tray 2)	2	Guide 	2

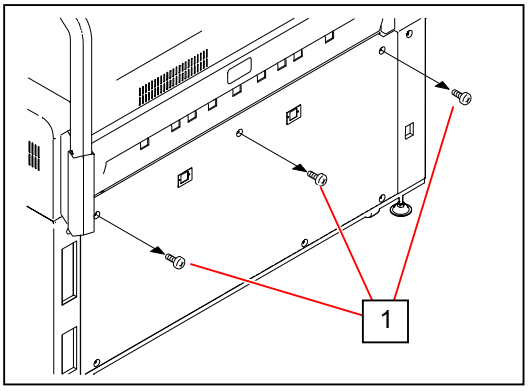
Bind Head Screw (M4x14)	3	BLACK Bind Head Screw (M4x6)	4
Bind Head Screw (M4x8)	2	Procedure (High Capacity Print Tray Kit)	1
Bind Head Screw (M4x6)	5	-----	---

Installation

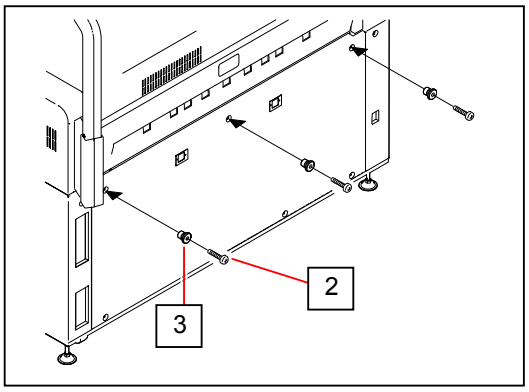
Reference

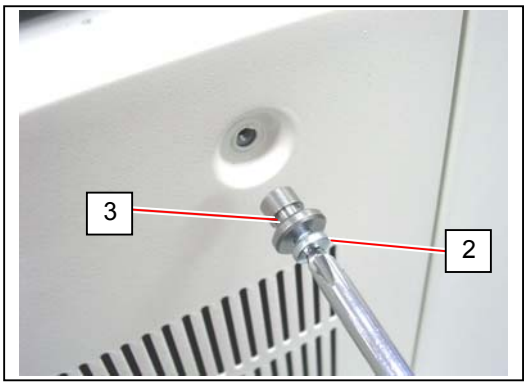
The pictures of Exit Tray Assy may be partly simplified for clarification.

1. Remove 3 screws (1) from the rear cover. (The screws are not reused any more)

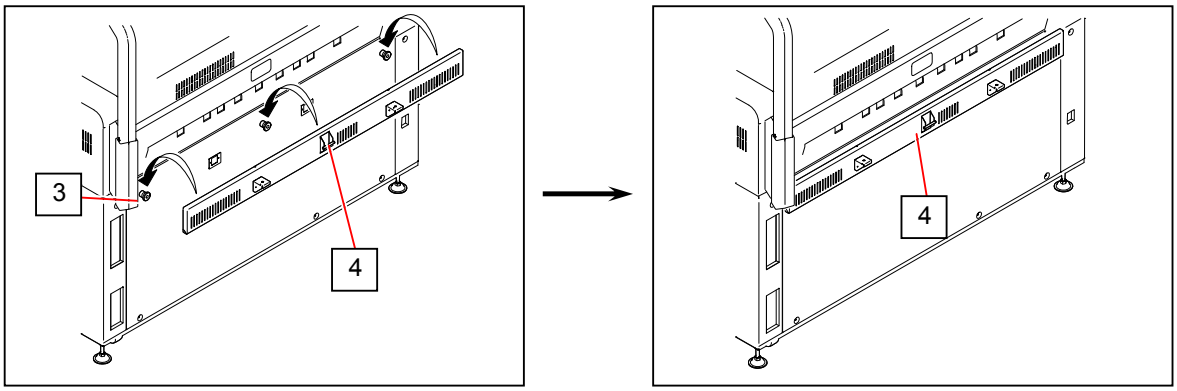


2. Install **Fixing Pin** (3) with **Bind Head Screw (M4x14)** (2) to the screw holes for the screws (1).

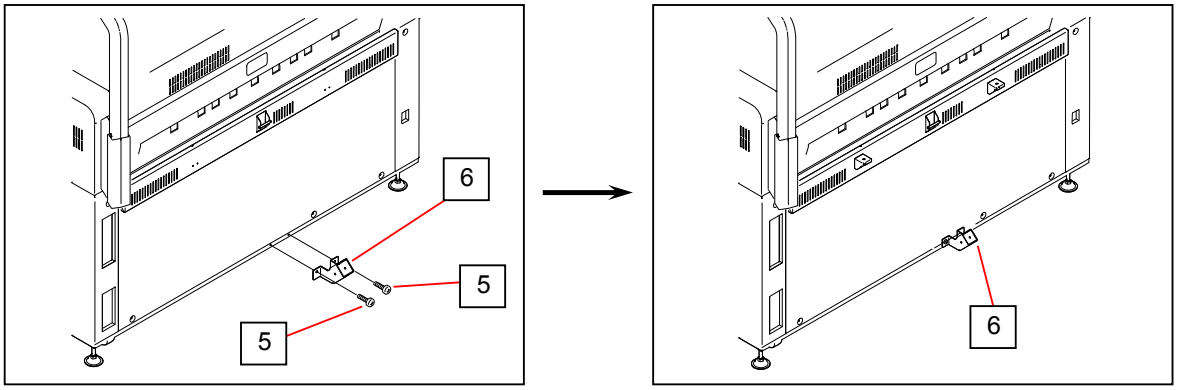




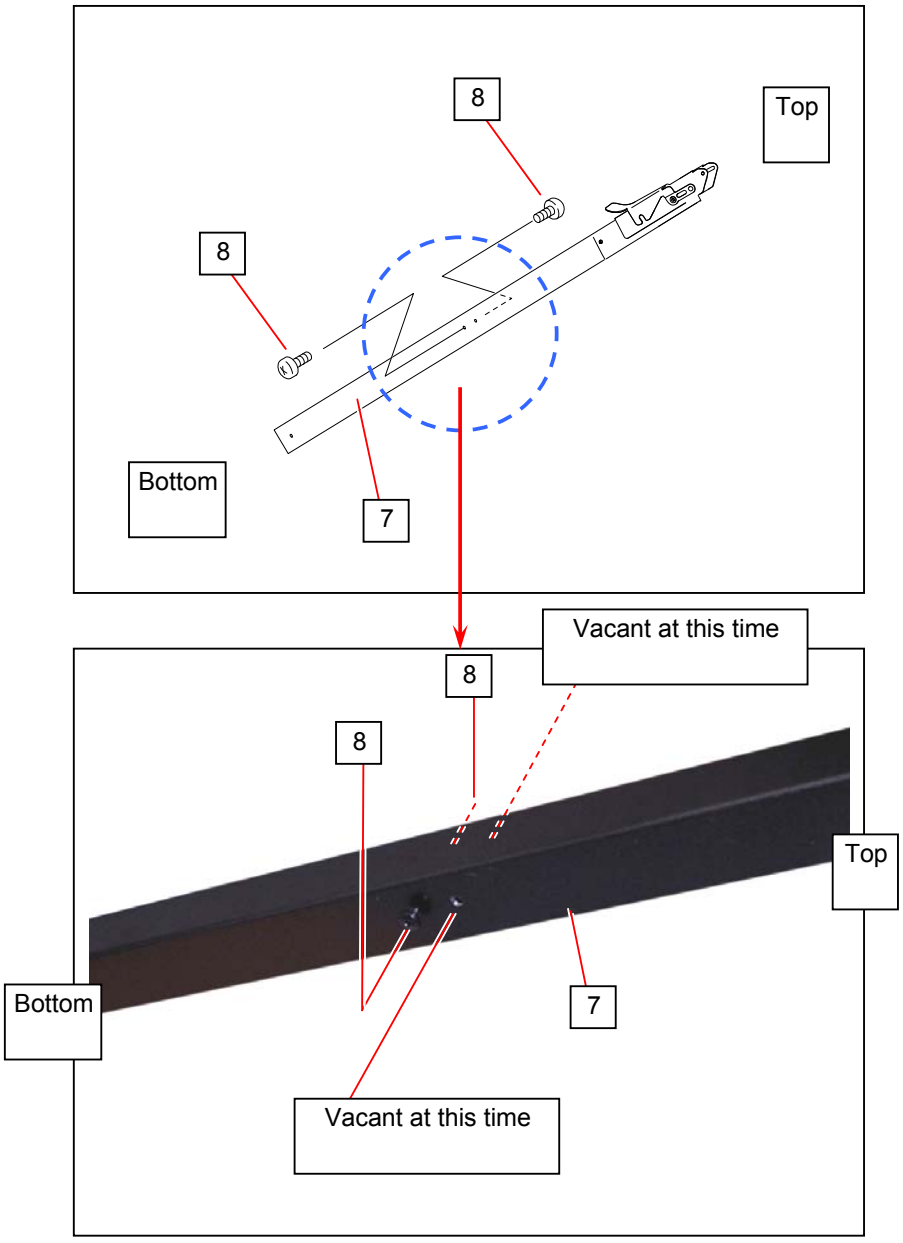
3. Put **Beam Assy** (4) on Fixing Pins (3).



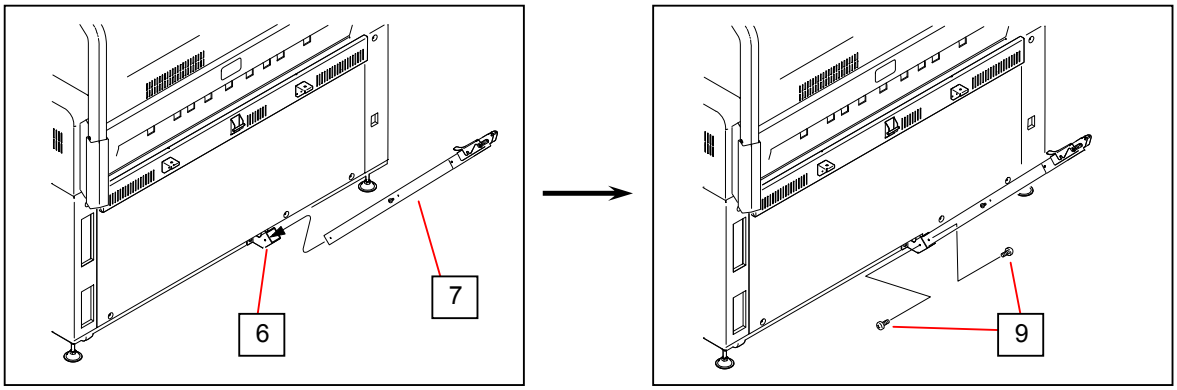
4. Install **Bracket 10** (6) to the rear bottom with 2 **Bind Head Screws (M4x8)** (5).



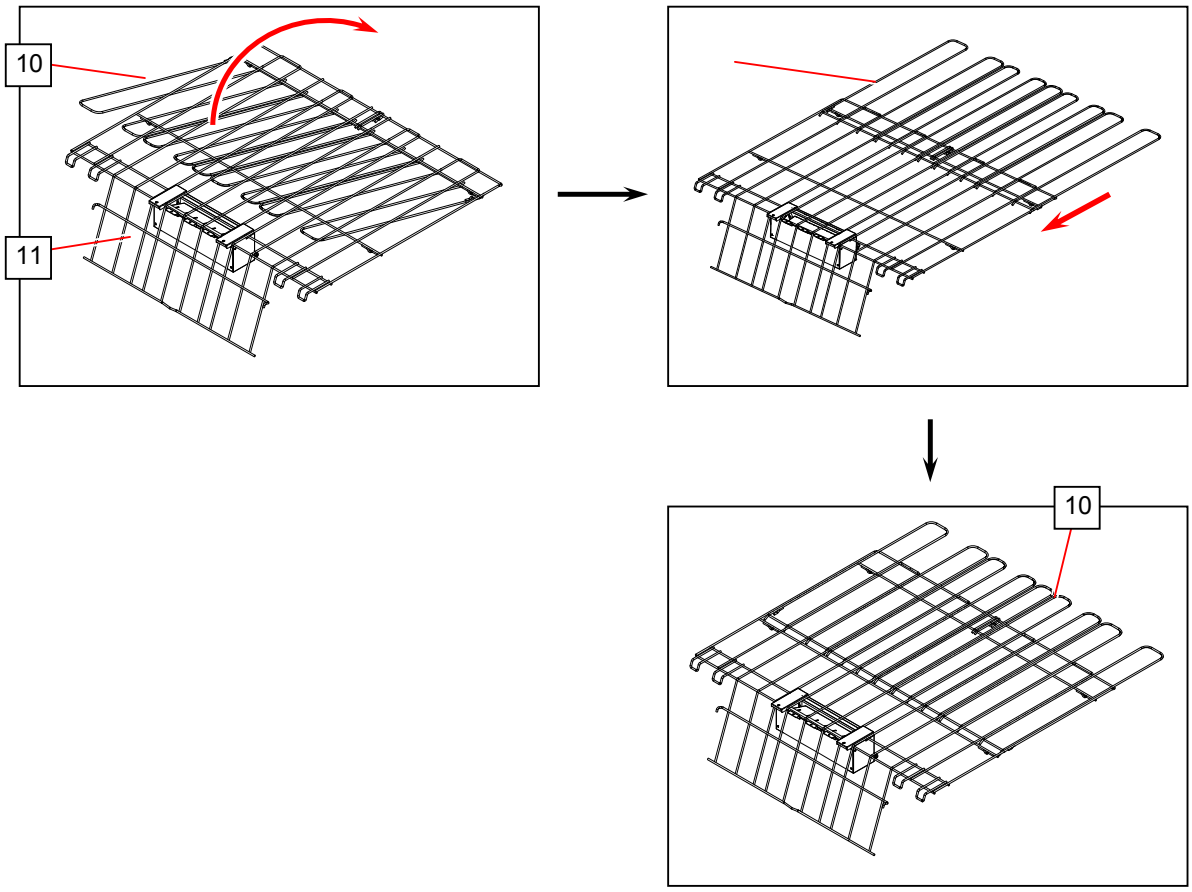
5. There are 2 screw holes in the middle on **Beam 2 Assy** (7). Just put 2 **Black Bind Head Screws** (8) into the middle lower screw holes on Beam 2 Assy (7). Do not secure them at this time.



