## Gestetner



## C211/C212/C216/C224 SERVICE MANUAL

# Gestetner RICOH 53VII 



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## C211/C212/C216/C224 SERVICE MANUAL

## WARNING

The Service Manual contains information regarding service techniques, procedures, processes and spare parts of office equipment distributed by Ricoh Corporation. Users of this manual should be either service trained or certified by successfully completing a Ricoh Technical Training Program.

Untrained and uncertified users utilizing information contained in this service manual to repair or modify Ricoh equipment risk personal injury, damage to property or loss of warranty protection.

Ricoh Corporation

## LEGEND

| PRODUCT CODE | COMPANY |  |  |
| :---: | :---: | :---: | :---: |
|  | GESTETNER | RICOH | SAVIN |
| C211 | 5315 | VT2130 | - |
| C212 | 5330 | VT2300 | - |
| C216 | 5325 | VT2105 | - |
| C224 | 5327 | VT2200 | $3200 D N P$ |

## DOCUMENTATION HISTORY

| REV. NO. | DATE | COMMENTS |
| :---: | :---: | :--- |
| ${ }^{*}$ | $4 / 95$ | Reprint |
| 1 | $10 / 95$ | C224 Addition |
| 2 | $8 / 96$ | Reprint |
|  |  |  |
|  |  |  |

# RICOH PRIPORT Model VT2130 SERVICE MANUAL 

(This is an addendum to the SS950/830 Service Manual. Only those sections which are unique to the VT2000 Series have been included.)

NOTE: References are made throughout this manual to other models in the VT2000 series. These are not currently available in this country.

## OVERALL MACHINE INFORMATION

## 1. SPECIFICATIONS

Configuration: Desk top
Master processing: Digital
Printing process: Full automatic one drum stencil system
Original type: Sheet
Original size: Maximum $307 \mathrm{~mm} \times 432 \mathrm{~mm}$ (12.0" x 17.0")
Reproduction ratios: LT version: 100 \%, 93 \%, 75 \%, 64 \%
Image mode: Line/Photo
Color printing: Drum unit replacement system
Master feed/eject: Roll master automatic feed/eject
Master processing area: Maximum $216 \mathrm{~mm} \times 354 \mathrm{~mm}$
(8.5" x 13.9")
Printing area: Maximum $210 \mathrm{~mm} \times 350 \mathrm{~mm}$
( $8.3^{\prime \prime} \times 13.7^{\prime \prime}$ ) at $20^{\circ} \mathrm{C} / 65 \%$ ..... RH
Leading edge margin: 10 mm
Print paper size: Minimum $90 \mathrm{~mm} \times 148 \mathrm{~mm}$ (3.6" x 5.8")Maximum $297 \mathrm{~mm} \times 442 \mathrm{~mm}$ (11.6" $\times 17.4^{\prime \prime}$ )
Print paper weight: 14 lb to 56 lb
Print speed: $60,75,90,105,120$ sheets/minute (5 steps)
First print time: 35 seconds (LG size)
Paper feed table capacity 1000 sheets, 17.6 lb
Paper delivery table 500 sheets, 17.6 lbcapacity:
Power source:
120V, 60 Hz ..... 5.5 A
$110 \mathrm{~V}, 60 \mathrm{~Hz}$ ..... 6.0 AWeight: 110/120 V version: 220.4 lbOptional table: 57.3 lb
Dimensions: When stored: $29.0^{\prime \prime} \times 23.9^{\prime \prime} \times 22.4^{\prime \prime}$
(W x D x H ) When set up: 50.4" $\times 23.9^{\prime \prime} \times 25.9^{\prime \prime}$Table only: $25.2^{\prime \prime} \times 22.4 \times 17.9^{\prime \prime}$
Original guide $38.6^{\prime \prime}$ to $12.44^{\prime \prime}$
width-settings:
Original scanning time: $3 \mathrm{~ms} / 1$ line
Original thickness: 0.06 mm to 0.5 mm
Original feed speed: 20.8 mm/second
Pixel density: 16 dots/mm
Master eject box capacity:
Paper feeding: Friction roller/center separation system
Feed table side plate ..... $3.46^{\prime \prime}$ to $12.48^{\prime \prime}$
width settings:
Paper feed rollerNormal position250 g
pressure:
pressure: Thick paper position ..... 550 gSeparation rollerpressure:
Side registration: $\pm 10 \mathrm{~mm}$ (manual)
Normal position ..... 180 g
Weak position ..... 70 g
Vertical registration: $\pm 20 \mathrm{~mm}$ (mechanical)
Paper table raising / $26 \mathrm{~mm} /$ second $(60 \mathrm{~Hz})$
lowering speed:
Ink supply: Automatic ink supply system
Pressure roller pressure: $10 \pm 0.3 \mathrm{~kg}$
Paper delivery:Air knife/vacuum delivery
Delivery side plate ..... $3.15^{\prime \prime}$ to $12.6^{\prime \prime}$
width settings:
Print counter: 7 digits
Master counter: ..... 6 digits
Supplies:
Priport Master VT-S:
Thermal master 240 mm width
Max run length ..... 2000 prints
Master roll 250 masters/ 1 roll
Master length 480 mm/1 master
Ink: 500 cc ink packColors:Black, Red, Blue, Green, Brown

## 2. GUIDE TO COMPONENTS AND THEIR FUNCTION

## (Paper Feed Side)



## Function

1. ADF Unit
(VT2300/2500)
2. ADF Unit Open

Button
(VT2300/2500)
4. Original Table
5. Original Table Release Lever
6. Feed Roller Pressure Lever
7. Separation Roller Pressure Lever
8. Paper Feed Side Plate
9. Paper Feed Table
10. Side Plate Fine

Adjusting Dial
11. Front Door
12. Paper Delivery Table
13. Operation Panel
14. ADF On/Off Select Switch (VT2300/2500)
15. Original Tray automatically.
Use to open the ADF unit. correctly. master installation. prevent double feed.
Use to prevent paper skew.
Set the paper on this table. switch to the Off position.

Feeds the original to the printing position

Adjust these guides to position the originals
Place the originals on this table.
Use to open the original table unit to the left for
Use to adjust the contact pressure of the paper feed roller according to paper thickness.
Use to adjust the separation roller pressure to

Use to shift the paper feed table sideways.
Open for access to the inside of the machine.
Completed prints are delivered here.
Operator controls and indicators are located here. When setting originals one sheet at a time, set this

Originals used to make a master are delivered to this tray.
(Paper Delivery Side)


No. Name
16. Master Cut Button
17. Pressure Release Lever
18. Drum Rotating Button
19. Drum Unit
20. Ink Holder
21. Main Switch
22. Small Size Paper

Delivery End Plate
(for smaller than LT)
23. Paper Delivery End Use to align the leading edge of prints larger than Plate (for larger than LT)

## 24. Paper Delivery Use to align the prints on the paper delivery table.

 Side Plate25. Master Eject Open when removing the master eject container. Container Cover
26. Memory/Class switch Use to select memory or class mode. (VT2300/2500)
27. Skip Paper Feed Use to adjust paper feed interval or a misted Switch (VT2300/2500) master.
Printing Density Use to select the printing density according to the Select Switch (VT2100/2130/2150)
28. Master Eject Unit Press to remove misfed paper or a misfed master.
Open Button

## 3. OPERATION PANEL

VT2300/VT2500


1. Reset Key
2. Make-up Key
3. Number Keys
4. Stop Key
5. Clear Modes Key
6. Master Making Key
7. Print Start Key
8. Proof Key
9. Clear Key

Press to reset error indicators.
Press to use the make-up function (VT2500 only).
Press to enter the number of prints.
Press to stop the machine operation. The machine will continue operation when the Print Start key or Master Making key is pressed.
Press to cancel all previously entered settings and modes.
Press to make a master.

Press to start printing.
Press to make trial prints or extra prints.
Press to change the number set in the counter. Also use to change the make-up mode (VT2500 only). This key can be used only after the machine stops operation.
Use to select group printing in Memory mode or Class mode.
11. Lower Paper Feed Press to lower the paper feed table.

Table Key
12. Image Position

Keys

Press to shift the image forwards or backwards on the print paper.



1. Reset Key
2. Indicators
3. Auto Cycle Key
4. Reduction Key
5. Image Position Keys
6. Number Keys
7. Counter
8. Memory Display
9. Print Start Key
10. Master Making Key
11. Proof Key
12. Stop Key

Press to reset error indicators. Light or blink when a non-standard condition occurs within the machine.
Use to automatically process masters and make prints.
Press to reduce the image.
Press to shift the image forwards or backwards on the print paper.
Press to enter the number of prints.
Displays the number of prints entered. While printing, it shows the number of uncompleted prints.
Displays the number of the memory location that will be used to store the number of copies. The print number for up to 10 jobs can be stored at once.
Press to start printing.
Press to make a master.
Press to make trial prints or extra prints.
Press to stop the machine operation. The machine will continue operation when the Print Start key or Master Making key is pressed.

13. Memory Key
14. Clear Key
15. Speed Keys
16. Image Mode Key
17. Combine 2 Originals Key
18. Lower Paper Feed Table Key

Use to select memory location number. Press to change the number set in the counter. This key can be used only after the machine stops operation.
Press to adjust the rotation speed of the machine according to the type of image and printing paper. Press to select line mode or photo mode according to the type and quality of the original.
Press to combine two originals onto one print image.
Press to lower the paper feed table.

## 4. PRINTING PROCESS



1. Master Ejecting:
2. Scanning:
3. Master Feeding:
4. Paper Feeding:
5. Printing:
6. Paper Delivering:

Eject the used master wrapped around the drum into the master eject box.
Scan the original image by CCD through the mirror and the lens while feeding the original.
Convert the image signal read by CCD into the digital signal and send it to the thermal head to make holes on the surface of the master and then, set the master around the drum.
Send paper to the drum section by using center separation system consisting of the separation plate and separation roller.
Press the paper fed from the paper feed section to the drum to transfer the ink through drum screen and the master.
Peel the printed paper with the Exit Pawl and Air knife and eject the paper onto the paper delivery table.

## 5. ELECTRICAL COMPONENT LAYOUT



1. Original Registration Sensor
2. 2nd Original Sensor
3. Original Pressure Solenoid (VT2300/VT2500)
4. Original Transport Motor
5. Fluorescent Lamp Stabilizer
6. Right Cutter Switch
7. Power Supply PCB
8. Thermal Head Drive Control PCB
9.Thermal Head
9. Master End Sensor
10. Master Feed Motor
11. Paper Size Detection Sensor 3 (VT2300NT2500)
12. Paper Size Detection Sensor 2 (VT2300/VT2500)
13. Paper Size Detection Sensor 1 (VT2300/VT2500)
14. Paper Size Detection Board (VT2300/VT2500)
15. Cutter Motor
16. Left Cutter Switch
17. Master Buckle Sensor
18. Master Eject Motor
19. Master Eject Solenoid
20. Master Box Switch
21. Master Eject Sensor
22. ADF Drive Motor
(VT2300/VT2500)
23. 1st Original Sensor (VT2300/VT2500)
24. Fluorescent Lamp

25. Master Eject Clamper Solenoid
26. Ink Detection PCB
27. Master Feed Clamper Solenoid
28. Master Eject Unit Safety Switch
29. Image Shift Motor
30. Reverse Roller Solenoid
31. Encoder
32. 1st Drum Position Sensor
33. 2nd Drum Position Sensor
34. Paper Feed Solenoid
35. Paper Table Drive Motor
36. Drum Rotation Sensor
37. Main Motor
38. Printing Pressure Solenoid
39. AC Drive PCB
40. 1st Paper Exit Sensor
41. 2nd Paper Exit Sensor

42. CCD PCB
43. A/D Conversion PCB
44. Master Cutter Switch
45. Scanner Safety Switch
46. Drum Master Detection Sensor (VT2300/VT2500)
47. Operation Panel
48. Drum Rotation Switch
49. Front Door Safety Switch
50. Drum Safety Switch
51. Ink Supply Solenoid
52. Main Control Board
53. Paper Table Height Sensor
54. Image Processing PCB
55. Drum Lock Solenoid
56. Paper End Sensor
57. Paper Table Safety Switch
58. Paper Table Lower Limit Sensor
59. Printing Pressure Sensor
60. Copy Counter
61. Master Counter
62. Interlock Switch
63. Circuit Breaker
64. Main Switch
65. Air Knife Motor
66. Vacuum Motor
67. Full Master Detecting Switch
68. Pressure Plate Position Switch
69. Memory/Class Switch (VT2300NT2500)
70. Skip Paper Feed Switch (VT2300NT2500) Printing Density Switch (VT2100 NT2130/VT2150)
71. A.D.F. Safety Switch (VT2300/NT2500)

## 6. ELECTRICAL COMPONENT DESCRIPTIONS

| $\begin{gathered} \hline \text { INDEX } \\ \text { No. } \end{gathered}$ | NAME | FUNCTION | P to P <br> LOCATION |
| :---: | :---: | :---: | :---: |
| Motors |  |  |  |
| 4 | Original Transport Motor | Transports the original to the scanner section. | A-4 |
| 11 | Master Feed Motor | Feeds the master to the drum. | E-3 |
| 16 | Cutter Motor | Cut the master. | F-6 |
| 19 | Master Eject Motor | Sends used master into the master eject box. | F-7 |
| 23 | ADF Drive Motor | Feeds the original to the scanner section. | $\begin{gathered} \text { A-4 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{gathered}$ |
| 30 | Image shift Motor | Changes the timing between the paper feed roller and the drum to adjust vertical image position. | F-8 |
| 36 | Paper Table Drive Motor | Raises and lowers the paper table. | F-5 |
| 38 | Main Motor | Drives paper feed, drum, printing and paper delivery unit components. | F-4 |
| 66 | Air Knife Motor | Rotates the fan to separate the paper leading edge from the drum. | F-7 |
| 67 | Vacuum Motor | Provides suction so paper is held firmly on the transport belt. | F-5 |
| Solenoids |  |  |  |
| 3 | Original Pressure Solenoid | Presses the original pressure plate down on the originals. | $\begin{array}{\|c\|} \hline \text { A-4 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{array}$ |
| 20 | Master Eject Solenoid | Moves the master eject roller to contact the drum surface. | F-6 |
| 26 | Master Eject Clamper Solenoid | Opens the master clamp to eject the master | F-8 |
| 28 | Master Feed Clamper Solenoid | Opens the master clamp to clamp the master. | F-8 |
| 31 | Reverse Roller Solenoid | Releases the clutch to rotate the reverse roller. | F-6 |
| 35 | Paper Feed Solenoid | Releases the paper feed sector gear to rotate the paper feed roller. | F-8 |
| 39 | Printing Pressure Solenoid | Moves the press roller against the drum. | F-8 |
| 52 | Ink Supply Solenoid | Releases the spring clutch to activate the ink supply pump. | F-7 |
| 56 | Drum Lock Solenoid | Prevents removal of the drum unit unless the drum is at the original stop position <br> (This solenoid can be used on the VT2300 NT2500). | F-7 |


| $\begin{array}{\|c\|} \hline \text { INDEX } \\ \text { No. } \\ \hline \end{array}$ | NAME | FUNCTION | P to P LOCATION |
| :---: | :---: | :---: | :---: |
| Switches |  |  |  |
| 6 | Right Cutter Switch | Detects when the cutter position is far right. | F-6 |
| 17 | Left Cutter Switch | Detects when the cutter position is far left. | F-6 |
| 21 | Master Box Switch | Checks whether the master eject box is installed correctly or not. | $\mathrm{F}-7$ <br> (VT2300/2500) <br> $\mathrm{F}-6$ <br> (VT2100/2130 <br> l2150) |
| 29 | Master Eject Unit Safety Switch | Checks whether the Master Eject Unit is closed correctly or not. | F-4 |
| 45 | Master Cut Switch | Informs the CPU to cut the master paper leading edge. | F-8 <br> (VT2300/2500) <br> F-7 <br> (VT2100/2130 <br> /2150) |
| 46 | Scanner Safety Switch | Checks whether the scanner unit is closed correctly or not. | F-4 |
| 49 | Drum Rotation Switch | Informs the CPU to rotate the main motor at 10 rpm . | A-6 |
| 50 | Front Door Safety Switch | Checks whether the Front Door is set correctly or not. | F-4 |
| 51 | Drum Safety Switch | Checks whether the drum unit is set correctly or not. | B-6 |
| 58 | Paper Table Safety Switch | Checks whether the paper table is opened correctly or not. | F-4 |
| 63 | Interlock Switch | Releases the cover safety functions. | F-4 |
| 65 | Main Switch | Turns the power on or off. | B-1 |
| 68 | Full Master Detecting Switch | Informs the CPU when the master eject box is full of masters. | $\mathrm{F}-7$ (VT2300/2500) $\mathrm{F}-6$ (VT2100/2130 I2150) |
| 69 | Pressure Plate Position Switch | Informs the CPU when the pressure plate has reached the home position. | F-7 VT2300/2500) F-6 (T2100/2130 I2150) |
| 70 | Memory/Class Switch | Selects Memory or Class mode. | $\begin{gathered} \text { C-4 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{gathered}$ |


| $\begin{array}{\|c\|} \hline \text { INDEX } \\ \text { No. } \end{array}$ | NAME | FUNCTION | P to P LOCATION |
| :---: | :---: | :---: | :---: |
| 71 | Skip Paper Feed Switch (VT2300/NT2500) Printing Density Switch (VT2100 series) | Adjusts paper feed interval to allow time for user to remove prints. Use to select the printing density according to the type and quality of the original. | $\begin{array}{\|c\|} \hline \mathrm{C}-4 \\ (\mathrm{VT} 2300 / 2500) \\ \mathrm{C}-3 \\ (\mathrm{~V} T 2100 / 2130 \\ / 2150) \\ \hline \end{array}$ |
| 72 | ADF Safety Switch | Check whether the ADF unit is set correctly or not. | $\begin{gathered} \text { B-4 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{gathered}$ |
| Sensors |  |  |  |
| 1 | Original Registration Sensor | Informs the CPU when the original leading edge reaches the exposure glass. | A-3 |
| 2 | 2nd Original Sensor | Detects when the original is set. | A-3 |
| 10 | Master End Sensor | Informs the CPU when the plotter unit runs out of master roll. | F-6 |
| 12 | Paper Size Detection Sensor 3 | Detects the size of the paper set on the paper table. | $\begin{array}{\|c\|} \hline \text { E-5 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{array}$ |
| 13 | Paper Size Detection Sensor 2 | Detects the size of the paper set on the paper table. | $\begin{gathered} \text { E-5 } \\ \text { (VT2300/2500 } \\ \text { only) } \end{gathered}$ |
| 14 | Paper Size Detection Sensor 1 | Detects the size of the paper set on the paper table. | E-5 (VT2300/2500 only) |
| 18 | Master Buckle Sensor | Detects the master buckle existence. | F-6 |
| 22 | Master Eject Sensor | Detects when the used master is sent into the master eject box. | F-7 (VT2300/2500) F-6 (VT2100/2130 I2150) |
| 24 | 1st Original Sensor | Detects when the original is set in the ADF mode. | $\begin{array}{\|c\|} \hline \text { A-4 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{array}$ |
| 33 | 1st Drum Position Sensor | Checks the position of the drum. | F-8 |
| 34 | 2nd Drum Position Sensor | Checks the position of the drum. | F-8 |
| 37 | Drum Rotation Sensor | Supplies timing pulses to the main board. | F-8 |
| 41 | 1st Paper Exit Sensor | Misfeed detector. | A-5 |
| 42 | 2nd Paper Exit Sensor | Misfeed detector. | A. 5 |
| 47 | Drum Master Detection Sensor | Checks whether the master is on the drum. | $\begin{gathered} \text { F-6 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{gathered}$ |
| 54 | Paper Table Height Sensor | Detects when the paper table reaches the paper feed position. | A-6 |


| $\begin{array}{\|c\|} \hline \text { INDEX } \\ \text { No. } \\ \hline \end{array}$ | NAME | FUNCTION | $\begin{gathered} \text { P to P } \\ \text { LOCATION } \end{gathered}$ |
| :---: | :---: | :---: | :---: |
| 57 | Paper End Sensor | Informs the CPU when the paper table runs out of paper. | $\begin{array}{\|c\|} \hline F-5 \\ \text { (VT2300/2500) } \\ \mathrm{B}-6 \\ (\mathrm{VT} 2100 / 2130 \\ / 2150) \\ \hline \end{array}$ |
| 59 | Paper Table Lower Limit Sensor | Detects when the paper table reaches the lowest position. | A-6 |
| 60 | Printing Pressure Sensor | Informs the CPU when the printing pressure is applied. | A-6 |
| Printed Circuit Board |  |  |  |
| 7 | Power Supply PCB | Rectifies 100V AC input and supplies DC voltage. | D-1 |
| 8 | Thermal Head Drive Control PCB | Supplies the power to the Thermal Head according to the signal from the scanner section. | E-2 |
| 27 | Ink Detection PCB | Control the ink supply. | F-7 |
| 40 | $A C$ Drive PCB | Controls the AC component by relays. | E-5 |
| 43 | CCD PCB | Converts the light intensity into the electrical signal. | A-2 |
| 44 | A/D Conversion PCB | Converts the analog signal into the digital signal. | B-3 |
| 48 | Operation Panel | Controls the LED performance and monitors the key operation. | A-8 |
| 53 | Main Control PCB | Controls all machine functions both directly and through other boards. | C-6 |
| 55 | Image Processing PCB | Controls the master processing performance. | C-3 |
| Printed Circuit Board |  |  |  |
| 15 | Paper Size Detection Board | Detects the size of the paper set on the table. | $\begin{gathered} \text { E-5 } \\ \text { (VT2300/2500 } \\ \text { only) } \\ \hline \end{gathered}$ |
| Counters |  |  |  |
| 61 | Copy Counter | Keeps track of the total number of copies made. | A-7 |
| 62 | Master Counter | Keeps track of the total number of masters made. | A-7 |
| Others |  |  |  |
| 5 | Fluorescent Lamp Stabilizer | Stabilizes the power supplement to the Fluorescent Lamp. | B-3 |
| 9 | Thermal Head | Plots the master with heat. | F-2 |
| 25 | Fluorescent Lamp | Applies light to the original for exposure. | A-3 |
| 32 | Encoder | Converts 16 image positions to 4 bit data. | F-7 |
| 64 | Circuit Breaker | Cuts the ac line off. | B-1 |

## 7. MECHANICAL COMPONENT LAYOUT



1. Thermal Head
2. Platen Roller
3. Master Feed Roller
4. CCD
5. Lens
6. Reverse Roller
7. Ink Roller
8. Drum Unit
9. 1st Eject Roller
10. 2nd Eject Roller
11. Original Pressure Plate (2300/2500)
12. Pull-out Roller (2300/2500)
13. Separation Blade (2300/2500)
14. Original Feed Roller (2300/2500)
15. 1st Original Transport Roller
16. Exposure Grass
17. 2nd Original Transport Roller
18. Fluorescent Lamp
19. Original Exit Tray
20. Feed Sub Mirror
21. Mirror
22. Master Eject Box
23. Exit Pawl
24. Air Knife
25. Delivery Table
26. Delivery Guide Plate
27. Vacuum Unit
28. Press Roller
29. Doctor Roller
30. 2nd Feed Roller
31. Lower Separation Roller
32. Separation Plate
33. Paper Feed Side Plate
34. Paper Feed Table
35. Paper Feed Roller
36. Upper Separation Roller
37. Ink Holder
38. Master Spool

## DETAILED SECTION DESCRIPTION

## 1. ORIGINAL FEED SECTION

### 1.1 ORIGINAL FEED DRIVE MECHANISM: VT2130



When the actuator $[\mathrm{A}]$ is pressed down by the original, the 2nd original sensor $[B]$ is activated and the original transport motor [C] starts rotating. The rotation of the original transport motor is transmitted to belts [D] and [E] to turn the lower first original transport roller and lower second original transport roller. At the same time, both the upper original transport rollers [F] contact the first and second lower original transport rollers due to pressure from the springs [G]. The rollers rotate and the original is fed.

When the actuator $[\mathrm{H}]$ is pressed down by the original, the original registration sensor [l] is activated and the original transport motor stops.

When the Master Making key is pressed, the original transport motor rotates to read the original after the master eject process is finished.

The distance between the sensors is 50 millimeters. If the original registration sensor is not activated within five seconds, "A" and of indications blink.

### 1.2 ELECTRICAL TIMING: VT2100/VT2130/VT2150



T1: When the 2nd original sensor detects the original, the original transport motor starts rotating.

T2: One original is fed and when the original registration sensor detects the original, the original transport motor stops the original position is then as shown above.

T3: After the master eject process is finished and the second drum position sensor is activated, the drum rotates 120 degrees more and then the original transport motor turns on.
T4: After the original is fed 14 millimeters, master feeding and master making start.

T5: The master feed motor stays on until it feeds the master 437 mm . The original transport motor stops when the master feeding stops. At that time the fluorescent lamp also turns off.


### 1.4 OUTPUTS:

| Signal Name | 1/0 | A/D Conversion Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Fluorescent Lamp | 0 | CN601-15 | $0 \mathrm{~V} \sqrt{3 V}$ | When the fluorescent lamp turns on, the voltage of the CN601-15 is 3 V . |
| Reading Command | 1 | $\begin{gathered} \text { CN601-25 } \\ \text { (CN601-27) } \end{gathered}$ | 3 V OV | When the CCD reads the original the voltage of CN601-25 (CN601-27) is 0 V . |
| ADF Drive Motor (VT2300/NT2500) | 1 | (CN607-6) | 24V OV | When the ADF drive motor starts rotating, the voltage of CN607-6 is 0 V . |
| Original <br> Pressure SOL <br> (VT2300/VT2500) | 0 | (CN607-2) | 24 V OV | When the original pressure solenoid is energized, the voltage of CN607-2 is 0 V . |
| Original Registration Sensor | 0 | CN603-4 |  | When the original registration sensor is activated, the voltage of $\mathrm{CN} 603-4$ is 0 V . |
| 2nd Original Sensor | 1 | CN603-3 |  | When the 2nd original sensor is activated, the voltage of CN603-3 is OV . |
| 1st Original Sensor (VT2300)NT2500) | 1 | (CN607-5) | $0 \mathrm{~V} \sqrt{5 V}$ | When the 1 st original sensor is activated the voltage of CN607-5 is 5 V . |

### 1.5 CCD (Charge Coupled Device)



CCD (16 dots/mm)

\$1E, \$2E Clock (Phase 1)
ф10, $\$ 20$ Clock (Phase 2)
01B : Final Clock (Phase 1)
02B : Final Clock (Phase 2)
SH : Shift Gate
RS : Reset Gate
OS : Output Transistor source
OD : Output Transistor Drain
SS : Sub-straight (Ground)
IS : Input Source (Test Pin)
IG : Input Gate (Test Pin)

This is a solid-state device similar to a photodiode array, but unlike a photodiode array, a CCD can read one complete scan line at a time. The CCD produces an analog signal which is converted into a digital signal for image processing.

### 1.5.1 Function

The principle circuit of each pixel in the CCD is shown above. The light reflected from the original is absorbed in the photodiode and the capacitor stores the charge corresponding to the light intensity.

The CCD is composed of many such pixel elements in series. The image signal of each pixel element is stored in the shift register as a charge.

When the SH signal is input, the image signal stored in the shift register, is output in serial as the OS signal.

## SH: Shift Gate

The storage electrode charge in the exposure section is transmitted to the shift register by the shift gate pulse.
$\phi 1 E, \phi 2 E$ Clock (Phase 1)
This is the transmission clock for analog shift register 2 (even pixels).
$\phi 10, \phi 20$ Clock (Phase 2)
This is the transmission clock for analog shift register 1 (odd pixels).
The shift gate signal transmits the electrical charge in parallel to either analog shift register 1 or 2 (odd or even pixels). At the same time, the photo signal storage of the next scan line starts in the exposure section.

The transmission clocks serially shift the electric charge transmitted to the shift register, which outputs it from the OS (output signal) terminal.

### 1.5.2 Printing Density Change

VT2100/VT2130/VT2150 Circuit in Line mode:


The printing density can be changed by the printing density switch when in the line mode. This switch changes the threshold level to $47 \%, 67 \%$, or $73 \%$ of the white level.
The selected threshold level enters port VL while the shading distortion corrected image signal enters port $\mathrm{VH}_{\mathrm{H}}$ of the A/D converter.
In manual printing density mode (Dark, Darker, and Lighter), the A/D converter outputs either all "H" BAD signals (4 bit) or all "L" BAD signals (4 bit). This is determined by the LUF signal
When the image signal is lower than the threshold level, the LUF signal is output from the A/D converter to make all BAD signals " H ". Then the image signal is output as a black.
When the image signal is higher than threshold level, LUF signal is not output. Then the BAD signals are all "L".

VT2300/VT2500 Circuit in Line Mode:


The printing density (i.e. image density) can be changed with the Printing Density key on the operation panel.

Line Mode Selector changes the threshold level of VH (White level reference) and VL (Black level reference) according to the density signals from CN 601-24 and CN 601-25.

The A/D converter converts the analog input signal to a 4-bit digital signal using both the white reference level (VH) and the black reference level (VL).

The following table shows the VH and VL levels that vary according to the combination of the density signals in Line mode.

|  | Density | Density |  | A/D Converter |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Printing <br> Density | Signal 0 <br> (CN601- <br> 24) | Signal 1 <br> (CN601- <br> 25) | Line Mode Selector <br> ON Channel. | VH | VL |
| Darker 2 | H | H | OX, OY | $100 \%$ | $40 \%$ |
| Darker 1 | L | H | $1 \mathrm{X}, 1 \mathrm{Y}$ | $100 \%$ | $20 \%$ |
| Standard | H | L | $2 \mathrm{X}, 2 \mathrm{Y}$ | $100 \%$ | $0 \sim 35 \%$ |
| Lighter | L | L | $3 \mathrm{X}, 3 \mathrm{Y}$ | $70 \%$ | $0 \%$ |

## VT2300/VT2500 Circuit in Photo Mode:



The printing density (i.e. image density) can be changed with the Printing Density key on the operation panel. This adjustment can also be done in Photo mode to increase the image quality of photo originals.

Photomode Selector changes the threshold level of VH (White level reference) and VL (Black level reference) according to the density signals from CN 601-24 and CN 601-25.

The A/D converter converts the analog input signal to a 4-bit digital signal using both the white reference level (VH) and the black reference level (VL).

The following table shows the VH and VL levels that vary according to the combination of the density signals in Photo mode.

| Printing Density | Density Signal 0 (CN60124) | Density Signal 1 (CN60125) | Photo Mode Selector ON Channel. | A/D Converter |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | VH | VL |
| Darker 2 | H | H | OX, OY | 95\% | 10\% |
| Darker 1 | L | H | 1X, 1Y | 80\% | 10\% |
| Standard | H | L | $2 \mathrm{X}, 2 \mathrm{Y}$ | 80\% | 4\% |
| Lighter | L | L | 3X, 3Y | 70\% | 4\% |

### 1.6 Enlargement Processing: VT2300/VT2500

In reduction processing, pixels are discarded according to the selected reduction ratio. In enlargement processing, pixels are added.

Enlargement processing requires main scanning enlargement and sub-scanning enlargement.

Main Scanning : Main scanning is performed by systematically adding pixels according to the enlargement ratio.

Sub-Scanning: Sub-scanning is performed by changing the original transportation speed according to the enlargement ratio.

### 1.6.1 Main Scanning Enlargement

When the magnification command is sent from the main control board (CN402$19,20,21$ ), the timing signal generator in the image processing board sends the adding timing control signal. Pixels are added to the 4-bit image data from the $A / D$ converter according to the adding timing control signal.

| Enlarge Mode | Added Pixels | Pixel Ratio |
| :--- | :---: | :---: |
| $115 \%$ (LT/A4 Version) | 2 Pixels | $15 / 13$ Pixels (1.154) |
| $122 \%$ (A4 Version) | 3 Pixels | $17 / 14$ Pixels (1.214) |
| $127 \%$ (LT Version) | 3 Pixels | $14 / 11$ Pixels (1.273) |
| $141 \%$ (LT/A4 Version) | 9 Pixels | $31 / 22$ Pixels (1.409) |

## Examples:

In 115\% enlarge mode, the 7th pixel and the 13th pixel data are doubled to produce 15 pixels. This is repeated each main scan cycle.

in $122 \%$ eniarge mode, the 5 th, 10 th, and 14 th pixels are doubied to produce 17 pixeis. This is repeated each cycle.
: Added Data


In 127\% enlarge mode, the 4th, 8th and 11th pixels are doubled to produce 14 pixels. This is repeated each cycle.

WTM : Added Data


In $141 \%$ enlarge mode, the 3rd, 5th, 8th, 10th, 13th, 15th, 18th, 20th, and 22nd pixels are doubled to produce 31 pixels.
This is repeated each cycle.

## : Added Data



### 1.6.2 Sub-scanning Enlargement

Enlargement in the sub-scanning direction is performed by decreasing the original transportation speed.

When the enlargement signal is sent from the main control board, the frequency of the pulses from the pulse generator decreases. (The pulse length increases.) The drive pulse generator then decreases the frequency of the motor drive pulses to decrease the motor rotation speed.

### 1.7 CIRCUIT: VT2300/VT2500



### 1.8 INPUT/OUTPUT: VT2300/VT2500

| Signal Name | 1/0 | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Master Buckle Sensor | 1 | CN104-31 | $0 V \longdiv { 5 V }$ | When the sensor is activated, CN104-31 becomes 5V. |
| Reverse Roller Solenoid | 0 | CN102-6 | $\overline{24 V}$ | When the solenoid is turned on, CN102-6 becomes OV. |
| Master Feed Clamper Sol. | 0 | CN102-19 | 24 V OV | When the solenoid is turned on, CN102-19 becomes OV. |
| Cutter Motor (+) | 0 | CN102-29 | 22 V | When the cutter unit is returning, CN102-29 becomes OV |
| Cutter Motor <br> (-) | 0 | CN102-27 | 22 V | When the cutter unit is moving to the non operation side, CN102-27 becomes OV. |



The specified direction of the motor rotation is as viewed from $A$.

### 1.9 CIRCUIT: VT2100/VT2130/VT2150



| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Master Buckle Sensor | 1 | CN104-17 | $0 \mathrm{~V} \sqrt{5 V}$ | When the sensor is activated, CN104-17 becomes 5 V . |
| Reverse Roller Solenoid | 0 | CN104-23 | 24 V OV | When the solenoid is turned on, CN104-23 becomes OV. |
| Master Feed Clamper Sol. | 0 | CN102-30 | 24 V OV | When the solenoid is turned on, CN102-30 becomes OV. |
| Cutter Motor ( + ) | 0 | CN104-21 | 22 V | When the cutter unit is returning, CN104-21 becomes OV |
| Cutter Motor $(-)$ | 0 | CN104-22 | 22 V | When the cutter unit is moving to the non operation side, CN104-22 becomes OV. |

Master Eject Motor


### 1.11 CIRCUIT: VT2300/VT2500



### 1.12 INPUT/OUTPUT: VT2300/VT2500

| Signal Name | 1/O | Main Control Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| LED: Master Eject Detection | 0 | 102-26 | 24 V OV | When the main switch is turned on, the voltage at CN102-26 is OV. |
| Master Eject Detection | 1 | 104-37 | 0V $\sqrt{0.2 \mathrm{~V}}$ | When the master is placed under the sensor, the voltage is $0.2 \mathrm{~V}_{\sim} 0.4 \mathrm{~V}$ at $\mathrm{CN} 104-37$ and 4V at TP104 (MDLV). |
| Master Box Detection | 1 | 104-24 |  | When the master box switch turns on, the voltage at CN104-24 is OV. |
| Full Master Detection | 1 | 104-26 |  | When the full master detection switch turns on, the voltage at CN104-26 is OV. |
| Pressure Plate Position | 1 | 104-20 |  | When the pressure plate position switch turns on, the voltage at CN104-20 is OV. |
| Master Eject Solenoid | 0 | 102-17 | 24 V OV | When the master eject solenoid turns on, the voltage at CN 102-17 is OV. |
| Master Eject Clamper Solenoid | 0 | 102-19 | 24 V OV | When the master eject clamper solenoid turns on, the voltage at CN102-19 is OV. |
| +: Master Eject Motor | 0 | 102-25 | OV $\longdiv { 2 2 \mathrm { V } }$ | When the master eject motor turns clockwise, the voltage at CN102-25 is 22 V . |
| -: Master Eject Motor | 0 | 102-23 | OV $\sqrt{22 \mathrm{~V}}$ | When the master eject motor turns counterclockwise, the voltage at CN102-23 is 22 V . |

Master Eject Motor


The motor direction of rotation is as viewed from A.

### 1.13 CIRCUIT: VT2100/VT2130/VT2150



| Signal Name | I/O | Main Control Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Master Eject Detection | 1 | 104-24 |  | When the master eject detection switch turns on, the voltage at CN104-24 is OV |
| Master Box Detection | 1 | 104-26 |  | When the master box switch turns on, the voltage at CN104-26 is 0V |
| Full Master Detection | 1 | 104-27 |  | When the full master detection switch turns on, the voltage at CN104-27 is 0 V |
| Pressure Plate Position | 1 | 104-25 | ${ }^{25 v} \text { 几 }$ | When the pressure plate position switch turns on, the voltage at CN104-25 is 0 V |
| Master Eject Solenoid | 0 | 104-28 | 24 V OV | When the master eject solenoid turns on, the voltage at CN104-28 is 0 V |
| Master Eject clamper Solenoid | 0 | 102-29 | 24 V OV | When the master eject clamper solenoid turns on, the voltage at CN102-29 is 0 V |
| +: Master Eject Motor | 0 | 104-29 | 22 V OV | When the master eject motor turns clockwise, the voltage at $\mathrm{CN104-29}$ is 22 V |
| -: Master Eject Motor | 0 | 104-30 | 22 V OV | When the master eject motor turns counter clockwise, the voltage at CN104-30 is 22V |

Master Eject Motor


The motor direction of rotation is as viewed from A.

### 1.15 PAPER SIZE DETECTION: VT2300/VT2500



The size of the paper set on the paper table is detected by the three paper size sensors (photo sensors) mounted on the paper table [A].

The master making process (Master feed direction only) is controlled according to the detected paper size so that ink will not be transferred to the pressure roller when the printing paper is smaller than the image on the master. Paper size sensors [SN1], [SN2], and [SN3] detect the paper size before the master making process starts. The master making length in the master feeding direction is determined by sensor ON/OFF states as shown below.

## A4 Version:

| Paper Size | Paper Size Sensor |  |  | Master Making Length in Normal Mode | Master Making Length in Combine 2 Originals Mode |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | SN1 | SN2 | SN3 |  | More than 100\% ratio | Less than 93\% ratio |
| A3/B4 lengthwise | ON | ON | ON | 354 mm | 354 mm | 354 mm |
| A4 lengthwise | ON | ON | OFF | 287 mm | 287 mm | 291.1 mm |
| B5 lengthwise | ON | OFF | OFF | 247 mm | 247 mm | 251.3 mm |
| A5 lengthwise B5 sideways | OFF | OFF | OFF | 172 mm | 172 mm | 203.1 mm |

LT Version:

| Paper Size | Paper Size Sensor |  |  | Master Making <br> Length in | Master Making Length in Combine <br> 2 Originals Mode |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | SN1 | SN2 | SN3 | Normal Mode | More than <br> ratio | Less than $93 \%$ <br> ratio |
|  | ON | ON | ON | $354 \mathrm{~mm}\left(13.9^{\prime \prime}\right)$ | $354 \mathrm{~mm}\left(13.9^{\prime \prime}\right)$ | $354 \mathrm{~mm}\left(13.9^{\prime \prime}\right)$ |
| LG lengthwise | ON | ON | OFF | 345.6 mm <br> $\left(13.6^{\prime \prime}\right)$ | 345.6 mm <br> $\left(13.6^{\prime \prime}\right)$ | 345.6 mm <br> $\left(13.6^{\prime \prime}\right)$ |
| LT lengthwise | ON | OFF | OFF | 269.4 mm <br> $\left(10.6^{\prime \prime}\right)$ | 269.4 mm <br> $\left(10.6^{\prime \prime}\right)$ | 269.4 mm <br> $\left(10.6^{\prime \prime}\right)$ |
| HLT lengthwise | OFF | OFF | OFF | $205.9 \mathrm{~mm}\left(8.1^{\prime \prime}\right)$ | $205.9 \mathrm{~mm}\left(8.1^{\prime \prime}\right)$ | $205.9 \mathrm{~mm}\left(8.1^{\prime \prime}\right)$ |

### 1.16 CIRCUIT: VT2300/VT2500



### 1.17 INPUT/OUTPUT: VT2300/VT2500

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No | Level |  |
| Paper Table Lower Limit Sensor | 1 | 104-23 |  | When the actuator is in the sensor, the voltage at CN104-23 is 7.5 .V Pulse. |
| Paper Table Height Sensor | 1 | 104-25 |  | When the actuator is in the sensor, the voltage at CN104-25 is 7.5 V pulse. |
| Paper End Sensor | 1 | 104-21 | ${ }^{250}$ | When paper is present, the voltage at CN104-21 is 5.0 V pulse. |
| Paper Size Detection Sensor 3 | 1 | 102-24 | 5 V 0V | When paper is present, the voltage at $\mathrm{CN} 102-24$ is 0 V . |
| Paper Size Detection Sensor 2 | I | 102-20 | 5 V OV | When paper is present, the voltage at $\mathrm{CN} 102-20$ is 0 V . |
| Paper Size Detection Sensor 1 | 1 | 102-18 | $\overline{5 V} 0 \mathrm{~V}$ | When paper is present, the voltage at $\mathrm{CN} 102-18$ is 0 V . |
| Paper Feed Solenoid | O | 102-14 | $\overline{24 V}$ OV | When the solenoid turns on, the voltage at CN102-14 is 0 V . |
| Relay: Paper Table Up | 0 | 102-8 | 24 V OV | When the paper table is being raised, the voltage at CN102-8 is 0 V . |
| Relay: Paper Table Down | 0 | 102-9 | $\overline{24 V}$ | When the paper table is being lowered, the voltage at CN102-9 is 0 V . |

### 1.18 CIRCUIT: VT2100/VT2130/VT2150



### 1.19 INPUT/OUTPUT: VT2100/VT2130/VT2150

| Signal Name | 1/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No | Level |  |
| paper Feed Solenoid | 0 | 102-31 | 24 V OV | When the solenoid turns on, the voltage at CN102-31 is OV |
| Paper Table Height Sensor | 0 | 102-22 |  | When the actuator is out of the sensor, the voltage at CN102-22 is 0 V |
| Paper Table Lower Limit Sensor | 0 | 102-21 |  | When the actuator is out of the sensor, the voltage at CN102-21 is 0 V |
| Relay: Paper Table Up | 0 | 104-9 | 24 V OV | When the paper table is being raised, the voltage at CN104-9 is 0 V |
| Relay: Paper Table Down | 0 | 104-11 | $\overline{24 V} 0 \mathrm{~V}$ | When the paper table is being raised, the voltage at $\mathrm{CN} 104-11$ is OV |
| Paper End Sensor | 0 | 102-20 |  | When paper is present, the voltage at CN102-20 OV |

### 1.20 CIRCUIT: VT2300/VT2500



### 1.21 INPUT/OUTPUT: VT2300/VT2500

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| 1st Paper Exit Sensor | 1 | CN102-32 |  | When the paper passes, the voltage at CN102-32 is more than 3 V . |
| 2nd Paper Exit Sensor | 1 | CN104-38 |  | When the paper passes, the voltage at CN104-38 is more than 3 V . |
| Relay: Blower | 0 | CN102-10 | 24 V OV | When the air knife motor and the vacuum motor turn on, the voltage at CN102-10 is 0 V . |

### 1.22 ELECTRICAL TIMING:



T1: After the master is cut and the right cutter switch turns on, the main motor starts rotating. At the same time, the air knife motor and the vacuum fan also turn on and stay on until the first drum position sensor turns on 4 times.

T2: When the Print Start key is pressed, the main motor starts rotating and the air knife motor and the vacuum fan also turn on. Then, when the counter indicates " 0 ", the main motors turn off after the first drum position sensor turns on 4 times.

## 2. INDICATORS/KEYS/PROGRAMS: VT2300/VT2500

### 2.1 CHECK PAPER SIZE/DIRECTION INDICATOR

When an enlargement ratio (A4: 115\%, 122\%, or 141\% LT: 115\%, 127\%, or $141 \%$ ) is selected with the Reduce/Enlarge key, the Check Paper Size/Direction indicator lights. This indicator turns off when the Master Making key, Print Start key, or Proof key is pressed and full size mode or reduction mode is selected.

All keys remain accessible after the Check Paper Size/Direction indicator lights. This indicator simply reminds the customer to check the size and direction of the paper set on the paper table.

### 2.2 REDUCE/ENLARGE KEY

The Reduce/Enlarge key can be used when the machine stops. The reproduction ratio changes as shown below.

$$
\begin{array}{lll}
\text { A4 version } & : & 71 \% \rightarrow 82 \% \rightarrow 93 \% \rightarrow 115 \% \rightarrow 122 \% \rightarrow 141 \% \\
\text { LT version } & : & 64 \% \rightarrow 75 \% \rightarrow 93 \% \rightarrow 115 \% \rightarrow 122 \% \rightarrow 141 \%
\end{array}
$$

### 2.3 SKIP PAPER FEED SWITCH

The paper feed interval can be set to allow time for the user to remove prints. This interval can be adjusted with the Skip Paper Feed switch.
The three following steps are available:

- Standard (normal feeding)
- $1 / 3$ rotation (one sheet fed every three drum rotations)
- $1 / 5$ rotation (one sheet fed every five drum rotations)

This function can also be used in Proof Mode.
If the Stop key is pressed before the copier feeds out a print during the $1 / 3$ or $1 / 5$ step interval, the copier returns to the normal feed interval and a print is fed out soon after the Start key is pressed.

### 2.4 COMBINE 2 ORIGINALS

The length of the original in Combine 2 Originals mode is limited according to the printing paper size and magnification ratio. When the original is too long, Combine 2 Original mode is automatically canceled and only the first original is made.

The following table lists the optimum magnification ratio for each paper size/original size combination in Combine 2 Originals mode.

A4 Version :

| Paper Size | Master Making Length |  | Acceptable Original Size Ratios in Combine 2 Originals mode |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $100 \% \text { or }$ more | $\begin{gathered} 93 \% \text { or } \\ \text { less } \\ \hline \end{gathered}$ | A4 <br> Sideways | $\begin{array}{\|c\|} \hline \text { B5 } \\ \text { Sideways } \\ \hline \end{array}$ | A5 <br> Sideways | B6 <br> Sideways | A6 <br> Sideways |
| A5 sideways | 172 mm | 203.1 mm | X | X | 71\% | 82\% | 100\% |
| B5 lengthwise | 247 mm | 251.3 mm | X | 71\% | 82\% | 100\% | 122\% |
| A4 lengthwise | 287 mm | 291.1 mm | 71\% | 82\% | 100\% | $\begin{gathered} 115 \% \\ \text { (122\%) } \end{gathered}$ | 141\% |
| B4 lengthwise | 354 mm | 354 mm | 82\% | 100\% | 122\% | 141\% | *141\% |

LT Version:

| Paper Size | Master Making Length |  | Acceptable Original Size Ratios in <br> Combine 2 Originals mode |  |
| :---: | :---: | :---: | :---: | :---: |
|  | $100 \%$ or <br> more | less than $93 \%$ | LT Sideways | HLT Sideways |
| HLT lengthwise | 205.9 mm | 205.9 mm | X | $* 64 \%$ |
| LT lengthwise | 269.4 mm | 269.4 mm | $64 \%$ | $100 \%$ |
| LG lengthwise | 345.6 mm | 345.6 mm | $* 75 \%$ | $127 \%$ |

$X$ : Combine 2 Originals mode is canceled.
When the values given in the above table are exceeded, Combine 2 Originals mode is also canceled.

* : A black area is mode.


### 2.5 MEMORY/CLASS KEY

The Memory/Class switch selects Memory or Class mode.
When Memory mode is selected (Memory indicator lights), Up to 15 prints can be input. Press the Master Making key after returning the memory number to "1".

When Class mode is selected (Class indicator lights), the number of prints for up to 20 groups can be input.

### 2.6 TRIAL PRINTS

Two trial printing sheets can be fed out by holding down the Master Making key and the Speed key

Only one trial printing sheet is fed out when just the Master Making key is pressed.

### 2.7 CLEAR MODES KEY

The Clear Modes key can be used after the machine stops. All previously entered settings and modes are cleared by the Clear Modes key. The normal settings and modes are displayed on the operation panel as follows:

Make-up Mode OFF
Combine 2 Originals
Image Mode
Printing Density
Magnification Ratio
Auto Cycle Mode
Printing Speed
Image Position
Counter Indicator
Memory Indicator
(Class Indicator)

### 2.8 INITIAL CHECK

When the main switch is turned on, the CPU checks the ON/OFF status of the sensors listed below. If a sensor is ON, the letter on the Jam indicator corresponding to the sensor blinks:
Master Eject Sensor ..... F
Master Buckle Sensor ..... C
2nd Original Sensor ..... A
Original Registration Sensor ..... A
1st/2nd Paper Exit Sensor ..... G
Printing Pressure Sensor ..... E

### 2.9 MAIN MOTOR SOFT START

The main motor turns at 60 rpm for the first print (not trial print) made from a new master. The printing speed then gradually increases with each rotation until the standard printing speed is reached.

## 3. DIFFERENCES BETWEEN SS900 SERIES AND VT 2000 SERIES

| No. | Item | Remarks |
| :---: | :---: | :---: |
| 1 | Thermal Head | The heating elements used in the VT2000 series thermal head are smaller than those used on the SS900 series. This reduces ink set-off on the back sides of copies. <br> SS900 Series |
| 2 | Thermal Head Drive Board | The thermal head drive voltage has been decreased from 24 V to 16 V because the smaller heating elements in the thermal head require less power. |
| 3 | Power <br> Supply <br> Board | The power supply board has been modified to output 16 V to drive the thermal head. <br> An ON/OFF switching circuit for the thermal head drive voltage (VHD) has been added to the power supply board. |
| 4 | Exterior | The design of the front cover and the model name printed on the cover have been changed. This was done for marketing reasons and to ensure that the users do not confuse the VT2000 series with the 900 series and use the wrong master type. (The VT2000 master is more sensitive.) |
| 5 | Image Processing Board | The VT2500 make-up control board has been eliminated because the VT2500 image processing board performs the Make-up function. |
| 6 | Main Harness | A VHD ON/OFF line has been added to the main harness. |
| 7 | Drum Master Sensor | The drum master sensor has been changed to stabilize the sensor sensitivity. |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 8 | Paper Feed Roller Cam | The paper feed roller cam has been slightly modified as shown to reduce the paper speed to $55 \%$ that of the SS900 series. (Extended outward at point [A].) This reduces the noise caused when the paper leading edge strikes the second feed roller. |
| 9 | $\begin{aligned} & \text { Second } \\ & \text { Feed } \\ & \text { Roller Cam } \end{aligned}$ | The second feed cam has been modified slightly as shown to reduce the speed of the second feed roller to 40\% that of the SS900 series. (Extended outward at point [A], moved in at point [B].) This reduces the noise caused when the second feed rollers turn and the paper [C] snaps as it is pulled taut. |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 10 | Pressure Cam | The shape of the VT2000 pressure cam has been modified slightly as shown to decrease the pressure roller speed to $70 \%$ that of the SS900 series. (A portion at point [A] has been shaved off.) This reduces the noise caused when the pressure roller moves against the drum. |
| 11 | Rear <br> Paper Delivery Side Plate | One of the air slots [B] cut in the rear paper delivery side plate has been enlarged so that tape strips from the optional tape dispenser can be inserted through it. |
| 12 | Main Control Board | An ON/OFF control circuit for the thermal head drive voltage (VHD) has been added to the main control board. <br> The drum master detection circuit on the main control board has been modified to accommodate the new drum master sensor. |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 13 | Printing Speed | The 40 cpm print speed at each step has been eliminated on the VT2000 series. This reduces ink set-off, which is most likely to occur at low printing speeds. <br> When the Master Making key is pressed, the print speed gradually increases until it reaches the set speed. |
|  |  |  Trial Print 1st Print 2nd Print 3rd Print <br> SS935/955: 10 rpm 40 xrpm 60 rpm 80 rpm |
| 14 | Thermal Head Mounting Plate | To prevent service personnel from mistakenly installing the SS900 thermal head on VT2000 series machines and vice versa, the distance between the screw holes on each mounting plate is different. |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 15 | Master Spool/ Holder | To prevent users from installing SS900 masters on VT2000 series machines, the diameter of each master spool [A] and master spool holder [B] has been changed as follows: <br> [A] <br> NOTE: <br> The VT2130/2150 spool is the same diameter as the SS900 spool; however, the type 900 master is too wide to fit on the VT2130/2150 spool holder. |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 16 | Cutter Section | A guard [A] has been mounted on the cutter unit [B] to prevent contact with the cutter edge (sharp) during cutter unit removal or installation. |
| 17 | Master Feed Unit | Counter rollers [C] have been added to prevent new masters from creasing as they are being fed through the master reverse section. Also, the reverse roller [D] has been modified as shown. |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 18 | Drum Unit | Both ends of the metal screen [A] pass through a half etching process. The half etch area $[B]$ is thinner than the other areas. This improves the outer portion of the copy image. <br> The outer drum screen consists of two tetron screens[C] that reduce ink set-off. <br> [C] <br> The diameter of the left drum lock pin [D] and the right drum lock pin [ $E$ ] is different for each drum type as follows: |
|  |  | Color Drum Left [D] Right [E] <br> VT2000-M: (B4 Size) $8 \phi$ $8 \phi$ <br> VT2000-S: (A4 Size) $10 \phi$ $7.6 \phi$ <br> VT2000-LG: (LG Size) $10 \phi$ $7.6 \phi$ |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 19 | Paper Delivery End Plate | The sponge cushions $[A]$ that were affixed to the paper delivery end plate have been removed to prevent paper sheets from bouncing back when they strike the paper delivery end plate. |
| 20 | Pressure Roller | Two different sizes of pressure rollers are-used because the printing area in the horizontal direction [B] on the VT2130/2150 machines is narrower. <br> B4 size (VT2100/2300/2500): 292 mm A4/LG size (VT2130/2150): 226 mm |
| 21 | Pressure Cam | Two different types of pressure cams are used because the printing area (feed direction) of A4 copies on the VT2150 is smaller. <br> B4/LG Size Pressure Cam <br> A4 Size Pressure Cam <br> (VT2100/2130/2300/2500) (VT2150) |


| No. | Item | Remarks |
| :--- | :--- | :--- | :--- | :--- |
|  |  | The platen roller [A] has been changed to an <br> electrically conductive type to prevent the master from <br> wrapping around the platen roller. |
|  |  |  |
| Roller |  |  |

## INSTALLATION

## 1. INSTALLATION REQUIREMENTS

The installation location should be carefully chosen because the environmental conditions greatly affect the performance of a machine.

### 1.1 OPTIMUM ENVIRONMENTAL CONDITION:



Temperature -
10 to $30^{\circ} \mathrm{C}$
( 50 to $86^{\circ} \mathrm{F}$ )
Humidity -

$$
20 \text { to } 90 \text { \% RH }
$$



On a strong and level base.
The machine must be level within 5 mm (13/64") both front to rear and left to right.

### 1.2 ENVIRONMENTS TO AVOID:



Location exposed to direct sun-light or strong light (more than 1,500 lux).


Areas with corrosive gases.


Dusty areas.


Locations directly exposed to cool air from an air conditioner or to reflected hear from a space heater. (Sudden temperature changes from low to high or vice versa may cause condensation within the machine.)

### 1.3 GROUND:



Be sure to ground the machine. Never connect the ground line to gas pipes.

### 1.4 POWER CONNECTION:



Securely connect the power cord to a power source.
a) $110 \mathrm{~V}, 60 \mathrm{~Hz}$ : More than 6.0 A
b) $120 \mathrm{~V}, 60 \mathrm{~Hz}$ : More than 5.5 A

Make sure the plug is firmly inserted in the outlet.


Avoid multiwiring.


Voltage must not fluctuate more than 10\%.


Do not pinch the power cord.

### 1.5 ACCESS TO MACHINE:

Place the machine near a power source, providing clearance as shown below.


## 2. VT2300/2500 INSTALLATION PROCEDURE



1. Make sure that you have all the accessories listed below.
(1) Original Exit Tray ..... 1
(2) Right Tray Bracket ..... 1
Left Tray Bracket ..... 1
(3) Fixing Screws ..... 2
(4) Master Spools ..... 2
(5) Thermal Head Cleaner ..... 1
(6) Operating Instructions (USA and Asia Version Only) ..... 1
(7) Operating Guide (USA and Asia Version Only) ..... 1
(8) NECR ..... 1
(9) Installation Procedure (English) ..... 1
(10) Noise Absorber ..... 2
(11) Background Pattern Sheet (VT2500 only) ..... 1

2. Place two noise absorbers on the optional table.

NOTE: Make sure that the noise absorbers are positioned on the table at the locations shown in the above figure.
3.Mount the machine on the optional table (2 screws--packed with table).
4. Remove the tape and string securing the covers and units as shown above.
a. Open the paper feed tray. Then remove the cushion plate $[B]$ from the paper feed roller section.
b. Open the master delivery unit. Then remove the tape securing the paper delivery guide plate.
5. Remove the protective sheet $[A]$ from the drum unit.
a. Open the front door.
b. Take out the drum unit.
c. Remove the protective sheet from the master clamper.
d. Reinstall the drum unit in the machine.

6. Install the original exit tray [B].
a. Hook the right and left tray brackets on the stepped screws.
b. Set the original exit tray on the brackets.
c. Secure the brackets with fixing screws.


## 7. Loading Paper on the Paper Feed Table

a. Open the paper feed table.
b. Stack the paper neatly on the paper feed table.
c. Position the paper feed side plates so that they lightly contact the paper on both sides.
d. Position the paper delivery table for the printing paper size, using the scale on the table.
e. Position the paper delivery side plate
 for the printing paper size, using the scale on the table.
8. Installing the Master Roll (Type VT-M)
a. While lifting up on the release lever, slide the scanner unit to the left.
b. Attach a spool to each end of the master roll.
c. Set the master roll in the machine. NOTE: The vinyl side faces down.

d. Return the pressure release lever to the original position.
e. Plug in the power cord and turn on the main switch.
f. Press the Master Cut button.
g. Remove the cut master paper.

NOTE: Please confirm that the master paper is not bent or creased.

h. Close the scanner unit.

9. Installing the Ink Cartridge
a. Open the front door and lower the ink holder.
b. Remove the ink cartridge cap.
c. Insert the ink cartridge into the ink holder and return the ink holder to the original position.
d. Close the front door.
10. Idling

a. While holding down the " 0 " key on the operation panel, press the Reset key.
b. If blinks on the operation panel, press the Reset key.

## 11. Test Printing

a. Adjust the original guide to match the original size.
b. Set the original face down.
c. Input the desired number of prints with the number keys and press the Master Making key.
d. After one sheet of paper is delivered, press the Print Start key to make prints at the lowest print speed (1) until the print image density stabilizes. Use a test chart to check for changes in the image density.
e. Check the copy image after about one hundred prints.


### 2.1 VT2130 INSTALLATION PROCEDURE



1. Make sure that you have all the accessories listed below.
(1) Original Exit Tray ..... 1
(2) Right Tray Bracket ..... 1
Left Tray Bracket ..... 1
(3) Fixing Screws ..... 2
(4) Master Spools ..... 2
(5) Thermal Head Cleaner ..... 1
(6) Operating Instructions (USA and Asia version only) ..... 1
(7) Operating Guide (USA and Asia version only) ..... 1
(8) NECR ..... 1
(9) Installation Procedure (English) ..... 1

2. Mount the machine on the optional table (2 screws packed with table).
3. Remove the tape and string securing the covers and units as shown on the right.
a. Open the paper feed tray. Then remove the cushion plate $[A]$ from the paper feed roller section.
b. Open the master delivery unit. Then remove the tape securing the paper delivery guide plate.
4. Remove the protective sheet $[A]$ from the drum unit.
a. Open the front door.
b. Take out the drum unit.
c. Remove the protective sheet from the master clamper.
d. Reinstall the drum unit in the machine.

5. Install the original exit tray [B].
a. Hook the right and left tray brackets on the stepped screws.
b. Set the original exit tray on the brackets.
c. Secure the brackets with fixing screws.


## 7. Loading Paper on the Paper Feed Table

a. Open the paper feed table.
b. Stack the paper neatly on the paper feed table.
c. Position the paper feed side plates so that they lightly contact the paper on both sides.
d. Position the paper delivery table for the printing paper size, using the scale on the table.
e. Position the paper delivery side plate
 for the printing paper size, using the scale on the table.
8. Installing the Master Roll (Type VT-S)
a. While lifting up on the release lever, slide the scanner unit to the left.
b. Attach a spool to each end of the master roll.
c. Set the master roll in the machine.


NOTE: The vinyl side faces down.
d. Return the pressure release lever to the original position.
e. Plug in the power cord and turn on the main switch.
f. Press the Master Cut button.
g. Remove the cut master paper.

NOTE: Please confirm that the master
 paper is not bent or creased.
h. Close the scanner unit.


## 8. Installing the Ink Cartridge

a. Open the front door and lower the ink holder.
b. Remove the ink cartridge cap.
c. Insert the ink cartridge into the ink holder and return the ink holder to the original position.
d. Close the front door.
9. Idling
a. While holding down the " 0 " key on the operation panel, press the Reset key.
b. If $L^{\dagger}$ + D blinks on the operation panel, repeat the above procedure.
10. Test Printing
a. Adjust the original guide to match the original size.
b. Set the original face down.

c. Input the desire number of prints with the number keys and press the Master Making key.
NOTE: With a new machine, the master paper misfeed indicator of + $F$ blinks because there is no master yet on the drum. Press the Reset key, then press the Master Making key.

d. After one sheet of paper is delivered, make prints at the lowest print speed
(1) until the print image density stabilizes. Use a test chart to check for changes in the image density.
e. Check the copy image after about one hundred prints.

## 3. TAPE MARKER INSTALLATION PROCEDURE

### 3.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

1. Screw M4 (For models VT2100/2130/2150/2300/2500 only) ..... 2
2. Hexagon Nut M4 (For models VT2100/2130/2150/2300/2500 only) ..... 2
3. Tape ..... 1

### 3.2 Installation



## Main Body:

1. Remove the rear cover ( 6 screws).
2. Replace two screws [A] securing the AC drive PCB with the longer screws (accessory).
3. Cut the Ty-wrap [B] binding the tape marker harness to the main harness, then insert the connector in the connector bracket as shown in the illustration [C].
4. Reinstall the rear cover.

## Tape Marker:

5. Install the tape marker on the main body using the inside two holes of the tape marker bracket. Then, tighten two hexagon nuts [D] (accessory).
6. Remove the small cap in the rear cover of the main body [A] using a minus screw driver. Then, connect the tape marker harness $[B]$ to the main body, and install the connector cover [C] using one of the rear cover fixing screws.
ne of the

7. Open the tape marker cover [D] and install one roll of tape (accessory). Then, insert the leading edge of the tape into the tape entrance until it stops as shown in the illustration [E].

NOTE: Tighten the knob screws with a screwdriver to prevent them from coming loose.
8. Turn on the main switch of the main body and the tape marker switch [F].

9. Press the tape cut button [G] to cut off the leading edge of the tape.
10. Check the tape marker operation using the Memory/Class modes of the main
 body.


## 4. INSTALLATION PROCEDURE COLOR DRUM VT2000 -LG (Option)

NOTE: There are three types of color drum units.
Color Drum Type VT2000-LG: For the VT2130

1. Remove the protective sheet $[A]$ from the drum unit.
2. Remove the tape securing the ink holder [B].
3. Stick a color indicator seal on the drum case and the ink holder. The seal must be the same color as the ink in use.
4. Remove the drum unit.

a. Leave the master wrapped around the removed drum to protect the drum from dust and drying.
b. Keep the removed drum unit in the drum case.
5. Install the color drum unit.

The color drum indicator $\qquad$ on the operation panel stays lit when the color
 drum is mounted in the machine.
6. Install the color ink.
a. Remove the ink cartridge cap.
b. Insert the ink cartridge into the ink holder.

7. Idling
a. While holding down the " 0 " key, press the Reset key on the operation panel.
b. If $\boldsymbol{~ ( ~}{ }^{\dagger}$ + D: blinks, press the Reset key.
8. Test Printing
a. Adjust the original guide to match the original size.
b. Set the original face down.

c. Input the desired number of prints with the number keys and press the Master Making key.
NOTE: With a new drum, the master paper misfeed indicator of $+F$ blinks because there is no master yet on the drum. Press the Reset key, then press the Master Making key.

d. After one sheet of paper is delivered, press the Print Start key to make prints at the lowest print speed (1) until the print image density stabilizes. Use a test chart to check the image density.
e. Check the copy image after about one hundred prints.


