

— II. MASTER HANDLING SECTION —

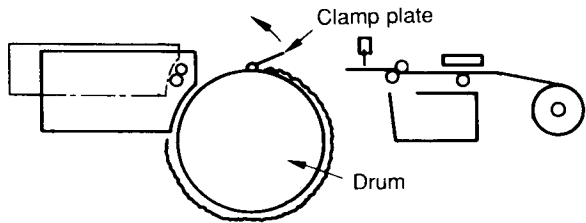
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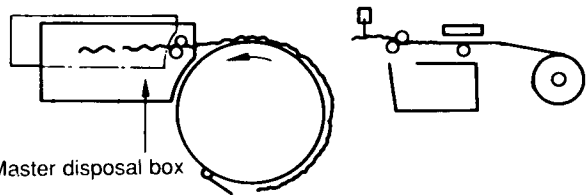
1. Mechanical Overview

[Master Removal and Feed]

Master Removal

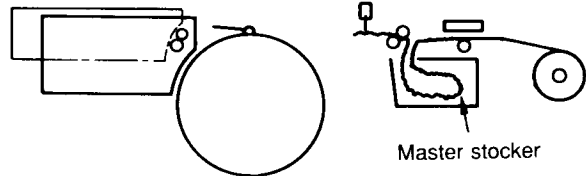


When the "START" button is pressed for master-making, the Drum rotates to the home position and the Clamp plate opens.

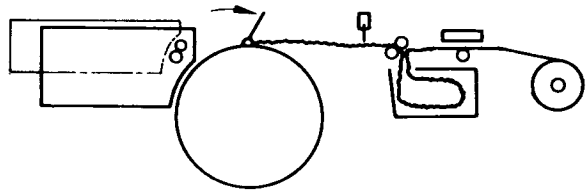


The Master removal hooks activate. The Drum rotates one revolution to remove the used master, placing it into the Master disposal box.

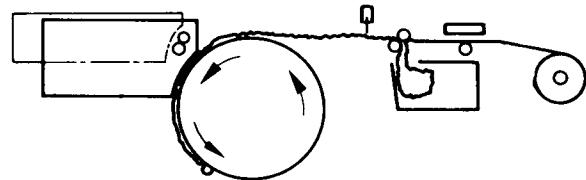
Master Feed



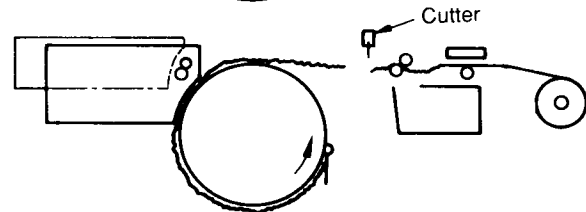
Master making starts and the newly made master is fed into the Master stocker.



The leading edge of the master advances to the Drum, and the Clamp plate is closed to hold the master.



The Drum rotates intermittently to load the master material while the master making is continued.



When the master making is finished, the drum rotates until the prime surface of the Drum is covered. Then the Cutter cuts the master material.

2. Master Making Section

[Theory of Operation]

1. Master making operation

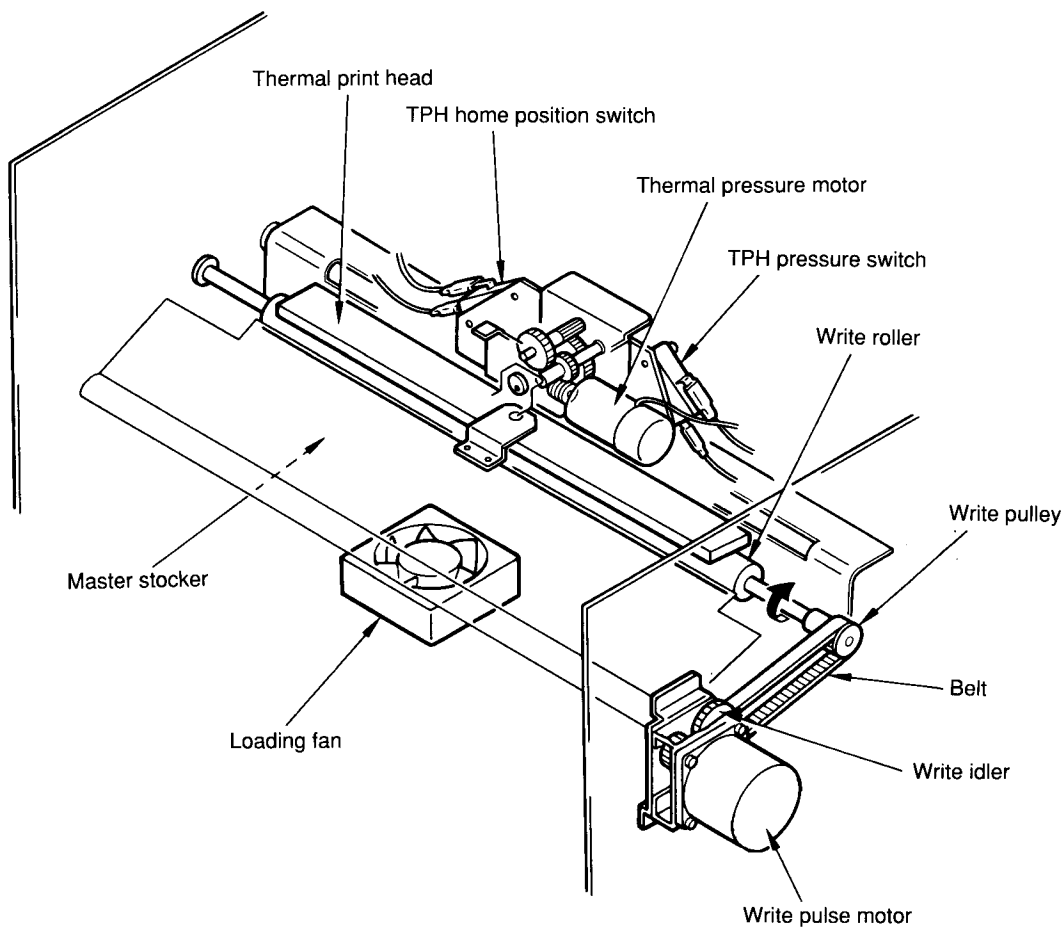
When the original is set in position and the "START" button is pressed, the pre-scanning starts and the Thermal print head is lowered by the Thermal pressure motor until the TPH pressure switch is activated.

As the image scanning starts, the Read and Write start signal and the Write pulse motor is activated to create the master.