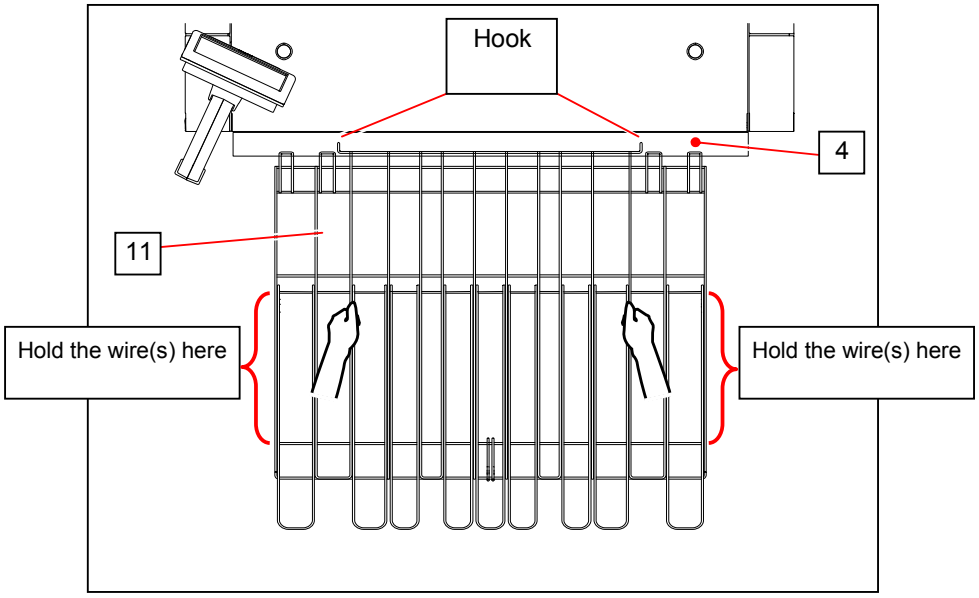
6. Fit the bottom of Beam 2 Assy (7) in Bracket 10 (6) and secure it with 2 **Bind Head Screws (M4x6)** (9).

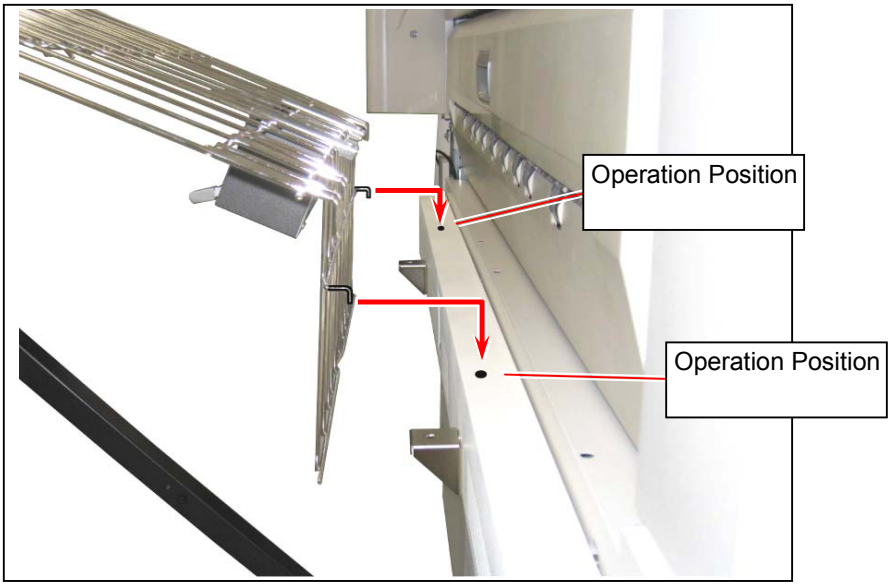


7. Turn the extension tray (10) on **Exit Tray Assy** (11) completely.
   Please slide the extension tray (10) to the arrow direction for later operation.



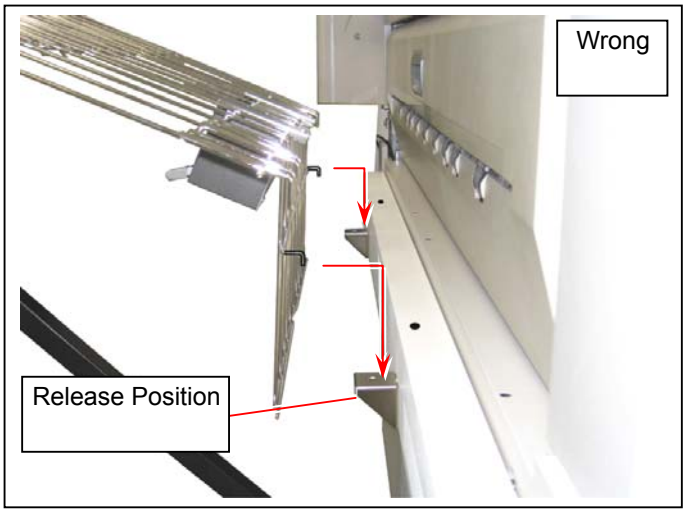
8. With holding the wire(s) on the overlapping area of Exit Tray Assy (11), insert the hooks into the holes on the top face of Beam (4). (operation position)



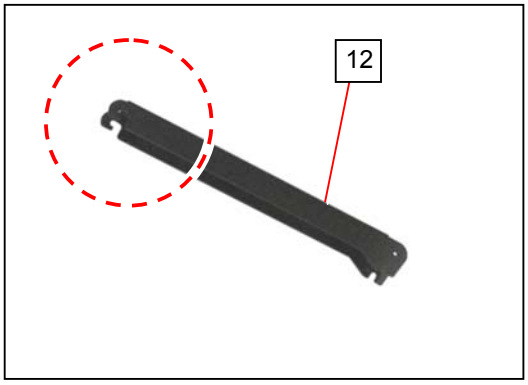


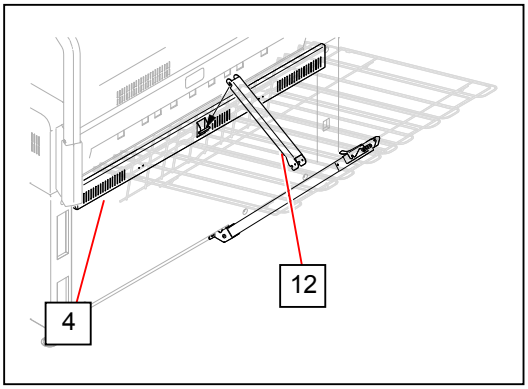
NOTE 注意

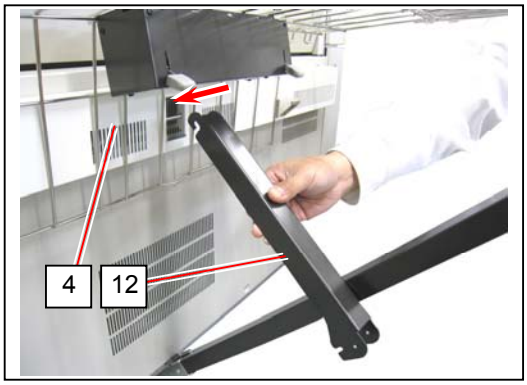
Do not install Exit Tray Assy to the brackets far from the print exit. (release position)

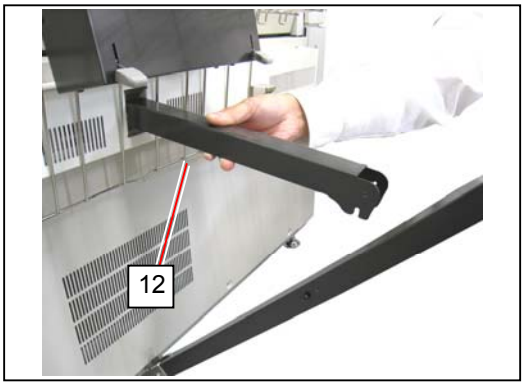


9. Hook the top of **Beam 3** (12) on the catch of Beam (4).

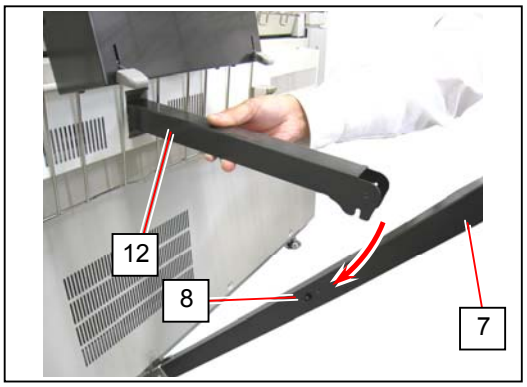


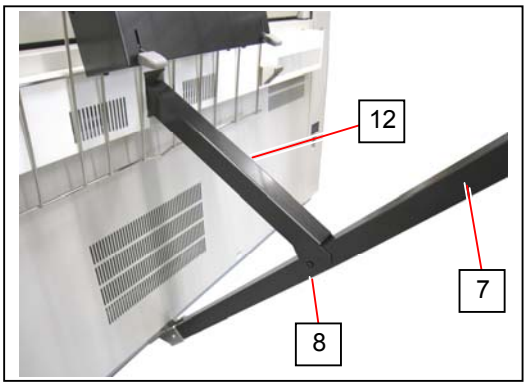


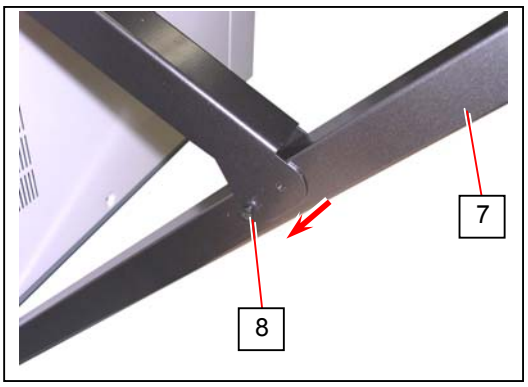




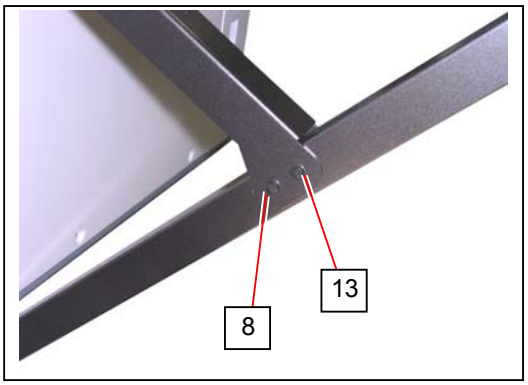
10. Fit the bottom of Beam 3 (12) on the black screws (8) installed on Beam 2 Assy (7).