## SERVICE TABLES

## 1. MAINTENANCE TABLES

### 1.1 LUBRICATION POINTS

Lubricate after removing adhering ink and paper dust.

| Lubrication Point | Interval | Type |
| :--- | :---: | :---: |
| Bearings for drum drive shaft | yearly | Oil |
| Bearing for each cam shaft | yearly | Oil |
| Bearing for main motor shaft | yearly | Oil |
| Bearing for speed reduction shaft | yearly | Oil |
| Gears on the drum drive shaft | yearly | Grease |
| Gears for each cam | yearly | Grease |
| Paper feed sector gear | yearly | Grease |
| Second feed sector gear | yearly | Grease |
| Edge of each cam | yearly | Grease |
| Master pressure plate groove | yearly | Grease |

## Type of Oil and Grease

Oil: Motor Oil (SAE No.20)
Grease: Shell Albania No. 2

### 1.2 USER'S MAINTENANCE

Please advise the customer to clean each item at suitable intervals.

| Cleaning Point | Interval | Cleaner |
| :--- | :---: | :--- |
| Original platen cover | at any time | Cloth and water |
| Exposure glass | at any time | Cloth and glass cleaner |
| Thermal head | 500 masters | Thermal Head cleaner |
| Paper feed rollers | at any time | Cloth, and soap and water (or ethyl <br> alcohol) |
| Press roller | at any time | Cloth, and soap and water (or ethyl <br> alcohol) |

### 1.3 TABLE OF PERIODIC INSPECTION (every 6 months)

| Item/Location | Step | Inspection Standard |
| :--- | :--- | :--- |
| Original platen <br> cover | cleaning | Wipe off the stain with soft cloth dampened <br> with ethyl alcohol. |
| Exposure glass | cleaning | Wipe with dry cloth. |
| Mirror/Sub mirror | cleaning | Use blower brush. |
| Thermal head | cleaning <br> and image <br> check | Wipe off the stain on the thermal head using <br> thermal head cleaning kit. Check the print <br> image. White line must not exist. |
| Platen roller | cleaning | Wipe off the paper powder with cloth <br> dampened with water. |
| Sensors | inspection <br> and <br> cleaning | Check the performance of all the sensors. <br> Remove the stains from sensors with dry <br> cloth. |
| Press roller | cleaning | Wipe off the ink and paper powder with cloth <br> dampened with ethyl alcohol. |
| Drum surface | cleaning | Wipe off the ink which is forced out from trail <br> edge of a master and paper powder using <br> cloth dampened with ethyl alcohol. |
| Master feed and <br> delivery | inspection | Master should be properly fed and clamped, <br> without generation of skew, fold. etc. Master <br> should also be properly delivered without jam. |
| Paper feed and <br> delivery | inspection | Actually print a few sheets to ensure that <br> paper is smoothly fed and delivered, without <br> generation of skew, folds, wrinkles, etc. |
| Second paper feed <br> rollers | cleaning | Wipe off the ink and paper powder with cloth <br> dampened with alcohol. |
| Original transport <br> roller | cleaning | Wipe off paper powder with cloth dampened <br> with water. |
| ADF (VT2300/VT2500) | cleaning | Wipe off paper powder with cloth dampened <br> with water. |
| Pull-out roller | Wipe off paper powder with cloth dampened <br> with water. |  |
| Separation blade | cleaning | Wipe off paper powder with cloth dampened <br> with water. |

### 1.4 TABLE OF PERIODIC INSPECTION (every 12 months)

| Item/Location | Step | Inspection Standard |
| :--- | :--- | :--- |
| Original platen <br> cover | cleaning | Wipe off stains with soft cloth dampened with <br> ethyl alcohol. |
| Exposure glass | cleaning | Wipe off the stain with soft cloth dampened <br> with ethyl alcohol. |
| Fluorescent lamp | cleaning | Wipe with dry cloth. |
| Mirror/Sub mirror | cleaning | Use blower brush. |
| Thermal head | cleaning <br> and <br> inspection | Wipe off stains on thermal head using <br> thermal head cleaning kit. Check the print <br> image. White line must not exist. |
| Platen roller | cleaning | Wipe off paper powder with cloth dampened <br> with water. |
| Paper feed roller | cleaning | Wipe off paper powder with cloth dampened <br> with water and wipe off ink with cloth <br> dampened with ethyl alcohol. |
| Separation roller | cleaning | Wipe off paper powder with cloth dampened <br> with water and wipe off ink with cloth <br> dampened with ethyl alcohol. |
| Sensors | inspection <br> and <br> cleaning | Check the performance of all the sensors. <br> Wipe off stains on the sensor with dry cloth. |
| Master delivery <br> rollers | cleaning | Wipe off the built up ink and paper powder <br> on the master delivery rollers using cloth <br> dampened with ethyl alcohol. |
| Master delivery <br> belts | cleaning | Wipe off the built up ink and paper powder <br> on the master delivery belts using cloth <br> dampened with ethyl alcohol. |
| Second paper feed <br> rollers | cleaning | Wipe off the built up ink and paper powder <br> on the second feed rollers using cloth <br> dampened with ethyl alcohol. |
| Press roller | cleaning | Wipe off the built up ink and paper powder <br> on the press roller using cloth dampened <br> with ethyl alcohol. |
| Drum surface <br> delivery | cleaning and | Wipe off the ink, which is forced out from trail <br> edge of a master, and paper powder using <br> cloth dampened with ethyl alcohol. |
| inspection | Master should be properly fed and clamped <br> whout generation of skew, fold, etc. Master <br> should also be properly delivered without jam. |  |


| Item/Location | Step | Inspection Standard |
| :--- | :--- | :--- |
| Paper feed and <br> delivery | inspection | Actually print a few sheets to ensure that <br> paper is smoothly fed and delivered without <br> generation of skew, folds, wrinkles, etc. |
| Original transport <br> roller | cleaning | Wipe off paper powder with cloth dampened <br> with water. |
| Lubrication points | Lubrication | Lubricate the lubrication points by following <br> lubrication points list. |
| ADF (VT2300/VT2500) | cleaning | Wipe off paper powder with cloth dampened <br> with water. |
| Pull-out roller | Wipe off paper powder with cloth dampened <br> with water. |  |
| Original feed roller | cleaning |  |
| Separation blade | cleaning | Wipe off paper powder with cloth dampened <br> with water. |

## 1.5

## TABLE OF SERVICE CALL INDICATIONS

| Indication | Trouble | Possible causes |
| :---: | :---: | :---: |
| E 01 | Malfunction in cutter section: The cutter motor does not reach both right and left cutter position detecting switches within 2 seconds | 1) Drive wire cut <br> 2) Drive section malfunction <br> 3) No power supply |
| E 02 | Malfunction in the paper table drive section: <br> The lower limit sensor or the paper table height sensor is not turned off even though the paper table UP or Down signal is applied | 1) Drive worm gear broken <br> 2) Mounting screw of the worm gear broken <br> 3) No power supply |
| E 03 | Malfunction in the program: | 1) PROM defective <br> 2) Control PCB defective |
| E 04 | Temperature of the thermal head or the power supply unit is high: Temperature of the thermal head becomes greater than $57^{\circ} \mathrm{C}$ or the temperature of the power supply unit becomes greater than $85^{\circ} \mathrm{C}$ when the machine is in stand-by condition | 1) Thermistor defective <br> 2) Thermal head defective <br> 3) Power supply unit defective |


| Indication | Trouble | Possible causes |
| :---: | :---: | :---: |
| E 05 | Malfunction in the image shifting section: | 1) Encoder connector of the image shifting section disconnected <br> 2) Encoder defective |
| E 06 | Mechanical lock: <br> When a paper jam or part failure occurs, the decoder detects that the motor speed is incorrect if this occurs, the main motor turns off. This prevents any further damage its components or fuse failure. | 1) Paper Jam <br> 2) Parts failure |
| E07 | Malfunction in the program (PROM). When using I/O check mode, "E07" lights up if the ROM is defective. <br> NOTE: When "E03" is lit, check whether or not the PROM is defective using I/O check mode. | ROM defective. |
| E08 | The pulse width applied to the thermal head is out of standard | Thermal head drive board detective. |
|  | The power supply unit temperature reaches $85^{\circ} \mathrm{C}$ | Power supply unit detective (Thermal guard failure) |

## 2. DIP SW, LED, VR TABLES

### 2.1 VT2300/VT2500 DIP SW (on the main control PCB)

| NO. DIP SW | Function | Remarks |
| :--- | :--- | :--- |
| 1. DPS101-1 | Cover Open | Turn on to disable all cover safety switch <br> functions except ADF cover safety.(Normal: <br> OFF) |
| 2. DPS101-2 | ADF Cover <br> Open | Turn on to release ADF cover. |
| 3. DPS102-1 | Key Counter <br> (Option) | Turn on when installing Key Counter. (Normal: <br> OFF) |
| 4. DPS102-2 | Buzzer <br> ON/OFF | Turn on to sound the beeper. (Normal: OFF) |
| 5. DPS102-3 | Initial Print | Once: OFF, Twice: ON (Normal: OFF) |
| 6. DPS102-4 | ON Line-1 | Turn on to use the machine with a PC. <br> (Normal: OFF) |
| 7. DPS102-5 | Drum Master <br> Detection | Turn on to detect the master on the drum. <br> (Normal: ON) |
| 8. DPS102-6 | Paper Size <br> Detection | Selects the paper size. (ON: LT version, OFF: <br> A4 version) |
| 9. DPS102-7 | I/O Check <br> Mode Access <br> Procedure | Selects the I/O Check mode access <br> procedure. (ON: Europe/Asia version, OFF: <br> US version) |
| 10. | ON Line-2 | Turn on to use the machine with the Print Box. <br> (Japanese version only) |
| DPS102-8 |  |  |

### 2.2 VT2300/VT2500 PHOTO DIODE (on the main control PCB)

| NO. LED | Function | Remarks |
| :---: | :--- | :--- |
| 1. LED-101 | Main Motor ON | When main motor turns on, LED lights. |
| 2. LED-102 | Master Eject <br> SN Detection | When master is detected, LED lights. |
| 3. LED-103 | 1st Paper Exit <br> SN Detection | When paper is detected, LED lights. |
| 4. LED-104 | 2nd Paper Exit <br> SN Detection | When paper is detected, LED lights. |
| 5. LED-105 | Drum Master <br> SN Detection | When master is detected, LED lights. |
| 6. LED-106 | Ink Detection | When ink is detected LED lights. |

### 2.3 VT2300/VT2500 VR

| NO. VR | PCB | Function |
| :---: | :---: | :--- |
| 1. VR-101 | Main | Main Motor Speed Adjustment |
| 2. VR-102 | Main | 2nd Paper Exit Detection Adjustment |
| 3. VR-103 | Main | Drum Master Detection Adjustment |
| 4. VR-104 | Main | Master Eject Detection Adjustment |
| 5. VR-105 | Main | 1st Paper Exit Detection Adjustment |
| 6. VR-1 | A/D Conversion | White Level Adjustment |
| 7. VR-2 | A/D Conversion | Black Level Adjustment |
| 8. VR-201 | Power Supply | Thermal Head Voltage Adjustment(16V) |
| 9. VR-204 | Power Supply | Vcc(+5V) Line Voltage Adjustment |
| 10. VR-901 | Ink Detecting | Ink Detecting Adjustment |

2.4

VT2300/VT2500 DIP SW (on the image processing PCB)

| NO. DIP SW | Function |
| :---: | :---: |
| 1. DPS400-1 | Enlarge/Reduction Compensation Switch |
| 2. DPS400-2 | Enlarge/Reduction Compensation Switch |
| 3. DPS400-3 | Enlarge/Reduction Compensation Switch |
| 4. DPS400-4 | Reproduction Ratio (ON: LT Version OFF: A4 Version) |
| 5. DPS400-5 | Thermal Head (Pulse Control) Image Density |
| 6. DPS400-6 | $\begin{array}{llll} 400-5 & \longrightarrow \text { ON } & \text { ON } & \text { OFF } \\ 400-6 \longrightarrow \text { ON } & \text { OFF } & \text { ON } & \text { OFF } \end{array}$ |
| 7. DPS400-7 | Output the Test Pattern Image (Normal: ON) |
| 8. DPS400-8 | Dither matrix selection (Normal: ON) <br> (ON: $6 \times 6$ Dither matrix, OFF: $4 \times 4$ Dither matrix) |

### 2.5 VT2130 DIP SW (on the main control PCB)

| No | DIP SW | FUNCTION | REMARKS |
| :---: | :--- | :--- | :--- |
| 1 | DPS100-1 | Key Counter <br> (Option) | Turn on when installing Key Counter. <br> (Normal: OFF) |
| 2 | DPS100-2 | Buzzer ON/OFF | Turn on to sound the beeper. (Normal: <br> OFF) |
| 3 | DPS100-3 | Initial Print | Once: OFF, Twice: ON <br> (Normal: OFF) |
| 4 | DPS100-4 | Not Used |  |
| 5 | DPS100-5 | Main Motor Speed <br> Adjustment | Turn on to adjust the main motor speed <br> using VR100. (Normal: OFF) |
| 6 | DPS100-1 | Turn on to disable all cover safety switch <br> functions. (Normal: OFF) |  |
| 7 | DPS101-1 | Cover Open | Turn on to release ADF cover.(Normal: <br> ON) |
| 8 | DPS101-2 | ADF Cover Open |  |


|  | DPS102-1 | DPS102-2 | VERSION | REMARKS |
| :---: | :---: | :---: | :---: | :--- |
| 9 | ON | ON | Europe/Asia <br> version (VT2150) | Memory mode+A4 master <br> processing+I/O check mode <br> access procedure for <br> Europe/Asia version (See <br> page 4-11) |

2.6 VT2130 PHOTODIODE (on the main control PCB)

| No | LED | FUNCTION | REMARKS |
| :---: | :---: | :---: | :--- |
| 1 | LED100 | Main Motor ON | When the main motor turns on, LED lights |
| 2 | LED101 | 2nd Paper Exit <br> Detection | When paper is detected, LED lights |
| 3 | LED102 | Ink Detection | When Ink is present, LED lights |
| 4 | LED103 | 1st Paper Exit <br> Detection | When paper is detected, LED lights |

### 2.7 VT2130 VR

| No | VR | PCB | REMARKS |
| :---: | :---: | :---: | :--- |
| 1 | VR-100 | Main | Main Motor Speed Adjustment |
| 2 | VR-102 | Main | 1st Paper Exit Detection Adjustment |
| 3 | VR-101 | Main | 2nd Paper Exit Detection Adjustment |
| 4 | VR-201 | Power Supply | Thermal Head Voltage Adjustment (16V) |
| 5 | VR-203 | Power Supply | Adjust the VCC (+5V) Line Voltage |
| 6 | VR-901 | Ink Detecting | Ink Detecting Adjustment |
| 7 | VR-600 | A/D Conversion | White Level adjustment |

2.8 VT2130 DIP SW (on the image processing PCB)

| NO. DIP SW | Function |
| :---: | :---: |
| 1. DPS400-1 | Enlarge/Reduction Compensation Switch |
| 2. DPS400-2 | Enlarge/Reduction Compensation Switch |
| 3. DPS400-3 | Enlarge/Reduction Compensation Switch |
| 4. DPS400-4 | Reproduction Ratio (ON: LT Version OFF: A4 Version) |
| 5. DPS400-5 | Thermal Head (Pulse Control) <br> Image Density |
| 6. DPS400-6 | $\begin{array}{llll} 400-5 & \longrightarrow \text { ON } & \text { ON } & \text { OFF } \\ 400-6 \longrightarrow \text { ON } & \text { OFF } & \text { ON } & \text { OFF } \end{array}$ |
| 7. DPS400-7 | Output the Test Pattern Image (Normal: ON) |
| 8. DPS400-8 | Not used |

### 2.9 EXPECTED LIFE OF PARTS

NOTE: Main parts have the following expected life.
Target Copy Volume Range: Avg. 50,000 prints/month.
(Max. 100,000~Min. 20,000 prints/month)
Avg. 500 masters/month

| Section | Part Description | Expected Life |
| :---: | :---: | :---: |
| Scanner Unit | Fluorescent lamp Original transport rollers | 15,000 masters <br> 1 year or 6,000 masters |
| Master Feed Unit | Thermal head Cutter Upper master feed rollers Platen roller | 30,000 masters 30,000 masters 1 year or 6,000 masters 30,000 masters |
| Drum Unit | Drum screen | 2 years or 1,200,000 prints |
| Paper Feed Unit | Paper feed rubber side plate <br> Paper feed roller <br> Upper Separation roller <br> Separation Plate <br> Lower separation roller <br> Feed roller brake | 1,200,000 prints <br> 6 months or 300,000 prints <br> 1 year or 600,000 prints <br> 1 year or 600,000 prints <br> 2,000,000 prints <br> 1,000,000 prints |
| Printing Unit | Pressure roller | 2 years or 1,200,000 prints |
| Delivery Unit | Vacuum belts | 2 years or 1,200,000 prints |
| (VT2300NT2500 only) |  |  |
| ADF Unit | Pull-out roller Original feed roller Separation blade Original pressure plate | 60,000 sheets 60,000 sheets 60,000 sheets 60,000 sheets |

### 2.10 SPECIAL TOOLS

| Description | Parts Number |
| :--- | :---: |
| Test chart | 99992131 |
| Drum gauge | C2009001 |
| Image shifting gauge | C 2009002 |

## 3. SERVICE PROGRAM MODE (I/O Check Mode)

### 3.1 SERVICE PROGRAM TABLE: VT2300/VT2500

Output Mode:

| COUNTER <br> INDICATION | OUTPUT |
| :---: | :--- |
| $0001-0$ | Turns on the drum (10 rpm). |
| $0002-0$ | Turns on the drum (30 rpm). |
| $0003-0$ | Turns on the drum (60 rpm). |
| $0004-0$ | Turns on the paper table drive motor (up). |
| $000-0$ | Turns on the paper table drive motor (down). |
| $0006-0$ | Turns on the vacuum motor. |
| $0007-0$ | Turns on the master eject solenoid. |
| $0008-0$ | Turns on the master eject clamper opening solenoid. |
| $0009-0$ | Turns on the master feed clamper opening solenoid. |
| $0010-0$ | Turns on the reversing roller solenoid. |
| $0011-0$ | Turns on the paper feed solenoid and the printing pressure solenoid. |
| $0012-0$ | Turns on the ink supply solenoid. |
| $0013-0$ | Turns on the original transport motor. |
| $0014-0$ | Turns on the master feed motor. |
| $0015-0$ | Turns on the fluorescent lamp. |
| $0016-0$ | Master Process Command (Photo LED ON) |
| $0017-0$ | Reverses the master eject motor (Turn the eject rollers). |
| $0018-0$ | Turns on the master eject motor (Pressure plate up/down). |
| $0019-0$ | Turns on the cutter motor (Moves it from front to rear). |
| $0020-0$ | Turns on the cutter motor (Moves it from rear to front). |
| $0021-0$ | Turns the image shifting motor in (+) direction. |
| $0022-0$ | Turns the image shifting motor in (-) direction. |
| $0023-0$ | Turns on the magnetic counter for paper. |
| $0024-0$ | Turns on the magnetic counter for master. |
| $0025-0$ | Turns on the drum reverse rotation relay. |
| $0026-0$ | Magnification ratio : 100\% (LED ON) |
| $0027-0$ | Magnification ratio: $93 \%$ (LED ON) |
| $0028-0$ | Magnification ratio : 82\% (A4 version)/ 75\% (LT version) (LED ON) |
| $0029-0$ | Magnification ratio : 71\% (A4 version)/ 64\% (LT version) (LED ON) |
| $0030-0$ | Turn on the drum (10 rpm), the paper feed solenoid and the printing pressure |
|  | solenoid. |
| $0031-0$ | Tape dispenser (option) feeds out strips of paper. |
| $0032-0$ | Turns on the ADF drive motor. |
| $0033-0$ | Turns on the ADF original pressure solenoid. |
| $0034-0$ | Turns on the drum lock solenoid. |
| $0035-0$ | Outputs the thermal head voltage (VHD). |

NOTE: 0001-0 to 0006-0 and 0030-0 are not activated when the safety cover is open.

### 3.2 SERVICE PROGRAM TABLE: VT2300/VT2500

Input Mode:

| COUNTER <br> INDICATION | INPUT |  |
| :---: | :---: | :---: |
| 0001-1 | SN: Master Eject Detection | (Indicator lights when sensor ON) |
| 0002-1 | SW: Pressure Plate Position | (Indicator lights when switch ON) |
| 0003-1 | SN: 2nd Original Detection | (Indicator lights when sensor ON) |
| 0004-1 | SN: Original Registration Detection | (Indicator lights when sensor ON) |
| 0005-1 | SN: 1st Drum Position Detection | (Indicator lights when sensor ON) |
| 0006-1 | SN: 2nd Drum Position Detection | (Indicator lights when sensor ON) |
| 0007-1 | SN: Master Detection | (Indicator lights when master is set) |
| 0008-1 | SN: Master Buckle Detection | (Indicator lights when master appears) |
| 0009-1 | SW: Left Cutter | (Indicator lights when switch ON) |
| 0010-1 | SW: Right Cutter | (Indicator lights when switch ON ) |
| 0011-1 | SW: Master Eject Box | (Indicator lights when switch ON) |
| 0012-1 | SW: Full Master Detection | (Indicator lights when switch ON) |
| 0013-1 | SN: Paper End | (Indicator lights when paper is set) |
| 0014-1 | SN: Paper Table Low Limit | (Indicator lights when sensor ON) |
| 0015-1 | SN: Paper Table Height | (Indicator lights when sensor ON) |
| 0016-1 | SN: Pressure | (Indicator lights when sensor ON) |
| 0017-1 | SN: 1st Paper Exit | (Indicator lights when paper exists) |
| 0018-1 | SN: 2nd Paper Exit | (Indicator lights when paper exists) |
| 0019-1 | SW: Cover Safety/Drum Detection | (Indicator lights when switch ON) |
| 0020-1 | SN: Color Drum | (Indicator lights when color drum is set) |
| 0021-1 | DIP SW-1 (DIP102-1) | (Indicator lights when switch ON ) |
| 0022-1 | DIP SW-2 (DIP102-2) | (Indicator lights when switch ON) |
| 0023-1 | DIP SW-3 (DIP102-3) | (Indicator lights when switch ON) |
| 0024-1 | DIP SW-4 (DIP102-4) | (Indicator lights when switch ON) |
| 0026-1 | SN: Ink Detecting | (Indicator lights when ink appears) |
| 0027-1 | SN: Thermistor | (Indicator lights when temp. is standard) |
| 0028-1 | Key: Proof | (Indicator lights when key ON) |
| 0029-1 | Key: Image Shift + | (Indicator lights when key ON) |
| 0030-1 | Key: Image Shift - | (Indicator lights when key ON) |
| 0031-1 | SW: Drum Rotation | (Indicator lights when switch ON) |
| 0032-1 | SW: Master Manual cut | (Indicator lights when switch ON ) |
| 0033-1 | SN: 1st Original Detection | ( Indicator lights when sensor ON) |
| 0034-1 | SN: Paper Size 1 | ( Indicator lights when sensor ON) |
| 0035-1 | SN: Paper Size 2 | (Indicator lights when sensor ON) |
| 0036-1 | SN: Paper Size 3 | (Indicator lights when sensor ON) |
| 0037-1 | SN: Drum Master Detection | (Indicator lights when sensor ON) |

### 3.3 SERVICE PROGRAAM TABLE: VT2130

## Output Mode:

| COUNTER INDICATION | OUTPUT |
| :---: | :---: |
| 0001-0 | Turns on the drum ( 10 rpm ). |
| 0002-0 | Turns on the drum ( 30 rpm ). |
| 0003-0 | Turns on the drum ( 60 rpm ). |
| 0004-0 | Turns on the paper table drive motor (up). |
| 0005-0 | Turns on the paper tabie dirive motor (down). |
| 0006-0 | Tums on the vacuum motor. |
| 0007-0 | Turns on the master eject solenoid. |
| 0008-0 | Turns on the master eject clamper opening solenoid. |
| 0009-0 | Turns on the master feed clamper opening solenoid. |
| 0010-0 | Turns on the reversing roller solenoid. |
| 0011-0 | Turns on the paper feed solenoid and the printing pressure solenoid. |
| 0012-0 | Turns on the ink supply solenoid. |
| 0013-0 | Turns on the original transport motor. |
| 0014-0 | Turns on the master feed motor. |
| 0015-0 | Turns on the fluorescent lamp. |
| 0016-0 | Master Process Command (Photo LED ON) |
| 0017-0 | Reverses the master eject motor (Turn the eject rollers). |
| 0018-0 | Turns on the master eject motor (Pressure plate up/down). |
| 0019-0 | Turns on the cutter motor (Moves it from front to rear). |
| 0020-0 | Turns on the cutter motor (Moves it from rear to front). |
| 0021-0 | Turns the image shifting motor in ( ${ }^{(+)}$direction. |
| 0022-0 | Turns the image shifting motor in (-) direction. |
| 0023-0 | Turns on the magnetic counter for paper. |
| 0024-0 | Turns on the magnetic counter for master. |
| 0025-0 | Turns on the drum reverse rotation relay. |
| 0026-0 | Magnification ratio : 100\% (LED ON) |
| 0027-0 | Magnification ratio : 93\% (LED ON) |
| 0028-0 | Magnification ratio: 82\% (A4 version) $75 \%$ (LT version) (LED ON) |
| 0029-0 | Magnification ratio : 71\% (A4 version)/ 64\% (LT version) (LED ON) |
| 0030-0 | Turn on the drum ( 10 rpm ), the paper feed solenoid and the printing pressure solenoid. |
| 0031-0 | Tape dispenser (option) feeds out strips of paper. |
| 0032-0 | Turns on the ADF drive motor (Not used). |
| 0033-0 | Turns on the ADF original pressure solenoid (Not used). |
| 0034-0 | Outputs the thermal head voltage (VHD). |

NOTE: $0001-0$ to $0006-0$ and $0030-0$ are not activated when the safety cover is open.

### 3.4 SERVICE PROGRAM TABLE: VT2130

## Input Mode:

| COUNTER |  |  |
| :---: | :--- | :--- |
| INDICATION |  | INPUT |
| $0001-1$ | SW: Master Eject Detection | (Indicator lights when sensor ON) |
| $0002-1$ | SW: Pressure Plate Position | (Indicator lights when switch ON) |
| $0003-1$ | SN: 2nd Original Detection | (Indicator lights when sensor ON) |
| $0004-1$ | SN: Original Registration Detection | (Indicator lights when sensor ON) |
| $0005-1$ | SN: 1st Drum Position Detection | (Indicator lights when sensor ON) |
| $0006-1$ | SN: 2nd Drum Position Detection | (Indicator lights when sensor ON) |
| $0007-1$ | SN: Master Detection | (Indicator lights when master is set) |
| $0008-1$ | SN: Master Buckle Detection | (Indicator lights when master appears) |
| $0009-1$ | SW: Left Cutter | (Indicator lights when switch ON) |
| $0010-1$ | SW: Right Cutter | (Indicator lights when switch ON) |
| $0011-1$ | SW: Master Eject Box | (Indicator lights when switch ON) |
| $0012-1$ | SW: Full Master Detection | (Indicator lights when switch ON) |
| $0013-1$ | SN: Paper End | (Indicator lights when paper is set) |
| $0014-1$ | SN: Paper Table Low Limit | (Indicator lights when sensor ON) |
| $0015-1$ | SN: Paper Table Height | (Indicator lights when sensor ON) |
| $0016-1$ | SN: Pressure | (Indicator lights when sensor ON) |
| $0017-1$ | SN: 1st Paper Exit (LED103) | (Indicator lights when paper exists) |
| $0018-1$ | SN: 2nd Paper Exit (LED101) | (Indicator lights when paper exists) |
| $0019-1$ | SW: Cover Safety/Drum Detection | (Indicator lights when switch ON) |
| $0020-1$ | SN: Color Drum | (Indicator lights when color |
|  |  | drum is set) |
| $0021-1$ | DIP SW-1 (DIP100-1) | (Indicator lights when switch ON) |
| $0022-1$ | DIP SW-2 (DIP100-2) | (Indicator lights when switch ON) |
| $0023-1$ | DIP SW-3 (DIP100-3) | (Indicator lights when switch ON) |
| $0024-1$ | DIP SW-4 (DIP100-4) | (Indicator lights when switch ON) |
| $0025-1$ | DIP SW-5 (DIP100-5) | (Indicator lights when switch ON) |
| $0026-1$ | SN: Ink Detecting | (Indicator lights when ink appears) |
| $0027-1$ | SN: Thermistor | (Indicator lights when temp. is |
| $0028-1$ | Key: Proof | standard) |
| $0029-1$ | Key: Image Shift + | (Indicator lights when key ON) |
| $0030-1$ | Key: Image Shift - | (Indicator lights when key ON) |
| $0031-1$ | SW: Drum Rotation | (Indicator lights when key ON) |
| $0032-1$ | SW: Master Manual Cut | (Indicator lights when switch ON) |
| $0033-1$ | SN: 1st Original Detection | (Indicator lights when switch ON) |
|  |  |  |

## 4. TEST PATTERN IMAGE MODE

The purpose of this mode is to distinguish whether the cause of the image problem is located before or after the image processing.

Output image: The normal output of this test pattern image mode is one of the Dither matrix pattern as illustrated below.

## Master processing length:

Main scan (Horizontal) direction:
Sub scan (Vertical) direction:

Full width of the thermal head
Same as the vertical size of the original set on the original table.


This test pattern is generated by the image processing PCB.
[Example] Problem: Vertical white lines appear on the print.
Possible Cause 1 If the same problem appears on the output Image from the thermal head in Test Pattern image mode, the cause should exist in area B as shown above.
Possible Cause 2 If the output image from the thermal head is correct in Test Pattern Mode but the output image in the normal mode is incorrect, the cause should exist in area $A$ as shown above.

### 4.1 OPERATION: (To Enter Test Pattern Image Mode)

1) Remove the front cover.
2) Turn off the DIP SW 400-7 on the image processing PCB only when the power switch is off.
3) Turn on the main switch.

VT2300/VT2500 only:
4) Press the Image Mode key to select the Test Pattern Image.


## VT2100/VT2130/VT2150 only:

4) The following Test Pattern is made in both Line and Photo mode (i.e. it does not need to be selected).

Test Pattern in Line Mode/Photo Mode

5) Set the originai on the original table.

CAUUTION: To prevent overheating of the thermal head, make the original as short as possible. Any type of original is suitable as the test pattern being used is in the image processing PCB memory.
6) Press the Master Making key and make prints.
7) After completion of the Test Pattern Image mode, turn on DIP SW 400-7.

## 5. DESIGNATED AREA CHECK MODE: VT2500

The command sheet image (designated area) and the original image can be printed at the same time to check the designated area and the positioning of the image within the designated area as follows:

1) Turn off the power switch.
2) Turn on the power switch while pressing the Make-up Key and the Reset Key.

3) Press the Make-up Key ([Fn] is displayed in the counter.)
4) Press the " 8 " key (" 8 " is displayed in the counter.)

5) Set the command sheet and the original on the original table and press the Print Start key to make copies.

* If white paper is used as an original, only the command sheet (the line showing the designate area) is printed.

Original


Command Sheet


Printed image using "Fn 8"


1) The designated areas marked using a pencil are depicted by dashed lines. This is because the line marked using a pencil is low density and thin, therefore the designated area is not recognized as a closed loop even if the line on the command sheet is a closed loop.
Therefore, the designated area can not be memorized.
2) The designated area marked using a black felt-tip pen is printed within the closed loop.
As the line of the designated area on the printed paper is a closed loop, the designated area is memorized.

## 6. OPTION/SUPPLY INTERCHANGEABILITY

0: Standard combination
$\Delta$ : Usable under certain conditions (*See NOTES on page 4-23)
X: Cannot be used

|  |  | SS810 | SS830 | SS930 | SS950 | SS915 | SS935 | SS955 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Masters | Type 800 | 0 | 0 | $\Delta * 1$ | $\Delta$ *1 | $\Delta$ *2 | $\Delta$ *2 | $\Delta$ *2 |
|  | Type 900 | X | X | 0 | 0 | $\Delta$ *3 | $\Delta$ *3 | $\Delta$ *3 |
|  | Type 905 | X | X | $\Delta$ *4 | $\Delta$ *4 | 0 | 0 | 0 |
|  | VT-S | X | X | X | X | X | X | X |
|  | VT-M | X | X | X | X | X | X | X |
|  | VT-L | X | X | X | X | X | X | X |
| Inks | Black | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Color (rd/b/gn/br) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | VT-Black-800 | X | X | X | X | X | X | X |
| Color Drums | Color Drum | 0 | 0 | 0 | 0 | $\Delta$ *6 | $\Delta$ *7 | $\Delta$ *7 |
|  | Color Drum <br> Type 905 | $\Delta$ *9 | $\Delta$ *9 | $\Delta$ *9 | $\Delta$ *9 | 0 | 0 | 0 |
|  | Color Drum VT2000-M | $\Delta * 11$ | $\Delta$ *11 | $\Delta * 11$ | $\Delta * 11$ | 0 | 0 | 0 |
|  | Color Drum VT2000-LG | X | X | X | X | X | X | X |
|  | Color Drum VT2000-S | X | X | X | X | X | X | X |
|  | Color Drum VT3000-L | X | X | X | X | X | X | X |
|  | Color Drum VT3000-S | X | X | X | X | X | X | X |
| Others | Cassette B4 | X | X | X | X | X | 0 | 0 |
|  | Cassette VT3000-L | X | X | X | X | X | X | X |
|  | $\begin{aligned} & \text { Cassette } \\ & \text { VT3000-S } \end{aligned}$ | X | X | X | X | X | X | X |
|  | Tape Marker Type 20 | 0 | 0 | 0 | 0 | 0 | $\Delta{ }^{* 12}$ | $\Delta{ }^{* 12}$ |
|  | Priport Table | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Priport Table VT3000 | X | X | X | X | X | X | X |

0: Standard combination
$\Delta$ : Usable under certain conditions (See NOTES on page 4-23)
X: Cannot be used

|  |  | VT2100 | VT2130 | VT2150 | VT2300 | VT2500 | VT3500 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Masters | Type 800 | X | X | X | X | X | X |
|  | Type 900 | X | X | X | X | X | X |
|  | Type 905 | X | X | X | X | X | X |
|  | VT-S | X | 0 | 0 | X | X | X |
|  | VT-M | 0 | X | X | 0 | 0 | X |
|  | VT-L | X | X | X | X | X | 0 |
| Inks | Black | 0 | 0 | 0 | 0 | 0 | $\Delta$ *5 |
|  | Color (rd/bl/gn/br) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | VT-Black-800 | X | X | X | X | X | 0 |
| Color Drums | Color Drum | $\Delta$ *8 | X | X | $\Delta$ *8 | $\Delta$ *8 | X |
|  | Color Drum Type 905 | $\Delta * 10$ | X | X | $\Delta * 10$ | $\Delta * 10$ | X |
|  | Color Drum VT2000-M | 0 | X | X | 0 | 0 | X |
|  | Color Drum VT2000-LG | X | 0 | X | X | X | X |
|  | Color Drum VT2000-S | X | X | 0 | X | X | X |
|  | Color Drum VT3000-L | X | X | X | X | X | 0 |
|  | Color Drum VT3000-S | X | X | X | X | X | 0 |
| Others | Cassette B4 | X | X | X | 0 | 0 | X |
|  | Cassette VT3000-L | X | X | X | X | X | 0 |
|  | $\begin{array}{\|l\|} \hline \text { Cassette } \\ \text { VT3000-S } \\ \hline \end{array}$ | X | X | X | X | X | 0 |
|  | Tape Marker Type 20 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Priport Table | 0 | 0 | 0 | 0 | 0 | X |
|  | Priport Table VT3000 | X | X | X | X | X | 0 |

## NOTES

1. The image density is lower than with a type 900 master; however, the ink set-off on the back side of the following pages is reduced.
2. The image density is lower than with a type 905 master; however, the ink set-off is reduced.
3. The image density is higher than with a type 905 master and the ink set-off is increased.
4. The image density is lower than with a type 900 master; however, the ink set-off is reduced and the image density in solid areas is more even.
5. When the 500 cc ink cartridge is installed, the ink holder spacer [ A ] ( $\mathrm{P} / \mathrm{N} \mathrm{C} 5264633$ ) must be installed as shown.
6. The image density is slightly higher.
7. The drum cannot be used used unless the black seal [ $B$ ] ( $\mathrm{P} / \mathrm{NC2074550} \mathrm{)} \mathrm{is} \mathrm{affixed} \mathrm{to} \mathrm{the}$ screen edge as shown. The drum lock function cannot be used.
8. The drum cannot be used unless the black seal $[B](P / N C 2074550)$ is affixed to the screen edge as shown. The modified master clamper (P/N C2074948) must be installed. The drum lock function cannot be used.
9. The drum lock and the drum master detection functions cannot be used; however, the first few prints made when the Master Making key is pressed will be better than those made on a standard drum.
10. The modified master clamper ( $\mathrm{P} / \mathrm{N} \mathrm{C} 2074948$ ) must be installed.
11. The drum lock and the drum master detection functions cannot be used; however, this drum produces better quality images than a standard drum.
12. The rear paper delivery side plate [C] (P/N C2136119) used on the VT series must be installed.


## REPLACEMENT AND ADJUSTMENT

## 1. EXTERIOR

### 1.1 EXTERIOR COVER REPLACEMENT



When adjusting or disassembling each sections, refer to the following procedure of how to remove the exterior covers.
[A] Master feed unit cover (2 screws). Slide the scanner unit to the left.
[B] Front cover (6 screws).

- Remove master feed unit cover [A] to remove upper right screw. Open the front door to remove the front screws.
[C] Rear cover ( 6 screws).
[D] Operation panel cover (6 screws).
- Remove front cover [B] to remove operation panel cover.
[E] Front and rear fluorescent lamp covers (2 screws each).
[F] Master eject cover (2 screws).

[G] Front and rear original table frames (3 screws each).
- Remove the operation panel cover [D] and rear cover [C] to remove the front and rear original table frames (See page 5-1).
[H] Original table (6 screws).
- Remove front and rear original table frames [G] to remove the original table.

NOTE: When installing the original table, make sure both original guides [J] are set in the same position in the grooves (See illustration).
[I] Original table cover (3 screws).

- Slide the scanner unit to the left.


## 2. ORIGINAL FEED SECTION

### 2.1 ORIGINAL FEED BELT TENSION ADJUSTMENT



Purpose: To ensure proper original feed.

1. Remove the rear cover of the fluorescent lamp (2 screws).
2. Using a tension gauge, apply a 110-gram load at the center of the belt [A]. Make sure that the belt deflects 2 to 3 mm .
3. If not, loosen the mounting screws $[B]$ of the original feed motor [ $C$ ] and adjust belt tension by moving the original feed motor.
4. Using a tension gauge, apply a 110-gram load at the center of the belt [F]. Make sure that the belt deflects $1.1 \pm 0.2 \mathrm{~mm}$.
5. If incorrect, loosen the mounting screw [D] and adjust belt tension by moving the belt tensioner [E].
6. After adjustment, retighten the mounting screws.

### 2.2 ORIGINAL PRESSURE SOLENOID ADJUSTMENT: VT2300/VT2500



Purpose: To ensure that the originals are separated properly.

1. Remove the screw securing the stopper [A].
2. Remove the platen plate $[B]$ ( 2 screws).
3. Remove the original guide [C] (4 screws).
4. Remove the ADF unit cover [D] (5 screws).
5. Unhook the both hook springs [E].
6. Remove the separation guide plate [F] ( 4 screws).
7. Adjust the original pressure solenoid [G] position so that the space between the E-ring and the rubber cushion is 6.0 to 6.5 mm when the solenoid is turned off.

### 2.3 TRANSPORT ROLLER PRESSURE ADJUSTMENT: VT2300/VT2500



Purpose : To ensure that the original does not skew

1. Set the ADF ON/OFF switch to OFF.
2. Open the scanner unit [ $A$ ] and place strips of paper $\left(45 \mathrm{~g} / \mathrm{m}^{2}\right)$ over the front and rear ends of the transport roller [B].
3. Close the scanner unit.
4. Confirm that the strips of paper can be pulled out at both ends of the roller with the same amount of force.
5. If the pressure is not the same at both ends, loosen the mounting screw [C] and adjust the transport roller pressure by sliding the adjustment plate [D] up or down.
6. Tighten the mounting screw after adjusting the roller pressure.

### 2.4 EXPOSURE GLASS REPLACEMENT



1. Slide the scanner unit to the left.
2. Open the ADF unit [A].
3. Remove the front and rear fluorescent lamp covers (2 screws each).
4. Remove both the exposure glass leaf springs [B].
5. Carefully remove the exposure glass [C].

### 2.5 EXPOSURE LAMP / HEATER REPLACEMENT



1. Slide the scanner unit to the left.
2. Remove the front fluorescent lamp cover (2 screws).
3. Remove the front fluorescent lamp holder [A] (2 screws).
4. Disconnect the 4 P heater connector [B].
5. Carefully remove the fluorescent lamp [C] so that it does not contact the exposure glass.
6. Remove the heater [ D$]$ from the fluorescent lamp.

### 2.6 ORIGINAL REGISTRATION SENSOR / 2ND ORIGINAL SENSOR REPLACEMENT



## Original Registration Sensor:

1. Remove the DF unit stoppers [A] (VT2100/NT2130NT2150 only).
2. Remove the exposure glass. (See page 5-6.)
3. Remove the fluorescent lamp. (See page 5-6.)
4. Remove the screw securing the stopper [B] (VT2300NT2500 only).
5. Remove the guide plate [C] (4 screws).
6. Disconnect the original registration sensor connector [D].
7. Remove the sensor with the securing plate [E] (2 screws).
8. Remove the original registration sensor $[\mathrm{F}]$ from the securing plate.

## 2nd Original Sensor:

1. $\sim 5$. procedures are the same as above.
2. Remove the original table. (see page 5-2.)
3. Remove the $2 n d$ original sensor feeler.
4. Disconnect the and original sensor connector [G].
5. Remove the $2 n d$ original sensor [H] (2 screws).

### 2.7 1ST ORIGINAL SENSOR REPLACEMENT: VT2300/2500



1. Remove the screw securing the stopper $[A]$ ( 1 screw).
2. Remove the platen plate $[B]$ (2 screws).
3. Remove the original guide [C] (4 screws).
4. Remove the ADF unit cover [D] (5 screws).
5. Unhook the both hook springs [E].
6. Remove the separation guide plate $[\mathrm{F}]$ ( 4 screws).
7. Remove the separation blade assembly [H] ( 1 screw).

8 . Disconnect the 1st original sensor connector [I].
9. Remove the sensor from the sensor bracket.

### 2.8 ORIGINAL FEED ROLLERS / PULL-OUT ROLLERS REPLACEMENT: VT2300/2500



1. Remove the original table (See page 5-2).
2. Replace the pull-out rollers [A] (1 snap ring, 1 pin).
3. Remove the E-rings at the both end of the original feed roller shaft [B].
4. Remove the ADF drive gear [C] and bushing [D].
5. Remove the original feed roller assembly [E].
6. Remove the stopper [F] (Allen screw).
7. Replace the original feed rollers [G].

NOTE: A one-way clutch is installed in the feed roller. Confirm that the roller can rotate in the arrow direction as shown in the above illustration.

## 3. SCANNER SECTION

### 3.1 OPTICAL ADJUSTMENT

The only change in the optical adjustment procedure is that black level adjustment should be done first.

The following table shows the reciprocal relationship between adjustment procedures. When the items listed in the left column are adjusted, the items listed in the top row must also be adjusted.

| Adjustment Items | Black <br> Level <br> VT2300, <br> VT2500) | White <br> Level | Shading | Scan <br> Line <br> Position | Reading <br> Start <br> Position of <br> Main Scan | Focus <br> (MTF) | Reduction <br> Ratio <br> (Moire) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Black Level <br> (VT2300/VT2500) | $\mathbf{0}$ | $\mathbf{0}$ |  |  | $\mathbf{0}$ | $\mathbf{0}$ |  |
| White Level |  |  |  |  |  |  |  |
| Shading | $\mathbf{0}$ | $\mathbf{0}$ |  |  |  |  |  |
| Scan Line Posi- <br> tion |  | $\mathbf{0}$ | $\mathbf{0}$ |  | $\mathbf{0}$ |  |  |
| Reading Start <br> Position of Main <br> Scan |  | $\mathbf{0}$ | $\mathbf{0}$ | $\mathbf{0}$ |  |  |  |
| Focus (MTF) |  |  |  |  | 0 | $\mathbf{0}$ |  |
| Reduction Ratio <br> (Moire) | $\mathbf{0}$ | $\mathbf{0}$ | $\mathbf{0}$ | $\mathbf{0}$ | $\mathbf{0}$ | $\mathbf{0}$ |  |

The facsimile test chart R-21 (P/N 99992131) and an oscilloscope are required for this adjustment.

### 3.1.1 Preparation for Adjustment

1. Remove the original table cover.
2. Connect the terminals of the oscilloscope to the following test pins on the A/D Conversion PCB.

| VT2100NT2130NT2150 |  | VT2300/NT2500 |  |
| :---: | :---: | :---: | :---: |
| Terminal | Test Pin | Terminal | Test Pin |
| Channel 1 | TP 600 | Channel 1 | TP 601 |
| Channel 2 | TP 603 | Channel 2 <br> (Black Level <br> Standard Voltage) | TP 600 |
| GND | TP 602 | GND | TP 604 |

* The trigger terminal is TP 603.


3. Turn on the power switch while holding down the Print Start key, Stop key and Clear key on the operation panel. --- LT version only
Turn on the power switch while holding down the Print Start key, Stop key, Clear key and the Full Master Detecting switch. --- A4 version only
4. Set " 15 " in the copy counter and set " 0 " in the memory/class display to turn on only the fluorescent lamp.

### 3.1.2 Black Level Adjustment: VT2300/VT2500



Purpose: To ensure that the black level from the CCD output conversion/amplification board is the same as the standard black level (1.4 V).

1. Close the scanner unit.
2. Press the Print Start key to turn on the fluorescent lamp.
3. Confirm that the black level at TP 601 is the same as the standard black level ( 1.4 V ) at TP600 on the A/D conversion board [A].
4. If the black levels are not the same, adjust VR2 to set the black level at TP601 to the standard black level ( $1.4 \pm 0.03 \mathrm{~V}$ ).

### 3.1.3 Shading Adjustment



The middle of the wavefrom should be higher than the ends.

$$
B \geq 0.6 A
$$

Purpose: To flatten the white level waveform. This also, corrects for distortion to the light intensity due to the output characteristics at both lamp ends and aberrations within the lens section.

1. Close the scanner unit [A].
2. Press the Print Start key to turn on the fluorescent lamp.
3. Confirm that the above white level waveform is displayed.
4. If incorrect, move the shading plate [B] position vertically (up or down), so that the waveform is similar to the one above.
5. After adjustment, retighten the mounting screws [C] of the shading plate [B].

### 3.1.4 Scan Line Position Adjustment



Purpose: To ensure that CCD alignment is perpendicular to the original feed direction.

1. Set the test chart so that the black line is positioned 16 mm away from the edge of the lower original guide plate as shown.
2. Press the Print Start key to turn on the fluorescent lamp and confirm that the waveform is similar to the above illustration.
3. If incorrect, loosen the mounting screws [A] fixing adjusting knob [B] and the mounting screws [C] of the CCD board and adjust the CCD position by turning the adjusting knob.
4. Tighten the mounting screws $[B]$ and $[C]$. Then reconfirm the waveform.

### 3.1.5 Reading Start Position Adjustment (In The Main Scan Direction)



Purpose: To align the center of the original with the center of the CCD so that the center of original image is positioned in the center on the master.

1. Open the scanner unit $[A]$.
2. Set the test chart so that the center line, located at the leading edge of the test chart, is positioned above the original leading edge sensor actuator [B].
3. Close the scanner unit [B].
4. Press the Print Start key to turn on the fluorescent lamp and feed the test chart.
5. Stop feeding the test chart when it is possible to read both lines [C], and confirm that the above waveform is displayed (The distance "L" is the same as "L'").
6. If incorrect, loosen the mounting screws [D] of the CCD board [E] and adjust the CCD horizontal position.
7. After adjustment, retighten the mounting screws.

### 3.1.6 Focus Adjustment (MTF Adjustment)



- $\frac{B}{A} \times 100 \geq 48 \%$
- Amplitude " B " (difference between white and black levels) must be a maximum

Purpose: To focus the lens (focus distance between the $C C D$ and the lens).

1. Position the test chart so that the 8 lines $/ \mathrm{mm}$ section on the test chart can be read.
2. Press the Print Start key to turn on the fluorescent lamp.
3. Confirm that the wave form is similar to the above illustration.
4. If incorrect, loosen the allen screw [A] and adjust the lens position $[B]$ by moving it as shown by the arrow.
5. After adjustment, retighten the allen screw.

### 3.1.7 Reduction Ratio Adjustment (Moire Adjustment)



Cross points must be less than 6 .

## : Upper cross points $\leq 6$

: Lower cross points $\leq 6$

Purpose: To adjust the focus (to set distance between the lens and the original)

1. Position the test chart so that the area containing 8 lines $/ \mathrm{mm}$ on the test chart can be read (See page 5-17).
2. Press the Print Start key to turn on the fluorescent lamp.
3. At the same time, confirm that the waveform is similar to the above illustration.
4. If incorrect, loosen the mounting screws [ $A$ ] and adjust the lens block [ $B$ ] position as indicated by the arrows.
5. After adjustment, retighten the mounting screw [A].

### 3.1.8 White Level Adjustment



Purpose: To set the white level so that the background of the test chart is not copied.

1. Position the test chart so that the background area (white area) of the test chart can be read.
2. Press the Print Start key to turn on the fluorescent lamp.
3. Adjust VR 600 for VT2100/VT2130NT2150 (VR-1 for VT2300/NT2500) on the A/D conversion PCB so that the maximum level is $2.0 \pm 0.1 \mathrm{~V}$.

### 3.2 IMAGE MAGNIFICATION ADJUSTMENT

(In The Sub-scan Direction)


Purpose: To ensure that the image magnification lengthwise is $100 \% \pm 0.5 \%$ when using the full size mode.

1. Press the Full Size (100 \%) key.
2. Make prints of the test chart.
3. Make sure that the image length is $100 \% \pm 0.5 \%$ by comparing the prints with the test chart.
4. If the prints are not within specification, open the front cover of the machine and adjust the magnification ratio using DIP SW400 on the image processing board.
<DIP SW / Correction Ratio>

|  | DIP 400-1 | DIP 400-2 | DIP <br> $400-3$ | $\frac{\text { Zoom }}{\text { Ratio }}=\frac{\text { (Length of Test Chart) }}{\text { (Length of Print Image) }} \times 100$ |
| :---: | :---: | :---: | :---: | :---: |
| Red: | OFF | OFF | OFF | $100 \%$ |
|  | OFF | ON | OFF | $99.25 \%$ |
|  | OFF | OFF | ON | $98.77 \%$ |
|  | OFF | ON | ON | $98.25 \%$ |
| Enl: | ON | OFF | OFF | $100 \%$ |
|  | ON | ON | OFF | $100.75 \%$ |
|  | ON | OFF | ON | $101.23 \%$ |

## 4. IMAGE SHIFTING SECTION

### 4.1 ENCODER MOUNTING POSITION ADJUSTMENT



Purpose: To ensure that the image is positioned in the middle when the Image Shifting key is set at the center " 0 ".

1. Remove the rear cover of the machine.
2. Turn on the power switch and press the "-" Image Shifting key to shift the position to the maximum backward position ("-2" position ). After that, press "+" Image Shifting key to shift the position to the center (when the " 0 " position LED lights).
3. Make sure that it is possible to insert the image shifting position gauge $[A]$ to confirm gear alignment and, therefore, the image shifting position.
4. If incorrect, adjust the gear alignment as follows after removing the encoder [B]:

CAUTION: Adjust the encoder position after removing the connector [C] of the image shift motor.

5. Disconnect the connector [D] of the encoder.
6. Insert the gauge $[A]$ into the hole of the gear $[E]$.
7. Turn on the LED "-2" of the Image shift indicator on the operation panel. Then gradually turn the shaft of the encoder $[B]$ in the " 0 " position direction and stop it as soon as the "0" position LED lights.
8. In the above condition, set the encoder and tighten the allen screw [F] to mount the shaft of the encoder with the gear [E]. Then remove the gauge [A] and connect the connector [C] of the image shift motor.
9. After adjustment, make prints to confirm the image position.

## 5. MASTER FEED SECTION

### 5.1 THERMAL HEAD VOLTAGE ADJUSTMENT



Purpose: To maintain master making quality and extend the lifetime of the thermal head.

NOTE: This adjustment is always required when the thermal head or power supply PCB is replaced.

1. Remove the rear cover of the machine.
2. Check the voltage noted on the decal, located on the thermal head. (The voltage varies according to the individual thermal head.)
3. Disconnect CN-504 [A] of the power supply PCB.
4. Place the master between the platen roller and the thermal head to protect the thermal head.
5. Access I/O check mode. (See page 4-11.)

- Enter " 0 " in the memory display and " 35 " in the copy counter ---- VT2300NT2500 only
- Enter " 0 " in the memory display and " 34 " in the copy counter ---- VT2100/VT2130/VT2150 only

6. Press the Print Start key to apply the thermal head voltage.
7. While holding down the Print Start key, Confirm that the voltage between pins 3 and 6 on CN504 is at the level specified on the decal (Within +0V, -0.1 V ).
8. If it is not, adjust VR201 on the power supply board.

### 5.2 BELT TENSION ADJUSTMENT



Purpose: To ensure that correct master feed motor rotation is transmitted to each roller.

## Platen Roller Drive Belt:

1. Turn off the main switch.
2. Remove the master feed unit from the machine.
3. Using a tension gauge, apply a 110-gram load to the center of the belt [A]. Make sure that the belt deflects 1.2 to 1.8 mm .
4. If incorrect, adjust the belt tension by raising or lowering the master feed motor [B].

## Feed Roller Drive Belt:

5. Using a tension gauge, apply a 110-gram load to the center of the belt [C]. Make sure that the belt deflects 2.2 to 3.7 mm .
6. If incorrect, loosen the nut [D] and adjust the belt tension by raising or lowering the tensioner [E].

### 5.3 RIGHT AND LEFT CUTTER SWITCH ADJUSTMENT



Purpose: To ensure that the cutter slider stops properly.

1. Turn off the main switch.
2. Remove the cutter unit (2 screws).
3. Remove the cutter unit cover (4 screws).
4. After moving the cutter slider $[A]$ fully to the left, make sure that the left cutter switch $[B]$ is turned on and that the switch stroke $[C]$ is 0.1 to 0.5 mm . Also, make sure that the right cutter switch [D] is actuated in the same fashion.
5. If incorrect, loosen the mounting screws [E] and adjust the switch position.

### 5.4 REVERSE ROLLER SOLENOID ADJUSTMENT



Purpose: To ensure proper operation of the reverse roller clutch.

1. Turn off the main switch.
2. Remove the master feed unit.
3. Adjust the solenoid [A] position so that there is 0.5 to 1 mm clearance between the stopper $[B]$ and the gear $[C]$ when the solenoid is energized.

### 5.5 CUTTER REPLACEMENT



1. Turn off the main switch.
2. Slide the scanner unit to the left.
3. Disconnect the 6P connector [A].
4. Remove the cutter unit [B] (2 screws).
5. Remove the cutter unit cover [C] (4 screws).
6. Remove the lower cutter cover ( 2 screws).
7. Remove the cutter [D] (1 nut).

NOTE: When reassembling, move the cutter motor to the home position (operation side end) before the lower cutter cover is installed.

CAUTION: The edge of the cutter is very sharp.

### 5.6 MASTER BUCKLE SENSOR REPLACEMENT



1. Turn off the main switch.
2. Slide the scanner unit to the left.
3. Remove the master roll.
4. Remove the cutter unit [A] (2 screws).
5. Disconnect the buckle sensor connector [B].
6. Remove the buckle sensor [C] together with the bracket [D] (2 screws).
7. Remove the buckle sensor from the bracket (2 screws).

### 5.7 THERMAL HEAD REPLACEMENT:



1. Turn off the main switch.
2. Slide the scanner unit to the left.
3. Remove the master roll.
4. Remove the thermal head cover [A] (3 screws).
5. Remove the platen roller [B] (2 knob screws).
6. Disconnect the thermal head connectors [C].
7. Remove the thermal head [D] (2 screws).
8. After installing the thermal head, adjust the thermal head voltage. (See page 5-23.)
NOTE: • The thermal head type being used on the VT2000 series is different from those of SS900 series.

- The VT2100NT2300NT2500 use the B4 size ( 256 mm width) thermal head ( $\mathrm{P} / \mathrm{N}$ C2138100)
- The VT2130NT2150 use the LG size ( 216 mm width) thermal head (P/N C2118100)


### 5.8 THERMAL HEAD DRIVE BOARD REPLACEMENT



1. Turn off the main switch.
2. Remove the master feed unit from the machine.
3. Remove the bottom plate [A] of the master feed unit.
4. Disconnect the 5 connectors (a to e).
5. Remove the thermal head drive board $[B]$ (6 screws).

## 6. MASTER EJECT SECTION

### 6.1 MASTER EJECT SOLENOID ADJUSTMENT



To ensure that master is ejected.
Purpose:

1. Open the master eject unit and remove the upper cover of the master eject unit (4 screws).
2. Access I/O check mode. (See page 4-11).

- Enter " 0 " in the memory display and " 7 " in the copy counter.

3. Press the Print Start key to turn on the master eject solenoid.
4. Confirm that the lower first eject rollers [A] are touched to the drum surface and also confirm that they are separated from the drum when the master eject solenoid turns off.
5. If it is out of adjustment, loosen the screws [B] and adjust the mounting position of the master eject solenoid [C].
6. After adjustment, retighten the screws [B].

NOTE: To easily confirm whether the lower roller touches to the drum surface. Wrap the drum with the blank paper. Check the paper for roller marks.

### 6.2 PRESSURE PLATE POSITION SWITCH ADJUSTMENT



Purpose: To ensure that the pressure plate stops at the proper position.

1. Open the master eject unit and remove the front cover of the master eject unit (3 screws).
2. Turn the gear $[A]$ and position the pressure plate $[B]$ at the maximum height.
3. Confirm that the distance between the switch [C] and lever [D] is 0.1 to 0.5 mm when the lever edge [E] is positioned in the ditch on the cam [F] bottom. Also, confirm that the switch turns off when the lever edge [ $E$ ] is not positioned in the ditch on the cam [F] bottom.
4. If it is out of adjustment, loosen the screws [G] and adjust the mounting position of the pressure plate position switch.

### 6.3 FULL MASTER SWITCH ADJUSTMENT



Purpose: To ensure that the full master detecting switch turns on when the master eject box is filled to capacity with ejected masters.

1. Open the master eject unit and remove the front cover of the master eject unit (3 screws).
2. Turn the gear [A] and position the pressure plate at its lowest position. Then, turn the gear further so that the arm $[B]$ turns on the full master detecting switch [C].
3. Confirm that the distance between the full master detecting switch and the switch actuator [D] is 0.1 to 0.5 mm when the full master detecting switch turns on.
4. If it is out of adjustment, loosen the screws [E] and adjust the position of the full master detecting switch.
5. Tighten the mounting screws [E].

### 6.4 MASTER EJECT SENSOR ADJUSTMENT: VT2300/VT2500



Purpose : To ensure that the sensor detects the ejected master.

1. Make a master that has a solid black area. The solid black area should be approx. A7 size ( $74 \times 105 \mathrm{~mm} / 3^{\prime \prime} \times 4$ ")
a. Set the original with the solid black area on the original table.
b. Press the Master Making key to make copies.
c. Stop printing when the image density of the solid black area on the copies stabilizes.
d. Remove the master from the drum.

NOTE: To prevent the thermal head from overheating, do not use a large solid black original.
2. Insert the above master [ A ] between the upper and the lower rollers with the master film side up and position the solid lack area under the sensor.
3. Confirm that the voltage between TP104 (MDLV) and the GND line (CN103-5) on the main control board [D] (see next page) is correct ( $4.0 \mathrm{~V} \pm$ $0.5 \mathrm{~V})$.]
4. If the voltage is outside the acceptable range, adjust it by turning VR104 on the main control board.

NOTE: Light reflected from an unused master has the highest intensity. Light reflected from that part of a used solid black master where the film layer has been burned away has the lowest intensity. Therefore, use a used solid black master for this adjustment so that the sensor can detect the ejected master under the worst conditions.


### 6.5 MASTER EJECT UNIT REPLACEMENT



1. Turn off the main switch.
2. Remove the master eject unit cover [A] (2 screws).
3. Disconnect the connector [B].
4. Pull out the shaft [C].
5. Carefully remove the master eject unit.

### 6.6 MASTER EJECT BELT/ROLLER REPLACEMENT



1. Remove the master eject unit. (See page 5-36.)
2. Remove the 2 springs [A] on both sides.
3. Remove the upper shaft [B] (2 E-rings).
4. Remove the lower shaft [C] (2 E-rings).
5. Remove the gear [D] (1 E-ring).
6. Remove the gear [E] (1 Allen Screw).
7. Remove the gear [F] (1 E-ring).
8. Remove the E-rings [G] to pull out both upper ( $30 \phi$ ) and lower rollers $(20 \phi)$ as a set.
9. Remove the Angle [H].
10. Remove the Plate [I].
11. Remove the Belts [J].
12. Remove the Rubber Rollers ( $30 \phi, 20 \phi$ ) [K].

## 7. PAPER FEED SECTION

### 7.1 PAPER TABLE SAFETY SWITCH ADJUSTMENT



Purpose: To ensure that the paper table safety switch turns on to prevent the paper table from going up when the paper table is closed.

1. Make sure that the safety switch [A] turns off when the paper table is opened and that the safety switch turns on when the paper table is closed. Also, make sure that the distance between the actuator $[B]$ and the safety switch [ A ] is 0.3 mm to 0.5 mm when the switch turns on.
2. If incorrect, loosen the screw [C] and adjust the switch bracket position.
3. After adjustment, repeat step 1 again.
4. Also, make sure that the safety switch does not turn on when 1,000 sheets of standard weight paper are placed on the paper table.

### 7.2 PAPER TABLE HEIGHT ADJUSTMENT



Purpose: To ensure smooth paper feed.

1. Set the paper feed pressure adjusting lever to the upper position.
2. Remove the front cover of the machine.
3. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and " 4 " in the copy counter.

4. Press the Print Start key to raise the paper table.
5. After the paper table stops, insert a scale into the slot at the end of the paper table. Make sure that the distance between the lower stay $[A]$ and the upper face of the table is 147.5 to 148.5 mm .
6. If not, loosen the screw $[\mathrm{B}]$ and adjust the position of the actuator [C].
7. After adjustment, repeat step 5 again by lowering and raising the paper table several times.
NOTE: When mounting the actuator, make sure that the actuator does not contact the paper table height sensor [D].

### 7.3 PAPER FEED ROLLER PRESSURE ADJUSTMENT



Purpose: To ensure that the paper feed roller exerts sufficient pressure for smooth printing paper feed (weight range 14 lbs . to 56 lbs .).
<Step 1>

1. Loosen the screw $[A]$ securing the lower adjusting plate $[B]$.

NOTE: When loosing the screw, hold the lower adjusting plate in the original position for fine adjustment.
2. Adjust the paper feed roller pressure by moving the lower adjusting plate [B] up/down.

Up : Increase the pressure
Down : Reduce the pressure

<Step 2>
This procedure should only be used when the proper pressure cannot be achieved in step 1.

1. Stack about 100 sheets of 20 lb . paper on the paper table. Lift up the paper table until it stops automatically.
2. Set the paper feed roller pressure adjusting lever to the upper position.
3. Remove the front cover, the main board, the image processing board.
4. Remove the master feed unit.
5. Align the lower adjusting plate notch with the center notch of the link [D] and tighten the screw [ $E$ ].
6. Hook a tension gauge (500-gram range) to the paper feed roller shaft [F] and insert a test sheet between the paper feed roller and the sheets of paper. Then hook a tension gauge ( 100 -gram range) to the test sheet and apply a 100 -gram load. In the above condition, gradually pull up the tension gauge hooked to the shaft and make sure that the test sheet can be pulled out when the tension gauge shows $250 \pm 5$ grams.
7. If not, adjust the pressure by moving the mounting position of the shaft [G].

### 7.4 SEPARATION PLATE PRESSURE ADJUSTMENT: VT2300/VT2500



Purpose : To adjust the separation plate pressure for the type of paper being used by the customer

1. Adjust the separation plate pressure by turning the adjusting screw [D].

NOTE: Position the minus groove on the screw head vertically $\mathbb{D}$ or horizontally $\Theta$. Otherwise, vibration may cause the screw to turn.
2. After adjustment, make copies to confirm that the paper feeds smoothly without jamming, folding, or wrinkling Use all the types of paper that the customer uses.

### 7.5 LOWER GUIDE PLATE ADJUSTMENT



Purpose: To ensure a smooth paper feed excluding paper jams, folds, or wrinkles.

1. Make sure that the distance between the lower guide plate $[A]$ and the lower second feed roller $[B]$ is 0 to 0.1 mm as shown.
2. If incorrect, remove both front and rear covers and loosen the screws [C]on both sides. Then, adjust the distance by lowering and raising the lower guide plate.
3. After adjustment, retighten the screws [C].

### 7.6 UPPER SECOND FEED ROLLER ADJUSTMENT



Purpose: To ensure that paper is fed between the drum and the pressure roller without skewing.

1. Remove both front and rear covers.
2. Move the second feed roller sector gear fully clockwise, so that the upper second feed roller [A] contacts the lower second feed roller.
3. Make sure that the clearance between the bushing $[\mathrm{B}]$ and the bushing supporter [C] is 0.05 to 0.1 mm as shown.
4. If incorrect, loosen the screw [D] and adjust the clearance by moving the bushing supporter.
5. After adjustment, make sure that the feed length of the second feed roller is correct. (The feed length varies with the position of the bushing supporter.)

### 7.7 PAPER FEED ROLLER FEED-LENGTH ADJUSTMENT



Purpose: To ensure paper feed to the second paper feed roller.

1. Stack about 100 sheets of 20 lb paper on the paper table.
2. Set the paper feed roller pressure adjusting lever in the upper position.
3. Remove both front and rear covers.
4. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and " 4 " in the copy counter.

5. Press the Print Start key to raise the paper table to the correct position.
6. Turn on the paper feed solenoid [A] manually. Then, turn the rollers counterclockwise by rotating the shaft $[B]$ with a spanner ( 10 mm ).
7. Measure the length of paper fed from the time the paper feed roller starts rotating until it stops rotating. This feed-length should be 93 to 97 mm .
8. If the feed-length is incorrect, adjust the feed-length by loosening the hexagon nut [C] mounted on the sector gear. Then, shift the bearing [D] up or down.
9. After adjustment, repeat steps 5 and 6 again.


Purpose: To ensure that the paper feed roller starts rotating when the paper feed solenoid turns on and stops rotating when the paper feed solenoid turns off.

1. Remove the rear cover.
2. With a spanner ( 10 mm ), gradually turn the shaft [ A ] counterclockwise.
3. Make sure that the clearance between the sector pin $[B]$ and the sector stopper [C] is 0.1 to 0.3 mm after turning the sector gear [D] fully clockwise.
4. If the clearance is incorrect, loosen the Allen screws [E] and adjust the clearance by shifting the sector pin [B].
5. Manually depress the plunger of the paper feed solenoid [F], and make sure that the clearance between the sector pin [G] and the sector stopper [H] is 0.1 to 0.5 mm .
6. If the clearance is incorrect, loosen the screws [I] and adjust it by shifting the paper feed solenoid bracket up or down.

### 7.9 SECOND FEED ROLLER SECTOR STOPPER CLEARANCE ADJUSTMENT


[E]

[D]
Purpose: To ensure that the second feed roller starts rotating when the paper feed solenoid turns on and stops rotating when the paper feed solenoid turns off.

1. Remove the rear cover of the machine.
2. Gradually turn the drum rotating shaft [A] counterclockwise with a spanner ( 10 mm ).
3. After turning the sector gear [B] fully counterclockwise, make sure that the clearance between the sector pin [C] and the sector stopper [D] is 0.1 to 0.3 mm .
4. If the clearance is incorrect, loosen the Allen screws [E] and adjust the clearance between the sector pin and the sector stopper.

### 7.10 SECOND FEED ROLLER FEED LENGTH ADJUSTMENT



Purpose: To ensure paper feed between the drum and the pressure roller.

1. Remove the drum unit and the rear cover from the machine.
2. Stack about 100 sheets of 20 lb paper on the paper table.
3. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and "4" in the copy counter.

4. Press the Print Start key to raise the paper table to the correct position.
5. Turn on the paper feed solenoid and gradually turn the drum rotation shaft to feed paper by rotating the drum rotation shaft $[A]$ with a spanner ( 10 mm ).
6. Measure the paper feed length from the time the second feed roller [B] starts rotating until it stops rotating. This feed length should be $85 \pm 5 \mathrm{~mm}$.
7. If it is not, loosen the screws [C] and adjust the feed length by shifting the second feed roller cam [D] up or down.
8. Check adjustment by repeating steps 5 and 6.
9. After adjustment, retighten the screws [C].

### 7.11 SECOND FEED ROLLER FEED TIMING ADJUSTMENT



Purpose: To ensure paper feed by regulating the start timing of the second feed roller.

1. Stack about 100 sheets of 20 lb paper on the table.
2. Set the paper feed roller pressure lever in the upper position.
3. Remove both front and rear covers of the machine.
4. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and " 4 " in the copy counter.

5. Press the Print Start key to raise the paper table to the correct position.
6. Set the Image Shifting indicator at " 0 " position, and turn the drum to the home position for drum replacement.
7. Set a protractor on the image shifting shaft [A].

- Position the origin of the protractor at the bracket of the master feed clamper solenoid.

8. Turn on the paper feed solenoid $[B]$ and, using a spanner ( 10 mm ), gradually turn the drum rotation shaft to feed the paper.
9. Measure the degrees turned when the second feed roller sector gear [C] starts returning counterclockwise. This should be $157^{\circ}$.
10. If incorrect, loosen the 2 hexagon bolts [D] located behind the second feed roller cam $[\mathrm{E}]$ and adjust by turning the cam.

### 7.12 PAPER FEED ROLLER REPLACEMENT



1. Remove the left clamper [A]
2. Remove the left bushing $[B]$.
3. Remove the paper feed roller shaft [C].
4. Remove the 2 paper feed rollers [D].

### 7.13 PAPER FEED ROLLER UNIT REPLACEMENT



1. Remove 2 hexagon screws $[A]$.
2. Remove the clampers [B].
3. Remove the upper paper feed roller unit from the machine by sliding the shaft to rear.

### 7.14 UPPER SEPARATION ROLLER REPLACEMENT



1. Remove the paper feed roller unit from the machine (See page 5-51).
2. Remove the bushing [A].
3. Remove the paper guide disks [B].
4. Remove the upper separation roller [C].

### 7.15 SEPARATION PLATE / LOWER SEPARATION ROLLER REPLACEMENT



## Separation Plate:

1. Remove the separation plate $[A]$ with the spring $[B]$ located under the separation plate (1 screw).

## Lower Separation Roller:

1. Remove the paper feed roller unit from the machine (See page 5-51).
2. Remove the front plate [C] of the paper feed section (4 screws). Lift up then pull out horizontally.
3. Remove the springs [D] on both sides.
4. Remove the separation levers [ $E$ ] on both sides ( 1 screw each).
5. Remove the lower separation roller shaft [F].
6. Remove the lower separation roller [G] (Allen screw).

## 8. PRINTING SECTION

### 8.1 PAPER DETECTING ARM CLEARANCE ADJUSTMENT



Purpose: To ensure that printing pressure is applied during paper feed, and is released correctly afterwards.

1. Remove the rear cover of the machine.
2. Using a spanner ( 10 mm ), gradually turn the drum rotation shaft counterclockwise to position the bearing of the pressure release arm $[A]$ on the top of the pressure cam [B].
3. Make sure that the clearance between the paper detecting arm [C] and the pressure release arm is 0.2 to 0.4 mm .
4. If incorrect, loosen the screws [D] and adjust the clearance by shifting the paper detecting bracket $[E]$ up or down.
5. After adjustment, confirm the printing pressure ON/OFF mechanism by monitoring a print run.

### 8.2 PRESSURE ROLLER POSITION ADJUSTMENT



Purpose: To ensure that the pressure roller does not contact the clamper section of the drum.

1. Remove the rear cover of the machine.
2. Using a spanner ( 10 mm ), turn the drum rotation shaft counterclockwise and position the bearing of the pressure release arm [ $A$ ] on top of the pressure cam [B].
3. While holding this condition, make sure that the distance between the pressure roller [C] and the tip of the clamper [D] is 0.6 to 1.0 mm .
4. If incorrect, loosen the hexagon nut $[E]$ and adjust the clearance by turning the screw [F].

### 8.3 PRESSURE TIMING ADJUSTMENT



Purpose: To ensure that the maximum printing area is within specifications, and that the ink does not stain the trailing edge.

1. Stack about 100 sheets of 20 lb paper on the table.
2. Set the paper feed roller pressure lever to the upper position.
3. Remove both front and rear covers of the machine.
4. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and " 4 " in the copy counter.

5. Press the Print Start key to raise the paper table to the correct position.

6 . Set the Image Shifting indicator at " 0 " position, and turn the drum to the home position for drum replacement.
7. Set a protractor on the image shifting shaft $[A]$.

- Position the origin of the protractor at the bracket of the master feed clamper solenoid.

8. Using a spanner ( 10 mm ), turn the drum rotation shaft counterclockwise while pressing in the plunger of the paper feed solenoid and the printing pressure solenoid.
9. Turn the drum rotation shaft a little further, and stop it when the pressure roller begins to contact the drum surface.
10. In the above condition, measure the degrees turned, this should be $225 \pm 1$ degrees.
11. If incorrect, loosen the screws $[B]$ of the pressure cam $[C]$ and adjust by turning the pressure cam.

### 8.4 PRINTING PRESSURE ADJUSTMENT



Purpose: To make better print results without decreasing the run length.

1. Remove the rear cover of the machine.
2. Adjust the clearance [A] to be 5 mm for VT2100/VT2300NT2500 ( 10 mm for $\mathrm{V} T 2130 \mathrm{NT} 2150$ ) by turning the adjusting bolt [B].

### 8.5 PRINTING PRESSURE STOPPER CLEARANCE ADJUSTMENT



Purpose: To ensure that printing pressure stopper is released when paper feed start, and is locked within one drum rotation when a paper jam occurs.

NOTE: Perform this adjustment after adjusting the clearance of the paper detecting arm.

1. Using a spanner ( 10 mm ), gradually turn the drum rotation shaft counterclockwise to position the bearing [ A ] of the pressure release arm on the top of the pressure cam $[B]$.
2. Manually press in the plunger [C] of the printing pressure solenoid and confirm that the clearance between the printing pressure ON/OFF lever [D] and the printing pressure stopper $[E]$ is 1 to 2 mm .
3. If incorrect, loosen the hexagon head screws [F] and adjust the clearance by moving the printing pressure solenoid.

### 8.6 PRESSURE ROLLER REPLACEMENT



1. Remove a screw [A].
2. Remove the holding plate $[\mathrm{B}]$.
3. Remove the pressure roller [C].
4. Remove both right and left bearings [D] (2 E-rings).

## 9. DRUM SECTION

### 9.1 MAIN DRIVE BELT TENSION ADJUSTMENT



Purpose: To ensure that correct main motor rotation is transmitted to the drum.

1. Remove the rear cover of the machine.
2. Apply a 1000-gram load using a tension gauge to the center of the main drive belt $[A]$. Make sure that the belt deflects 1.5 mm .
3. If incorrect, remove the drum unit and adjust the belt tension by moving the tensioner shaft [B] after loosening the nut [C].
4. After adjustment, tighten the nut completely.

### 9.2 DRUM ROTATION SENSOR ADJUSTMENT



Purpose: To ensure correct main motor speed detection.

1. Remove the rear cover of the machine.
2. Make sure that the drum rotation sensor $[A]$ is positioned so that the pulse disk $[B]$ is inserted into the sensor by $8 \pm 1 \mathrm{~mm}$ as shown above.
3. If not, loosen the screw [C] securing the sensor bracket and adjust the sensor bracket position.
4. After adjustment, set a spanner ( 10 mm ) into the drum shaft and rotate the drum to make sure that the pulse disk does not contact the sensor during a rotation.

### 9.3 PRINTING SPEED ADJUSTMENT:



Purpose: To set the maximum speed at $120 \pm 10$ rotations/minute.

1. Press the Speed Change key to set the speed at the maximum level.
2. Press the reset key while pressing the " 0 " key and make sure that the drum rotation speed is $120 \pm 10$ rotations/minute.

## VT2100/VT2130/VT2150 Only:

3. If not, remove the front cover of the machine and turn on DIP SW 100-6 on the Main Control PCB [A]. Then adjust the speed by turning VR100.

## VT2300/VT2500 Only:

3. If not, remove the front cover of the machine and then adjust the speed by turning VR101 on the Main Control PCB [A].

### 9.4 DRUM STOPPER ADJUSTMENT



Purpose: To ensure that the drum is securely locked when the drum unit is pulled out.

1. Press the Drum Rotation button to stop the drum at the home position for drum replacement.
2. Make sure that the distance between the center of the drum lock [ A ] and the center of the drum stopper $[B]$ is less than $\pm 1 \mathrm{~mm}$.
3. If incorrect, loosen the screws [C] and adjust by moving the drum lock [A].

### 9.5 MASTER FEED CLAMPER CAM ADJUSTMENT


$\mathrm{ON}=29 \pm 0.5 \mathrm{~mm} \quad \mathrm{OFF}=$ less than 25 mm
Purpose: To ensure that the master feed clamper is opened during the master feed process and is closed during other processes.

1. Remove the drum unit from the machine and open the master eject unit.
2. Remove the rear cover of the machine
3. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and " 9 " in the copy counter.

4. Press the Print Start key to turn on the master feed clamper solenoid [A].
5. Make sure that the distance between the bushing and the edge of the opening cam $[B]$ is $29 \pm 0.5 \mathrm{~mm}$ when the master feed clamper solenoid turns on.
6. If not, loosen the mounting screws [C] and adjust the solenoid position.

CAUTION: Do not turn on the solenoid any longer than 10 seconds.
7. After adjustment, retighten the mounting screws.

### 9.6 MASTER EJECT CLAMPER CAM ADJUSTMENT



$$
\mathrm{ON}=29 \pm 0.5 \mathrm{~mm} \quad \mathrm{OFF}=\text { less than } 25 \mathrm{~mm}
$$

Purpose: To position the master eject clamper cam so that the master clamper opens correctly during the master eject process and closes correctly for all other processes.

1. Remove the drum unit from the machine and open the master eject unit.
2. Remove the rear cover of the machine.
3. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and " 8 " in the copy counter.

4. Press the Print Start key to turn on the master eject clamper solenoid [A].
5. Make sure that the distance between the bushing and the edge of the opening cam $[B]$ is $29 \pm 0.5 \mathrm{~mm}$ when the master eject clamper solenoid turns on.
6. If not, loosen the mounting screws [C] and adjust the position of the master eject clamper solenoid.

CAUTION: Do not turn on the solenoid any longer than 10 seconds.
5. After adjustment, retighten the mounting screws.

### 9.7 INK DETECTING PIN POSITION ADJUSTMENT



Purpose: To ensure detection of ink built-up between the ink roller and the doctor roller.

1. Remove the drum unit.
2. Remove the master clamper.
3. Remove the tetron screen and the metal screens from the drum unit.
4. Remove the ink around the ink roller $[A]$ and the doctor roller $[B]$.
5. Make sure that the distance between the end of detecting pin [C] and the doctor roller surface is $7 \pm 1 \mathrm{~mm}$.
6. If incorrect, loosen the screw [D] and adjust the distance by moving the ink detecting pin bracket [E].
7. After adjustment, retighten the screw [D].

### 9.8 DOCTOR ROLLER CLEARANCE ADJUSTMENT



Purpose: To equalize the ink thickness around the ink roller and prevent uneven image.