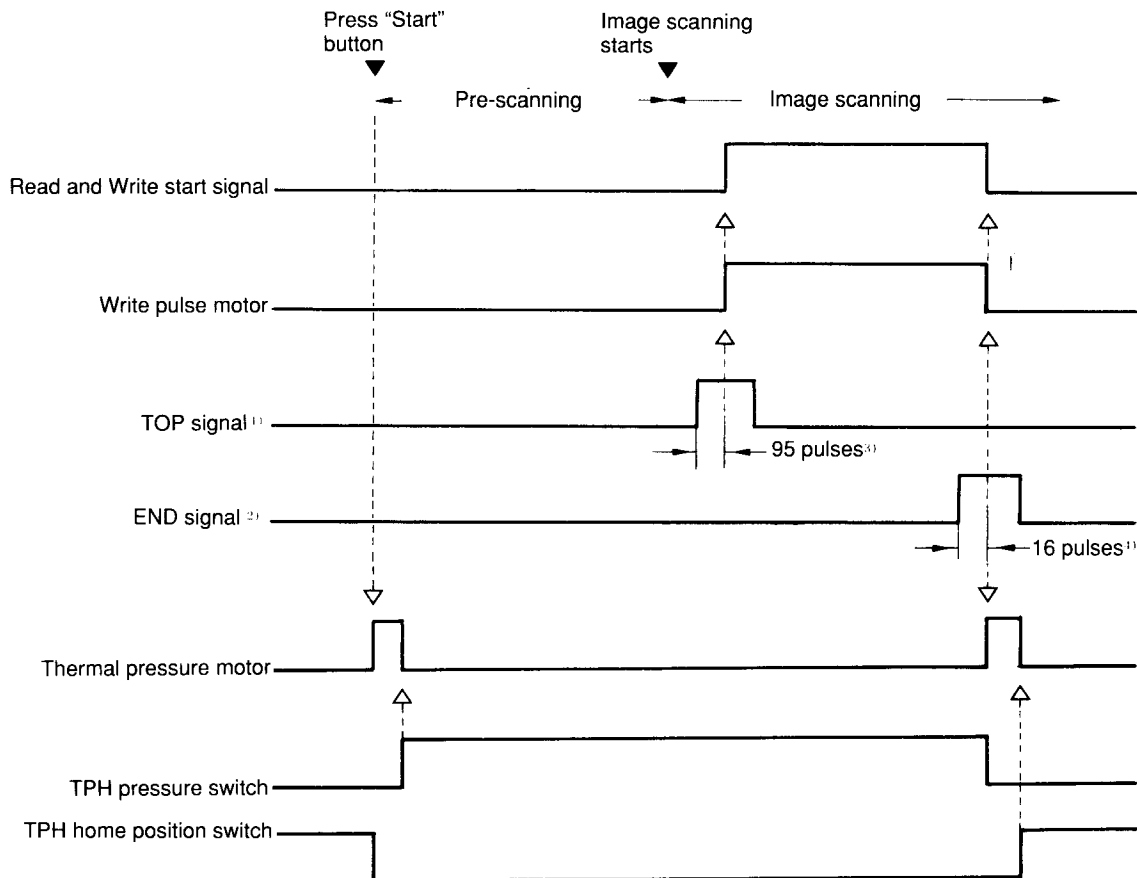
The Write pulse motor rotates the Write roller via the Write idler, Belt, and Write pulley. The newly created master is fed into the Master stocker.

The master making operation is finished when the Read and Write start signal and the Write pulse motor is turned off either by the END signal from the Trimming PCB or after the Write pulse motor has rotated for the given pulses.

As the master making operation is finished, the Thermal print head is elevated by the Thermal pressure motor until the TPH home position switch is pressed.



Master Making Operation (when “Margin Erasing” is selected)



- ① The master making is finished when **Write pulse motor** has activated for a **given pulse** interval for the paper size selected or the **END signal** is sent out from the Trimming PCB.
- 1) The **TOP signal** is the signal which starts the master-making operation and is output from the Trimming PCB.
- 2) The **END signal** is the signal which indicates the tail edge of the original detected in the pre-scanning operation and is output from the Trimming PCB.
- 3) The **Read and Write start signal** and the **Write pulse motor** is activated as the **Read pulse motor** turns for **95 pulses** after the **TOP signal** is output.
- 4) The **Read and Write start signal** and the **Write pulse motor** is deactivated as the **Read pulse motor** turns for **16 pulses** after the **END signal** is output.

[Removal Procedures & Precautions for Installation]

1. Thermal Print Head

- Removal Procedures -

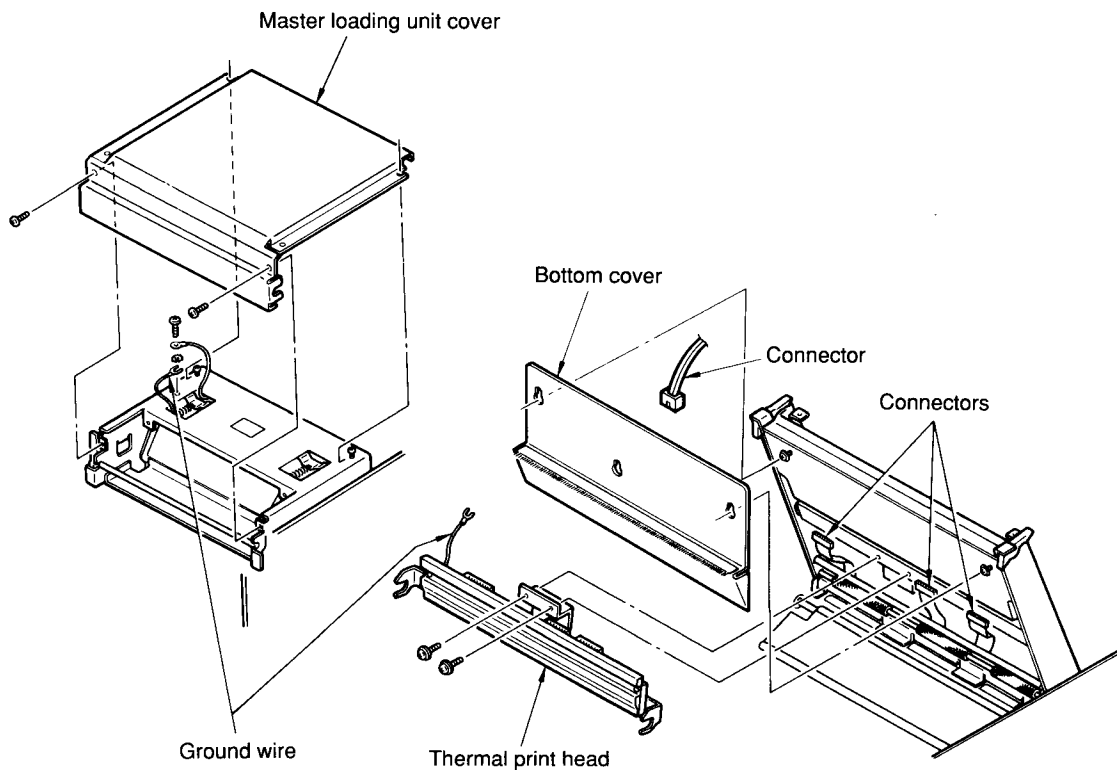
- 1) Turn off the machine power and slide the Image Scanning section towards the paper feed side.
- 2) Loosen the two mounting screws of the Master loading unit cover and remove the cover.
- 3) Loosen the mounting screw for the ground wire and remove the ground wire of the Thermal print head.
- 4) Loosen the two screws holding the Bottom cover of the TPH unit and slide the Bottom cover off.
Disconnect the Connector of the sensor.
- 5) Remove the two screws holding the Thermal print head, and disconnect the three connectors.