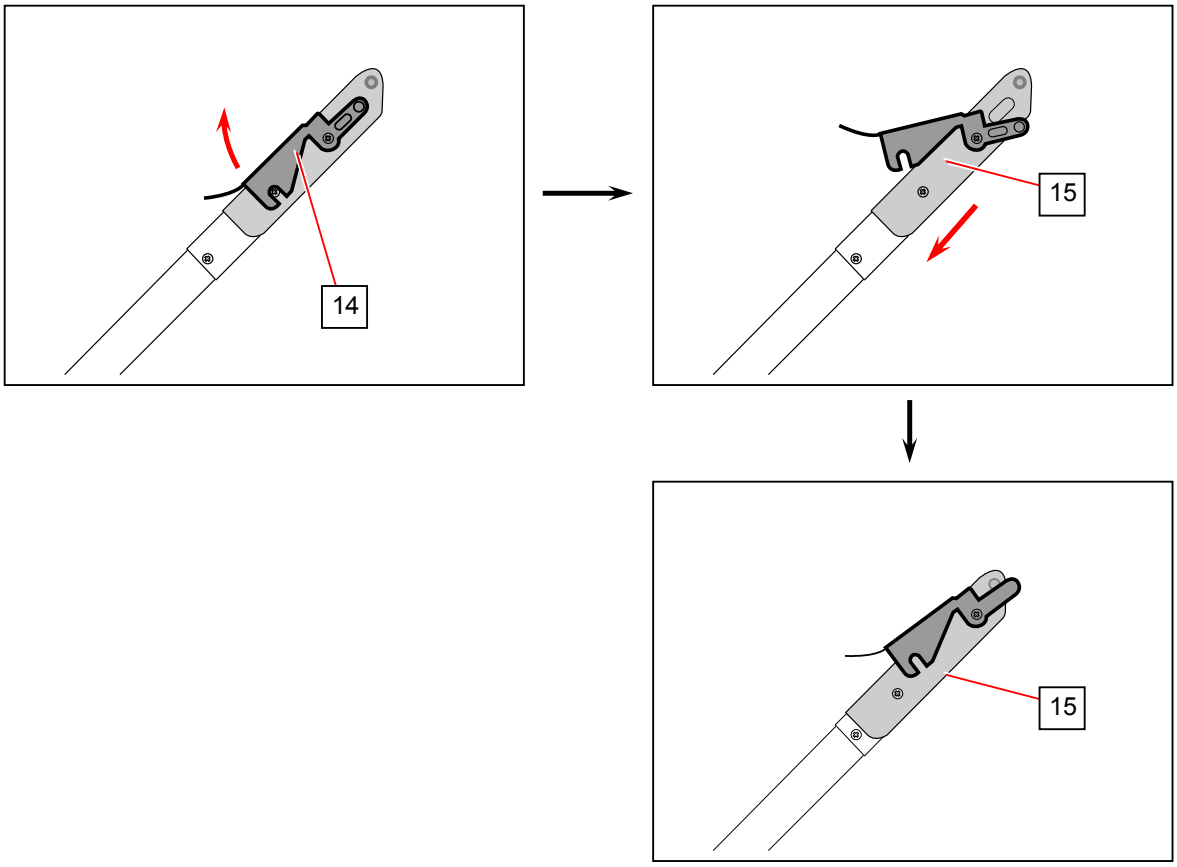




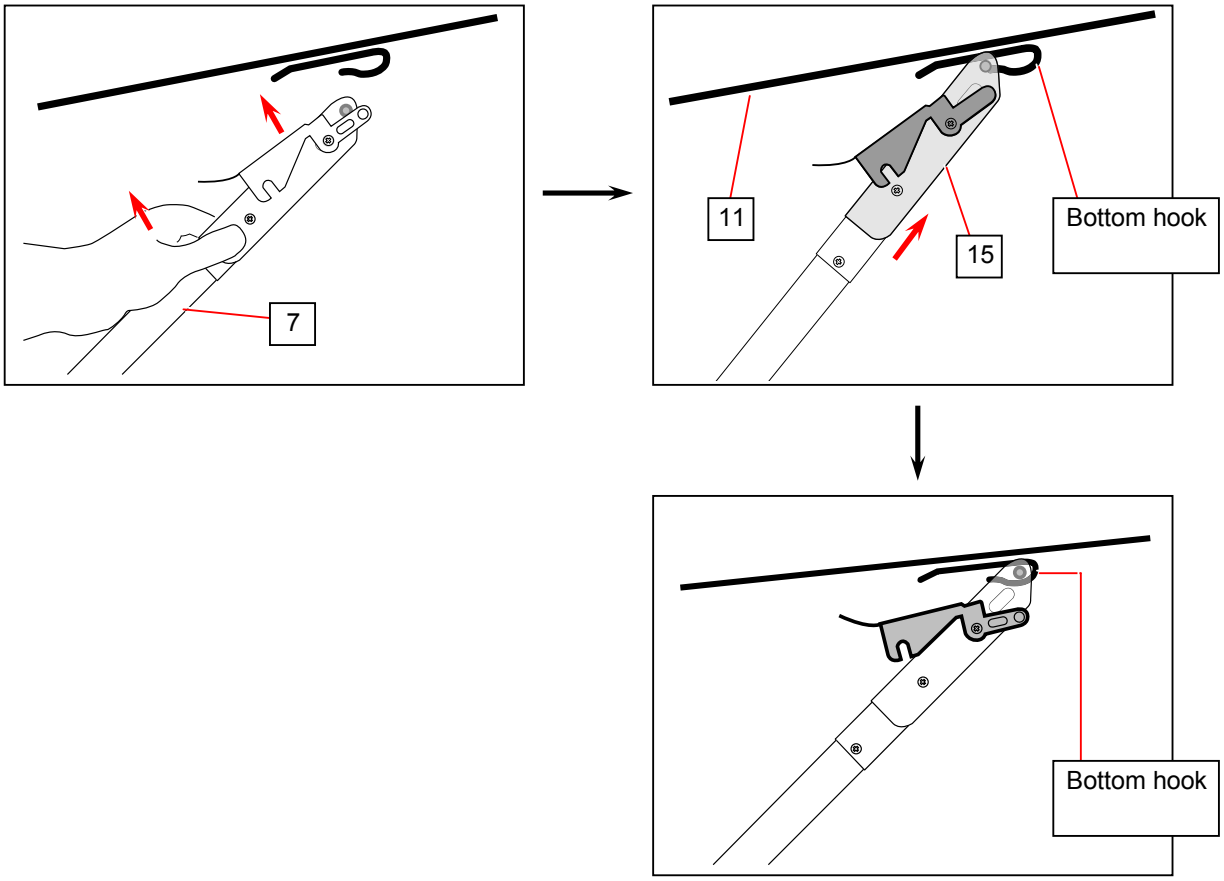
11. Put 2 **BLACK Bind Head Screws** (13) on the rest holes on Beam 2 Assy.
Secure all the screws (8) (13).



12. Flip up the Lock Lever (14) on the top of Beam 2 Assy.
Slide the Lock Slide (15) down.

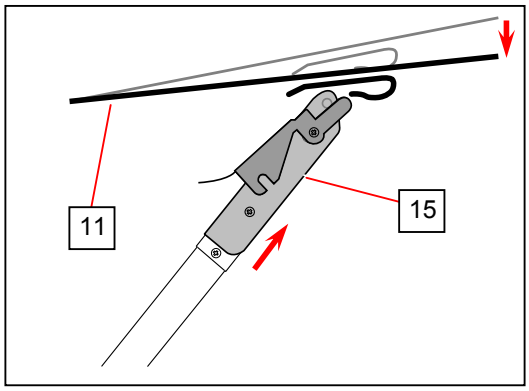


13. Lift up Beam 2 Assy (7). Fully slide the Lock Slide (15) upward to fit in the bottom hook on Exit Tray Assy (11).

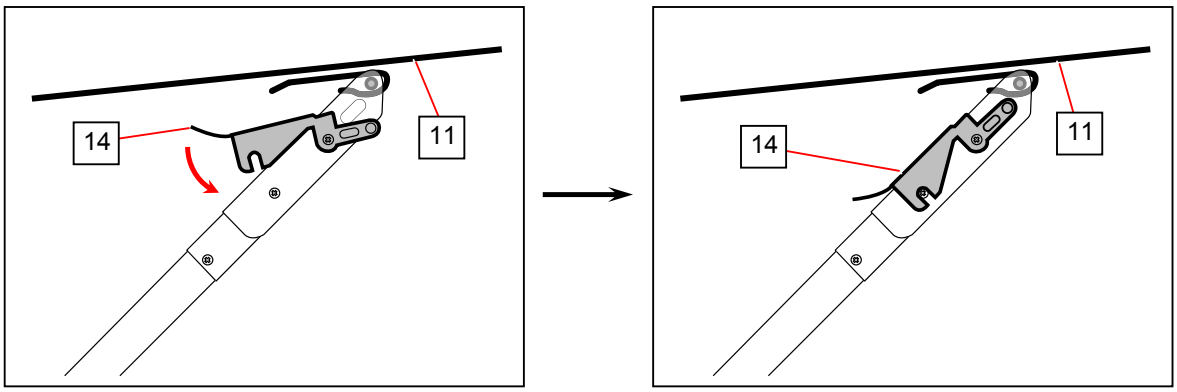


NOTE 注意

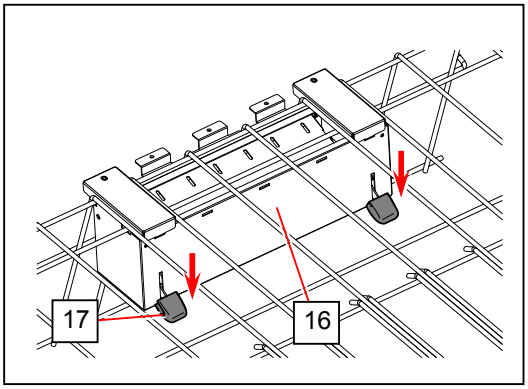
If the Lock Slide (15) cannot catch the bottom hook, slightly push down Exit Tray Assy (11) to hook on Lock Slide (15).



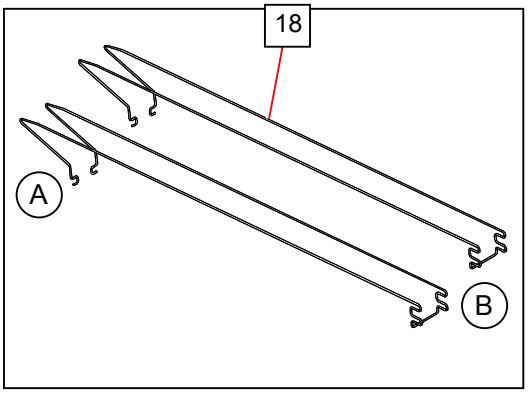
14. Fully press down the Lock Lever (14) to lock Exit Tray Assy (11).

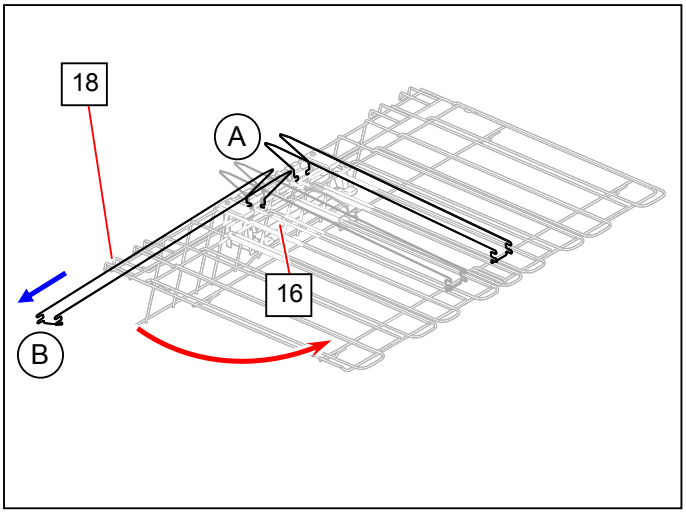


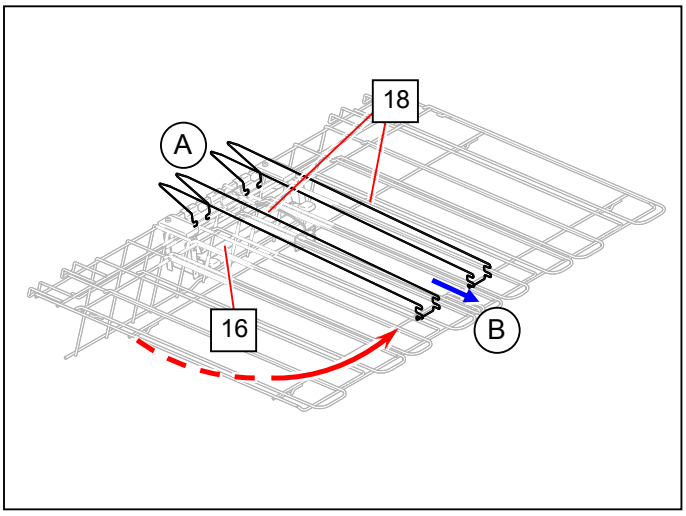
15. Press down the lever (17) on Tray Bracket Assy (16) if not.



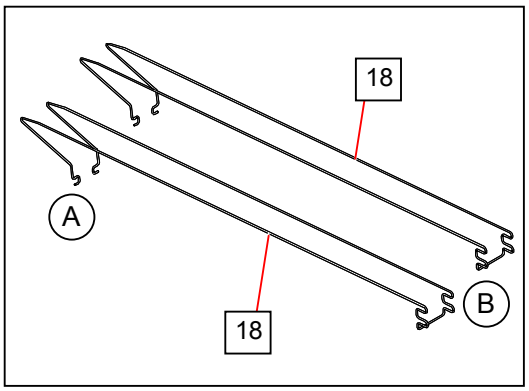
16. Install **Tray** (18) on Exit Tray Assy. <u>The detail procedure is described on the later pages.</u>
    1) Insert the end (A) on Tray Bracket Assy (16)
    2) Turn the entire Tray (18) in position
    3) Hook the end (B) to the beam

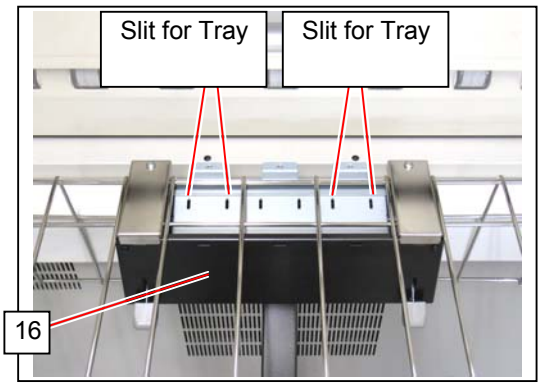


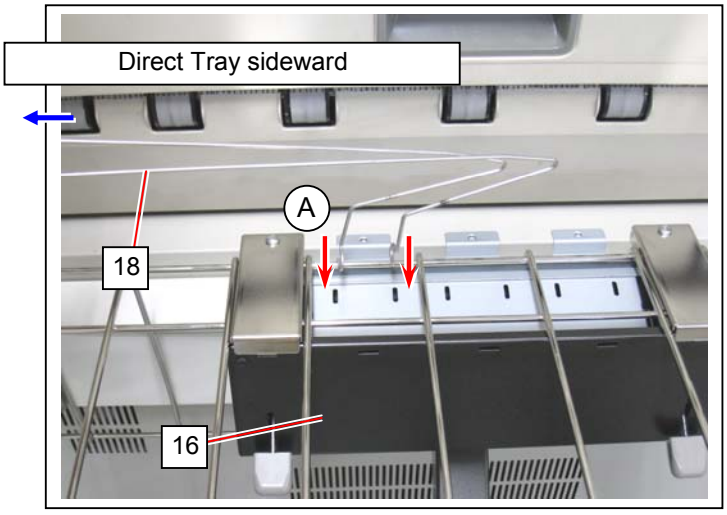


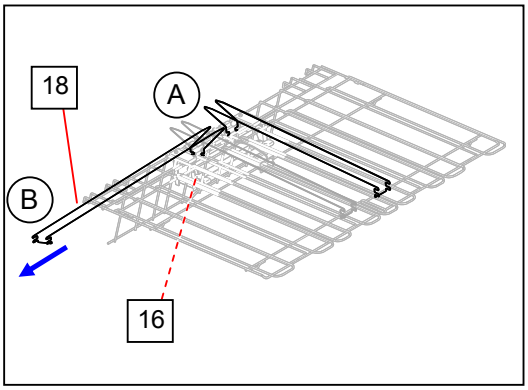


16−1. Direct the end (B) of Tray (18) 90 degrees right / left. Insert the end (A) on the slits' rim on the top of Tray Bracket Assy (16).