1. Remove the drum unit.
2. Remove the master clamper.
3. Remove tetron screen and the metal screens from the drum unit.
4. Wipe off the ink around the ink roller and the doctor roller.
5. Insert a $0.08-\mathrm{mm}$ gap gauge between the doctor roller and the ink roller. Then make sure that a $0.1-\mathrm{mm}$ gauge can not penetrate the gap.
NOTE: Check the gap at the right, center, and left positions.
6. If the gap is not within specifications, loosen the screws [A] on both sides and adjust the gap by turning the eccentric bushings [B] on both sides.
NOTE: Before adjustment, remove the drive gear located on the operation side of the doctor roller as the drive gear restricts the adjustment.

### 9.9 INK ROLLER UNIT POSITION ADJUSTMENT



Purpose: To ensure that the pressure of the pressure roller is applied evenly to the ink roller (the difference in distance from the center to either end should be less $\pm 0.5 \mathrm{~mm}$ ).

1. Remove the drum unit from the machine.
2. Remove the tetron and the metal screens from the drum unit.
3. Loosen the bolts $[A]$ and the screws $[B]$ that secure the ink roller unit to the drum shaft.
4. Insert the drum gauge [ $C$ ] in the holes in both side plates of the drum unit and the ink roller unit.
NOTE: The part number of the drum gauge is C2009001.
5. In the above condition, tighten the bolts [ A ] and the screws $[\mathrm{B}]$ so that the thrust play of the flange [D] is 0.05 to 0.2 mm .

### 9.10 INK SUPPLY SOLENOID POSITION ADJUSTMENT



Purpose: To ensure that the clutch sleeve is released by the stopper when the ink supply solenoid $[A]$ turns on.

1. Remove the drum unit from the machine.
2. Remove the front cover of the drum unit.
3. Press in the solenoid plunger by hand and make sure that the distance between the stopper [B] and the clutch sleeve [C] is 0.5 mm to 1.0 mm as shown.
4. If incorrect, loosen the screw [D] and adjust the distance by moving the solenoid bracket [E].
5. After adjustment, retighten the screw [D].

### 9.11 DRUM LOCK SOLENOID ADJUSTMENT: VT2300/VT2500



Purpose : To prevent the drum unit from being removed when it is not at the original drum position.

1. Install the drum unit in the machine.
2. Access I/O check mode (See page 4-11).

- Enter " 0 " in the memory display and "34" in the copy counter.

3. Press the Print Start key to turn on the drum lock solenoid [A].
4. Make sure that the drum lock arm $[B]$ and the stopper $[C]$ are no further than 0.3 mm apart when the solenoid turns on.
5. If the drum and the stopper are too far apart, loosen the 2 screws [D] and adjust the drum lock solenoid position.

### 9.12 MASTER DETECTING SENSOR ADJUSTMENT: VT2300/VT2500



1. Remove the front cover.
2. Remove the master $[A]$ from the drum. Then, confirm that the voltage between TP101 and GND (CN103-5) is $0.9 \pm 0.1 \mathrm{~V}$ when no master is on the drum.
3. If the voltage is outside the specified range, adjust VR103 $[B]$ on the main control board [C].
4. Place a master on the drum.

NOTE: Make sure the master leading edge is clamped to the drum clamper and that the master $[A]$ is wrapped correctly on the drum.
5. Make sure that the voltage between TP101 and GND (CN103-5) on the main control board is 3.0 V or higher.

### 9.13 INK DETECTION ADJUSTMENT


(Detection Signal)


Purpose: To ensure correct detection of a no ink condition when all the ink has been consumed.

1. Remove the rear cover of the machine.
2. Position SW901 [A] on the ink detecting board to the oil type (upper) position.
3. Connect the CH 1 probe of an oscilloscope to TP1, the CH 2 probe to TP2 and the GND lead to TP-12V. Select the 5 microsecond range.
4. Install a drum with no ink or remove the ink cartridge and make prints until the Add Ink is displayed (the ink detecting pin is not in contact with the ink).
5. Make sure that the waveform is as shown above when the ink detecting pin is not in contact with the ink.

- This adjustment should be made under normal conditions ( $20^{\circ} \mathrm{C} / 65 \% \mathrm{RH}$ ).

NOTE: The period of the waveform varies inversely with temperature.
(High temp. $\rightarrow$ reduced period. Low temp. $\rightarrow$ increased period)
6. If incorrect, adjust the ON timing of the detection signal using VR901 [B] on the ink detecting board.

### 9.14 SCREEN REPLACEMENT



1. Remove the drum unit from the machine.
2. Remove the 2 springs [A].
3. Remove the front screen plate [B] (2 screws).
4. Remove the tetron screens [C] from the drum.
5. Remove the front screen plate [D] and the rear screen plate [E].

### 9.15 DRUM DRIVE BELT REPLACEMENT



## Removal:

1. Set the image position to "0" by turning off and on the main switch.
2. Turn off the main switch and unplug the power supply cord.
3. Remove the drum unit.
4. Remove the rear cover.
5. Remove the center support side plate [A] (5 screws).
6. Remove the lower support side plate [B] (4 screws).
7. Remove the upper support side plate [C] (6 screws).


## VT2100/2130/2150 Only:

8. Remove the drive gear [ A$]$ and the bearing ( 2 Allen screws).

NOTE: It is not necessary to remove the drive gear on the VT2300 and the VT2500 because these models use a timing relay belt [B].
9. Remove the relay gear assembly [C].
10. Loosen the 2 hexagon bolts [D] and remove the pressure cam drive gear [E].
11. Remove the timing gear assembly [F].
12. Remove the belt tension bearings [G] (1 E-ring).
13. Replace the drum drive belt $[H]$.


## Assembly:

1. Install the pressure cam drive gear [A].

NOTE: Make sure that the top part of the pressure cam points to the right [B].
2. Install the relay gear assembly [C].
3. Install the relay belt [D] (VT2300NT2500 only).
4. Install the drive gear [E] (VT2100NT2130NT2150 only).
5. Install the lower support side plate [F].
6. Adjust the drum drive belt position so that the hexagon bolt [G] can be seen through the hole in the lower support side plate when the drum drive gear [H] is at drum home position. (The notch cut in the plate [l] lines up with the gap between the two teeth [J] on the drum drive gear. Also, the hole $[\mathrm{K}]$ in the drum drive gear lines up with a hole in the rear side plate $\rightarrow$ Check by inserting a long screwdriver.)
NOTE: These are the only teeth on the drum drive gear that are not backed by the metal plate on the rear side of the drum drive gear.

7. Install the belt tension bearings [A] (1 E-ring).
8. Adjust the position of both feed cams [B] by inserting a long screwdriver [C] as shown through the holes in the feed cams and the rear side plate.
9. Install the timing gear assembly [D] with the two bearings [E].
10. Install the upper support side plate [F].
11. Confirm the position of the cams by inserting a long screwdriver as shown through the holes in the upper support side plate, the feed cams, and the rear side plate.
12. Confirm that the center of the slot [G] in the second feed cam is aligned with the lower side of the bearing shaft $[\mathrm{H}]$.
NOTE: Push down lightly on the second feed cam to remove any play in the cam gear.
13. Make prints to check the registration.
14. It the registration is off by more than 9 mm , repeat steps 8 to 13 . If the registration is only off by a few millimeters, loosen the two bolts [ J ] with a spanner ( 8 mm ) and adjust the second feed cam position.
$X$ direction: Image on the prints is shifted up.
Y direction: Image on the prints is shifted down
15. Install the center support side plate.

## 10. PAPER DELIVERY

### 10.1 FIRST PAPER EXIT SENSOR ADJUSTMENT



Purpose : To ensure that the sensor detects correct paper delivery and that the jam indicator blinks after an exit misfeed or a paper wrap occurs.

1. Remove the front cover from the machine.
2. Place a sheet of 20 lb paper 30 mm above the first paper exit sensor [A] and make sure that VR105 [B] for VT2300/NT2500 (VR102 for VT2100/VT2130/VT2150) is set to the ON/OFF threshold of LED 103 [C].
3. If incorrect, adjust the sensor sensitivity by turning VR105 for VT2300/NT2500 (VR102 for VT2100/VT2130NT2150) on the main control board [D].

### 10.2 SECOND PAPER EXIT SENSOR ADJUSTMENT



Purpose : To ensure that the sensor detects correct paper delivery and that the jam indicator blinks and the machine stops when a paper wrap or exit misfeed occurs

1. Remove the front cover from the machine.
2. Confirm the following items:
a. When the shelter plate is removed and the master eject unit is closed, LED104 [A] for VT2300NT2500 (LED101 for VT2100NT2130NT2150) is OFF.
b. When the shelter plate is installed and the master eject unit is closed, LED104 [A] for VT2300/NT2500 (LED101 for VT2100/VT2130/VT2150) is OFF.
c. When a sheet of paper is positioned over the second paper exit sensor [B] and is in contact with the shelter plate, LED104 for VT2300/NT2500 (LED101 for VT2100/VT2130/VT2150) is ON.
3. If any of the above items is incorrect, adjust the sensor by turning VR102 [C] for VT2300/VT2500 (VR101 for VT2100/NT2130/NT2150) on the main control board [D].

### 10.3 EXIT PAWL CLEARANCE ADJUSTMENT



Purpose: To ensure that the printing paper is delivered without paper wrap or damage to the screen.

1. Remove the rear cover of the machine.
2. Manually turn on the paper feed and the printing pressure solenoids. Using a spanner ( 10 mm ), gradually rotate the drum rotation shaft counterclockwise to move the exit pawl $[A]$ to the drum.
3. Make sure that the clearance between the drum and the exit pawl is 0.3 to 0.5 mm when the exit pawl is at the position closest to the drum.
4. If incorrect, open the master eject box and loosen the hexagon nut $[B]$ of the exit pawl drive arm. Then adjust the clearance by turning the screw [C].
5. Check adjustment by repeating steps 2 and 3.

### 10.4 EXIT PAWL TIMING ADJUSTMENT



Purpose: To ensure that the exit pawl does not contact the master clamper.

1. Remove the rear cover of the machine.
2. Press the Image Shifting key to give a maximum white area at the paper leading edge (image shift position set to "-2").
3. Stack 20 lb paper on the paper table.
4. Access I/O Check mode (See page 4-11).

- Enter " 0 " in the memory display and " 4 " in the copy counter.

5. Press the Print Start key to raise the paper table to the correct position.
6. Manually turn on the paper feed and the printing pressure solenoids. Using a spanner ( 10 mm ), gradually rotate the drum rotation shaft counterclockwise at a constant speed.
7. While rotating, make sure that the exit pawl [A] does not contact the master clamper $[\mathrm{B}]$ and that the exit pawl approaches the drum before the leading edge of the printing paper exits.
8. If incorrect, loosen the hexagon nut [C] and hexagon bolt [E] and adjust the exit pawl position by turning the hexagon bolt [D].
9. Check adjustment by repeating step 7 with the image position shifted to both maximum forward and maximum backward directions.

### 10.5 DELIVERY TABLE REPLACEMENT



1. Open the delivery table.
2. Remove the leaf spring [A] for GND located under the table (1 screw)
3. Remove the stoppers $[B]$ (2 screws each).
4. Remove the delivery table.

### 10.6 VACUUM UNIT REPLACEMENT



1. Remove both front and rear covers of the machine.
2. Remove the antistatic brush bracket [A] (4 screws).
3. Remove the harness clamp [B] (1 screw).
4. Disconnect the sensor connectors [C].
5. Disconnect the vacuum motor connector [D].
6. Remove the vacuum unit [E] (2 screws).

### 10.7 DELIVERY BELT/PAPER EXIT SENSORS

 REPLACEMENT

1. Remove the vacuum unit (See page 5-83).
2. Remove the 2 screws $[A]$ securing the vacuum guide plate.
3. Remove the tension roller [B] (2 screws).
4. Remove the bearing [C] (1 E-ring).
5. Disconnect the first paper exit sensor connector [D].
6. Remove the delivery belts [E].
7. Disconnect the second paper exit sensor connector [F].
8. Turn the vacuum guide plate [G] over.
9. Replace the paper exit sensors [H] (2 screws each).

### 10.8 VACUUM MOTOR REPLACEMENT



1. Remove the vacuum unit (See page $5-83$ ).
2. Turn the vacuum unit [A] over.
3. Loosen the 4 hexagon bolts [B].
4. Remove the vacuum motor [C].

## TAPE MARKER

## 1. SPECIFICATIONS

Tape Feed Length: ..... 9.8"
Tape Feed Speed: ..... 3.9"/s
Tape Size: Outside Diameter 3.1" or smallerInside Diameter 0.8 " or largerWidth 0.67 " to 0.71 "
Dimensions:$6.1^{\prime \prime}(W) \times 4.1^{\prime \prime}(\mathrm{D}) \times 2.4^{\prime \prime}(\mathrm{H})$
Weight:1.5 lb
Power Source:Power Consumption:15 W

## 2. BASIC OPERATION

### 2.1 OVERVIEW



After the tape dispenser receives the start signal from the main body, the drive motor [A] rotates counterclockwise to feed out the tape. The pinch roller [B] presses the center of the tape against the feed roller [C] flexing the tape into a $V$ shape. This keeps the tape stiff as it is fed out. After the tape has fed out the proper length, the drive motor rotates in the opposite direction (clockwise) and the cutter [D] moves down to cut the tape. After the cutter home position sensor [ $E$ ] detects the cutter actuator [ $F$ ], the drive motor stops and sends the task completion signal to the main body. The main body starts the next job after receiving this signal.

### 2.2 DRIVE AND CUTTING MECHANISM



The tape dispenser uses a stepping motor, which is driven at 460 pulses per second, as a drive motor.

When the print counter of the main body becomes 0 , the start signal from the main body changes from high ( +5 VDC ) to low ( 0 VDC ) to start the timer on the tape dispenser PCB. When the start signal changes to high 10 milliseconds later, the drive motor [A] starts to rotate counterclockwise to feed tape. However, since a one-way bearing is mounted in the cam drive gear [B], the cutter cam [C] does not rotate.

The drive motor starts rotating in the opposite direction 2,500 milliseconds after the timer starts. At this time, the tape has been fed out 250 mm ( 9.8 ") from the tape dispenser. The drive motor rotates the cam drive gear clockwise and the eccentric shaped cutter cam presses down the cutter arm [D]. The cutter [E] then goes down to cut the tape. The cutter spring [F] returns the cutter to its original position. After the cutter home position sensor [G] detects the cutter actuator [H], the drive motor stops and the tape dispenser PCB sends the task completion signal to the main body.

### 2.3 MANUAL CUT



When the manual cut switch $[\mathrm{A}]$ is pressed, the timer starts counting and the drive motor starts feeding tape. 2,500 milliseconds later, the drive motor reverses to cut the tape.

If the manual switch is pressed longer than 2,500 milliseconds, the tape continues to be fed out until the manual switch is released. Afterward, the motor reverses to cut the tape.

## 3. REPLACEMENT AND ADJUSTMENT

### 3.1 CUTTER REPLACEMENT


[E]


1. Remove the tape dispenser from the main body. (1 connector, 2 nuts or screws)
2. Remove the support bracket [A]. (3 screws)
3. Remove the tape dispenser cover $[B]$ and the upper housing [C] (1 screw, 1 connector)
4. Remove the tape dispensing assembly [D]. (2 connectors)
5. Replace the cutter assembly [E]. (2 screws)

NOTE: Make sure that the cutter moves smoothly by rotating the cam drive gear [F] clockwise manually after the replacement.
6. Reassemble the tape dispenser.

NOTE: Make sure that the tape dispenser PCB [G] and the tape dispensing bracket $[\mathrm{H}]$ are in lower housing slots [I].

### 3.2 CUTTER HOME POSITION SENSOR REPLACEMENT



1. Remove the tape dispensing assembly. (See steps \#1 to \#4 on of " 3.1 CUTTER REPLACEMENT".)
2. Unhook the cutter spring [A].
3. Remove the cam drive gear [B]. (1 E-ring)
4. Remove the pinch roller support bracket [C]. (4 screws)
5. Remove the cutter home position sensor assembly [D] and replace the sensor. (1 screw, 1 connector)
6. Reassemble the tape dispenser.

NOTE: Make sure that the tape dispenser PCB [E] and the tape dispensing bracket $[\mathrm{F}]$ are in lower housing slots [G].

### 3.3 TAPE CUT LENGTH ADJUSTMENT



Adjustment standard : $250 \mathrm{~mm} \pm 15 \mathrm{~mm}$

1. Turn on the main body and the tape dispenser main switches.
2. Press the manual cut switch [A].

NOTE: Do not press the switch longer than 2.5 seconds.
3. Measure the tape length.

If the tape is longer than 250 mm , turn VR2 [B] counterclockwise. If the tape is shorter than 250 mm , turn VR2 clockwise.

CAUTION: Do not turn VR1. It is for factory adjustment only.

## TROUBLESHOOTING

## 1. ELECTRICAL COMPONENT TROUBLE

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| 10 A Fuse <br> (Power Supply PCB) | Open | Machine does not work. (No indicators on the operation panel turn on.) |
| 2.5 A Fuse (AC Drive PCB) | Open | Cover open indicator blinks when the main switch is turned on. |
| +24 V (CN510-1 on Power Supply PCB) | No output | Buzzer sounds and the machine does not work. |
| +24 V (CN504-1 on Power Supply PCB) | No output | Nothing happens when the main switch is turned on; when the Master Making key is pressed, the master feed motor fails to turn on and the " $\mathrm{C}^{\prime \prime}$ and of jam indicators blink. |
| +24 V (CN504-2 on Power Supply PCB) | No output | Nothing happens when the main switch is turned on; when the Master Making key is pressed, the master feed motor fails to turn on and the " C " and of jam indicators blink. |
| SEOH (CN503-1 on Power Supply PCB) | No output | When the main switch is turned on, E04 is displayed. |
| +12 V (CN503-2 on Power Supply PCB) | No output | Machine functions are correct, but the image is almost completely black. |
| +12 V (CN503-3 on Power Supply PCB) | No output | Counter indicator is not displayed. (Only the reduction and image mode indicators are displayed.) |
| -12 V (CN503-4 on Power Supply PCB) | No output | Machine functions are correct, but the image is almost completely black. When the Print Start key is pressed, the add ink indicators and "D" blink after 20 rotations even though ink is present. |
| +5 V (CN503-5 on Power Supply PCB) | No output | Nothing <br> happens There is no output at Pins 5 and 6, <br> and the drum rotates at high speed |
| +5 V (CN503-6 on Power Supply PCB) | No output | $\begin{array}{l}\text { Nothing } \\ \text { happens }\end{array}$ after the main switch is turned |
| +12 V (CN103-2 on Main PCB) | No input | Counter indicator is not displayed (Only the reduction and image mode indicators are displayed.) |
| +5 V (CN103-3 on Main PCB) | No input | No indicators turn on. |
| -12 V (CN103-6 on Main PCB) | No input | Machine functions are correct, but when the Print Start key is pressed, the add ink indicators ${ }^{\square}$ and " $D$ " blink after 20 rotations even though ink is present. |
| 1st Original Sensor (VT2300/VT2500 Only) | ON condition (Not interrupted) | First original can be printed correctly, but the jam indicators " A " and ${ }^{\circ}$ ' blink during the next master process when the ADF drive motor turns on. |
|  | OFF condition (Interrupted) | When the Master Making key is pressed, the jam indicators "A" and of blink. |


| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| 2nd Original Sensor | ON condition (Not interrupted) | When the main switch is turned on, the jam indicators " A " and 0 of blink and reset is impossible. |
|  | OFF condition (Interrupted) | The original is not inserted automatically, and the jam indicators " $A$ " and O. Of blink when the Master Making key is pressed (VT2100/2130/2150). <br> The original is fed when the Master Making key is pressed, but the leading edge of the original is damaged because the original transport motor fails to turn on. The "A" andof jam indicators blink (VT2300/VT2500). |
| Original Registration Sensor | ON condition (Not interrupted) | After the master making process is finished, the Jam indicators " A " and of blink. |
|  | OFF condition (Interrupted) | The original is fed until the leading edge of the original goes 5 cm past the exposure glass, then jam indicators " $A$ " and 0 - $ل$ blink. |
| Master Eject Switch (Sensor) | ON condition (Not interrupted) | After the master is ejected and one sheet of paper (trial print) is delivered, the jam indicators "F" and of blink and reset is impossible. |
|  | OFF condition (Interrupted) | When the master is being ejected, the jam indicators "F" and of blink. |
| Pressure Plate Position Switch | ON condition (Feeler is actuated) | The pressure plate does not go up. After one sheet of paper (trial print) is delivered, the indicators " F " and $\square$ blink. |
|  | OFF condition (Feeler is not actuated) | When the main switch is turned on, the pressure plate keeps moving up and down. |
| Full Master Detecting Switch | ON condition (Feeler is actuated) | When the master eject box is full, the indicators "F" and $\square$ do not blink. |
|  | OFF condition (Feeler is not actuated) | After master ejecting is finished, the indicators " F " and $\square$ • blink. |
| Paper Table Lower Limit Sensor | ON condition (Interrupted) | The paper table does not go down. |
|  | OFF condition (Not interrupted) | When the paper feed table goes down and stops, the cover open indicator blinks. |
| Paper Table Safety Switch | ON condition (Feeler is actuated) | When the main switch is turned on, the cover open indicator blinks. |
|  | OFF condition (Feeler is not actuated) | If paper table lower limit sensor is faulty, the paper table moves all the way down and locks. |


| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| Paper Table Height Sensor | ON condition (Interrupted) | When the paper feed table goes up, it does not stop at the proper position and E-02 lights. |
|  | OFF condition (Not interrupted) | The paper feed table does not go up. When printing starts, jam indicators " $B$ " and of blink. |
| Paper End Sensor | ON condition (Not interrupted) | When there is no paper on the paper feed table, the Print Start key can be activated, but jam indicators " B " and 0 of blink. |
|  | OFF condition (Not interrupted) | Though there is paper on the paper table, paper end indicators " B " and $\square$ blink. |
| Pressure Sensor | ON condition (Interrupted) | After one sheet of paper is printed, the machine stops. At that time, the counter does not count down and jam indicators " B " and of blink. |
|  | OFF condition (Not interrupted) | When the main switch is turned on, jam indicators " $B$ " and o 0 blink and cannot be reset. |
| First Paper Exit Sensor | ON condition (Paper exists) | When the main switch is turned on, the machine stops and jam indicators " G " and 0 of blink. |
|  | OFF condition (Paper does not exist) | After one sheet of paper is printed, the machine stops and jam indicators " B ", " E ", and of blink. |
| Second Paper Exit Sensor | ON condition (Paper exists) | When the main switch is turned on, jam indicators "G" and of blink. |
|  | OFF condition (Paper does not exist) | After one sheet of paper is printed, the machine stops and jam indicators " $E$ " and of blink. |
| Paper Feed Solenoid | OFF condition | The paper is not fed and jam indicators " B " andol blink. |
| Drum Rotation Sensor | ON condition (Interrupted) | The drum begins to rotate when the main switch is turned on. E06 lights when the Master Making key is pressed or when the Print Start key is pressed. |
|  | OFF condition (Not interrupted) | The drum begins to rotate when the main switch is turned on. E06 lights when the Master Making key is pressed or when the Print Start key is pressed. |
| Master End Sensor | ON condition (Actuated) | Normal operation when master is present. Master end is not detected; Master End indicators " ${ }^{4}$ " and $L^{\dagger}$ do not blink and jam indicators " C " and of blink. |
|  | OFF condition (Not actuated) | Even if the master is present, the Master End indicators " C " and ${ }^{\dagger}$ لblink. |


| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| Right Cutter Switch (Rear) | ON condition (Feeler is actuated) | Master is not cut. (Cutter unit does not move at all.) |
|  | OFF condition (Feeler is not actuated) | When the master is cut, indicator " $\mathrm{E}-01$ " lights. At that time the cutter does not return to the front. |
| Left Cutter Switch (Front) | ON condition (Feeler is actuated) | Master is not cut. (Cutter unit does not return from the rear.) |
|  | OFF condition (Feeler is not actuated) | When the main switch is turned on, indicator "E-01" lights. |
| First Drum Position Sensor | OFF condition (Not interrupted) | When the main switch is turned on, the drum starts rotating and it cannot be stopped. |
|  | ON condition (Interrupted) | * Print (When the Print Start key is pressed) <br> 1. After one sheet of paper is fed, the drum continues to rotate and paper feed stops. <br> 2. The machine does not stop when the Stop key is pressed. <br> 3. Paper feed and delivery jams are not detected. <br> * Master making (When the Master Making key is pressed) <br> 1. After the new master is wrapped around the drum and one sheet of paper (trial print) is delivered, the drum does not stop rotating. The Stop key does not work. |
| Second Drum Position Sensor | OFF condition (Not interrupted) | * Print (When the Print Start key is pressed) <br> 1. The paper feed solenoid does not work and the Stop key does not work. <br> * Master making (When the Master Making key is pressed) <br> 1. When the Master Making key is pressed, the drum starts rotating and cannot be stopped. |
|  | ON condition (Interrupted) | * Print (When the Print Start key is pressed.) <br> 1. Paper feed solenoid does not work and drum continues to rotate. <br> * Idling time (Reset key +0 key) <br> 1. Drum does not stop rotating. <br> * Master eject <br> 1. When the Master Making key is pressed, master eject indicators " $F$ " and of blink and the master is not ejected. |
| Master Buckle Sensor | ON condition | When the main switch is turned on, jam indicators "C" and of blink and cannot be reset. |
|  | OFF condition | Original feeding and master feeding stops halfway, and jam indicators "C" and of blink. |

VT2300/VT2500 only:

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| Paper Size Detection Sensor 1 | Always ON <br> (Paper detected) | * A4 : Master making length is 247 mm (B5 lengthwise). <br> * LT : Master making length is $10.6^{\prime \prime}$ (LT lengthwise). |
|  | OFF (Paper not detected) | * A4 : Master making length is 172 mm (B5 sideways). <br> *LT : Master making length is $8.1^{\prime \prime}$ (HLT lengthwise). |
| Paper Size Detection Sensor 2 | Always ON (Paper exists) | * A4 : Master making length is 172 mm (B5 sideways). <br> * LT : Master making length is $8.1^{"}$ (HLT lengthwise). |
|  | OFF (Paper not detected) | * A4 : Master making length is 247 mm (B5 lengthwise). <br> * LT : Master making length is $10.6^{\prime \prime}$ (LT lengthwise). |
| Paper Size Detection Sensor 3 | Always ON (Paper detected) | * A4 : Master making length is 172 mm (B5 sideways). <br> * LT : Master making length is $8.1^{\prime \prime}$ (HLT lengthwise). |
|  | OFF (Paper not detected) | * A4 : Master making length is 287 mm (A4 lengthwise). <br> * LT : Master making length is $13.6^{\text {n }}$ (LG lengthwise). |
| Drum Master Detection Sensor | Always ON (Sensor always detects white) | Master is on the drum: machine works correctly. Master is not on the drum: indicators $F$ and ${ }_{o}^{\circ}$. blink during the master eject process. Printing starts when the Print Start key is pressed, but indicators " $E$ ", "B", and OD soon turn on and the machine stops. |
|  | OFF <br> (Sensor always detects black) | Master is on the drum: two masters are wrapped on the drum. <br> Master is not on the drum: master is wrapped correctly on the drum, but the " M " indicator blinks when the Print Start key is pressed. |

## * Refer to the next page.

A4 version :

| Paper Size Detection Sensor |  |  | Image Length (Master Making Length) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SN1 | SN2 | SN3 | 172 mm | 247 mm | 287 mm | 354 mm |
| OFF | OFF | OFF | $\mathbf{0}$ |  |  |  |
| ON | OFF | OFF |  | 0 |  |  |
| OFF | ON | OFF | $\mathbf{0}$ |  |  |  |
| ON | ON | OFF |  |  | 0 |  |
| OFF | OFF | ON | $\mathbf{0}$ |  |  |  |
| ON | OFF | ON |  | 0 |  |  |
| OFF | ON | ON | $\mathbf{O}$ |  |  |  |
| ON | ON | ON |  |  |  | 0 |

LT version :

| Paper Size Detection Sensor |  |  | Image Length (Master Making Length) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SN1 | SN2 | SN3 | $8.1^{n}$ <br> $(205.9 \mathrm{~mm})$ | $10.6^{n}$ <br> $(269.4 \mathrm{~mm})$ | $13.6^{n}$ <br> $(345.6 \mathrm{~mm})$ | $13.9^{n 7}$ <br> $(354 \mathrm{~mm})$ |
| OFF | OFF | OFF | $\mathbf{0}$ |  |  |  |
| ON | OFF | OFF |  | 0 |  |  |
| OFF | ON | OFF | $\mathbf{O}$ |  |  |  |
| ON | ON | OFF |  |  | 0 |  |
| OFF | OFF | ON | $\mathbf{0}$ |  |  |  |
| ON | OFF | ON |  | 0 |  |  |
| OFF | ON | ON | $\mathbf{O}$ |  |  |  |
| ON | ON | ON |  |  |  | 0 |

## 2. TROUBLESHOOTING

### 2.1 IMAGE TROUBLE

## 1. No image, white lines, uneven image on copy

## Does the image created on the master match the original?



Not enough ink supplied to the drum?


No ink supplied even though ink supply solenoid is energized?

No Yes $\rightarrow$ Check the ink supply mechanism. Check the ink detection circuit. (See page 5-72.)

Are drum screens clogged with dried ink? (Printer has not been used for a long time.)
No $\quad$ Yes
Clean or replace the drum screens. (See page 5-73.)

Has the ink inside the drum separated? (Ink was in storage for a long time.)
No $\quad$ Yes
Install a new ink cartridge.

Insufficient printing pressure applied to drum?
Yes
Check the printing pressure mechanism.

Sheet of paper wrapped under the master or two masters wrapped around the drum?

No

```
Yes
```

$\rightarrow$ Remove the paper or the extra master from the drum.

2. Print image is enlarged or reduced in the paper feed direction

$\longrightarrow$


Is the print image larger than the original in the paper feed direction?


Is the original transport motor functioning normally?
Yes $\quad$ No
Check the original transport motor.

Are the drive belts in the original feed section adjusted to the correct tension?
Yes $\quad$ No
Adjust the belt tension. (See page 5-3.)

Are any of the pulleys and/or gears in the original feed section loose?

No
Tighten the screws securing the pulleys and/or gears.

Is the print image smaller than the original in the paper feed direction?
Yes
Is the master feed motor functioning normally?


Check the master feed motor.

Are the drive belts in the master feed section adjusted to the correct tension?
Yes $\quad$ No

Adjust the belt tension. (See page 5-24.)

Are any of the pulleys and/or gears in the original feed section loose?

## Yes

Tighten the screws securing the pulleys and/or the gears.

### 2.2 PAPER FEED TROUBLE

1. No paper is fed from the paper table.

Are the paper feed rollers turning normally?


Is the one-way clutch on the paper feed roller shaft slipping? (Paper is often not fed forward at high printing speeds.)

Yes
Lightly sand the roller shaft surface with fine sandpaper (increases the coefficient of friction) and replace the clutch.

## 2. Paper leading edge jams under the second feed roller.

Does the upper second feed roller contact the lower second feed roller and are both rollers tuning normally?


## 3. Paper leading edge jams under the drum.


4. Paper frequently jams or is not fed during high speed printing. (Does not occur at low printing speeds.).
is the suiface of the paper feed roller damaged or defective?
No $\quad$ Yes
Replace the roller. (See page 5-51.)

Is the timing belt of the paper feed roller slipping?
No $\quad$ Yes
Adjust the belt tension.

Is the one-way clutch installed on the paper feed roller shaft slipping?
No $\quad$ Yes
Lightly sand the paper feed roiier shaft with
fine sandpaper and replace the one-way clutch.

Is there enough clearance between the paper detecting arm and the pressure release arm?

## Yes

No
Âdjust the ciearance. (See page 5-54.)

Is the printing pressure cam timing correct? (Otherwise, the maximum printing area cannot be created.)

No
Adjust the cam timing. (See page 5-56.)

## Electrical Data



## VT2100/VT2130/VT2150/VT2300/VT2500



## VT2100/VT2130/VT2150 ${ }^{2}$ VT2300/VT2500 CCD CIRCUIT

PCB No. 3


## VT2300/VT2500 PAPER SIZE DETECTION CIRCUIT



TAPE MARKER CIRCUIT (OPTION)


## Differences between VT2130 and VT2300

Some of the VT2300's features were not offered on the VT2130, but were available on the SS950. Since this update is being issued to technicians who are trained on the SS950, these features will not be explained here in detail. More information on all of the differences listed below can be found in the VT2130 addendum to the SS950 Service Manual.

The VT2300 has an Automatic Document Feeder (ADF) like the SS950.
The maximum print area is $9.8^{\prime \prime} \times 13.7^{\prime \prime}$
The VT2300 offers 3 step enlargement. The process used is simply the reverse of the procedure used for reduction in other models. (For details see page 2-10 of the VT2130 addendum to the SS950 Service Manual.)

The Skip Paper Feed Switch has been added. (Addendum page 1-7, \# 27)
There have been changes made to the Operations Panel. (Addendum page 1-8)

Three sensors and a circuit board have been added to detect paper size. (Addendum pages 1-13, 1-18 and 1-19)

A Drum Master Detect Sensor has been added. (Addendum pages 1-15 and 5-71)

A Drum Lock Solenoid has been added. (Addendum pages 1-16 and 5-70)
The Original Pressure Solenoid, Transport Roller Pressure and Master Eject sensor are now adjustable. (Addendum pages 5-4, 5-5 and 5-34)

Please review the enclosed material and the VT2130 update package carefully. Pay particular attention to the sections of the VT2130 addendum which refer to the VT2300. As stated on the update cover page, these sections were not relevant at the time that the package was issued. It is important that you now take the time to become familiar with this information, in order to be able to properly service the VT2300.
4.5 PRESSURE PLATE UP/DOWN MECHANISM VT2300/2500


After the master making process is finished, the master eject motor [A] turns clockwise to raise the pressure plate $[B]$.

When the master eject motor turns, the gear [C] is driven through the timing belt $[R]$ the gears [ D$],[\mathrm{E},[\mathrm{F},[\mathrm{G}],[\mathrm{H}],[\mathrm{I},[\mathrm{L}],[\mathrm{K}],[\mathrm{L}]$ and $[\mathrm{M}]$. The pin [ $N$ ] on the gear [ $C$ ] which is inserted into the link [ O ] rises and lifts the left end of the link; thus, raising the pressure plate [B].

The gear [C] continues to turn until the lever [P] moves into the notch on the bottom of the cam, located behind the gear [C]. At this time, the master eject motor [A] stops as the lower end of the lever [P] pushes the pressure plate position switch [Q]. Thus, the pressure plate is held in țe upper position.

When the master eject motor turns clockwise, the gear [I] turns clockwise, but the upper first eject roller does not turn because of a one-way clutch in the gear [I]. Also, when the master eject motor turns in the reverse direction (counterclockwise), the pressure plate does not move because of a one-way clutch in the gear [L].
NOTE: The VT2100/NT2130/VT2150 use a gear instead of a timing belt [R]. (as in the SS950)

## 3. SERVICE PROGRAM MODE (I/O Check Mode)

### 3.1 HOW TO ACCESS I/O CHECK MODE

This program checks electrical components. The procedure for accessing the program is as follows:

1. Turn off the power switch.

## 2. A4 version:

Remove the front cover of the master eject unit to access the Full Master Detecting switch [A]. Turn on the power switch while holding down the Print Start key, Stop key, Clear key and Full Master Detecting Switch [A]. This accesses I/O check mode.

## LT version:

Turn on the power switch while holding down the Print Start key, Stop key, and Clear key. This accesses I/O check mode.
NOTE: When the I/O check mode is accessed, only the $141 \%$ enlargement (VT2300/2500) or the 71\% (64\%) reduction (VT2100/2130/2150) ratio LED, the left lighter image density LED, and the Line Mode LED light. Also, 1 is displayed in the memory indicator and 0 is displayed in the copy counter.

VT2300/VT2500:


VT2100/VT2130/VT2150:

3. Press the Memory/Class key to select either "Input" or "Output". Memory Indicator " 1 " = Input Memory Indicator "0" - Output
4. Use the Numeral keys to enter the desired input or output number in the copy counter. (See the Service Program Table.)
5. a) In input mode, all Image Shift Position indicators [A] turn on when a switch or sensor that is being tested is actuated.

## VT2300/VT2500:



## VT2100/VT2130/VT2150:


b) In output mode, the component corresponding to the number entered with the Number keys turns on when the Print Start key is pressed.

* Press the Clear key to set the counter number in the copy counter.

6. After completion of the Service Program mode, turn off the power switch to clear the l/O check mode.

## Gestetner RICOH 5aVII

## C216 SERVICE MANUAL

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PCRIP-10 PRIPORT CONTROLLER

## OVERALL MACHINE INFORMATION

## 1. SPECIFICATIONS

| Configuration: | Desktop |
| :---: | :---: |
| Master processing: | Digital |
| Printing process: | Full automatic one drum stencil system |
| Original type: | Sheet |
| Original size: | Maximum $307 \mathrm{~mm} \times 432 \mathrm{~mm}$ (12.0" x 17.0") Minimum $90 \mathrm{~mm} \times 140 \mathrm{~mm}\left(3.6^{\prime \prime} \times 5.5^{\prime \prime}\right)$ |
| Reproduction ratios: |  LT Version A4 Version <br> Full Size $100 \%$ $100 \%$ <br> Reduction $93 \%$ $93 \%$ <br>  $75 \%$ $82 \%$ <br>  $64 \%$ $71 \%$ |
| Image mode: | Line/Photo |
| Color printing: | Drum Unit replacement system |
| Master feed/eject: | Roll master automatic feed/eject |
| Printing area: | Maximum: $250 \mathrm{~mm} \times 355 \mathrm{~mm}$ (9.8" $\times 13.9$ ") at $20^{\circ} \mathrm{C} / 65 \% \mathrm{RH}$. |
| Leading edge margin: | $5 \pm 3 \mathrm{~mm}$ at "0" position |
| Print paper size: | Minimum: $90 \mathrm{~mm} \times 148 \mathrm{~mm}$ (3.6" x 5.8") <br> Maximum: $325 \mathrm{~mm} \times 447 \mathrm{~mm}$ ( 12.8 " x 17.6") |
| Print paper weight: | $50 \mathrm{~g} / \mathrm{m}^{2}$ to $215 \mathrm{~g} / \mathrm{m}^{2}$ |
| Printing speed: | 60, $75,90,105,120$ sheets/minute (5 steps) |
| First print time: | $42 \pm 3$ seconds (B4 size) |
| Paper feed table capacity: | 1000 sheets ( $66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}$ ) |
| Paper delivery table capacity: | 500 sheets ( $66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}$ ) |
| Power source: | $\begin{array}{ll} 120 \mathrm{~V}, 60 \mathrm{~Hz} & 3.0 \mathrm{~A} \\ 220 / 240 \mathrm{~V}, 50 / 60 \mathrm{~Hz} & 1.8 \mathrm{~A} \end{array}$ |


| Maximum | 120 V version: 300 W |
| :---: | :---: |
| Power consumption: | 220/240 V version: 300 W |
| Weight: | 120 V version: 99 kg (217.8 lb) 220/240 V version: 104 kg ( 228.8 lb ) |
| Dimensions: $(\mathrm{W} \times \mathrm{D} \times \mathrm{H})$ | Stored: $735 \mathrm{~mm} \times 607 \mathrm{~mm} \times 577 \mathrm{~mm}$ (29.0" x $23.9^{\prime \prime} \times 22.8^{\prime \prime}$ ) <br> Set up: $1279 \mathrm{~mm} \times 607 \mathrm{~mm} \times 656 \mathrm{~mm}$ (50.4" x 23.9" x 25.9") |
| ADF original capacity: | 20 sheets ( $66 \mathrm{~g} / \mathrm{m}^{2}$ ) or 1.8 mm height |
| Original guide width settings: | 98 mm to 316 mm (38.6" to 12.44") |
| Original scanning time: | $5 \mathrm{~ms} / 1$ line |
| Original thickness: | 0.05 mm to 0.8 mm |
| Original feed speed: | $16.9 \mathrm{~mm} /$ second (When master processing) $33.9 \mathrm{~mm} /$ second (When not master processing) |
| Pixel density: | 300 dots/inch |
| Master eject box capacity: | 30 masters (Normal condition) 25 masters ( $10^{\circ} \mathrm{C} / 30 \%$ RH Condition) |
| Paper feeding: | Friction roller/center separation system |
| Feed table side plate width settings: | 88 mm to 330 mm (3.46" to 12.99") |
| Paper feed roller pressure: | Normal position 250 g <br> Thick paper position 550 g |
| Separation roller pressure: | Normal position 180 g <br> Weak position 70 g |
| Side registration: | $\pm 10 \mathrm{~mm}$ (manual) |
| Vertical registration: | $\pm 20 \mathrm{~mm}$ (mechanical) |
| Ink supply: | Automatic ink supply system |
| Press roller pressure: | $10 \pm 0.3 \mathrm{~kg}$ |
| Paper delivery: | Air knife/vacuum delivery |
| Delivery side plate width settings: | 90 mm to 320 mm (3.54" to 12.6") |
| Print counter: | 7 digits |
| Master counter: | 6 digits |

Supplies:

| Priport | Thermal master | 280 mm width |
| :--- | :--- | :--- |
| Master VT- II - M: |  |  |
| (300 dots/inch) | Master roll | 250 masters/1 roll |
|  | Roll diameter | 130 mm |
|  | Master length | $480 \mathrm{~mm} / 1$ master |
|  | Max run length | 2000 prints |
| Ink colors: | Black, Red, Blue, Green, Brown |  |
| (500 cc/pack) |  |  |



Ink colors:
Black, Red, Blue, Green, Brown

## 2. DIFFERENCE BETWEEN VT2000 SERIES AND VT2105



| 4. | Drum Connector | To ensure drum connection, a drum lock lever is added inside the front door. To remove the drum from the machine, the drum release lever must be pulled up to disconnect the drum connector. |
| :---: | :---: | :---: |
| 5. | Ink Detection Board | The location of the ink detection board has been changed from the upper side to the right side of the drum shaft. The ink type switch (SW901), which was not used (always set at oil type), has been removed. |
| 6. | Drum Shaft | To supply ink to the ink roller evenly, the second ink supply hole (count from the front side) of the drum shaft is covered with a strip of tape. |
| 7. | Exit Pawl Air Pump | To ensure paper separation from the drum, the exit pawl air pump system is standardized. (The pump system can optionally be installed on the VT2000 series.) |
| 8. | Thermal Head Drive | The thermal head drive board has been removed. The function of the board has been moved to the image processing board and the main board. <br> The thermal head voltage is directly applied from the power supply unit. The main board applies signal to the PSU to supply thermal head voltage only during the master making process. |

## 3. ELECTRICAL COMPONENT DESCRIPTIONS

| INDEX <br> No. | NAME |  |
| ---: | :--- | :--- |
| Motors | FUNCTION |  |
| 4 | Original Transport Motor | Transports the original to the scanner section. |
| 10 | Master Feed Motor | Feeds the master to the drum. |
| 11 | Cutter Motor | Cuts the master. |
| 14 | Master Eject Motor | Sends used master into the master eject box. |
| 18 | ADF Drive Motor | Feeds the original to the scanner section. |
| 25 | Image Shift Motor | Changes the timing between the paper feed roller <br> and the drum to adjust the vertical image position. |
| 28 | Paper Table Drive Motor | Raises and lowers the paper table. |


| INDEX <br> No. | NAME |  |
| ---: | :--- | :--- |
| 41 | Master Cutter Switch | Informs the CPU to cut the master paper leading <br> edge. |
| 42 | Scanner Safety Switch | Checks whether the scanner unit is closed correctly <br> or not. |
| 44 | Drum Rotation Switch | Informs the CPU to rotate the main motor at 10 rpm. |
| 45 | Front Door Safety Switch | Checks whether the Front Door is set correctly or <br> not. |
| 46 | Drum Safety Switch | Checks whether the drum unit is set correctly or not. |
| 52 | Paper Table Safety Switch | Checks whether the paper table is opened correctly <br> or not. |
| 57 | Interlock Switch | Releases the cover safety functions. |
| 59 | Main Switch | Turns the power on or off. |
| 62 | Full Master Detecting Switch | Informs the CPU when the master eject box is full of <br> masters. |
| 63 | Pressure Plate Position <br> Switch | Informs the CPU when the pressure plate has <br> reached the home position. |
| 64 | Printing Density Switch | Use to select the printing density according to the <br> type and quality of the original. |
| 65 | ADF Safety Switch | Check whether the ADF unit is set correctly or not. |
| Sensors | Printing Pressure Sensor | Informs the CPU when the printing pressure is <br> applied. |
| 1 | Original Registration Sensor | Informs the CPU when the original leading edge <br> reaches the exposure glass. |
| 2 | 2nd Original Sensor | Detects when the original is set. |
| 9 | Master End Sensor | Informs the CPU when the plotter unit runs out of <br> master roll. |
| 13 | Master Buckle Sensor | Detects master buckles. |
| 17 | Master Eject Sensor | Detects when the used master is sent into the <br> master eject box. |
| 19 | 1st Original Sensor | Detects when the original is set in the ADF mode. |
| 29 | Drum Rotation Sensor | Supplies timing pulses to the main board. |
| 33 | 2nd Drum Position Sensor | Checks the position of the drum. |
| 34 | 1st Paper Exit Sensor | Detects misfeed. |
| 35 | 2nd Paper Exit Sensor | Detects misfeed. |
| 37 | 1st Drum Position Sensor | Checks the position of the drum. |
| 49 | Paper Table Height Sensor | Detects when the paper table reaches the paper <br> feed position. |
| 51 | Paper End Sensor | Informs the CPU when the paper table runs out of <br> paper. |
| position. |  |  |


| $\begin{gathered} \text { INDEX } \\ \text { No. } \end{gathered}$ | NAME | FUNCTION |
| :---: | :---: | :---: |
| Printed Circuit Board |  |  |
| 7 | Power Supply PCB | Rectifies 100V AC input and supplies DC voltage. |
| 31 | AC Drive PCB | Controls the AC component by relays. |
| 38 | Ink Detection PCB | Control the ink supply. |
| 39 | CCD PCB | Converts the light intensity into the electrical signal. |
| 40 | A/D Conversion PCB | Converts the analogue signal into the digital signal. |
| 43 | Operation Panel | Controls the LED performance and monitors the key operation. |
| 48 | Main Control PCB | Controls all machine functions both directly and through other boards. |
| 50 | Image Processing PCB | Controls the master processing performance. |
| Counters |  |  |
| 55 | Copy Counter | Keeps track of the total number of copies made. |
| 56 | Master Counter | Keeps track of the total number of masters made. |
| Others |  |  |
| 5 | Fluorescent Lamp Stabilizer | Stabilizes the power supplement to the fluorescent lamp. |
| 8 | Thermal Head | Burns the image on to the master. |
| 20 | Fluorescent Lamp | Exposes the original. |
| 26 | Encoder | Converts 16 image positions to 4 bit data. |
| 58 | Circuit Breaker | Cuts the ac line. |

# DETAILED SECTION DESCRIPTIONS 

## 1. OPTICS

### 1.1 OVERALL

The CCD [A] used on the VT2105 is commonly used on the SS800 series. Due to the pixel density difference between the VT2105 and SS800 series ( 300 dots/inch and 12 dots $/ \mathrm{mm}$ ), the reduction ratio (lens [B] position) of the VT2105 is different from the SS800 series.


The thermal head drive board has been removed. The function of this board has been moved to the image processing board and the main board.


| Component Name | I/O | ID Conversion Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No |  |  |
| Fluorescent Lamp | 0 | 604-3 | 24 V | When the fluorescent lamp turns ON, the CN604-3 goes to OV. |
| ADF Drive Motor | 0 | 607-6 | 24 V OV | When the ADF drive motor starts rotating CN607-6 goes to 0 V . |
| Original Pressure Solenoid | O | 607-2 | 24 V 0V | When the original pressure solenoid is energized, CN607-2 goes to OV. |
| Original <br> Registration Sensor | I | 603-4 | 24 V OV | When the original registration sensor is activated, CN603-4 goes to 0 V . |
| 2nd Original Sensor | 1 | 603-3 | 24 V | When the 2nd original sensor is activated, CN603-3 goes to 0 V . |
| 1st Original Sensor | 1 | 607-5 | $\overline{24 \mathrm{~V}}$ OV | When the 1 st original sensor is activated, CN607-5 goes to 0V. |

### 1.3 THERMAL HEAD



Thermal head

- Memory lergth

256 mm

- Number of thermal head elements
- Density of thermal head elements
- Applied voltage

3072 dots
300 DPI
19~24 V
(2) Thermal Head Control

The thermal head drive board has been removed. The function of this board has been moved to the image processing board and the main board.


The thermal head energy is controled by changing pulse width.
The pulse is controlled by the ENL signal from the main board corresponding to ENLTRIG from the image processing board.


Thermal head voltage (VHD: 19V~24V) is applied from PSU only during the master making process. This is controlled by the VHDCNT signal (CN104-33) from the main board.

| VHDCNT | (CN104-33) |
| :---: | :---: | VHD | (CN505-1) |
| ---: |
| (CN505-3) |$|$| 0 V | 0 V |
| :---: | :---: |
| 5 V |  |

## 2. DRUM

### 2.1 DRUM CONNECTION MECHANISM



When the drum release lever $[A]$ in front of the machine is raised, the connector $[B]$ is pushed away from the drum by the bracket [C] through the link [D] to be disconnected. The connector moves only horizontally due to the guidance of the shafts [E]. The bracket [C] also pushes the drum lock lever $[F]$ to release the drum lock allowing the drum to be removed. While the drum is out of home position, the drum lock solenoid [G] is energized and the stopper $[\mathrm{H}]$ locks the link [D] not to be pulled. The solenoid is de-energized when the drum stops at the home position (1st drum home position sensor is actuated).

### 2.2 CIRCUIT



Description

When the drum rotation SW is pressed, CN104-30 goes to 24 V .
When the solenoid is turned on, CN102-16 goes to 0V.
When the drum position sensor 1 is deactuated, CN104-35 goes to 0V. When there is no ink on the ink roller CN104-9 goes to OV.

## 3. PAPER DELIVERY

### 3.1 EXIT PAWL AIR PUMP MECHANISM



The main motor drive is transmitted to the pump gear $[\mathrm{A}]$ through gears and a timing belt $[B]$. The gear $[A]$ rotates and drives the piston [C] back and forth.

The piston moves forward and pushes a jet of air out through the nozzle [D]. This jet of air helps separating the paper from the drum.

## INSTALLATION

## 1. INSTALLATION PROCEDURE



1. Make sure that you have all the accessories listed below
(1) Original Exit Tray .......................................................................... 1
(2) Right Tray Bracket........................................................................ 1

Left Tray Bracket............................................................................ 2
(3) Fixing Screws ................................................................................ 2
(4) Master Spools ................................................................................ 1
(5) Thermal Head Cleaner .................................................................. 1
(6) Operating Instructions (USA and Asia version only) ..................... 1
(7) NECR............................................................................................ 1
(8) Installation Procedure (English).................................................... 1

2. Mount the machine on the optional table (2 screws packed with table.)
3. Remove the tape and string securing the covers and units as shown on the right.
a. Open the paper feed tray. Then remove the cushion plate $[A]$ from the paper feed roller section.
b. Open the master delivery unit. Then remove the tape securing the paper delivery guide plate.
4. Remove the protective sheet [A] from the drum unit.
a. Open the front door.
b. Take out the drum unit.
c. Remove the protective sheet from the master clamper.
d. Reinstall the drum unit in the machine.
e. Push down the drum lock lever [B].

5. Install the original exit tray [B].
a. Hook the right and left tray brackets on the stepped screws.
b. Set the original exit tray on the brackets.
c. Secure the brackets with fixing screws.

6. Loading Paper on the Paper Feed Table.
a. Open the paper feed table.
b. Stack the paper neatly on the paper feed table.
c. Position the paper feed side plates so that they lightly contact the paper on both sides.
d. Position the paper delivery table for the printing paper size, using
 the scale on the table.
e. Position the paper delivery side plate for the printing paper size, using the scale on the table.
7. Installing the Master Roll (Type VT-II-M)
a. While lifting the release lever, slide the scanner unit to the left.

b. Attach a spool to each end of the master roll.
c. Set the master roll in the machine.

NOTE: The vinyl side faces down.
d. Return the pressure release lever to the original position.
e. Plug in the power cord and turn on the main switch.
f. Press the Master Cut button.
g. Remove the cut master paper.

NOTE: Confirm that the master paper is not bent or creased.

h. Close the scanner unit.
8. Installing the Ink Cartridge
a. Open the front door and lower the ink holder.
b. Remove the ink cartridge cap.
c. Insert the ink cartridge into the ink holder and return the ink holder to the original position.
d. Close the front door.
9. Idling
a. While holding down the "0" key on the operation panel, press the Reset key.
b. If $\downarrow+$ Dblinks on the operation panel, repeat the above procedure.
10. Test Printing
a. Adjust the original guide to match
 the original size.
b. Set the original face down.
c. Input the desired number of prints with the number keys and press the Master Making key.

NOTE: With a new machine, the master paper misfeed indicator of + Fblinks because there is no master yet on the drum. Press the Reset key, then press the Master Making key.
d. After one sheet of paper is delivered, make prints at the lowest print speed (1) until the print image density stabilizes. Use a test chart to check for changes in the image density.
e. Check the copy image after about one hundred prints.

## SERVICE TABLES

## 1. MAINTENANCE TABLE

The following VT2105 tables are identical to those from the VT2000 series.

- Lubrication Points
- User's Maintenance
- Table of Periodic Inspection


### 1.1 TABLE OF SERVICE CALL INDICATIONS

| Indication | Trouble | Possible cuses |
| :---: | :---: | :---: |
| E 01 | Malfunction in cutter section: <br> The cutter does not reach both right and left cutter position switches within 2 seconds. | 1) Drive wire cut <br> 2) Drive section malfunction <br> 3) No power supply |
| E 02 | Malfunction in the paper table drive section: The lower limit sensor or the paper table height sensor status does not change even though the paper table UP or Down signal is applied. | 1) Drive worm gear broken <br> 2) Mounting screw of the worm gear broken <br> 3) No power supply |
| E 03 | Malfunction in the program. | 1) Defective PROM <br> 2) Defective control PCB |
| E 04 | Temperature of the thermal head or the power supply unit is high: <br> Temperature of the thermal head becomes greater than $57^{\circ} \mathrm{C}$ or the temperature of the power supply unit becomes greater than $85^{\circ} \mathrm{C}$ when the machine is in stand-by condition. | 1) Defective thermistor <br> 2) Defective thermal head <br> 3) Defective power supply unit |
| E 05 | Malfunction in the image shifting section: | 1) Encoder connector of the image shifting sectiond is connected. <br> 2) Defective encoder |
| E 06 | Mechanical lock: <br> Drum rotation sensor detects that the drum rotation speed is abnormal. | 1) Mechanical lock <br> 2) Main motor failure |
| E 07 | Malfunction in the program (PROM). When using I/O check mode, "E 07" lights up if the ROM is defective. <br> NOTE: When "E 03" is lit, access I/O check mode to check if the PROM is defective. | Defective ROM |
| E 08 | Thermal head drive signal (ENL) is defective. | Defective image processing board. |

## 2. DIP SW, LED, VR, AND TP TABLES

### 2.1 DIP SW TABLE (ON THE MAIN BOARD)

| No. | DIP SW | Function | Remarks |
| :---: | :---: | :---: | :---: |
| 1 | DP102-1 | Cover Open | Turn on to disable all cover safety switch functions except ADF cover safety. <br> (Normal: OFF) |
| 2 | DP102-2 | ADF Cover Open | Turn on to disable the ADF cover safety switch function. (Normal: OFF) |
| 3 | DP101-1 | Key Counter | Turn on when installing the key counter. (Normal: OFF) |
| 4 | DP101-2 | Buzzer ON/OFF | Turn on to sound the beeper. (Normal: OFF) |
| 5 | DP101-3 | Initial Print | ON: Makes two prints after making a master. OFF: Makes one print after making a master. (Normal: OFF) |
| 6 | DP101-4 | ADF Operation | Turn on to kill the ADF function. (Normal: OFF) |
| 7 | DP101-5 | Class/Memory Selection | To select class or memory function. OFF: Class, ON: Memory. (Normal: ON) |
| 8 | DP101-6 | I/O Check Procedure | Selects the I/O check mode access procedure (ON: Europe/Asia version, OFF: US version) |
| 9 | DP101-7 | Erase White Line | Turn on to erase the white line 60 mm from the leading edge. (NOTE1) (Normal: OFF) |
| 10 | DP101-8 | Double Master Compression | If this switch is ON , when the master making key is pressed, masters in the master eject box are compressed once before plotting starts and detects if the master box is full. (NOTE2) (Normal: OFF) |
| 11 | DP103-1 | Reduction Ratio Compensation | Used to adjust the reduction ratio in the sub-scan direction. |
| 12 | DP103-2 | Reduction Ratio Compensation | Used to adjust the reduction ratio in the sub-scan direction. |
| 13 | DP103-3 | Reduction Ratio Compensation | Used to adjust the reduction ratio in the sub-scan direction. |
| 14 | DP103-4 | Mode Clear | If this switch is turned on, the blind key on the operation panel is used as the clear mode key. (Normal: OFF) |
| 15 | $\begin{aligned} & \text { DP103-5 } \\ & \text { DP103-6 } \end{aligned}$ | Skip Paper Feed Setting | Setting these switches enables skip paper feed mode. After setting these switches, the blind key is used to access skip paper feed mode. (NOTE3) <br> (Normal: 103-5 OFF, 103-6 OFF) |

NOTE1 The shock wave from clamping might make a thin white line 60 mm from the leading edge. This line is visible when the image is made by photo mode. By turning on DPS 101-7, the reverse roller solenoid ON timing is delayed to absorb the shock wave. However, the above measure sometimes disturbs master registration (image position on the master).
NOTE2 If the customer does not dispose of the ejected masters even though full master is indicated (Turning off the main switch resets full master condition), master eject jams or master eject belt might slip off. Double master compression prevents the customer from making a master when the master box is full. However, if this switch is turned on, the master compression is performed twice for every master made. This hastens parts wear and may cause trouble.
NOTE3 The following skip number can be selected by setting DIP SW 103-5 and 103-6.

| DPS103 | 1 Sheet/ <br> 1 Rotation | 1 Sheet/ <br> 3 Rotation | 1 Sheet/ <br> 5 Rotation | 1 Sheet/ <br> 8 Rotation |
| :---: | :---: | :---: | :---: | :---: |
| 5 | OFF | ON | OFF | ON |
| 6 | OFF | OFF | ON | ON |

If both DPS 103-4 (Mode Clear) and DPS 103-4/5 (Skip Paper Feed Setting) are selected, Mode Clear mode is selected. (Skip Feed is ignored.)

### 2.2 DIP SW TABLE (Image Processing Board)

| No. | DIP SW | Function | Remarks |
| :---: | :---: | :--- | :--- |
| 1 | DPS 400-1 | Test Pattern | Turn off to access test pattern mode <br> (Normal: ON) |
| 2 | DPS 400-1 | Dither Pattern | Used to change dither matrix <br> (ON: 4 4 4, OFF: $6 \times 6)$ |

### 2.3 LED TABLE

| No. | LED | Function | Remarks |
| :---: | :---: | :--- | :--- |
| 1 | LED 101 | Main Motor ON | When the main motor turns on, LED lights |
| 2 | LED 102 | 1st Paper Exit <br> SN Detection | When paper is detected, LED lights |
| 3 | LED 103 | 2nd Paper Exit <br> SN Detection | When paper is detected, LED light |
| 4 | LED 104 | Ink Detection | When ink is detected, LED lights <br> NOTE:When the drum release lever is raised <br> the drum connector is disconnected <br> and LED turns off. |

### 2.4 VR TABLE (Main Board)

| No. | VR | Function |
| :---: | :---: | :--- |
| 1 | VR 101 | Main motor speed adjustment |
| 2 | VR 102 | 1st paper exit sensor adjustment |
| 3 | VR 103 | 2nd paper exit sensor adjustment |

### 2.5 VR TABLE (AD Conversion Board)

| No. | VR |  | Function |
| :---: | :---: | :--- | :--- |
| 1 | VR 600 | White level adjustment |  |
| 2 | VR 601 | Black level adjustment |  |

### 2.6 TEST PIN TABLE (Main Board)

| No. | Test Pin | Function | Standard Voltage |
| :---: | :---: | :--- | :--- |
| 1 | TP 101 | GND | $0 \mathrm{~V} . \quad$. |
| 2 | TP 102 | 1st paper exit <br> sensor (PDLV) | ON: 5~10 V <br> OFF: 0 V |
| 3 | TP 103 | 1st paper exit <br> sensor (PROL) | ON: 5V <br> OFF: 0 V |

### 2.7 TEST PIN TABLE (A/D Conversion Board)

| No. | Test Pin | Function |
| :---: | :---: | :--- |
| 1 | TP 600 | GND |
| 2 | TP 601 | Shift signal output (SH) |
| 3 | TP 602 | CCD output (OS) |
| 4 | TP 603 | Inverted and amplified CCD output |
| 5 | TP 604 | Black level standard voltage output |

## 3. SERVICE PROGRAM TABLE: VT2105

### 3.1 HOW TO ACCESS I/O CHECK MODE

1. A4 version:

Turn on the main switch while holding down the Print Start key, Stop key, Clear key and Full Master Detection switch. LT version:
Turn on the main switch while holding down the Print Start key, Stop key, and Clear key.
2. Press the Memory/Class key to select either "Input" or "Output".

Memory indicator "1" Input
Memory Indicator "0" Output

### 3.2 OUTPUT MODE:

| COUNTER |  |
| :---: | :--- |
| INDICATION | OUTPUT |
| $0001-0$ | Turns on the drum (10 rpm). |
| $0002-0$ | Turns on the drum (30 rpm). |
| $0003-0$ | Turns on the drum (75 rpm). |
| $0004-0$ | Turns on the paper table drive motor (up). |
| $0005-0$ | Turns on the paper table drive motor (down). |
| $0006-0$ | Turns on the vacuum motor. |
| $0007-0$ | Turns on the master eject solenoid. |
| $0008-0$ | Turns on the master eject clamper opening solenoid. |
| $0009-0$ | Turns on the master feed clamper opening solenoid. |
| $0010-0$ | Turns on the reverse roller solenoid. |
| $0011-0$ | Turns on the paper feed solenoid and the printing pressure solenoid. |
| $0012-0$ | Turns on the ink supply solenoid. |
| $0013-0$ | Turns on the original transport motor. |
| $0014-0$ | Turns on the master feed motor. |
| $0015-0$ | Turns on the fluorescent lamp. |
| $0016-0$ | Master Process Command (photo LED ON) |
| $0017-0$ | Reverses the master eject motor (turn the eject rollers). |
| $0018-0$ | Turns on the master eject motor (pressure plate up/down). |
| $0019-0$ | Turns on the cutter motor (moves it from front to rear). |
| $0020-0$ | Turns on the cutter motor (moves it from rear to front). |
| $0021-0$ | Turns the image shifting motor in the (+) direction. |
| $0022-0$ | Turns the image shifting motor in the (-) direction. |
| $0023-0$ | Turns on the magnetic counter for paper. |
| $0024-0$ | Turns on the magnetic counter for master. |
| $0025-0$ | Turns on the drum reverse rotation relay. |
| $0026-0$ | Magnification ratio : 100\% (LED ON) |
| $0027-0$ | Magnification ratio : 93\% (LED ON) |
| $0028-0$ | Magnification ratio : 82\% (A4 version)/ 75\% (LT version) (LED ON) |
| $0029-0$ | Magnification ratio : 71\% (A4 version)/ 64\% (LT version) (LED ON) |
| $0030-0$ | Turns on the drum (10 rpm), the paper feed solenoid, and the printing |
| $0031-0$ | pressure solenoid. |
| $0032-0$ | Tape marker (option) feeds out strips of paper. |
| $0033-0$ | Turns on the ADF drive motor (Not used). |
| $0034-0$ | Turns on the ADF original pressure solenoid (not used). |
| $0035-0$ | Outputs the drum lock solenoid. |
| $0036-0$ | Simulates original transportation in ADF mode. (Fluorescent lamp and CCD |

NOTE: 0001-0 to 0006-0 and 0030-0 are not activated when the safety cover is open.

### 3.3 INPUT MODE:

| COUNTER INDICATION | INPUT |  |
| :---: | :---: | :---: |
| 0001-1 | SW: Master Eject Detection | (Indicator lights when sensor ON) |
| 0002-1 | SW: Pressure Plate Position | (Indicator lights when switch ON) |
| 0003-1 | SN: 2nd Original Detection | (Indicator lights when sensor ON) |
| 0004-1 | SN: Original Registration Detection | (Indicator lights when sensor ON) |
| 0005-1 | SN: 1st Drum Position Detection | (Indicator lights when sensor ON) |
| 0006-1 | SN: 2nd Drum Position Detection | (Indicator lights when sensor ON) |
| 0007-1 | SN: Master Detection | (Indicator lights when master is set) |
| 0008-1 | SN: Master Buckle Detection | (Indicator lights when master appears) |
| 0009-1 | SW: Left Cutter | (Indicator lights when switch ON) |
| 0010-1 | SW: Right Cutter | (Indicator lights when switch ON) |
| 0011-1 | SW: Master Eject Box | (Indicator lights when switch ON) |
| 0012-1 | SW: Full Master Detection | (Indicator lights when switch ON) |
| 0013-1 | SN: Paper End | (Indicator lights when paper is set) |
| 0014-1 | SN: Paper Table Low Limit | (Indicator lights when sensor ON) |
| 0015-1 | SN: Paper Table Height | (Indicator lights when sensor ON) |
| 0016-1 | SN: Pressure | (Indicator lights when sensor ON) |
| 0017-1 | SN: 1st Paper Exit (LED103) | (Indicator lights when paper is present) |
| 0018-1 | SN: 2nd Paper Exit (LED102) | (Indicator lights when paper is present) |
| 0019-1 | SW: Cover Safety/Drum Detection | (Indicator lights when switch ON) |
| 0020-1 | SN: Color Drum | (Indicator lights when color drum is set) |
| 0021-1 | DIP SW-1 (DIP101-1) | (Indicator lights when switch ON) |
| 0022-1 | DIP SW-2 (DIP101-2) | (Indicator lights when switch ON) |
| 0023-1 | DIP SW-3 (DIP101-3) | (Indicator lights when switch ON) |
| 0024-1 | DIP SW-4 (DIP101-4) | (Indicator lights when switch ON) |
| 0025-1 | Not Used |  |
| 0026-1 | SN: Ink Detection | (Indicator lights when ink appears) |
| 0027-1 | SN: Thermistor | (Indicator lights when temp. is standard) |
| 0028-1 | Key: Proof | (Indicator lights when key ON) |
| 0029-1 | Key: Image Shift + | (Indicator lights when key ON) |
| 0030-1 | Key: Image Shift - | (Indicator lights when key ON) |
| 0031-1 | SW: Drum Rotation | (Indicator lights when switch ON) |
| 0032-1 | SW: Master Manual Cut | (Indicator lights when switch ON) |
| 0033-1 | SN: 1st Original Detection | (Indicator lights when sensor ON) |

## 4. TEST PATTERN IMAGE MODE

The purpose of this mode is to distinguish whether the cause of the image problem is located before or after image processing.

Output image: The normal output of this test pattern image mode is one of the dither matrix pattern as illustrated below.

## Master processing length:

Main scan (Horizontal) direction: Full width of the thermal head
Sub-scan (Vertical) direction: Same as the vertical size of the original set on the original table.
Magnified Test Pattern Image


This test pattern is generated by the image processing PCB.
[Example] Problem:
Possible Cause 1 If the same problem appears on the output image from the thermal head in test pattern image mode, the cause should be in area B, as shown above.
Possible Cause 2 If the output image from the thermal head is correct in test pattern mode but the output image in the normal mode is incorrect, the cause should be in area $A$, as shown above.

### 4.1 OPERATION: (To Enter Test Pattern Image Mode)

1) Remove the front cover.
2) Turn off DIP SW 400-1 on the image processing PCB only when the power switch is off.
3) Turn on the main switch.
4) Press the Image Mode key to select the test pattern image.

5) Set the original on the original table.

CAUTION: To prevent overheating of the thermal head, make the original as short as possible. Any type of original is suitable as the test pattern being used is in the image processing PCB memory.
6) Press the Master Making key and make prints.
7) After completion of the test pattern image mode, turn on DIP SW 400-1.

## 5. AVAILABLE OPTION/SUPPLY TABLE

O: Standard combination
$\Delta$ : Usable under certain conditions
X: Cannot be used

|  |  | VT2105 |
| :---: | :---: | :---: |
| Masters | Type 800 | X |
|  | Type 900 | X |
|  | VT-S | X |
|  | VT-M | X *NOTE1 |
|  | VT-L | X |
|  | VT-II-M | 0 |
| Inks | Black | 0 |
|  | Color (rd/bl/gn/br) | 0 |
|  | VT-Black-800 | X |
| Color Drums | Color Drum | $\Delta$ *NOTE2 |
|  | Color Drum Type 905 | $\Delta$ *NOTE2 |
|  | Color Drum VT2000-M | 0 |
|  | Color Drum VT2000-LG | X *NOTE3 |
|  | Color Drum VT2000-S | X *NOTE3 |
|  | Color Drum VT3000-L | X |
|  | Color Drum VT3000-S | X |
| Others | Cassette B4 | X |
|  | Cassette VT3000-L | X |
|  | Cassette VT3000-S | X |
|  | Tape Marker Type 20 | 0 |
|  | Priport Table | 0 |
|  | Priport Table VT3000 | X |

NOTES: 1. The VT-M master can be installed on the VT2105, however, a weak image (sometimes image blank) will appear.
This is because the VT-II-M master is more sensitive than the VT-M master.
2. The modified master clamper ( $\mathrm{P} / \mathrm{N} \mathrm{C} 2074948$ ) must be installed.
3. The drum can be installed, however, the maximum image area is limited according to the drum screen size.

## REPLACEMENT AND ADJUSTMENT

1) The replacement and adjustment procedures not mentioned in the following pages are identical to those of the VT2000 series.
2) The purpose and procedure of the following adjustments are identical to those of the VT2000 series, however the adjusting value or VR is different.

- PRINTING PRESSURE ADJUSTMENT


Adjust the clearance [A] to be $14 \pm 0.5 \mathrm{~mm}$ by turning the adjusting belt [B].

## - PRINTING SPEED ADJUSTMENT

Adjust the drum speed by turning VR101 on the main board.

## - EXIT PAWL CLEARANCE ADJUSTMENT



Adjust the exit pawl clearance so that the distance between the exit pawl and the drum is between 0.5 and 0.7 mm .

## - FIRST PAPER EXIT SENSOR ADJUSTMENT

Adjust the 1st paper exit sensor sensitivity by turning VR103. Check the sensor status with LED103.

## - SECOND PAPER EXIT SENSOR ADJUSTMENT

Adjust the 2nd paper exit sensor sensitivity by turning VR102. Check the sensor status with LED102.

## 1. OPTICS ADJUSTMENT

The method of the optics adjustment is the same as the VT2000 series. However, the wave shape is not exactly same because the pixel density of VT2105 is different from that of the VT2000 series.

## Necessary Tools

1) Facsimile Text Chart R-21
(99992131)
2) Resolution Chart (A0129110)
3) Oscilloscope

### 1.1 PREPARATION FOR ADJUSTMENT

1. Remove the original table and the original table cover.
2. Connect the terminals of the oscilloscope to the following test pins on the $A / D$ conversion board.

3. Access "I/O Check Mode".

- Turn on the main switch while holding the Print Start key, Stop key and Clear key on the operation panel. ------ LT version
- Turn on the main switch while holding the Print Start key, Stop key, Clear key and the full master detection switch. ----- A4 version

4. Set " 15 " in the copy counter using the number keys, and set " 0 " in the memory/class display by pressing the memory/class key
5. Press the Print Start key to turn on the fluorescent lamp.

### 1.2 BLACK LEVEL ADJUSTMENT



Adjust VR601 so that the black level at TP603 is the same as the standard black level ( $1.4 \mathrm{~V} \pm 0.03 \mathrm{~V}$ ).

### 1.3 SHADING ADJUSTMENT



$$
B / A \geq 60 \%
$$

Adjust the shading plate position so that the wave is shaped as shown above.

### 1.4 SCAN LINE POSITION ADJUSTMENT



Set the test chart R-21 so that the 1 mm black line is positioned 16 mm away from the edge of the lower original guide plate.