Cautions:

- ★ Be careful not to damage the heating area of the Thermal print head.
- ★ Take extra precautions not to allow any static electricity to pass through the connectors on the Thermal print head when removed.
It will damage the Thermal print head.

Cautions in Installation:

- ★ Make sure to connect the Ground wire.
- ★ After replacing the TPH unit, be sure to make the thermal power adjustment of the Thermal print head.



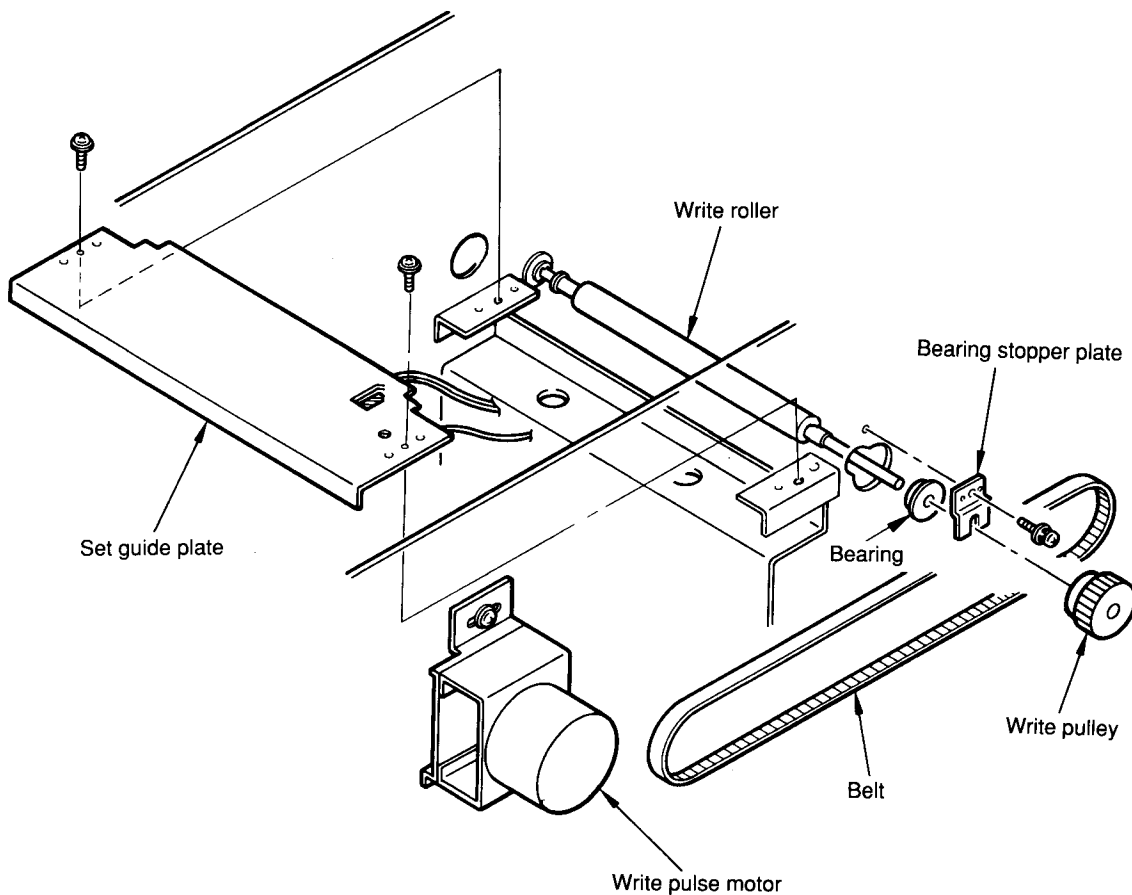
2. Write Roller

- Removal Procedures -

- 1) Turn off the machine power and remove the Back cover.
- 2) Slide the Image scanning section towards the paper feed side, and unlock and open the Master loading unit.
- 3) Remove the two screws on the Set guide plate and lift the plate.
- 4) Loosen the belt tension by shifting the Write pulse motor to the right after loosening the mounting screws and remove the belt from the Write pulley.
- 5) Loosen the allen screw on the Write pulley and remove the pulley.
- 6) Remove the Bearing stopper plate.
- 7) Remove the bearing from the shaft of the Write roller and slide the Write roller out.

Cautions in Installation:

- ★ Do not put the bearings on the shaft facing the wrong way.
- ★ The Write pulley should be attached on the tip end of the Write roller shaft.
- ★ Remember to adjust the tension of the belt of the Write pulse motor.
- ★ Take extra precautions not to damage the Write roller.



Adjustment Procedures
1. Thermal Power of Thermal Print Head

[Adjustment Procedures]