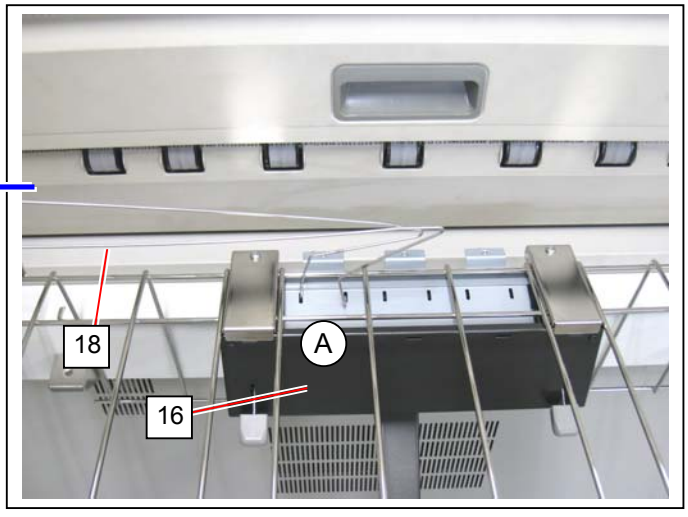


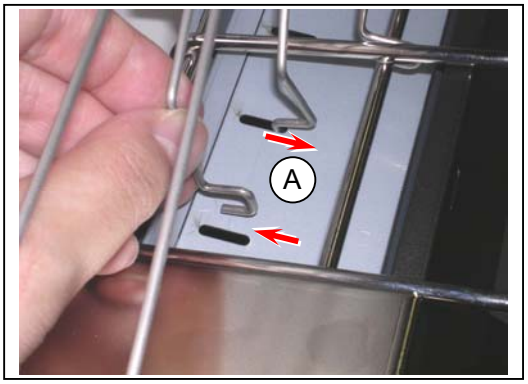


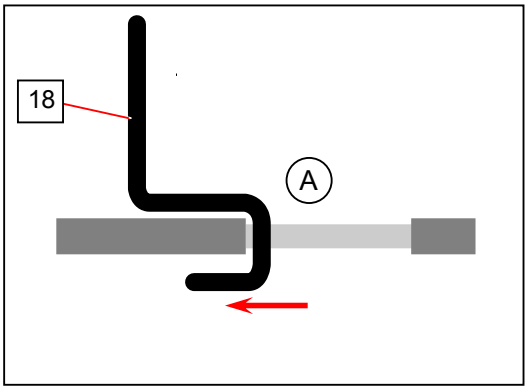




Direct Tray sideward





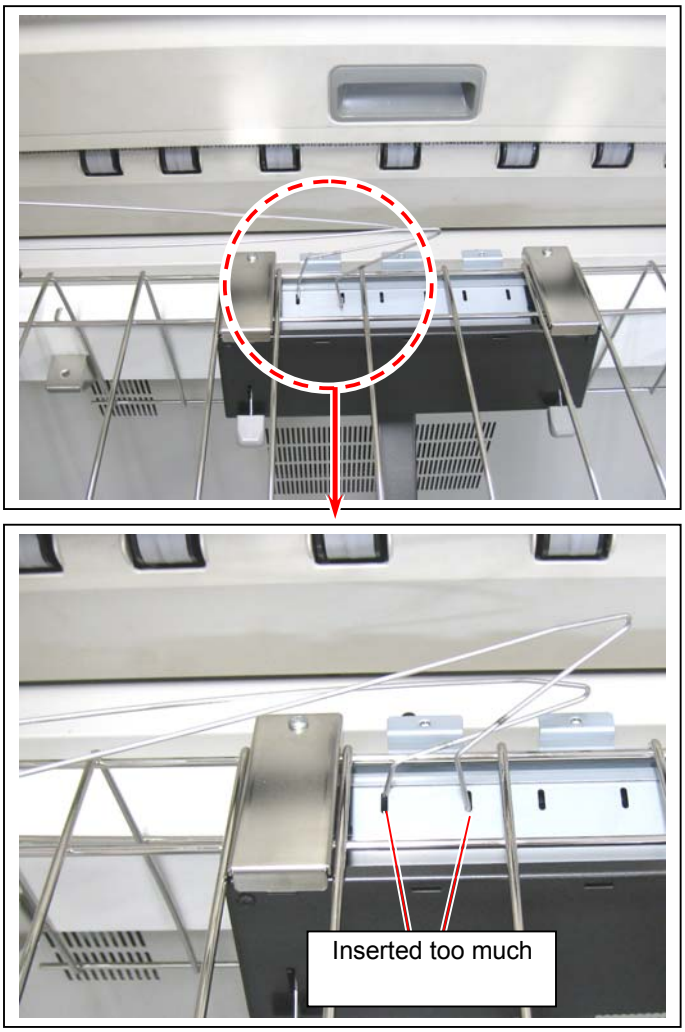


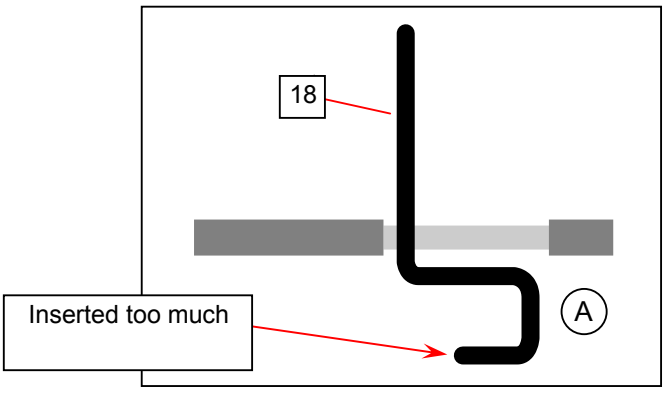
Side Section

(continued on the next page)

NOTE

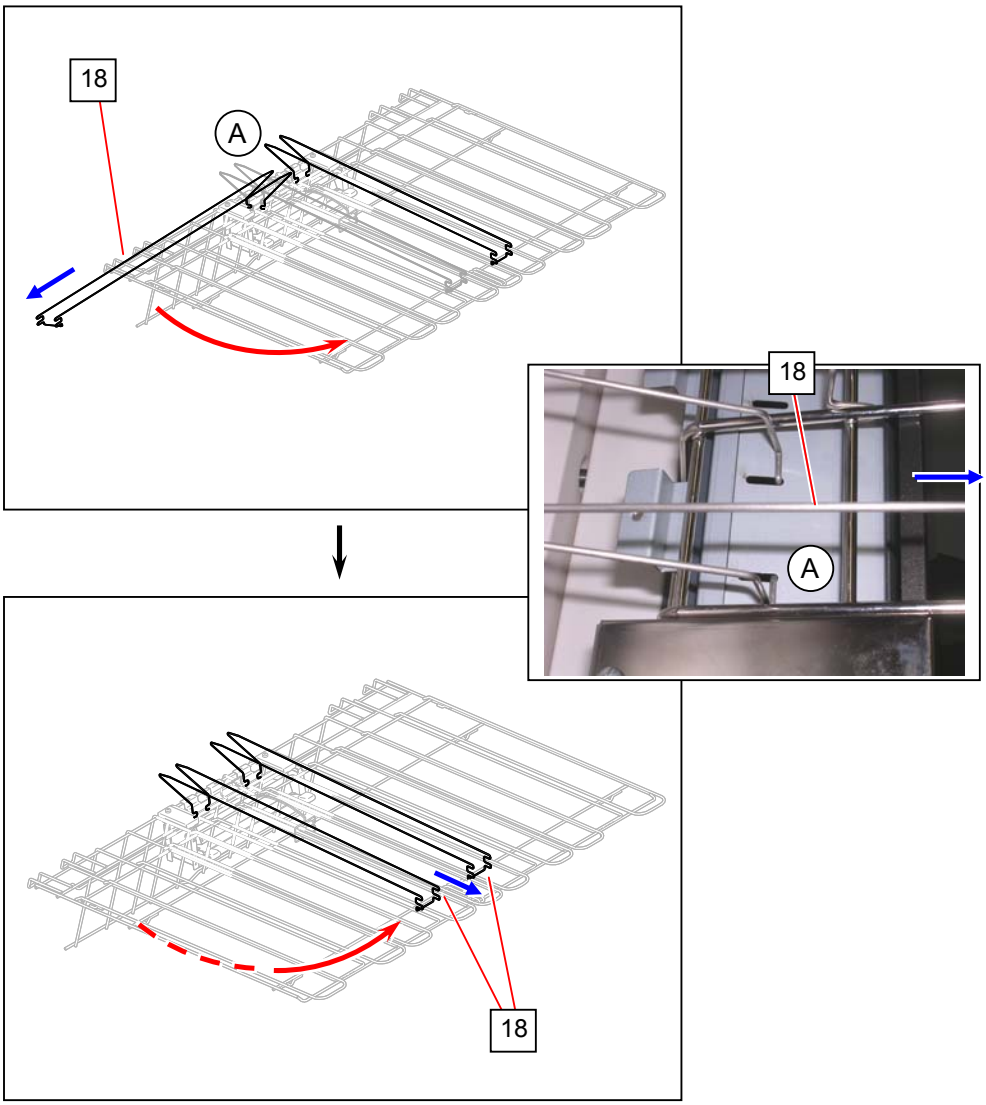
Do not insert the entire end (A) in the slits.



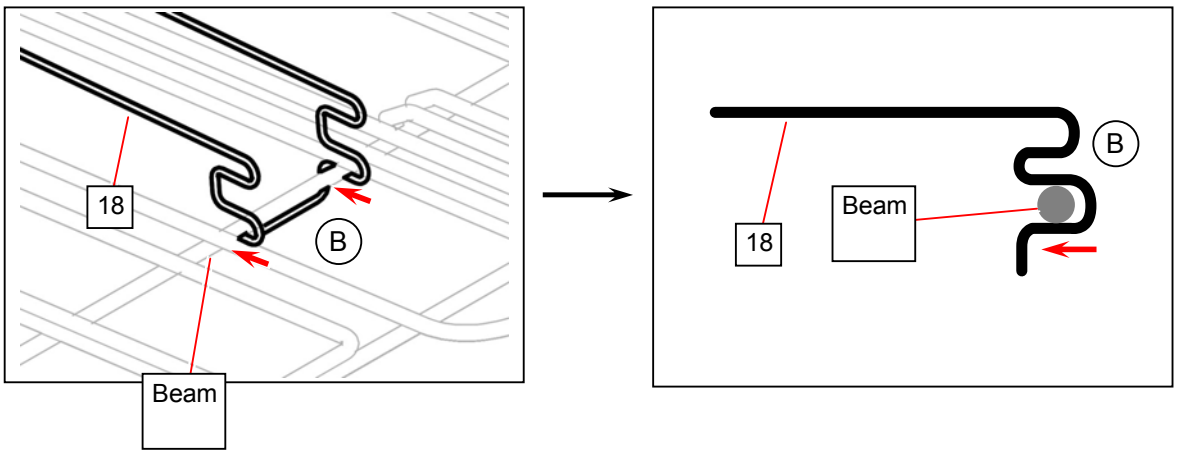


Wrong

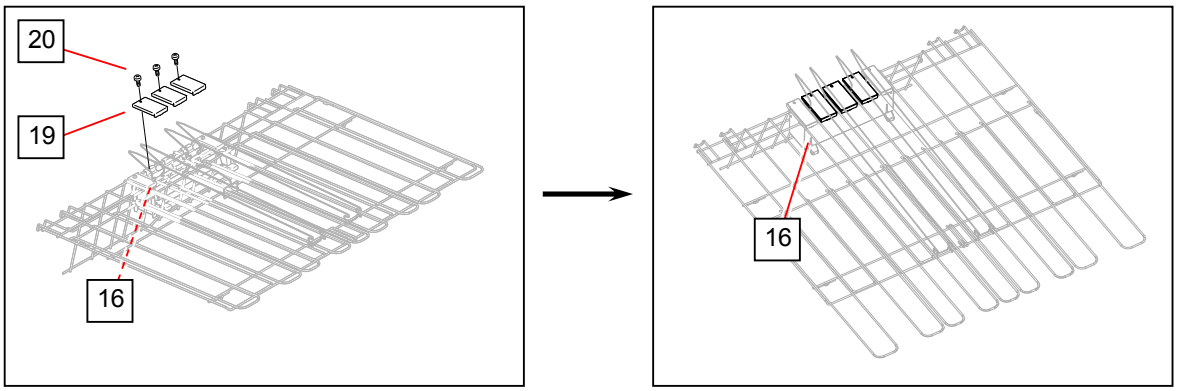
16-2. Turn the entire Tray (18) 90 degrees to direct it parallel to Exit Tray Assy.