Adjust the CCD board position so that the shape of the wave is similar to the above illustration.

### 1.5 READING START POSITION ADJUSTMENT (In The Main Scan Direction)




Set the test chart so that the center line, located at the leading edge of the test chart, is positioned above the original leading edge sensor actuator. Then feed the test chart so that the center line can be read.

Adjust the CCD board position so that the above wave is displayed.

### 1.6 FOCUS ADJUSTMENT



- $\frac{B}{A} \times 100 \geq 20 \%$
- Amplitude "B" (difference between white and black levels) must be a maximum.

Position the resolution chart so that the 300 DPI section can be read. Adjust the lens position so that the above wave appears.

### 1.7 REDUCTION RATIO ADJUSTMENT



Position the resolution chart so that the 300 DPI section can be read. Adjust the lens block position so that the cross points are less than 8.

### 1.8 WHITE LEVEL ADJUSTMENT



Adjust the VR600 on the AD conversion board so that the maximum level is $2.0 \pm 0.1 \mathrm{~V}$.

### 1.9 IMAGE MAGNIFICATION IN THE SUB-SCAN DIRECTION ADJUSTMENT

Adjust the magnification ratio in the sub-scan direction using DIP103-1, 2, 3 on the main board, so that the printed image length is $100 \% \pm 0.5 \%$ by comparing the original image length.
-DIP SW/Correction Ratio-

| DPS 103 |  |  | Original Length <br> $\times 100$ <br> 1 Print Image Length |
| :---: | :---: | :---: | :---: |
| OFF | OFF | 3 |  |
| OFF | ON | OFF | $99.25 \%$ |
| OFF | OFF | ON | $98.75 \%$ |
| OFF | ON | ON | $98.25 \%$ |
| ON | OFF | OFF | $100 \%$ |
| ON | ON | OFF | $100.75 \%$ |
| ON | OFF | ON | $101.25 \%$ |
| ON | ON | ON | $101.75 \%$ |

## 2. THERMAL HEAD VOLTAGE ADJUSTMENT

Purpose: To maintain master making quality and extend the lifetime of the thermal head.
NOTE: This adjustment is always required when the thermal head or power supply board is replaced.


1. Remove the rear cover of the machine.
2. Check the voltage noted on the decal, located on the thermal head. (The voltage varies according to each thermal head.)
3. Access "I/ Check Mode".

- Turn on the main switch while holding the Print Start, Stop and Clear keys. ------ LT version
- Turn on the main switch while holding the Print Start, Stop, Clear keys and the full master detection switch. ------ A4 version

4. Input 35 in the copy counter using the number keys, and set " 0 " in the Memory/Class display by pressing the Memory/Class key.
5. Press the Print Start key to apply the thermal head voltage.
6. While holding down the Print Start key, confirm that the voltage between pins 2(VHD) and 4(GMD) on CN505 is at the level specified on the decal (Within + $0 \mathrm{~V},-0.1 \mathrm{~V}$ ).
7. If it is not, adjust VR202 on the power supply board.

## 3. AIR PUMP TIMING ADJUSTMENT



Purpose: To ensure that the paper exit pawl air pump produces a jet of air at the proper timing

1. Remove the rear cover.
2. Set the drum in the home position.
3. Confirm that the mark $[A]$ on the pump drive gear $[B]$ is right over the gear shaft [C].
4. If incorrect, remove the support plate [D] (5 screws) and reposition the gear.
5. Rotate the drum to the home position and confirm step 3 again.

## PCRIP-10

## Priport Controller

## Installation Guide

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### 6.1 INTRODUCTION

The Priport Controller is an external PostScript ${ }^{8}$ and PCL-5® compatible processor designed to add a computer interface to Priport Digital Duplicators. Since it is separate from the Priport, the designers were able to use high-speed techniques making it one of the fastest add-on processors available.

The Controller uses a high-speed 25 megahertz Intel 960-CF RISC microprocessor chip to achieve its high speed processing. In addition the Controller contains 4 Megabytes (Mb) of RAM which can be upgraded to 16 Mb.

This product features Pipeline Associates' PowerPage ${ }^{\text {TM }}$ interpreter, a widely recognized LaserWriter® compatible implementation of Adobe's® PostScript interpreter. The PowerPage interpreter offers users excellent quality and performance in handling the thirty-five industry standard Type 1 compatible fonts built into the Controller. Pipeline Associates' PCL-5 compatible interpreter is also built into the Controller providing the eight standard Intellifont ${ }^{\text {TM }}$ PCL-5 fonts.

The Controller supports several models of Priport Digital Duplicators with print resolutions of 300 dots per inch (dpi). The U.S. page sizes supported by the Priport Controller are US Letter, US Legal and US $11 \times 17$. Supported international page sizes are A3, A4, B4 and B5.

We reserve the right to make amendments to the technical specifications and/or the external appearance of the equipment without prior notice.

### 6.2 SYSTEM REQUIREMENTS

## Supported Priports:

- Models VT1730 and VT2105


## Compatible computers:

- IBM 286, 386, 486 and compatible PC's
- Apple Macintosh


## Memory requirements:

- The Priport Controller places no requirements on the RAM in the PC or Macintosh.


### 6.3 INSTALLATION PROCEDURE:

## NOTES:

A. DO NOT use the documentation that is packed in the kit, the instructions are incorrect. Discard the complete set of material titled "INTERFACE UNIT - 10 TYPE 1 .......". Use the installation procedure listed below.
B. The Priport Controller Installation Kit (Type 1) was designed for installation into many different model machines. All of the hardware parts within the kit are not used during the installation of any one model machine.

There are two (2) different sets of hardware parts in the kit. Do not open the plastic bag containing the longer set of black mounting studs, the longer flat ribbon cable and the " S " shaped yellow metal bracket. The parts in this bag are not used in the Model VT2105.

1. Insure that the Priport is turned off and disconnected from the power source.
2. Prior to the installation, set the dip switches, DPS101 on the new Video Interface Board to the correct setting for the model VT2105. Number 1, 3, and 4: OFF (down)

Number 2: ON (up)
3. Remove the Front cover from the Priport.
4. Set the dip switches, DPS103 on the Main Control Board [A]. Refer to figure 1.
Number 3, 7, and 8: ON (up)
Number 1, 2, 4, 5, and 6: OFF (down)


FIGURE 1:
FRONT VIEW OF FRAME WITH MOUNTING HARDWARE
5. Mount the (4) short Studs $[B]$ into the chassis.
6. Attach one end of the short I/O Ribbon Cable [C] to the connector, CN406 on the Image Processing Board [E]. Refer to figure 2.


FIGURE 2:
FRONT VIEW OF FRAME WITH INTERFACE PCB
7. Position the Plastic Sheet [D] to the back side of the Video Interface Board [E].
8. Carefully align the Video Interface Board and the Plastic Sheet to the chassis.

CAUTION: When the Video Interface Board is attached correctly, the Front Cover Bracket [F] should not touch the Video Interface Board.
9. Secure the Video Interface Board and Plastic Sheet to the installed Studs [B], use M3x6 screws with flat washers. (Note: Flat washers are not illustrated).
10. Attach the short I/O Ribbon Cable to the Video Interface Board, connector CN102.
11. Remove the screw securing the main power cable harness to the cable channel to allow the cable harness to be moved, clearing the channel.
12. Remove the rear cover from the machine.
13. Working from the rear of the machine, thread the small connector end of the Interface Harness [G] through the cable channel and to the front of the machine, Refer to figure 3.

14. Install the (2) longer Studs $[H]$ to the chassis, as shown above.

NOTE: There may be a grounding wire secured in the right hole that is needed for the right mounting stud. If the mounting hole is blocked, remove the grounding wire and re-secure it to the adjacent grounding wire screw.
15. Attach the bracket of the Interface harness to the installed Studs [H], use M4x8 screws with flat washers.
16. Attach the small connector of the Interface Harness to the Video Interface Board, connector CN101.
17. Re-position the main power cable harness (refer to step 11) and secure with the removed screw.
18. Snap out the communication port cover plate from the lower center of the rear cover.
19. Re-assemble the machine.
20. The last installation step is to attach the Ferritecore (not illustrated) onto the interconnect cable that is used to connect the controller Box to the Priport. "Snap" the Ferritecore around the cable nearest the MALE end of the cable (connects to the Priport).
21. Refer to the PCRIP - 10 Priport Controller "Installation Guide" for the proper cabling configuration.
22. Refer to the PCRIP - 10 Priport Controller "User Guide" for the proper set-up and operation procedures.

### 6.4 PART LISTING:

INTERFACE UNIT - 10 TYPE 1 KIT QUANTITY DESCRIPTION

1

1
4
2

4
2
1
1
*1

Interface Harness with Bracket Video Interface PCB
Phillips Screws M4x6 with flat washer Phillips Screws M4x8 with flat washer

Short mounting Studs
Long Mounting Studs I/O Ribbon Cable
Plastic Sheet
Diagnostic Plug

Note: Only the parts that are used in the Model VT2105 are listed.

[^0]
### 6.5 CABLING BETWEEN PCRIP-10 AND COMPUTER

The cable to be installed now is one that the customer has purchased to match his specific computer and communication port choice. The correct cable for each computer and communication port is described generally below. (For more detailed technical information on cables, see page 6-12).

## A. IBM and compatibles - Parallel

1. Make sure that the customer's computer is turned off.
2. Attach the DB-25 Male end of a standard PC parallel printer cable to the customer designated parallel output port on the rear of the computer. Record the choice of LPT1 or LPT2 because this port name will be required during the configuration process.
3. Attach the other end (36-pin Centronics Male) of a standard PC parallel printer cable to the input port on the rear of the PCRIP-10 labeled "Parallel In".


Figure A - Parallel Connection

## B. IBM and compatibles - Serial

1. Make sure that the customer's computer is turned off.
2. Attach the DB-25 Female end of a standard PC serial printer cable to the customer designated serial output port on the rear of the computer.
Record the choice of COM1 or COM2 because this port name will be required during the configuration process.
3. Attach the other end (DB-25 Male) of a standard PC serial printer cable to the input port on the rear of the PCRIP-10 labeled "Serial In".


Figure B - Serial Connection

## C. Macintosh computers - AppleTalk Standard

1. Make sure that the customer's computer is turned off.
2. Attach one 8-pin mini din Male end of a standard Macintosh printer cable to the printer output port on the rear of the computer.
3. Attach the other end (8-pin mini din Male) of a standard Macintosh printer cable to the input port on the rear of the PCRIP-10 labeled "AppleTalk".


Figure C - AppleTalk Connection

### 6.6 SYSTEM VERIFICATION AND DEFAULT CONFIGURATION

## Now that the physical installation is complete, you are ready to start the system verification.

1. Plug in all components of the system and turn them on in this order:
1.Computer
2. Priport
3. PCRIP-10
4. Look at the two lights located in the lower left corner below the product label. The left hand light indicates "Power-on". It will stay on as long as the PCRIP-10 is receiving power.
5. The right hand light indicates "Ready". It will come on for a few seconds at Power-on and then go off for up to 60 seconds while the PCRIP-10 runs its internal diagnostics. If the Ready light comes back on and stays on, the PCRIP-10 has passed its startup diagnostics and verified communication with the Priport.
6. If the Ready light flashes quickly, the PCRIP-10 has not been able to verify communication with the Priport.
A. First, check to see if the Priport is plugged in and turned on.
B. Next, check to see that the cable from the PCRIP-10 to the Priport is securely seated in the ports at each end.
C. If the Ready light does not come on after these steps, turn off the PCRIP-10 and then the Priport.

- Check to see that the small "AMP" connector of the Interface Harness is securely fastened to the connector on the Video Interface PCB.
- Check to see that the I/O Ribbon Cable which connects the Video Interface PCB to the image processing board inside the Priport is securely fastened as well. Then, turn on the Priport and the PCRIP-10. Watch the Ready light again to see if it comes on briefly, goes off for approximately 30-60 seconds and then comes back on. If so, you are ready to proceed. If not, contact your local service organization for help.

5. If the Ready light fails to come on at all, the PCRIP-10 has been damaged, contact your local service organization for help.
6. Push the On Line button on the Priport Control Panel. The Priport must be On Line for the Priport to accept input from the computer through the

PCRIP-10. (If the Priport is not On Line, the scanner in the Priport will be enabled instead.) If the green On Line light comes on, skip to Step 8.
7. If the On Line light does not come on, check to see that the new ROM was installed as described in Step 5 and is seated firmly in its socket. Try the On Line key again. If the On Line light comes on, skip to Step 8. If not, contact your local service organization for help.
8. Turn the PCRIP-10 off. Install the Diagnostic Plug P/N DP000001 (optional test tool) in the port labeled Diagnostic on the rear of the PCRIP-10 and turn it back on again. The PCRIP-10 will send an internal PostScript file to the Priport which will output a Diagnostic Status page. This page includes PostScript font samples as well as configuration status from the PCRIP-10. (An example of this page can be found on page 6-35 of the Priport Controller User's Guide.)
9. The configuration status information found in the lower left corner of the page should match the following factory default settings:

Selected Page Size: US Letter (in US and Canada) or A4 (International)
Controller RAM size: 4 Megabytes
Mode: Postscript Compatibility
(The number which follows "Controller Firmware Rev:" will vary according to when the PCRIP-10 was manufactured. This firmware revision number will be needed only if you must contact your local service organization about technical problems with this PCRIP-10 unit.)

Now that you have verified that the PCRIP-10 can successfully send files to the Priport, you are ready to proceed with configuring the PCRIP-10. Turn to page 6-23 of the User's Guide to continue.

### 6.7 CABLE PIN-OUT DIAGRAMS

## A. PARALLEL INTERFACE CABLE (CENTRONICS) PIN-OUT CONNECTIONS:

DB-25 PinMale Centronics
1 ..... 1
2 ..... 2
3. ..... 3
4. ..... 4
5. ..... 5
6. ..... 6
7. ..... 7
8. ..... 8
9. ..... 9
10 ..... 10
11 ..... 11
12. ..... 12
13 ..... 13
153 ..... 2
18-25 ..... 19-30
B. PARALLEL INTERFACE CABLE (CENTRONICS) PIN ASSIGNMENTS:

| Signal Pin | Signal Pin |
| :---: | :---: |
| -Strobe (Input) .................... 1 | GND............................... 19 |
| Data 1 (Input)..................... 2 | GND............................... 20 |
| Data 2 (Input)..................... 3 | GND............................... 21 |
| Data 3 (Input)..................... 4 | GND............................... 22 |
| Data 4 (Input)..................... 5 | GND............................... 23 |
| Data 5 (Input)..................... 6 | GND............................... 24 |
| Data 6 (Input)..................... 7 | GND............................... 25 |
| Data 7 (Input)..................... 8 | GND............................... 26 |
| Data 8 (Input)..................... 9 | GND............................... 27 |
| -Acknlg (Output) ............... 10 | GND.............................. 28 |
| Busy (Output) .................. 11 | GND.............................. 29 |
| Paper Error (Output).......... 12 | GND............................... 30 |
| Select (Output) ................. 13 | NC................................. 31 |
| NC................................. 14 | -Error.............................. 32 |
| NC................................. 15 | +5 VDC (Output)............... 33 |
| 0 VDC ............................ 16 | NC................................. 34 |
| GND............................... 17 | +5 VDC (Output)............... 35 |
| +5 VDC (Output)............... 18 | NC.................................. 36 |

The dash (-) before some signals indicates that the signal is negative true (active LOW). GND means the connection is a ground. NC indicates that the pin has no connection.

## C. SERIAL INTERFACE CABLE PIN-OUT CONNECTIONS:

Controller ..... PC
DB-25 Pin Male DB-25 Pin Female
11
2. ..... 3
3 ..... 2
5, 6 ..... 20
7 ..... 7
20 ..... 5, 6
Controller ..... PC
DB-25 Pin Male DB-9 Pin Female
2 ..... 2
3 ..... 3
4. ..... 1
5, 6 ..... 4
7. ..... 5
8 ..... 7
20 ..... 6, 8
NOTE: The cable pin-outs shown above are recommended; however, anystandard serial printer cable should work.
D. SERIAL INTERFACE CABLE PIN ASSIGNMENTS FOR CONTROLLER:
Signal ..... Pin
Protective ground shield. ..... 1
Transmitted data from the Controller (Output) ..... 2
Received data by the Controller (Input) ..... 3
Request to send (Output) ..... 4
Clear to send (Input) ..... 5
Data set ready (Input) ..... 6
Signal ground ..... 7
(Not Used) ..... 8
Data terminal ready (Output) ..... 20

### 6.8 RAM UPGRADE PROCEDURE

The RAM in the PCRIP-10 consists of four (4) - 1 Megabyte by 8 (or 9 ) Single-Inline-Memory-Modules (SIMMs) running at 70 nanoseconds. A SIMM consists of a very small (appr. 3/4" inch by $31 / 2$ " inches) printed ciruit board (PCB) with 30 contact fingers which plug into sockets on the main board of the PCRIP-10. Dynamic RAM memory chips which are soldered on to this small PCB can communicate with each other through the wiring in the board and with the main board through the 30 contact fingers. The actual physical number of DRAM chips installed on the SIMM can be either 2 or 8 for $1 \mathrm{Mb} x$ 8 (3 or 9 for $1 \mathrm{Mb} \times 9$ ) depending on the density of the chips. (See Figure 1.)

"1 Megabyte X 8" (or 9) describes a SIMM with 1 Megabyte usable storage which sends data out 8 bits (or 9 bits) at a time.
"70 nanoseconds" describes how fast the memory can respond in billionths of a second to commands from the Intel CF processor chip on the main board of the PCRIP-10.

## HOW TO UPGRADE RAM TO 16 MEGABYTES

To upgrade the PCRIP-10 to 16 Megabytes of RAM from the factory standard, contact either a local computer dealer or an electronic component distributor about purchasing parts with the following description:

Four (4) - 4 Megabyte $X 8$ (or 9) SIMMs with 30 contact fingers running at 70 nanoseconds (ns)

While SIMMs of this variety are available in both 70 and 80 ns speeds, BE CERTAIN TO PURCHASE ONLY SIMMS WHICH RUN AT 70 NS! Due to the high speed of the Intel CF processor chip, SIMMs running at 80 nanoseconds will not work in the PCRIP-10.

NOTE: Please take appropriate precautions for preventing static discharge throughout this procedure.

1. Turn off and disconnect all cables to the PCRIP-10.
2. Slide the metal chassis of the controller from its plastic housing.
3. Remove the 3 screws from each side and 2 screws from the backpanel which hold the chassis lid in place.
4. Remove the chassis lid and set it aside.
5. With the chassis oriented with the 2 LED's facing you, the 4 SIMMs to be replaced are located directly to your right. (See Figure 2.) Main PCB


NOTE: BE VERY CAREFUL NOT TO BREAK ANY PORTION OF THE SIMM SOCKET OR SOCKET CLIP WHEN REMOVING OR INSTALLING SIMMS. THIS IS AN ITEM WHICH CAN BE REPAIRED ONLY BY REPLACING THE MAIN BOARD AT THE FACTORY!
6. Starting with the SIMM in the socket closest to you, gently move the clip on one end of the socket to release the edge of the SIMM.
7. Gently move the clip on the other end of the socket to release the other edge. When both edges are released the SIMM will rotate forward (toward you) at a 45 degree angle.
8. Carefully remove the existing SIMM by pulling it towards you and set it aside.
9. Repeat Steps 6 through 8 for each of the remaining SIMMs, each time moving to the next socket away from yourself.
10. Starting with the SIMM socket farthest away from you, with the notched edge of the SIMM pc board on your right, insert one of the new 4 Megabyte X 8 (or 9 ) SIMMs in the socket at a 45 angle (toward you). The insertion angle for the new SIMMs is the same angle you used when removing the previous SIMMs.
11. Gently rotate the top of the SIMM away from you until you see the clips on each end of the socket engage. Check to see if the prongs of the clips are inserted in both of the small holes at each end of the SIMM. When correctly inserted, the SIMM should be firmly seated in the socket.
12. Repeat Steps 10 and 11 for each on the remaining SIMMs, each time moving to the next socket closer to you.
13. To verify that the SIMM installation was successful, reattach the chassis lid to the chassis and reconnect all cables including the power cable to the PCRIP-10.
14. Install the Diagnostic Plug in the Diagnostic Port on the backpanel of the PCRIP-10.
15. Power on the PCRIP-10. A Diagnostic Status Page should be output to the Priport which confirms the "Controller RAM size" as 16 Megabytes. If the Diagnostic Status Page is correct, you may skip to Step 18. If the Diagnostic Status Page does not reflect the upgrade to 16 Megabytes of RAM, go to Step 16. If the Diagnostic Status Page does not output at all and the PCRIP-10 Ready light is off, go to Step 17.
16. If the Diagnostic Status Page still shows only 4 Megabytes as the "Controller RAM size", you need to recheck that each of the 4 SIMMs you just installed match the specification of "4 Megabytes X 8" or "4 Megabytes X 9" as given above. The PCRIP-10 startup diagnostic routine has checked the RAM and only found 4 Megabytes. BE SURE TO TURN OFF AND UNPLUG THE CONTROLLER BEFORE MAKING ANY FURTHER CHANGES TO THE SIMMS. When the changes are completed, repeat Steps 13 through 15 to verify successful installation before continuing to Step 18 for reassembly.
17. If a Diagnostic Status Page was not output to the Priport at all, the PCRIP-10 startup diagnostics routine has checked the RAM in the PCRIP-10 and found an error that prevented any further operation. BE
SURE TO TURN OFF AND UNPLUG THE CONTROLLER BEFORE MAKING ANY FURTHER CHANGES TO THE SIMMS. When the changes are completed, repeat Steps 13 through 15 to verify successful installation before continuing to Step 18.

- First, check to see if all the SIMMs are properly seated in their sockets. There should be no movement from side to side and very little movement up and down if the SIMMs are properly seated.
- Next, verify that the newly installed SIMMs are, in fact, 70 ns in speed. As mentioned in the purchase specification above, 80 ns SIMMs do not respond quickly enough to work with the Intel CF processor in the PCRIP-10 and can not be used!
- Check that all the newly installed SIMMs are 4 Megabyte X 8 (or 9) and that you have not accidently reinstalled one of the 1 Megabyte X 9 SIMMs you removed.
- If none of the steps above have solved the problem, it is possible, though highly unlikely, that one of the new SIMMs is defective. If the SIMMs were purchased from reputable dealer or distributor, these components should have been tested and should also be replaceable under warranty.

18. Make sure the PCRIP-10 is turned off and that the Diagnostic Plug and all cables are removed.
19. Make sure that the chassis lid is reattached with 8 screws--3 on each side and 2 on the backpanel.
20. Slide the metal chassis back into the plastic housing. Be careful to line up the two LED's on the front of the chassis with the holes cut in the front panel of the plastic housing for them.

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## Priport Controller

## User's Guide

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### 6.9 REGULATORY NOTICES <br> FCC REGULATIONS

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. Shielded interconnect cables must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device.

Changes or modifications not expressly approved by Elesys, Inc. could void the user's authority to operate the equipment.

### 6.10 TRADEMARKS

© 1990 Elesys, Inc. All rights reserved. Elesys is a registered trademark of Elesys, Inc.

Governmental rights to this product are restricted. See license agreement.

The following is a list of trademarks and their respective manufacturers:
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### 6.11 HARDWARE INSTALLATION

1. The Controller is connected by cables between both the computer and the Priport. (The computer and Priport are not directly connected to each other.) The inputs to the Priport Controller replicate those of a standard printer, including Parallel, RS-232 Serial and AppleTalk® inputs. Simply remove the cable from the printer and insert it into the appropriately labeled connector on the backpanel of the Controller. DO NOT CONNECT A SERIAL CABLE TO THE DIAGNOSTIC PORT.
2. The Controller is connected from the Priport port on its backpanel to the input port on the back of the Priport. The required cable is a standard IBM-PC parallel printer cable which is included with the Controller.
3. Cabling Diagrams:

# Parallel Connection 

Diagnostic Serial In

Serial Connection

Parallel In Digital Duplicator AppleTalk
Priport
Diagnostic Serial In

AppleTalk Connection

Parallel In Digital Duplicator AppleTalk
Priport

### 6.12 PRIPORT CONTROLLER CONFIGURATION

1. Factory Settings:

The Controller comes preset with the following factory defaults:
-Input Buffers: $\quad$ Parallel Inputs - 256 Kb
Serial Inputs - 4 Kb
AppleTalk - Not applicable

Page Size: US Letter (8-1/2" x 11") for U.S. and Canada A4 (210mm x 297 mm ) for International
-Mode: PostScript compatible
2. Controller Configuration Programs:

Three diskettes have been provided with the Controller: one $51 / 4$ " and one 3 1/2" for IBM and compatible computers and one 3 1/2" for Apple Macintosh computers. Each of these configuration programs allows you to change the factory settings of the Controller (including the ones listed above) until the next power down of the Controller or permanently if desired.

NOTE: See Step 9 on page 6-26 on how to save configuration changes you have made with an IBM and compatible computers. See Step 5 on page 6-28 on how to save configuration changes made with an Apple Macintosh.

### 6.13 CONFIGURATION OF IBM PC AND COMPATIBLES

The configuration program is menu-driven and has been designed to be very simple to use. (If you will be changing output page size regularly, you should copy these files to your hard disk.) When the initial configuration is completed and saved, you should rarely need to use this program disk.

- If you have the Controller connected to your IBM PC or compatible output port labeled LPT1 and you wish to output in PostScript mode with the default page size listed above, you will not need to use this program to make any configuration changes from the factory settings.
- If you have the Controller connected to your IBM PC or compatible to an output port labeled LPT2, COM1, or COM2, or wish to change to PCL-5 mode, or wish to change to any page size other than the default page size listed above, you will need to use this program.
- If you have more than one computer (IBM compatibles and/or a Macintosh) connected to the Controller, you should be cautious about switching modes between PostScript and PCL-5 compatibility. To achieve the best output results, both IBM compatibles should output files in the same mode. Also, if the Controller is set in PCL-5 mode for the IBM's, the Macintosh will be locked out because it can only send PostScript compatible files.
Step 1. Insert the Utility Disk in drive A. (If you are copying these files to your hard disk, first create a subdirectory named PCRIP. At the DOS prompt type md PCRIP <ENTER>. Next, type cd PCRIP <ENTER>. At the C:\PCRIP prompt, type COPY A:*.* <ENTER> and skip to Step 3.)

Step 2. Type A: <ENTER>

Step 3. Type PCRIP <ENTER> (The Main Menu Bar will appear across the top of the screen.)
File Page Install PC Port Input Bufrs Special Help Quit
The "Help" Menu item explains the general function of each item in the menu bar. The first item on each of the pull-down menus is context-sensitive help. This item describes the functions of all the other items available on whatever pull-down menu you have open.

Step 4. Use the right arrow key to move the highlight over the "PC Port" pull-down menu and <ENTER>. The selections available are:
Printer Port LPT1, Printer Port LPT2, Printer Port COM1, Printer Port COM2, Printer Port to LOG file, and Printer Port to NULL.

Step 5. Use the up or down arrow keys to highlight the correct PC output port and <ENTER>. This port selection should match the name of the physical port on the back of your computer that is connected by cable to the Controller. Any selection from any menu will move you back up to the main menu bar.

If you selected COM1 or COM2, you must select the "PC Port" pull-down menu again to specify a baud rate. The selections available are: Com Port Baud Rate 1200, Com Port Baud Rate 2400, Com Port Baud Rate 4800, Com Port Baud Rate 9600 and Com Port Baud Rate 19.2K. This selection will tell the Controller what speed to expect data from your computer. Most serial port users should select "Com Port Baud Rate 19.2K ".

Step 6. Use the left arrow key to move the highlight back to the "Install" pull-down menu and <ENTER>. The selections available are: Set

> PostScript compatible input, Set PCL-5 compatible input, Enable AppleTalk, Disable AppleTalk, Reset to Factory Config, Print Test File, Print Diagnostic Status Page, Save Configuration Changes. You must use this menu to select PCL-5 mode or to re-select PostScript mode if you have previously selected PCL-5 mode. You may also use items from this menu to permanently save the configuration settings you have made during this session, turn AppleTalk on or off, print a test page, print the diagnostic status page or reset the Controller back to the original factory settings. Just use the up or down arrow keys to highlight your choice and <ENTER>.

Step 7. Use the left arrow key to move the highlight back to the "Page" pull-down menu and <ENTER>. The selections available are: Page Size A4, Page Size B4, Page Size B5, US Letter, US Legal. You must use this menu to select an output page size other than the factory default. Just use the up or down arrow to highlight your new output page size and

Step 8. If your computer is connected to the Controller through COM1 or COM2, OR if it is the only computer connected, you may also want to change the input buffers. The larger the input buffer, the faster your print job will be processed, however there is a limited amount of memory to be allocated to input buffers. Use the right arrow key to move the highlight to "InputBufrs" pull-down menu and <ENTER>. The selections available are: Parallel Input Buffer Size = OK, Parallel Input Buffer Size $=\mathbf{2 5 6 K}$, Parallel Input Buffer Size $=\mathbf{2 5 6 K}$, Serial Input Buffer Size $=0 \mathrm{~K}$ and Serial Input Buffer Size $=64 \mathrm{~K}$. If you are the only computer user hooked to the Controller, you should select the maximum available. For a single computer connected to COM1 or COM2, use the down arrow key to select "Serial $\ldots=64 \mathrm{~K}$ ". For a single computer connected to LPT1 or LPT2, use the down arrow to choose "Parallel $\ldots=512 \mathrm{~K}$ ", though the factory default of 256 K should be adequate.

Step 9. When all the configuration changes are completed, you must decide if you want to make them permanent. If you do not complete this step, any changes you have made this session will be lost the next time the Controller is turned off. If you do complete this step, the Controller will remember any changes you have made through all power cycles. Use the right or left arrow to highlight the "Install" pull-down menu and <ENTER>. Use the down arrow key to select "Save Configuration Changes " and <ENTER>. You can change and save the configuration settings of the Controller as often as you wish.

The two remaining Main Menu items, "File" and "Special", provide functions which may be useful during setup or reconfiguration of the Controller.

The following selections are available in the "File" menu: Print a File, Eject Page, Info About this Program and Quit (Exit) this Program. To print an output file from the hard disk or a diskette as a test of the configuration before saving or exiting the program, you would use the "Print a File" command. To clear the Input Buffer of the Controller or to create a master for a blank page, you would use the "Eject Page" command. To check the revision number of the PCRIP program which you are using, you would choose "Info About this Program ". You may also exit the program from this menu.

The following selections are available in the "Special" menu: Set Inter-Job Timeout Value, Disable Formfeed between Jobs, Enable Formfeed between Jobs and Enter Executive Mode. The factory default setting for Inter-Job Timeout Value is 20 seconds. In other words, if the Controller does not receive any data from the computer for more than 20 seconds, the Controller will assume that the print job is complete and signal the start of master making in the Priport. Some software applications, specifically Windows-based programs which generate graphic-intensive output, may require a longer timeout value. If you use the "Set Inter-Job Timeout Value " to change this setting, we recommend that you increase the timeout value in 10 second increments until you achieve the desired output results. The factory default setting also has Formfeed Enabled. If the PCL-5 output file does not include a formfeed, the Controller will automatically generate one. You may turn this feature off with "Disable Formfeed between Jobs" and turn it back on with "Enable Formfeed between Jobs ". This menu also provides an advanced PostScript feature called "Executive Mode" which allows direct entry of PostScript programming commands from the keyboard of the computer.

### 6.14 CONFIGURATION OF MACINTOSH COMPUTERS

The utility disk contains a program called "FontDownLoader" and 13 small PostScript format files. These files contain the instructions for changing the output page size, printing the diagnostic status page, saving configuration changes permanently and numbering multiple Controllers if more than one Controller is connected to the same AppleTalk network. (If you will be changing the output page size regularly, you should copy the entire PCRIP Utility folder onto your desktop or hard disk.)

- The files which will be used most frequently are the output page size selection files. They are "A4", "B4", "B5", "US Letter" and "US Legal".
- If you wish to verify that the page size selection is correct, you can select "Diagnostic Status Page." This file will generate a one page print-out of PostScript font samples as well as a listing of the current Controller settings at the bottom of the page. See Appendix A for an example of this Diagnostic Status Page output.
- If you have more than one Controller installed on an AppleTalk network, you will need to add a number to its name so that Appletalk can distinguish between the Controller units. The file names are "Priport \#1", "Priport \#2", "Priport \#3", etc. If you only have one Controller installed on the AppleTalk network, you will not need to use these files at all.
- If you have changed the output page size or the name/number of the Controller and wish to retain that change as the Controller's power on default, you will also need to use "Save Config Changes."

Step 1. Insert the Priport Controller Disk in the drive and double click on the floppy icon to open it.

Step 2. Double click on the Priport Controller folder to open it and then double click on "DownLoader 5.0.1". (A new window will NOT appear on the screen but a new smaller menu bar with only three pull-down menus--File Edit Special --will appear.)

Step 3 .Under the File Menu, the selections available are: Download Font and Download PostScript File and Quit. Double click on Download PostScript File . (A dialog box listing the 13 possible file choices will appear on the screen.)

Step 4. Point and click to select the file which will make the desired configuration change and click on Open. (While the file is being sent, AppleTalk will display a printer status report. When the file has been successfully received by the Controller, the following message will be displayed "The download was successful".)

Step 5. Click OK. If you wish to make any other changes, start again at Step. 3. If you are finished making or saving the configuration changes, select Quit under the File menu.

### 6.15 APPLICATION SOFTWARE SET-UP

1. Printer Drivers:

Each desktop publishing or word processing application provides printer drivers for PostScript and PCL-5 compatible printers. Please follow the instructions supplied with your application software to select the appropriate printer for the page size you wish to send to the Priport. We have supplied examples for MS Windows 3.1 and WordPerfect.

## 2. Printer Selection:

A. PostScript Compatible Printing - DOS:

- Windows 3.1 applications (Pagemaker, Corel Draw, MS Word for Windows, etc.) should select "Postscript Printer" for the following page sizes: Letter, Legal, A4 and B5.
- WordPerfect 5.1 users should select a "TI Microlaser " for the following page sizes: Letter, Legal and A4.
- WordPerfect 5.1 users needing B4 or B5 page sizes should install the WPPSE1.ALL file (supplied on the 3 1/2" Priport Configuration Disk for IBM and compatibles) and select "Priport Controller ".


## B. PostScript Compatible Printing - Macintosh:

- Using the pull-down menu from the Apple icon, point and click on Chooser.
- Within the Chooser left-hand dialog box, point and click on LaserWriter. (The Macintosh will then poll the AppleTalk network and return the Priport name in the right-hand dialog box.)
- If it is not already selected, you should point and click on Priport now. When you close the Chooser, the Macintosh is ready to send files to the Controller from any Macintosh software program. This driver supports the printing of all possible output page sizes through the Controller; however, you may be limited by the page size choices within the specific Macintosh application itself.
C. PCL-5 Compatible Printing - (only applicable for DOS applications):

All users should select an "HP LaserJet III " printer within their software application for letter, legal or A-4 page sizes. (Other page sizes are not available.)

### 6.16 PRIPORT CONTROLLER OPERATION

## 1. Power-On/Power-Off Sequence:

Please follow the steps listed below to turn on and off your system:
Power-On: 1. Computer
2. Priport
3. Controller

Power-Off: 1. Controller
2. Priport
3. Computer
2. Controller - Front Panel Indicator Lights:

- Power-On Light (left hand light): When light is on, power is on.
- Ready Light (right hand light)

3. Ready Light:
A. The Controller is ready for operation after the following sequence occurs:

- At power on, the ready light remains off for a short time.
- When ready light turns on, the Controller is ready for use.
B. Ready Light--Slow Flash:
- When a slow flash occurs, the Controller is processing the document.
C. Ready Light--Quick Flash:
- When a quick flash occurs, the Controller has encountered an error condition in processing the document. (See the Troubleshooting section for possible error conditions and solutions.)
D. Ready Light--One Long + Two Short Flashes:
- When one long and two short flashes occur, either the Priport is off-line or the Priport is still waiting to print copies off a new master which is currently on the drum.


### 6.17 COMMONLY ASKED QUESTIONS

## 1.How far can I have the Controller from the computer?

- The official specification for parallel cables recommends a length not greater than 10 feet (appr. 3 meters), however you can probably use a cable up to 25 feet (appr. 8 meters) without encountering any line communication problems.
- The official specification for serial cables recommends a length not greater than 50 feet (appr. 16 meters), however you can probably use a cable up to 100 feet (appr. 30 meters).
- The AppleTalk specification recommends a cable length of not greater than 1000 feet (appr. 300 meters) which should not be exceeded.


## 2. How far can I have the Controller from the Priport?

- The official specification allows for a 10 foot (appr. 3 meter) cable. A 6 foot (appr. 2 meter) cable was supplied with the Controller, but you can probably use a cable up to 20 feet (appr. 6 meters) if necessary. The potential for line communication problems are greater the farther the Priport is from the computer.


## 3. Which is faster--the serial port or the parallel port?

- The parallel port connection on the back panel of the Controller will receive data from the computer as much as eight times faster than the serial connection. However, because of the higher data transmission rate, you are limited to a maximum parallel cable length of 25 feet (appr. 8 meters).


## 4. How many computers can you run from the Controller?

- Three. One IBM or compatible connected to the parallel port, one IBM or compatible connected to the serial port, and one Apple Macintosh or Macintosh network connected to the AppleTalk port.


## 5. Will the Controller work with a laptop or notebook computer?

- Yes, all computers connect to the Controller as if it were a standard computer printer.


## 6. Is any special wiring required for the Controller?

- No, it will work on 110 or 220 volt systems by using the appropriate power cord.


## 7. How much RAM memory does the Controller have?

- It comes standard with 4 megabytes of RAM.


## 8. What if my file size is over 4 megabytes? Will the Controller be able to process the file?

- Under most circumstances, the answer is yes, due to a process built into the Controller called "power banding". If your files are very large, you might want to consider upgrading to 16 megabytes of RAM. Please contact your local Sales Representative for more information.


## 9. Can you add additional memory?

- Yes, the Controller can be upgraded from 4 megabytes to 16 megabytes of RAM. Please contact your local Sales Representative for more details on this upgrade.

10. Must you configure all software when you install the Controller?

- Yes and no. The Configuration Program supplied with the Controller must be installed on your computer in order for you to change any of the factory settings. For example, the Controller comes preset in PostScript mode with a US Letter ( $81 / 2^{\prime \prime} \mathrm{X} 11$ ") or A4 page size. If you wish to switch to PCL-5 mode or to a different page size, you must use the Configuration Program to make those changes. In order to output to the Priport through the Controller, you need to select the appropriate printer driver in your software application for the mode (PostScript or PCL-5) and page size you wish to print.


## 11. Will the Controller work with Windows 3.1?

- Yes, as long as you select the appropriate printer driver for the page size you need.


## 12. Will the Controller work with all application software programs?

- As there are no international software standards which apply to the over 10,000 software applications worldwide, it is impossible to give a definitive answer for each and every program in the DOS, Windows and Macintosh environments. We have tested and know that the most popular software applications, MS Windows 3.1, WordPerfect, MS Word, etc. work extremely well. The Controller is designed to emulate (act as if it were in fact) a large variety of PostScript printers or a HP LaserJet III for PCL-5 output. Therefore, if your software application allows you to select either a PostScript printer or a HP LaserJet III, you should be able to send files to the Priport through the Controller to produce documents.


## 13. Will the Controller work on a network?

- Yes, if the Controller is connected to a host computer. The computer used as a host for the Controller can be the file server, a printer server or any one of the network nodes. Other than the AppleTalk port for Macintosh networks, there is no port on the Controller, at this time, which allows for a connection directly to the network.

14. What fonts are built into the Controller?

- The 35 standard PostScript fonts plus the 8 standard Intellifont PCL-5 fonts.

15. Can you use other downloaded soft fonts with the Controller?

- Yes, you can use downloaded soft fonts in both PostScript and PCL-5 compatibility modes. You should be aware that the amount of RAM the soft fonts occupy may impact the processing speed.

16. Can you reverse scan with the Controller and the Priport?

- No, but you could buy a scanner and hook it directly to your computer. While this process is simpler in the Macintosh environment, it is still a very complex project in either the PC or Macintosh environment and should be undertaken only by an expert computer user. When scanned images are saved as graphic files, they can be included in documents you create in various software applications.

17. Can you set the number of copies to print from the computer?

- No, the number of copies to be printed must be set from the Priport control panel. This was done intentionally so that you can check that the correct paper and ink are in the Priport before printing.

18. How important is the "Auto Cycle" key in the printing of a job?

- It is important that the Priport print a minimum of one copy in addition to the proof copy for each new master. Until at least one copy has been printed, the Priport will not allow a new master to be created. Therefore, we recommend that when using the Controller that you also use the "Auto Cycle" mode to enable the system to clear itself and be ready for the next print job.


## 19. What does the Diagnostic Port do?

- When the diagnostic plug used by the Customer Engineer is installed in the Diagnostic Port and the Controller is turned on, the Priport will output a Diagnostic Status page which includes Postscript font samples and configuration information for the Controller. (See Appendix A.)

20. If I have a software or hardware question, who do I call?

- Your local sales/service organization should be contacted first.


### 6.18 TROUBLESHOOTING

The following are symptoms you might encounter and the appropriate solution for each:

## 1. There is a quick flash of the ready light.

- An error condition has been detected in the Priport. First, check for a loose or missing cable between the Controller and the Priport.
- Next, check the control panel of the Priport for a flashing master jam indicator. Clear the jam and, if possible, print one proof copy from the newly created master. If the image on the proof copy is complete, you can print more copies. If the image is not complete, pust the reset button on the Priport control panel and the Controller will resend the document to the Priport to create a new master.
- If you are unable to print a proof copy, you will need to toggle the On Line button off and back on again to clear the error and the Controller will resend the document to create a new master.


## 2. There is no master making at all.

The Customer Engineer who installed the Controller should have tested both the connection between the Controller and the Priport, the connection between your computer and the Controller and the system as a whole.

- If the Controller ready light is producing a quick flash, follow the steps listed above to clear the error.
- If the Controller ready light is producing one long and two short flashes, check to see if the Priport may be off-line. Put the Priport back on-line and verify that the PCRIP-10 ready light has stopped flashing.
- If the Priport is not off-line, then the Priport is waiting to print from a new master. You may either print one copy from the master currently on the drum, or push the Priport's on-line button off and then on again to clear this condition.
- If you are sending PostScript files to the Controller, make sure that you have the correct PostScript-compatible printer selected as the output printer within in your application software and the Controller has been configured for PostScript mode.
- If none of the steps above have produced any master making, it is possible that the PostScript file you are trying to print may be corrupted. You can test for actual Postscript output by printing the Diagnostic Status Page through the Configuration Program. If you can not successfully print this page (which is a special PostScript-compatible file), you should contact your local service organization for help.


## 3. A new master is made, but only blank pages print out.

- Verify that the page size selected in the application software, the Controller configuration and the Priport all match.
- Make sure that you have the correct printer selected in the application software for either PostScript or PCL-5 mode.
- Check that the document being sent to the Controller is not blank.
- If you have followed all of the steps listed above and still get blank pages as output, contact your local service organization.

4. My document prints out as unrecognizable text.

- This symptom is usually the result of sending a PostScript file to a Controller that is still configured in PCL-5 compatibility mode. Check to make sure that you have the correct printer selected in the application as well as that the Controller is in PostScript-compatibility mode.


## 5. Part of the document image I can see on my monitor is missing when it prints.

- Verify that the page size and the page orientation (portrait or landscape) selected in the application software, the Controller configuration and the Priport all match.


## 6. My Macintosh gives an error message which says "Priport is not available on AppleTalk".

- Make sure that the Controller is powered on.
- If both an IBM or compatible and a Macintosh are connected to the Controller, check to see if the Controller has been switched to PCL-5 mode for the IBM PC. If so, the Macintosh will be locked out until the Controller is switched back to PostScript-compatibility mode.
- If only one Macintosh is connected to the Controller, contact your local sales/service organization for additional help.


### 6.19 APPENDIX A - DIAGNOSTIC STATUS PAGE

### 6.20 POINT TO POINT DIAGRAM: VT2105 CONTROLLER ADDENDUM



# 6.21 See Accessories Parts Catalog <br> List for PCRIP-10 -- page 2 

# Gestetner RICOH 5aVIn 

## C224

## SERVICE MANUAL

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## OVERALL MACHINE INFORMATION

## 1. SPECIFICATIONS

| Configuration: | Desktop |
| :---: | :---: |
| Master processing: | Digital |
| Printing process: | Full automatic one-drum stencil system |
| Original type: | Sheet |
| Original size: | Maximum $307 \mathrm{~mm} \times 432 \mathrm{~mm}$ (12.0" x 17.0") Minimum $90 \mathrm{~mm} \times 140 \mathrm{~mm}$ (3.6" x 5.5") |
| Reproduction ratios: |  LT Version <br> Full Size $100 \%$ <br> Reduction $93 \%$ <br>  $75 \%$ <br>  $64 \%$ |
| Image mode: | Line/Photo |
| Color printing: | Drum unit replacement system |
| Master feed/eject: | Roll master automatic feed/eject |
| Printing area: | Maximum: $250 \mathrm{~mm} \times 355 \mathrm{~mm}$ ( $9.8^{\prime \prime} \times 13.9^{\prime \prime}$ ) at $20^{\circ} \mathrm{C} / 65 \% \mathrm{RH}$. |
| Leading edge margin: | $5 \pm 3 \mathrm{~mm}$ at the "0" position |
| Print paper size: | Minimum: $90 \mathrm{~mm} \times 148 \mathrm{~mm}\left(3.6^{\prime \prime} \times 5.8^{\prime \prime}\right)$ Maximum: $325 \mathrm{~mm} \times 447 \mathrm{~mm}$ (12.7" x 17.5") |
| Print paper weight: | $47.1 \mathrm{~g} / \mathrm{m}^{2}$ to $209.3 \mathrm{~g} / \mathrm{m}^{2}$ ( 12.5 lb to 55.6 lb ) |
| Printing speed: | 60, 75, 90, 105, 120 sheets/minute (5 steps) |
| First copy time: | Less than 35 seconds |
| Second copy time: | Less than 38 seconds |
| Paper feed table capacity: | 1000 sheets ( $66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}$ ) |
| Paper delivery table capacity: | 500 sheets ( $66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}$ ) |
| Power source: | 110/120 V, 60 Hz 4.5 A |
| Maximum power consumption: | 110/120 V version: 280 W |
| Weight: | $97 \mathrm{~kg}(213.6 \mathrm{lb})$ |


| Dimensions: $(\mathrm{W} \times \mathrm{D} \times \mathrm{H})$ | $\begin{gathered} \text { Trays closed: } 735 \mathrm{~mm} \times 607 \mathrm{~mm} \times 577 \mathrm{~mm} \\ \left(28.9^{\prime \prime} \times 23.9^{\prime \prime} \times 22.7^{\prime \prime}\right) \\ \text { Trays open: } 1279 \mathrm{~mm} \times 607 \mathrm{~mm} \times 656 \mathrm{~mm} \\ \left(50.4^{\prime \prime} \times 23.9^{\prime \prime} \times 25.9^{\prime \prime}\right) \end{gathered}$ |
| :---: | :---: |
| ADF original capacity: | 20 sheets ( $66 \mathrm{~g} / \mathrm{m}^{2}$ ) or 1.8 mm height |
| Original guide width settings: | 98 mm to 316 mm (38.6" to 12.44") |
| Original scanning time: | $2.5 \mathrm{~ms} / \mathrm{line}$ |
| Original thickness: | 0.05 mm to 0.8 mm |
| Original feed speed: | $21.2 \mathrm{~mm} /$ second (When master processing) $33.9 \mathrm{~mm} /$ second (When not master processing) |
| Pixel density: | 300 dots/inch |
| Master eject box capacity: | 70 masters (Normal condition) 60 masters $\left(10^{\circ} \mathrm{C} / 30 \%\right.$ RH Condition) |
| Paper feeding: | Friction roller/center separation system |
| Feed table side plate width settings: | 88 mm to 330 mm (3.46" to 12.99") |
| Paper feed roller pressure: | Normal position 300 g <br> Thick paper position 400 g |
| Separation roller pressure: | Normal position 180 g <br> Weak position 70 g |
| Side registration: | $\pm 10 \mathrm{~mm}$ (manual) |
| Vertical registration: | $\pm 20 \mathrm{~mm}$ (mechanical) |
| Ink supply: | Automatic ink supply system |
| Press roller pressure: | $10 \pm 0.3 \mathrm{~kg}$ |
| Paper delivery: | Air knife/vacuum delivery |
| Delivery side plate width settings: | 90 mm to 320 mm (3.54" to 12.6") |
| Print counter: | 7 digits |
| Master counter: | 6 digits |


| Supplies: | Thermal master | 280 mm width |
| :--- | :--- | :--- |
| Priport |  |  |
| Master VT- II - M: | Master roll | 257 masters/roll |
| $(300$ dots/inch $)$ | Roll diameter | 130 mm |
|  | Master length | $480 \mathrm{~mm} / \mathrm{master}$ |
|  | Max run length | 2000 prints |
| Ink colors: | Black, Red, Blue, Green, Brown |  |
| $(600$ ml/pack $)$ | Yellow, Purple, Navy, Maroon |  |

## 2. ESSENTIAL DIFFERENCES BETWEEN THE VT2130,VT2300, VT2105 AND THE VT2200

| No. | Item | Remarks |
| :---: | :---: | :---: |
| 1. | CCD | A CCD which corresponds to a 300 dpi pixel density is used. |
| 2. | Thermal Head | The thermal head and thermal head drive circuit have been changed to correspond to the 300 dpi pixel density and the increased master feed speed. |
| 3. | Drum Ink Roller Layout | To ensure the proper paper separation from the drum, the ink roller has been shifted towards the paper feed table. <br> The distance $L$ has been changed from 5.0 mm to 3.5 mm (same as the VT3600). <br> VT2130 <br> VT2200 <br> NOTE: The optional color drum for the VT2200 model is commonly used for the VT2130 model. (The distance $L$ in the color drum is 4.5 mm .) |


| No. | Item | Remarks |
| :---: | :---: | :---: |
| 4. | Drum Connector | To ensure the proper drum connection, a drum lock lever has been added inside the front door. To remove the drum from the machine, the drum release lever must be moved upward to disconnect the drum connector. (Same as the VT3600) |
| 5. | Ink Detection Board | The location of the ink detection board has been changed from the upper side to the right side of the drum shaft. The ink type switch (SW901), which was not used (always set at oil type), has been removed. (Same as the VT3600.) |
| 6. | Drum Shaft | To supply ink to the ink roller evenly, the second ink supply hole (count from the front side) of the drum shaft was covered with a strip of tape. <br> (Same as the VT3600.) |
| 7. | Exit Pawl Air Pump | To ensure proper paper separation from the drum, the exit pawl air pump system was standardized. (Same as VT3600.) The pump system can optionally be installed in the models of the VT2000 series.) |
| 8. | Main Board and Image Processing Board | The main board and the image processing board have been combined into one board. |
| 9. | Thermal Head Drive | The thermal head drive board has been removed. The function of the board has been moved to the main board. The thermal head voltage is applied directly from the power supply unit. The main board applies the signal to the PSU to supply thermal head voltage only during the master making process. (Same as the VT3600.) |
| 12. | Paper Table Drive Motor | The paper table drive motor has been changed from an ac motor to a dc motor. |
| 13. | Air Knife Motor | The air knife motor has been changed from an ac motor to a dc motor. |
| 14. | Pressure Plate Position Sensors | The pressure plate position switch and the full master detecting switch have been eliminated. <br> Three photo-interrupters, the upper and lower pressure plate sensors and the full master box sensor are used. (Same as the VT3600) |


| No. | Item | Remarks |
| :---: | :---: | :--- |
| 15. | Pressure Plate <br> Motor | The master eject motor which had two functions: (one is to <br> drive the exit rollers, and the other to drive the pressure <br> plate) has been replaced by two motors; the master eject <br> motor and the pressure plate motor. Due to this <br> modification, the master box capacity has been increased. |
| 16 | Skip Feed | A user can select from 2 to 9 rotations of the drum <br> between each printed sheet of paper, as a result the <br> image will be darker than normal and more ink will be <br> consumed. |
| 17. | Economy Function <br> (New Function) | If "Economy mode" is selected on the operation panel, a <br> lower thermal head energy is applied when a master is <br> made. As a result, the image will be lighter than normal <br> and ink consumption will be less. |
| 18. | Security Mode <br> (New Function) | "Secret mode" can be selected by changing DIP <br> SW103-6. If this mode is selected, the Print key is <br> disabled after turning the main switch off and on. (Only the <br> "Master making key" is available for use.) |

## 3. ELECTRICAL COMPONENT DESCRIPTIONS

| $\begin{array}{\|l\|} \hline \text { INDEX } \\ \text { No. } \\ \hline \end{array}$ | NAME | FUNCTION |
| :---: | :---: | :---: |
| Motors |  |  |
| 1 | Main Motor | Drives paper feed, drum, printing and paper delivery unit components. |
| 4 | Vacuum Motor | Provides suction to ensure that the paper is held firmly onto the transport belt. |
| 7 | ADF Drive Motor | Feeds the original into the original transport section (ADF). |
| 12 | Original Transport Motor | Transports the original through the scanner section. |
| 20 | Master Feed Motor | Feeds the new master to the drum. |
| 22 | Pressure Plate Motor | Raises and lowers the pressure plate. |
| 26 | Air Knife Motor | Provides air to separate the paper leading edge of the paper from the drum. |
| 28 | Master Eject Motor | Sends the used masters into the master eject box. |
| 33 | Cutter Motor | Cuts the master. |
| 60 | Image Shift Motor | Changes the timing between the paper feed roller and the drum to adjust the vertical image position. |
| 64 | Paper Table Drive Motor | Raises and lowers the paper table. |
| Solenoids |  |  |
| 11 | Original Pressure Solenoid | Presses the original pressure plate downward onto the originals. |
| 21 | Ink Supply Solenoid | Releases the spring clutch to activate the ink supply pump. |
| 29 | Master Eject Solenoid | Positions the master feed rollers against the drum to eject the used master. |
| 51 | Paper Feed Solenoid | Releases the paper feed sector gear to rotate the paper feed roller. |
| 52 | Printing Pressure Solenoid | Moves the press roller against the drum. |
| 56 | Master Eject Clamper Solenoid | Opens the master clamp to eject the old master from the drum. |
| 58 | Drum Lock Solenoid | Prevents the removal of the drum unit whenever the drum is not at the home position. |
| 59 | Master Feed Clamper Solenoid | Opens the master clamp to feed the new master onto the drum. |
| Switches |  |  |
| 6 | Printing Density Switch | Use to select the printing density to correspond to the type and quality of the original. |
| 14 | ADF Safety Switch | Check whether the ADF unit is closed correctly. |
| 18 | Fluorescent Lamp Safety Switch | Cuts the power for the fluorescent lamp when the scanner is opened. |
| 19 | Left Cutter Switch | Detects when the cutter position is at the far left position. |
| 27 | Master Eject Box Switch | Checks whether the master eject box is installed correctly. |
| 32 | Right Cutter Switch | Detects when the cutter position is at the far right position. |


| $\begin{array}{\|l\|} \hline \text { INDEX } \\ \text { No. } \end{array}$ | NAME | FUNCTION |
| :---: | :---: | :---: |
| 37 | Front Door Safety Switch | Checks whether the front door is closed correctly. |
| 38 | Drum Safety Switch | Checks whether the drum unit is latched correctly. |
| 41 | Paper Table Safety Switch | Checks whether the paper table is opened. |
| 47 | Test Switch | Releases the cover safety functions. |
| 48 | Main Switch | Turns the power on or off. |
| 49 | Master Eject Unit Safety <br> Switch (220V machines only) | Checks whether the master eject unit is closed correctly . |
| 55 | Master Eject Unit Safety Switch (115V machines only) |  |
| 62 | Master Cutter Switch | Informs the CPU to cut the leading edge of the master paper |
| 65 | Drum Rotation Switch | Informs the CPU to rotate the main motor at 10 rpm . |
| Sensors |  |  |
| 3 | 1st Paper Exit Sensor | Detects misfeeds in the paper exit section. |
| 5 | 2nd Paper Exit Sensor | Detects misfeeds in the paper exit section. |
| 9 | Original Registration Sensor | Detects misfeeds in the ADF, and synchronizes the master feed with the original feed. |
| 10 | 2nd Original Sensor | Detects when the original is in the feed position. |
| 13 | 1st Original Sensor | Detects when the original is inserted into the ADF. |
| 23 | Lower Pressure Plate Sensor | Informs the CPU when the pressure plate is at the lower limit position. |
| 24 | Full Master Box Sensor | Informs the CPU when the master eject box is full of used masters. |
| 25 | Upper Pressure Plate Sensor | Informs the CPU when the pressure plate is at the upper limit position. |
| 30 | Master Eject Sensor | Detects the master eject jams. |
| 34 | Master Buckle Sensor | Detects the master buckling process during master making. |
| 35 | Master End Sensor | Informs the CPU when master roll is empty. |
| 40 | Paper Table Height Sensor | Detects when the paper table has reached the paper feed position. |
| 42 | Paper Table Lower Limit Sensor | Detects when the paper table has reached the lowest position. |
| 43 | Printing Pressure Sensor | Informs the CPU when printing pressure is applied. |
| 44 | Paper End Sensor | Informs the CPU when the paper table runs out of paper. |
| 50 | Drum Rotation Sensor | Supplies the timing pulses to the main board. |
| 53 | 2nd Drum Position Sensor | Checks the home position of the drum. |
| 57 | 1st Drum Position Sensor | Checks the home position of the drum. |
|  |  |  |
| Printer Circuit Board |  |  |
| 16 | CCD PCB | Converts the reflected light into an analog signal. |
| 17 | A/D Conversion PCB | Converts analog signals into digital signals. |
| 39 | Main Control PCB | Controls all machine functions both directly and indirectly through the other PC boards. |
| 54 | Ink Detection PCB | Controls the ink supply within the drum |
| 63 | Power Supply PCB | Rectifies 100 V ac input and supplies dc voltage. |
|  |  |  |


| $\begin{array}{\|c\|} \hline \text { INDEX } \\ \text { No. } \\ \hline \end{array}$ | NAME | FUNCTION |
| :---: | :---: | :---: |
| Counters |  |  |
| 45 | Copy Counter | Keeps track of the total number of copies made. |
| 46 | Master Counter | Keeps track of the total number of masters made. |
| Others |  |  |
| 2 | Transformer | Steps down the wall voltage. |
| 8 | Fluorescent Lamp | Exposes the original. |
| 15 | Fluorescent Lamp Stabilizer | Controls the exposure lamp. |
| 31 | Reverse Roller Clutch | Transfers the master feed motor rotation to the reverse roller at proper timing. |
| 36 | Thermal Head | Burns the image onto the master. |
| 61 | Encoder | Converts the 16 image positions into a 4 bit data. |
| 66 | Operation Panel | Interfaces the CPU and the operator. |

ELECTRICAL COMPONENT LAYOUT



## DETAILED DESCRIPTIONS

## 1. MASTER EJECT SECTION

### 1.1 MASTER EJECT ROLLER DRIVE MECHANISM



The DC motor located in the rear of the machine will drive the master eject rollers $[B]$ and $[E]$ through the timing belt [C] and gear train [D].

When the master eject solenoid (not shown) is energized, the lower master eject rollers [E] will be pressed against the drum surface to pick up the curled trailing edge of the used master.

The curled trailing edge of the used master will then pass between the upper and lower master eject roller and will be transported into the master eject box.

### 1.2 PRESURE PLATE UP/DOWN MECHANISM



After the used master is transported to the master eject box, the master is compressed by the pressure plate.

The pressure plate is driven by an independent dc motor. The pressure plate motor [A] drive is transmitted to the gear [B] through gears, and the pin [C] will move the link [D] downward until the lower pressure plate sensor [E] is actuated. Spring [F] pull down on the pressure plate [G] and the used master in the master eject box is compressed. The pressure plate will stay remain in the lower position until the master making process is completed. The pressure plate motor then start again to return the pressure plate to the upper position. The motor will stop when the upper pressure plate sensor $[\mathrm{H}]$ is actuated.

The machine will detect a full master box when the full master box sensor [I] is not actuated when the pressure plate moves downward.

## 2. OPTICS

### 2.1 OVERALL

The CCD [A] which corresponds to a 300 dpi pixel density is used in the VT2200.

The light reflected from the original is sent to the CCD through a lens. The CCD changes the reflected light into an analog electrical signal which will then be converted into a 4-bit digital data in the A/D conversion PCB will then convert. The main control PCB changes the 4-bit data into a 1-bit data to drive the thermal head.


### 2.2 THERMAL HEAD

(1) Specifications

The VT2200 uses a 300 dpi thermal head.
Thermal head

- Width
- Number of thermal head elements
- Density of thermal head elements

256 mm
3072 dots
300 dpi
(2) Thermal Head Control

The PSU applies the thermal head voltage which is preset at the factory to match the individual thermal head characteristics. The main control PCB controls the thermal head to reproduce the image on the master.

## ENLTRIG



The thermal head energy is controlled by changing the pulse width. The pulse is controlled by the signal, ENL on the main board to correspond to the signal, ENLTRIG from the image processing board.


Thermal head voltage is only applied from the PSU during the master making process. This is controlled by the signal, VHDON (CN105-14) from the main board.

## 3. DRUM

### 3.1 DRUM CONNECTION MECHANISM



When the drum release lever $[A]$ in front of the machine is raised, the connector $[B]$ is pushed away from the drum by the bracket $[\mathrm{C}]$ through the link [D], and is disconnected. The connector will only move horizontally due to the guidance of the shafts $[E]$. The bracket $[C]$ will also push the drum lock lever [F] to release the drum lock allowing the drum to be removed. While the drum is out of home position, the drum lock solenoid [G] is energized and the stopper [ H ] will lock the link [ D ] so that it cannot be pulled. The solenoid is de-energized when the drum is stopped at the home position (when the 1st drum home position sensor is actuated).

## 4. PAPER DELIVERY

### 4.1 EXIT PAWL AIR PUMP MECHANISM



The main motor drive is transmitted to the pump gear $[\mathrm{A}]$ through gears and a timing belt $[B]$. The gear $[A]$ will rotate and drive the piston in the air pump [C] back and forth.

When the piston moves forward, it will pushe a jet of air out through the nozzle [D]. This jet of air will help to separate the paper from the drum.

## INSTALLATION

NOTE: THE MACHINE MUST BE INSTALLED BY A CUSTOMER SERVICE REPRESENTATIVE WHO HAS COMPLETED THE TRAINING COURSE ON THIS MACHINE

## 1. INSTALLATION PROCEDURE



1. Ensure that you have all the accessories listed below.
(1) Original Exit Tray
(2) Operating Instructions ............................................................. 1
(3) NECR...................................................................................... 1

2. Mount the machine on the optional table (2 screws packed with the table).
3. Remove all of the strips of tape securing the covers and units as shown above.
a. Open the paper feed tray and remove the cushion plate $[A]$ from the paper feed roller section.
b. Open the master delivery unit and remove the tape securing the paper delivery guide plate.
4. Remove the protective sheet $[A]$ from the drum unit.
a. Open the front door.
b. Lift the drum lock lever [B] upward
c. Remove the drum unit.
d. Remove the protective sheet [A] from the master clamper.
e. Reinstall the drum unit in the machine.
f. Push the drum lock lever [B] downward.

5. Loading Paper on the Paper Feed Table
a. Open the paper feed table.
b. Stack the paper neatly on the paper feed table.
c. Position the paper feed side plates so that they are in light contact with both sides of the paper.
d. Position the paper delivery table for the printing paper size, use the
 scale on the table.
e. Position the paper delivery side plate for the printing paper size, use the scale on the table.
6. Installing the Master Roll (Type VT-II-M)
a. While lifting the release lever, slide the scanner unit to the left.
b. Attach a spool onto each end of the master roll.
c. Set the master roll in the machine.

NOTE: The vinyl side faces down.
d. Return the pressure release lever to the original position.
e. Plug in the power cord and turn on the main switch.
f. Press the Master Cut button.
g. Remove the cut master paper.


NOTE: Check that the master paper is not bent or creased.
h. Close the scanner unit.

9. Installing the Ink Cartridge
a. Open the front door and lower the ink holder.
b. Remove the ink cartridge cap.
c. Insert the ink cartridge into the ink holder and return the ink holder to the original position.
d. Close the front door.
10. Idling

a. While holding down the "0" key on the operation panel, press the Reset key.
b. If the display message
 + D blinks repeat the above procedure.

## 11. Test Printing

a. Adjust the original guide to match the original size.
b. Place an original into the ADF, face down.
c. Input the desired number of prints with the number keys and press the Master Making key.
NOTE: With a new machine, the master paper misfeed indicator of + $F$ will blink because there is no master on the drum. Press the Reset key, then press the Master Making key.
d. After one sheet of paper is delivered, press the print key to iniaciate the print cycle. Make the prints at the lowest print speed (1) until the print image density stabilizes. Use a test chart to check for changes in the image density.
e. Check the copy quality after the image is stabilized (dry).

## SERVICE TABLES

## 1. MAINTENANCE TABLES

### 1.1 LUBRICATION POINTS

Lubricate after removing adhering ink and paper dust.

| Lubrication Point | Interval | Type |
| :--- | :---: | :---: |
| Bearings for the drum drive shaft | Yearly | Oil |
| Bearing for each cam shaft | Yearly | Oil |
| Bearing for the main motor shaft | Yearly | Oil |
| Bearing for the speed reduction shaft | Yearly | Oil |
| Gears on the drum drive shaft | Yearly | Grease |
| Gears for each cam | Yearly | Grease |
| Paper feed sector gear | Yearly | Grease |
| Second feed sector gear | Yearly | Grease |
| Edge of each cam | Yearly | Grease |
| Master pressure plate groove | Yearly | Grease |

## Type of Oil and Grease

Oil: Motor Oil (SAE No.30)
Grease: Shell Albania No. 2

### 1.2 USER'S MAINTENANCE

Please advise the customer to clean each item at suitable intervais.

| Cleaning Point | Interval | Cleaner |
| :--- | :---: | :--- |
| Original platen cover | At any time | Cloth and water |
| Exposure glass | At any time | Cloth and glass cleaner |
| Paper feed rollers | At any time | Cloth, and soap and water (or alcohol) |
| Press roller | At any time | Cloth, and soap and water (or alcohol) |

### 1.3 PERIODIC INSPECTION TABLE (EVERY 6 MONTHS)

| Item/Location | Step | Inspection Standard |
| :--- | :--- | :--- |
| Original platen cover | Cleaning | Wipe off any stains with a soft cloth dampened <br> with ethyl alcohol. |
| Exposure glass | Cleaning | Wipe with a dry cloth. |
| Mirror/Sub mirror | Cleaning | Use a blower brush. |
| Platen roller | Cleaning | Wipe off paper powder with a cloth dampened <br> with water. |
| Sensors | Inspection <br> and cleaning | Check the performance of all the sensors. <br> Remove stains from sensors with dry cloth. |
| Press roller | Cleaning | Wipe off the ink and paper powder with cloth <br> dampened with ethyl alcohol. |
| Drum surface | Wipe off the paper powder and ink which is forced <br> out from the trailing edges of the masters using a <br> cloth dampened with ethyl alcohol. |  |
| Master feed and <br> delivery | Inspection master should be properly fed and clamped, <br> without generation of skew, folding, etc. The <br> master should also be properly delivered without <br> jam. |  |
| Paper feed and delivery | Inspection | Print several sheets of paper to ensure that paper <br> is fed smoothly and delivered, without generation <br> of skew, folds, wrinkles, etc. |
| Second paper feed <br> rollers | Cleaning | Wipe off ink and paper powder with a cloth <br> dampened with alcohol. |
| Original transport rollers | Cleaning | Wipe off paper powder with a cloth dampened <br> with water. |
| ADF | Cleaning | Wipe off paper powder with a cloth dampened <br> with water. |
| Pull-out roller | Wipe off paper powder with a cloth dampened <br> with water. |  |
| Original feed roller | Cleaning |  |
| Wipe off paper powder with a cloth dampened |  |  |
| with water. |  |  |

### 1.4 TABLE OF PERIODIC INSPECTION (EVERY 12 MONTHS)

| Item/Location | Step | Inspection Standard |
| :--- | :--- | :--- |
| Original platen cover | Cleaning | Wipe off stains with a soft cloth dampened with <br> ethyl alcohol. |
| Exposure glass | Cleaning | Wipe off stains with a soft cloth dampened with <br> ethyl alcohol. |
| Fluorescent lamp | Cleaning | Wipe with a dry cloth. |
| Mirror/Sub mirror | Cleaning | Use a blower brush. |
| Platen roller | Cleaning | Wipe off paper powder with a cloth dampened <br> with water. |
| Paper feed roller | Cleaning | Wipe off paper powder with a cloth dampened <br> with water and wipe off ink with a cloth dampened <br> with ethyl alcohol. |
| Separation roller | Cleaning | Wipe off paper powder with a cloth dampened <br> with water and wipe off ink with a cloth dampened <br> with ethyl alcohol. |
| Sensors | Inspection <br> and cleaning | Check the performance of all the sensors. <br> Wipe off stains on the sensor with a dry cloth. |
| Master delivery rollers | Cleaning | Wipe off built up ink and paper powder on the <br> master delivery rollers using a cloth dampened <br> with ethyl alcohol. |
| Master delivery belts | Cleaning | Wipe off built up ink and paper powder on the <br> master delivery belts using a cloth dampened with <br> ethyl alcohol. |
| Second paper feed | Cleaning | Wipe off built up ink and paper powder on the <br> second feed rollers using a cloth dampened with <br> ethyl alcohol. |
| rollers | Cleaning | Wipe off built up ink and paper powder on the <br> press roller using a cloth dampened with ethyl <br> alcohol. |
| Press roller | Cleaning | Wipe off paper powder with a cloth dampened <br> with water. |
| with water. |  |  |

### 1.5 EXPECTED LIFE OF PARTS

NOTE: The main parts have the following expected life.
Target Copy Volume Range: Avg. 50,000 prints/month.
(Max. 100,000~Min. 20,000 prints/month)
Avg. 500 masters/month

| Section | Part Description | Expected Life |
| :---: | :---: | :---: |
| Scanner Unit | Fluorescent lamp Original transport rollers | 15,000 masters <br> 1 year or 6,000 masters |
| Master Feed Unit | Thermal head Cutter Upper master feed rollers Platen roller | 30,000 masters <br> 30,000 masters <br> 1 year or 6,000 masters <br> 30,000 masters |
| Drum Unit | Cloth screen | 2 years or 1,200,000 prints |
| Paper Feed Unit | Paper feed rubber side plate <br> Paper feed roller <br> Upper separation roller <br> Separation plate <br> Lower separation roller <br> Feed roller brake | 1,200,000 prints <br> 6 months or 300,000 prints <br> 600,000 prints <br> 2,000,000 prints <br> 1,000,000 prints |
| Printing Unit | Press roller | 2 years or 1,200,000 prints |
| Delivery Unit | Vacuum belts | 2 years or 1,200,000 prints |
| ADF Unit | Pull-out roller Original feed roller Separation blade Original pressure plate | 60,000 sheets 60,000 sheets 60,000 sheets 60,000 sheets |

### 1.6 SPECIAL TOOLS

| Description | Parts Number |
| :--- | :--- |
| Test chart | 99992131 |
| Resolution chart | A0129110 |
| Drum gauge | C2009001 |
| Image shifting gauge | C 2009002 |

## 2. TABLE OF SERVICE CALL INDICATIONS

| Indication | Trouble | Possible cuses |
| :---: | :---: | :---: |
| E 01 | Malfunction in the cutter section: The cutter did not reach both the right and left cutter position switches within 2 seconds. | 1) Drive wire cut <br> 2) Drive section malfunction <br> 3) No power supply |
| E 02 | Malfunction in the paper table drive section: The lower limit sensor or the paper table height sensor status did not change even though the paper table Up or Down signal was applied. | 1) Drive worm gear broken <br> 2) Mounting screw of the worm gear broken <br> 3) No power supply |
| E 04 | The temperature of the thermal head or the power supply unit is high: <br> The temperature of the thermal head was greater than $53^{\circ} \mathrm{C}$. | 1) Defective thermistor <br> 2) Defective thermal head <br> 3) Defective power supply unit |
| E 05 | Malfunction in the image shifting section: All of the encoder output signals are at the " H " level. | 1) Encoder connector of the image shifting section is disconnected. <br> 2) Defective encoder |
| E 06 | Mechanical lock: <br> The drum rotation sensor detects that the drum rotation speed is abnormal. | 1) Mechanical lock <br> 2) Main motor failure |
| E 09 | Malfunction of the thermal head. | 1) Defective thermal head <br> 2) Defective thermistor <br> 3) Thermal head harness broken |
| E-10 | Malfunction in the thermal head drive section. | 1) Defective main control PCB <br> 2) Thermal head drive wire short circuit |
| E-11 | Image shift motor malfunction: <br> The encoder status did not change within 3 <br> seconds after the encoder motor started rotating. | 1) Image shift motor lock <br> 2) Image shift motor harness broken |
| E-12 | Malfunction in the pressure plate drive section: The lower pressure plate sensor was not actuated within 8 seconds. <br> The upper pressure plate sensor was not actuated within 4 seconds. | 1) Pressure plate motor lock <br> 2) Pressure plate motor harness broken <br> 3) Pressure plate position sensor malfunction |

## 3. DIP SW, LED, VR, AND TP TABLES

### 3.1 DIP SW TABLE (ON THE MAIN BOARD)

| No. | DIP SW | Function | Remarks | Factory Setting |
| :---: | :---: | :---: | :---: | :---: |
| 1 | DPS101 | Not Used |  | OFF |
| 2 | DPS102-1 | Thermal Head Test | Turn off to access test pattern mode. (Refer to the Thermal Head Test, section 4.4) | ON |
| 3 | DPS102-2 | Dither Matrix Selection | Turn off to select the $6 \times 6$ dither matrix. (Image will be lighter if the $6 \times 6$ dither matrix is selected.) <br> ON: $4 \times 4$ <br> OFF: $6 \times 6$ | ON |
| 4 | DPS103-1 DPS103-2 | Skip Paper Feed Setting | Select the number of drum rotations between every print when the Skip Paper Feed mode is selected. (See the skip paper setting table on the next page.) | DPS103-1: OFF DPS103-2: OFF |
| 5 | DPS103-3 | Initial Full <br> Master Check | If this switch is on, when the main switch is turned on, masters in the master eject box are compressed once to check if the master eject box is full. | OFF |
| 6 | DPS103-4 | Initial Print | ON: Make two prints after making a master. <br> OFF: Make one print after making a master. | OFF |
| 7 | DPS103-5 | Beeper ON/OFF | Turn on to sound the beeper. | OFF |
| 8 | DPS103-6 | Security Function | If this switch is on, prints cannot be made without making a new master after the main switch is turned off and on. | OFF |
| 9 | DPS103-7 | Key Counter | Turn on after installing the key counter. | OFF |
| 10 | DPS103-8 | On Line | Turn on after installing the option controller. | OFF |
| 11 | DPS104-1 <br> DPS104-2 <br> DPS104-3 | Reduction Ratio Compensation | Used to adjust the reduction ratio in the sub-scan direction. (Refer to Image Magnification in the Sub-Scan Direction Adjustment. section 5.1.9) |  |
| 12 | DPS104-4 | Not Used |  | OFF |
| 13 | DPS104-5 | Not Used |  | OFF |
| 14 | DPS104-6 | Auto Class | If this switch is on, in Memory/Class mode, the next job will start 5 seconds after the previous job is finished even if the tape marker is not installed. | OFF |
| 15 | DPS104-7 | Reduction Ratio Selection | Select the reduction ratio setting. ON: 93\%, 75\%, 64\%. OFF: $93 \%, 82 \%, 71 \%$. | A4 version: OFF <br> LT version: ON |
| 16 | DPS104-8 | Class/Memory Selection | Select class or memory function. <br> ON: Memory <br> OFF: Class | ON |

Skip Paper Setting Table

|  | 1 Sheet/ <br> 2 Rotations | 1 Sheet/ <br> 3 Rotations | 1 Sheet/ <br> 5 Rotations | 1 Sheet/ <br> 8 Rotations |
| :---: | :---: | :---: | :---: | :---: |
| DPS103-1 | OFF | ON | OFF | ON |
| DPS103-2 | OFF | OFF | ON | ON |

Skip paper setting can also be changed by key operation.
Press a number key while pressing the skip paper feed key to select the number of drum rotations Between each printed page.