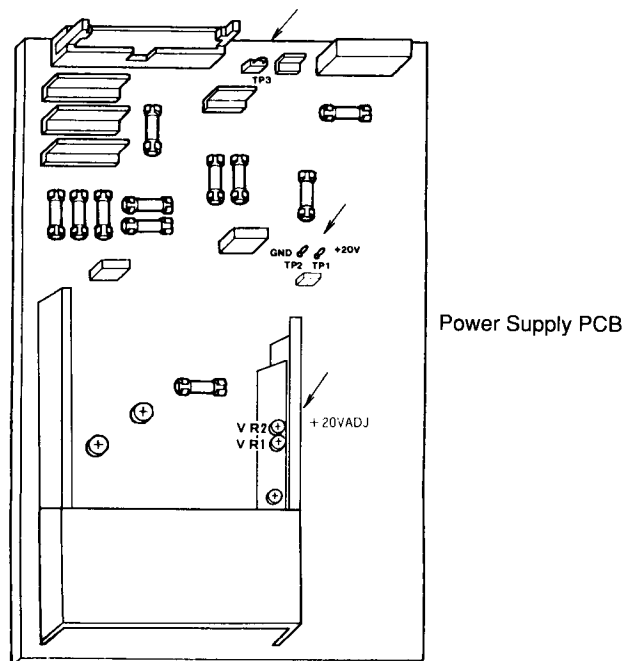
1. Thermal Power of Thermal Print Head

- Check & Adjustment -

- 1) Turn the power off and remove Shading plate cover from the Image scanner table.
 - 2) Remove the Front right cover.
 - 3) Connect the terminals of a voltmeter to **TP1 (+20V)** and **TP2 (GND)** on the **Power Supply PCB** and remove the jumper connector from **TP3** on the **Power Supply PCB**.
 - 4) Slide the Image scanner table towards the paper feed side, and unlock and open the Master loading unit. Then read the resistance value (Ω) marked on the Thermal print head.
 - 5) Turn on the machine power and measure the voltage between the **TP1** and **TP2**.
If the voltage does not match with the value on the chart (next page), adjust **VR2 (+20VADJ** coarse adjustment) and **VR1 (+20VADJ** fine adjustment) until the correct voltage is read on the voltmeter.
 - 6) Connect the jumper connector back on the “**TP3**” of the **Power Supply PCB**.
 - 7) Confirm that **SW8-2** of the **Image Processing PCB** is selected to “**ON**”.
 - 8) Check that the setting of **SW3 (T1)** and **SW4 (T2)** on **Image Processing PCB** are correct, referring to the correlation table on the next page. If not, set them correctly.
- ★ **Turn the machine power off before connecting or disconnecting the voltmeter or jumper connector.**
- ★ **Be sure to place the jumper connector back to TP3 after voltage adjustment.**

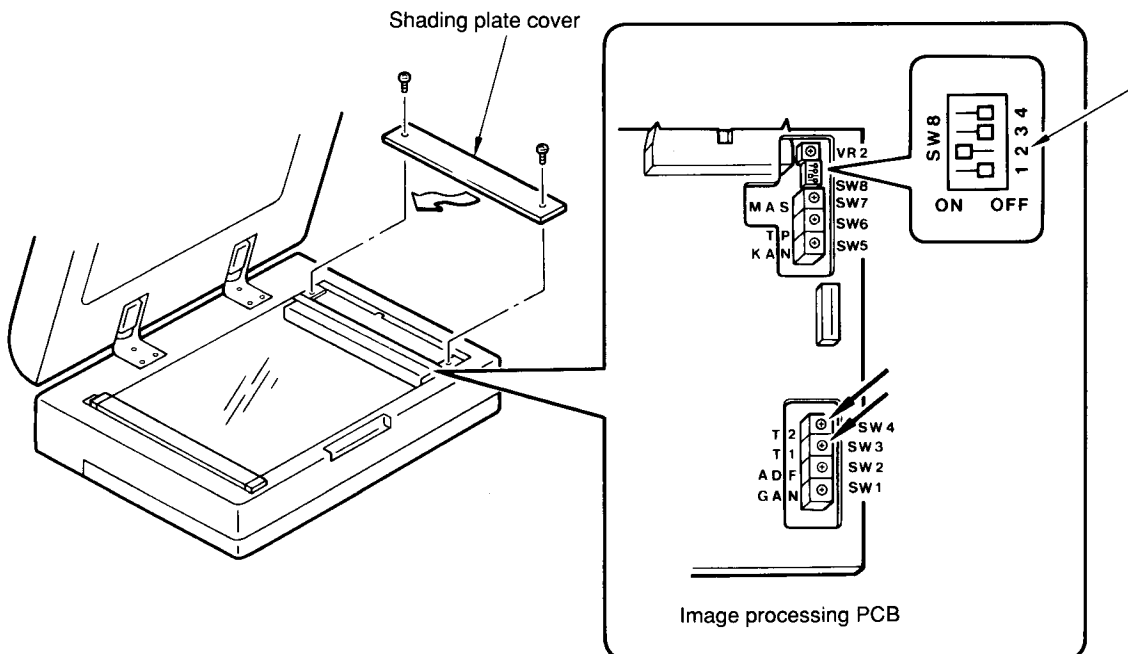
- Results of Misadjustment -

- 1) If **SW3** and **SW4** setting is too low (not enough heat) or the voltage level is too low (not enough power); ➡ thin lines and solid prints can not be reproduced clearly.
- 2) If **SW3** and **SW4** setting is too high (too much heat) or the voltage level is too high (too much power); ➡ the Thermal print head may be damaged.



CORRELATION CHART

Voltage (v)	Resistance (Ω)	SW3 (T1)	SW4 (T2)
20.0	2550 ~ 2582	A	C
	2583 ~ 2627	B	C
	2628 ~ 2647	C	D
20.5	2648 ~ 2666	9	C
	2667 ~ 2713	A	C
	2714 ~ 2749	B	C
21.0	2750 ~ 2797	9	C
	2798 ~ 2847	A	C
	2848 ~ 2855	B	C
21.0	2856 ~ 2883	B	C
	2884 ~ 2949	C	D
	2950 ~ 2965	D	D
21.5	2966 ~ 2984	A	C
	2985 ~ 3036	B	C
	3047 ~ 3079	C	D
22.0	3080 ~ 3124	A	C
	3125 ~ 3178	B	D
	3179 ~ 3198	C	D
22.5	3199 ~ 3211	9	C
	3212 ~ 3268	A	C
	3269 ~ 3321	B	C
23.0	3322 ~ 3355	9	C
	3356 ~ 3415	A	C
	3416 ~ 3450	B	C



MASTER LOADING SECTION

Theory of Operation

1. Master Loading (On the Drum) System

3. Master Loading Section

[Theory of Operation]

1. Master Loading (On the Drum) System

400ms after the Master clamp plate operation is completed, the length of the master inside the Master stocker is "Calculated" and the master loading is activated by rotating the Main motor for the equivalent of the calculated master length.