16-3. Hook the other end (B) of Tray (18) to the beam to the arrow direction.

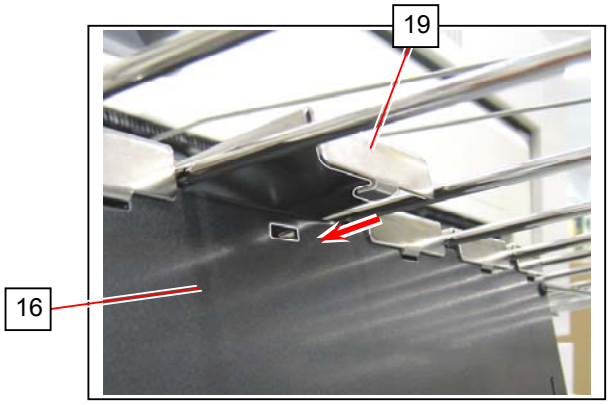


17. Install 3 pieces of **Bracket 6** (19) on the top of Tray Bracket Assy (16) with 3 **Bind Head Screws (M4x6)** (20).

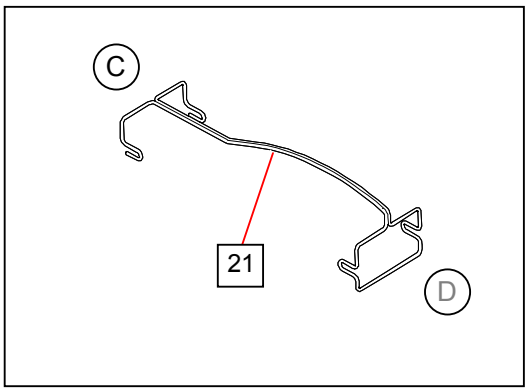


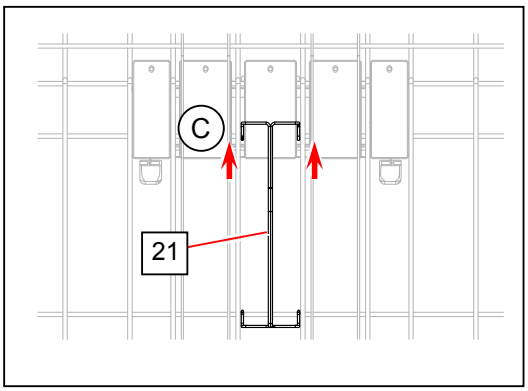
NOTE

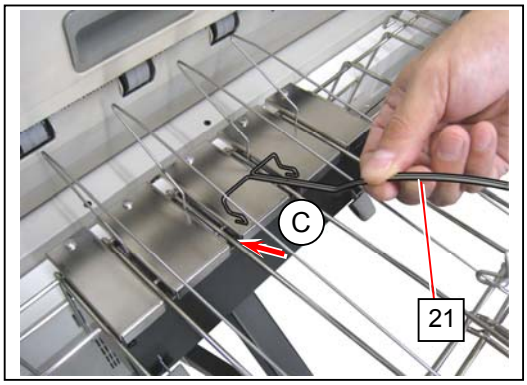
Use the hook part on Bracket 6 (19) to position it on Tray Bracket Assy (16).

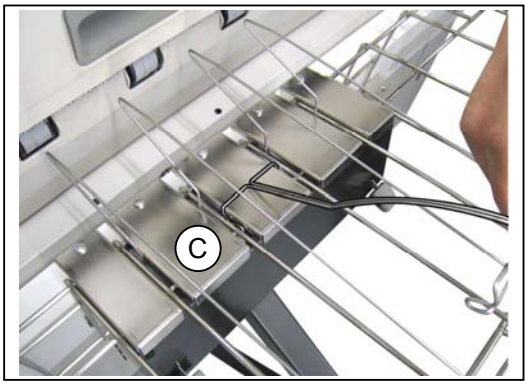


18. Hook the end (C) of Tray 3 (21) in the center block of Exit Tray Assy.

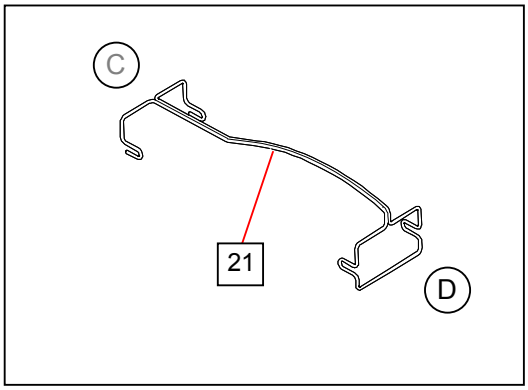


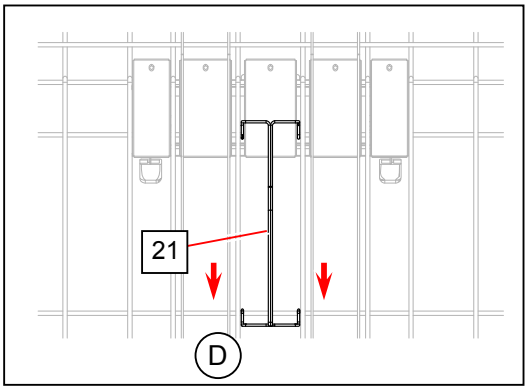


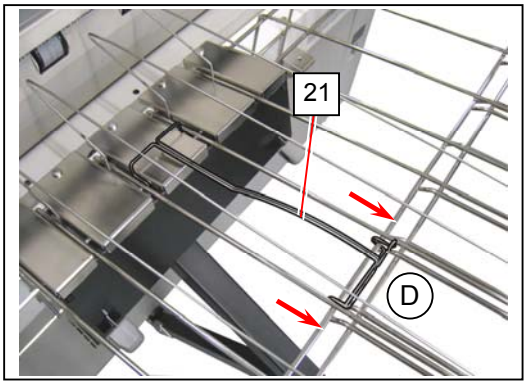




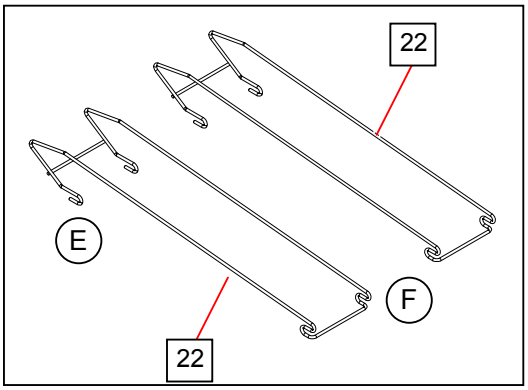
19. Hook the other end (D) of Tray 3 (21) on the beam to the arrow direction.

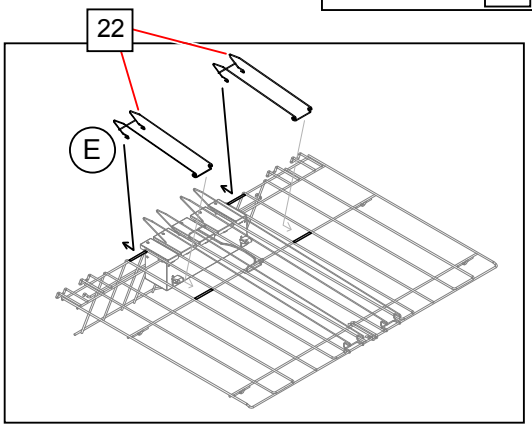


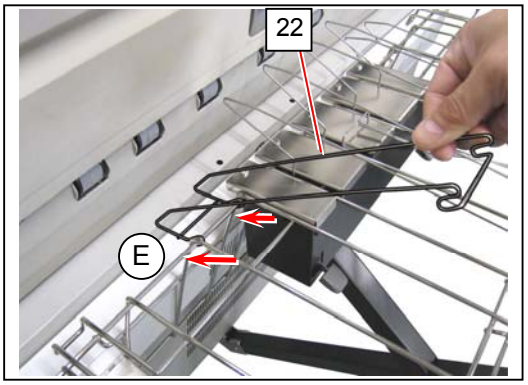




20. Hook the end (E) of **Tray 4** (22) on Exit Tray Assy.

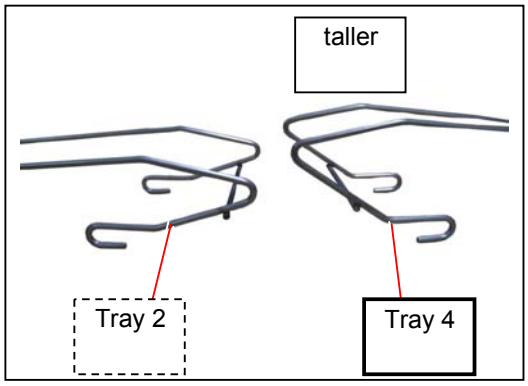




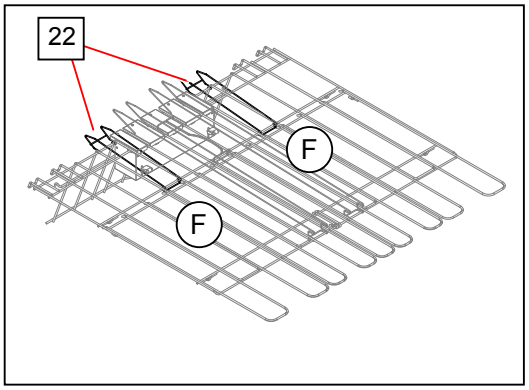


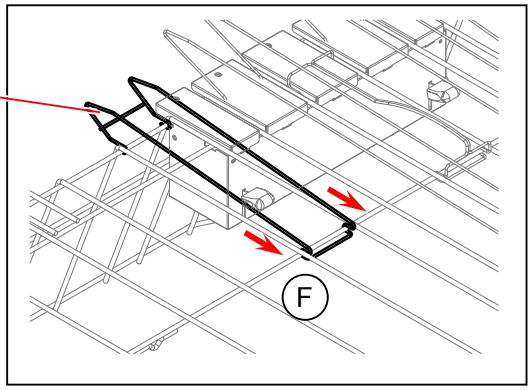
NOTE

Be careful not to mix up Tray 4 (22) with Tray 2 as they appear to be similar in shape.
Tray 4 (22) is taller than Tray 2.

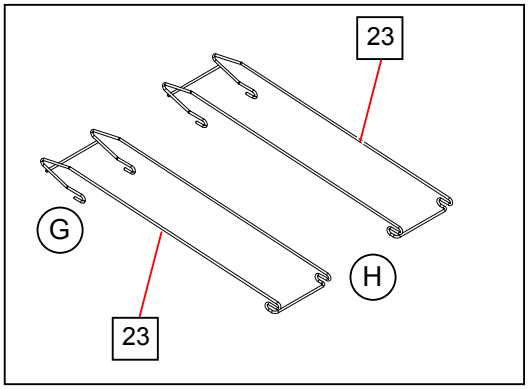


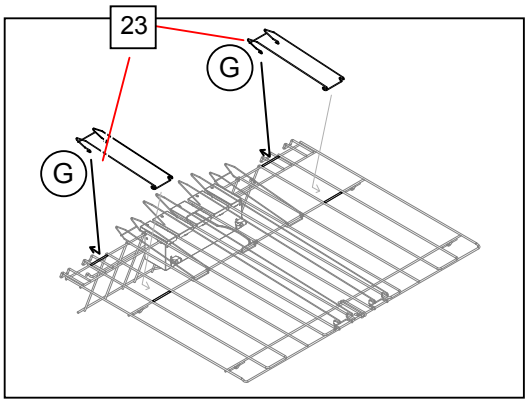
21. Hook the other end (F) of Tray 4 (22) on the beam to the arrow direction.