### 3.2 LED TABLE

| No. | LED | Function | Remarks |
| :---: | :---: | :--- | :--- |
| 1 | LED101 (MSPD) | Main Motor ON | When the main motor turns on, the LED will <br> lights. |
| 2 | LED102 (PDLV) | 2nd Paper Exit SN | When paper is detected, the LED will light. |
| 3 | LED103 (ROLL) | 1st Paper Exit SN | When paper is detected, the LED will light. |
| 4 | LED104 (MDLV) | Master Eject SN | When a master is detected, the LED will <br> light. |
| 5 | LED105 (INK) | Ink Detection | When ink is detected, the LED will light. <br> NOTE: When the drum release lever is <br> rised, the drum connector is <br> disconnected and the LED will turn <br> off. |

### 3.3 VR TABLE

| No. | VR | Function |
| :---: | :---: | :--- |
| 1 | VR101 (MSPD) | Main motor speed adjustment. |
| 2 | VR102 (PDLV) | 2nd paper exit sensor adjustment. |
| 3 | VR103 (ROLL) | 1st paper exit sensor adjustment. |
| 4 | VR104 (MDLV) | Master eject sensor adjustment. |

### 3.4 TEST PIN TABLE (Main Control PCB)

| No. | Test Pin | Function |
| :---: | :--- | :--- |
| 1 | TP101 (DPLS) | Drum rotation sensor output. |
| 2 | TP102 (PDLV) | 2nd drum position sensor output. |
| 3 | TP103 (ROLL) | 1st drum position sensor output. |
| 4 | TP104 (MDLV) | Master eject sensor output. |
| 5 | TP105 (INK) | Ink detction signal. |
| 6 | TP106 (GND) | GND. |
| 7 | TP107 (GND) | GND. |

### 3.5 TEST PIN TABLE (A/D Conversion PCB)

| No. | Test Pin | Function |
| :--- | :--- | :--- |
| 1 | TP600 | GND. |
| 2 | TP601 | Shift signal output (SH). |
| 3 | TP602 | CCD output (OS). |
| 4 | TP603 | Inverted and amplified CCD output. |
| 5 | TP604 | Black level standard voltage output. |

## 4. SERVICE PROGRAM TABLE:

### 4.1 HOW TO ACCESS I/O CHECK MODE

1. Turn on the main switch while holding down the Print Start key, Stop key, and Clear key.
2. Press the Memory/Class key to select either "Input" or "Output" mode.

Memory indicator "1" Input Memory Indicator "0" Output

### 4.2 INPUT CHECK MODE

| Counter <br> Indication | $\quad$ Component to be checked |
| :---: | :--- |
| $1-1$ | ADF Safety Switch |
| $2-1$ | 1st Original Sensor |
| $3-1$ | 2nd Original Sensor |
| $4-1$ | Original Registration |
| $5-1$ | Paper End Sensor |
| $6-1$ | Paper Table Lower Limit Sensor |
| $7-1$ | Paper Height Sensor |
| $8-1$ | Right Cutter Switch |
| $9-1$ | Left Cutter Switch |
| $10-1$ | Master Buckle Sensor |
| $11-1$ | Master End Sensor |
| $12-1$ | Ink Detection |
| $13-1$ | Color Drum |
| $14-1$ | Drum Safety Sensor |
| $15-1$ | Master Eject Sensor |
| $16-1$ | Upper Pressure Plate Sensor |
| $17-1$ | Lower Pressure Plate Sensor |
| $18-1$ | Master Eject Box Switch |
| $19-1$ | Full Master Box Sensor |
| $20-1$ | 1st Paper Exit Sensor |
| $21-1$ | 2nd Paper Exit Sensor |
| $22-1$ | Printing Pressure Sensor |
| $23-1$ | 1st Drum Position Sensor |
| $24-1$ | 2nd Drum Position Sensor |
| $25-1$ | Master Cut Position Sensor |
| $26-1$ | Key Counter Set |
| $27-1$ | Not Used |

### 4.3 OUTPUT CHECK MODE

| Counter <br> Indication | $\quad$ Output |
| :---: | :--- |
| $1-0$ | ADF Motor Rotates. |
| $2-0$ | ADF Original Pressure Solenoid is energized. |
| $3-0$ | Master Eject Motor rotates. |
| $4-0$ | Pressure Plate Motor rotates. |
| $5-0$ | Reverse Roller Clutch is energized. |
| $6-0$ | Vacuum Fan Motor rotates. |
| $7-0$ | Air Knife Motor rotates. |
| $8-0$ | Increments the Key Counter. |
| 90 | Increments the Master Counter |
| $10-0$ | Increments the Total Counter. |
| $11-0$ | Ink Supply Solenoid is energized. |
| $12-0$ | Drum Lock Solenoid is energized. |
| $13-0$ | Printing Pressure Solenoid is energized. |
| $14-0$ | Paper Feed Solenoid is energized. |
| $15-0$ | Master Feed Clamper Solenoid is energized. |
| $16-0$ | Master Eject Clamper Solenoid is energized. |
| $17-0$ | Master Eject Solenoid is energized. |
| $18-0$ | Paper Table Drive Motor rotates to move the paper table downward. |
| $19-0$ | Paper Table Dirive Motor rotates to move the paper table upward. |
| $20-0$ | Relay for main motor reversing is energized. |
| $21-0$ | Lamp is energized. |
| $22-0$ | Cutter Motor rotates to move the cutter unit from the front of the machine to |
| $23-0$ | rear. |
| Cutter Motor rotates to move the cutter unit from the rear of the machine to |  |
|  | front |
| $24-0$ | Image Shifting Motor rotates in the (+) direction. |
| $25-0$ | Image Shitting Motor rotates in the (-) direction. |
| $26-0$ | Drum rotates at 1Orpm. |
| $27-0$ | Drum rotates at 20rpm. |
| $28-0$ | Drum rotates at 6rpm. |
| $29-0$ | Drum rotates at 75rpm. |
| $30-0$ | Drum rotates at 90rpm. |
| $31-0$ | Drum rotates at 105rpm. |
| $32-0$ | Drum rotates at 120pm. |
| $33-0$ | Original Transport Motor rotates. |
| $34-0$ | Master Feed Motor rotates. |
| $35-0$ | Thermal Head Energy is applied. |
| $36-0$ | All the operation panel indicators are turned on. |
| $37-0$ | Tape Maker (option) feeds out a strip of paper. |
| $38-0$ | Printing operation is done at 10rpm. |
| $39-0$ | Simulates original transportation in ADF mode. |

NOTE: 1. If the drum is rotated using output check mode $26-0$ to $32-0$, the drum rotation speed (rpm) is displayed in the copy counter.
2. After selecting output check mode 35-0 and pressing the Print Start key, the thermal head voltage is continuously applied until the Stop key or the Clear key is pressed. The beeper will sound while the thermal head energy is applied.

WARNING: Do not apply the thermal head voltage for more than several seconds.

### 4.4 THERMAL HEAD TEST

The function of this mode is to distinguish if the cause of the image problem is located before or after image processing.

Output image: The normal output of this test pattern image mode is one of the dither matrix patterns as illustrated below.

## Master processing length:

Main scan (Horizontal) direction:
Sub-scan (Vertical) direction:

Full width of the thermal head
Same as the vertical size of the original set on the original table.


The test pattern is generated by the image processing PCB.
[Example] Problem:
Possible Cause 1
Vertical white lines appear on the print. If the same problem appears on the output image from the thermal head in test pattern image mode, the cause is in area B , as shown above.
Possible Cause 2 If the output image from the thermal head is correct in test pattern mode but the output image in the normal mode is incorrect, the cause is in area $A$, as shown above.

### 4.4.1 OPERATION: (To Enter Test Pattern Image Mode)

1) Turn the power switch off
2) Remove the front cover.
3) Set DIP SW102-1 on the image processing PCB to the off setting. CAUTION: Do not change the setting with the power switch on.
4) Turn the power switch on.
5) Press the Image Mode key to select the test pattern image.

Test pattern in line mode


Test pattern in photo mode

5) Place an original on the original table.

## . CAUTION:

To prevent overheating of the thermal head, make the original as short as possible. Any type of original is suitable as the test pattern being used is in the image processing PCB memory.
6) Press the Master Making key and make a print.
7) After completion of the test pattern image mode, turn the power switch off and set DIP SW 102-1 on.

## 5. AVAILABLE OPTION/SUPPLY TABLE

O: Standard combination
$\Delta$ : Usable under certain conditions
X: Cannot be used

|  |  |  |
| :---: | :---: | :---: |
| Masters | Type 800 | X |
|  | Type 900 | X |
|  | VT-S | X |
|  | VT-M | X *NOTE1 |
|  | VT-L | X |
|  | VT-II-M | 0 |
| Inks | Black | 0 |
|  | Color | 0 |
|  | VT-Black-1000 | X |
| Color Drums | Color Drum | $\Delta *$ NOTE2 |
|  | Color Drum Type 905 | $\Delta *$ NOTE2 |
|  | Color Drum VT2000-M | 0 |
|  | Color Drum VT2000-LG | X *NOTE3 |
|  | Color Drum VT2000-S | X *NOTE3 |
|  | Color Drum VT3000-L | X |
|  | Color Drum VT3000-S | X |
| Others | Cassette B4 | X |
|  | Cassette VT3000-L | X |
|  | Cassette VT3000-S | X |
|  | Tape Marker Type 20 | 0 |
|  | Priport Table | 0 |
|  | Priport Table VT3000 | X |

NOTE: 1. The VT-M master can be installed in the VT2200, however, a weak image (sometimes blank) will appear.
This is because the VT-II-M master is more sensitive than the VT-M master.
2. The modified master clamper (P/N C2074948) must be installed.
3. The drum can be installed. However, the maximum image area is limited depending on the drum screen size.

## REPLACEMENT AND ADJUSTMENT

1) The replacement and adjustment procedures not mentioned in the following pages are identical to those of the VT2130, VT2300, and the VT2105.
2) The purpose and procedure of the following adjustments are identical to those of the VT2130, VT2300, and VT2105 however the adjustment value or VR number is different.

- PRINTING PRESSURE ADJUSTMENT


Adjust the clearance $[A]$ to be $14 \pm 0.5 \mathrm{~mm}$ by turning the adjustment bolt [B].

## - PRINTING SPEED ADJUSTMENT

Adjust the drum speed by turning VR101 on the main board.

## - EXIT PAWL CLEARANCE ADJUSTMENT



Adjust the exit pawl clearance until the distance between the exit pawl and the drum is between 0.5 and 0.7 mm .

## - FIRST PAPER EXIT SENSOR ADJUSTMENT

Adjust the 1st paper exit sensor sensitivity by turning VR103. Check the sensor status with LED103.

## - SECOND PAPER EXIT SENSOR ADJUSTMENT

Adjust the 2nd paper exit sensor sensitivity by turning VR102. Check the sensor status with LED102.

## 1. OPTICS ADJUSTMENT

The procedure of the optics adjustment is the same as the VT2130, VT2300 and VT2105. However, the wave shape is not exactly the same because the pixel density of the VT2200 is different.
Necessary Tools

1) Facsimile Text Chart R-21
(99992131)
2) Resolution Chart (A0129110)
3) Oscilloscope

### 1.1 PREPARATION FOR ADJUSTMENT

1. Remove the original table and the original table cover.
2. Connect the terminals of the oscilloscope to the following test pins on the $\mathrm{A} / \mathrm{D}$ conversion board.


## 3. Access "I/O Check Mode".

- Turn on the main switch while holding the Print Start key, Stop key and Clear key on the operation panel.

4. Input 21 in the copy counter using the number keys, and set " 0 " in the memory/class display by pressing the memory/class key
5. Press the Print Start key to turn on the fluorescent lamp.

### 1.2 BLACK LEVEL ADJUSTMENT



Adjust VR601 until the black level at TP603 is the same as the standard black level ( $1.4 \mathrm{~V} \pm 0.03 \mathrm{~V}$ ).

### 1.3 SHADING ADJUSTMENT


$B / A \geq 60 \%$

Adjust the shading plate position until the wave is shaped as shown above.

### 1.4 SCAN LINE POSITION ADJUSTMENT



Set the R-21 test chart so that the 1 mm black line is positioned 16 mm away from the edge of the lower original guide plate.

Adjust the CCD board position until the shape of the wave is similar to the illustration above.

### 1.5 READING START POSITION ADJUSTMENT (In The Main Scan Direction)




Set the test chart so that the center line, located at the leading edge of the test chart, is positioned above the original leading edge sensor actuator. Then feed the test chart until the center line can be read.

Adjust the CCD board position until the above wave is displayed.

### 1.6 FOCUS ADJUSTMENT



- $\frac{B}{A} \times 100 \geq 20 \%$

- Amplitude "B" (difference between white and black levels) must be a maximum.

Position the resolution chart so that the 300 DPI section can be read. Adjust the lens position until the above wave appears.

### 1.7 REDUCTION RATIO ADJUSTMENT



Position the resolution chart so that the 300 DPI section can be read. Adjust the lens block position until the cross points are fewer than 8.

### 1.8 WHITE LEVEL ADJUSTMENT



Adjust VR600 on the AD conversion board so that the maximum level is 2.0 $\pm 0.1 \mathrm{~V}$.

### 1.9 IMAGE MAGNIFICATION IN THE SUB-SCAN DIRECTION ADJUSTMENT

Adjust the magnification ratio in the sub-scan direction using DIP103-1, 2, 3 on the main board, until the printed image length is $100 \% \pm 0.5 \%$ when compared with the original image length.
-DIP SW/Correction Ratio-

| DPS 104 |  |  | Original Length Print Image Length 100 |
| :---: | :---: | :---: | :---: |
| 1 | 2 | 3 |  |
| OFF | OFF | OFF | $99.5 \%$ |
| OFF | ON | OFF | $99.0 \%$ |
| OFF | OFF | ON | $98.5 \%$ |
| OFF | ON | ON | $100 \%$ |
| ON | OFF | OFF | $100.5 \%$ |
| ON | ON | OFF | $101.0 \%$ |
| ON | OFF | ON | $101.5 \%$ |
| ON | ON | ON |  |

## 2. THERMAL HEAD VOLTAGE ADJUSTMENT

Purpose: To maintain master making quality and extend the lifetime of the thermal head.
NOTE: This adjustment is always required when ever the thermal head or the power supply board is replaced.


1. Remove the rear cover and the right cover and right cover of the machine.
2. Disconnect the connector $[A]$ from the plotter unit.
3. Check the voltage noted on the decal, located on the thermal head. (The voltage will vary with each thermal head.)
4. Access "I/ Check Mode".

- Turn on the main switch while holding the Print Start, Stop and Clear keys.

5. Input 35 in the copy counter using the number keys, and set " 0 " in the Memory/Class display by pressing the Memory/Class key.
6. Press the Print Start key to apply the thermal head voltage.
7. Confirm that the voltage between one of the VHD terminals and one of the ground terminals of CN503 is at the level specified on the decal (Within + $0 \mathrm{~V},-0.1 \mathrm{~V}$ ).
8. If it is not correct, adjust VR3 on the power supply board.

NOTE: Press the stop key to stop applying the thermal head voltage. Do not keep the thermal head voltage on for a long period (longer than several seconds).

## 3. AIR PUMP TIMING ADJUSTMENT



Purpose: To ensure that the paper exit pawl air pump produces a jet of air at the proper time.

1. Remove the rear cover.
2. Set the drum in the home position.
3. Confirm that the mark $[A]$ on the pump drive gear $[B]$ is located directly over the gear shaft [C].
4. If incorrect, remove the support plate [D] (5 screws) and reposition the gear.
5. Rotate the drum to the home position and repeat the procedure.

RICOH PRIPORT SS830/SS950

## SERVICE MANUAL



RICOH CORPORATION

## Overall Machine Information

## SPECIFICATIONS: SS950

Configuration: Desk top
Master processing : Digital
Printing process : Full automatic one drum stencil system
Original type : Sheet
Original size : Maximum $307 \mathrm{~mm} \times 432 \mathrm{~mm}$ (12.0" x 17.0")
Reproduction ratios: 120 V version: 100\%, 93\%, 75\%, 64\%
Image mode: Line / Photo
Color printing : Drum unit replacement system
Master feed / eject : Roll master automatic feed / eject
Master processing Maximum $256 \mathrm{~mm} \times 360 \mathrm{~mm}$ (10.1" $\times 14.2^{\prime \prime}$ )
area:
Printing area : $\quad$ Maximum $250 \mathrm{~mm} \times 350 \mathrm{~mm}\left(9.8^{\prime \prime} \times 13.7^{\prime \prime}\right)$
Leading edge blank : 10 mm
Print paper size : $\quad$ Minimum $90 \mathrm{~mm} \times 140 \mathrm{~mm}\left(3.6^{\prime \prime} \times 5.5^{\prime \prime}\right)$
Maximum $297 \mathrm{~mm} \times 432 \mathrm{~mm}$ (11.6" $\times 17.0^{\prime \prime}$ )
Print paper weight : $\quad 14 \mathrm{lb}$ to 65 lb
Printing speed: 40, 60, 80, 100, 120 sheets/minute (5 steps)
First print time : 32 seconds
Paper feed table ..... 1000 sheets $\left(66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}\right)$
capacity :
Paper delivery table 500 sheets $\left(66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}\right)$
capacity :
Power source : ..... 120V, 60 Hz ----- 5.5A
Power consumption : 120 V version: 430W
Weight : 120 V version: 101 kg (222.7 lb)
Option Table: 26 kg (57.3 lb)
Dimensions: Storing $735 \mathrm{~mm} \times 607 \mathrm{~mm} \times 577 \mathrm{~mm}$(29.0" $\times 28.9^{\prime \prime} \times 22.8^{\prime \prime}$ )
Working $1279 \mathrm{~mm} \times 607 \mathrm{~mm} \times 656 \mathrm{~mm}$(50.4" $\times 23.9^{\prime \prime} \times 25.9^{\prime \prime}$ )
Table $\quad 640 \mathrm{~mm} \times 570 \mathrm{~mm} \times 455 \mathrm{~mm}$
(25.2" $\times 22.4^{\prime \prime} \times 17.9^{\prime \prime}$ )
ADF original capacity : 10 sheets ( $66 \mathrm{~g} / \mathrm{m}^{2}$ ) or 1.8 mm height
Original guide move- 98 mm to 316 mm (38.6" x 12.44")
ment distance :
Original scanning 3 ms / 1 line
time :
Original thickness : $\quad 0.06 \mathrm{~mm}$ to 0.5 mm
Original feed speed : $20.8 \mathrm{~mm} /$ second (While master processing)
$41.7 \mathrm{~mm} /$ second (Not master processing)
Pixel density : 16 dots/mm (400 D.P.I. Scanning Resolution)
Master eject box 25 masters (Normal Condition)
capacity :
20 masters ( $10^{\circ} \mathrm{C} / 30 \%$ RH Condition)
Paper feeding : Friction roller / center separation system
Feed table side plate 88 mm to 317 mm (3.46" x 12.48")
movement distance :
Paper feed roller Normal position - - 250 gpressure:Thick paper position - -550 g
Separation roller Normal position - - 180 gpressure:
Weak position - -70 g
Side registration : $\quad \pm 10 \mathrm{~mm}$ (manual)
Vertical registration : $\pm 20 \mathrm{~mm}$ (mechanical)
Paper table raising / $26 \mathrm{~mm} /$ second $(60 \mathrm{~Hz})$lowering speed:
Ink Supply : Automatic ink supply system
Press roller pressure : $10 \pm 0.3 \mathrm{~kg}$
Paper Delivery : Air knife / vacuum delivery
Delivery side plate 80 mm to 320 mm (3.15" $\left.\times 12.6^{\prime \prime}\right)$
movement distance :
Print counter : 7 digits
Master counter : 6 digits
Supplies:
(16 dots/mm)
Thermal master 280 mm width250 masters / 1roll
Roll diameter ..... 130 mm
Master length ..... 480 mm / 1 master
Max run length ..... 2000 prints
Ink : 500cc ink packColors : Black, Red, Blue, Green, Brown

## SPECIFICATIONS: SS830

Configuration : Desk top
Master processing : Digital
Printing process : Full automatic one drum stencil system
Original type : Sheet
Original size : Maximum $307 \mathrm{~mm} \times 432 \mathrm{~mm}$ (12.0" $\times 17.0^{\prime \prime}$ )
Reproduction ratios: 120 V version: $100 \%, 93 \%, 75 \%, 64 \%$
Image mode : Line / Photo
Color printing : Drum unit replacement system
Master feed / eject : Roll master automatic feed / eject
Master processing Maximum $256 \mathrm{~mm} \times 360 \mathrm{~mm}$ (10.1" $\left.\times 14.2^{\prime \prime}\right)$
area :
Printing area : Maximum $250 \mathrm{~mm} \times 350 \mathrm{~mm}\left(9.8^{\prime \prime} \times 13.7^{\prime \prime}\right)$
Leading edge blank : 10 mm
Print paper size : $\quad$ Minimum $90 \mathrm{~mm} \times 140 \mathrm{~mm}\left(3.6^{\prime \prime} \times 5.5^{\prime \prime}\right)$
Maximum $297 \mathrm{~mm} \times 432 \mathrm{~mm}$ (11.6" x 17.0")
Print paper weight : 14 lb to 65 lb
Printing speed : 40, 60, 80, 100, 120 sheets/minute (5 steps)
First print time : $63 \pm 3$ second (B4 size)
Paper feed table 1000 sheets $\left(66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}\right)$capacity :
Paper delivery table 500 sheets $\left(66.3 \mathrm{~g} / \mathrm{m}^{2} / 17.6 \mathrm{lb}\right)$
capacity :
Power source ..... 120V, 60 Hz ----- 5.5A
Power consumption: 120 V version: 430 W
Weight : 120V version: 97 kg (213.9 lb)
Dimensions: Storing $732 \mathrm{~mm} \times 607 \mathrm{~mm} \times 577 \mathrm{~mm}$
(W $\times \mathrm{D} \times \mathrm{H}$ ) ..... (28.8" $\times 23.9^{\prime \prime} \times 22.7^{\prime \prime}$ )
Working $1290 \mathrm{~mm} \times 607 \mathrm{~mm} \times 661 \mathrm{~mm}$( $50.8^{\prime \prime} \times 23.9^{\prime \prime} \times 26.0^{\prime \prime}$ )
Table $640 \mathrm{~mm} \times 570 \mathrm{~mm} \times 455 \mathrm{~mm}$( $25.2^{\prime \prime} \times 22.4^{\prime \prime} \times 17.9^{\prime \prime}$ )
Original guide move- 98 mm to 316 mm (38.6" x 12.44")
ment distance :
Original scanning 10 ms / 1 line
time :
Original thickness : 0.06 mm to 0.5 mm
Original feed speed : $8.3 \mathrm{~mm} /$ second (While master processing)
16.7 mm / second (Not master processing)
Pixel density :Master eject box25 masters (Normal Condition)
capacity :Master eject boxdimension:(W×D×H)
Paper feeding : Friction roller / center separation system
Feed table side plate 88 mm to $317 \mathrm{~mm}\left(3.46^{\prime \prime} \times 12.48^{\prime \prime}\right)$
movement distance :
Paper feed roller Normal position - - 250 gpressure :

Thick paper position - -550 g

| Separation roller pressure: | Normal position - - 180 g <br> Weak position - - 70 g |  |  |
| :---: | :---: | :---: | :---: |
| Side registration : | $\pm 10 \mathrm{~mm}$ (manual) |  |  |
| Vertical registration : | $\pm 20 \mathrm{~mm}$ (mechanical) |  |  |
| Paper table raising / lowering speed : | $26 \mathrm{~mm} /$ second $(60 \mathrm{~Hz})$ |  |  |
| Ink Supply : | Automatic ink supply system |  |  |
| Press roller pressure : | $10 \pm 0.3 \mathrm{~kg}$ |  |  |
| Paper Delivery : | Air knife / vacuum delivery |  |  |
| Delivery side plate movement distance | 80 mm to 320 mm (3.15" $\times 12.6{ }^{\prime \prime}$ ) |  |  |
| Print counter : | 7 digits |  |  |
| Master counter | 6 digits |  |  |
| Supplies: | Master : <br> (12 dots $/ \mathrm{mm}$ ) | Thermal master | 280 mm width |
|  |  | Master roll | 250 masters / 1roll |
|  |  | Roll diameter | 130 mm |
|  |  | Master length | 480 mm / 1 master |
|  |  | Max run length | 2000 prints |
|  | Ink : | 500cc ink pack |  |
|  |  | Colors: Black, Red, Blue, Green, Brown |  |

- MEMO -


## GUIDE TO COMPONENTS AND THEIR FUNCTION (Paper Feed Side)



No.
Name
Function

1. ADF Unit
2. ADF Unit Open Button
3. Original Guides
4. Original Table
5. Original Table Release Lever
6. Feed Roller Pressure Lever
7. Separation Roller Pressure Lever
8. Paper Feed Side Plate
9. Paper Feed Table
10. Side Plate Fine Adjusting Dial

Feeds the original to the printing position automatically. Used to open the ADF unit.
Adjust these guides to position the originals correctly.
Place the originals on this table.
Used to open the original table unit to the left for master installation.
Used to adjust the contact pressure of the paper feed roller according to paper thickness.
Used to adjust the separation roller pressure to prevent double feed.
Used to prevent paper skew.
Set the paper on this table.
Used to shift the paper feed table sideways.
Open for access to the inside of the machine.
Completed prints are delivered here.
Operator controls and indicators are located here.
When setting originals one sheet at a time, set this switch to the Off position.
Originals used to make a master are delivered to this tray.

## (Paper Delivery Side)



No.
Name
Function

## 16. Master Cut Button

17. Pressure Release Lever
18. Drum Rotating Button
19. Drum Unit
20. Ink Holder
21. Main Switch
22. Wing Guide Release Lever
23. Small Size Paper Delivery End Plate (for smaller than A4/LT)
24. Paper Delivery End Plate (for larger than A4/LT)
25. Paper Delivery Side Plate
26. Master Eject Container Cover
27. Printing Density Select Switch
28. Master Eject Unit Open Button

Press this button to cut the master paper leading edge after installing a new master roll.
Used to install the master roll, or to clean the thermal head.
Press to replace the drum or to remove misfed paper.
The master paper is wrapped around this unit.
Set the ink cartridge in this holder.
Used to turn the power on or off.
Used to aid the paper delivery according to paper thickness.
Used to align the leading edge of small-sized
(less than A4/LT) prints.
Used to align the leading edge of prints larger than A4/LT
Used to align the prints on the paper delivery table.
Open when removing the master eject container.
Used to select the printing density according to the type and quality of the original.
Press to remove misfed paper or a misfed master.

## DRIVE LAYOUT



ADF Unit


Master Feed Unit


1. Coupled Gear - 16T and 64T
2. Sector Gear
3. Sector Gear
4. Gear - 18T
5. Ball Bearing - $12 \times 28 \times 8 \mathrm{~mm}$
6. Gear - 14T
7. Pulse Generator Disk
8. Worm Wheel Gear - 18T
9. Motor - AC 22W
10. Worm Gear
11. Gear - 20T
12. Motor - DC 25.8 W
13. Coupled Gear - 20T and 60T
14. Gear-16T
15. Gear-20T
16. Gear 50T
17. Gear - 22T
18. Gear-26T
19. Gear - 50
20. Paper Feed Cam
21. Feed Cam
22. Stud and Gear - 30T
23. Timing Belt
24. Print Pressure Cam
25. Gear - 90T
26. Gear-90T
27. Main Motor - DC 80W
28. Pulse Disk
29. Coupled Pulley - 20 and 48T
30. Timing Belt - $100 \times \mathrm{L}$
31. Motor - DC 2.25W
32. Pulley - 15T
33. Coupled Gear - 62T and 20T
34. Gear - 20T
35. Pulley - 20T
36. Timing Belt - $128 \mathrm{M} \times \mathrm{L}$
37. Motor - DC 25.8 W
38. Coupled Gear-16T and 50T
39. Coupled Gear - 58T and 20T
40. Gear-116T
41. Gear - 16T
42. Coupled Gear - 62T and 32T
43. Gear - 30T
44. Gear-60T
45. Pulley - 28T
46. Timing Belt - MM-75-4.8-G
47. Timing Belt - MM $190 \times 6.4$
48. Pulley - 34T
49. Pulley - 28T
50. Coupled Gear - 16T and 64T
51. Pulley - 16T
52. Timing Belt - $87 \times \mathrm{L}$
53. Motor - DC 2.25W
54. Pulley - $17 Z$
55. Motor - DC 1.69W
56. Coupled Gear - 15T/60T
57. Coupled Gear - 16T/60T
58. Gear - 65T

59. Reset Key
60. Indicators

## 3. Auto Cycle Key

4. Reduction Key
5. Image Position Keys

## 6. Number Keys

7. Counter
Press to reset error indicators.
Lights or blinks when a non-standard condition occurs within the machine.
Used to automatically process masters and make prints.
Press to reduce the image.
Press to shift the image forwards or backwards on the print paper.
Press to enter the number of prints.
Displays the number of prints entered. While printing, it shows the number of uncompleted prints.

## 8. Memory Display

Displays the number of the memory location that will be used to store the number of copies. The print number for up to 10 jobs can be stored at once.
9. Print Start Key Press to start printing.
10. Master Making
Key
11. Proof Key
12. Stop Key

13. Memory Key Used to select memory location number.
14. Clear Key15. Speed KeysPress to adjust the rotation speed of the machine according tothe type of image and printing paper.
16. Image Mode KeyPress to select line mode or photo mode according to the typeand quality of the original.
17. Combine 2 Originals Key
18. Lower Paper Press to lower the paper feed table. Feed Table Key
19. Make-up KeyPress to use the make-up function.


1. Reset Key Press to reset error indicators.
2. Indicators
3. Idling Key Press this key to rotate the drum.
4. Reduction Key
Press to reduce the image.
5. Image Position Keys
Press to shift the image forwards or backwards on the print paper.
6. Number Keys Press to enter the number of prints.
7. Counter
Displays the number of prints entered. While printing, it showsthe number of uncompleted prints.
8. Memory Display Displays the number of the memory location that will be used tostore the number of copies. The print number for up to 15 jobscan be stored at once.
9. Start Key
10. Stop Key
11. Proof KeyPress to start printing.
Press to stop the machine operation. The machine will continueoperation when the Start key is pressed.
Press to make trial prints or extra prints.
12. Auto Cycle Key

Lights or blinks when a non-standard condition occurs within the machine.

13. Class Key

Press this key to store in memory the number of groups of14. Clear Key Press to change the number set in the counter. This key can beused only after the machine stops operation. prints from an original.
14. Clear Key
15. Speed Keys
15. Speed Keys

Press to adjust the rotation speed of the machine according to the type of image and printing paper.
17. Combine 2 Originals Key
18. End Cycle Key

Press to select line mode or photo mode according to the type and quality of the original.

Press to combine two originals onto one print image.

Press to stop the master processing (original is fed out quickly to prepare for making the master from the next original) or printing (printing stops and the counter returns to the number before the start key was pressed).
19. Lower Paper Feed Table Key

Press to lower the paper feed table.

## PRINTING PROCESS



1. Master Ejecting: Eject the used master wrapped around the drum into the master eject box.
2. Scanning: Scan the original image by CCD through the mirror and the lens while feeding the original.
3. Master Feeding : Convert the image signal read by CCD into the digital signal and send it to the thermal head to make holes on the surface of the master and then, set the master around the drum.
4. Paper Feeding: Send paper to the drum section by using a center separation system consisting of the separation plate and separation roller.
5. Printing:

Press the paper fed from the paper feed section to the drum to transfer the ink through the drum screen and the master.
6. Paper Delivering :

Peel the printed paper off the drum with the Exit Pawl and Air knife and eject the paper onto the paper delivery table.

## ELECTRICAL COMPONENT LAYOUT



1. Original Registration Sensor
2. 2nd Original Sensor
3. Original Pressure Solenoid
4. Original Transport Motor
5. Printing Density Switch
6. Fluorescent Lamp Stabilizer
7. Right Cutter Switch
8. Power Supply P.C.B.
9. Thermal Head Drive Control P.C.B.
10. Thermal Head
11. Master End Sensor
12. Master Feed Motor
13. Cutter Motor
14. Left Cutter Switch
15. Master Buckle Sensor
16. Master Eject Motor
17. Master Eject Solenoid
18. Master Box Switch
19. Master Eject Switch
20. ADF Drive Motor
21. 1st Original Sensor
22. Fluorescent Lamp

23. Master Eject Clamper Solenoid
24. Ink Detection P.C.B.
25. Master Feed Clamper Solenoid
26. Master Eject Unit Safety Switch
27. Image Shift Motor
28. Reverse Roller Solenoid
29. Encoder
30. 1st Drum Position Sensor
31. 2nd Drum Position Sensor
32. Paper Feed Solenoid
33. Paper Table Drive Motor
34. Drum Rotation Sensor
35. Main Motor
36. Printing Pressure Solenoid
37. AC Drive P.C.B.
38. 1st Paper Exit Sensor
39. 2nd Paper Exit Sensor

40. CCD P.C.B.
41. A/D Conversion P.C.B.
42. Master Cutter Switch
43. Scanner Safety Switch
44. Operation Panel
45. Drum Rotation Switch
46. Front Door Safety Switch
47. Drum Safety Switch
48. Ink Supply Solenoid
49. Main Board
50. Paper Table Height Sensor
51. Paper End Sensor
52. Master Processing Control P.C.B.
53. Paper Table Safety Switch
54. Make-up Control P.C.B. (950 only)
55. Paper Table Lower Limit Sensor
56. Printing Pressure Sensor
57. Copy Counter
58. Master Counter
59. Interlock Switch
60. Circuit Braker
61. Main Switch
62. Air Knife Motor
63. Vacuum Motor
64. Full Master Detecting Switch
65. Pressure Plate Position Switch
66. A.D.F. Safety Switch

## ELECTRICAL COMPONENT DESCRIPTIONS

| INDEX No. | . NAME | FUNCTION P | P to P LOCATI |  |
| :---: | :---: | :---: | :---: | :---: |
| Motors |  |  |  |  |
|  |  |  | (950) | (830) |
| 4 O | Original Transport Motor | Transports the original to the scanner section. | A-4 | A-4 |
| 12 M | Master Feed Motor | Feeds the master to the drum. | E-3 | F-4 |
| 13 C | Cutter Motor | Cut the master. | F-6 | F-5 |
| 16 M | Master Eject Motor | Sends used master into the master eject box. | F-6 | F-6 |
| 20 A | ADF Drive Motor | Feeds the original to the scanner section. | A-4 | A-7 |
| 27 In | Image shift Motor | Changes the timing between the paper feed roller and the drum to adjust vertical image position. | F-8 | F-8 |
| 33 P | Paper Table Drive Motor | Raises and lowers the paper table. | F-5 | F-4 |
| 35 M | Main Motor | Drives paper feed, drum, printing and paper delivery unit components. | F-4 | F-4 |
| 62 A | Air Knife Motor | Rotates the fan to separate the paper leading edge from the drum. | F-7 | F-6 |
| 63 V | Vacuum Motor | Provides suction so paper is held firmly on the transport belt. | F-5 | F-5 |

## Solenoids

$36 \quad$ Printing Pressure Solenoid
Ink Supply Solenoid

Presses the original pressure plate down on the originals.
Moves the master eject roller to contact the drum surface.
Opens the master clamp to eject the master.

Opens the master clamp to clamp the master

Releases the clutch to rotate the reverse roller.

Releases the paper feed sector gear to rotate the paper feed roller.

Moves the press roller against the drum.
Releases the spring clutch to activate the ink supply pump.

## Switches

5

7

Printing Density Switch
Right Cutter Switch
Left Cutter Switch
Master Box Switch

Changes the threshold level to prevent low image density
Detects when the cutter position is far right.
Detects when the cutter position is far left.
Checks whether the master eject box is installed correctly or not.

C-3 A-4

F-6 F-5
F-6 F-5
F-6 F-6
F-6
Master Eject Switch

Master Eject Unit Safety
Switch
Master Cut Switch

Detects when the used master is sent into the F-6 F-6 master eject box.
Checks whether the Master Eject Unit is closed F-4 D-4 correctly or not.
Informs the CPU to cut the master paper leading F-7 E-8 edge.
Scanner Safety Switch
Checks whether the scanner unit is closed cor-
F-4
F-3 rectly or not.
Drum Rotation Switch
Informs the CPU to rotate the main motor at 10
A-6
B-5
rpm.
Front Door Safety
Switch
Drum Safety Switch
Checks whether the Front Door is set correctly
F-4
D-4 or not.
Checks whether the drum unit is set correctly or B-6 B-5
not.
Paper Table Safety $\quad$ Checks whether the paper table is opened cor-
F-4 rectly or not.
Releases the cover safety functions
F-4
B-1 B-1
Turns the power on or off.
F-6 F-6
Informs the CPU when the master eject box is
$F=$
Informs the CPU when the pressure plate has
F-6 F-6 reached the home position.
Check whether the ADF unit is set correctly or
A-4 not.

## Sensors

| Original Registration Sensor | Informs the CPU when the original leading edge reaches the exposure glass. | A-3 | A-3 |
| :---: | :---: | :---: | :---: |
| 2nd Original Sensor | Detects when the original is set. | A-3 | A-3 |
| Master End Sensor | Informs the CPU when the plotter unit runs out of master material. | F-6 | F-6 |
| Master Buckle Sensor | Detects the master buckle existence. | F-6 | F-6 |
| 1st Original Sensor | Detects when the original is set in the ADF mode. | A-4 | A-7 |
| 1st Drum Position Sensor | Checks the position of the drum. | F-8 | E-8 |
| 2nd Drum Position Sensor | Checks the position of the drum. | F-8 | E-8 |
| Drum Rotation Sensor | Supplies timing pulses to the main board. | F-8 | E-8 |
| 1st Paper Exit Sensor | Misfeed detector. | A-5 | B-6 |
| 2nd Paper Exit Sensor | Misfeed detector. | A-5 | B-5 |
| Paper Table Height Sensor | Detects when the paper table reaches the paper feed position. | A-6 | B-6 |
| Paper End Sensor | Informs the CPU when the paper table runs out of paper. | A-6 | B-6 |
| Paper Table Lower Limit Sensor | Detects when the paper table reaches the lowest position. | A-6 | B-6 |
| Printing Pressure Sensor | Informs the CPU when the printing pressure is applied. | A-6 | B-5 |

## Printed Circuit Board

|  |  |  | (950) | (830) |
| :---: | :---: | :---: | :---: | :---: |
| 8 | Power Supply PCB | Rectifies 100V AC input and supplies DC voltage. | D-1 | D-1 |
| 9 | Thermal Head Drive Control PCB | Supplies the power to the Thermal Head according to the signal from the scanner section. | E-2 | D-3 |
| 24 | Ink Detection PCB | Control the ink supply. | F-7 | F-7 |
| 37 | $A C$ Drive PCB | Controls the AC component by relays. | E-5 | E-4 |
| 40 | CCD PCB | Converts the light intensity into the electrical signal. | A-2 | A-2 |
| 41 | A/D Conversion PCB | Converts the analog signal into the digital signal. | B-3 | B-3 |
| 44 | Operation Panel | Controls the LED performance and monitors the key operation. | A-8 | B-8 |
| 49 | Main Control PCB | Controls all machine functions both directly and through other boards. | C-6 | C-7 |
| 52 | Master Processing Control PCB | Controls the master processing performance. | C-3 | C-3 |
| 54 | Make-up Control PCB | Edits the image data in the make-up mode. | D-3 | - |

## Counters

| 57 | Copy Counter |
| :--- | :--- |
| 58 | Master Counter |

Keeps track of the total number of copies made. A-7

## Others

6

10
22
29
60

Fluorescent Lamp Stabilizer
Thermal Head
Fluorescent Lamp
Encoder
Circuit Breaker

Stabilizes the power supplement to the Fluores- B-3 cent Lamp.
Plots the master with heat. F-2
E-3
Applies light to the original for exposure. A-3
Converts 16 image positions to 4 bit data. F-7 E-7
Cuts the ac line off.

B-1

## MECHANICAL COMPONENT LAYOUT



1. Thermal Head
2. Platen Roller
3. Master Feed Roller
4. CCD
5. Lens
6. Reverse Roller
7. Ink Roller
8. Drum Unit
9. 1st Eject Roller
10. 2nd Eject Roller
11. Original Pressure Plate
12. Pull-out Roller
13. Separation Blade
14. Original Feed Roller
15. 1st Original Transport Roller
16. Exposure Grass
17. 2nd Original Transport Roller
18. Fluorescent Lamp
19. Original Exit Tray
20. Feed Sub Mirror
21. Mirror
22. Master Eject Box
23. Exit Pawl
24. Air Knife
25. Vacuum Unit
26. Delivery Guide Plate
27. Delivery Table
28. Press Roller
29. Doctor Roller
30. 2nd Feed Roller
31. Lower Separation Roller
32. Separation Plate
33. Paper Feed Side Plate
34. Paper Feed Table
35. Paper Feed Roller
36. Upper Separation Roller
37. Ink Holder
38. Master Spool

## Sectional Description

## ORIGINAL FEED SECTION

## 1. Overall


[J]: 2nd Original Transport Rollers
[K]: Exposure Glass
[L]: Fluorescent Lamp

There are two original feed modes in this model.
ADF Mode: The originals [I] set on the original table are detected by the 1st original sensor [A]. When the Master Making key (Start key : 830) is pressed, the original pressure plate [B] presses the originals down. The pull-out roller [C] starts moving the lowest original forward at the same time. The lowest original is separated from the other originals by the original feed roller [D] and the separation blade [E]. When the 2nd original sensor [F] detects the original, the 1st original transport rollers [G] start rotating. The rollers stop after the original activates the original registration sensor $[\mathrm{H}]$. The 1st original transport rollers start rotating again after the drum section completes the preparation for the master making.

SADF mode : The separation blade [E] is released in the SADF mode. The original on the original table is fed to the starting position when the 2nd original sensor $[F]$ detects the original.

## 2. Original Feed Drive Mechanism



The original transport rollers $[A]$ are driven by the original transport motor [B], which is a stepper motor. The original feed rollers [J] are driven by the ADF drive motor [C] through a series of gears $[(a)$ to $(f)]$. The ADF drive motor is a dc motor. The pull-out rollers [D] are driven by the ADF motor through a drive belt [E].

The original pressure plate $[F]$ is pressed down on the originals by the original pressure solenoid [G]. The separation blade [H] is moved and up down by the ADF ON/OFF select switch [I].

## 3. Electrical Timing

(One Original)


T1: When originals are inserted in the ADF unit, the 1st original sensor is activated.
T2: When the Master Making key (Start key : 830) is pressed, the ADF drive motor starts rotating and the pull-out roller and original feed roller feed the 1st original. At the same time, the original pressure solenoid is energized and the pressure plate presses the originals against the pull-out rollers.

T3: When the 2nd original sensor detects the original, which is separated by the separation blade and the original feed roller, the original transport motor starts rotating and the transport rollers start rotating.

T4: One original is fed and when the original registration sensor detects the original, the original transport motor stops the original in the position shown above-right.

T5: After the master eject process is finished and the second drum position sensor is activated, the drum rotates 220 degrees more and then the original transport motor turns on.

T6: After the original is fed 14 millimeters, master feeding and master making start.
T7: The ADF drive motor and the original pressure solenoid are turned off 425 mseconds after the 2nd original sensor detects the original.

* If the 2nd original sensor is not activated within 2.3 seconds after pressing the Master Making key (Start key: 830), the Original Misfeed indicator ( $A+o f$ ) will start blinking.


TO: When the make-up key is pressed the fluorescent lamp turns on.
T1: When the original is inserted with a command sheet, the 1st original sensor is activated.

T2: When the Master Making key is pressed, the ADF drive motor turns on and the command sheet is fed by the pull-out rollers and the original feed rollers. At the same time, the original pressure solenoid is energized and the original pressure plate presses down on the original and the command sheets.

T3: The original transport motor starts rotating when the $2 n d$ original sensor is activated by the command sheet.

T4: The reading command is output when the command sheet is fed 2 mm past the scanning position.

T5: The original transport motor stops rotating when the command sheet is fed 25 mm past the original registration sensor. At the same time, the reading command turns off. The ADF drive motor and the original pressure solenoid turn on at the same time and the original is fed.

5. Outputs : SS830

| Signal Name | I/O | Master Processing Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Fluorescent Lamp | 0 | CN403-10 | $0 \mathrm{~V}-\sqrt{3 \mathrm{~V}}$ | When the fluorescent lamp turns on, the voltage of CN403-10 is 3 V . |
| 2nd Original Sensor | 1 | CN403-11 |  | When the 2nd original sensor is activated, the voltage of CN403-11 is OV. |
| Original <br> Registration <br> Sensor | 1 | CN403-12 |  | When the original registration sensor is activated, the voltage of CN403-12 is 0 V . |


| Signal Name | I/O | Main Board |  | Description |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |  |
| Original Feed <br> Command | O | CN101-1 | $5 \mathrm{v}-$ | When the original transport motor <br> turns on, the voltage of CN101-1 is 0 V. |  |
| Reading <br> Command | O | CN101-6 | $5 \mathrm{~V}-$ | When the master processing board <br> receives the reading command, the <br> voltage of CN101-6 is OV. |  |

SS830 only

| Signal Name | $\mathrm{I} / \mathrm{O}$ | Main Board |  | Description |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | Level |  |  |  |
| 1st Original <br> Sensor | I | CN106-9 | ov |  |  |
| ADF Drive <br> Motor | O | CN106-17 | 24 V | When the 1st original sensor is ac- <br> tivated, the voltage of CN106-9 is 5 V. |  |
| Original <br> Pressure SOL | O | CN106-18 | 24 V | When the ADF drive motor starts <br> rotating, the voltage of CN106-17 is <br> OV. |  |

5. Outputs: SS950

| Signal Name | $\mathrm{I} / \mathrm{O}$ |  | A/D Conversion Board |  | Description |
| :--- | :--- | :--- | :--- | :--- | :--- |



## OPTICS / MASTER PROCESS SECTION

## 1. Overall


[C]: Shading Plate
[D]: Mirror
[E]: Exposure Glass
[F]: Fluorescent Lamp

The light reflected from the original goes through the lens [A] and is changed to an analog signal in the CCD [B].

The electrical signal from the CCD is converted from an analog signal to a digital signal in the $A / D$ converter.

The converted digital image data is modulated and edited and is sent to the thermal head control PCB, when the make-up function is used. (SS950 only)

## 2. Light Source



SS950


SS830
(SS950)
The high frequency fluorescent lamp [A] is used as a light source for the high speed reading of 16 pixels $/ \mathrm{mm}$. The light exposes at two angles using a sub mirror $[B]$ to prevent the shades at the edges of paste-ups on the original [C]. The original guide plate [F] blocks part of the direct light from the fluorescent lamp to make the light intensity of both direct and reflected light the same. A heater [E] is wrapped around the fluorescent lamp. It prevents light intensity reduction due to low temperature.

## ( SS830)

The fluorescent lamp [A] is used as a light source for the reading of 12 pixels $/ \mathrm{mm}$. The light exposes at two angles using a sub mirror [B] to prevent the shades at the edges of paste-ups on the original [C]. The original guide plate [F] blocks part of the direct light from the fluorescent lamp to make the light intensity of both direct and reflected light the same.
<Fluorescent Lamp>

## - Platen Cover -

The platen cover [D] is used as a standard white level reference to correct for shading distortion.
3. Lens


The Lens Assembly consists of 6 internal lenses (950) or 5 internal lenses (830) to transfer the correctly oriented image to the photoelectric elements of the CCD. It is possible to adjust the focus by moving the lens assembly [A].
<Lens>
Focal distance : $\quad 43 \mathrm{~mm}(43.05 \pm 0.32 \mathrm{~mm})(950)$ $38 \mathrm{~mm}(37.9 \pm 0.42)(830)$
F No. :
F4.5
The above illustration shows the layout necessary to transfer an image from an A3 original (297 millimeter width) to the CCD [B].
<CCD $>$

Number of effective pixels : 5000 pixels (950)
Reading length: $\quad 312.5 \mathrm{~mm}$ (950)
Photo signal storage time : 3 msec . (950)

3648 pixels (830)
304 mm (830)
10 ms (830)

The shading plate [ C ] corrects light intensity distortion. The light intensity is low at both ends of the lamp and is also low at the edge of the lens. Therefore, the light in the center is reduced to make the light intensity uniform.

## 4. CCD (Charge Coupled Device)

The CCD can be thought of as many small photocells in a row. One cell or element will read one point (about $.005^{\prime \prime} \times .005^{\prime \prime}$ ) in a scan line. Internally, we can imagine a rotary switch that selects the output of each element in sequence. See figure 1. Each element conducts proportional to the amount of light striking its face. The CCD's output, which we will call video, represents the current scan line. As the scan line changes, these changes are reflected in the video output.


Figure 1

A clock is sent to the CCD to "move" the "rotary switch" inside the CCD. The faster the input clock, the faster the video signal. There is an "off time" where the output of the CCD is off while the "rotary switch" resets from the last element to the first element. This "off time" is the end of our main scan. We can say that our scanning is a raster scan, very much like the picture is created on a television set. If you could slow the electron beam on a TV picture tube, you would see the beam move across the screen from left to right and then disappear momentarily before reappearing at the left for the next scan. This is the main scan of the picture tube and the distance the beam moved downward for the next main scan is the vertical resolution. Our CCD scanner uses the same principle. Since it is stationary, it provides us with our main scan. During CCD "off time" a DC stepping motor provides drive to rollers that move the original document forward for the next main scan. The distance that the rollers move the document is our sub-scan for vertical resolution.

## 4-1. Function



This is a solid-state device similar to a photodiode array, but unlike a photodiode array, a CCD can read one complete scan line at a time. The CCD produces an analog signal which is converted into a digital signal for processing.

The light reflected from the original is absorbed in the photodiode and the capacitor stores the charge corresponding to the light intensity.

The CCD is composed of many such pixel elements in series. The image signal of each pixel element is stored in the shift register as a charge. The thermal heads of the SS950 and SS830 cannot be interchanged. They are physically different in size, due to a difference in the number of heating elements. The SS950 thermal head contains 4096 heating elements; the SS830 contains 3072 heating elements.


Dummy Pixels: The dummy pixels generated by the area covered with aluminum film. The dummy pixels are used as the standard black level.

The first 32 pixels read (D0 to D31) are dummy pixels. Pixels D32 to D5,032 are the effective pixels ( S 1 to $\mathrm{S} 5,000$ ). After that there are four more dummy pixels. Therefore, the total pixel count from the CCD, including the dummy pixels, is 5,036 .

As the image signal captured by the CCD is clocked out by the shift gate every 3 ms (scan line period), there remains time for 84 transmission clock pulses after all the image data from the CCD has been output. These clock pulses, after all valid data have been clocked out, constitute empty data. During this period, subscanning occurs.


Dummy Pixels: The dummy pixels generated by the area covered with aluminum film. The dummy pixels are used as the standard black level.

The first 32 pixels read (D1 to D32) are dummy pixels. Pixels D33 to D3,680 are the effective pixels ( S 1 to $\mathrm{S} 3,648$ ). After that there are four more dummy pixels. Therefore, the total pixel count from the CCD, including the dummy pixels, is 3,684 .

As the image signal captured by the CCD is clocked out by the shift gate every 10 ms (scan line period), there remains time for 412 transmission clock pulses after all the image data from the CCD has been output. These clock pulses, after all valid data have been clocked out, constitute empty data. During this period, subscanning occurs.

## 5. CCD Output Signal Conversion SS830



SH
Approx. 6 V
(a) OS


## CCD Output Signal Conversion SS950



## 5-1. Signal Conversion

The CCD output (OS) varies according to the reflected light intensity and is clipped at 6 volts. The output signal is then buffered, inverted and amplified.

## 6. Peak Hold:



Peak Hold: SS950


This circuit holds, at different stages of image processing, the peak white levels for both the original and the platen cover (standard white). The peak white, or maximum, level is stored as charge on a capacitor. The peak hold circuit is cleared by discharging the capacitor.

## 6-1. Platen Cover Peak Hold (Standard White)

The platen cover peak hold is used as standard white when processing data to create the shading distortion data, which is later stored in memory. This data is used to correct such distortions as bright or dull spots on the lamp or variations in the CCD output. To create the platen cover peak hold (standard white), the machine scans the white platen cover prior to scanning an original. The reading the machine receives is stored as a "Peak Hold" voltage in a capacitor. The peak hold circuit stores the maximum level from three scan lines of the white platen cover. This sets the entire machine circuitry for what it considers "white" to be.

## 6-1. Shading Distortion Correction -- (Selector 2 Switch 1 ON)



When reading the platen cover to establish the shading distortion data, the high reference voltage $\left(\mathrm{VH}_{\mathrm{H}}\right)$ of the $\mathrm{A} / \mathrm{D}$ converter is set to the peak hold level and the low reference voltage ( VL ) is set to $53 \%$ of the peak hold level. Therefore, the potential difference between the output of each pixel and the $53 \%$ level of the peak hold is converted by the A/D converter into 4-bit data. The shading distortion data for each pixel is stored in a memory location corresponding to that pixel.

## 6-2. Original Reading



1) Line Mode -- (Selector 2 Switch 3 ON)

The reference voltage $\left(V_{H}\right)$ of the $A / D$ converter is set to the output of the D/A converter (converted shading distortion data) for each pixel being read. Because the reference level of the D/A converter is set to the original peak hold level, this corrects for shading distortion as well as matching the output level to the original background.

Also, as described in "Black Level Correction", VL is set from $0 \%$ to $35 \%$ of the potential difference between 1.7 volts (black level) and the peak hold of the original background. Black level correction varies according to the original image density.

2) Photo Mode -- (Selector 2 Switch 2 ON)

The $V_{H}$ of the A/D converter is set to $80 \%(92 \%: 830)$ of the potential difference between 1.7 volts and the output from the D/A converter (converted shading distortion data). This corrects for shading distortion as well as matching the output level to the original background because the reference level of the D/A converter is set to the original peak hold level.

Also, $V_{L}$ is set to $6 \%$ of the potential difference between 1.7 volts and the peak hold level of the original.

## 6-2. Printing Density Change

(950)
(830)


Black Level (1.7V)


The printing density can be changed by the printing density switch when in the line mode. This switch changes the threshold level to $47 \%, 67 \%$, or $73 \%$ of the white level.

The selected threshold level enters port VL while the shading distortion corrected image signal enters port $\mathrm{V}_{\mathrm{H}}$ of the $\mathrm{A} / \mathrm{D}$ convertor.

When the image signal ( Vs ) is lower than the threshold level ( $\mathrm{V}_{\mathrm{L}}$ ), the LUF signal is output from the A/D converter to make all BAD (Buffered A/D Converter) signals "H". Then the image signal is output as a black.

When the image signal (Vs) is higher than the threshold level ( V L), the LUF signal is not output. Then the BAD signals are all "L".

## 7. Reduction Processing : SS950

Reduction in the main scanning direction is performed by systematically discarding the pixels and the reduction in the sub-scanning direction is performed by changing the transportation speed of the original.

## 7-1. Main Scanning Reduction: SS950

| Reduction Mode | Discarded Pixels | Remaining Pixels |
| :---: | :--- | :--- |
| $100 \%$ | 0 Pixels | All Pixels |
| $93 \%$ | $1 / 14$ Pixels | $13 / 14$ Pixels $(0.929)$ |
| $82 \%(220 / 240 \mathrm{~V})$ | $2 / 11$ Pixels | 9/11 Pixels $(0.818)$ |
| $75 \%(120 \mathrm{~V})$ | $1 / 4$ Pixels | $3 / 4$ Pixels $(0.75)$ |
| $71 \%(220 / 240 \mathrm{~V})$ | $2 / 7$ Pixels | $5 / 7$ Pixels $(0.714)$ |
| $64 \%(120 \mathrm{~V})$ | $5 / 14$ Pixels | $9 / 14$ Pixels $(0.642)$ |

When the reduction command is sent from the main board, the timing signal generator sends the thinning timing control signal to the reduction processing circuit. Some of the 4-bit image data from the A/D converter is discarded according to the thinning timing control signal.

## Examples

During the $82 \%$ reduction mode, 9 out of 11 pixels are used; 2 pixels are discarded each cycle.

Before thinning


During the $93 \%$ reduction mode, 13 out of 14 pixels are used; 1 pixel is discarded each cycle.


## 7-2. Sub-scanning Reduction



Note: The SS830 Sub-scanning Reduction operates in a similar fashion as that of the SS950. The SS830 uses a 4-phase motor as opposed to a 5 -phase motor in the SS950. This is due to the difference in scanning resolutions of the two machines; the 5-phase motor allows for more precise motor movement.

A Phase

B Phase

C Phase
D Phase

E Phase


Note: The reduction ratio change is performed by changing the pulse width ( t ).

| Reduction <br> Ratio | Original Transportation |  |  | Command Sheet Transportation |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Pulse Width | PPS |  | Pulse Width | PPS |  |
| $100 \%$ | 1.484 ms | 674 | - | 0.742 ms | 1348 | - |
| $93 \%$ | 1.378 ms | 726 | $\frac{674}{726}=0.928$ | 0.689 ms | 1451 | $\frac{1348}{1451}=0.928$ |
| $82 \%$ | 1.214 ms | 824 | $\frac{674}{824}=0.818$ | 0.607 ms | 1648 | $\frac{1348}{1648}=0.818$ |
| $75 \%$ | 1.112 ms | 899 | $\frac{674}{899}=0.74$ | 0.556 ms | 1798 | $\frac{1348}{1798}=0.749$ |
| $71 \%$ | 1.060 ms | 944 | $\frac{674}{944}=0.714$ | 0.530 ms | 1888 | $\frac{1348}{1838}=0.714$ |
| $64 \%$ | 0.950 ms | 1053 | $\frac{674}{1053}=0.64$ | 0.475 ms | 2106 | $\frac{1348}{2106}=0.640$ |

When the reduction command is sent from the main board, the frequency of the pulses from the pulse generator increases. The drive pulse generator then increases the frequency of the motor drive pulses to increase the motor rotation speed.

## 8. Thermal Head Pulse Generator

Voltage to the thermal head is applied in 24 V pulses. The energy applied to the thermal head is changed by changing the pulse width according to the thermal head temperature and its resistance.


1) Thermal Head Resistance

The resistance of the thermal head varies from one head to the another.
The information of the thermal head resistance is sent to the pulse generator.
2) Head Temperature

The thermal head contains a thermistor, which detects the thermal head temperature.
3) The pulse generator controls the pulse width based on the above thermal head resistance information and the head temperature information.

## 9-1. Function / Specification

Thermal head . Memory length ..... 256 mm (B4)

- Number of thermal heating elements ..... 4096 dots
- Density of thermal heating elements ..... 16 dots/mm- Element Size$45 \mu \mathrm{~m} \times 45 \mu \mathrm{~m}$
- Applied Voltage ..... 24V


## 9-2. Power lines

VCC/VHD/GND .... Applied voltage
VHD: As the resistance of the thermal elements varies depending on the thermal head, it is necessary to adjust the applied voltage according to the average resistance of the thermal head.

The thermal rating of each head is documented on the thermal head cover. Therefore, after installing a new thermal head, always recalibrate the power supply unit according to the VHD ratings on the thermal head cover. Adjust VHD using VR1 on the power supply unit.

The drive circuit (LSIC) consists of the following: $32 \times 128$-bit shift registers, $32 \times 128$-bit latches, logic gates, drive transistors, and 4096 heating elements. The thermal head is made up of 32 drive circuits arranged in two rows of 16 elements.

## 9-3. Temperature Ascent Detection of Thermal Head / Power Supply : SS950

A thermistor located on the thermal head and a thermal guard located on the power supply board are used for thermal protection. This is to prevent the temperature of the thermal head and the power supply board from overheating when continuously processing a solid image.

Thermal head detecting temp. Thermal head return temp.
Power supply detecting temp.
$54^{\circ} \mathrm{C}$
$50^{\circ} \mathrm{C}$
$85^{\circ} \mathrm{C}$

When the thermistor is open, a detection signal is applied.


The thermal head temperature detection signal is applied if CN404-11 becomes greater than 3.13 volts (Thermal head detecting temp.-- $54^{\circ} \mathrm{C}$ ).

Note: $\quad$ The thermal head temperature detection signal is applied if the thermistor is open.

The thermal head temperature return signal is applied when CN404-11 becomes 2.98 volts (Thermal head return temp.-- $50^{\circ} \mathrm{C}$ ).

The thermal guard detection signal is applied if CN4O1-11 is 0 volt (Power supply detecting temp.-- $85^{\circ} \mathrm{C}$ ).

The thermal guard temperature return signal is applied when CN401-11 becomes 5 volts.

When the temperature ascent signal is applied CN402-11 goes HIGH.
When the temperature ascent signal is applied during master processing, master processing continues until completion. The machine stops after the master making process is finished.

## 9-1. Function / Speciíication

| Thermai head - Memory length | 256 mm (B4) |
| :--- | :--- | :--- |
| - Number of thermal heating elements | 3072 dots |
| - Density of thermal heating elements | 12 dots $/ \mathrm{mm}$ |
| - Calorific size | $73 \mu \mathrm{~m} \times 95 \mu \mathrm{~m}$ |

## 9-2. Power lines

VCC/VHD/GND .... Applied voltage
VHD: As the resistance of the thermal elements varies depending on the thermal head, it is necessary to adjust the applied voltage according to the average resistance of the thermal head.

The thermal rating of each head is documented on the thermal head cover. Therefore, after installing a new thermal head, always recalibrate the power supply unit according to the VHD ratings on the thermal head cover. Adjust VHD using VR1 on the power supply unit.

The drive circuit (LSIC) consists of the following: $48 \times 64$-bit shift registers, $48 \times 64$-bit latches, logic gates, drive transistors, and 3072 heating elements. The thermal head is made up of 48 drive circuits arranged in two rows of 24 elements. These rows are designated CHA (Channel A) and CHB (Channel B). CHA and CHB are interlaced, but CHB is slightly offset to the rear. The input data for each line is divided into 48 data batches and sent serially to the respective LSIC.

## 9-3. Temperature Ascent Detection of Thermal Head / Power Supply: SS830

A thermistor located on the thermal head and a thermal guard located on the power supply board are used for thermal protection. This is to prevent the temperature of the thermal head and the power supply board from overheating when continuously processing a solid image.

Thermal head detecting temp.
Thermal head return temp.
Power supply detecting temp.
$55^{\circ} \mathrm{C}$
$49^{\circ} \mathrm{C}$
$85^{\circ} \mathrm{C}$

When the thermistor is open, a detection signal is applied.


The thermal head temperature detection signal is applied if CN708-1 becomes greater than 2.53 volts (Thermal head detecting temp.-- $55^{\circ} \mathrm{C}$ ).

Note: Thermal head temperature detection signal is applied if the thermistor is open.

The thermal head temperature return signal is applied when CN708-1 becomes 2.26 volts (Thermal head return temp.-- $49^{\circ} \mathrm{C}$ ).

The thermal guard detection signal is applied if CN705-5 is 0 volt (Power supply detecting temp.-- $85^{\circ} \mathrm{C}$ ).

The thermal guard temperature return signal is applied when CN705-5 becomes 5 volts.
When the temperature ascent signal is applied CN707-10 goes HIGH.
When the temperature ascent signal is applied during master processing, master processing continues until completion. The machine stops after the master making process is finished.


## 10-1. Overall Operation

The command sheet is read twice as fast as the original. The command data is converted in the A/D converter and is modulated in the master processing circuit. The modulated command data is reduced to $1 / 64$ and stored in the area memory. The area memory stores the command sheet area data as area solid fill data.

The image data read by the CCD is also converted and is modulated. The modulated image data, the stored command area data, and the background pattern are edited in the editing circuit of the make up control board according to the editing command.

The edited image data is sent to the thermal head control board through the master processing control board.

When the make-up mode is not selected, the modulated image data that was sent to the make-up control board is returned to the master processing control board without any processing.

When the make-up control board is removed, CN407-19 is High and the modulated image data is sent directly to the thermal head control board.

10-2. Input/Output Signal Make-up P.C.B.

| Signal Name | I/O | Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| M-DATA1 | 1 | 001-5 | BLACK: H <br> WHITE : L | Modulated command / Image data. |
| $\overline{\text { M-DATA2 }}$ | 0 | 001-18 | BLACK: H WHITE: L | Edited image data. |
| $\bar{S}$ | 1 | 001-11 |  | Outline image |
| Designation | I | 001-9 | Diagonal : H Closed: L | Designated function mode. |
| $\overline{\text { Pattern 1,2,4 }}$ | 1 | 001-6,7,8 |  | Selection of the background pattern. |
| $\overline{\text { BCD 1,2,3,4 }}$ | 1 | $\begin{array}{\|l} 001-12, \\ 13,14,15 \\ \hline \end{array}$ |  | Editing mode. |
| $\overline{\text { Make-up PCB }}$ | 0 | 001-19 | USED : L NOT USED: H | Make-up PCB. |
| $\overline{\text { MTF-DATA }}$ | 1 | 001-10 | BLACK : L WHITE: H | MTF image data. (Output 5 Data) |

### 10.3. Command Sheet Data Reduction

The designated line data read from the command sheet is reduced to $1 / 64$ and stored in the memory as shown in the illustration.


If any pixel in each of the $8 \times 8$ pixel squares is black, the square is stored as black data.

10-4. Designated Area Memory


The designated area by the command sheet is stored in the memory as a solid fill area data.

The designated area is read in two directions. One is from the leading edge to the trailing edge and the other is from the trailing edge to the leading edge.

1) Solid Fill Operation (Closed Area)

How to decide whether pixel $E$ data is black or white.

1. When pixel $E$ is black, $E$ is black.
2. When the pixel $C$ or $F$ is black and also the pixel $D$ or $G$ is black, $E$ is black.
3. In all other cases, E is white.

Note: The above operation also acts in the opposite direction.

2) Solid Fill Operation (Diagonal Line)

How to decide whether pixel E data is black or white.

1. When the pixels $B$ and $D$ are black, Pixel E is black.
2. When the pixel $E$ is black, the pixel $E$ is black.
3. In all other cases, the pixel $E$ is white.

Note: The above operation also acts in the opposite direction.



Selection Table

| Make-up Selection Signal |  | DO | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 | D13 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Input signal | CN NO | OFF | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 11.12 | 12.22 | 13.23 | 14.24 | 15.25 | 16.26 |
| BCD1 | 001-12 | H | L | H | L | H | L | H | L | L | H | L | H | L | H |
| BCD2 | 001-13 | H | H | L | L | H | H | L | L | H | L | L | H | H | L |
| BCD3 | 001-14 | H | L | H | H | L | L | L | L | H | H | H | L | L | L |
| BCD4 | 001-15 | H | H | H | H | H | H | H | H | L | L | L | L | L | L |

The make-up control circuit edits the image using the above logic circuit.
The modulated image data, the outline image data, the background pattern data and the designated area data are processed simultaneously in the make-up control board.

One input of the selector (D0 - D13) is output at CN001-18 as the M-DATA 2 signal. The data selection depends on which make-up function the user selects. The above selection table shows the relationship between the make-up function and the M-DATA 2 output.

Fn1: Save area
The image data is ANDed with the designated area data in command sheet and the edited image data is output.

Fn2 : Delete area
The image data is ANDed with the inverted data of designated area and the edited image data is output.

Fn3 : Outline Image

Step 1:
The outline image data is ANDed with the designated area data and the edited image data is output.

Step 2 :
The Fn2 data is ORed with the step 1 data and the edited image data is output.


Fn4: Screen Image
Step 1:
This image data is ANDed with the designated area data and the edited image data is output.

Step 2 :
The screen pattern data is ANDed with the step 1 data and the edited image data is output.

Step 3 :
The Fn3 (step 1) data is ORed with the step 1 data and also ORed with the Fn2 data, and the edited image data is output.


Fn5 : Photo Image
The designated area is processed by the photo mode processing.
The non designated area is processed by the line mode processing.
Above processing is performed independent of the image mode selection on the operation panel.

Fn6 : Save area and Outline image

The outline image data is ANDed with the designated area data and the edited image data is output.

Fn7: Save area screen image

Outline image data (Original)


Fn11, Fn21: Pattern Area / Outline Image
Fn14, Fn24 : Save Area / Pattern Area / Outline Image

Step 1:
The background pattern data is ANDed with the designated area data and the edited image data is output.

Step 2 :
The inverted image data is ANDed with the step 1 data and the edited image data is output.

Step 3 :
The step 2 data is ORed with the Fn6 data and the edited image data is output.

Step 4 :
The Fn2 data is ORed with the step 3 data and the edited image data is output.


Fn12, Fn22 : Pattern Area / Normal Image
Fn15, Fn25 : Save Area / Pattern Area / Normal Image
Step 1:
The background pattern data is ORed with the Fn1 data and the edited image data is output.