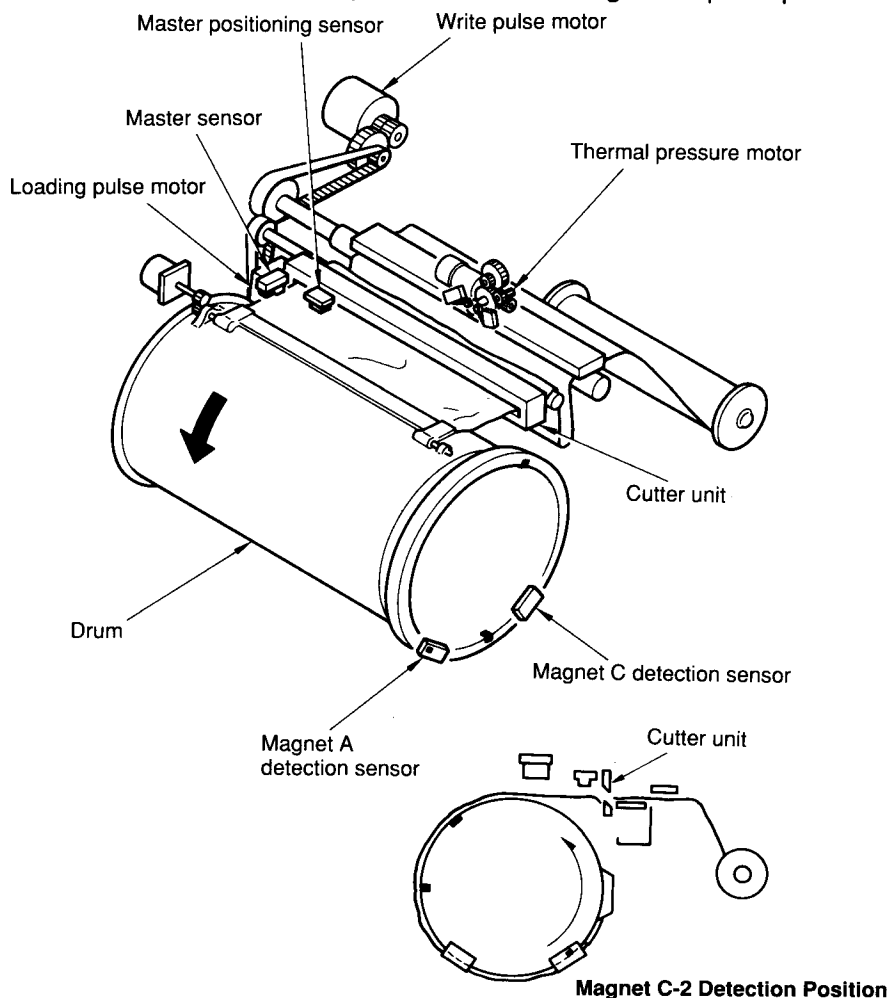
Then until the master making is completed, the Main motor is turned "ON" and "OFF" to load the master on the Drum intermittently.

When the Write pulse motor is turned "OFF" as the master making is completed, the Main motor rotates to wrap the remaining master on the Drum.

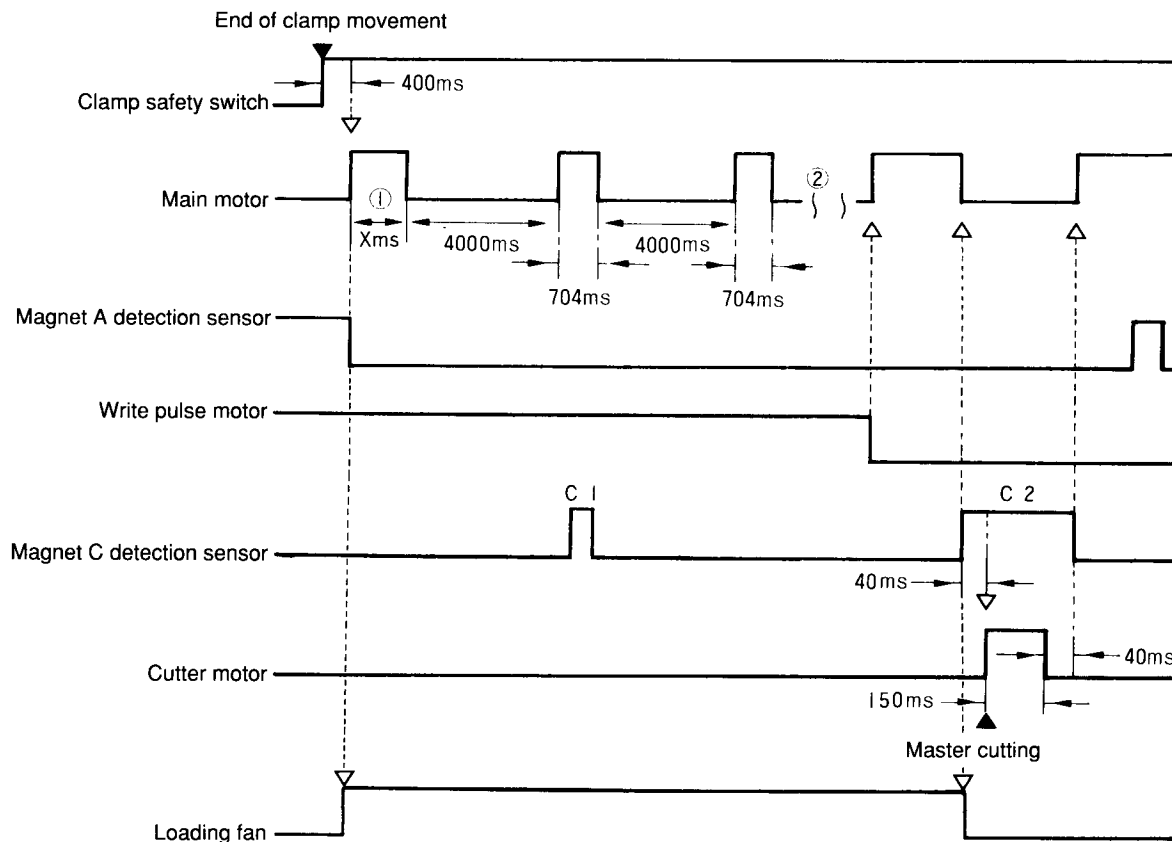
The Main motor is turned "OFF" at the Magnet C-2 detection position and the master is cut by activating the Cutter motor for 40ms.

The Main motor is reactivated, once again, to wrap the rest of the remaining master on the Drum.

The Loading fan is turned "ON" during the master loading to help keep the back tension on the master.



Master Loading (On the Drum) System



- ① How long the Main motor stays activated varies on the amount of master in the Master stocker when the Master clamp plate operation is completed.
- ② The Main motor repeats the ON and OFF movement until the write pulse motor stops.

MASTER LOADING SECTION

Theory of Operation
2. Master Loading Check

2. Master Loading (On the Drum) Check

After the master is cut and wrapped completely around the Drum and as the Drum returns to the Magnet A detection position, the print signal is turned "ON" and the rotation of the Drum is continued.

The Master sensor and the Master positioning sensor are activated when the Drum comes to the Magnet C-1 detection position.

The Master sensor checks the status of the master on the Drum to determine if a master (on-drum) loading error has occurred.