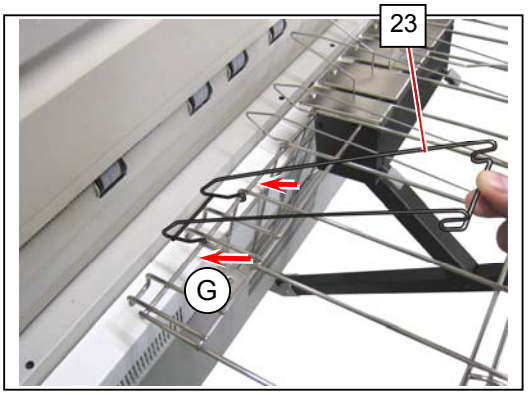




22. Hook the end (G) of **Tray 2** (23) on Exit Tray Assy.

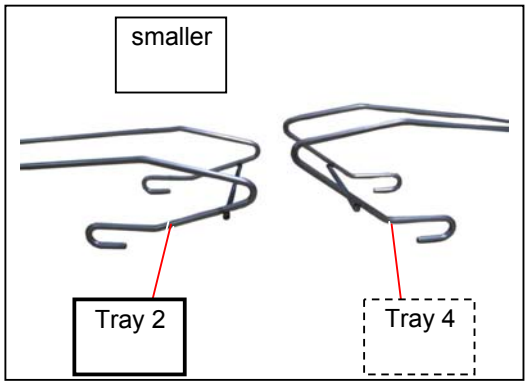




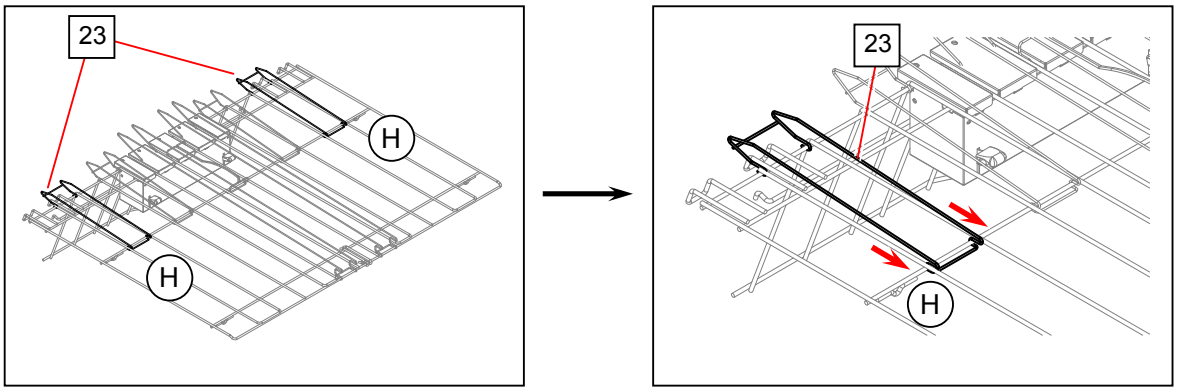


NOTE

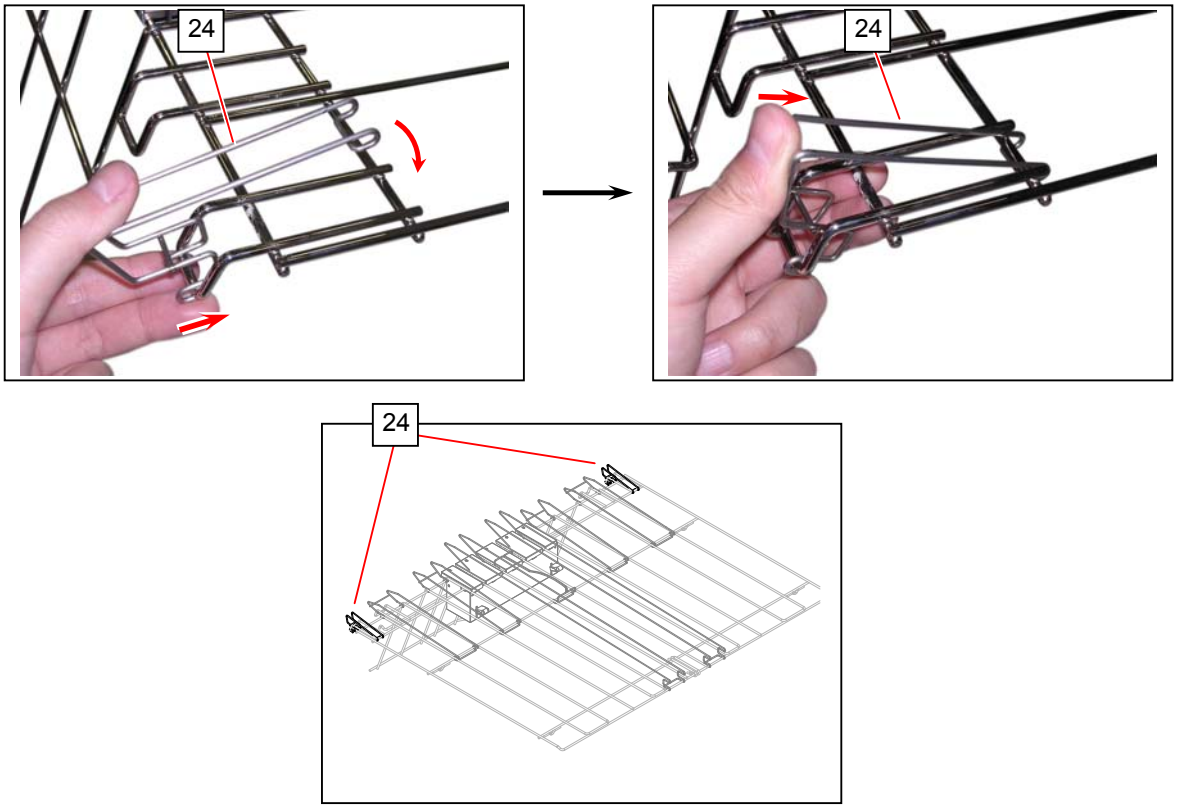
Be careful not to mix up Tray 2 (23) with Tray 4 (22) as they appear to be similar in shape. Tray 2 (23) is shorter than Tray 4 (22).



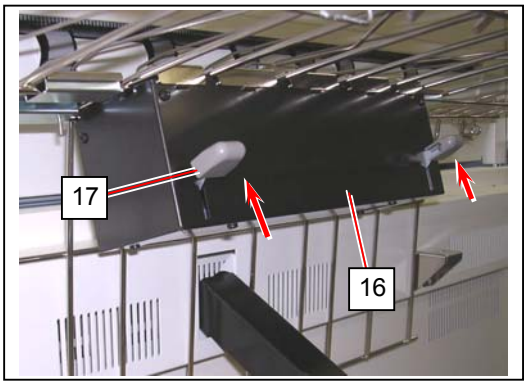
23. Hook the other end (H) of Tray 2 (23) on the beam to the arrow direction.



24. Hook **Guide** (24) on the small bend block at the far outside of Exit Tray Assy.
With pushing Guide (24) to the arrow direction, hook the other end to the beam.



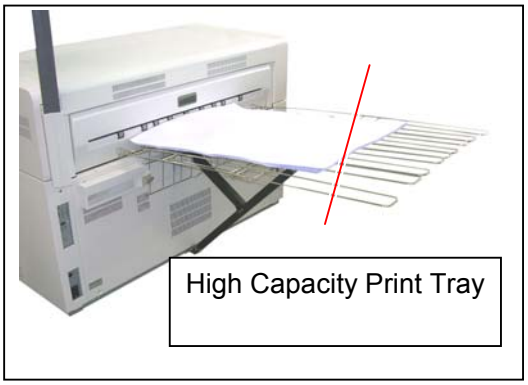
25. Press up the Lever (17) on Tray Bracket Assy (16).



Usage Precautions

Any information and instructions in this section are described on the KIP 7900 / 7700 document.

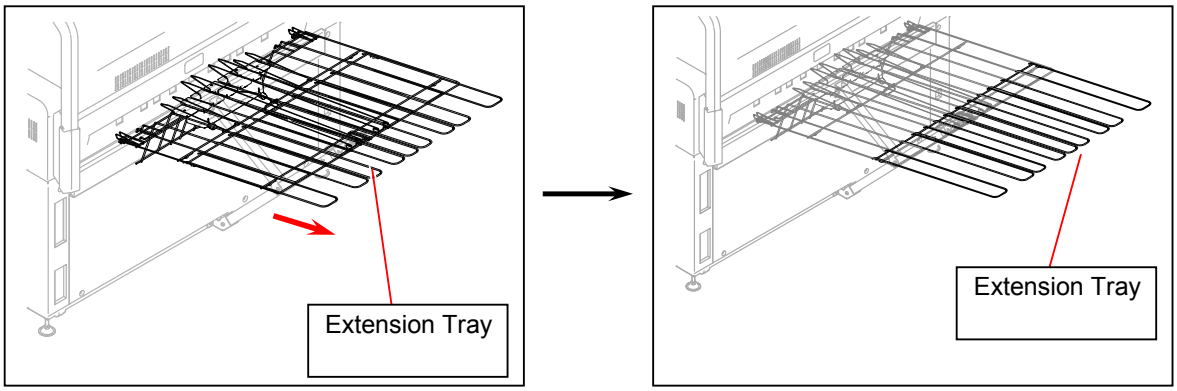
High Capacity Print Tray has the ability to stack about 100 sheets of ejected prints behind the printer.



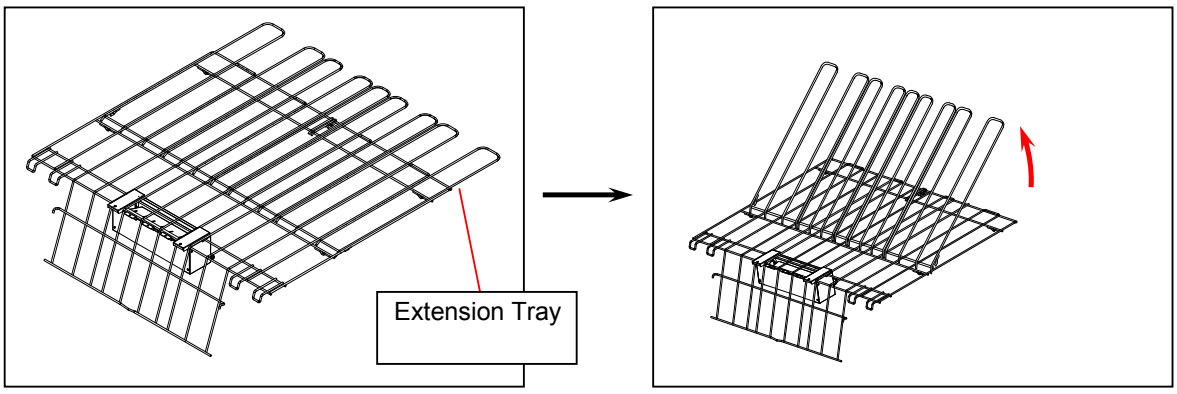
Tray Stack Capacity (approximate):

Media Type	Number of sheets	Note
Plain Paper	100	The correct stack capacity of these number of sheets can be achieved when all pages are; - in any 1 standard size - included in 1 print job and printed without any interruption.
Tracing Paper Vellum	10	
Film	1	

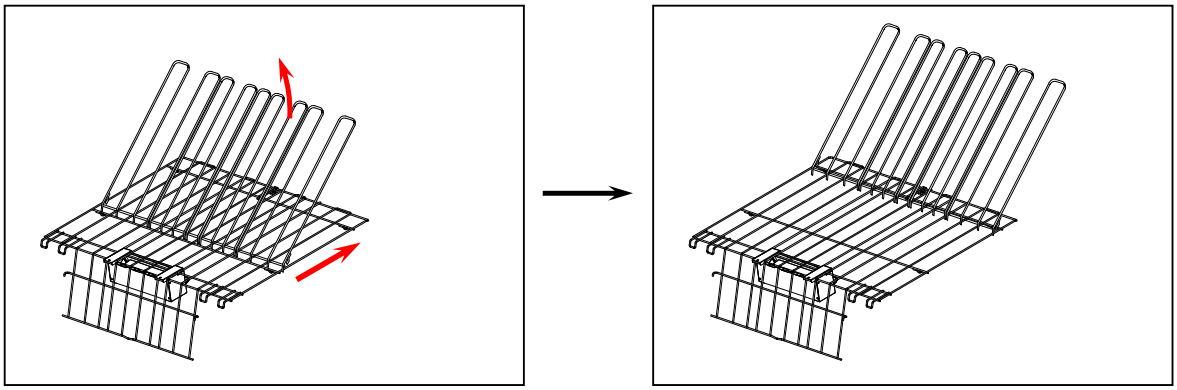
For larger print sizes (D/A1 portrait, E/A0), please use the extension tray.



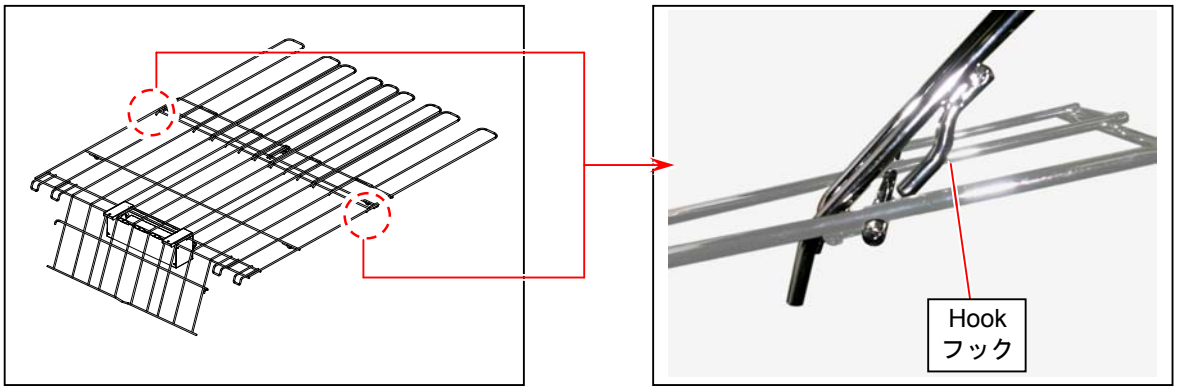
1. Flip up the extension tray.