Step 2 :
The Fn2 data is ORed with the step 1 data and the edited image data is output.


Fn13, Fn23: Pattern Image
Fn16, Fn26 : Save Area / Pattern Image
Step 1:
The image data is ANDed with the designated area pattern data and the edited image data is output.

## Step 2 :

The Fn6 data is ORed with the step 1 data and the edited image data is output.

Step 3 :
The step 2 data is ORed with the Fn2 data and the edited image data is output.


## RECOGNITION OF DESIGNATED AREA: SS950 only

As the required image may differ depending on how the designated area is entered, make the command sheet by referring to the following.

| No. | Item | Sample of Problem |  | Preferred designated area |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Designated area | Area recognized |  |
| 1 | Form of the designated area | Serial pattern | The designated area is recognized as follows: | Separation the area to be designated as follows: <br> Make a space more than 2 mm . <br> Make a space more than 2 mm . Designate area by a closed line. |
|  |  | Double circle pattern. | Only the outer circle will be recognized as follows: | Make a gap in the pattern. |
| 2 | Non-closed line | The designated area is not a closed loop. | The designated area is not recognized. | Designate the area by a closed loop. |


| No. | Item | Sample of Problem |  | Preferred designated area |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Designated area | Area recognized |  |
| 3 | Thickness of the designating line. | The thickness of the line as follows: <br> X = Full Size: less than 0.5 mm Reduction: less than 0.7 mm | As the line of the designated area is too thin, no designated area is recognized. | Mark with a line more than 1 mm in width. |
| 4 | Density of the designated line. | When using a pencil with low reflectivity or a color pen. | As the designating line is too light, no designated area is recognized. | Mark using a black pen. |
| 5 | Type of command sheet. | 1) Rough paper is used as a command sheet. <br> 2) If the command sheet has a different friction coefficient from the original. | Any fibrous black spots will be read as a designated area. <br> Due to different registration of the original and the command sheet, the designated areas vary. | Use white paper ( 65 g ). <br> Use white paper (65 g). |


| No. | Item | Sample of Problem |  | Preferred designated area |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Designated area | Area recognized |  |
| 6 | Gap between the designated area and neighboring image. (Gap between two designated areas.) | When the gap between the designated area and neighboring image is too small. | Depending on the original feed condition (registration and skewing) or handwriting ability the designated area, the neighboring image may or may not be recognized as a designated area. | Image in the designated area <br> 1) There should be more than 2 mm clearance between designated areas. <br> 2) Mark the line away from the image in the designated area more than 2 mm to recognize the image completely. <br> 3) For consideration of the handwriting ability, approximately 5 mm is needed as a gap. |

## MASTER FEED SECTION

1. Overall


The thermal head $[A]$ burns an image on the master $[B]$ as it is being fed to the drum [C]. After this, the master is clamped and wrapped around the drum.


After the master eject process is finished, the interruptor [B] references the first drum position sensor [H], the main motor turns on, and the drum starts rotating ( 30 rpm ) in the reverse direction.

When the drum turns 160 degrees past the actuation position of the second drum position sensor [A], the cam [D] is moved to the drum's side as the master feed clamper solenoid [C] turns on.

When the drum turns an additional 60 degrees in the reverse direction, the sector gear [E] runs along the cam [D] and the gear [F] turns counterclockwise to open the clamper [G]. At the same time, the drum stops and the clamper remains open to clamp the master leading edge.


The original transport motor starts rotating after the drum rotates 120 degrees past the 2nd drum position sensor. The reverse roller solenoid [A] and the master feed motor [E] turn on after the original is fed 14 mm . The rotation of the master feed motor [E] is transmitted to the platen roller [F] through the belt [C] and the pulley [D] which feeds the master and forces the master to contact the thermal head [P]. Also, the rotation of the pulley [D] is transmitted to the pulley [J] through the belt [H] to drive the upper feed roller $[K]$ and the lower feed roller [L] for master feeding.

The spring clutch $[B]$ is located behind the reverse roller $[\mathrm{N}]$. When the reverse roller solenoid [A] turns on, the rotation of the upper feed roller [K] is transmitted to the reverse roller $[\mathrm{N}]$ through the belt [I] as the stopper [G] releases the spring clutch $[\mathrm{B}]$, thus feeding the master. Also, the master is directed down to the clamper [Q] of the drum by the reverse guide [M].

After the master is fed 61 millimeters, the master feed clamper solenoid turns off because the master leading edge has already reached the clamper [Q]. At the same time, the reverse roller solenoid [A] turns off and the reverse roller [N] stops.

A leaf spring on both holders [O] prevents any master buckle due to free rotation of the master roll.


When the reverse roller solenoid [A] is turned off, the reverse roller [D] stops as the stopper $[B]$ locks the clutch gear [C].

However, since the feed rollers [F] turn continuously, the master continues to be fed causing the master to buckle. This buckle is detected by the master buckle sensor [E]. When the sensor turns on, the main motor turns on at 10 rpm to rotate the drum. The main motor turns off when the sensor turns off.

Therefore, the master is fed by the ON/OFF action of the master buckle sensor.

## 5. Cutter Mechanism



After the master making process (writing process) is finished, the master feed motor turns off and the cutter motor [A] starts turning in the reverse direction as indicated by the arrow.

The cutter motor [A] drives the wire pulley [F] through the gears [B], [C], [D], [E] and pulley [F]. This is to shift the cutter unit to the rear (non-operation side). As the cutter [G] rotates and travels to the rear, it cuts the master.

When the right cutter switch $[\mathrm{H}]$ turns on, the cutter motor $[A]$ starts turning in the opposite direction to return the cutter unit to the front (operation side). When the left cutter switch [I] turns on, the cutter motor [A] stops. This finishes the master cutting process.

After the master cutting process is finished, the master is fed about 42 millimeters.
6. Electrical Timing


T1: The main motor starts rotating in the reverse direction at 30 rpm after the master eject process is completed.

T2: After the drum rotates 120 degrees past the point where the 2nd drum position sensor in activated, the original transport motor turns on and starts feeding the original. The master feed motor turns on and the reverse roller solenoid energizes when the original has fed 14 mm .

T3: The main motor stops and the clamper remains open when the drum rotates 220 degrees past the point where the 2nd drum poition sensor is activated.

T4: The reverse roller solenoid and the master feed clamper solenoid are de-energized when the master is fed 61 mm .
After the reverse roller solenoid is de-energized, the master buckles and the master buckle sensor is activated. At the same time the main motor turns on to wrap the master around the drum. When the master is fed to the drum, the master buckle sensor is de-activated, and the main motor stops. The master continues to feed by repeating the above steps, controlled by the ON/OFF action of the buckle sensor.

T5: The main motor stops after the master paper is fed 438 mm . At the same time the cutter motor rotates to cut the master paper.

T6: When the cutter returns to the home position, the master feed motor rotates again to feed the master paper 42 mm .
7. Circuit: SS950

6. Input/Output: SS950

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Master Buckle Detect | 1 | CN104-17 |  | When the sensor is activated, CN10417 becomes 5 V . |
| Reverse Rolier Solenoid | O | CN104-23 |  | When the solenoid is turned on, CN104-23 becomes OV. |
| Master Feed Clamper Sol. | 0 | CN102-30 |  | When the solenoid is turned on, CN102-30 becomes OV. |
| Cutter Motor $(+)$ | 0 | CN104-21 |  | When the cutter unit is returning, CN104-21 becomes OV |
| Cutter Motor $(-)$ | 0 | CN104-22 |  | When the cutter unit is moving to the nonoperation side, CN104-22 becomes OV. |

## Cutter Motor



The specified direction of the motor rotation is as viewed from $A$.


## 8. Input/Output : SS830

| Signal Name | 1/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Master Buckle Detect | 0 | CN106-8 | $5^{-1}{ }^{04 \mu \mathrm{sec}}$ | When the sensor is activated, CN1068 becomes OV. |
| Reverse Roller Solenoid | 0 | CN102-19 |  | When the solenoid is turned on, CN102-19 becomes OV. |
| Master Feed Clamper Sol. | 0 | CN104-30 |  | When the solenoid is turned on, CN104-30 becomes OV. |
| Cutter Motor $(+)$ | 0 | CN102-22 |  | When the cutter unit is returning, CN102-22 becomes OV |
| Cutter Motor $(-)$ | 0 | CN102-23 |  | When the cutter unit is moving to the nonoperation side, CN102-23 becomes OV . |

## Cutter Motor



The specified direction of the motor rotation is as viewed from $A$.

## MASTER EJECT SECTION

## 1. Overall



- The drum rotates in the direction opposite to printing.
- Master eject rollers rotate.
- Lower eject roller contacts drum.
- The curled master is caught between the upper and lower eject rollers to eject the master into the master eject box.
- The ejected master is compressed by the pressure plate.

To eject the master wrapped around the drum, the drum rotates in the direction opposite to the printing direction. Thus, the master is ejected into the master eject box by utilizing the back curl of the master trailing edge which is caught between the upper and lower eject rollers.

The ejected master is then compressed by the pressure plate to fully utilize the master eject box capacity.

## 2. Master Eject Roller Rotating Mechanism



After the original is set, the main motor rotates in the reverse direction ( 30 rpm ) when the Master Making key (Start key: 830) is pressed.

When the interruptor $[B]$ blocks the 2nd drum position sensor [ $O$ ], the master eject motor [C] starts rotating counterclockwise and the gear [H] is driven clockwise through gears [D], [E], [F], and [G]. The upper first eject roller [J] also turns clockwise, because gear $[\mathrm{H}]$ has a one way clutch. At the same time, the belt $[\mathrm{K}]$ drives the upper second eject roller [L], and gears $[\mathrm{M}]$ and $[\mathrm{N}]$ drive the lower eject roller [I] counterclockwise.

After the drum completes one rotation in the reverse direction, the interruptor $[B]$ blocks the first drum position sensor [A]. The master eject roller then stops rotation.

## 3. Master Eject Roller Drive Mechanism



When the drum turns 20 degrees past the second drum position sensor [A], the master eject solenoid $[B]$ turns on and the supporter [C] turns counterclockwise around the upper eject roller shaft [D]. This forces the lower first eject roller [E] to contact the drum.

As the drum turns, the curled trailing edge of the master enters between the upper and lower first eject rollers. The first eject rollers then peel the master from the drum.


When the drum turns 70 degrees past the second drum position sensor, the master eject solenoid [A] turns off, separating the lower first eject roller [B] from the drum.

When the ejected master is between the upper and lower first eject rollers, it activates the master eject switch [C]. After that, the master is stacked into the master eject box [D].

Master Eject Misfeed Detection:


When the master eject switch is not activated within 120 degrees of drum reverse rotation during the 1st master eject process, the drum rotates 83 degrees in the forward direction to repeat the master eject process (2nd master eject proccess) as shown above.

If the master eject switch [C] is not turned on again in the 2nd master eject process, a master eject misfeed is detected.

When a master misfeed occurs during the 2nd master ejection, rotation of the drum in the reverse direction stops, the master eject motor turns off, and the main motor turns on to drive the drum to the home position. After the drum returns to the home position, the beeper sounds, and $F$ and of indicators blink.


When the drum has turned 230 degrees past the second drum position sensor activation position, the master eject clamper solenoid [A] turns on and turns the lever [B] counterclockwise. This moves the cam [C] to the drum's side. After that, the clamper sector gear [D] rides on the cam [C] and the gear [E] turns counterclockwise opening the master clamper [F] for master ejection.

When the drum turns 13 degrees past the first drum position sensor, the main motor turns off. Then, after 0.5 second, the drum references the first drum position sensor, the master eject clamper solenoid [A] turns off, and the spring [G] returns the opening cam [C] to the normal position.


After the master making process is finished, the master eject motor [A] turns clockwise to raise the pressure plate [O].

When the master eject motor $[A]$ turns, the gear $[M]$ is driven through the gears $[B],[C]$, $[D],[E],[F],[G],[H],[J],[K]$ and $[L]$. The pin on the gear $[M]$ which is inserted into the link $[\mathrm{N}$ ] rises and lifts the left end of the link; thus, raising the pressure plate [ O ].

The gear [M] continues to turn until the lever [I] moves into the notch on the bottom of the cam, located behind the gear [M]. At this time, the master eject motor [A] stops as the lower end of the lever [I] pushes the pressure plate position switch [P]. Thus, the pressure plate is held in the upper position.

When the master eject motor turns clockwise, the gear [G] turns clockwise, but the upper first eject roller does not turn because of a one-way clutch in the gear [G]. Also, when the master eject motor turns in the reverse direction (counterclockwise), the pressure plate does not move because of a one-way clutch in the gear [K].


After the master eject process is finished, the master eject motor [A] turns clockwise, driving the gear [C] clockwise through the relay gears.

When the pin [B] of the gear [C] turns about 45 degrees, the pressure plate goes down immediately due to the one-way clutch in the gear [G] and the pressure spring [D] Therefore, the ejected master in the master eject box is compressed by the pressure plate [E].

If the full master detecting switch [F] does not turn on when the pressure plate goes down, this means that the master eject box is filled with ejected masters. In this case, the "F" and ${ }^{\bullet}$ indicators blink, and the machine stops after a new master is wrapped.

The "F" and ${ }^{4}$ indicator cannot be reset until the master box switch is turned OFF and ON. This is to prevent the full ejected master condition from being reset without removing the ejected master from the box.

### 4.5 PRESSURE PLATE UP/DOWN MECHANISM VT2300/2500 <br> [0] <br> 

After the master making process is finished, the master eject motor [A] turns clockwise to raise the pressure plate [B].

When the master eject motor turns, the gear [C] is driven through the timing belt $[\mathrm{R}]$ the gears [D], [E], [F], [G], [H], [I], [J], [K], [L] and [M]. The pin [ $N$ ] on the gear [C] which is inserted into the link [O] rises and lifts the left end of the link; thus, raising the pressure plate $[B]$.

The gear [C] continues to turn until the lever [ $P$ ] moves into the notch on the bottom of the cam, located behind the gear [C]. At this time, the master eject motor [A] stops as the lower end of the lever [P] pushes the pressure plate position switch [Q]. Thus, the pressure plate is held in țe upper position.

When the master eject motor turns clockwise, the gear [I] turns clockwise, but the upper first eject roller does not turn because of a one-way clutch in the gear [I]. Also, when the master eject motor turns in the reverse direction (counterclockwise), the pressure plate does not move because of a one-way clutch in the gear [ L ].
NOTE: The VT2100/VT2130/VT2150 use a gear instead of a timing belt [R]. (as in the SS950)

## 6. Electrical Timing



T1: When the Master Making key (Start key : 830) is pressed, the main motor starts rotating in reverse. At the same time the paper table drive motor also starts rotating to lift the paper table to the proper position.

T2: When the 2nd drum position sensor is activated, the master eject motor starts rotating in reverse to drive the master eject rollers.

T3: When the drum rotates 20 degrees past the 2nd drum position sensor, the master eject solenoid is energized to press the master eject roller against the drum surface. The master eject solenoid is de-energized when the drum rotates 50 degrees more.
When the drum rotates 160 degrees after the master eject solenoid is de-energized, the master eject clamper solenoid is energized.

T4: When the drum turns 13 degrees past the first drum position sensor actuation position, the main motor stops.

500 milliseconds after the main motor stops, the master eject clamper solenoid turns off. Then, after a 100 millisecond-pause, the main motor starts rotating in the forward direction and stays on until the first drum position sensor is activated.
7. Circuit : SS950


Master Eject Motor:
: CN104-30 is connected to the GND and CN104-29 is connected to 24 V line.

Turning clockwise
: CN104-29 is connected to the GND and CN104-30 is connected to 24 V line.

## 8. Input/Output : SS950

| Signal Name | I/O | Main Control Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Full Master Detection | 1 | CN104-27 |  | When the full master detecting switch turns on, the voltage is OV . |
| Pressure Plate Position | 1 | CN104-25 |  | When the pressure plate position switch turns on the voltage of $\mathrm{CN} 104-25$ is 0 V . |
| Master Eject Detection | 1 | CN104-24 | ${ }^{7.5 \mathrm{~V}} \xrightarrow[\square]{\square^{5 \mathrm{sec}}}$ | When the master eject detecting switch turns on the voltage of CN104-24 is 0 V . |
| Master Box Detection | 1 | CN104-26 | ${ }^{7.5 \mathrm{v}} \square_{\square}^{+5 \mathrm{sec}}$ | When the master box switch turns on, the voltage of $\mathrm{CN} 104-26$ is OV . |
| Master Eject Solenoid | 0 | CN104-28 |  | When the master eject solenoid turns on, the voltage of CN104-28 is OV . |
| Master Eject Clamper Opening Solenoid | 0 | CN102-29 |  | When the master eject clamper solenoid turns on, the voltage of CN102-29 is 0V. |
| $+: \begin{aligned} & \text { Master Eject } \\ & \text { Motor } \end{aligned}$ | 0 | CN104-29 |  | When the master eject motor turns clockwise, the voltage of CN104-29 is OV. |
| $\begin{aligned} & \hline-: \text { Master Eject } \\ & \text { Motor } \end{aligned}$ | 0 | CN104-30 | $22 \mathrm{~V} \longrightarrow 0 \mathrm{~V}$ | When the master eject motor turns counterclockwise, the voltage of $\mathrm{CN} 104-30$ is 0 V . |

Master Eject Motor


The specified direction of the motor rotation is as viewed from A .
7. Circuit : SS830


Turning counterclockwise

Turning clockwise

CN104-34 is connected to the GND and CN104-33 is connected to 24 V line.

CN104-33 is connected to the GND and CN104-34 is connected to 24 V line.
8. Input/Output : SS830

| Signal Name | I/O | Main Control Board |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Full Master Detection | 1 | CN104-11 | ${ }^{7.5 \mathrm{v}}+_{\square \square}^{5 \mathrm{sec}}$ | When the full master detecting switch turns on, the voltage of CN104-11 is OV. |
| Pressure Plate Position | 1 | CN104-16 | ${ }^{7.5 \mathrm{v}} \mathrm{~J}^{+} \mathrm{L}_{\substack{5 \mathrm{~V}}}^{5 \mathrm{mec}}$ | When the pressure plate position switch turns on, the voltage of CN104-16 is 0 V . |
| Master Eject Detection | I | CN104-18 | ${ }^{7.5 \mathrm{v}} \mathrm{~J}^{-1} \mathrm{t}_{\mathrm{sec}}^{\mathrm{sec}}$ | When the master eject detecting switch turns on, the voltage of CN104-18 is 0 V . |
| Master Box Detection | 1 | CN104-13 | ${ }^{7.5 \mathrm{v}}{ }^{+}+\hbar_{\mathrm{sec}}^{5 \mathrm{sec}}$ | When the master box switch turns on, the voltage of $\mathrm{CN} 104-13$ is OV . |
| Master Eject Solenoid | 0 | CN104-28 | $24 \mathrm{~V} \longrightarrow 0 \mathrm{~V}$ | When the master eject solenoid turns on, the voltage of CN104-28 is 0 V . |
| Master Eject Clamper Opening Solenoid | 0 | CN104-29 |  | When the master eject clamper solenoid turns on, the voltage of CN104-29 is OV. |
| +: Master Eject Motor | 0 | CN104-33 |  | When the master eject motor turns clockwise, the voltage of CN104-33 is OV. |
| $\begin{aligned} & \text { - : Master Eject } \\ & \text { Motor } \end{aligned}$ | 0 | CN104-34 | $22 \mathrm{~V}-\square 0 \mathrm{~V}$ | When the master eject motor turns counterclockwise, the voltage of CN104-34 is OV. |

## Master Eject Motor



The specified direction of the motor rotation is as viewed from $A$.

## PAPER FEED SECTION

## 1. Overall


[A]: Separation Plate
[B]: Paper Feed Roller
[C]: Upper Separation Roller
[D]: 2nd Upper Feed Roller
[E]: 2nd Lower Feed Roller
[F]: Lower Separation Roller

This machine uses a center separation system, which consists of the separation plate [A] and rollers, instead of the corner separation system. Also, the paper table is lifted and lowered by a motor.

## 2. Paper Feed Roller/Upper Separation Roller Mechanism



The sector gear [F], located on the non-operation side, rotates the paper feed roller [G] and the upper separation roller [K]. When the paper feed solenoid [A] turns on, the link $[B]$ is pulled and the sector stopper [C] turns counterclockwise. This is because the sector gear lock is released when the cam roller [E] is positioned on the top of the paper feed roller cam [D]. Then, the cam roller [E] of the sector gear moves along the cam face of the paper feed roller cam [D].

When moving the cam roller [E] from the bottom to the top of the paper feed roller cam [D], the sector gear [F] turns clockwise and the gear [H] is turned counterclockwise. The rotation of the gear $[\mathrm{H}]$ is transmitted to the upper separation roller shaft [ J ] by the oneway clutch inside the gear $[\mathrm{H}]$, and the upper separation roller $[\mathrm{K}]$ turns counterclockwise.

At the same time, the pulley [L] mounted on the upper separation roller shaft [J] turns, and the belt [I] rotates the paper feed roller [G] counterclockwise to feed the printing paper.

When the cam roller [E] moves from the top to the bottom of the paper feed roller cam [D], the sector gear [F] turns counterclockwise and the gear [H] is turned clockwise. However, due to the one-way clutch inside the gear [H], the upper separation roller [K] and the paper feed roller [G] do not turn.

## 3. Feed Roller Pressure Mechanism



The feed roller assembly rotates clockwise around it's shaft $[B]$ due to the weight of assembly.

The feed roller rotation is resisted by the feed roller pressure spring [C].
The force difference between the feed roller assembly weight and the pressure spring force is applied to the paper as a feed roller pressure.

The feed roller pressure can be changed by moving the feed- pressure lever [D] up or down as shown in the figure.


The separation plate [A] is in contact with the upper separation roller [C] due to the spring [B]. This is to prevent multiple paper feed.

As the lower separation roller [D] does not turn clockwise due to the one way clutch bearings $[G]$ provided on both right and left separation levers [ $E$ ], the sheets are separated and a sheet of paper is fed to the second feed rollers. When 2 sheets of paper are fed, brake force is applied to the lower sheet of paper.

The pressure between upper and lower separation rollers can be adjusted in two steps by changing the right and left separation pressure adjusting levers [F].

Up (Weak position) $\quad \rightarrow$ Spring tension and separation pressure decrease.
Down (Standard position) $\rightarrow$ Spring tension and separation pressure increase.

[C]: Lower Separation Roller
[D]: Upper Separation Roller
[E]: Separation Pressure Adjusting Lever
When the paper table lowers, the paper feed roller level [A] also lowers and presses the left separation lever $[B]$ to release the separation roller pressure.

This mechanism allows misfed paper to be easily removed.


The lower second feed roller [C] is driven by the sector gear [A] and the gear [B]. When the paper feed solenoid [D] turns on, the link [F] combined with the paper feed roller sector stopper [E] is pulled and the second feed roller sector stopper [G] turns counterclockwise.

When the bearing of the sector gear [A] comes to the top of the lower second feed roller cam [H], the stopper [G] is released from the sector gear [A] as a clearance is formed between the pin of the sector gear and the stopper. Therefore, the bearing of the sector gear [A] moves along the second feed roller cam face.

When turning the gear $[\mathrm{B}]$ counterclockwise, its rotation is not transmitted to the lower second feed roller due to the one-way clutch bearing which is press-fit into the gear [B].

When the bearing of the sector gear $[A]$ moves up from the bottom of the second feed roller cam $[\mathrm{H}]$, the sector gear $[A]$ turns counterclockwise and gear $[B]$ turns clockwise. As the rotation of the gear $[B]$ is transmitted to the lower second feed roller, the lower second feed roller turns clockwise to feed the paper to the drum section.


Normally, the upper second feed roller [B] does not contact the lower second feed roller [F]. When the second feed roller sector gear [A] is moved, the upper second feed roller $[B]$ moves against the lower second feed roller [F] to feed paper to the drum section.

When the sector gear [A] turns clockwise, the bearing of the lever [C] moves down from the top of the cam [D] mounted behind the sector gear [A], and the lever [C] and the upper roller shaft [E] turn clockwise.

As the upper roller shaft [E] is an eccentric shaft, the upper second feed roller [B] contacts the lower second feed roller [F] and the upper second feed roller is turned by the friction of the lower second feed roller. Springs [G] apply tension to both the right and left sides of the upper second feed roller $[B]$.


The shaft $[B]$ of the fine adjusting dial $[A]$ is threaded. The inside of the sleeve [C] is also threaded. The sleeve is fixed to the feed table stay [F] through a bracket [D].

The feed table brackets [G] mounted under the table are fixed on the both ends of the adjusting dial shaft.

When the fine adjusting dial is turned clockwise, the feed table moves to the right.

## 8. Paper Table Up/Down Mechanism



The paper table is raised and lowered by the paper table drive motor.
The paper end sensor $[B]$ is actuated when the paper is set on the paper table. When the Start key is pressed, the paper table drive motor [A] starts turning clockwise ( X direction) and the worm gear [C] also turns. The worm wheel [D] turns clockwise and the gear [F] on the both sides turn to raise the racks [G].

When no paper is present, the paper end sensor $[B]$ is not activated and the paper table motor turns counterclockwise (Y direction) to lower the paper table. The paper table is lowered until the actuator [E] interrupts the lower limit sensor [I].

When a misfeed occurs, the paper table motor [A] turns counterclockwise (Y direction) for one second, slightly lowering the paper table.


When the print key is pressed, racks raise causing the paper table to rise until the paper pushes against the paper feed rollers [ H ]; thereby, raising the lever [ J ] which is mounted on the feed roller cover. This activates the paper table height sensor [K] (the phototransistor senses the light from the photocoupler, which up to now was cut off by the lever), causing the paper table motor to turn OFF and stop raising the paper table.

As printing proceeds and the paper level runs down, the lever [J] cuts off the light of photocoupler and the motor turns clockwise until the phototransistor is reactivated. As a result, the paper table is constantly kept at the correct height.


T1: When the paper end sensor is not actuated and the Master Making key (Start key: 830) is pressed, the paper table up signal turns on RA303 and the paper table motor rotates to raise the paper table. The paper table motor turns off when the paper table height sensor turns on. At the same time, the main motor starts rotating in the reverse direction.

T2: After the master eject and master clamping process is completed and the cutter motor is driven to the right position (right cutter switch ON) the paper feed solenoid and the printing pressure solenoid turns on. It turns off when the second drum position sensor turns on.

T3: When the Print Start key (Start key : 830) is pressed, the main motor starts rotating. When the second drum position sensor turns on, the paper feed solenoid and the printing pressure solenoid turn on again to start printing. The paper feed solenoid and the printing pressure solenoid turn off when the copy counter indicates " 0 ".
10. Circuit : SS950


## 11. Input / Output : SS950

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Paper Feed Solenoid | O | CN102-31 | $24 \mathrm{~V} \longrightarrow \quad 0 \mathrm{~V}$ | When the solenoid is on CN102-31 is OV. |
| Paper Table Height Sensor | O | CN102-22 | ${ }^{7.5 \mathrm{v}} \mathrm{~m}^{-1} \mathrm{H}_{0 \mathrm{~V}}^{5 \mathrm{sec}}$ | When the actuator is out of the sensor, CN102-22 is 0 V . |
| Paper Table Lower Limit Sensor | O | CN102-21 | ${ }^{7.5 \mathrm{v}} \square_{\square}^{-1} \square_{0 \mathrm{~B}}^{5 \mathrm{sec}}$ | When the actuator is out of the sensor, CN102-21 is $0 V$. |
| Relay: Paper Table Up | 0 | CN104-9 |  | When the paper table is fully raising, CN104-9 is 0 V . |
| Relay: Paper Table Down | 0 | CN104-11 |  | When the paper table is fully lowering, CN104-11 is OV . |
| Paper End Sensor | 0 | CN102-20 | $7.5 \mathrm{v} \mathrm{~J}^{-1} \mathrm{~J}^{5} \mathrm{~L}_{\substack{5 \mathrm{sec} \\ \mathrm{sev}}}$ | When paper is present, CN102-20 is OV. |

10. Circuit: SS830

11. Input/Output: SS830

| Signal Name | 1/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Paper Feed Solenoid | O | CN104-31 | $2 \mathrm{~V} \square \mathrm{O}$ | When the solenoid is on CN104-31 is OV. |
| Paper Table Height Sensor | 0 | CN102-10 | $7.5 \mathrm{v} \mathrm{~g}^{-1} \mathrm{l}^{5 \mathrm{sec}} \mathrm{sec}$ | When the actuator is out of the sensor, CN102-10 is OV. |
| Paper Table Lower Limit Sensor | O | CN102-11 | $7.5 \mathrm{v} \mathrm{v}^{-1} \mathrm{~J}^{5 \mathrm{sec}} \mathrm{sev}$ | When the actuator is out of the sensor, CN102-11 is OV. |
| Relay: Paper Table Up | O | CN104-25 |  | When the paper table is fully raising, CN104-25 is OV. |
| Relay: Paper Table Down | 0 | CN104-26 |  | When the paper table is fully lowering, CN104-26 is 0 V . |
| Paper End Sensor | O | CN102-12 | $\left.{ }^{7.5 \mathrm{v}}\right]^{-1} \mathrm{t}^{5} 5$ | When paper is present, CN102-12 is OV. |

## PRINTING SECTION

## 1. Overall



In this section, the paper detecting feeler [A] detects whether paper is fed correctly to the second paper feed roller section.

Only when the paper is correctly fed, printing pressure is applied (the press roller [B] contacts the drum) to transmit the ink from the master to the printing paper.

## 2. Paper Detecting and Printing Pressure ON/OFF Mechanism



The main motor turns the gear [A], thus rotating the pressure cam [B]. During the printing process, the pressure cam [B] turns clockwise as the main motor turns clockwise. When paper is not fed, the pressure ON/OFF lever [C] is locked by the paper detecting arm [D]. However, when paper is fed, the bearing of the pressure ON/OFF lever [C] rides up on the top of the pressure cam $[\mathrm{B}]$ and slight clearance is made between the paper detecting arm [D] and the pressure ON/OFF lever [C]. At this moment, the paper turns the paper detecting feeler [E] slightly clockwise and a clearance forms in the lock section. Therefore, the paper detecting arm [D] turns clockwise, releasing the lock of the pressure ON/OFF lever [C]. Also, the printing pressure solenoid [F] turns on to release the pressure ON/OFF lever [C]. As a result, the bearing of the pressure ON/OFF lever [C] moves along the pressure cam [B] and the press roller [I] moves against the drum for printing.

The printing pressure is determined by the pressure spring [G] which is adjustable. The printing pressure sensor [ H ] is not interrupted by Lever [ J ] when the press roller [I] comes near the drum.

## 3. Print Pressure Release Mechanism



This release mechanism prevents deformation of the drum and the pressure roller when the drum is pulled out to remove misfed paper.

The printing pressure solenoid $[A]$ is de-energized at the same time as the paper feed solenoid.

When a paper misfeed occurs, the paper feed solenoid and the printing pressure solenoid are de-energized but the print pressure is still applied to the drum. This print pressure is released when the drum rotates to the drum home position after the drum rotation button is pressed.

This printing pressure release mechanism works even if the paper detecting feeler is actuated by the misfed paper.

## 4. Circuit


5. Input/Output

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Printing Pressure | I | CN102-25 | ${ }^{7.5 \mathrm{v}} \mathrm{~g}^{-1} \hbar^{5 \mathrm{mec}} \mathrm{sec}$ | When the pressure is applied (sensor OFF) CN102-25 becomes 0V. |
| Printing Pressure Solenoid | 0 | CN102-31 |  | When the printing pressure solenoid is $\mathrm{ON}, \mathrm{CN} 102-31$ becomes 0 V . |

## 6. Electrical Timing

2nd Drum Position Sensor


T1: When the printing pressure is applied and the printine pressure sensor is not interrupted, the print counter signal is applied for 100 milliseconds to increase the copy counter and decrease the counter on the operation panel.

T2 : When the printing pressure sensor is not interrupted and the copy counter on the operation panel indicates " 0 ", the paper feed solenoid and the printing pressure solenoid turn off to stop paper feeding and to release the printing pressure.

## DRUM SECTION

## 1. Overall


[A]: Doctor Roller
[B]: Ink
[C]: Ink Roller
[D]: Press Roller
[E]: Paper
[F]: Drum

In this section, ink is supplied from the ink cartridge and is applied to the ink roller uniformly. The ink is then transferred to the printing paper through the holes in the master.
[L]


The main motor (dc motor) [A], located under the rear side plate, turns the drum either clockwise or counterclockwise. It drives the drum through gears [B], [C], [D], pulley [E], belt [F], and pulley [G].

To decrease the driving noise, this mechanism uses of helical gears. On this machine, it is possible to change the drum for color printing, so gears $[\mathrm{H}]$ and [J] have grooves as shown below to prevent the drum from shifting against the driving section of the machine. The pulse disk [M] and the sensor [I] are located on the main motor shaft to check the drum rotation speed.

When the interruptor [L] is positioned in the first drum position sensor [K], it is possible to replace the drum unit.


When the drum unit is set in the machine, the arm $[B]$ is turned counterclockwise by the lock pin [A]. The top of the arm is locked by the stopper [C] to lock the drum in the machine completely. At the same time, the drum detecting switch $[E]$ is turned on by the top of the stopper [C].

When pulling the lever [D] to the operation side, the stopper [C] is turned clockwise and the stopper is released from the arm $[\mathrm{B}]$ due to spring tension. Therefore, the locking mechanism of the drum is also released.


To prevent the drum from rotating when the drum is pulled out of the machine, the drum stopper $[A]$ drops into the drum lock $[B]$ to secure the drum.

When the drum is installed in the machine, the drum stopper [A] is held out of the drum lock by the side plate of the machine.

## 5. Drum Lock Mechanism 3


[Fig. 3]

When the drum is pulled out, the drum stopper [A] drops into the hole as shown in the figure and the drum stopper [A] stops the drum unit from being pulled out any further. In this condition, if the operator pulls the handle [B], the drum unit cannot drop.

When the stopper releasing lever is moved to the operation side as illustrated in the direction of the arrow [Fig. 3], the drum stopper releasing lever [C] pushes up the drum stopper [A] to the same level as the drum rail cover [D]. This allows the drum to be removed.


Ink is supplied from the ink cartridge [K] to the ink roller by the ink pump [I] through 4 holes in the drum shaft [J].

Drum rotation is transmitted through gear [A] to gear [B].
However, rotation is not transmitted to the gear [D] due to the spring clutch [C].
When the ink on the ink roller [L] decreases and the ink detector turns on, the ink supply solenoid [E] turns on and the ink supply stopper [F] releases from the clutch sleeve allowing the gear [D] and gear [G] to turn.

The pin [H] moves the pump shaft up and down as gear [G] rotates. Therefore, the ink in the ink cartridge is sucked into the pump [I]. The pump then pushes the ink out onto the ink roller through the 4 holes in the drum shaft [J].

* One stroke of the ink pump occurs for every 2 rotations of the drum.


## 7. Ink Kneading Mechanism



The ink kneading mechanism consists of the ink roller [A] which rotates with the drum and the doctor roller $[B]$ which ensures that the ink is supplied evenly to the ink roller.

The ink roller $[A]$ rotates due to gear [E], which rotates with the drum, through idle gear [C] and gear [D] mounted on the ink rolier. The ink roller rotates 1.3 times faster than the drum.

The doctor roller is adjusted to give a distance of 0.08 millimeters between itself and the ink roller. It rotates to create an even thickness of ink.

The ink roller does not contact the screen [F] when not printing. However, during the printing process, the ink on the ink roller is transmitted to the print paper through holes in the screen and the master while the drum screen is held against the master by the pressure roller located under the drum.

Gear [D] has a one-way clutch to prevent the ink roller from rotating in the reverse direction when the drum turns in the reverse direction during the master eject process.

## 8. Ink Detection


(1) Standard Generation Pulse
(2) Detecting Pulse

[A]: Doctor Roller
[B]: Detecting Pin
[C]: Ink Roller
The ink detection circuit consists of an electrode (detecting pin), to detect the electrostatic capacity and a multivibrator. The pulse generated by the multivibrator is different when ink is present and when ink is not present. This pulse is compared to a standard pulse to detect whether or not there is ink in the drum.
(1) The standard pulse is output from OUTPUT 1. The pulse length (To) can be adjusted by adjusting VR901.
(2) OUTPUT 2 is the detection pulse. The time constant is determined by C908 and the ink. The detection pulse is triggered by the rising edge of the standard pulse.

When ink is present, the electrostatic capacity increases and the pulse length ( $\mathrm{T}_{1}$ ) becomes longer. On the other hand, when ink is not present, the pulse length (T2) becomes shorter as the electrostatic capacity decreases.
(3) The pulse length ( $\mathrm{T}_{1}$ or $\mathrm{T}_{2}$ ) is compared with the standard pulse (T0).

When the time constant ( $\mathrm{T}_{2}=$ No ink) is shorter than the standard pulse (To), the output of CN902-2 goes High.


T1: After all the ink has been consumed and the no ink signal is HIGH, the ink supply solenoid turns on at the rising edge of the second drum position sensor signal. The ink supply solenoid turns off when the ink detecting signal goes LOW.

T2: If after the ink supply solenoid turns on the drum turns a further 20 rotations and the no ink signal remains HIGH, the No Ink indicator $\left(\mathrm{D}+\mathrm{E}^{\text {) }}\right.$ ) blinks.

When the " 0 " key and "Reset" key are pressed while the No Ink indicator ( $\mathrm{D}+\dot{\Delta}$ ) blinks, the drum turns 40 rotations. (950)

When the "Idling" key is pressed while the No ink indicator ( $D+E$ ) blinks, the drum turns 40 rotations. (830)

When the No Ink Signal goes off during the 40 drum rotations, the ink supply solenoid is de-energized.
10. Circuit : SS950

11. Input/Output: SS950

| Signal Name | I/O | Main Control PCB |  | Description |
| :--- | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Ink Supply <br> Solenoid | O | CN102-32 | 24 V |  |
| Drum Safety <br> Switch | I | CN102-28 |  | When the solenoid turns on, CN102- <br> 32 is OV. |

## 12. Function : SS950

When the drum is pulled out, the drum safety switch is turned off and the Cover Open indicator blinks.

When the color drum unit is set, the Color indicator lights because the optional drum short circuits pins 5 and 6 which causes CN102-18 to go LOW.

11. Input/Output: SS830

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| Ink Supply Solenoid | 0 | CN104-32 |  | When the solenoid turns on, CN10432 is 0 V . |
| Drum Safety Switch | 1 | CN104-7 | $0 \mathrm{~V} \quad \sqrt{2} \quad 24 \mathrm{~V}$ | When the drum safety switch and the ADF safety switch turn on, CN104-7 is 24 V . |

## 12. Function : SS830

When the drum is pulled out, the drum safety switch is turned off and the Cover Open indicator blinks.

When the color drum unit is set, the Color indicator lights because the optional drum short circuits pins 5 and 6 which causes CN104-14 to go LOW.

## IMAGE SHIFTING SECTION

## 1. Overall

The image on the printing paper can be shifted 20 millimeters either backwards or forward using the Image Shift keys on the operation panel.

The image position is adjusted by the image shifting motor which changes the paper feed timing by turning the first paper feed roller and second feed roller rotation cams.

## 2. Image Shifting Mechanism



When the forward key ( + key $=\square$ ) is pressed, the image shifting motor [A] turns clockwise (in the direction of the arrow) and drives cam gear [J] clockwise through gears [B], [C], [D], [E], [F], [G] and [H] as illustrated on the next page.

The cam gear [J] has a spiral track which the lever [K] moves along. When the cam gear turns clockwise, the pin of the lever [K] moves towards the outside of the cam gear [J]. Therefore, the lever [K] moves clockwise.

The lever [K] drives the gear [ O ] clockwise through the gear [ N ] and the first paper feed roller and second feed roller rotation cams mounted on the shaft of the gear [P] turn clockwise. As a result, the paper feed start timing is delayed compared with drum rotation timing and the image position is moved in the forward direction.

When the cam gear [J] turns, the gear [I] located behind the gear [J] turns and the encoder [M] mounted on the gear [L] turns to check the image shifting position.


This brake mechanism prevents the print image from shifting during the printing process. Gear [Q] pressed by spring [R] is used to brake gear [C].
3. Electrical Operation : SS950


When the Image Shifting key (forward key $=$ SW216) is pressed, CN102-37 becomes 22 V and CN102-36 becomes OV. Thus, the image shifting motor turns clockwise. (View from $A$ as show next page.)

On the other hand, when the Image Shifting key (backward key = SW220) is pressed, CN102-36 becomes 22V and CN102-37 becomes OV. Thus, the image shifting motor turns counterclockwise. (View from A as shown next page.)

## 3. Electrical Operation : SS830



When the Image Shifting key (forward key $=$ SW216) is pressed, CN104-35 becomes 22V and CN104-36 becomes OV. Thus, the image shifting motor turns clockwise. (View from $A$ as show next page.)

On the other hand, when the Image Shifting key (backward key = SW220) is pressed, CN104-36 becomes 22V and CN104-35 becomes OV. Thus, the image shifting motor turns counterclockwise. (View from $A$ as shown next page.)

To check the image position, an encoder, which converts 16 positions to 4 bit data, is used.




## DELIVERY SECTION

## 1. Overall



This section consists of the exit pawl [A] and air knife (blower fan) [B], which separates the leading edge of the paper from the drum [D], and the vacuum unit [C], which delivers the separated paper to the delivery table.

## 2. Exit Pawl Drive Mechanism



The exit pawl [A] located in the center of the drum, guides the center of the printing paper. As the master clamper [H] approaches the exit pawl, the exit pawl moves away from the drum.

When the bearing of the pressure ON/OFF cam [C] comes to the top of the pressure cam [G], the exit pawl drive cam [B], mounted on the pressure ON/OFF cam [C], moves up. The exit pawl lever [D] then turns clockwise along the surface of the exit pawl drive cam [B]. Therefore, the exit pawl [A] also comes near the drum until the stopper [F] contacts the adjusting screw [E]. This keeps a small clearance between the exit pawl and the drum surface to enable the printing paper to feed to the vacuum unit.

As the press roller moves away from the drum, the exit pawl drive cam [B] moves down and the exit pawl lever [D] turns counterclockwise. This causes, the exit pawl $[A]$ to separate from the drum.

The exit pawl $[\mathrm{A}]$ is held away from the drum when printing pressure is not applied.


The vacuum fan $[A]$ holds the printed paper against the transport belts $[B]$. The transport belts move the paper to the delivery table. The wing guides [C] located at the end of the vacuum unit decrease the stains on the reverse side of the printing paper.

When the main motor turns on, the gear [F] mounted on the motor shaft drives the belts $[\mathrm{B}]$ through gears [G], [H], [J], pulley [K], and the drive belt [I].

The first and second paper exit sensors check the paper feed condition.
Paper exit jam check occurs when the printing pressure is applied and the printing pressure sensor is interrupted.

|  | 1st Paper Exit Sensor [D] |  | 2nd Paper Exit Sensor [E] |  |
| :---: | :---: | :---: | :---: | :---: |
| 2nd Drum Position Sensor | $\begin{aligned} & \mathrm{ON} \\ & \mathrm{OFF} \end{aligned}$ | Correct <br> Paper Wrap | $\begin{aligned} & \hline \text { OFF } \\ & \text { ON } \end{aligned}$ | Correct Delivery Miss |
| 1st Drum Position Sensor |  | ---------- | $\begin{aligned} & \text { ON } \\ & \text { OFF } \end{aligned}$ | Correct Paper Wrap |



The wing guides [A] lift the sides of the paper to stiffen the paper as it exits the machine.
This is to prevent the back and the leading edge of the print from being contaminated by the printed paper in the delivery tray.

The angle of the wing guide can be changed by the wing guide release lever [B].
When using the thick paper setting, the wing guide release lever is placed in the upper position to release the wings.

## 5. Misfeed/Paper Wrap

2nd Drum Position Sensor

Paper Feed Sol
Printing Pressure Sensor
1st Paper Exit Sensor


Misfeed

Paper Wrap
If printing pressure is not applied (printing pressure sensor is interrupted) when the paper feed solenoid turns on, the Misfeed indicator blinks and the drum stops.

If the first paper exit sensor does not turn on when the paper feed solenoid turns on, the Paper Wrap indicator blinks and the drum stops.

## 6. Exit Misfeed/Paper Wrap



Exit Misfeed If the second paper exit sensor and the second drum position sensor turn on at the same time after printing pressure is applied, the Exit Misfeed indicator blinks and the drum stops.

Paper Wrap
After printing pressure is applied, if the second paper exit sensor turns off when the first drum position sensor turns on, the Paper Wrap indicator blinks and the drum stops.
7. Circuit : SS950

8. Input/Output : SS950

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| 1st Paper Exit Sensor | 1 | CN104-33 | $0 \mathrm{~V} \quad \sqrt{3 \mathrm{~V}}$ | When the paper passes, the CN10433 becomes more than $3 V$. |
| 2nd Paper Exit Sensor | 1 | CN104-34 | $0 \mathrm{~V} \quad-3 \mathrm{~V}$ | When the paper passes the CN10434 becomes more than 3V. |
| Relay : Blower | 0 | CN104-13 |  | When the air knife motor and the vacuum motor turn on, the CN104-13 becomes OV. |

9. Electrical Timing: SS950


T1: After the master cut process finishes and the left cutter switch turns on, the main motor starts rotating. At the same time, the air knife motor and the vacuum fan also turn on and stay on until the first drum position sensor turns on 3 or 4 times.

T2 : When the Print Start key is pressed, the main motor starts rotating and the air knife motor and the vacuum fan also turn on. Then, when the counter indicates " 0 ", the main motors turn off after the first drum position sensor turns on 3 or 4 times.
7. Circuit : SS830

8. Input/Output : SS830

| Signal Name | I/O | Main Control PCB |  | Description |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CN No. | Level |  |
| 1st Paper Exit Sensor | 1 | CN102-7 | $0 \mathrm{~V} \quad \int^{3 \mathrm{~V}}$ | When the paper passes, the CN1027 becomes more than 3V. |
| 2nd Paper Exit Sensor | 1 | CN102-8 | $0 \mathrm{~V} \quad \sqrt{3} 3 \mathrm{~V}$ | When the paper passes the CN102-8 becomes more than 3 V . |
| Relay : Blower | 0 | CN104-13 |  | When the air knife motor and the vacuum motor turn on, the CN104-13 becomes OV. |

## 9. Electrical Timing: SS830



T1: After the master cutting process finishes and the left cutter switch turns on, the main motor starts rotating. At the same time, the air knife motor and the vacuum fan also turn on and stay on until the first drum position sensor turns on 3 or 4 times.

T2: When the Start key is pressed, the main motor starts rotating and the air knife motor and the vacuum fan also turn on. Then, when the counter indicates " 0 ", the main motors turn off after the first drum position sensor turns on 3 or 4 times.

## Installation

## INSTALLATION REQUIREMENTS

The installation location should be carefully chosen because the environmental conditions greatly affect the performance of a machine.

## 1. Optimum environmental condition :



Temperature -

Humidity -
10 to $30^{\circ} \mathrm{C}$
( 50 to $86^{\circ}$ F)
20 to $90 \% \mathrm{RH}$

On a strong and level base.
The machine must be level within 5
$\mathrm{~mm}(13 / 64$ ") both front to rear and left
The machine must be level within 5
$\mathrm{~mm}(13 / 64$ ") both front to rear and left to right.



Well-ventilated and wide room.
Minimum ventilation:
air turnover 3 times / hour

## 2. Environments to avoid:



Location exposed to direct sun-light or strong light (more than 1,500 lux).


Areas with corrosive gases.


Dusty areas.


Locations directly exposed to cool air from an air conditioner or to reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause condensation within the machine.)

## 3. Ground:



Be sure to ground the machine. Never connect the ground line to gas pipes.
4. Power connection:


Securely connect the power cord to a power source.
a) $120 \mathrm{~V}, 60 \mathrm{~Hz}$ : More than 5.5 A

Make sure the plug is firmly inserted in the outlet.


Avoid multiwiring.


Voltage must not fluctuate more than 10\%.


Do not pinch the power cord.

## 5. Access to Machine:

Place the machine near a power source, providing clearance as shown below.



1. Check that the accessories are in the quantities according to the following list.
(1) Original Exit Tray ..... 1
(2) Right Tray Bracket ..... 1
Left Tray Bracket ..... 1
(3) Fixing Screws ..... 2
(4) Master Spools ..... 2
(5) Thermal Head Cleaner ..... 1
(6) Operating Instruction ..... 1
(7) Operating Guide ..... 1
(8) NECR ..... 1
2. Install the machine on the option table with two screws which are packed with option table.
3. Remove the tape and string retaining the covers and units as shown to the right.
(1) Open the paper feed tray. Then remove the cushion from the paper feed roller arm.
(2) Open the master delivery unit. Then remove the Retaining tape from the paper delivery guide plate.

4. Remove the protection sheet from the drum unit.
(1) Open the front door.
(2) Take out the drum unit.
(3) Remove the protection sheet clamped in master clamper.
(4) Reinstall the drum unit in the machine.
5. Install the original exit tray.
(1) Hook the right and left tray brackets on the stepped screws.
(2) Set the original exit tray on the brackets.
(3) Fix the brackets with fixing screws.

6. Setting Paper
(1) Open the paper feed table.
(2) Stack the paper neatly on the paper feed table.
(3) Bring the paper feed side plates lightly in contact with the paper.
(4) Position the paper delivery table for the printing paper size, using the scale on the table.
(5) Position the paper delivery side plate for the printing paper size, using the scale on the table.
7. Setting a Master Roll
(1) While moving up the release lever, slide the scanner unit to the left.
(2) Place both spools into a master roll.
(3) Set the master roll in the machine. (Note: The glossy side is face down).
(4) Set the pressure release lever to the original position.
(5) Plug in the power cord and turn on the main switch.
(6) Press the Master Cut button.
(7) Remove the cut master paper.

Note: Check that the master paper is not folded or creased.
(8) Close the scanner unit.

8. Setting Ink
(1) Open the front door and lower the ink cartridge holder.
(2) Remove the cap of an ink cartridge.
(3) Insert the ink cartridge into the ink holder (spout should be facing lower left hand corner) and set the ink holder to the original position.
(4) Close the front door.
9. Idling
(1) Press the Reset key on the operation panel while pressing the " 0 " key ----950.
Press the Idling key ----- 830 .
(2) If $\dot{U}+\mathbf{D}$ blink on the operation panel, operate the above procedure again.
10. Test Print
(1) Set the original face down on the original table.
(2) Adjust the original guide to match the original size.
(3) Use the Number keys to set the number of prints and press the Master Making key (950) (Start key : 830).

Note: In the case of a new machine, the master paper misfeed indicator of $+F$ will blink because a master is not wrapped around the drum yet. Press the Reset key, then press the Master Making key (950) (Start key : 830).
(4) After one sheet of paper is delivered, make a print at the lowest print speed (1) until the print image density does not change using a test chart.
(5) Check the copy image after about one hundred prints.


## INSTALLATION PROCEDURE (Color Drum Unit)

1. Remove the protection sheet wrapped around the drum unit.
2. Remove the retaining tape from the ink holder.
3. Stick a color indicator seal which is the same color as the ink on the drum case and the ink holder.
4. Replace the drum unit installed in the machine with the color drum unit.
(1) Leave the master wrapped around the removed drum to protect the drum from dust and drying.
(2) Keep the removed drum unit in the drum case.
5. Install the color drum unit.

* While this color drum is installed, the color drum indicator 8 lights on the operation panel.

6. Install the color ink.
(1) Remove the cap of the ink cartridge.
(2) Insert the ink cartridge into the ink holder.
7. Idling
(1) Press the Reset key on the operation panel while pressing the " 0 " key ----- 950.
Press the Idling key ----- 830.
(2) If $\dot{\Delta}+\mathbf{D}$ blink on the operation panel, operate the above procedure again.

(1) Adjust the original guide to match the original size.
(2) Set the original face down.
(3) Use the number keys to set the number of prints and press the Master Making key (950) (Start key : 830).

Note: In the case of a new machine, the master paper misfeed in-
 dicator of $+F$ will blink because a master is not wrapped around the drum yet. Press the Reset key, then press the Master Making key (950) (Start key : 830).
(4) After one sheet of paper is delivered, make a print at the lowest print speed (1) until the print image density does not change using a test chart.
(5) Check the copy image after about one hundred prints.

## Service Tables/Modes

## MAINTENANCE TABLE

## 1. "Total Call" Schedule (every Service Call)

| Lubrication point | Interval | Type |
| :--- | :--- | :---: |
| Bearings for drum drive shaft | Every call | Oil |
| Bearing for each cam shaft | Every call | Oil |
| Bearing for main motor shaft | Every call | Oil |
| Bearing for speed reduction shaft | Every call | Oil |
| Gears on the drum drive shaft | Every call | Grease |
| Gears for each cam | Every call | Grease |
| Paper feed sector gear <br> Second feed sector gear <br> Edge of each cam <br> Master pressure plate groove | Every call | Grease |
| Cleaning point | Every call | Grease |
| Original platen cover call | Grease |  |
| Exposure glass | Every call <br> Every call | Cloth and water <br> Eloth and glass cleaner <br> Thermal head |
| Every other <br> call and <br> after every <br> 2 master <br> rolls | Thermal head cleaner |  |

## Type of Oil and Grease

Oil : Pump Oil (SAE No. 20)
Grease : White Lithium
2. PM Schedule I - (every $\mathbf{3 0 0}, 000$ prints or 6 months)

| Item/location | Step | Inspection standard |
| :---: | :---: | :---: |
| Original platen cover | Cleaning | Wipe off the stain with soft cloth dampened with ethyl alcohol. |
| Exposure glass | Cleaning | Wipe with dry cloth. |
| Mirror/Sub mirror | Cleaning | Use blower brush. |
| Thermal head | Cleaning and image check | Wipe off the stain on the thermal head using thermal head cleaning kit. Check the print image. White line must not exist. |
| Platen roller | Cleaning | Wipe off the paper powder with cloth dampened with water. |
| Sensors | Inspection and cleaning | Check the performance of all the sensors. Remove the stains from sensors with dry cloth. |
| Press roller | Cleaning | Wipe off the ink and paper powder with cloth dampened with warm water and mild soap. |
| Drum surface | Cleaning | Wipe off the ink which is forced out from trail edge of a master and paper powder using cloth dampened with ethyl alcohol. |
| Master feed and delivery | Inspection | Master should be properly fed and clamped, without generation of skew, folds, etc. Master should also be properly delivered without jam. |
| Paper feed and delivery | Inspection | Actually print a few sheets to ensure that paper is smoothly fed and delivered, without generation of skew, folds, wrinkles, etc. |
| Second paper feed rollers | Cleaning | Wipe off the ink and paper powder with cloth dampened with warm water. |
| Original transport roller | Cleaning | Wipe off paper powder with cloth dampened with water. |
| ADF |  |  |
| Pull-out roller | Cleaning | Wipe off paper powder with cloth dampened with water. |
| Original feed roller | Cleaning | Wipe off paper powder with cloth dampened with water. |
| Separation blade | Cleaning | Wipe off paper powder with cloth dampened with water. |

## 2-1. PM Schedule I — Lubrication Points (every $\mathbf{3 0 0}, 000$ prints or 6 months)

Inspect and lubricate (if necessary) after removing adhered ink and paper dust.

| Lubrication point | Type | Inspection standard |
| :--- | :---: | :--- |
| Bearings for drum drive shaft | Oil | Check that the bearing shafts |
| Bearing for each cam shaft | Oil |  |
| Bearing for main motor shaft | Oil light coating of oil. |  |
| Bearing for speed reduction shaft | Oil |  |
| Gears on the drum drive shaft | Grease | Check that the root of the gears |
| Gears for each cam | Grease |  |
| and groove contain a light coating |  |  |
| Paper feed sector gear | Grease |  |
| Second feed sector gear | Grease |  |
| Edge of each cam | Grease |  |
| Master pressure plate groove | Grease |  |

## 3. PM Schedule II - (every 600,000 prints or 12 months)

| Item/location | Step | Inspection standard |
| :---: | :---: | :---: |
| Original platen cover | Cleaning | Wipe off stains with soft cloth dampened with ethyl alcohol. |
| Exposure glass | Cleaning | Wipe off the stain with soft cloth dampened with ethyl alcohol. |
| Fluorescent lamp | Cleaning | Wipe with dry cloth. |
| Mirror/Sub mirror | Cleaning | Use blower brush. |
| Thermal head | Cleaning and inspection | Wipe off stains on thermal head using thermal head cleaning kit. Check the print image. White line must not exist. |
| Platen roller | Cleaning | Wipe off the paper powder with cloth dampened with water. |
| Paper feed roller | Cleaning | Wipe off paper powder with cloth dampened with water and wipe off ink with cloth dampened with water. |
| Separation roller | Cleaning | Wipe off paper powder with cloth dampened with water and wipe off ink with cloth dampened with water. |
| Sensors | Inspection and cleaning | Check the performance of all the sensors. Wipe off stains on the sensor with dry cloth. |
| Master delivery rollers | Cleaning | Wipe off the built up ink and paper powder on the master delivery rollers using cloth dampened with water. |
| Master delivery belts | Cleaning | Wipe off the built up ink and paper powder on the master delivery belts using cloth dampened with water. |
| Second paper feed rollers | Cleaning | Wipe off the built up ink and paper powder on the second feed rollers using cloth dampened with water. |
| Press roller | Cleaning | Wipe off the built up ink and paper powder on the press roller using cloth dampened with warm water and mild soap. |
| Drum surface | Cleaning | Wipe off the ink, which is forced out from trail edge of a master, and paper powder using cloth dampened with ethyl alcohol. |
| Master feed and delivery | Inspection | Master should be properly fed and clamped, without generation of skew, folds, etc. Master should also be properly delivered without jam. |

3. PM Schedule II - Continued - (every $\mathbf{6 0 0}, 000$ prints or 12 months)

| Item/location | Step | Inspection standard |
| :--- | :--- | :--- |
| Paper feed and delivery | Inspection | Actually print a few sheets to ensure that <br> paper is smoothly fed and delivered <br> without generation of skew, folds, wrinkles, <br> etc. <br> Wipe off paper powder with cloth <br> dampened with water. |
| Original transport roller | Cleaning |  |
| ADF | Lubrication points | following lubrication points list. |
| Pull-out roller | Cleaning | Wipe off paper powder with cloth <br> dampened with water. <br> Wipe off paper powder with cloth <br> dampened with water. <br> Original feed roller <br> Wipe off paper powder with cloth <br> dampened with water. |
| Separation blade | Cleaning | Cleaning |

## 3-1. PM Schedule II - Lubrication Points (every $\mathbf{6 0 0 , 0 0 0}$ prints or 12 months)

Inspect and lubricate (if necessary) after removing adhered ink and paper dust.

| Lubrication point | Type | Inspection standard |
| :--- | :---: | :--- |
| Bearings for drum drive shaft | Oil | Check that the bearing shafts |
| Bearing for each cam shaft | Oil |  |
| Bearing for main motor shaft | Oil light coating of oil. |  |
| Bearing for speed reduction shaft | Oil |  |
| Gears on the drum drive shaft | Grease | Check that the root of the gears |
| Gears for each cam | Grease | and groove contain a light coating <br> of grease. |
| Paper feed sector gear | Grease |  |
| Second feed sector gear | Grease |  |
| Edge of each cam | Grease |  |
| Master pressure plate groove | Grease |  |

4. Table of Service Call Indications

| Indication | Trouble | Possible causes |
| :---: | :---: | :---: |
| E 01 | Malfunction in cutter section: <br> The cutter motor does not reach both right and left cutter position detecting switches within 2 seconds | 1) Drive wire cut <br> 2) Drive section malfuncation <br> 3) No power supply |
| E 02 | Malfunction in the paper table drive section: <br> The lower limit sensor or the paper table height sensor is not turned off even though the paper table UP or Down signal is applied | 1) Drive worm gear broken <br> 2) Mounting screw of the worm gear broken <br> 3) No power supply |
| E 03 | Malfunction in the program: | 1) PROM defective <br> 2) Control PCB defective |
| E 04 | Temperature of the thermal head or the power supply unit is high: <br> Temperature of the thermal head becomes greater than $57^{\circ} \mathrm{C}$ or the temperature of the power supply unit becomes greater than $85^{\circ} \mathrm{C}$ when the machine is in stand-by condition | 1) Thermistor defective <br> 2) Thermal head defective <br> 3) Power supply unit defective |
| E 05 | Malfunction in the image shifting section: | 1) Encoder connector of the image shifting section disconnected <br> 2) Encoder defective |
| E 06 | Mechanical lock: <br> When a paper jam or part failure occurs, the decoder detects that the motor speed is incorrect; if this occurs, the main motor turns off. This prevents any further damage to its components or fuse failure | 1) Paper jam <br> 2) Parts failure |
| E 07 | Malfunction in the program (PROM). When using I/O check mode, "E07" lights up if the ROM is defective. <br> NOTE: <br> When "E03" is lit, check whether or not the PROM is defective using I/O Check mode | ROM defective |

5. Table of DIP SW, LED, VR: SS950
1) DIP SW (on the main control PCB)

| No. | DIP SW | FUNCTION | REMARKS |
| :---: | :--- | :--- | :--- |
| 1. | DPS100-1 | Key Counter (Option) | Turn on when installing Key Counter. (Nor- <br> mal: OFF) |
| 2. | DPS100-2 | Buzzer ON/OFF | Turn on to sound the beeper. (Normal: <br> OFF) |
| 3. | DPS100-3 | Initial Print | Once: OFF / Twice: ON (Normal: OFF) |
| 4. | DPS100-4 | Not Used |  |
| 5. | DPS100-5 | ADF Original Detection | Turn on to release ADF original detection <br> and stop the ADF function. |
| 6. | DPS100-6 | Main Motor Speed <br> Adjustment | Turn on to adjust the main motor speed <br> using VR100. (Normal: OFF) |
| 7. | DPS101-1 | Cover Open | Turn on to disable all cover safety switch <br> functions except ADF cover safety. (Nor- <br> mal: OFF) |
| 8. | DPS101-2 | ADF Cover Open | Turn on to release ADF cover. |

## 2) Photodiode (on the main control PCB)

| No. LED | FUNCTION | REMARKS |
| :---: | :--- | :--- |
| 1. LED-100 | Main Motor ON | When the main motor turn on. |
| 2. LED-101 | 2nd Paper Exit <br> Detection | When paper is detected. |
| 3. LED-102 | Ink Detection | When ink is present. |
| 4. LED-103 | 1st Paper Exit <br> Detection | When paper is detected. |

3) $V R$

| No. | VR | PCB | FUNCTION |
| :---: | :---: | :--- | :--- |
| 1. | VR-100 | Main | Main Motor Speed Adjustment |
| 2. | VR-102 | Main | 1st Paper Exit Detection Adjustment |
| 3. | VR-101 | Main | 2nd Paper Exit Detection Adjustment |
| 4. | VR-201 | Power Supply | Thermal Head Voltage Adjustment |
| 5. | VR-203 | Power Supply | Adjust the VCC (+5V) Line Voltage |
| 6. | VR-901 | Ink Detecting | Ink Detecting Adjustment |
| 7. | VR-600 | A/D Conversion | White Level Adjustment |

5. Table of DIP SW, LED, VR: SS830
1) DIP SW (on the main control PCB)

| No. | DIP SW | FUNCTION | REMARKS |
| :---: | :--- | :--- | :--- |
| 1. | DPS101-1 | Key Counter (Option) | Turn on when installing Key Counter. (Nor- <br> mal: OFF) |
| 2. | DPS101-2 | Buzzer ON/OFF | Turn on to sound the beeper. (Normal: <br> OFF) |
| 3. | DPS101-3 | Initial Print | Once: OFF / Twice: ON (Normal: OFF) |
| 4. | DPS101-4 | Not Used |  |
| 5. | DPS101-5 | Main Motor Speed <br> Adjustment | Turn on to adjust the main motor speed <br> using VR101. (Normal: OFF) |
| 6. | DPS101-6 | Cover Open | Turn on to disable all Cover safety switch <br> functions. (Normal: OFF) |

2) Photodiode (on the main control PCB)

| No. LED | FUNCTION | REMARKS |
| :---: | :--- | :--- |
| 1. LED-101 | Main Motor ON | When the main motor turn on. |
| 2. LED-102 | Ink Detection | When ink is present. |
| 3. LED-103 | 1st Paper Exit <br> Detection | When paper is detected. |
| 4. LED-104 | 2nd Paper Exit <br> Detection | When paper is detected. |

3) VR

| No. | VR | PCB | FUNCTION |
| :---: | :--- | :--- | :--- |
| 1. | VR-101 | Main | Main Motor Speed Adjustment |
| 2. | VR-102 | Main | 1st Paper Exit Detection Adjustment |
| 3. | VR-103 | Main | 2nd Paper Exit Detection Adjustment |
| 4. | VR-1 | Power Supply | Thermal Head Voltage Adjustment |
| 5. | VR-2 | Power Supply | Adjust the VCC (+5V) Line Voltage |
| 6. | VR-901 | Ink Detecting | Ink Detecting Adjustment |
| 7. | VR-600 | A/D Conversion | White Level Adjustment |

6. DIP SW: SS950/SS830 (on the master processing PCB)
1) DIP SW: SS950 (on the master processing PCB)

2) DIP SW: SS830 (120V Version) (on the master processing PCB)

| No. | DIP SW | FUNCTION |
| :---: | :---: | :---: |
| 1. | DPS400-1 | Enlarge/Reduction Compensation Switch |
| 2. | DPS400-2 | Enlarge/Reduction Compensation Switch |
| 3. | DPS400-3 | Enlarge/Reduction Compensation Switch |
| 4. | DPS400-4 | Non Used |
| 5. | DPS400-5 | Non Used |
| 6. | DPS400-6 | ON: MTF Processing (Normally ON) <br> OFF: Non-MTF Processing |
| 7. | DPS400-7 | Non Used |
| 8. | DPS400-8 | Output the Test Pattern Image (Normally ON) |

## 7. Expected Life of Parts

Note: Main parts have the following expected life.

| Section | Part description | Expected life |
| :--- | :--- | :--- |
| Master Eject | Upper master eject belt | 1 year or 6,000 masters |
|  | Lower master eject belt | 1 year or 6,000 masters |
| Scanner | Fluorescent lamp | 15,000 masters |
|  | Original transport roller | 1 year or 6,000 masters |
| Plotter/Master | Thermal head | 30,000 masters |
| Feed | Cutter | 30,000 masters |
|  | Upper master feed roller | 1 year or 6,000 masters |
| Drum | Drum screen | 2 years or 1,200,000 prints |
| Paper Feed | Paper feed rubber side plate | 2 years or 1,200,000 prints |
|  | Paper feed roller/Upper separa- | 1 year or 300,000 prints |
|  | tion roller | 3 years or 2,000,000 prints |
|  | Lower separation roller | $1,000,000$ prints |
| Frinting | Feed roller brake | 2 years or 1,200,000 prints |
| Delivery | Press roller | 2 years or 1,200,000 prints |


| Section | Part description | Expected life |
| :--- | :--- | :--- |
| ADF | Pull-out roller | 1 years or 60,000 sheets |
|  | Original feed roller | 1 years or 60,000 sheets |
|  | Separation blade | 1 years or 60,000 sheets |
| Original pressure plate | 1 years or 60,000 sheets |  |

## 8. Special Tools

| Description | Parts number |
| :--- | :---: |
| Test chart | 99992131 |
| Drum gauge | C 2009001 |
| Image shifting gauge | C 2009002 |

## SERVICE PROGRAM MODE (I/O Check Mode): SS950

A program for checking electrical parts is stored in memory. To access the program, use as follows:

1) Turn off the power switch.
2) 120 V version:

Turn on the power switch while pressing the Print Start key, Stop key and Clear key. This accesses the I/O check mode.

Note: When the I/O check mode is accessed, only "64\%" reduction LED and Line mode LED light and simultaneously, 1 is displayed in the memory indicator and 0 is displayed in the copy counter.

3) Press the Memory key to select either "Input" or "Output".

Memory Indicator "1" ----- Input
Memory Indicator "0" ----- Output
4) Use the Numeral keys to enter the proper numbers in the copy counter (Reference the Service Program Table).
5) a) When checking inputs, all of the Image Shift Position indicators turn on when the switch or sensor being tested is actuated.

b) When checking the outputs, the component entered in the counter turns on while the Print Start key is pressed.

* Press the Clear key to set the counter number in the copy counter.

6) After completion of the Service Program mode, turn off the power switch to clear the I/O check mode.

## SERVICE PROGRAM MODE (I/O Check Mode) : SS830

A program for checking electrical parts is stored in memory. To access the program, use as follows:

1) Turn off the power switch.
2) 120 V version:

Turn on the power switch while pressing the Start key, Stop key and Clear key. This accesses the I/O check mode.
Note: When the I/O check mode is accessed, only Line mode LED lights and simultaneously, 1 is displayed in the memory indicator and 0 is displayed in the copy counter.

3) Press the Class key to select either "Input" or "Output".

Memory Indicator "1" ----- Input
Memory Indicator "0" ----- Output
4) Use the Number keys to enter the proper numbers in the copy counter (Reference the Service Program Table).
5) a) When checking inputs, all of the Image Shift Position indicators turn on when the switch or sensor being tested is actuated.

b) When checking the outputs, the component entered in the counter turns on while the Start key is pressed.

* Press the Clear key to set the counter number in the copy counter.

6) After completion of the Service Program mode, turn off the power switch to clear the I/O check mode.

## 3. SERVICE PROGRAM MODE (I/O Check Mode)

### 3.1 HOW TO ACCESS I/O CHECK MODE

This program checks electrical components. The procedure for accessing the program is as follows:

1. Turn off the power switch.

## 2. A4 version:

Remove the front cover of the master eject unit to access the Full Master Detecting switch [A]. Turn on the power switch while holding down the Print Start key, Stop key, Clear key and Full Master Detecting Switch [A]. This accesses I/O check mode.

## LT version:

Turn on the power switch while holding down the Print Start key, Stop key, and Clear key. This accesses I/O check mode.
NOTE: When the I/O check mode is accessed, only the $141 \%$ enlargement (VT2300/2500) or the $71 \%$ (64\%) reduction (VT2100/2130/2150) ratio LED, the left lighter image density LED, and the Line Mode LED light. Also, 1 is displayed in the memory indicator and 0 is displayed in the copy counter.

VT2300/VT2500:


VT2100/VT2130/VT2150:

[A4 Version Only]
3. Press the Memory/Class key to select either "Input" or "Output".

Memory Indicator "1" - Input
Memory Indicator "0" - Output
4. Use the Numeral keys to enter the desired input or output number in the copy counter. (See the Service Program Table.)
5. a) In input mode, all Image Shift Position indicators [A] turn on when a switch or sensor that is being tested is actuated.

VT2300/VT2500:


## VT2100/VT2130/VT2150:


b) In output mode, the component corresponding to the number entered with the Number keys turns on when the Print Start key is pressed.

* Press the Clear key to set the counter number in the copy counter.

6. After completion of the Service Program mode, turn off the power switch to clear the I/O check mode.

Service Program Table

| COUNTER INDICATION | OUTPUT |
| :---: | :---: |
| 0001-0 | Turn on the drum ( 10 rpm ) |
| 0002-0 | Turn on the drum ( 30 rpm ) |
| 0003-0 | Turn on the drum ( 60 rpm ) |
| 0004-0 | Turn on the paper table drive motor (up) |
| 0005-0 | Turn on the paper table drive motor (down) |
| 0006-0 | Turn on the vacuum motor |
| 0007-0 | Turn on the master eject solenoid. |
| 0008-0 | Turn on the master eject clamper opening solenoid. |
| 0009-0 | Turn on the master feed clamper opening solenoid. |
| 0010-0 | Turn on the reversing roller solenoid. |
| 0011-0 | Turn on the paper feed solenoid and the printing pressure solenoid. |
| 0012-0 | Turn on the ink supply solenoid. |
| 0013-0 | Turn on the original transport motor |
| 0014-0 | Turn on the master feed motor |
| 0015-0 | Turn on the fluorescent lamp |
| 0016-0 | Master Process Command (Line/Photo) |
| 0017-0 | Reverse the master eject motor (Turn the eject rollers) |
| 0018-0 | Turn on the master eject motor (Pressure plate up/down) |
| 0019-0 | Turn on the cutter motor (Move it from front to rear ----- 950) (Move it from rear to front ----- 830) |
| 0020-0 | Turn on the cutter motor (Move it from rear to front -----950) (Move it from front to rear ----- 830) |
| 0021-0 | Turn on the image shifting motor to ( + ) direction ----- 950 Turn on the image shifting motor to (-) direction ----- 830 |
| 0022-0 | Turn on the image shifting motor to $(-)$ direction ----- 950 Turn on the image shifting motor to ( + ) direction ----- 830 |
| 0023-0 | Turn on the magnetic counter for paper |
| 0024-0 | Turn on the magnetic counter for master |
| 0025-0 | Turn on the drum reverse rotation relay |
| 0026-0 | Magnification ratio : 100\% (LED ON) |
| 0027-0 | Magnification ratio : 93\% (LED ON) |
| 0028-0 | Magnification ratio: $75 \%$ (120V) (LED ON) |
| 0029-0 | Magnification ratio: $64 \%$ (120V) (LED ON) |
| 0030-0 | Turn on the drum (10 rpm), the paper feed solenoid and the printing pressure solenoid. |
| 0031-0 | Tape marker (option) |
| 0032-0 | Turn on the ADF drive motor |
| 0033-0 | Turn on the ADF original pressure solenoid |

Note: 1) Indication (0001-0 to 0006-0 and 0030-0) are not activated when the safety cover is open.
2) With Indication 0004-0, the paper tray must be in the down position or damage will result.