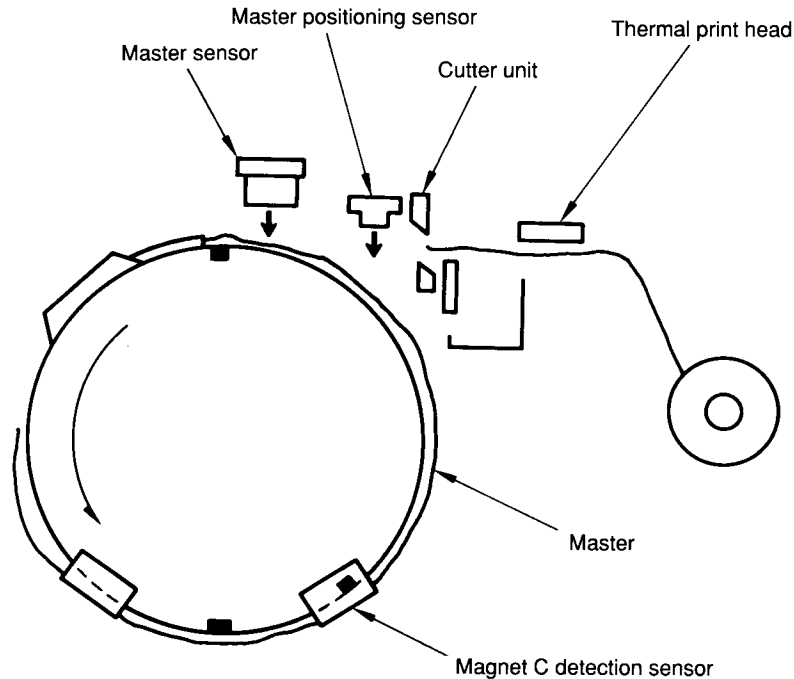
The Master positioning sensor determines if a master cut error has occurred.

If the master loading error and the cutting error are both undetected, the Thermal pressure motor is turned "ON" to lower the Thermal print head until the TPH pressure switch is pressed, at the same time the first print is made.

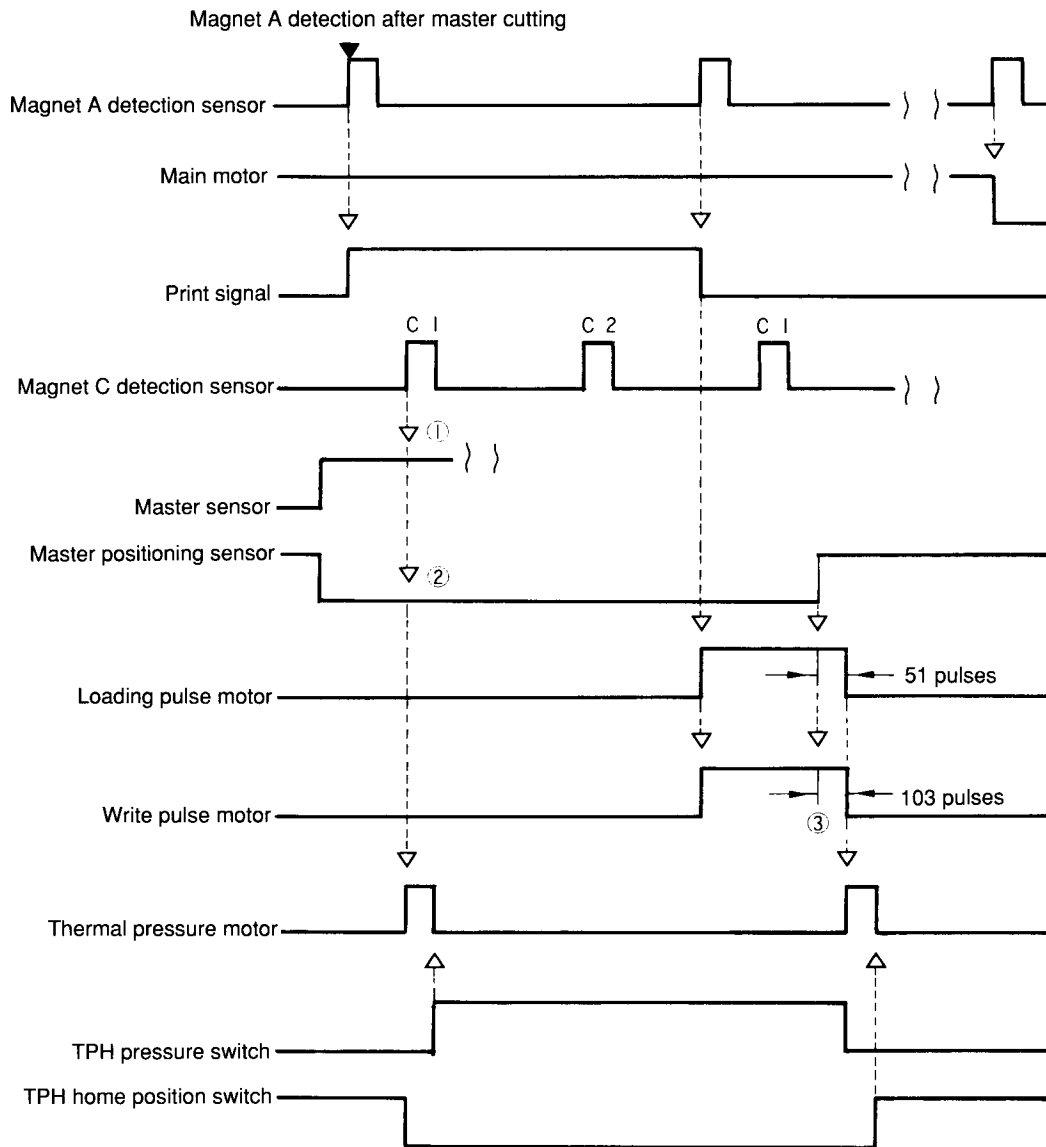
As the drum comes to the Magnet A detection position, the Load and Write pulse motors rotate to advance the master material into position for the next master making operation.

The advance of the master material stops after 103 pulses from the time the Master positioning sensor detects the master material.

At the same time, the Thermal pressure motor is activated and elevates the Thermal print head until the TPH home position switch is pressed.