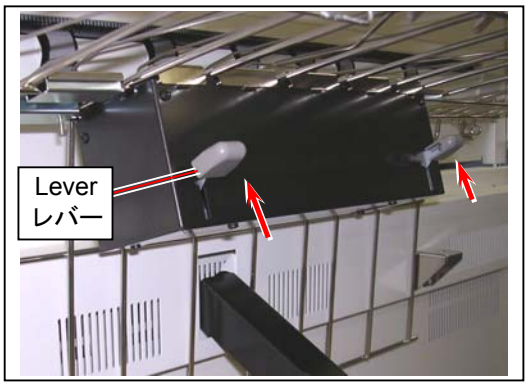
2. With holding the extension tray, slide it completely to the arrow direction.



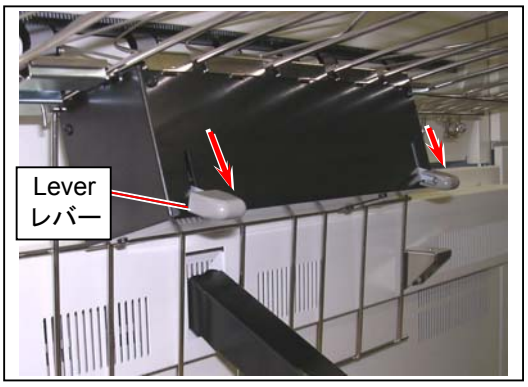
3. Lower the extension tray and insert the hooks on the base tray.



For use of thin vellum / tracing paper and film in D/A1 portrait or E/A0, press the lever down. In most sizes / types, the lever should remain up.



Lever UP: most size, type



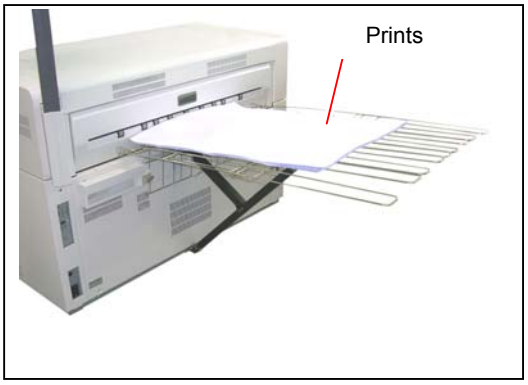
Lever DOWN: Large Tracing, Vellum, Film

NOTE

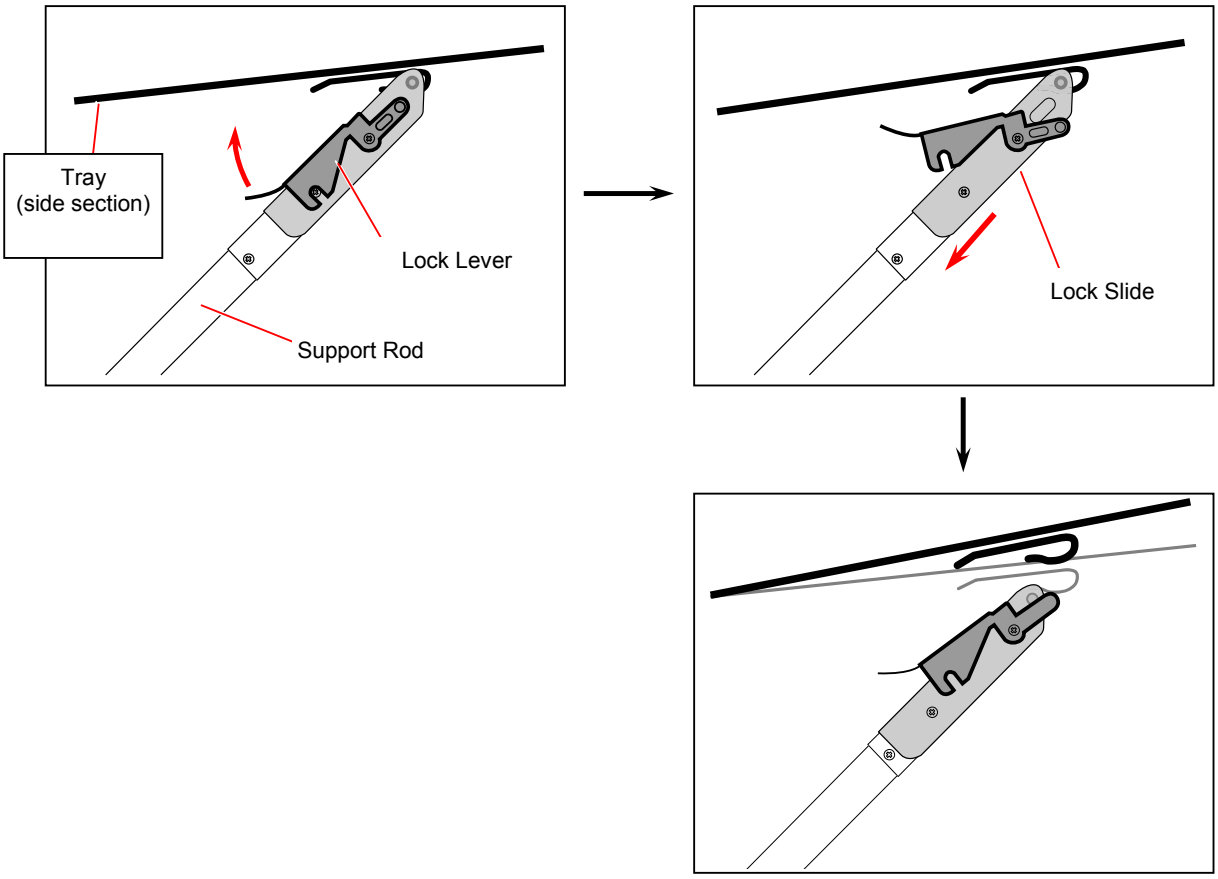
This equipment is exclusive use of stacking ejected prints from the printer.

When a paper jam on the fuser region occurs, it is necessary for the tray to move aside to "release position". Follow the instruction below to relocate the tray.

1. First remove stacked prints from the tray.



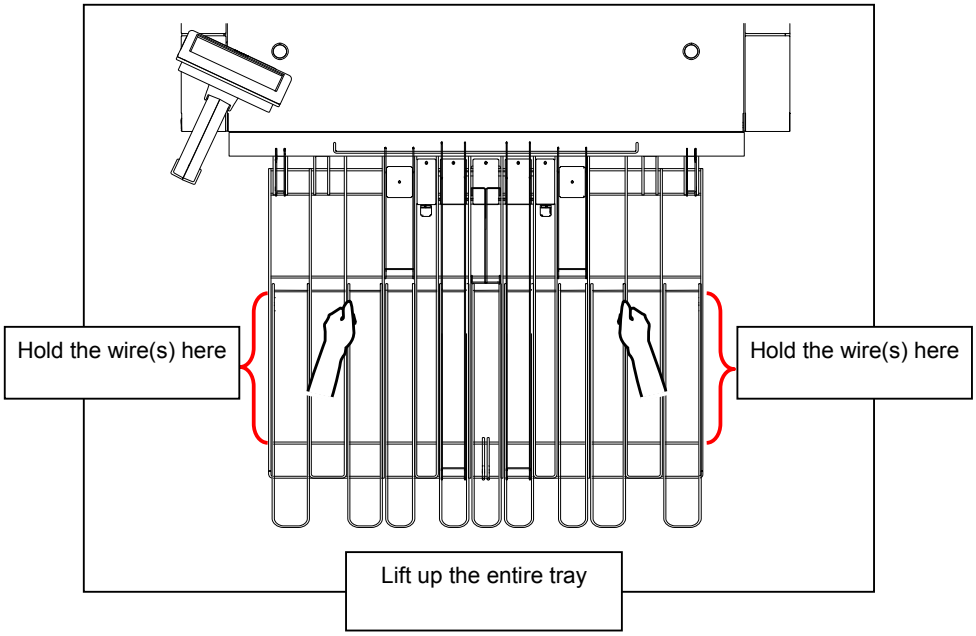
2. Flip up the Lock Lever on the top of the Support Rod.
   Slide the Lock Slide down to release the tray.

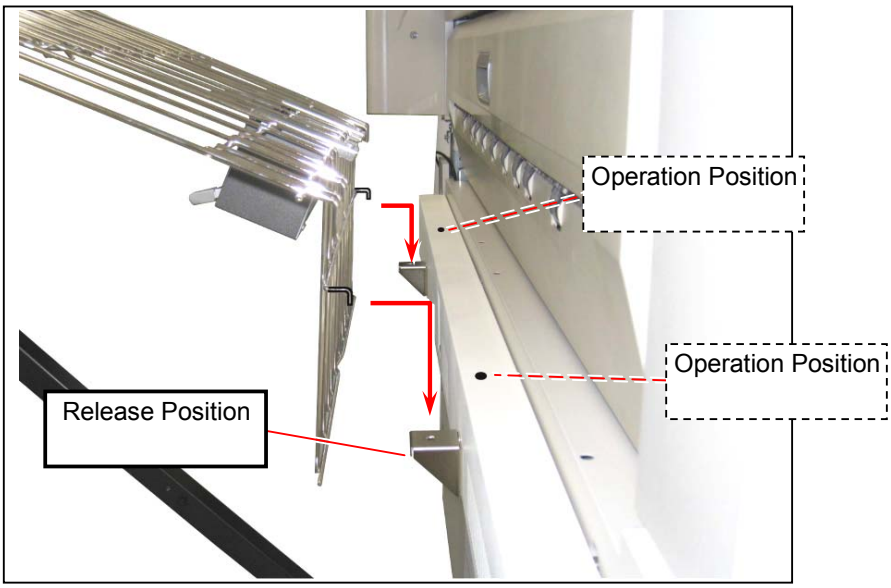


NOTE

Please note that the tray may slightly bounce at the time of release.

3. With holding the thick wire(s) on the overlapping area of the tray, lift up the entire tray.
   Insert the hooks into the holes on the tray rest. (release position)





NOTE 注意

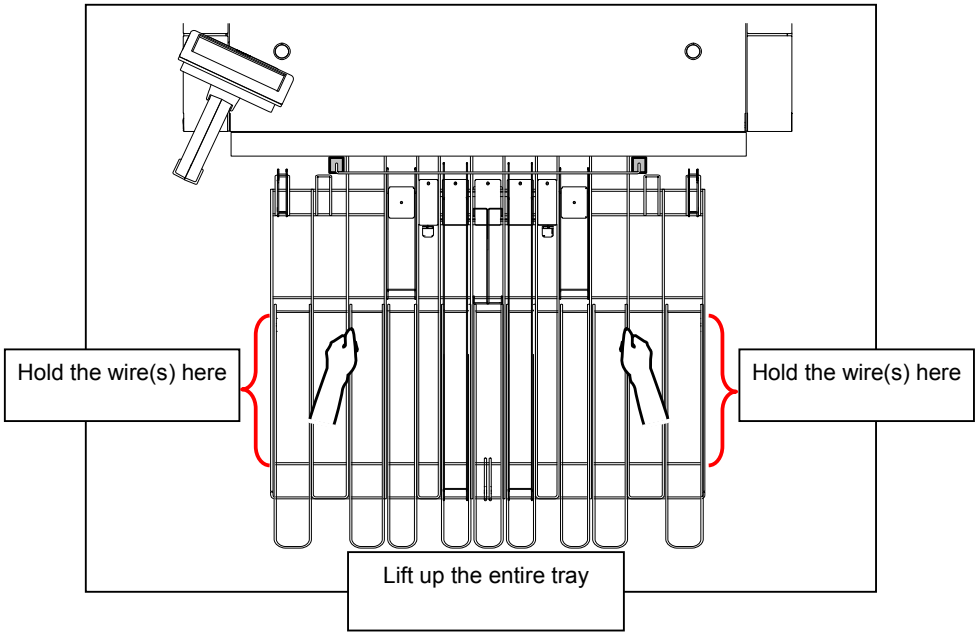
(1) Do not hold a thin wire to carry the entire tray.

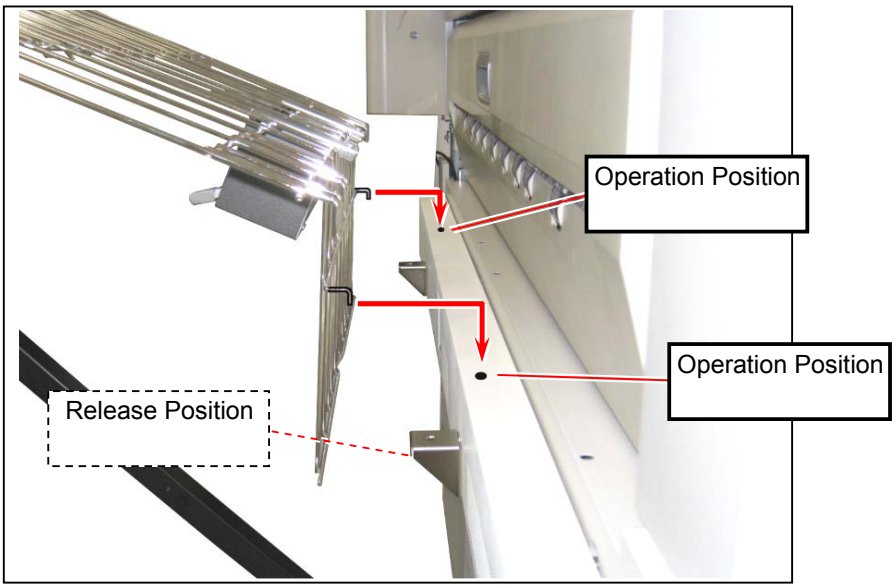
(2) You cannot open Exit Cover until you move the tray from “operation position” to “release position”.