Service Program Table

| COUNTER INDICATION | INPUT |  |
| :---: | :---: | :---: |
| 0001-1 | SW:Master Eject Detection | (Indicator lights when switch ON) |
| 0002-1 | SW:Pressure Plate Position | (Indicator lights when switch ON) |
| 0003-1 | SN:2nd Original Detection | (Indicator lights when sensor ON) |
| 0004-1 | SN:Original Registration Detection | (Indicator lights when sensor ON) |
| 0005-1 | SN :1st Drum Position Detection | (Indicator lights when sensor ON) |
| 0006-1 | SN:2nd Drum Position Detection | (Indicator lights when sensor ON) |
| 0007-1 | SN:Master Detection | (Indicator lights when master is set) |
| 0008-1 | SN:Master Buckle Detection | (Indicator lights when master appears) |
| 0009-1 | SW:Left Cutter | (Indicator lights when switch ON) |
| 0010-1 | SW:Right Cutter | (Indicator lights when switch ON) |
| 0011-1 | SW:Master Eject Box | (Indicator lights when switch ON) |
| 0012-1 | SW:Full Master Detection | (Indicator lights when switch ON) |
| 0013-1 | SN:Paper End | (Indicator lights when paper is set) |
| 0014-1 | SN:Paper Table Low Limit | (Indicator lights when switch ON) |
| 0015-1 | SN:Paper Table Height | (Indicator lights when sensor ON) |
| 0016-1 | SN:Pressure | (Indicator lights when switch ON) |
| 0017-1 | SN:1st Paper Exit | (Indicator lights when paper exist) |
| 0018-1 | SN:2nd Paper Exit | (Indicator lights when paper exist) |
| 0019-1 | SW:Cover Safety/Drum Detection | (Indicator lights when switch ON) |
| 0020-1 | SN:Color Drum | (Indicator light when color drum is set) |
| 0021-1 | DIP SW-1 (DIP100-1) --- 950 <br> (DIP101-1) --- 830 | (Indicator lights when switch ON) (Indicator lights when switch ON) |
| 0022-1 | DIP SW-2 (DIP100-2) --- 950 <br> (DIP101-2) --- 830 | (Indicator lights when switch ON) (Indicator lights when switch ON) |
| 0023-1 | DIP SW-3 (DIP100-3) --- 950 (DIP101-3) --- 830 | (Indicator lights when switch ON) (Indicator lights when switch ON) |
| 0024-1 | DIP SW-4 (DIP100-4) --- 950 (DIP101-4) --- 830 | (Indicator lights when switch ON) (Indicator lights when switch ON) |
| 0025-1 | DIP SW-5 (DIP100-5) ---- 950 SN:Ink Detecting ------ 830 | (Indicator lights when switch ON) (Indicator lights when ink appears) |
| 0026-1 | SN:Ink Detecting ----------- 950 SN:Thermistor -----830 | (Indicator lights when ink appears) (Indicator lights when Temp. is in Standard) |
| 0027-1 | SN:Thermistor -------------------- 950 Key:Proof 830 | (Indicator lights when Temp. is in Standard) (Indicator lights when key ON) |
| 0028-1 | Key:Proof - ---------------------------- 950 Key:Idling | (Indicator lights when key ON) (Indicator lights when key ON) |
| 0029-1 | Key:Image Shift + | (Indicator lights when key ON) |
| 0030-1 | Key:Image Shift - | (Indicator lights when key ON) |
| 0031-1 | Key:Free Turn | '(Indicator lights when key ON) |
| 0032-1 | Key:Manual cut key | (Indicator lights when key ON) |
| 0033-1 | $\mathrm{SN}: 1$ st Original Detection | (Indicator lights when sensor ON) |

## DESIGNATED AREA CHECK MODE : SS950

The command sheet image (designated area) and the original image can be printed at the same time to check the designated area and the positioning of the image within the designated area as follows:

1) Turn off the power switch.
2) Turn on the power switch while pressing the Make-up Key and the Reset Key.


Turn on the power switch while pressing these keys.
3) Press the Make-up Key ([Fn] is displayed in the counter.)
4) Press the " 8 " key (" 8 " is displayed in the counter.)

5) Set the command sheet and the original on the original table and press the Print Start key to make copies.

* If white paper is used as an original, only the command sheet (the line showing the designate area) is printed.


## Original



Printed image using "Fn 8"


1) The designated areas marked using a pencil are depicted by dashed lines. This is because the line marked using a pencil is low density and thin, therefore the designated area is not recognized as a closed loop even if the line on the command sheet is a closed loop.
Therefore, the designated area can not be memorized.
2) The designated area marked using a black felt-tip pen is printed within the closed loop.
As the line of the designated area on the printed paper is a closed loop, the designated area is memorized.

## TEST PATTERN IMAGE MODE

The purpose of this mode is to distinguish whether the cause of the image problem is located before or after the image processing.

Output image : The normal output of this test pattern image mode is one of the Dither matrix pattern.

Master processing length :
Main scan (Horizontal) direction: Full width of the thermal head

Sub scan (Vertical) direction: Same as the vertical size of the original set on the original table.


This test pattern is generated by the master processing PCB.
If some problems occur on the output image in the test pattern image mode, the cause should exist in area B.

If the output image in the normal mode is incorrect but the output in the test pattern image mode is correct, the cause should exist in area A.

## Operation : (To enter Test Pattern Image mode)

1) Remove the front cover.
2) Turn off the DIP SW 400-7 (DIP SW 400-8: SS830) on the master processing PCB only when the power switch is off.
3) Turn on the main switch.
4) Press the Image Mode key to select photo mode.
5) Set the original on the original table.

Caution: To prevent overheating of the thermal head, make the original as short as possible. Any type of original is suitable as the test pattern being used is in the master processing PCB memory.
6) Press the Master Making key (Start key: SS830).

After these operations, the machine begins master processing and printing.
If detail confirmation is required, use facsimile thermal paper instead of master roll and check the out put with a magnifying glass.

Caution: To prevent overheating of the thermal head, do not continuously operate this test pattern image mode.
7) After completion of the Test Pattern Image mode, turn on DIP SW 400-7 (DIP SW 400-8: SS830).

## Adjustment and Disassembly

## EXTERIOR COVER REMOVAL



When adjusting or disassembling each section, refer to the following procedure of how to remove the exterior cover:
[A] Master feed unit cover (2 screws "a":SS950, "b": SS830). Slide the scanner unit to the left.
[B] Front cover (6 screws).

* Remove the master feed unit cover [A] to remove the upper right screw. Open the front door to remove the front screws.
[C] Rear cover (6 screws).
[D] Operation panel cover ( 6 screws).
* Remove the front cover $[\mathrm{B}]$ to remove the operation panel cover.
[E] Front and rear fluorescent lamp covers (2 screws each).
[F] Master eject cover (2 screws).

[G] Front and rear original table frames (3 screws each).
* Remove the operation panel cover [D] and the rear cover [C] to remove the front and rear original table frames.
[H] Original table (6 screws).
* Remove the front and rear original table frames [G] to remove the original table.

Note: When installing the original table, make sure both original guides [J] are set in the same position in the grooves (see illustration).
[I] Original table cover (3 screws).

* Slide the scanner unit to the left.


## ORIGINAL FEED SECTION

## <Adjustment>

## 1. Adjusting The Tension of The Original Feed Roller Drive Belt



Purpose : To ensure proper original feed.
Method : 1. Remove the rear cover of the fluorescent lamp.
2. Using a tension gauge, apply a 110-gram load at the center of the belt [A]. Make sure that the belt deflects 2 to 3 mm .
3. If not, loosen the mounting screws [B] of the original feed motor [C] and adjust belt tension by moving the original feed motor.
4. Using a tension gauge, apply a 110-gram load at the center of the belt [F]. Make sure that the belt deflects $1.1 \pm 0.2 \mathrm{~mm}$.
5. If incorrect, loosen the mounting screw [D] and adjust belt tension by moving the belt tensioner [E].
6. After adjustment, retighten the mounting screws.

## 2. Adjusting The Original Pressure Solenoid



Purpose : To ensure that the originals are separated properly.
Method: 1. Remove the screw securing the stopper [A].
2. Remove the platen plate $[B]$.
3. Remove the original guide [C].
4. Remove the ADF unit cover [D] (5 screws).
5. Remove hook springs [E].
6. Remove the separation guide plate [F].
7. Adjust the original pressure solenoid [G] and position it so that the space between the E-ring and the rubber cushion is 6.0 to 6.5 mm when the solenoid is turned off.

## <Disassembly>

## 1. Exposure Glass



1) Move the scanner unit to the left.
2) Open the ADF unit $[A]$.
3) Remove both fluorescent lamp covers.
4) Remove both exposure glass leaf springs [B].
5) Carefully remove the exposure glass [C].

## 2. Exposure Lamp / Heater: SS950



1) Move the scanner unit to the left.
2) Remove the front fluorescent lamp cover.
3) Disconnect the 4 P heater connector $[B]$.
4) Remove the front fluorescent lamp holder $[A]$.
5) Carefully remove the fluorescent lamp [C] so that it does not contact the exposure glass.
6) Remove the heater [D] from the fluorescent lamp.

7) Move the scanner unit to the far left.
8) Remove the fluorescent lamp cover.
9) Turn the fluorescent lamp $90^{\circ}$.
10) Remove the fluorescent lamp holder $[A]$.
11) Carefully remove the fluorescent lamp so that it does not contact the exposure glass.

## 3. Original Registration Sensor / 2nd Original Sensor


< Original Registration Sensor >

1) Remove the DF unit stoppers [A]. (If equipped)
2) Remove the exposure glass (2 spring plates).
3) Remove the fluorescent lamp.
4) Remove the screws securing the locking arms.
5) Remove the guide plate $[B]$.
6) Disconnect the original registration sensor connector [G].
7) Remove the sensor with the securing plate [F].
8) Remove the original registration sensor $[\mathrm{H}]$ from the securing plate.
<nd Original Sensor>
9)     - 5) procedures are the same as above.
1) Remove the original table. (see letter $[\mathrm{H}]$ under exterior cover removal section).
2) Remove the 2nd original sensor feeler.
3) Disconnect the End original sensor connector [D].
4) Remove the and original sensor [E].

## 4. 1st Original Sensor :



1) Remove the screw securing the stopper [A].
2) Remove the platen plate $[B]$.
3) Remove the original guide [C]
4) Remove the ADF unit cover [D] (5 screws).
5) Remove hook springs [E].
6) Remove the separation guide plate $[F]$
7) Remove the separation blade assembly $[H]$.
8) Disconnect the 1st original sensor connector [I].
9) Remove the sensor from the sensor bracket.

## 5. Original Feed Rollers / Pull-out Rollers :



1) Remove the original table.
2) Replace the pull-out rollers [A] (1 snap ring, 1 pin).
3) Remove the E-rings at the both end original feed roller shaft $[B]$.
4) Remove the ADF drive gear [C] and bushing (Front).
5) Remove the original feed roller assembly [D].
6) Remove the stopper [E] (hexagonal screw).
7) Replace the original feed rollers [F].

Note: A one way cutch is installed in the feed roller. Confirm that the roller can rotate in the arrow direction as shown in the above illustration.

## SCANNER SECTION

## <Adjustment>

## 1. Optical Adjustment

Double check all optical component adjustments, because these adjustments influence each other.

The following table shows the reciprocal relationship between adjustment procedures. When the adjustment procedures in the vertical section are performed, the indicated adjustment procedures in the horizontal section should also be done.

| Check Item <br> Adjustment Item | Output of White Level | Shading | Scan Line Position | Reading Start Position of Main Scan | Focus <br> (MTF) | $\begin{gathered} \text { Reduction } \\ \text { Ratio } \\ \text { (Moire) } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Output of White Level |  |  |  |  |  |  |
| Shading | $\bigcirc$ |  |  |  |  |  |
| Scan Line Position | $\bigcirc$ | $\bigcirc$ |  |  |  |  |
| Reading Start Position of Main Scan | $\bigcirc$ | $\bigcirc$ | $0$ |  |  |  |
| Focus (MTF) |  |  |  |  |  | $\bigcirc$ |
| Reduction Ratio (Moire) | $0$ | $\bigcirc$ | $0$ | $\bigcirc$ | $\bigcirc$ |  |

* Necessary Tools

1) Facsimile Test Chart R-21 (P/N 99992131)
2) Oscilloscope using the 1 volt scale:
$950=3 \mathrm{~ms}$
$830=10 \mathrm{~ms}$

* Preparation for Adjustment

1) Remove the original table cover
2) Connect the terminals of the oscilloscope to the following test pins on the $A / D$ conversion PCB.

3) Turn on the power switch while pressing the Print Start key (Start key: SS830), Stop key and Clear key on the operation panel.
4) Set " 15 " in the copy counter and set " 0 " in the mode display to turn on the fluorescent lamp only.

$B \geqq 0.6 A$

* The middle of the wave form should be higher than the ends.

Purpose: To flatten the white level wave form. This also, corrects for distortion to the light intensity due to the output characteristics at both lamp ends and aberrations within the lens section.

Method : 1. Remove Receiving Plate [D] P/N C2033020
2. Close the scanner unit [A]
3. Press the Print Start key (Start key: 830) to turn on the fluorescent lamp.
4. Confirm that the above white level wave form is displayed:
5. If incorrect, move the shading plate [B] position vertically (up or down), so that the wave form is similar to the one above.
6. After adjustment, retighten the mounting screws [C] of the shading plate [B].


Purpose : To ensure that CCD alignment is perpendicular to the original feed direction.
Method: 1. Set the test chart so that the black line is positioned 16 mm away from the edge of the lower original guide plate as shown on the next page.
2. Press the Print Start key (Start key: SS830) to turn on the fluorescent lamp and confirm that the wave form is similar to the above illustration:
3. If incorrect, loosen the mounting screw [B] fixing adjusting knob [A] and the mounting screw [C] of the CCD board and adjust the CCD position.
4. Tighten the mounting screws $[B]$ and $[C]$. Then reconfirm the wave form.

[A]


Purpose : To align the center of the original with the center of the CCD so that the center of original image is positioned in the center on the master.

Method : 1. Open the upper original guide unit $[B]$.
2. Set the test chart so that the center line, located at the leading edge of the test chart, is positioned above the original leading edge sensor actuator [A].
3. Close the upper original guide unit $[B]$.
4. Press the Print Start key (Start key: SS830) to turn on the fluorescent lamp and feed the test chart.
5. Stop feeding the test chart when it is possible to read both lines [E], and confirm that the distance "L" is the same as "I".
6. If incorrect, loosen the mounting screws [C] of the CCD board [D] and adjust the CCD horizontal position.
7. After adjustment, retighten the mounting screws [C].


* $\begin{aligned} \frac{B}{A} \times 100 & \geqq 48 \%----S S 950 \\ \frac{B}{A} \times 100 & \geqq 40 \%---S S 830\end{aligned}$
* Amplitude "B" (difference between white and black levels) must be a minimum.

Purpose : To focus the lens (focal distance between the CCD and the lens)
Method : 1. Position the test chart so that the 8 -lines $/ \mathrm{mm}$ section on the test chart can be read.
2. Press the Print Start key (Start key: SS830) to turn on the fluorescent lamp.
3. Confirm that the wave form is similar to the above illustration:
4. If incorrect, loosen the allen screw [A] and adjust the lens position [B] by moving it as shown by the arrow.
5. After adjustment, retighten the allen screw [A].

## 1-5. Adjusting The Reduction Ratio (Moire Adjustment)



- : Lower cross points $\leqq 8$-- SS830

Lower cross points $\leqq 6$---SS950

Purpose: To adjust the focus (to set distance between the lens and the original)
Method : 1. Position the test chart so that the area containing 8 lines $/ \mathrm{mm}$ on the test chart can be read.
2. Press the Print Start key (Start key : SS830) to turn on the fluorescent lamp.
3. At the same time, confirm that the wave form is similar to the above illustration.
4. If incorrect, loosen the mounting screws [A] and adjust the lens block [B] position as indicated by the arrows.
5. After adjustment, retighten the mounting screw [A].


$$
\begin{array}{rl}
\mathrm{A}: 2 & 2.0 \pm 0.1 \mathrm{~V}---\mathrm{SS} 950 \\
1.9 & \pm 0.1 \mathrm{~V}--\mathrm{SS} 830
\end{array}
$$

Purpose : To set the white level so that the background of the test chart is not copied.
Method : 1. Position the test chart so that the background area (white area) of the test chart can be read.
2. Press the Print Start key (Start key: SS830) to turn on the fluorescent lamp.
3. Adjust VR 600 on the A/D conversion PCB so that the maximum level is $2.0 \pm$ $0.1 \mathrm{~V}(1.9 \pm 0.1 \mathrm{~V}$ : SS830).


Purpose: To ensure that the image magnification lengthwise is $100 \% \pm 0.5 \%$ when using the full size mode.

Method : 1. Press the Full Size (100\%) key.
2. Make prints of the test chart.
3. Make sure that the image length is $100 \% \pm 0.5 \%$ by comparing the prints with the test chart.
4. If the prints are not within specification, open the front cover of the machine and adjust the magnification ratio using DIP SW400 on the master processing board.
< DIP SW / Correction Ratio >

|  | DIP 400-1 | DIP 400-2 | DIP 400-3 | $\frac{\text { Zoom }}{\text { Ratio }}=\frac{\text { (Length of Test Chart) }}{\text { (Length of Print Image) }} \times 100$ |
| :---: | :---: | :---: | :---: | :---: |
|  | OFF | OFF | OFF | $100 \%$ |
|  | OFF | ON | OFF | $99.25 \%$ |
|  | OFF | OFF | ON | $98.77 \%$ |
| Enl $:$ | OFF | ON | OF | ON |
|  | ON | ON | OFF | $98.25 \%$ |
|  | ON | OFF | OF | $100 \%$ |
|  | ON | ON | ON | $100.75 \%$ |

Enl : Enlargement

## IMAGE SHIFTING SECTION

<Adjustment>

## 1. Adjusting The Mounting Position of The Encoder



Purpose: To ensure that the image is positioned in the middle when the Image Shifting key is set at the center " 0 ".

Method : 1. Remove the rear cover of the machine.
2. Turn on the power switch and press the "-" Image Shifting key to shift the position to the maximum backward position ("-2" position ). After that, press " + " Image Shifting key to shift the position to the center (when the " 0 " position LED lights).
3. Make sure that it is possible to insert the image shifting position gauge [A] to confirm gear alignment and, therefore, the image shifting position.
4. If necessary, adjust the gear alignment as follows after removing the encoder [B]:

Caution: Adjust the encoder position after removing the connector [F] of the image shift motor.
a) Disconnect the connector [C] of the encoder.
b) Insert the gauge $[A]$ into the hole of the gear [D].
c) Turn on the LED "-2" of the Image shift indicator on the operation panel. Then gradually turn the shaft of the encoder [B] in the " 0 " position direction and stop it as soon as the " 0 " position LED lights.
d) In the above condition, set the encoder $[B]$ and tighten the allen screw [E] to mount the shaft of the encoder [B] with the gear [D]. Then remove the gauge [A] and connect the connector [F] of the image shift motor.
e) After adjustment, make prints to confirm the image position.

## MASTER FEED SECTION

## <Adjustment >

1. Adjusting The Thermal Head Voltage


Purpose : To maintain master making quality and extend the life of the thermal head.

NOTE: This adjustment is always required when the thermal head or power supply PCB is replaced. At no other time should this adjustment be used.

Method: 1. Remove the rear cover of the machine.
2. Check the voltage noted on the decal, located on the thermal head. (The voltage varies according to the individual thermal head.)
3. Disconnect CN-504 of the power supply PCB [A].
4. Place the master between the platen roller and the thermal head to protect the thermal head.
5. Set the original and press the Start key. Press the Stop key when the master making process starts.
6. Confirm that the voltage between pin 1 and pin 4 of $\mathrm{CN}-504$ is the correct voltage (within ${ }_{-0.1}^{0} \mathrm{~V}$ ) as shown on the decal.
7. If it is not, adjust VR201 (VR1: SS830) on the power supply board.

## 2. Adjusting The Belt Tension



Purpose: To ensure that correct master feed motor rotation is transmitted to each roller.

Method : <Platen Roller Drive Belt [A]>

1. Remove the plotter unit from the machine.
2. Using a tension gauge, apply a 110-gram load to the center of the belt [A]. Make sure that the belt deflects 1.2 to 1.8 mm .
3. If incorrect, adjust the belt tension by raising or lowering the master feed motor [B].
<Feed Roller Drive Belt [C]>
4. Using a tension gauge, apply a 110-gram load to the center of the belt [C]. Make sure that the belt deflects 2.2 to 3.7 mm .
5. If incorrect, loosen the nut [D] and adjust the belt tension by raising or lowering the tensioner [E].

## 3. Adjusting The Right and Left Cutter Switches



Purpose : To ensure that the cutter slider stops properly.
Method : 1. Remove the cutter unit
2. Remove the cutter unit cover.
3. After moving the cutter slider [A] fully to the left, make sure that the left cutter switch $[B]$ is turned on and that the switch stroke [C] is 0.1 to 0.5 mm . Also, make sure that the right cutter switch [D] is actuated in the same fashion.
4. If incorrect, loosen the mounting screws [E] and adjust the switch position.


Purpose : To ensure proper operation of the reverse roller clutch.
Method: 1. Remove the master processing unit.
2. Adjust the solenoid [A] position so that there is 0.5 to 1 mm clearance between the stopper [B] and the gear [C] when the solenoid is energized.

## 5. Adjusting The Thermal Head: SS830



Purpose : To ensure correct master feed so that the image does not become wrinkled or skewed.

Method : 1. Tighten the locking screws [A] of the platen roller.
2. Remove the front cover of the machine.
3. Loosen the mounting plate screw $[\mathrm{B}]$ and raise the thermal head mounting plate to the platen roller so that equal pressure is applied on both ends. Then, retighten the mounting plate screw. (The mounting plate screw is accessed through a hole in the side plate.)

* Cut about a 30 millimeters wide strip from the master roll to make a test sheet. Insert the test sheet between the platen roller [D] and the thermal head [C]. Confirm that it requires the same amount of force to draw out the test sheet from both ends.

4. After adjusting, confirm that the master is fed correctly without becoming wrinkled or skewed.

Note: When moving the mounting plate [E].

* If the image on the operation side is lighter, raise the mounting plate.
* If the image on the non-operation side is lighter, lower the mounting plate.


## < Disassembly >

1. Cutter

1) Slide the scanner unit to the left.
2) Disconnect the 6P connector $[A]$.
3) Remove the cutter unit [B] (2 screws).
4) Remove the cutter cover [C] (4 screws).

* When moving the cutter motor, be careful not to damage the cutter.

5) Remove the cutter [D] (1 nut).

* When reassembling, move the cutter motor to the home position (operation side end) before the cutter cover is installed.


1) Slide the scanner unit to the left.
2) Remove the master paper.
3) Remove the cutter unit $[A]$.
4) Disconnect the buckle sensor connector [B].
5) Remove the buckle sensor together with the bracket [C].
6) Remove the buckle sensor [D] from the bracket.

7) Lift the lever and slide the scanner unit to the left.
8) Remove the master material.
9) Remove the thermal head cover [A] (3 screws).
10) Remove the platen roller $[B]$.
11) Disconnect the thermal head connectors [C].
12) Remove the thermal head [D] (2 screws).


Do the following after the plotter unit, the cutter unit, and the platen roller unit have been removed.

1) Remove the bottom plate of the unit (6 screws).
2) Unplug the 3 connectors $[A]$.
3) Remove the 2 springs $[B]$.
4) Remove the adjusting plate [C] (1 screw, 1 E-ring).
5) Remove the thermal head unit [D] (2 E-rings).
6) Remove the guide plate [E] (2 screws).
7) Disconnect the 5 connectors [F].
8) Remove the thermal head [G] (4 screws).
9) Remove the screw $[\mathrm{H}]$ (1 screw).

Note: After replacement, ensure correct master feeding by following Adjusting the Thermal Head: SS830 procedure.

## 4. Thermal Head Control Board



1) Remove the master processing unit.
2) Remove the bottom plate $[\mathrm{A}]$ of the master processing unit.
3) Disconnect the 5 connectors (a to e).
4) Remove the control board [B] (6 screws).

Note: Refer to the Thermal Head Removal procedure of the SS830.

## MASTER EJECT SECTION

<Adjustment >

1. Adjusting The Master Eject Solenoid


Purpose : To ensure that the master is ejected.
Method : 1. Open the master eject unit and remove the upper cover of the master eject unit (4 screws).
2. Confirm that the lower first eject rollers [B] are touching the drum surface by enabling I/O check No. 7 (Output Mode) [A] and also confirm that they are separated from the drum when releasing the plunger.
3. If it is out of adjustment, loosen the screws [C] and adjust the mounting position of the master eject solenoid [A].
4. After adjustment, retighten the screws [C].

Note: To easily confirm whether the lower roller touches the drum surface, wrap the drum with the blank paper, and check the paper for roller marks.

## 2. Adjusting The Pressure Plate Position Switch



Purpose: To ensure that the pressure plate stops at the proper position.
Method : 1. Open the master eject unit and remove the front cover of the master eject unit.
2. Turn the gear $[A]$ and position the pressure plate $[B]$ at the maximum height.
3. Confirm that the distance between the switch [E] and lever [D] is 0.1 to 0.5 mm when the lever edge [D] is positioned in the ditch on the cam [C] bottom.

Also, confirm that the switch turns off when the lever edge [D] is not positioned in the ditch on the cam [C] bottom.
4. If it is out of adjustment, loosen the screws [F] and adjust the mounting position of the pressure plate position switch [E].

## 3. Adjusting The Full Master Switch



Purpose: To ensure that the full master detecting switch turns on when the master eject box is filled to capacity with ejected masters.

Method : 1. Open the master eject unit and remove the front cover of the master eject unit.
2. Turn the motor gear $[A]$ and position the pressure plate at its lowest position. Then, turn the gear further so that the arm [B] turns on the full master switch [D].
3. Confirm that the distance between the switch [D] and the switch actuator [C] is 0.1 to 0.5 mm when the full master switch turns on.
4. If it is out of adjustment, loosen the screws [E] and adjust the position of the full master detecting switch [D].
5. Tighten the mounting screws [E].

## < Disassembly >

## 1. Master Eject Unit


[B]

1) Remove the master eject unit cover [A] (2 screws).
2) Disconnect the connector [B].
3) Remove the E-ring [C] to pull out the shaft.
4) Carefully remove the master eject unit.

## 2. Master Eject Belt/Roller



1) Remove the 2 springs $[A]$ on both sides.
2) Remove the upper shaft $[B]$ (2 E-rings).
3) Remove the lower shaft [C] (2 E-rings).
4) Remove the gear $[D]$ (1 E-ring).
5) Remove the gear [E] (1 Hexagon Headless Set Screw).
6) Remove the gear [F] (1 E-ring).
7) Remove the E-rings [G] to pull out both upper $(30 \varnothing)$ and lower rollers $(20 \varnothing)$ as a set.
8) Remove the Angle $[\mathrm{H}]$.
9) Remove the Plate [I].
10) Remove the Belts [J].
11) Remove the Rubber Rollers $(30 \varnothing, 20 \varnothing)[K]$.

## PAPER FEED SECTION

<Adjustment >

## 1. Adjusting The Paper Table Safety Switch



Purpose: To ensure that the paper table safety switch turns on to prevent the paper table from going up when the paper table is closed.

Method : 1. Make sure that the safety switch [A] turns off when the paper table is opened and that the safety switch [A] turns on when the paper table is closed. Also, make sure that the distance between the actuator [B] and the safety switch [A] is 0.3 mm to 0.5 mm when the switch turns on.
2. If incorrect, loosen the screw [C] and adjust the switch bracket position.
3. After adjustment, repeat step 1 again.
4. Also, make sure that the safety switch [A] does not turn on when 1,000 sheets of standard weight paper are placed on the paper table.


Purpose : To ensure smooth paper feed.
Method : 1. Set the paper feed pressure adjusting lever to the upper position.
2. Remove the front cover of the machine.
3. Turn on the power switch while pressing the Print Start key (Start key: SS830), Stop key and Clear key on the operation panel.

- Enter " 0 " in the memory display and " 4 " in the copy counter.

4. Press the Print Start key (Start key : SS830) to raise the paper table.
5. After the paper table stops, insert a scale into the slot at the end of the paper table. Make sure that the distance between the lower stay [A] and the upper face of the table is 147.5 to 148.5 mm .
6. If not, loosen the screw [B] and adjust the position of the actuator [C].
7. After adjustment, repeat step 5 again by lowering and raising the paper table several times.

Note: When mounting the actuator, make sure that the actuator [C] does not contact the paper table height sensor [D].


Purpose : To ensure that the paper feed roller exerts sufficient pressure for smooth printing paper feed (weight range 14 lb to 65 lb ).
<Step 1 >
Method: 1. Loosen the screw [C] securing the lower adjusting plate [B].
Note: When loosening the screw [C], hold the lower adjusting plate [B] in the original position for fine adjustment.
2. Adjust the paper feed roller pressure by moving the lower adjusting plate [B] up/down.

Up : Increase the pressure
Down: Reduce the pressure

<Step 2 > This procedure should only be used when the proper pressure cannot be achieved in step 1.

Method: 1. Stack about 100 sheets of 20 lb . paper on the paper table. Lift up the paper table until it stops automatically.
2. Set the paper feed roller pressure adjusting lever in the upper position.
3. Remove the front cover, the main board, the master processing board, and make-up board. ----- 950 only
4. Remove the master feed unit.
5. Align the lower adjusting plate notch with the center notch of the link [D] and tighten the screw [C].
6. Hook a tension gauge (500-gram range) to the paper feed roller shaft [E] and insert a test sheet between the paper feed roller and the sheets of paper. Then hook a tension gauge (100-gram range) to the test sheet and apply a 100-gram load. In the above condition, gradually pull up the tension gauge hooked to the shaft and make sure that the test sheet can be pulled out when the tension gauge shows $250 \pm 5$ grams.
7. If not, adjust the pressure by moving the mounting position of the shaft [F].


Purpose: To ensure a smooth paper feed excluding paper jams, folds, or wrinkles.
Method : 1. Make sure that the distance between the lower guide plate [A] and the lower second feed roller $[B]$ is 0 to 0.1 mm as shown.
2. If incorrect, remove both front and rear covers and loosen the screw [C]. Then, adjust the distance by turning the eccentric nut [D].
3. After adjustment, retighten the screw [C].

## 5. Adjusting The Upper Second Feed Roller



Purpose: To ensure that paper is fed between the drum and the press roller without skewing.

Method : 1. Remove both front and rear covers.
2. Move the second feed roller sector gear fully clockwise, so that the upper second feed roller $[A]$ contacts the lower second feed roller.
3. Make sure that the clearance between the bushing [B] and the bushing supporter [C] is 0.05 to 0.1 mm as shown.
4. If incorrect, loosen the screw [D] and adjust the clearance by moving the bushing supporter.
5. After adjustment, make sure that the feed length of the second feed roller is correct. (The feed length varies with the position of the bushing supporter.)

## 6. Adjusting The Feed-Length of The Paper Feed Roller



Purpose : To ensure paper feed to the second paper feed roller.
Method: 1. Stack about 100 sheets of 20 lb . paper on the paper table.
2. Set the paper feed roller pressure adjusting lever in the upper position.
3. Remove both front and rear covers.
4. Turn on the power switch while pressing the Print Start key (Start key: SS830), Stop key and Clear key on the operation panel.

- Enter " 0 " in the memory display and " 4 " in the copy counter.

Then press the Print Start key (Start key : SS830) to raise the paper table to the correct position.
5. Turn on the paper feed solenoid [A] manually. Then, turn the rollers counterclockwise by rotating the shaft $[B]$ with a spanner $(8 \mathrm{~mm})$.
6. Measure the length of paper fed from the time the paper feed roller starts rotating until it stops rotating. This feed-length should be 93 to 97 mm .
7. If the feed-length is incorrect, adjust the feed-length by loosening the hexagon nut [C] mounted on the sector gear. Then, shift the bearing [D] up or down.
8. After adjustment, repeat steps 5 and 6 again.

## 7. Adjusting The Clearance of The Paper Feed Sector Gear Stopper



Purpose: To ensure that the paper feed roller starts rotating when the paper feed solenoid turns on and stops rotating when the paper feed solenoid turns off.

Method : 1. Remove the rear cover (6 screws).
2. With a ( 10 mm ) open end wrench, gradually rotate the shaft ( $A$ ) counterclockwise until the cam follower of the sector gear (B) is at the high lobe of the cam (F).
3. Make sure that the overthrow clearance between the latching plate (C) and the sector stopper (D) is 0.1 to 0.3 mm (Fig. 1).
4. If the overthrow clearance is incorrect, loosen the two Allen screws (E) and adjust the clearance by shifting the latching plate (C) left to increase or right to decrease.
5. Manually depress the plunger of the paper feed solenoid (G), and confirm the clearance between the latching plate (C) and the sector stopper (D) is 0.1 to 0.5 mm (Fig. 2).
6. If the clearance is incorrect, loosen the screws (H) on the solenoid bracket $(\mathrm{G})$ and adjust by shifting the paper feed solenoid bracket (G) up or down.

## 8. Adjusting The Clearance of The Second Feed Roller Sector Stopper



Purpose: To ensure that the second feed roller starts rotating when the paper feed solenoid turns on and stops rotating when the paper feed solenoid turns off.

Method : 1. Remove the rear cover (6 screws).
2. With a ( 10 mm ) open end wrench, gradually rotate the shaft ( $A$ ) counterclockwise, until the cam follower of the second paper feed sector gear $(B)$ is at the high lobe of the cam (E).
3. Make sure that the overthrow clearance between the latching plate (C) and the sector stopper ( D ) is 0.1 to 0.3 mm .
4. If the overthrow clearance is incorrect, loosen the two allen screws ( F ) and adjust the clearance by shifting the latch plate (C) right to increase or left to decrease.


Purpose : To ensure paper feed between the drum and the press roller.
Method : 1. Stack about 100 sheets of 20 lb . paper on the paper table.
2. Set the paper table in the paper feed position. (Use I/O Check mode 00040 as following the step 4 on next page.)
3. Remove the drum unit and the rear cover from the machine.
4. Turn on the paper feed solenoid and gradually turn the drum rotation shaft to feed paper by rotating the drum rotation shaft $[A]$ with a ( 10 mm ) open end wrench.
5. Measure the paper feed length from the time the second feed roller [B] starts rotating until it stops rotating. This feed length should be $85 \pm 5$ mm.
6. If it is not, adjust the feed length by loosening the screw [C] and by shifting the second feed roller cam [D] up or down.
7. Check adjustment by repeating steps 4 and 5 .
8. Re-install drum and run at least 50 copies to test.
8. Looking through the drum cavity, identify the 2 hex head bolts (D) that can be seen through holes provided on the rear side main frame. This is located on the right side of the drum drive gear.
9. Using an 8 mm socket and a ratchet wrench, loosen the 2 hex head bolts.

- Image too high

Turn secondary cam CCW

- Image too low

Turn secondary cam CW
After slightly moving the cam in the proper direction, tighten 1 bolt and be sure to remove the wrench.
10. Reference the drum drive gear to " 9 o'clock" and insert the drum. Clear I/O \#1, key in \#4 and lift the PF table to feed level.
11. Clear I/O \#4 and key in \#30. Feed 2 sheets and confirm that the image position is within reasonable tolerance with the original.
12. IMAGE POSITION IS INCORRECT

Clear I/O \#30 and key in \#1. Reference the drum assembly with the 1st drum sensor, remove the drum and repeat steps 6 through 10.
13. IMAGE POSITION IS CORRECT

Clear I/O \#30 and key in \#1. Reference the drum assembly with the 1st drum sensor. Remove the drum, repeat steps $6 \& 7$, then tighten the 2nd hex head bolt and be sure to remove the wrench.
14. Once fully adjusted, reference the drum drive gear to " 9 o'clock". Clear I/O \#1 and key in \#5 to lower the PF table; reinsert the drum; turn the main SW OFF; reset the DIP SW; install the plotter section and make a trial run by repeating step 1. If satisfactory, install the side cover.

## 10. Ádjusting The Feed Timing oí The Second Feed Roilier



Purpose: To ensure paper feed by regulating the start timing of the second feed roller.
CAUTION: This 14 step procedure makes extensive use of the I/O MODE. Before setting things in motion, ensure that proper clearance exists. MAIN SW ON,, the image shift "encoder" is automatically referencing the image registration to mid-position.

Method: 1. Stack about 100 sheets of mimeo paper on the table.
2. Key in 10 copies, feed an original to start up and run a new job. (DO NOT touch the image registration keys.)
3. After the job has been run, lower the PF table; turn the main SW OFF; remove the drum, the front and back cover; remove the plotter section assembly and reinsert the drum.
4. Change DIP SW setting

- SS950: DPS 101-1 to ON position
- SS830: DPS 101-6 to ON position

Main SW ON and activate the I/O MODE. Select " 0 ", (output) key in \#4 and lift the PF table to feed level.
5. Clear I/O \#4 and key in \#30. Feed 2 sheets to confirm that the image height registration is the same as the job previously run. Clear I/O \#30 and key in \#5 to lower the PF table.
6. Clear I/O \#5 and key in \#1. Reference the drum assembly with the 1st drum sensor and remove the drum.
7. Reference the secondary PF cam to HIGH position, providing overthrow clearance to the sector gear assemblly. Manually activate the PF sol. while depressing the "print start" to reference the secondary PF cam to maxi. LOW. (Watch your fingers as the sector gear moves.)
NOTE: When covering this procedure for the 1st time, it is recommended to clearly mark the side cam with a pen or white-out fluid while in maxi. LOW position.

## 1. Paper End Switch



1) Raise the paper table

Turn on the power switch while pressing the Print Start key (Start key : 830), Stop key, and Clear key on the operation panel.

- Enter " 0 " in the memory display and " 4 " in the copy counter.

Press the Print Start key (Start key : 830) to raise the paper table to the paper feed position.
2) Unplug the connector $[A]$.
3) Cut the harness tie wrap $[B]$.
4) Remove the paper end switch ass'y [C].


1) Remove the left clamper [A].
2) Remove the left bushing [B].
3) Remove the paper feed roller shaft [C].
4) Remove the 2 paper feed rollers [D].

5) Remove 2 hexagon screws [A].
6) Remove the clampers [B].
7) Remove the upper separation roller/paper feed roller unit from the machine by sliding the shaft to the rear.

## 4. Upper Separation Roller

* Perform the following procedure after removing the paper feed roller/upper separation roller unit.


1) Remove the paper guide disk [A].
2) Remove the upper separation roller [B].


## Separation Plate

1) Remove the separation plate [A] with the spring [B] located under the separation plate $[A]_{\&}$ (1 screw).

## Lower Separation Roller

Perform the following procedure after removing the paper feed roller/upper separation roller unit.

1) Remove the front plate [C] of the paper feed section (4 screws).

Lift up then pull out horizontally.
2) Remove the spring [D] hooked on the separation lever [E].
3) Remove the separation lever [E].
4) Remove the lower separation roller shaft [F].
5) Remove the lower separation roller [G] (Allen screw).

## PRINTING SECTION

<Adjustment>

## 1. Adjusting The Clearance of The Paper Detecting Arm



Purpose: To ensure that printing pressure is applied during paper feed, and is released correctly afterwards.

Method: 1. Remove the rear cover of the machine (6 screws).
2. Using a ( 10 mm ) open end wrench, gradually turn the drum rotation shaft counterclockwise to position the bearing of the pressure release arm [B] on the top of the pressure cam [A].
3. Make sure that the overthrow clearance between the paper detecting arm [C] and the pressure release arm $[B]$ is 0.2 to 0.4 mm .
4. If incorrect, loosen the screw [D] and adjust the clearance by shifting the paper detecting bracket [E] up or down.
5. After adjustment, confirm the printing pressure ON/OFF mechanism by monitoring a print run.

## 2. Adjusting The Distance Between The Press Roller and The Drum



Purpose: To ensure that the press roller does not contact the clamper section of the drum.

Method : 1. Remove the rear cover of the machine (6 screws).
2. Using a $(10 \mathrm{~mm})$ open end wrench, turn the drum rotation shaft counterclockwise and position the bearing of the pressure release arm [A] on top of the pressure cam [B].
3. While holding this condition, make sure that the distance between the press roller [C] and the tip of the clamper [D] is 0.6 to 1.0 mm .
4. If incorrect, loosen the hexagon nut [E] and adjust the clearance by turning the screw [F].

## 3. Adjusting The Pressure Timing



Purpose: To ensure that the maximum printing area is within specifications, and that the ink does not stain the trailing edge.

Method: 1. Stack about 100 sheets of 20 lb . paper on the table.
2. Set the paper feed roller pressure lever in the upper position.
3. Remove both front and rear covers of the machine.
4. Set the paper table in the paper feed position.

Turn on the power switch while pressing the Print Start key (Start key: SS830), Stop key and Clear key on the operation panel.

- Enter " 0 " in the memory display and " 4 " in the copy counter.

Then press the Print Start key (Start key : SS830) to raise the paper table to the correct position.
5. Set the Image Shifting indicator at " 0 " position, and turn the drum to the correct position for replacement.
6. Set a protractor on the image shifting shaft [A].

* Position the origin of the protractor at the bracket of the master feed clamper solenoid.

7. Using a $(10 \mathrm{~mm})$ open end wrench, turn the drum rotation shaft counterclockwise while pressing in the plunger of the paper feed solenoid and the printing pressure solenoid.
8. Turn the drum rotation shaft a little further, and stop it when the press roller begins to contact the drum surface.
9. In the above condition, measure the degrees turned, this should be 230 to 231 degrees.
10.If incorrect, loosen the screw [B] of the pressure cam [C] and adjust by turning the pressure cam [C].


Purpose: To make better print results without decreasing the run length.
Method : 1. Remove the rear cover of the machine (6 screws).
2. Adjust the clearance $[A]$ to 6 mm by turning the adjusting bolt $[B]$.

NOTE: This procedure should be used only as a last resort. Technicians should avoid making this adjustment whenever possible.

## 5. Adjusting The Clearance of The Printing Pressure Stopper



Purpose : To ensure that printing pressure stopper is released when paper feed start, and is locked within one drum rotation when a paper jam occurs.

Method: Perform this adjustment after adjusting the clearance of the paper detecting arm.

1. Lock the paper detecting arm [B] on the printing pressure ON/OFF lever [A] by rotating the drum shaft with a $(10 \mathrm{~mm})$ open end wrench.
2. Confirm that the overthrow clearance between the printing pressure ON/OFF lever $[A]$ and the printing pressure stopper [C] is 0.1 to 0.7 mm . Also confirm the smooth movement of the printing pressure stopper by manually moving the printing pressure solenoid.
3. If incorrect, loosen the screws [D] and [E] and adjust the clearance by moving the bracket [F].
4. Manually press in the plunger of the printing pressure solenoid. At this time release the paper detecting arm manually by rotating the drum rotation shaft with a ( 10 mm ) open end wrench.
5. Confirm that the clearance $[I]$ is 1 to 2 mm .
6. If incorrect, loosen the hexagon head screws [H] and adjust the clearance [I] by moving the printing solenoid [G].

1) Remove a screw $[A]$.
2) Remove the holding plate [B].
3) Remove the press roller.
4) Remove both right and left bearings [C] (2 E-rings).

## DRUM SECTION

## <Adjustment>

## 1. Adjusting The Main Drive Belt Tension



Purpose : To ensure that the correct main motor rotation is transmitted to the drum.
Method: 1. Remove the rear cover of the machine (6 screws).
2. Apply a 1000-gram load using a tension gauge to the center of the main drive belt [A]. Make sure that the belt deflects 1.5 mm .
3. If incorrect, remove the drum unit and adjust the belt tension by moving the tensioner shaft [C] after loosening the nut [B].
4. After adjustment, tighten the nut [B] completely.

## 2. Adjusting The Drum Rotation Sensor



Purpose : To ensure correct main motor speed detection.
Method : 1. Remove the rear coven of the machine ( 6 screws).
2. Make sure that the drum rotation sensor [B] is positioned so that the pulse disc is inserted into the sensor by $8 \pm 1 \mathrm{~mm}$ as shown above.
3. If not, loosen the screw [C] securing the sensor bracket and adjust the sensor bracket position.
4. After adjustment, rotate the drum with a $(10 \mathrm{~mm})$ open end wrench to make sure that the pulse disk $[\mathrm{A}]$ does not contact the sensor during rotation.


Purpose : To set the maximum speed at $120 \pm 10$ rotations/minute.
Method : 1. Press the Speed Change key to set the speed at the maximum level.
2. Press the reset key while pressing the " 0 " key and make sure that the drum rotation speed is $120 \pm 10$ rotations/minute.
3. If not, remove the front cover of the machine and turn on DIP SW 100-6 on the Main Control PCB [A]. Then adjust the speed by turning VR100.


Purpose : To set the maximum speed at $120 \pm 10$ rotations/minute.
Method: 1. Press the Speed Change key to set the speed at the maximum level.
2. Press the Idling key and make sure that the drum rotation speed is $120 \pm$ 10 rotations/minute.
3. If not, remove the front cover of the machine and turn on DIP SW 101-5 on the Main Control PCB [A]. Then adjust the speed by turning VR101.


Purpose : To ensure that the drum is securely locked when the drum unit is pulled out.
Method: 1. Press the Drum Rotation button to stop the drum at the home position for drum replacement.
2. Make sure that the distance between the center of the drum lock [ $A$ ] and the center of the drum stopper $[B]$ is less than $\pm 1 \mathrm{~mm}$.
3. If incorrect, loosen the screws [C] and adjust by moving the drum lock [A].

## 5. Adjusting The Master Feed Clamper Cam



Purpose: To ensure that the master feed clamper is opened during the master feed process and is closed during other processes.

Method: 1. Pull out the drum unit and open the master eject unit.
2. Remove the rear cover of the machine and turn on the master feed clamper solenoid [A].
Turn on the solenoid [A] using the following procedure:
Turn on the power switch while pressing the Print Start key (Start key: SS830), Stop key and Clear key on the operation panel.

- Enter " 0 " in the memory display and " 9 " in the copy counter.

Press the Print Start key (Start key : SS830) to turn on the master feed clamper solenoid.
3. Make sure that the positioning of the cam [B] is $29 \pm 0.5 \mathrm{~mm}$ away from the bushing as shown above.
4. If not, loosen the mounting screw [C] and adjust the solenoid position.

Caution: Do not turn on the solenoid any longer than 10 seconds.
5. After adjustment, retighten the mounting screws [C].

## 6. Adjusting The Master Eject Clamper Cam



Purpose: To position the master eject clamper cam [B] so that the master clamper opens correctly during the master eject process and closes correctly for all other processes.

Method : 1. Remove the drum unit from the machine and open the master eject unit.
2. Remove the rear cover of the machine and turn on the master eject clamper solenoid [ $A$ ] as follows.

Turn on the solenoid [A] using the following procedure:
Turn on the power switch while pressing the Print Start key (Start key: SS830), Stop key and Clear key on the operation panel.

- Enter " 0 " in the memory display and " 10 " in the copy counter.

Turn on the clamper solenoid [A] by pressing the Print Start key (Start key SS830).
3. Confirm that the distance between the bushing and the edge of the opening cam [B] is $29 \pm 0.5 \mathrm{~mm}$ in the above condition.
4. If not, loosen the mounting screws [C] and adjust the position of the clamper solenoid [A].
5. After adjustment, retighten the mounting screws [C].

Caution: Do not turn on the solenoid any longer than 10 seconds.

## 7. Adjusting The Position of The Ink Detecting Pin



Purpose: To ensure the detection of ink built-up between the ink roller and the doctor roller.

Method : 1. Remove the drum unit.
2. Remove the stainless steel screen, tetron screen, and the metal screen from the drum unit.
3. Remove the ink around the ink roller [A] and the doctor roller [B].
4. Make sure that the distance between the end of detecting pin [C] and the doctor roller surface is $7 \pm 1 \mathrm{~mm}$.
5. If incorrect, loosen the screw [D] and adjust the distance by moving the ink detecting pin [C].
6. After adjustment retighten the screw [D].

## 8. Adjusting The Clearance of The Doctor Roller



Purpose: To equalize the ink thickness around the ink roller and prevent uneven image.

Method : 1. Remove the drum unit.
2. Remove the clamper.
3. Remove the stainless screen, tetron screen and the metal screen from the drum unit.
4. Wipe off the ink around the ink roller and the doctor roller.
5. Insert a 0.08-mm gap gauge between the doctor roller and the ink roller.

Then make sure that a $0.1-\mathrm{mm}$ gauge can not penetrate the gap.

* Check the gap at the right, center, and left positions. The gap must be uniform from side to side.

6. If the gap is not within specifications, loosen the screw [A] and adjust the gap by turning the eccentric bushing [B].

* Before adjustment, remove the drive gear located on the operation side of the doctor roller as the drive gear restricts the adjustment.


## 9. Adjusting The Ink Roller with The Drum Unit



Purpose: To ensure that the pressure of the press roller is applied evenly to the ink roller (the difference in distance from the center to either end should be less $\pm 0.5 \mathrm{~mm}$ ).

Method: 1. Remove the drum unit from the machine.
2. Remove the stainless steel screen, tetron screen, and the metal screen from the drum unit.
3. Loosen the bolt [A] and the screw [B] that secure the ink roller unit to the drum shaft.
4. Insert the drum gauge [C] in the holes in both side plates of the drum unit and the ink roller unit.
5. In the above condition, tighten the bolt [A] and the screw [B] so that the thrust play of the flange [D] is 0.05 to 0.2 mm .

Note: $\quad$ The part number of the drum gauge is C2029001.


Purpose: To ensure total clutch-sleeve release by the stopper when the ink supply solenoid [A] turns on and complete clutch-sleeve locking by the stopper when the ink supply solenoid turns off.

Method: 1. Remove the drum unit from the machine.
2. Remove the front cover of the drum unit.
3. Press in the solenoid plunger by hand and make sure that the distance between the stupper [B] and the clutch sleeve [C] is 0.5 mm to 1.0 mm as shown.
4. If incorrect, loosen the screw [D] and adjust the distance by moving the solenoid bracket [E].
5. After adjustment, retighten the screw [D].

CH 1 (Standard Signal)


Purpose : To ensure correct detection of a no ink condition when all the ink has been consumed.

Method : 1. Remove the rear cover of the machine.
2. Position SW901 [A] on the ink detecting board to the oil type (upper) position. This switch must always remain in the upper position when using Ricoh Priport type ink.
3. Connect the CH1 probe of an oscilloscope to TP1, the CH2 probe to TP2 and the GND lead to TP-12V. Select the 5 microsecond range.
4. Install a drum with no ink or remove the ink bottle and make prints until the Add Ink is indicated (the ink detecting pin is not in contact with the ink) and turn on the power switch.
5. Make sure that the wave form is as follows in the no ink condition.

* This adjustment should be made under normal conditions ( $20^{\circ} \mathrm{C} / 65 \%$ RH).

Note: The period of the wave form varies inversely with temperature. (High temp. $\rightarrow$ reduced period, Low temp. $\rightarrow$ increased period)
6. If incorrect, adjust the ON timing of the detection signal using VR901 on the ink detecting board.


1) Remove the drum unit from the machine.
2) Remove the 2 springs [A].
3) Remove the front stay [B] of the screen (2 screws).
4) Remove the screen.

## *Assemble

5) Insert the front screen plate [C] into the tetron screen [D] as shown in the above figure.
6) Insert the tetron screen under the flap of the stainless screen [E]. At this time, the red printed circle [F] must face the operation side and mounted on the drum side.
7) Set the drum screens by performing steps 1) to 4) above in reverse order.

Note: Set the stainless screen [E] out side the tetron screen.

## 2. Drum Drive Belt

1. Set the image position to " 0 " by turning off and on the main switch.
2. Turn off the main switch and unplug the power supply cord.
3. Remove the drum unit.
4. Remove the rear cover.
5. Remove the center support plate [A] (5 screws).
6. Loosen the screw securing the drive gear (18T) [B] bearing.
7. Remove the support side plate [C] (3 screws).
8. Remove the drive gear (18T) [B] with the bearing (2 hexagonal screw).
9. Remove the relay gear assembly [C].
10. Loosen the screws [B] securing the print pressure cam drive gear (out 2 and remove the drive gear).
11. Remove the bearing support bracket [D].
12. Remove the top support bracket ( 6 screws).

Note: Hold the timing gear assembly [F] to prevent it from falling when removing the top support bracket.
13. Disconnect the encoder motor.
14. Remove the timing gears assembly [F].
15. Remove the belt tension bearings [I].
16. Replace the drum drive belt [G].
17. Reassemble the pressure cam drive gear assembly $[\mathrm{H}]$.
18. Install the relay gear assembly drive gear (18T) with the bearing.
19. Install the support side plate (3 screws).
20. Adjust the belt position so that the hexagonal screw can be seen through the center support plate hole [J] when the drum drive gear is at home position.
21. Install the belt tension bearings [I] (E-ring).
22. Adjust the feed cam position by inserting the shaft.
23. Install the timing gear assembly.
24. Install the two bearings. Pull out the shaft.
25. Install the top support bracket.
26. Install the bearing support bracket.
27. Install the center support plate.


## DELIVERY SECTION

## <Adjustment>

## 1. Adjusting The First Paper Exit Sensor



Purpose: To ensure that the sensor detects correct paper delivery and that the jam indicator blinks properly after an exit misfeed or a paper wrap occurs.

Method: 1. Remove the front cover of the machine.
2. Place a sheet of 20 lb . paper [B] 30 mm away from the paper exit sensor [A] and make sure that VR102 is set at the ON/OFF threshold of LED 103.
3. If incorrect, adjust the sensor sensitivity by turning VR102 on the main control PCB [C].

## 2. Adjusting The Second Paper Exit Sensor



Purpose: To ensure the correct sensor detection of printing paper, and that the Jam indicator blinks and the machine stops when a paper wrap or exit misfeed occurs.

Method : 1. Remove the front cover of the machine.
2. Confirm the following items:
a) When the shelter plate is removed and the master eject unit is closed LED 101 (LED 104 : SS830) should be OFF.
b) When the shelter plate is installed and the master eject unit is closed, LED 101 (LED 104 : SS830) should be OFF.
c) When a sheet of paper is positioned over the second paper exit sensor and is in contact with the shelter plate, LED 101 (LED $104: 830$ ) should be ON.
3. If incorrect, adjust by turning VR101 (VR103: 830) on the main control board [B].

## 3. Adjusting The Clearance of The Exit Pawl



Purpose: To ensure that the printing paper is delivered without paper wrap or damage to the screen.

Method : 1. Remove the rear cover of the machine (6 screws).
2. With a $(10 \mathrm{~mm})$ open end wrench, gradually rotate the drum rotation shaft while manually activating the paper feed solenoid to feed a sheet of paper and manually activate the printing pressure solenoid to move the exit pawl [A] to the drum.
3. Make sure that the clearance between the drum and the exit pawl is 0.3 to 0.5 mm when the exit pawl is at the position closest to the drum.
4. If incorrect, open the master eject box and loosen the hexagon nut [B] of the exit pawl drive arm. Then adjust the clearance by turning the screw [C].
5. Confirm this adjustment by repeating steps 2 and 3 .

## 4. Adjusting The Exit Pawl Timing



Purpose: To ensure that the exit pawl does not contact the master clamper.
Method: 1. Remove the rear cover of the machine (6 screws).
2. Press the Image Shifting key to give a maximum white area at the paper leading edge (image shift position set to "-2").
3. Stack 20 lb paper on the paper table.
4. Manually turn on the paper feed solenoid. Using a ( 10 mm ) open end wrench, gradually rotate the drum rotation shaft counterclockwise at a constant speed.
5. While rotating, make sure that the exit pawl [A] does not contact the master clamper $[B]$ and that the exit pawl $[A]$ approaches the drum before the leading edge of the printing paper exits.
6. If incorrect, loosen the hexagon nut [C] and screw [E] and adjust the exit pawl position by turning the hexagon bolt [D].
7. Confirm this adjustment by repeating step 5 with the image position shifted to both maximum forward and maximum backward directions.

## 1. Delivery Table



1) Open the delivery table.
2) Remove the spring for GND located under the table. (1 screw)
3) Remove the stoppers $[A]$. (2 screws)
4) Remove the delivery table.

5) Remove both front and rear covers of the machine.
6) Remove the antistatic brush bracket [A].
7) Remove the harness clamp [B] (1 screw).
8) Disconnect the sensor connectors [C].
9) Disconnect the vacuum motor connector [D].
10) Remove the vacuum unit [E] (2 screws).

11) Remove the vacuum unit.
12) Remove the tension roller [A] (2 screws).
13) Remove the delivery belts [B].

## 4. Paper Exit Sensors



1) Remove the delivery belts.
2) Remove the magnet plates $[A]$ (2 screws each).
3) Remove the wing guides $[B]$ (1 screw each).
4) Remove the belt rollers [C] (2 E-rings each), then remove the tapes [D] from the vacuum guide plate.
5) Remove the vacuum guide plate [E] (6 screws).
6) Unplug the sensor connectors (3P) $[F]$.
7) Remove the paper exit sensors [G] (2 screws each).

8) Remove the vacuum unit.
9) Loosen the allen screw $[A]$ mounted on the motor shaft.
10) Remove the harness clamp [B] (1 screw).
11) Remove the vacuum motor [C] (2 screws).

## Troubleshooting

## <Phenomenon>

1-1. Master eject motor does not rotate.
<Possible causes >

1. The pressure plate is tilted away from the horizontal and locked in place due to a bend in the pressure plate drive link [A]. Therefore, the master eject motor $[B]$ is locked and the main control PCB is damaged.


## <Countermeasure >

1. Correct the form or replace the bent link which causes the master eject motor to lock. Replace the master eject motor and the main control PCB.

## <Phenomenon>

1-2. Master eject jam indicator blinks.

$$
F+8
$$

* When the drum begins reverse rotation, during the master eject process, the master eject jam indicator lights and the drum stops rotating in reverse.
* At this time, the master is still wrapped around the drum.


## <Possible causes >

1. The master eject indicator lights because of contamination (ink, oil, paper dust, etc.) build up on the light emitting and light detecting surface [A] of the second drum position sensor.

* When the drum starts rotating in the reverse direction, the CPU starts checking for the master eject detection signal as the second drum position sensor is ON due to contamination. However, the master eject switch does not turn on within the specified time ( 120 degrees of rotation). Therefore, the master eject jam indicator lights and the drum stops.

2. The second drum position sensor is faulty.
< Countermeasure >
3. Remove the second drum position sensor and clean off the contamination build up on the light emitting and light detecting surfaces [A] of the sensor.

4. Replace the second drum position sensor.

## 1. Master Miss-Eject

## <Phenomenon >

1-3. Master eject jam indicator blinks.

$$
F+8 d
$$

* During master ejection, after the drum has rotated in reverse by 200 degrees, the master eject jam indicator lights and drum rotation stops.
< Possible causes >

1. The master eject switch $[A]$ is faulty.

* Check the performance of the master eject switch using I/O check program 0001-1.

< Countermeasure >

1. Replace the master eject switch[A].

## 2. Master Feed Miss

<Phenomenon>
2-1. After the master paper is fed about 61 mm , the jam indicator blinks. At this time, the drum clamps the master paper and stops at the regular position.
C + ol
< Possible causes >

1. The looseness of the stopper shaft [A] prevents the clutch stopper from catching the reverse roller clutch [B]. Therefore, the rotation of the reverse roller [C] does not stop, and the buckling in the master paper is not made.


## <Countermeasure>

1. Tighten the stopper shaft $[A]$.

## 2. Master Feed Miss

<Phenomenon >
2-2. When the master is wrapped around the drum, the jam indicator blinks.

$$
\mathbf{c}+\text { ol }
$$

## <Possible causes >

1. When the buckle in the master paper is detected, the main motor [A] does not rotate, so the drum can not wrap the master paper around itself. The detection of the buckle in the master paper does not turn off. Therefore, the jam indicator blinks.
<Countermeasure>
2. Replace the main motor $[\mathrm{A}]$.

## NOTE:

To replace the main motor, remove the front plate of the paper feed section.

2. Master Feed Miss
<Phenomenon>
2-3. The master is not clamped to the drum and the Master Feed Jam indicator blinks.

$$
\mathbf{c}+\text { ol }
$$

* The master is cut to a length of 19 cm and remains in the plotter unit.
* The Master Misfeed indicator lights before the drum rotates.


## <Possible causes >

1. The master buckle sensor is faulty.

* When the buckle of the master becomes larger than specification (30 mm ), the sensor does not turn on and the Master Feed Jam indicator lights.


## < Countermeasure>

1. Change the master buckle sensor.

## <Phenomenon>

2-4. The master is not clamped to the drum and the Master Feed Jam indicator blinks.

$$
c+8 \downarrow
$$

* The master is cut to a length of 19 cm and remains in the plotter unit.
* When the drum begins rotation to wrap the master, the master misfeed indicator lights.
<Possible causes >

1. The master clamper does not close to clamp the master because the master clamper action is incorrect.

* Remove the drum unit and confirm smooth movement of the master clamper [A] by moving the sector gear by hand.


```
<Countermeasure>
```

1. Loosen the two shoulder screws $[B]$ of the sector gear [C] (about 180 degrees), and move the gear continually to open and close the clamper [A].
When the movement of the clamper [A] is smooth, retighten the two shoulder screws. Lubricate the clamper gear [D], sector gear [C] and sector gear slider [E].

* Be careful not to over loosen the shoulder screw [B].



## 3. Drum Section Trouble

## <Phenomenon>

3-1. Ink is not supplied during idling and the Add Ink indicator is displayed.
D +

## < Possible causes >

1. When the ink supply solenoid $[A]$ is on, the spring clutch [B] slips and the ink supply pump [C] does not move.

2. The mounting position of the ink supply solenoid is not correct, so when the ink supply solenoid [A] is on, the stopper [D] does not release the clutch.


## <Countermeasure >

1. After cleaning the clutch spring, slightly lubricate it with grease.
2. Adjust the mounting position of the ink supply solenoid [A] so that the clearance between the stopper [D] and the clutch [B] is from 0.5 mm to 1.0 mm when the solenoid is on.


## 3. Drum Section Trouble

## <Phenomenon>

3-1. Ink is not supplied during idling and the Ink Empty indicator is displayed.

$$
D+\omega
$$

## <Possible causes >

3. The coil of the ink supply solenoid [A] is open circuit and the ink supply solenoid [A] does not turn on.

Check the performance of the ink supply solenoid [A] by using I/O check program 0012-0.


## <Countermeasure>

3. Replace the ink supply solenoid.

## <Phenomenon>

3-2. No add ink indication $D+\dot{\lrcorner}$ with low image density. Ink may not be supplied when a low ink condition occurs.

D + *

## < Possible causes >

1. The variable resistor for ink supply detection is not adjusted correctly.
2. The ink detection board is faulty.
1). Check the wave form using an oscilloscope.
2). When there is no oscilloscope.
a. Remove the ink from inside the drum.
b. Turn VR 901 on the ink detection board fully clockwise or counterclockwise.
c. If LED 102 on the main PCB does not go out, the ink detection board is faulty.


## <Countermeasure >

1. Adjust VR 901 on the ink detection board until the wave form of TP1 and TP2 on the ink detection board is as shown below.

NOTE:
Before adjustment, remove the ink from inside the drum as much as possible.

2. Replace the ink detection board. After replacement, adjust VR 901 as explained above.

## 3. Drum Section Trouble

## <Phenomenon>

3-3. The ink supply pump does not stop supplying ink. Even though there is too much ink in the drum, the ink supply pump does not turn off.
< Possible causes >

1. The variable resistor for ink supply detection is not adjusted correctly.
2. Connection (CN118-7,8) between the drum connector (male) $[A]$ and the main body connector (female) is faulty.
<Countermeasure>
3. Adjust VR 901 as explained on the previous page.
4. Reform the pins of the drum connector [A], then check for continuity.
5. Paper Feed Miss

## <Phenomenon>

4-1. When paper is set, E-02 is displayed in the counter.
<Possible causes >

1. The paper table does not rise or rises at a lower speed than usual, this is because the allen screw for the worm gear of the paper table drive motor is loose.


## <Countermeasure >

1. Tighten the allen screw. Confirm that there is no resistance for the paper feed table drive motor by raising and lowering the paper feed table manually. If necessary, lubricate the worm gear with grease.


## <Phenomenon >

4-2. E-02 is displayed in the counter.

## <Possible causes >

1. The fuse ( 2.5 amp ) $[\mathrm{A}]$ on the AC Drive PCB is blown because of heavy resistance to main motor rotation. Therefore, when the Start key is pressed and the paper feed table rise signal goes high, the paper feed table drive motor does not rotate and E-02 is displayed in the counter.
(factor for fuse break down)
a. The drum is locked due to a paper jam.
b. The drum is locked because the paper delivery pawl is stuck in the master clamper.
c. The drum is locked because the optional drum protection sheet, which was not removed, is jammed in the machine.
2. The fuse blows because the rear cover pinches the harness from the AC Drive PCB to the paper table drive motor. This causes the polyvinyl tube to be broken and from there the circuit is shorted to ground.


## <Countermeasure >

1. Replace the fuse ( 2.5 amp ) $[\mathrm{A}]$ on the AC Drive PCB.
Remove the inhibiting factor that caused the fuse to blow.

2. Cover the bare wire with polyvinyl tape (electrical tape). To prevent the harness from being pinched by the rear cover, change the position of the harness.

## 4. Paper Feed Miss

## <Phenomenon>

4-2. $\mathrm{E}-02$ is displayed in the counter.

## < Possible causes >

3. When the paper table comes to the proper height, the paper table drive motor does not stop, due to a fault in the paper table height sensor [A]. So, the paper table drive motor locks after the paper table reaches its highest position.


## <Countermeasure >

3. Replace the paper table height sensor [A], and adjust the stop position of the paper feed table.

## CAUTION:

The paper table drive motor is equipped with thermal protection. If the main switch is turned on and off, E-02 is reset. At this time, the paper table drive motor turns on to drive the table to the highest position, as the table is locked, E-02 is again displayed. Therefore, if the main motor switch is continually turned on and off, the motor heats up and the thermal protection cuts in. At this time keep the main switch off for 30 to 60 minutes.

## <Phenomenon>

4-3. The image shifts vertically at about 2 or 3 cm as shown below.

* There is no problem at slow speeds, but the faster the speed is, the greater the amount and occurrence of the vertical image shift.


## < Possible causes >

1. Ink sticks to the lower second feed roller [A] during duplex printing, and transport ability of the roller is lowered. This causes a vertical image shift of about 2 or 3 cm .

2. Incorrect movement of the upper second feed roller [B] shaft delays the upper second feed roller [B] contacting the lower second feed roller [A].


## < Countermeasure >

1. Clean the lower second feed roller [A]. If this phenomenon does not stop after cleaning the roller, change the lower second feed roller [A].


Normal


Abnormal

2-1. Remove and clean the upper second feed roller [B] and it s bushing [C], then lubricate the bushing with grease.


2-2. If the spring [D] is stretched, replace it.

4. Paper Feed Miss
<Phenomenon>
4-4. Paper feed can not be stopped.

* When the drum rotation button is pushed, the paper feed begins.
* In some cases, the paper feed stops after about 2 or 3 sheets of paper are fed.
< Possible causes >

1. Paper feed cannot be stopped because the clearance between the paper feed sector pin $[A]$ and the sector stopper $[B]$ is too large; therefore, the sector pin [A] can not be locked by the sector stopper [B].

2. The sector stopper $[B]$ does not go up because the sector stopper spring [C] comes off.

## <Countermeasure >

1. Adjust the clearance as shown below.

When the Solenoid is OFF.

[B]

When the Solenoid is ON.

2. Reform the hook of the stopper spring [C], then reset it. If necessary, change the spring.
结
4. Paper Feed Miss
<Phenomenon>
4-5. During the initial print operation, paper misfeed occur at the second feed roller.
(Especially rough paper or thin paper.)

## < Possible causes >

1. The clearance between the paper detecting arm $[A]$ and the printing pressure ON/OFF Lever [B] is too smail; therefore, the paper detecting arm [A] can not rotate, and paper is siopped by the paper detecting pin [C]. When the printing speed is fast, the paper misfeeds do not occur, as the paper detecting arm [A] can rotate due to vibrations.


## <Countermeasure >

1. Adjust the clearance as shown below.


## <Phenomenon>

5-1. Vertical white lines appear on the paper. During the photograph mode, these white lines appear more clearly than in normal mode.
<Possible causes >

1. White line appears due to dust adhering to the mirror.
```
<Countermeasure>
```

1. Remove the contact glass and clean off the dust adhering to the mirror with a blower brush.


## <Phenomenon> : SS830

$5-2$. Vertical low density strips occur with a width of about 5.0 mm . Confirm with facsimile thermal paper.

< Possible causes >

1. Thermal head is faulty.
<Countermeasure>
2. Replace the thermal head.
3. Image Trouble
<Phenomenon>: SS830
5-3. Vertical black lines appear on the image with a 5.0 mm width.

$\rightarrow+5 \mathrm{~mm}$
<Possible causes >
4. Thermal head is faulty.
<Countermeasure>
5. Replace the thermal head.

## <Phenomenon>

5-4. Many vertical black lines appear on the image. The lines vary with every master.

<Possible causes >

1. The fluorescent lamp flickers because the fluorescent lamp bracket is loose. This causes vertical black lines.


## <Countermeasure>

1. Tighten the fixing screw of the fluorescent lamp bracket [A].


## 5. Image Trouble

## <Phenomenon >

5-5. The image density is too low on the operation side. Confirm with facsimile thermal paper.

## <Possible causes >

1. Parallel adjustment of the thermal head [A] is faulty. A strip of master paper can be drawn evenly from the right side to the left side if the pressure (clearance) between the thermal head [A] and the platen roller $[B]$ is even.

2. The fixing screws [D] of the platen roller are loose.

3. The platen roller is slightly deformed.

## <Countermeasure>

1. Insert a screw driver into the hole on the operation side of the main body and loosen the fixing screw [C] of the plotter unit. Adjust the thermal head so that it is parallel with the platen roller [B]. (830)

2. Tighten the fixing screws [D]. After this instruct the customer to ensure that these fixing screws do not become loose.
3. Replace the platen roller.

## <Phenomenon>

5-6. The side-to-side registration is incorrect.

* Though the positions of the printing paper and the original are aligned, the printed image is off set by about 1 cm .


## <Possible causes >

1. The position of the CCD is incorrect.

## <Countermeasure >

1. Adjust the CCD position. (Main scan direction.)

## < Phenomenon >

5-7. Spots appear all over the image regardless of original size.

* The image of the original is not printed.



## <Possible causes >

1. The scanner harness is faulty.

< Countermeasure >

1-1. Repair the faulty section of the harness.

1-2. Replace the harness.

## CAUTION:

Confirm that there is no strain of the harness when the scanner unit is opened and closed.

## 5. Image Trouble

## <Phenomenon>

$5-8$. Only the edge of the image is printed as shown below.

* The image density decreases.
* This phenomenon occurs either partially or over the whole image.

< Possible causes >

1. The scanner harness is faulty.

## < Countermeasure >

1-1. Repair the faulty section of the scanner harness or replace the scanner harness.

## <Phenomenon>

$5-9$. The image is reduced towards the original feed direction. In some case the image is reduced partially.
< Possible causes >

1. The original is incorrectly transported because the stepping motor is faulty.

## < Countermeasure >

1. Replace the stepping motor.
2. Miss Indicator Lights (When the main switch is turned on)
<Phenomenon>
6-1. When the main switch is on, the jam indicator "B" blinks. The jam indicator "B" cannot be reset even though the Reset key is pressed.
$B+8$
< Possible causes >
3. Incorrect positioning of the interrupter [B] prevents the sensor from being activated.