Master Loading (On the Drum) Check



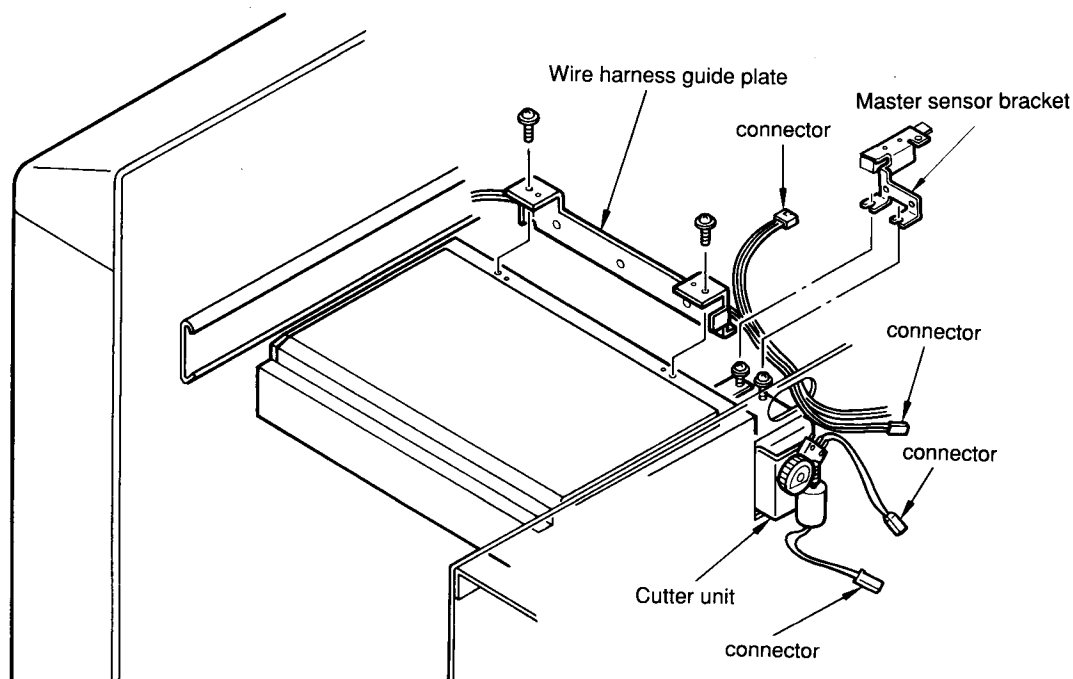
- ① If the Master sensor detects no master on the Drum at the Magnet C-1 detection position, following three messages will appear on the display panel in the given order.
“MASTER CLAMP ERROR/REMOVE CUT MASTER STRIP” → “MASTER CLAMP ERROR/RESET MASTER” → “TO RETURN TO START/PRESS START BUTTON”.
- ② If the Master positioning sensor detects the master material at the Magnet C-1 detection position, it is judged that a **master cut error** has occurred.
 The Main motor stops and the Cutter motor is reactivated.
 The Main motor turns again and brings the Drum to Magnet C-2 detection position and the Master Positioning sensor looks for the master material. If the master material is not detected, the message **“PULL OUT DRUM AND CHECK MASTER ON IT”** will be displayed.
 If the master material is still detected by the Master positioning sensor, the message **“T13: CALL SERVICE”** is displayed on the panel.
- ③ If the Master positioning sensor does not detect the master material within 460 pulses after the Write pulse motor is turned on, the message **“MASTER MIS-FEED/RESET MASTER”** is displayed on the panel.

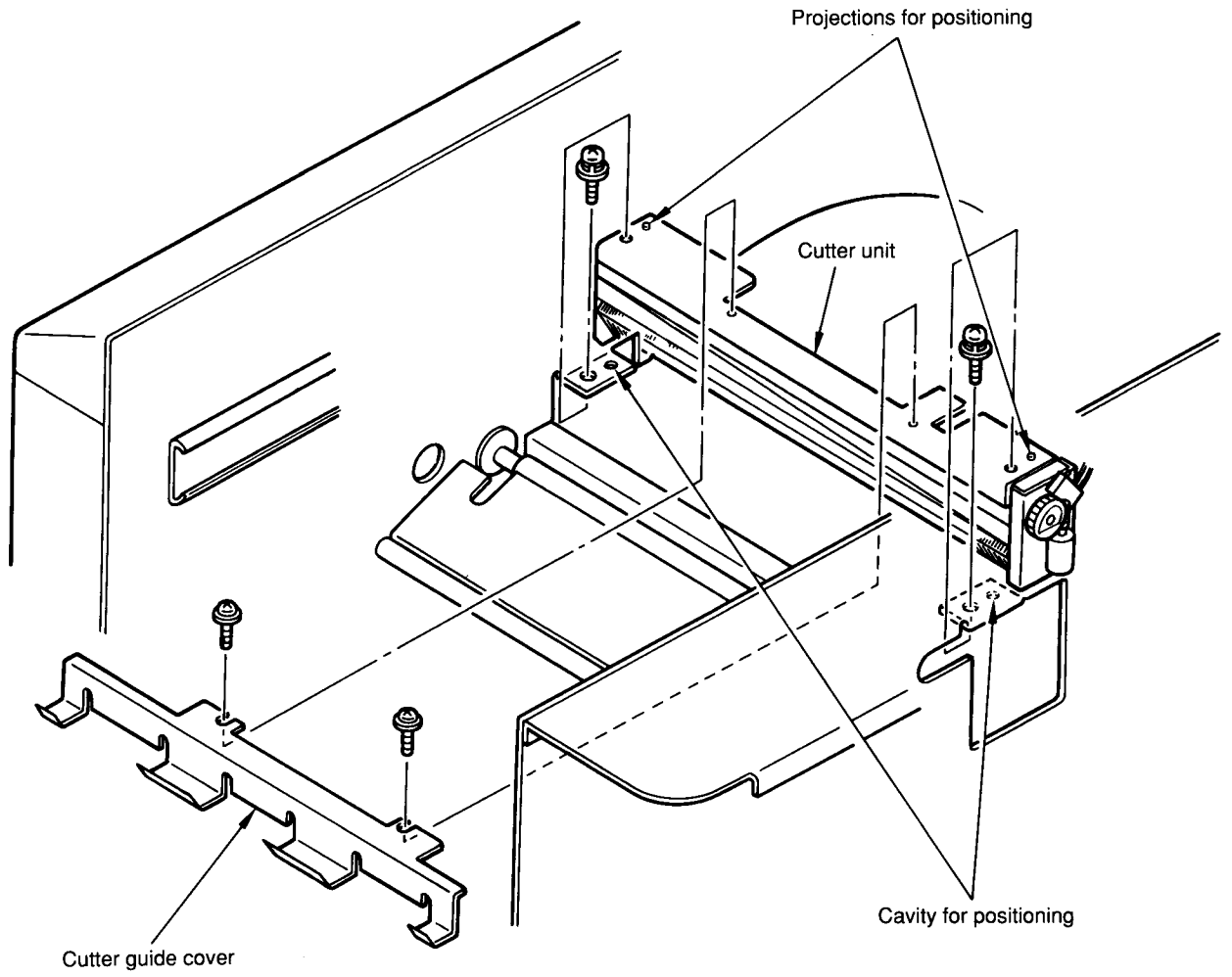
[Removal Procedures & Precautions for Installation]**1. Cutter Unit****- Removal Procedures -**