(3) Do not place any heavy object on the tray with mounted at “release position”.

4. Remove a jammed paper in the printer.

5. With holding the thick wire(s) on the overlapping area of the tray, lift up the entire tray.
Insert the hooks into the holes on the top face of the printer's rear beam. (operation position)



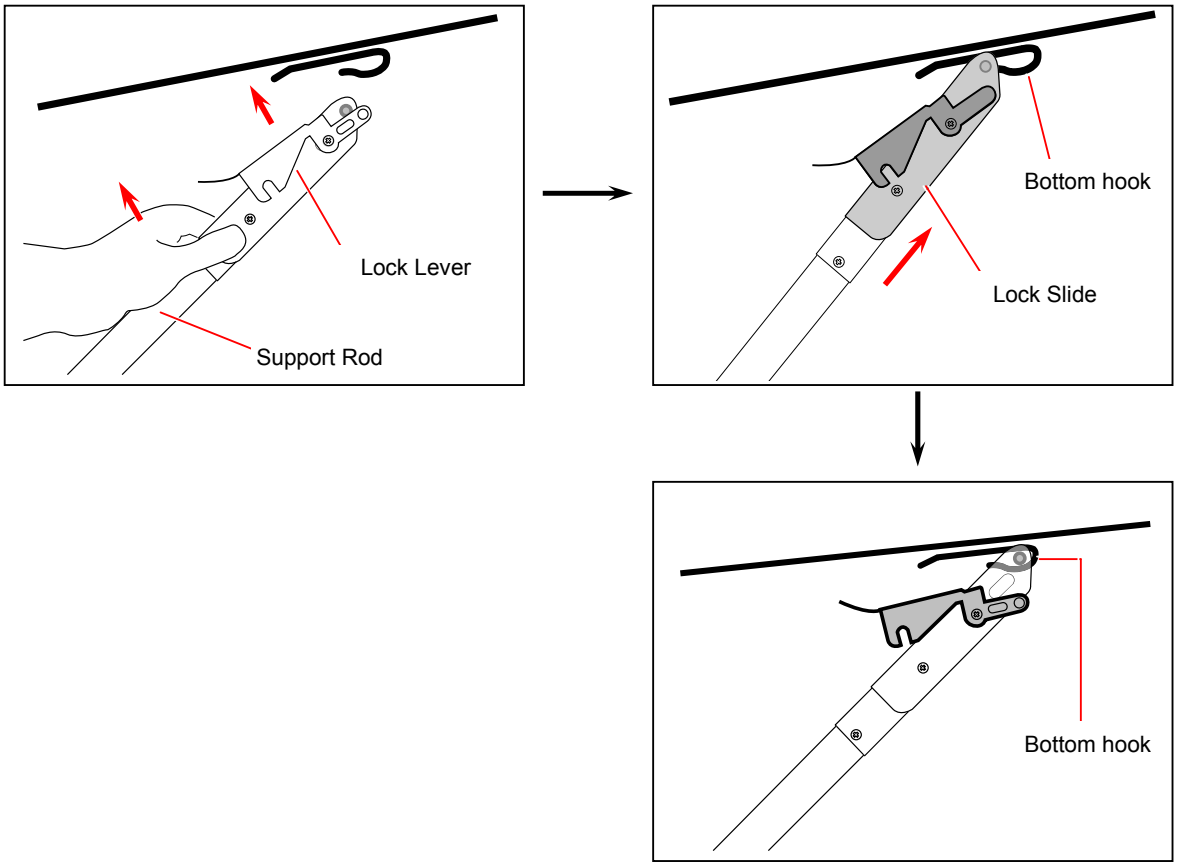


NOTE 注意

(1) Do not hold a thin wire to carry the entire tray.

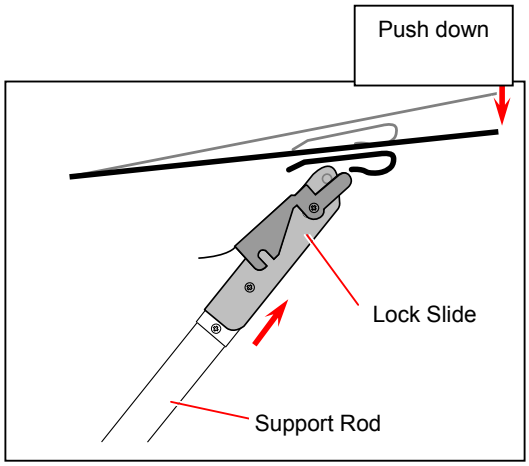
(2) Ejected prints will be stacked incorrectly on the tray until you move it from "release position" to "operation position".

6. Lift up the Support Rod. Fully slide the Lock Slide upward to fit in the bottom hook on the tray.

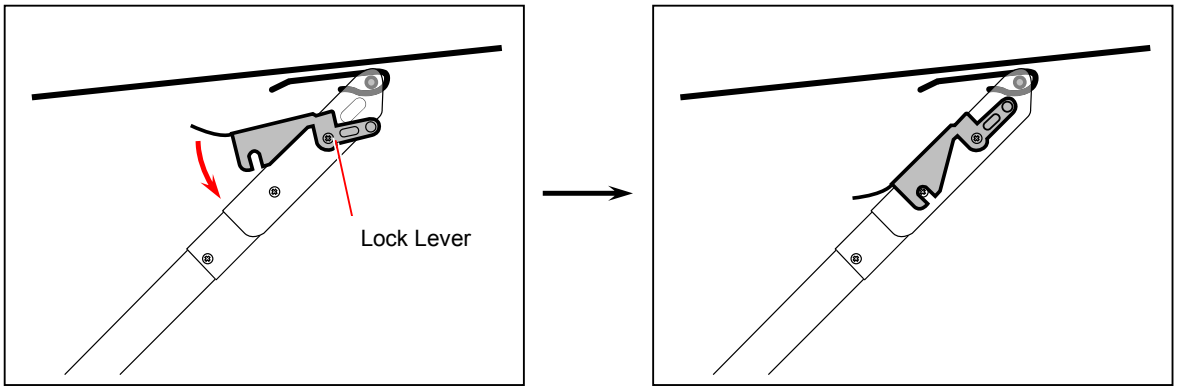


NOTE 注意

If the Lock Slide cannot catch the bottom hook, slightly push down the tray to hook on the Lock Slide.

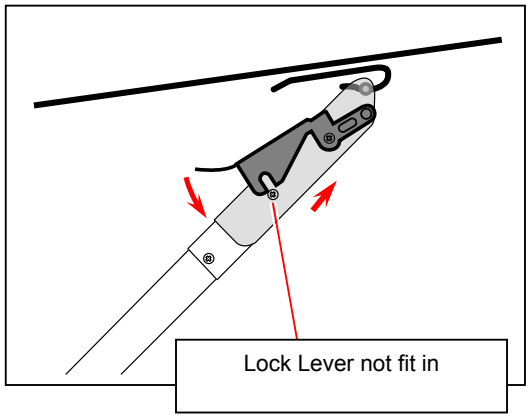


7. Fully press the Lock Lever down to lock the tray.

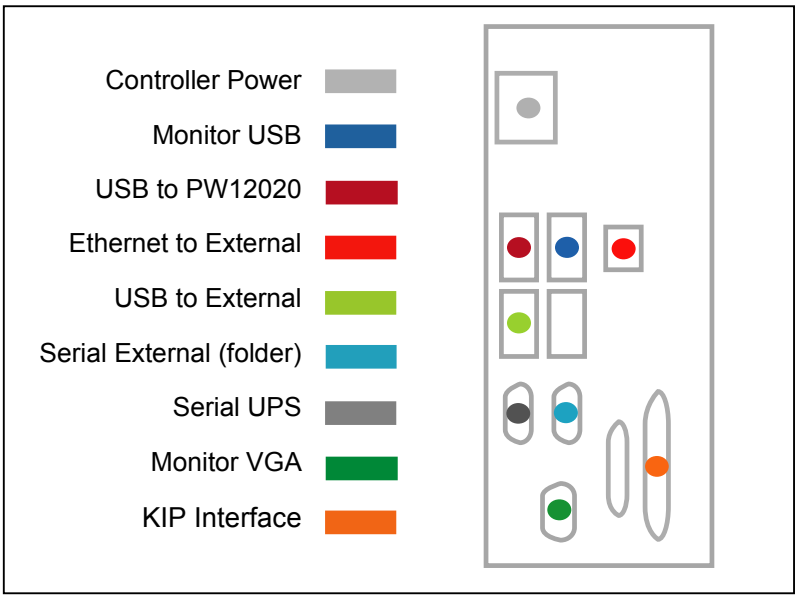


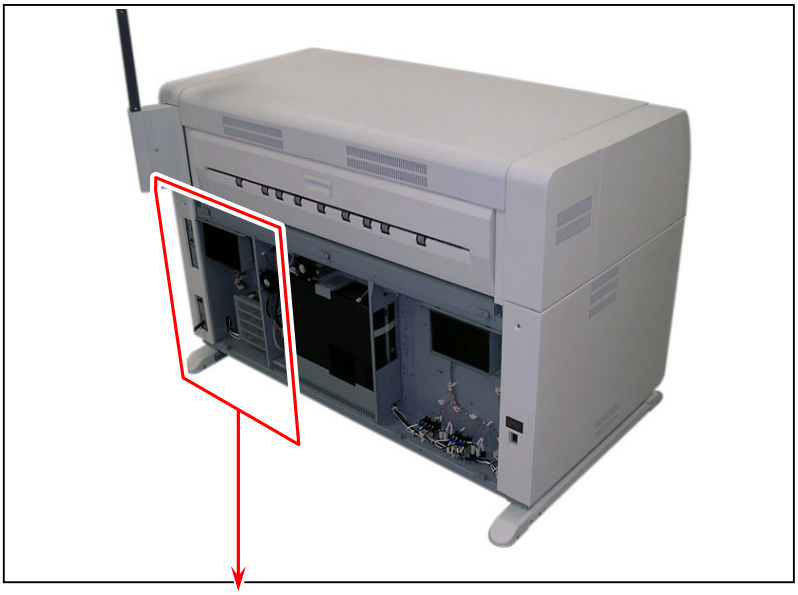
NOTE 注意

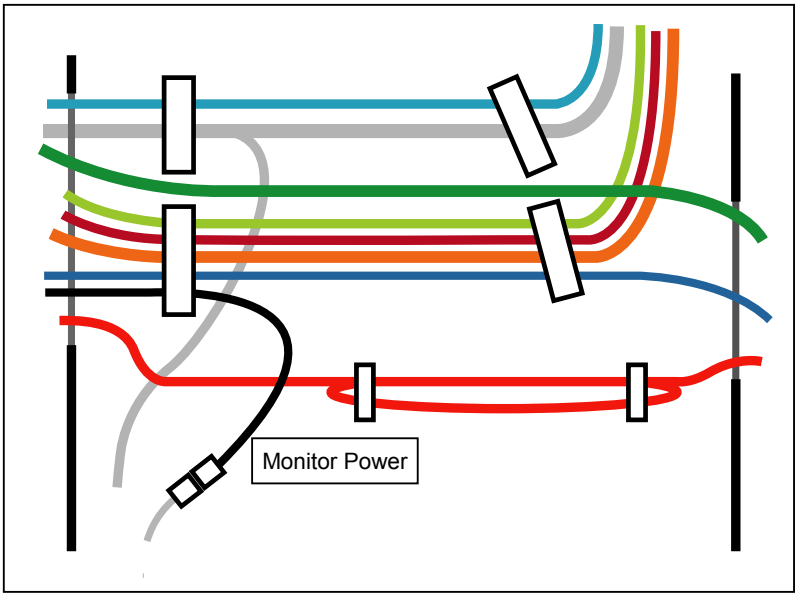
To fit the Lock Lever in position, fully slide the Lock Slide upward.



9. 2 Schematic Wiring around Controller







9. 3 Power Cord Instruction

The installation of (or exchange to) a power plug which fits in the wall outlet of the installation location shall be conducted in accordance with the following:

WARNING

Select a power plug which meets the following criteria;

- The plug has a voltage and current rating appropriate for the product's rating marked on its name plate.
- The plug meets regulatory requirements for the area.
- The plug is provided with a grounding pin or terminal.

If the appropriate plug does not fit the wall outlet in the installation, the customer shall install an appropriate outlet.

Connector Type:

Configuration	Standard	Rating	Usually found in
	IEC60320:C19	20A 250V (UL) 16A 250V (IEC)	

Plug Type: Model Rating 220-240V

Configuration	Standard	Rating	Usually found in
	NEMA6-20	20A 250V	North America (UL Listed)
	CEE7/7	16A 250V	European countries
	KS C 8305	16A 250V	Korea
	AS/NZS 3112	16A 250V	Australia New Zealand
	GB1002 GB2099.1	16A 250V	China
	IRAM 2073	16A 250V	Argentina

Cord Type

Standard	Rating	Usually found in
SJT 3X12AWG Long <4.5m	20A 250V	North America (UL Listed)
HO5VV-F 3X1.5mm^2	16A 250V	European countries Argentina
RVV 3X1.5mm^2	16A 250V	China

KIP 7700 Overall Circuit Diagram

CONFIDENTIAL

9. 4 Overall Circuit Diagram