- 1) Remove the Drum from the machine.
- 2) Turn off the machine power.
- 3) Slide the Image scanner section to the paper receiving side and free the Master removal guide sheet by removing the Master removal guide plate (refer to the page on the **Removal & Installation of the Master Removal Unit**).
- 4) Remove the Back cover.
- 5) Disconnect the Connectors of the Cutter motor, Cutter position switch and Master positioning sensor. Remove the wire harness guard (black) to free the Master positioning sensor wire.
- 6) Slide the Image scanner section to the paper feed side, loosen the two mounting screws (short) of the Master sensor bracket and slide out the bracket.
- 7) Remove the two screws (long) holding the Wire harness guide plate and lift the plate.
- 8) Remove the two screws (short) holding the Cutter guide cover and remove the cover, and at the same time remove the Master removal guide sheet from the machine.
- 9) Remove the two Cutter unit mounting screws holding the unit and extract the Cutter unit from the opening on the Drum side of the machine, pushing the unit out through the transparent Aero guide sheet.

Cautions in Installation:

- ★ Take extra precautions not to pinch the Aero guide sheet.
- ★ Match the cavity on the machine and the projection on the Cutter unit to obtain the correct positioning.
- ★ Make sure to use the correct size screws. If the screws are too long, the screws will hit the Cutter blade and lock Cutter movement.
- ★ Be sure to use Test Mode No. 84 to check the Cutter unit operation after completion of the Cutter unit installation.



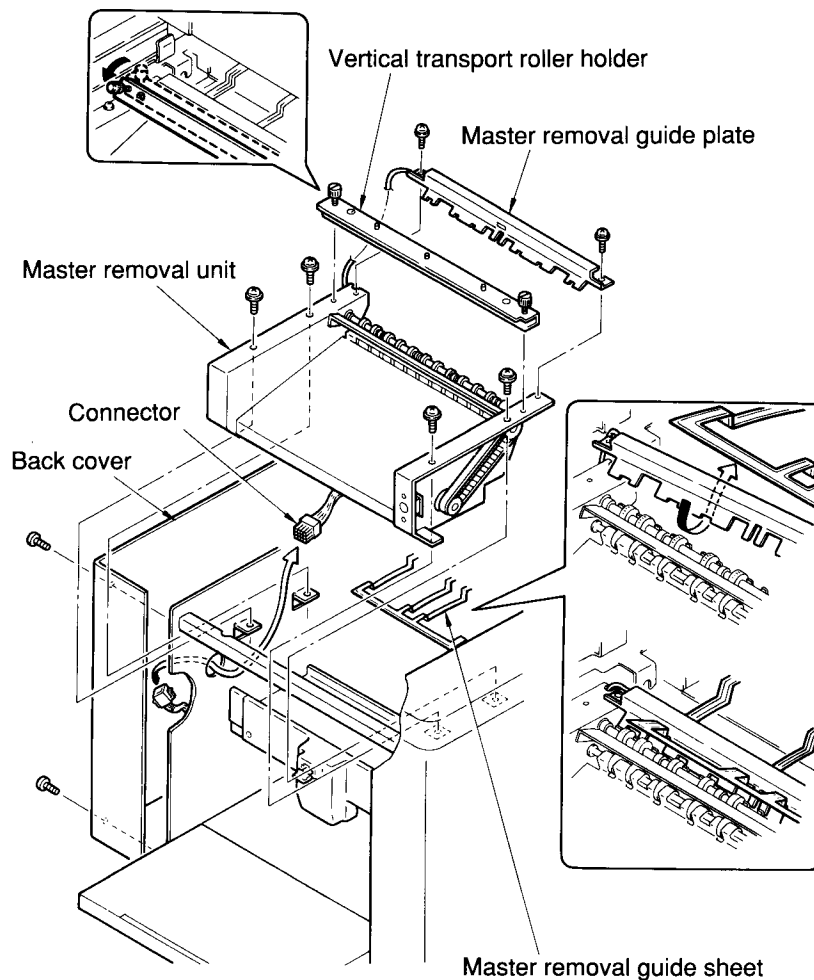


[Removal Procedures & Precautions for Installation]**1. Master Removal Unit****- Removal Procedures -**

- 1) Turn off the machine power.
- 2) Remove the Back cover from the machine.
- 3) Disconnect the 15 pin connector of the Master removal wire harness.
- 4) Remove the Master disposal box from the Master removal unit.
- 5) Slide the Image Scanning section towards the paper receiving side and loosen the two straight knurl screws fixing the Vertical transport roller holder to the Master removal unit. Then place the roller holder aside.
- 6) Remove the two screws fixing the Master removal guide plate onto the Master removal side frames. Lift the guide plate and slide out and free the Master removal guide sheet.
- 7) Remove the four mounting screws on the Master removal unit. Slide the unit towards the paper feed side and remove it from the machine.

Cautions:

- ★ Take extra precautions not to rip or deform the Master removal guide sheet.



[Adjustment Procedures]

1. Projected Position of Master Removal Hooks

- Procedure -

- 1) Remove the Master removal unit from the machine.
- 2) Check that the plunger can move smoothly inside the Master removal solenoid.
If not, adjust the position of the Master removal solenoid.
- 3) Loosen the allen screw fixing the Linking plate on the Master removal hook shaft.
- 4) Pressing the plunger of the Master removal solenoid (but not the Linking plate) with your finger, push out the Master removal hooks manually to obtain the gap of **17 mm to 18 mm** between the tips of the Master removal hooks and the Upper vertical transport roller shaft (not the metal collar, but the shaft).
- 5) In the above condition, tighten the allen screw on the Linking plate, taking care not to release the plunger and hooks.

- Check -

After installing the Master removal unit into the machine, flip the Clamp plate 180 degrees to the other side.

Select Test mode **No. 51** to project the Master removal hooks.

Then check by manually rotating the Drum that the tip of the projected Master removal hook is **2 to 3 mm** off the Clamp plate on the Drum.

- Results of Misadjustment -

- 1) If the Master removal hooks are not projected enough (the gap is adjusted to be **much less than 17 mm**); ➡
the used master cannot be removed from the Drum into the Master disposal box, causing a master removal error.
- 2) If the Master removal hooks are projected too much (the gap is adjusted to be **much more than 18 mm**); ➡
the tip of the hooks will contact the Clamp plate, causing the hooks and/or Clamp plate to be deformed, or the Clamp plate may be caught between the Vertical transport rollers, causing the Drum to be stuck in rotation, which will result in the trouble message **"T1: CALL SERVICE"** indication on the panel.