## < Countermeasure >

1. Adjust the interrupter $[B]$ so that when the bearing of the printing pressure release arm has reached the highest position of the printing pressure cam, the interrupter [ B ] blocks the printing pressure detecting sensor [A].
2. Miss Indicator Lights (When the main switch is turned on)

## <Phenomenon>

6-2. When the main switch is on, no indicator is displayed on the operation panel.
< Possible causes >

1. VPP $(+12 \mathrm{~V})$ and VCC $(+5 \mathrm{~V})$ are not supplied because of a faulty power supply PCB. Check if the output of the power supply is faulty.
The voltage between pin, No. 6 (No. 5 : 830 ) and No. 7 (No. 8 : 830) of CN503 should be +5 V . The voltage between pin No. 7 (No. 8 : 830) and No. 3 (No. 7 : 830) of CN503 should be +12 V .

Power Supply P.C.B.


## <Countermeasure >

1. Replace the power supply PCB. When the power supply PCB is changed, the voltage supplied to the thermal head must be adjusted. Adjust the voltage between pin No. 1 and No. 4 of CN504 to the voltage indicated on the thermal head using VR201 (VR 1 : 830).

2. Paper Eject Miss

## <Phenomenon>

7-1. When printing starts without master processing, paper feed does not start but paper wrap indicator blinks and the drum stops rotating.

$$
\mathbf{E}+\stackrel{\downarrow}{ }
$$

< Possible causes >

1. Contamination build up is on the second drum position sensor [A] maintains the sensor ON condition (interrupted). When printing starts, the first paper delivery sensor is OFF, and the second drum position sensor [A] is ON as mentioned above;therefore, the Paper Wrap indicator lights.

2. The second drum position sensor [A] is faulty.

## <Countermeasure>

1. Clean the light emitting and light detecting surfaces $[B]$ of the second drum position sensor [A].

[B]
2. Replace the second drum position sensor [A].
3. Drum Rotation Trouble

## <Phenomenon>

8-1. The drum does not rotate. When the drum rotation button is pressed, the drum begins to rotate, but immediately afterwards, the buzzer rings and the drum stops rotating.

## < Possible causes >

1. Contamination on the light emitting and light detecting surfaces of the first drum position sensor [A] maintains the sensor ON condition (interrupted); therefore, the drum is always judged to be at the sensor on position.

2. The first drum position sensor is faulty.
<Countermeasure >
3. Clean the light emitting and light detecting surfaces [B] of the first drum position sensor [A].

* Remove the sensor and clean up ink, oil, and the paper powder on it.


2. Replace the first drum position sensor [A].
3. Table of Defective Electrical Components: SS950

| Component | Condition | Phenomenon |  |
| :---: | :---: | :---: | :---: |
| 15A Fuse (Power Supply PCB) | Open | Machine does not work. (No indicator is indicated on the operation panel.) |  |
| 2.5A Fuse (AC Drive PCB) | Open | Cover open indicator blinks when the main switch turns on. |  |
| +24 V (CN510-1 on Power Supply PCB) | No output | Desired number can be entered, but the machine does not work. -. 5 image position blinks |  |
| +24 V (CN504-1 on Power Supply PCB) | No output | Nothing happens | When no outputs on both pin 1 and 2, the Jam indicators "C" + of blink as the master feed motor does not turn on. |
| $\begin{aligned} & +24 \mathrm{~V} \text { (CN504-2 on } \\ & \text { Power Supply PCB) } \end{aligned}$ | No output | Nothing happens |  |
| SEOH (CN503-1 on Power Supply PCB) | No output | When the main switch turns on, E04 is displayed. |  |
| +12V (CN503-2 on <br> Power Supply PCB) | No output | Machine functions are correct, but the image is almost completely black. |  |
| +12 V (CN503-3 on <br> Power Supply PCB) | No output | Counter indicator is not displayed. (Only the reduction and image mode indicators are displayed.) |  |
| -12V (CN503-4 on <br> Power Supply PCB) | No output | Machine functions are correct, but the image is almost completely black and when the Print Start key is pressed the add ink indicators $\dot{U}^{+}$"D" blink after 20 rotations if ink is present. |  |
| +5 V (CN503-5 on Power Supply PCB) | No output | Nothing happens | When no output on Pins 5 and 6 , the drum rotates at high speed after the main switch is turned on. All indicators off. |
| +5 V (CN503-6 on Power Supply PCB) | No output | Nothing happens |  |
| 1st Original Sensor | ON condition (Feeler is actuated) | The first original can be printed correctly, but the jam indicators " $A$ " + of blink at the next master process as the ADF drive motor turns on. |  |
|  | OFF condition (Feeler is not actuated) | When the Master Making key is pressed, the jam indicators "A" + of blink. |  |

9. Table of Defective Electrical Components : SS950

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| 2nd Original Sensor | ON condition (Feeler is actuated) | When the main switch is turned on, the Jam indicators " $A$ " + of blink and reset is impossible. |
|  | OFF condition (Feeler is not actuated) | The original is fed when the Master Making key is pressed, but the jam indicators "A" + of blink and the original leading edge damages because the original transport motor does not turn on. |
| Original Registration Sensor | ON condition (Feeler is actuated) | After the master paper is ejected, the Jam indicators " $A$ " + of blink. |
|  | OFF condition (Feeler is not actuated) | The original is fed until the leading edge of the original goes 5 cm past the exposure glass, then jam indicators "A" + of blink. |
| Master Eject Switch | ON condition (Feeler is actuated) | After the master is ejected and one sheet of paper (trial print) is delivered, the jam indicators "F" + of blink and reset is impossible. |
|  | OFF condition (Feeler is not actuated) | When the master is being ejected, the jam indicators " F " + of blink. |
| Pressure Plate Position Switch | ON condition (Feeler is actuated) | The pressure plate does not go up. After one sheet of paper (trial print) is delivered, the jam indicators "F" + blink. |
|  | OFF condition (Feeler is not actuated) | After the main switch is turned on, the pressure plate keeps moving up and down. |
| Full Master Detecting Switch | ON condition (Feeler is actuated) | When the master eject box is full, the full master indicators "F" + 点 do not blink. |
|  | OFF condition (Feeler is not actuated) | After master ejecting is finished, the indicators "F" + 肖blink. |
| Paper Table Lower Limit Sensor | ON condition (Interrupted) | The paper table does not go down. |
|  | OFF condition (Not interrupted) | When paper feed table goes down, overdrive and "E02" is displayed. |

9. Table of Defective Electrical Components: SS950

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| Paper Table Safety Switch | ON condition (Feeler is actuated) | When the main switch is turned on, the cover open indicator $[\cdot$ blinks. |
|  | OFF condition (Feeler is not actuated) | If the paper table lower limit sensor is faulty, the paper table moves all the way down, locks, and "E02" is displayed. |
| Paper Table Height Sensor | ON condition (Interrupted) | When the paper feed table goes up, it does not stop at the proper position and E-02 lights. |
|  | OFF condition (Not interrupted) | The paper feed table does not go up and when printing starts, jam indicators " $\mathrm{B} "+\neq$ blink. |
| Paper End Sensor | ON condition (Not interrupted) (Feeler is actuated) | When there is no paper on the paper feed table, the Print Start key can be activated, but jam indicators "B" + of blink. |
|  | OFF condition (Not interrupted) (Feeler is not actuated) | Though there is paper on the paper table, Paper End indicators "B" + ث blink. |
| Pressure Sensor | ON condition (Interrupted) | After one sheet of paper is printed, the machine stops. At that time, the counter does not count down and jam indicator "B" + of blinks. |
|  | OFF condition (Not interrupted) | When the main switch is on, jam indicators "B" + of blink and it cannot be reset. |
| First Paper Exit Sensor | ON condition (Paper exists) | After one sheet of paper is printed, the machine stops and jam indicators "G" $+\circ \downarrow$ blink. |
|  | OFF condition (Paper does not exist) | After one sheet of paper is printed, the machine stops and jam indicators " B " and " $E$ " + of blink. |
| Second Paper Exit Sensor | ON condition (Paper exists) | When the main switch is turned on, jam indicators "G" + of blink. |
|  | OFF condition (Paper does not exist) | After one sheet of paper is printed, the machine stops and jam indicators "E" $+\mathcal{q}$ blink. |

9. Table of Defective Electrical Components : SS950

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| Paper Feed Solenoid | OFF condition | The paper is not fed and jam indicators " B " + of blink. |
| Drum Rotation Sensor | ON condition (Interrupted) | The drum begins to rotate when the main switch is turned on. E06 lights when the Master Making key is pressed or when the Print Start key is pressed. |
|  | OFF condition (Not interrupted) | The drum begins to rotate when the main switch is turned on. E06 lights when the Master Making key is pressed or when the Print Start key is pressed. |
| Master End Sensor | ON condition (Actuated) | Normal operation when a master is present. Master end is not detected; Master End indicators " C " + E do not blink and jam indicators " $C$ " + of blink. |
|  | OFF condition <br> (Not actuated) | Even if the master is present, the Master End indicators " C " + Eblink. |
| Right Cutter Switch (Rear) | ON condition (Feeler is actuated) | The master is not cut. (Cutter unit does not move at all.) |
|  | OFF condition (Feeler is not actuated) | When the master button is depressed, indicator "E-01" lights. At that time the cutter does not return to the front. |
| Left Cutter Switch (Front) | ON condition (Feeler is actuated) | The master is cut. (Cutter unit does not return from the rear.) |
|  | OFF condition (Feeler is not actuated) | When the main switch is turned on, indicator "E-01" lights. (Cutter unit attempts to reference Home position.) When the master button is depressed "E-01" lights (master is cut). If switch fails during machine operation, "E-01" lights. |

9. Table of Defective Electrical Components: SS950

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| First Drum Position Sensor | OFF condition (Not interrupted) | When main switch is turned on, the drum start rotating and it cannot be stopped. |
|  | ON condition (Interrupted) | * On print (When the Print Start key is pressed.) <br> 1. Paper feeding does not stop when the counter indicates " 0 ". <br> 2. Paper feeding does not stop when the stop key is pressed. <br> 3. Jam detection of paper feed and delivery does not work. <br> * On master making (When the Master Making key is pressed.) <br> 1. After the new master is wrapped around the drum and one sheet of paper (trial print) is delivered, the drum rotation does not stop. The stop key does not work. |
| Second Drum Position Sensor | OFF condition (Not interrupted) | * On print (When the Print Start key is pressed.) <br> 1. The paper feed solenoid does not work and the stop key does not work. Drum Rotation does not stop. <br> * On master making (When the Master Making key is pressed.) <br> 1. When the Master Making key is pressed, the drum rotates and it cannot be stopped. |
|  | ON condition (Interrupted) | * On print (When the Print Start key is pressed.) <br> 1. The paper feed solenoid does not work and the drum continues to rotate at 30 rpm . Also, the stop key does not work. <br> * Idling time (Reset key +0 key) <br> 1. Drum rotation does not stop <br> * On master eject <br> 1. When the Master Making key is pressed, master miss-ejection indicators " $F$ " + of blink and the master is not ejected. |

9. Table of Defective Electrical Components : SS950

| Component | Condition | Phenomenon |
| :--- | :--- | :--- |
| Master Buckle <br> Sensor - SN5 | ON condition | When main switch is turned on, jam in- <br> dicators "C" + of blink, and it cannot be <br> reset. |
|  | OFF condition | Original feeding and master feeding stops <br> halfway and jam indicators "C" + of blink. |
| +24V (CN504-1 <br> and CN504-2 is 0V) | No output | There is no image on the master paper. <br> +24V (CN103-1 on <br> Main PCB) |
| +12V (CN103-2 on <br> Main PCB) | No input | When the main switch is turned on, the ADF <br> drive motor turns on. -.5 Image position <br> blinks. |
| +5V (CN103-3 on <br> Main PCB) | No input | The counter indicator is not displayed (Only <br> the reduction and image mode indicators are <br> displayed.) |
| -12V (CN103-6 on <br> Main PCB) | No input | No indicators. |

9. Table of Defective Electrical Components : SS830

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| 8A Fuse (Power Supply PCB) | Open | Machine does not work. (No indicator is indicated on the operation panel.) |
| 2.5A Fuse <br> (AC Drive PCB) | Open | The open cover indicator blinks when the main switch turns on. |
| +24 V (CN503-9 on Power Supply PCB) | No output | All indicators are displayed. (Machine does not work.) |
| SEOH (CN505-2 on Power Supply PCB) | No output | When the main switch is turned on, E04 is displayed. |
| $\begin{aligned} & \text { +12V (CN503-7 on } \\ & \text { Power Supply PCB) } \end{aligned}$ | No output | The counter indicator is not displayed. (Only the reduction and image mode indicators are displayed.) |
| -12V (CN503-6 on Power Supply PCB) | No output | Machine functions are correct, but when the Start key is pressed the add ink indicators U + "D" blink after 20 rotations if ink is present. |
| $\begin{aligned} & +5 \mathrm{~V}(\mathrm{CN} 503-5 \text { on } \\ & \text { Power Supply PCB) } \end{aligned}$ | No output | When the main switch is turned on, the drum rotates at high speed. |
| $\begin{aligned} & +5 \mathrm{~V} \text { (CN503-4 on } \\ & \text { Power Supply PCB) } \end{aligned}$ | No output | Nothing <br> happens When there is no output on Pin 3 <br> and 4, E04 is displayed after the |
| $\begin{aligned} & +5 \mathrm{~V}(\mathrm{CN} 503-3 \text { on } \\ & \text { Power Supply PCB }) \end{aligned}$ | No output | Nothing happens |
| 1st Original Sensor (830 only) | ON condition (Feeler is actuated) | The first original can be printed correctly, but the jam indicators " $A$ " + of blink at the next master process as the ADF drive motor turns on. |
|  | OFF condition (Feeler is not actuated) | When the Start key is pressed, the jam indicators "A" + \& ${ }^{\prime}$ blink. <br> (Nothing happens in the SADF mode.) |

9．Table of Defective Electrical Components：SS830

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| 2nd Original Sensor | ON condition （Feeler is actuated） | When the main switch is turned on，the Jam indicators＂ A ＂+ of blink and reset is impos－ sible． |
|  | OFF condition （Feeler is not actuated） | The original is fed when the Start key is pressed，but the jam indicators＂A＂$+o f$ blink and the original leading edge damages because the original transport motor does not turn on． |
| Original Registra－ tion Sensor | ON condition （Feeler is actuated） | After the master paper is ejected，the Jam indicators＂A＂＋of blink． |
|  | OFF condition （Feeler is not actuated） | The original is fed until the leading edge of the original goes 5 cm past the exposure glass，then jam indicators＂A＂+ of blink． |
| Master Eject Switch | ON condition （Feeler is actuated） | After the master is ejected and one sheet of paper（trial print）is delivered，the jam in－ dicators＂F＂+ of blink and reset is impos－ sible． |
|  | OFF condition （Feeler is not actuated） | When the master is being ejected，the jam indicators＂$F$＂＋of blink． |
| Pressure Plate Posi－ tion Switch | ON condition （Feeler is actuated） | The pressure plate does not go up．After one sheet of paper（trial print）is delivered， the jam indicators＂F＂＋首blink． |
|  | OFF condition （Feeler is not actuated） | When the main switch is turned on，the pressure plate keeps moving up and down． After the master eject process is completed， the jam indicators＂F＂＋首 blink． |
| Full Master Detect－ ing Switch | ON condition （Feeler is actuated） | When the master eject box is full，the full master indicators＂F＂＋当 do not blink． |
|  | OFF condition （Feeler is not actuated） | After master ejection is complete，the indi－ cators＂F＂＋曾 blink． |

9. Table of Defective Electrical Components: SS830

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| Paper Table Lower Limit Sensor | ON condition (Interrupted) | Paper table does not go down. |
|  | OFF condition (Not interrupted) | When the paper feed table goes down overdrives and "E02" is displayed. |
| Paper Table Safety Switch | ON condition (Feeler is actuated) | When the main switch is turned on, the cover open indicator [. blinks. |
|  | OFF condition (Feeler is not actuated) | If the paper table lower limit sensor is faulty, the paper table moves all the way down and locks and "E02" is displayed. |
| Paper Table Height Sensor | ON condition (Interrupted) | When the paper feed table goes up, it does not stop at the proper position and E-02 lights. |
|  | OFF condition (Not interrupted) | The paper feed table does not go up and when printing starts, jam indicators "B" + of blink. |
| Paper End Sensor | ON condition (Not interrupted) (Feeler is actuated) | When there is no paper on the paper feed table, the Start key can be activated, but jam indicators "B" + of blink. |
|  | OFF condition (Not interrupted) (Feeler is not actuated) | Though there is paper on the paper table, Paper End indicators "B" + blink. |
| Pressure Sensor | ON condition (Interrupted) | After one sheet of paper is printed, the machine stops. At that time, the counter does not count down and jam indicator "B" + of blinks. |
|  | OFF condition (Not interrupted) | When the main switch is on, jam indicators "B" + of blink and it cannot be reset. |
| First Paper Exit Sensor | ON condition (Paper exists) | After one sheet of paper is printed, the machine stops and jam indicators "G" + of blink. |
|  | OFF condition (Paper does not exist) | After one sheet of paper is printed, the machine stops and jam indicators " B " and "E" + of blink. |

9. Table of Defective Electrical Components : SS830

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| Second Paper Exit Sensor | ON condition (Paper present) | When the main switch is turned on, jam indicators "G" + of blink. |
|  | OFF condition (Paper does not present) | After one sheet of paper is printed, the machine stops and jam indicators "E" + of blink. |
| Paper Feed Solenoid | OFF condition | The paper is not fed and jam indicators " $B$ " + of blink. |
| Drum Rotation Sensor | ON condition (Interrupted) | The drum begins to rotate when the main switch is turned on. E06 lights when the Start key is pressed. |
|  | OFF condition (Not interrupted) | The drum begins to rotate when the main switch is turned on. E06 lights when the Start key is pressed. |
| Master End Sensor | ON condition (Actuated) | Normal operation when a master is present. Master end is not detected; Master End indicators "C" + ப do not blink and jam indicators "C" + of blink. |
|  | OFF condition (Not actuated) | Even if the master is present, the Master End indicators " C " $+{ }^{\bullet}$ blink. |
| Right Cutter Switch (Rear) | ON condition (Feeler is actuated) | The master is not cut. (Cutter unit does not move at all.) |
|  | OFF condition (Feeler is not actuated) | When the master button is depressed, indicator "E-01"lights. At that time, the cutter does not return to the front position. |
| Left Cutter Switch (Front) | ON condition (Feeler is actuated) | The master is cut. (Cutter unit does not return from the rear.) |
|  | OFF condition (Feeler is not actuated) | When the main switch is turned on, indicator "E-01" lights. <br> When the master button is depressed "E-01 lights. (Master is cut) If switch fails during machine operation, "E-01" lights. |

9. Table of Defective Electrical Components: SS830

| Component | Condition | Phenomenon |
| :---: | :---: | :---: |
| First Drum Position Sensor | OFF condition (Not interrupted) | When the main switch is turned on, the drum starts rotating and it cannot be stopped. |
|  | ON condition (Interrupted) | * On print (When the Start key is pressed.) <br> 1. Paper feeding does not stop when the counter indicates " 0 ". <br> 2. Paper feeding does not stop when the stop key is pressed. <br> 3. Jam detection of paper feed and delivery does not work. <br> * On master making (When the Start key is pressed.) <br> 1. After the new master is wrapped around the drum and one sheet of paper (trial print) is delivered, the drum rotation does not stop. The stop key does not work. |
| Second Drum Position Sensor | OFF condition (Not interrupted) | * On print (When the Start key is pressed.) <br> 1. The paper feed solenoid does not work and the drum continues rotation. Also, the stop key does not work. <br> * On master making (When the Start key is pressed.) <br> 1. When the Start key is pressed, the drum rotates and it cannot be stopped. |
|  | ON condition (Interrupted) | * On print (When the Start key is pressed.) <br> 1. The paper feed solenoid does not work and drum continues rotation at 30 rpm . Also, the stop key does not work. <br> * Idling time <br> 1. Drum rotation does not stop. <br> * On master eject <br> 1. When the Start key is pressed, master miss-ejection indicators " $F$ " + of blink and the master is not ejected. |

9. Table of Defective Electrical Components : SS830


## TECHNICAL SERVICE BULLETINS

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

Retain this information with all VT2105 Parts Catalog documentation until a new micropublications paka with these revisions is distributed.


NOTE: The part number of the ROM and Main PCB for the VT2105 has been changed. The Main PCB has not been changed except for the ROM. The old and new PCB's are interchangeable.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2168122 | C2168123 | Main Control Board - 230V | $1 \rightarrow 1$ | 0 | 67 | 31 |
| C2168112 | C2168113 | Main Control Board - 115V | $1 \rightarrow 1$ | 0 | 67 | 31 |
| C2158045 | C2158057 | IC - Main Control Board | $1 \rightarrow 1$ | 0 | 67 | 32 |

TABLE CONTINUED ON PAGE 2

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured aft er the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

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|  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2008440 | Reverse Roller Solenoid | $1 \rightarrow 0$ |  | 61 | 8 |
| C2004223 | Reverse Solenoid Bracket | $1 \rightarrow 0$ |  | 61 | 9 |
| C2004216 | Reverse Roller Clutch Barrel | $1 \rightarrow 0$ |  | 61 | 10 |
| C2004217 | Reverse Roller Clutch Sleeve | $1 \rightarrow 0$ |  | 61 | 11 |
| C2004215 | Reverse Roller Clutch Spring | $1 \rightarrow 0$ |  | 61 | 12 |
| C2004213 | Pulley - 28T | $1 \rightarrow 0$ |  | 61 | 13 |
| C2014068 | Reverse Roller Clutch Pawl | $1 \rightarrow 0$ | -3/S | 61 | 51 |
| 56073616 | Guide Plate Spring | $1 \rightarrow 0$ |  | 61 | 52 |
| 06220060E | Spring Pin - $2 \times 6 \mathrm{~mm}$ | $1 \rightarrow 0$ |  | 61 | 103 |
| 03140080Z | Philips Screw | $1 \rightarrow 0$ |  | 61 | 104 |
| 05740060E | Hexagon Headless Screw-M4 x 6 | $1 \rightarrow 0$ |  | 61 | 106 |
| 03130200Z | Philips Screw - $3 \times 20$ | 1 $\rightarrow 0$ |  | 61 | 117 |
| C2134046 | Upper Reverse Roller | $1 \rightarrow 0$ |  | 61 | 42 |
| C2154200 | Clutch Stopper | $0 \rightarrow 1$ |  | 61 | 8 * |
| C2158240 | Reverse Roller Clutch | $0 \rightarrow 1$ |  | 61 | 9 * |
| $09604008 Z$ | Flange Head Screw | $0 \rightarrow 1$ | 3/S | 61 | 116 |
| C2154046 | Upper Reverse Roller | $0 \rightarrow 1$ |  | 61 | 42 * |

* DENOTES NEW ITEM


## UNITS AFFECTED:

All VT2105 Priports manufactured after Serial Number C3213040001 will have the new style Main CPU ROM and reverse roller clutch installed during production.

- UPDATE NO. 2 - MAIN CONTROL BOARD, IMAGE PROCESSING BOARD - Due to parts standardization, the Main Control Board (including the ROM on the main board), the Image Processing Board and the flat cable connecting the two boards have been changed. Since the number of connector pins on the Main Control Board and the Image Processing Board has been increased, old and new parts are not interchangeable. You may replace the Flat Cable, Main Control Board and Image Processing Board as a set, or use the newly registered Flat Cable (P/N C2169501) to connect old and new style boards.

NOTE: There are two (2) similar, but different, Flat Cables listed on the following part chart. The first, (P/N C2078088) is used to connect the new Main Control Board and the new Image Processing Board. The second, (P/N C2169501) enables the use of an old style board in a new machine and/or a new style board in an old machine. However, new style Main Control and Image Processing Boards must be used in conjunction with the Computer Interface Option.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2158088 | C2078088 | Flat Cable - Main Board | $1 \rightarrow 1$ | 3/S | 67 | 19 |
| C2158002 | C2168002 | Image Processing Board | $1 \rightarrow 1$ | 3/S | 67 | 25 |
| C2168123 | C2168062 | Main Control Board - 230V | $1 \rightarrow 1$ | 3/S | 67 | 31 |
| C2168113 | C2168052 | Main Control Board - 115V | $1 \rightarrow 1$ | 3/S | 67 | 31 |
| C2158057 | C2168057 | IC - Main Board | $1 \rightarrow 1$ | 3/S | 67 | 32 |
|  | C2169501 | Flat Cable Main PCB | $0 \rightarrow 1$ |  | 67 | 47 * |

## UNITS AFFECTED:

All VT2105 Priports manufactured after Serial Number C3213090001 will have the new style Main Contro Board, Image Processing Board and Flat Cable installed during production.

## SUBJECT: PARTS CATALOG CORRECTION

## GENERAL:

The following Parts Update is being issued to update all Ricoh VT2105 Parts Catalogs. This informatn should be incorporated into all existing Ricoh VT2105 Parts Catalog documentation.

Please correct your Parts Catalog as follows:

|  |  |  |  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| INCORRECT <br> P/N | CORRECT <br> P/N | DESCRIPTION | QTY | PAGE | ITEM |  |  |  |  |
| C2018453 | 12040801 | Push Switch | 1 | 67 | 20 |  |  |  |  |

## BULLETIN NUMBER: VT2105-003 <br> 03/14/94 <br> APPLICABLE MODEL: VT2105

## SUBJECT: FIELD SERVICE MANUAL - INSERT

## GENERAL:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bultin package contains 2 sets of replacement pages.

## PAGES:

The revised pages have been highlighted by an arrow $\Rightarrow$

Updated Information

## SUBJECT: FIELD SERVICE MANUAL - INSERT

## GENERAL:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bultin package contains 2 sets of replacement pages.

## PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$

* • 4-10 Updated Information

BULLETIN NUMBER: VT2105-004

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts Updates are being issued for all VT2105 Parts Catalogs. This information shoulde incorporated into all existing VT2105 Parts Catalog documentation.

- UPDATE NO. 1- CIRCUIT BREAKER - Due to a vendor change, the following parts have been changed.


## UNITS AFFECTED:

All VT2105 Priports manufactured after Serial Number C3214020001 will have the new style Circuit Baker and Bracket installed during production.

|  |  |  |  | INT | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY |  | PAGE | ITEM |
| C2032059 | C2162059 | Circuit Breaker Bracket | $1 \rightarrow 1$ | $\begin{gathered} " 1 " \\ -A S \\ A \\ \text { AET } \end{gathered}$ | 67 | 38 |
| 11070134 | 11070761 | $\begin{aligned} & \text { Circuit Breaker - 5A } \\ & (220 / 240 \mathrm{~V}) \end{aligned}$ | $1 \rightarrow 1$ |  | 67 | 126 |
| 11070154 | 11070782 | $\begin{aligned} & \begin{array}{l} \text { Circuit Breaker - 5A } \\ (110 / 120 \mathrm{~V}) \end{array} \\ & \hline \end{aligned}$ | $1 \rightarrow 1$ |  | 67 | 126 |
| 12081245 |  | Relay - DC24V | $4 \rightarrow 2$ |  | 87 | 109 |
|  | 12081042 | Power Relay - DC24V | $0 \rightarrow 2$ | 1 | 87 | 130 * |

DENOTES NEW ITEM

- UPDATE NO. 2-AC DRIVE BOARD - To improve reliability, the relays (RA303 and RA304) used to control the Table Drive Motor have been changed.


## UNITS AFFECTED:

All VT2105 Priports manufactured after Serial Number C321408XXXX will have the new style Relays installed during production.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured aft er the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: VT2105-005
APPLICABLE MODEL: VT2 105

## SUBJECT: INK PUMP IMPROVEMENT

## SYMPTOM:

Not all of the ink is supplied from the ink cartridge.

## CAUSE:

The small ball, which is used as a valve, is not pushed back properly.


## PRODUCTION COUNTERMEASURE:

A spring has been added inside the ink pump to ensure the ball is pushed back as it should be.

|  |  | REFERENCE |  |  |
| :---: | :--- | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |
| C2244715 | Pump Spring - 13mm | 1 | 41 | $27^{*}$ |
| C2004827 | Packing | 1 | 41 | $28^{*}$ |
| C2004826 | Pump Rubber | 1 | 41 | 25 |

UNITS AFFECTED:
All VT2105 Priports manufactured from December '95 (C321512XXXX) will have the Pump Spring added during production.

## FIELD COUNTERMEASURE:

Install the Pump Spring (C2244715) after removing the socket (2 screws).

NOTE: 1. When you remove the socket, ink will leak out. Make sure to place absorbent material under the work area prior to disassembling the ink pump.
2. There is a packing (gasket) (C2004827) between the socket and the housing (see illustration above). If it is damaged, you may need to replace the packing, however, this normally is not necessary.
3. The pump rubber (C2004826) is used to ensure that the nozzle of the ink cartridge tightly contacts the pump socket. Make sure that this part is not dislocated. The
 pump rubber used on the VT1730 and other later models is adhered by glue, however, it is not adhered on the older models.

## RICBM TECHNICAL SERVICE BULLETIN CUSTOMER SERVICE GROUP

BULLETIN NUMBER: VT2105-006

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts Updates are being issued for all VT2105 Parts Catalogs. This information shoulde incorporated into all existing Parts Catalog documentation.

UPDATE NO. 1- PARTS CATALOG CORRECTION - Add the following corrections to your Parts Catalog.



|  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: |
| INCORRECT | CORRECT | DESCRIPTION | PAGE | ITEM |
| PART NO. | PART NO. |  |  |  |
| C2163105 | C2163120 | ADF Unit - LT | 49 | $*$ |

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* DENOTES NEW ITEM


Correct (*: New index number or corrected illustration)


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UPDATE NO. 2 -
PARTS STANDARDIZATION - Due to parts standardization, the following parts have been changed.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2002005 | C2222072 | Bottom Stay | $2 \rightarrow 2$ | 0 | 11 | 11 |
| C2033015 |  | Bracket | $1 \rightarrow 0$ |  | 11 | 13 |
|  | C2242015 | Image Processing Board Bracket | $0 \rightarrow 1$ | 0 | 11 | 13 |
| C2154505 | C2194505 | Drum Stopper Ass'y | $1 \rightarrow 1$ | 0 | 11 | 27 |
| C2154506 | C2194506 | Stopper Base | $1 \rightarrow 1$ | 0 | 11 | 40 |
| C2034512 | C2244512 | Grounding Spring Plate | $1 \rightarrow 1$ | 0 | 11 | 46 |
| C2002340 |  | Washer | $1 \rightarrow 0$ |  | 13 | 24 |
|  | 07010030Z | Flat Washer - M3 | $0 \rightarrow 1$ | 0 | 13 | 24 |
| C2012226 | C2192226 | Gear - 22T | $1 \rightarrow 1$ | 0 | 13 | 33 |
| 14030539 |  | Photointeruptor - EE-SX450-P1 | $\mathrm{n} \rightarrow \mathrm{n}-1$ |  | $\begin{aligned} & 15 \\ & 17 \end{aligned}$ | $\begin{aligned} & 118 \\ & 111 \end{aligned}$ |
|  | AW020041 | Photointeruptor | $n \rightarrow n+1$ | 0 | $\begin{aligned} & 15 \\ & 17 \end{aligned}$ | $\begin{aligned} & 118 \\ & 111 \end{aligned}$ |
| $55061535 \square$ |  | Right Side Pad | $2 \rightarrow 0$ |  | 17 | 6 |
|  | C2095092 | Rubber Plate Lever | $0 \rightarrow 2$ | 0 | 17 | 6 |
| C2035126 | C2245126 | Right Rack - Paper Feed | $1 \rightarrow 1$ | 0 | 17 | 25 |
| C2035128 | C2245128 | Left Rack - Paper Feed | $1 \rightarrow 1$ | 0 | 17 | 40 |
| C2005207 | C2195127 | Sector Gear Stud | $1 \rightarrow 1$ | 3/S | 25 | 3 |
| C2035175 | C2245101 | Sector Gear | $1 \rightarrow 1$ | 3/S | 25 | 5 |
| 55015929 |  | Spacer - $5.2 \mathrm{~mm} \times 16 \mathrm{~mm} \times 1$ | $1 \rightarrow 0$ | 3/S | 25 | 1 |
| 56001086 |  | Spacer - $10.2 \times 20$ | $1 \rightarrow 0$ | 3/S | 25 | 6 |
| 08077018 |  | Washer - M10 | $1 \rightarrow 0$ | 3/S | 25 | 104 |
| 07200080Z |  | Retaining Ring - M8 | $\mathrm{n} \rightarrow \mathrm{n}-1$ | 3/S | 25 | 106 |
| C2136034 |  | Gear | $1 \rightarrow 0$ |  | 33 | 9 |
|  | - C2196033 | Gear - 50Z | $0 \rightarrow 1$ | 0 | 33 | 9 |
| C2136009 | C2246009 | Driven Roller - Transport Belt | $1 \rightarrow 1$ | 0 | 37 | 11 |
| 55054189 | C2156110 | Felt - Side Plate | $1 \rightarrow 1$ | 0 | 39 | 22 |

Continued...

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|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2004941 | C2194941 | Clamper Shaft | $1 \rightarrow 1$ | 0 | 45 | 30 |
| C2004947 | C2224947 | Clamper Rubber | $2 \rightarrow 2$ | 0 | 45 | 31 |
| C2154948 | C2194948 | Drum Clamper Ass'y | $1 \rightarrow 1$ | 0 | 45 | 36 |
| C2134583 ${ }^{\text {¢ }}$ |  | Stainless Screen | $1 \rightarrow 0$ |  | 45 | 37 |
|  | - C2194583 | Teflon Screen - B4 | $0 \rightarrow 1$ | 0 | 45 | 37 |
| C2003546 | C2193546 | Lower Belt | $4 \rightarrow 4$ | 0 | 63 | 7 |
| C2003545 | C2193545 | Upper Belt | $4 \rightarrow 4$ | 0 | 63 | 9 |
| $14080308 \square$ |  | IC - TL321CP | $1 \rightarrow 0$ |  | 85 | 138 |
|  | - 14081187 | IC - Ope. Amp-MC34071P | $0 \rightarrow 1$ | 0 | 85 | 138 |

## UNITS AFFECTED:

All VT2105 Priports will utilize the parts listed above as service parts only.

## RUC®® TECHNICAL SERVICE BULLETIN <br> CUSTOMER SERVICE GROUP

BULLETIN NUMBER: VT2105-007
06/28/96

## APPLICABLE MODEL: VT2105

## SUBJECT: MASTER EJECT BELT MODIFICATION

## SYMPTOM:

Master eject jams occur frequently. In the worst case, the upper and lower master eject belts slipff the rollers.

CAUSE:
During March 1996 production, the vendor that produced the master eject belts was changed. The part numbers were not changed because there was no change in configuration. However, recently it was fond that the new style master eject belts tend to stretch causing the above mentioned symptom.

## SOLUTION:

The vendor has again been changed. The part numbers have been changed as follows:

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2193545 | C2193605 | Upper Belt | $4 \rightarrow 4$ | 1 | 63 | 9 |
| C2193546 | C2193606 | Lower Belt | $4 \rightarrow 4$ | 1 | 63 | 7 |

## UNITS AFFECTED:

All VT2105 Priports manufactured after Serial Number C321604XXXX will have the new style Master Ejec Belts installed during production.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured aft er the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

CUSTOMER SERVICE GROUP
BULLETIN NUMBER: VT2105/2200-007 REISSUE $\star$
11/08/96
APPLICABLE MODEL: VT2105/2200

## SUBJECT: MASTER EJECT BELT MODIFICATION

## SYMPTOM:


#### Abstract

numbers were not changed because there was no change in configuration. However, recently it was ford


 that the new style master eject belts tend to stretch causing the above mentioned symptom.SOLUTION:
The vendor has again been changed. The part numbers have been changed as follows:

| $\begin{gathered} \text { OLD } \\ \text { PART } \\ \text { NUMBER } \end{gathered}$ | NEW PART NUMBER | DESCRIPTION | QTY | INT | MODEL |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | VT2105 |  | VT2200 |  |
|  |  |  |  |  | PAGE | ITEM | PAGE | ITEM |
| C2003545 | C2193605 | Upper Belt | $4 \rightarrow 4$ | 1 | 63 | 9 | - | - |
| C2003546 | C2193606 | Lower Belt | $4 \rightarrow 4$ | 1 | 63 | 7 | - | - |
| C2193545 | C2193605 | Upper Belt | $4 \rightarrow 4$ | 1 | - | - | 59 | 28 |
| C2193546 | C2193606 | Lower Belt | $4 \rightarrow 4$ | 1 | - | - | 59 | 29 |

## UNITS AFFECTED:

All VT2105/2200 Priports manufactured after Serial Number C321604XXXX and C340604XXXX respectively will have the new style Master Eject Belts installed during production.

INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured aft er the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: VT2105-008
10/15/96

## APPLICABLE MODEL: VT2105

## SUBJECT: MAIN DRIVE GEAR

## SYMPTOM:

 percentage of machines manufactured from the end of 1994 to April of 1995 had an insufficient amourdf grease applied to these gears during production.

## FIELD COUNTERMEASURE:

Inspect these gears and lubricate as necessary. Also, lubricate these gears whenever they are repled and at yearly PM intervals as mentioned in the service manual.

## PRODUCTION COUNTERMEASURE:

From May 1995, an inspection process was added to ensure these gears are properly lubricated during production.

BULLETIN NUMBER: VT2105-009
10/15/96
APPLICABLE MODEL: VT2105

## SUBJECT: INK ON LEADING EDGE OF COPIES

## SYMPTOM:

During a long printing run, ink appears at the leading edge of copies. At first, it is very hard toee, but it becomes more visible as the printing continues.

## CAUSE:

Due to rough paper edges, the master becomes damaged.
Just when the leading edge of the paper is positioned under the drum, it is pressed against the drum surface, so that the master is wrapped around by the press-roller. Due to this repeated action, thenaster's surface, where the paper leading edge contacts, is gradually torn.

Also, if the paper generates a lot of paper dust, it is accumulated on the press-roller surface andamages the master in the same manner.

Normally, even if the master is damaged, ink does not exist around the area beneath the master wherthe paper leading edge contacts (there are no holes in the metal screen). However, after a long printingun, ink leaks onto this area and is transferred to the paper through the damaged part of the master.

## SOLUTION:

1. Change the paper type. Re-setting the paper on the paper feed table up side down so that the rough edge of the paper faces downward may also solve the problem.
2. Change the image position on the paper slightly using the IMAGE SHIFTING key before the leading edge of the paper becomes dirty with ink.
3. Cover the leading edge part of the cloth screen on the drum with tape, so that ink does not leak eve when the master is damaged. See page two (2) for installation instructions for the tape.

## Installation Instructions:

- It is recommended to use: Teflon Tape - 19 mm : A012 9112
- The position of the tape has been determined to maintain the specified 5 mm leading edge blank margin for copies.
- Even after installing the tape, the same problem may occur if the leading edge registration of copsis not adjusted properly (if the paper feed timing is delayed). First check that the leading edge regiration of copies is OK. If it is out of specification, follow the "SECOND FEED ROLLER START TIMING" adjustment procedure in the Service Manual.
- Strips of sandpaper are used on the leading edge portion of the cloth screen. This prevents the maet wrapped around the drum from slipping out of the master clamper due to the repeating press-roller on/off action. Avoid covering all the sandpaper when you install the tape. However, to adhere theape firmly, some area of the sand paper should be covered.
- Even if the sandpaper is not used on the cloth screen (the old type cloth screen), install the tapat the same position by measuring the distance from the edge of the cloth screen. Refer to the distance between the edge of the screen and the sand paper, which is described below.

- Cut the tape where it covers the sandpaper as shown.The indicated area must be left as shown to hold the tape on the screen firmly. Be careful not to damage the cloth screen surface.
- Cut both edges of the tape as indicated.
- Even if the sandpaper is not used on the cloth screen (the old type cloth screen), install tape ahe same position by measuring the distance from the edge of the cloth screen to the lower edge of the tape (between 63 and 64 mm ).
- Since the specification of the leading edge blank margin is 5 mm , it is permissible to install theape $\underline{5}$ mm lower than the position indicated above.

BULLETIN NUMBER：VT2105／2200－010
11／08／96

## APPLICABLE MODEL：VT2200

## SUBJECT：PAPER TABLE DRIVE ERROR（E－02）

## SYMPTOM：

The electrical noise tends to be generated when the motor is still new．
Since a DC motor of this type is used on the VT2200 \＆VT3800 models only，this problem does not occoon any other PRIPORT models．

## FIELD COUNTERMEASURE：

For the field units，the Motor Relay Harness Kit has been registered as a service part（C2238131）Install the kit as shown below．

NOTE：The Motor Relay Harness Kit：（C2238131）includes：
－One Relay Harness（includes the capacitors）
－One Ty－wrap
－One Grounding Screw（M4 x 6）

NOTE：To prevent the relay harness from being caught by the gears， firmly secure it with the Ty－wrap as shown in the illustration．

## PRODUCTION <br> COUNTERMEASURE：



To prevent the electrical noise from being generated，a harness which contains two capacitors willeb installed between the AC Drive Board and DC motor from the August 1996 production．

BULLETIN NUMBER: VT2200-011
1/20/98
APPLICABLE MODEL: VT2200

## SUBJECT: FLUORESCENT LAMP STABILIZER BREAKAGE

## SYMPTOM:

The original transport motor does not work, causing a location " A " jam being displayed. When this occurs, the exposure lamp and the original pressure solenoid do not turn on, either.

## CAUSE:

Due to a short in capacitor "C2", either transistor "Q1" or "Q2" on the fluorescent lamp stabilizer fails. This causes fuse "FU600" on the A/D conversion board to blow.
This symptom may occur when the scanner unit is opened and closed immediately after turning on the machine's power.
When the main switch is turned on, the "Lamp On" signal is generated to turn on the exposure lamp. (This is to stabilize the light intensity of the fluorescent lamp before the start of scanning an original.) The lamp turns off after 1 minute.
While the "Lamp On" signal is generated, 24 -volts DC is supplied to the fluorescent lamp stabilizer. In this condition, if the scanner unit is opened, the voltage is cut by the safety switch. However, the lamp on signal stays on (until 1 minute lapses).
If the scanner unit is closed before the "Lamp On" signal turns off (1 minute at most), the voltage is suddenly supplied to the fluorescent lamp stabilizer. Due to excessive load, there is a possibility of capacitor "C2" on the fluorescent lamp stabilizer shorting out.

NOTE: The 24-volts DC supplied to the fluorescent lamp stabilizer is not cut by opening any other units/doors other than the scanner unit.

This problem rarely occurs since the load applied to "C2" fluctuates widely depending on the timing of closing the scanner unit. Also, it is not usual to open and close the scanner unit within 1 minute immediately after turning on the main switch.

## SOLUTION:

If this problem occurs, replacing fuse FU600 on the A/D conversion board (P/N-11070713) or the whole A/D conversion board (P/N-C224 8012) only can cause the same damage again. First, you must check the fluorescent lamp stabilizer (P/N-C2248006), and replace fuse FU600 if necessary.

From the September '97 production, new software is implemented. The new software turns off the "Lamp On" signal when the scanner unit (and all other units/doors) is open. Then, it turns on again one second after the scanner unit is closed (and if it is still within the exposure lamp on timing).
The following ROM is used on the main board for this modification:

| New Suffix (P/N) | Description | Check Sum |
| :--- | :--- | :--- |
| C224 8075-C | ROM IC134 - M27C512-15F1 | 98 D 9 |

## TECHMILRL SERUILE BLLLETIT <br> BULLETIN NO. 830/950-001 <br> DATE <br> 7-21-89 <br> PRODUCT SS830 PRIPORT

## SUBJECT: BLANK IMAGE

## SYMPTOM:

Blank image prints may be produced and/or master paper is not burned properly by the thermal head.

## CAUSE:

The thermal head drive line becomes grounded due to improper screw length for securing thethermal head when reinstalling.

## SOLUTION:

Ensure proper assembly of thermal head when reinstalling.
NOTE: Original size screws must return to original screw holes.


UNITS AFFECTED:
All SS830 priports exhibiting the above symptom.

# TEEHNILRL SERUILE BULLETIT 

| BULLETIN | NO. $\xlongequal{830 / 950-002}$ | DATE 7-21-99 |
| :--- | :--- | :--- |
| PRODUCT |  |  |
| SS830/950 PRIPORT |  |  |

SUBJECT: CPU MALFUNCTION

## SYMPTOM:

False indications displayed on operaiion panel.

1. " $F$ ", " $C$ ", " $B$ " is flashing when paper end is detected.
2. "Cover Open" is displayed.

## CAUSE:

The CPU on the main board malfunctions due to static electricity.

## SOLUTION:

Install the ground wire in the paper table section as illustrated.


TECH SERVICE BULLETIN SS830/950-002
PAGE 2 of 2

|  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: |
| NEW PART NO. | DESCRIPTION |  | QTY | PAGE |
| C2038098 | Grounding Wire | 1 | 11 | 41. |

- DENOTES NON ITEM

UNITS AFFECTED:
All SS830/950 priports manufactured after Serial Numbers 22181000 CKI and 2918120000 respectively will have the ground wire installed durin'g production.

# TELHEILRL SERUHEE BULLETH 

BULLETIN NO. 830/950-003 REISSUE $\star$
DATE

SUBJECT: CERAMIC OSCILLATOR AND CAPACITOR

## GENERAL:

The main control boards have been modified to ensure proper CPU operation. Retain this information with all SS830/950 parts catalog documentation until a new micropublications package with this update is distributed.


| OLD P/N | NEW P/N | DESCRIPTION | INT | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | PAGE |  | ITEM |  |
|  |  |  |  | SS830 | SS950 | SS830 | SS950 |
| 15030028 | 15030332 | Ceramic Oscillator - 6MUZ | YES | 63 | 59 | 142 | 139 |
| 16060995 - |  | Capacitor-10pF 50 V |  | 63 | 59 | 157 | 151 |
| $\underline{-16061129}$ |  | Capacitor-30pF 50V | YES | 63 | 59 | 157 | 151 |

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Number 2218120000 and 2198120000 respectively will have modified oscillator and capacitor installed during production.

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts updates are being issued to update all RicohSS830/950 Parts Catalogs. This information should be incorporated into all existing RicohSS830/950 Parts Catalog documentation until a newmicropublications package with these updates is distributed.

- UPDATE NO. 1 - COVERS - The material of the following parts has been changed to improve durability and reliability.



## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 2219030000 and 2199030000 respectively will have the new style covers installed during production.

- UPDATE NO. 2 - THERMAL HEAD CLEANER - The Material Safety Data Sheets have been included in the package to ensure safety.

NOTE: Ensure the enduser receives the Material Safety Data Sheets.

. Denotes new item

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 2218120000 and 2198120000 respectively will have the material safety data sheets installed during production.

## PAGE 2 of 2

- UPDATE NO. 3 - SIDE PLATE - A fixing plate and two (2) holes have been added to the side plate to prs vent the paper feed table from lowering during transportation. This will prevent the safety switch from actuating causing a "Cover Open" indicationwhen the main switch is turned "ON".

When the Copier is installed and turned "ON" the paperfeed table raises and the paper feed shaft is released from the fixing plate.


|  |  | REFERENCE |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |  |
| C2035143 | Fixing Plate | 1 | $11 \quad{ }^{\prime \prime}$ | $42^{\prime}$ |  |
| 095140062 | Philips Screw with Flat Washer-M4 | 1 | ${ }^{\prime}$ | 1 | 1 |

'Denotes new item.

UNITS AFFECTED:
All SS830/950 priports manufactured after Serial Numbers 2219040000 and 21990400crespectively will have the fixing plate installed during production.


## TELHMILRL SERUILE BLLLETH

## BULLETIN

NO. 830/950-005
DATE 1 o-20-89
PRODUCT

SUBJECT: MAIN CONTROL BOARD

GENERAL:
The component parts and program of the main control board have been changed to improve reliability.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD P/N | NEW P/N | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2068042 | C2068035 | Main Control Board |  | YES | 49/63 | 271* |
| C2068045 | C2068036 | IC-TMM24128—AP-20 <br> (Only compatible with P/NC2068035) |  |  | 49/63 | 28/1 |
|  | 14072273 | IC-TA8050P | 3 |  | 63 | 206* |
| 14071837 |  | IC-STK6962H | $1-0$ |  | 63 | 133 |
| 14071838 |  | IC-STK6972H | 1-0 |  | 63 | 134 |
| 16001096 |  | Resistor 1K OHM 1T +5\% | 6-0 |  | 63 | 144 |
|  | 16070001 | Coil-SN-8S-500 | 1 |  | 63 | $20{ }^{*}$ |
|  | 16040861 | Capacitor-10uF 50V | 1 |  | 63 | 208* |
| 14020110 |  | Diode-V06C | 1-2 |  | 63 | 121 |

## . DENOTES NEW ITEM

## UNITS AFFECTED:

All SS830 priports manufactured after Serial Number 2219050031 will have the new style main control board installed during production.

GENERAL:
The coil of the main motor has been covered with a core and the commutation brush's resistance has been changed to improve reliability and reduce electrical noise. Retain this information with aSS830/950 parts catalog documentation until a new micropublications package with this update is distributed.


|  |  |  |  |  |  |  |  | REFERENCE |  |
| :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD P/N | NEW P/N | DESCRIPTION | INT | PAGE | ITEM |  |  |  |  |
| C2008402 | C2038451 | Main Motor-DC8OW' | YES | 9 | 1 |  |  |  |  |
| C2038404 | C2038453 | Commutation Brush | YES | 9 | 7 |  |  |  |  |

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 2219040000 and 219904000 (respectively will have the new style main. motor with brushes installed during production.

## SUBJECT: NOISE FROM MASTER SPOOLS

SYMPTOM:
Noise generating from the master spool area.

## CAUSE:

The brake pad contacting the master spool may generate noise due to the composition of the brake pad material.

## SOLUTION:

Replace the brake plate with the soft urethane rubber type brake pad (no change in part number).


## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 2219090099 and 2199020009 respectively will have the soft urethane rubber type brake pad installed during production.


BULLETIN NO. 830/950-008<br>DATE

## SUBJECT: FLUORESCENT LAMP STABILIZER

## SYMPTOM:

Inoperative fluorescent lamp.

## CAUSE:

The fluorescent lamp stabilizer (P/NC2038104) malfunctions due to a possible voltage overload.

## FIELD COUNTERMEASURE:

Repiace the fluorescent lamp stabilizer (no change in part number) with one which has a "GREEN" colorecidecal.


## PRODUCTION COUNTERMEASURE:

The fluorescent lamp stabilizer has been modified.

## UNITS AFFECTED:

All SS950 Priports manufactured after Serial Number 2199040000 will have the new style lamp stabilizer (green label) installed during production.

## SUBJECT: PRINTING PRESSURE SPRING LINK

## GENERAL:

The following modifications have been implemented to increase the durability of the pressure spring link.

## 1. PRESSURE SPRING LINK (P/N C2005543)

The material, diameter, and color have been changed as follows:

|  | OLD TYPE | NEW TYPE |
| :--- | :--- | :--- |
| Material | Stainless Steel | Spring Steel |
| Diameter | 2.0mm | 2.3mm |
| Color | White | Black |

2. PRINTING PRESSURE ARM (P/N CZ005541)

The spring hook hole has been beveled and lubricated with graase as shown.


## 3. MOUNTING SCREW FOR VACUUM DRIVE BRACKET

The screw used to mount the vacuum drive bracket lias been shortened by 2 mm . This will prevent the end of the screw from contacting the pressure spring link.


## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 2219020000 and 2199020000 respectively will have the above modifications applied during production.



## SUBJECT: PACKING METHOD

## SYAPTOM:

Outer box damage.

CAUSE:
Improper warehouse storage.

## SOLUTION:

The corrugated paper used for the outerbox has been changed to increase its strength by approximately $40 \%$. Ricoh recommends that all Priports be stacked no more than three (3) high when storing.

## UNITS AFFECTED:

All SS830/950 Priports manufactured after Serial Numbers 2219070000 and 2199070000 respectively will have the stronger type packaging used during production.

## SUBJECT: UNEVEN IMAGE DENSITY

## SYMPTOM:

Uneven image density may occur until 15 to 20 copies are produced and/or the following:

- idling process does not increase the image density of the low density area.
- insufficient ink supplied to the master in the low density area.


## CAUSE:

The doctor roller is too close to the ink roller causing an insufficient supply of ink to the drum surface.

## SOLUTION:

Adjust the clearance between the ink roller and the doctor roller to the specification standard 00.08 mm . This may be accomplished by following the procedure below.

NOTE: Ensure a O.Imm gap gauge cannot be inserted between the doctor and ink rollers.
ADJUSTING PROCEDURE:

1. Remove the ink cartridge from the drum unit.
2. Disable the ink detection as follows:

## SS830 Priport:

A) Remove the rear cover.
B) Disconnect the two (2) pin connector "CN901" on the ink detection board and connect a jumper wire to the two (2) pins as illustrated below.

C) Set the DIP Switch "SW801" to the down position.

## SS950 Priport :

Turn ON the main power switch while holding down the Auto Cycle key and the Reset key as illustrated. This will access a special mode that enables the technician to use the machine without ink detection.


NOTE: Tum "OFF" the main power switch to cancel the special mode.
3. Make copies with several masters until all the ink is used inside the drum (until copies are blank).
4. Remove the drum unit from the machine and place it on a large sheet of paper.
5. Open the drum as follows:
A) Secure each comer of the screen with strips of adhesive tape [C] as illustrated.
B) Unhook the two tension springs [D] from the damper.
C) Loosen the Allen screw and remove the pinion gear [E].

D) Remove the clamper [F].

E) Remove the long strip of tape [G] from the edge of the metal drum.
F) Remove the six (6) screws (M4x6) and open the metal drum [H] halfway.
G) Place a sheet of paper [I] on the inside of the metal drum.

6. Wipe the ink off the ink roller and doctor roller.
7. Check the clearance between the ink roller [J] and the doctor roller [ K$]$ as illustrated:
A) Grasp the rollers as shown.
B) Insert a 0.08 mm gap gauge between the rollers.

NOTE: Check the gap in thres (3) locations left, right, and center.
C) Ensure a 0.1 mm , gauge cannot be inserted in the gap.

NOTE: Check the gap In three (3) focations left, right, end center.

6. If the gap is not within the spsctfication standard, remove the drive gear [M] which blocks the access to the eccentric bushing and loosen the screws shown in the illustration. Rotate the eccentric bushings [L] to adjust the gap. Tighten the screws and reconfirm adjustment.

NOTE: If the gap is too wide (mom than 0.1 mm ), excessive ink will be supplied to the drum surface, and ink will leak from the end of the screen.

9. Close the metai drum by sliding one end $[\mathrm{N}]$ under the other and tighten the six (6) drum screws. Ensure the end $[\mathrm{N}]$ does not slip out of position.

NOTE: There shouid be no cloarance between the drum wheels and the metal drum.
10. Apply a long strip of tape [0] over the ends of the metal drum.
11. Install the clamper $[P]$ by sliding the ciamper plate $[Q]$ (magnet side) under the front screen plate[R] (side with no springs) and tighten the four (4) clamper screws.
12. Place the pinion gear [ $\mathbf{S}$ ] on the clamper shaft and manually move the magnetclamper plate up and down several times to ensure that the clamper opens end closes smoothly.
NOTE: The outside im of the pinion gear must be positioned as Illustrated. The top tooth [T] of tie sector gear must be positioned above the pinton gear as shown.
13. Retighten the four clamper screws.
14. Insert a 0.3 mm gap gauge between the interrupter plate [U] and the piniongear, tighten the pinion gear Allen screw.

NOTE: Ensure clearance between the interrupter plate and the pinion gear is from 0.2 mm to 0.5 mm .
15. Hook the two (2) tension springs on the clamper.

NOTE: Ensure proper installation of the tebtm and stainless screens and remove tape as described In step 10.
16. Reinstall the drum unit and insert the ink cartridge.

CAUTION: Failure to return DIP Switch "SW901" to the up position and reconnect the two (2) pin connector before resuming normal operation will cause ink to overflow from the drum.
17. Return DIP Switch "SW901" to the up position and reconnect the two (2) pin connector.
16. Perform the idling process as fallows:

SS830-Press the idling key on the operation panel.
SS950-Press the " 0 " number key on the operation panel while holding down the "Reset" key.

TELHOILRL SERUILE BLLLLETHT
BULLETIN NO. 830/950-012
DATE I-22-90

## PRODUCT SS830/950 PRIPORTS

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts updates are being issued to update all RicohSS830/950 Parts Catalogs. This information should be incorporated into all existing RicohSS830/950 Parts Catalog documentation until a newmicropublications package with these updates is distributed.

- UPDATE NO. 1 - FRAME - A spring plate supporter and grounding spring plate have been added to ensure proper grounding.


|  |  | REFERENCE |  |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: |
| NEW P/N | DESCRIPTION | QTY | PAGE | ITEM |  |
|  |  |  |  | SS830 | SS950 |
| C2034511 | Spring Plate Supporter | 1 | 5 | $43^{\prime}$ | $45^{\prime}$ |
| C2034512 | Grounding Spring Plate | 1 | 5 | $44^{\circ}$ | $46^{\prime}$ |
| 08011135 | Philips Pan Head Screw-M3 $\times 3$ | 2 | 5 | $117^{\prime}$ | $117^{\prime}$ |

. DENOTES NEW ITEM
UNITS AFFECTED:
All SS830/950 priports manufactured after Serial Numbers 2219060000 and 2199060030 respectively will have the spring plate supporter and grounding spring plate installed during production.

- UPDATE NO. 2 -FIXING PLATE - A magnetic plate has been added to ensure proper movement when the plate is released.


|  |  |  |  |  |  |  |  |  | REFERENCE |  |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD P/N | NEW P/N | DESCRIPTION | INT | PAGE | ITEM |  |  |  |  |  |
| C2035143 | C2035148 | Fixing Plate | YES | 11 | 42 |  |  |  |  |  |

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers2219060000 and 2799060030 respectively will have the modified fixing plate installed during production.

- UPDATE NO. 3 - SCANNER - The configuration of the stopper stud and the size of the spring arm have been changed to correct misaligned front, rear, and scanner covers.


|  |  |  |  | REFERENCE |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD P/N | NEW P/N | DESCRIPTION | INT | PAGE |  | ITEM |  |
|  |  |  |  | SS830 | SS950 | SS830 | SS950 |
| C2103004 | C2033047 | Stopper Stud | AS A | 59 | 43 | 28 | 72 |
| C2033034 | C2043038 | Spring Arm | SET | 59 | 43 | 32 | 10 |

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers $\mathbf{2 2 1 9 0 6 0 0 0 0}$ and 2199060030 respectively will have the new style stopper stud and spring arm installed during production.
$\qquad$

## GENERAL:

The following Parts updates are being issued to update all RicohSS830/950 Parts Catalogs. This information should be incorporated into all existing RicohSS830/950 Parts Catalog documentation until a newmicropublications package with these updates is distributed.

- UPDATE NO. 1 - MASTER EJECT SECTION - The dimensions of the following parts have been changed to increase durability.


| OLD P/N | NEW P/N | DESCRIPTION | QTY | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | PAGE |  | $\frac{\text { ITEM }}{830 / 950}$ |
|  |  |  |  |  | 830 | 950 |  |
| C2003509 | C2033516 | Master Eject Stay - Large |  | AS | 47 | 55 | 21 |
| C2033502 | C2033517 | Lock Stud |  |  | 47 | 55 | 23 |
| C2013502 | C2033519 | Front Side Plate - Master Eject |  | A | 47 | 55 | 19 |
| 070100502 |  | Flat Washer - M5 | 1-0 |  | 47 | 55 | 110 |
|  | 070100802 | Flat Washer - M8 | 1 | SET | 47 | 55 | 110 |

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 2219070000 and 2199070000 respectively will have the modified parts installed during production.

TECH SERVICE BULLETIN NO. 830/950-013
PAGE 2 of 2

- UPDATE NO. 2 - PARTS CATALOG CORRECTIONS - Please correct the parts catalog as follows:

|  |  | REFERENCE |  |  |
| :--- | :--- | :--- | :---: | :---: |
| PART NO. | INCORRECT DESCRIPTION | CORRECT DESCRIPTION | PAGE | ITEM |
| C2014670 | Platen Roller | Ink Pump | 33 | 33 |


|  |  | REFERENCE |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
| INCORRECT P/N | CORRECT P/N | DESCRIPTION | PAGE | ITEM |  |
|  |  |  |  | 930 | 950 |
| C2012415 | C2032761 | Master Eject Box Door | 3 | 1 | 2 |
| C2012435 | C2032765 | Master Eject Cover | 3 | 3 | 4 |



## TELHMILRL SERUILE BLLLETIM

$\qquad$ DATE
3-29-9C
PRODUCT SS950 PRIPORTS

SUBJECT: CAPACITORS, GROUNDING WIRES ETC.

## GENERAL:

The following modifications have been applied to protect against electromagnetic interference. Retain this information with all SS950 parts catalog documentation until a new micropublications package with this update is distributed.

The Master Processing Control Board has four (4) capacitors and one (1) coil added.
The Power Supply Unit has a ground wire added.
A metal cover and insulating sheets have been added.
Ribbon cables are wrapped with special tape which has a metal wire covering and the clamps have been changed to metal.

A conductive plate spring and ground wire have been added and the coating removed from the plotter unit cover.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD P/N | NEW P/N | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2038002 | C2038222 | Master Processing Control Board - A4 |  | YES | 57/61 | 251* |
| 16041989 |  | Capacitor - $1 \mu \mathrm{~F} 50 \mathrm{~V}$ | 2.0 |  | 61 | 136 |
| 16041988 |  | Capacitor - 10.4 F 50 V | 1.0 |  | 61 | 135 |
| 16041593 |  | Capacitor - $100 \mu \mathrm{~F} 25 \mathrm{~V}$ | $1-0$ |  | 61 | 137 |
|  | 16042081 | Capacitor - $100 \mu \mathrm{~F} 50 \mathrm{~V}$ | 2 |  | 61 | 136 |
|  | 15042208 | Capacitor - 10 / F 50 V | 1 |  | 61 | 135 |
|  | 16042209 | Capacitor - $100{ }_{4} \mathrm{~F} 25 \mathrm{~V}$ | 1 |  | 61 | 137 |
|  | 16061190 | Capacitor - 150pF 50V | 3 |  | 61 | 151 |
|  | 16070421 | Coil - SPO615-220M2RO | 1 |  | 61 | 152 |
|  | 16061139 | Capacitor - $0.01 \mu \mathrm{~F} \pm 20 \%$ | x+1 |  | 61 | 140 |
| C2038330 | C2038332 | Induction Coil |  | YES | 69 | 9 |
| C2038316 | C2038318 | Transformer - E1-40 |  | YES | 69 | 4 |
| C2038320 | C2038324 | Coil |  | YES | 69 | 7 |
|  | C2038331 | Grounding Wire | 1 |  | 69 | 10 |
| C2018102 | C2038067 | Flat Cable - Master Processing |  | AS A | 45 | 15 |
| C2003125 | C2033029 | Clamp |  | SET | 5 | 31 |
| C2038080 | C2038117 | Flat Cable - Thermal Head |  | YES | 47 | 35 |
| C2038079 | C2038148 | Flat Cable - Plotter |  | AS A | 47 | 31 |
|  | C2033029 | Clamp | 1 | SET |  |  |
|  | C2038365 | Grounding Wire | 1 |  | 11 | $43^{\circ}$ |
|  | C2032142 | Bottom Plate - Master Processing Board | 1 |  | 57 | 47* |
|  | C2032143 | Cover - Master Processing Board | 1 |  | 57 | $48^{\circ}$ |
|  | C2032147 | Insulating Sheet - Master Processing | 1 |  | 57 | 49** |
|  | C2032148 | Insulating Sheet - Main Board | 1 |  | 57 | $50^{\circ}$ |
|  | C2032149 | Insulating Sneet - Make Up | 1 |  | 57 | $51^{\circ}$ |
| C2032425 | C2032744 | Plotter Unit Cover |  | YES | 3 | 14 |
|  | C2032044 | Conductive Plate Spring | 2 |  | 55 | $37^{\circ}$ |
|  | C2032144 | Hariess Clamp | 1 |  | 57 | $52^{*}$ |
| 095130062 |  | Philips Screww with flat Washer - M $3 \times 6$ | $x+1$ |  | 57 | 103 |



## UNITS AFFECTED:

All SS950 priports manufactured after Serial Number 2199090000 will have the above modifications installed during production.

TELHOILRL SERUILE BLLLETIT

| BULLETIN NO. | 830/950-015 | DATE | 5-7-90 |
| :---: | :---: | :---: | :---: |
| PRODUCT | SS830/950 PRIPORTS |  |  |

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts updates are being issued to update all FlicohSS830/950 Parts Catalogs. This information should be incorporated into all existingRicoh SS830/950 Parts Catalog documentation until a newmicropublications package with these updates is distributed.

- UPDATE NO. 1-POWER SUPPLY UNIT - A capacitor and grounding wire have been added for electromagnetic interference protection.


|  | REFERENCE  <br> NEW PART NO.  <br> C2018316 $\quad$ DESCRIPTION |  | QTY | PAGE |
| :---: | :--- | :---: | :---: | :---: |
| 16961572 | Grounding Wire | 1 | 73 | $9^{\prime}$ |

. DENOTES NEW ITEM

## UNITS AFFECTED:

All SS830 priports manufactured after Serial Number221911XXXX will have the capacitor and grounding wire installed during production.

- UPDATE NO. 2 - LOWER SECOND FEED ROLLER AND GEAR- The dimensions of these parts have been changed as illustrated to improve durability.


|  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | INT | PAGE | ITEM |
| C2015136 | C2035230 | Lower Second Feed Roller | AS | 21 | 18 |
| C2015130 | C2035231 | Gear-I 4T | SET | 21 | 12 |

UNITS AFFECTED:
All SS830/950 priports manufactured after Serial Numbers 221911XXXX and 219911XXXX respectively will have the new style gear and roller installed during production.

- UPDATE NO. 3- TABLE SECTION - The parts illustrated are available as service parts per field request.


TECH SERVICE BULLETIN 830/950-015
PAGE 3 of 4

| NEW PART NO. | DESCRIPTION | QTY | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | ITEM |
|  |  |  | 830 | 950 |  |
| C2009101 | Drawer | 2 | 93 | 85 | $1 *$ |
| C2009102 | Table Stud | 2 | 93 | 85 | 2* |
| C5052150 | Drum Decal-Black | 1 | 93 | 85 | 3* |
| C5052151 | Drum Decal-Red | 1 | 93 | 85 | $4^{*}$ |
| C5052152 | Drum Decal-Biue | 1 | 93 | 85 | 5* |
| C5052153 | Drum Decal-Green | 1 | 93 | 85 | $6^{*}$ |
| C5052154 | Drum Decal-Brown | 1 | 93 | 85 | 7* |
| C5052005 | Option Drum Case | 1 | 93 | 85 | 8* |
| C5052031 | Decal-Drum Case | 1 | 93 | 85 | 9* |
| C2009105 | Magnet Catch | 1 | 93 | 85 | 10* |
| C2009107 | Caster | 4 | 93 | 85 | 11* |
| C2009103 | Table Door | 1 | 93 | 85 | 12* |
| C2009104 | Hinge | 2 | 93 | 85 | 13* |
| 05840100Z | Hexagon Bolt-M4x10mm |  | 93 | 85 | 100* |
| 03240100Z | Sunk Screw- $4 \times 10 \mathrm{~mm}$ |  | 93 | 85 | 101* |
| 05880120Z | Hexagon Bolt-M8x12mm |  | 93 | 85 | 102* |

. DENOTES NEW ITEM

## UNITS AFFECTED:

All $\mathbf{S S 8 3 0 / 9 5 0}$ priports will utilize these parts as service parts only.

- UPDATE NO. 4 - BELT TENSIONER - Two (2) holes have been added to the feed roller holder (P/N C2035057), a belt tensioner assembly has been added, and the material of the18T gear has been changed to ensure proper belt drive.


TECH SERVICE BULLETIN 830/950-015 Page 4 of 4

| OLD P/N |  |  |  | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | NEW P/N | DESCRIPTION | QTY | INT | PAGE | ITEM |  |
|  |  |  |  |  |  | 830 | 950 |
|  | C2035205 | Belt Tensioner Assembly | 1 |  | 15 | 29** | $28^{\circ}$ |
|  | C2035200 | Tension Roller | 1 |  | 15 | $30^{\circ}$ | $29^{\circ}$ |
|  | C2035201 | Tension Arm | 1 |  | 15 | $31^{\circ}$ | $30^{\circ}$ |
|  | C2035208 | Tension Bracket | 1 |  | 15 | 32* | $31^{\circ}$ |
|  | C2035215 | Tension Spring | 1 |  | 15 | $33^{*}$ | 32* |
|  | C2035225 | Spacer-8×11x1mm | 1 |  | 15 | $34^{*}$ | $33^{*}$ |
|  | 072000402 | Retaining Ring-M4 | X 1 |  | 15 | 100 |  |
|  | 072000602 | Retaining Ring-6 | X+1 |  | 15 | 117* |  |
| 56072926 | C2035220 | Gear-18T | YES | 15 | 9 |  |  |

. DENOTES NEW ITEM

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 221912XXXX and 219912XXXX respectively will have the belt tensioner assembly and new style gear installed during production.

## TEEHMILRL SERUILE BLLLETIT

BULLETIN NO.
830/950-016
DATE 8/6/90

## SUBJECT: PROM MODIFICATION

## SYMPTOM:

1 Copy counter does not increment when small paper sizes are used. i.e. Post Card (4" $\times 6$ 6")
2.Images which appear on the platen cover may appear on the copy in reduction.
3. When stacked paper on the paper table runs out during the printing run, the operation panel
 indicator should light). Press the Reset key to reset thejam indicator.

CAUSE:
1 .The paper end sensor detects the paper end before the printing pressuresensor is actuated.
2.The CCD reads the platen cover after the trail edge of the original passes the scanning point.

FIELD COUNTERMEASURE:
Replace the main control board PROM or the main control board.
NOTE: No change in part numbers, only suffix

| PART NO. | DESCRIPTION |
| :--- | :--- |
| C2038042P | Main Control Board |
| C2038045J | PROM |

## ORDERING PROCEDURE:

Contact Technical Services Hotline at $1(800) 8374264$ to obtain a PROM.
PRODUCTION COUNTERMEASURE:
The PROM program has been modified as follows:
1 .The paper end detection is performed after the printing pressuresensor is actuated.
2.The master read command "OFF" timing will change according to the reduction ratios $93 \%, 82 \%, 71 \%$, or $84 \%$.
3.The Jam Indicator does not light when the stacked paper on the paper table runs out.

UNITS AFFECTED:
All SS830/950 priports manufactured after Serial Numbers 2219988074 and 2199888074 respectively will have the modified PROM installed during production.


## TEEHMILRL SERUILE BLLLETIN

BULLETIN NO.
830/850-017
DATE $\mathbf{8 / 6 / 9 0}$
PRODUCT SS830/950 PRIPORTS

SUBJECT: PARTS CATALOG UPDATES

- UPDATE NO. 1 - SEPARATION GUIDE PLATE-The position of the cutout has been shifted as illustrated to prevent original misfeeds.


|  |  |  |  |  |  |  |  |  | REFERENCE |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | INT | PAGE | ITEM |  |  |  |  |  |
|  |  |  |  | SS830 SS950 |  |  |  |  |  |  |
| C2033109 | C2033111 | Separation Guide Plate | YES | 55 | 39 |  |  |  |  |  |

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers $221004 X X X X$ and 219004 XXXX respectively will have the new style separation guide plate installed during production.

[^1]TECH SERVICE BULLETIN 830/950-017
mamenmen


|  |  |  |  |  |  |  |  |  | REFERENCE |
| :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | INT | PAGE | ITEM |  |  |  |  |
| C2034015 | C2074015 | Thermal Head Cover | YES | 47 | 27 |  |  |  |  |
| C2034030 | C2074030 | Guide Plate - Thermal Head | YES | 47 | 7 |  |  |  |  |

## UNITS AFFECTED:

All SS950 priports manufactured after Serial Number219004XXXX will have the modified thermal head cover and guide plate installed during production.

- UPDATE NO. 3 -CAPACITOR - A capacitor has been added to the master processing control board to ensure good copy quality.

NOTE: No changa in the part number of the master processing control board.

| NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| :---: | :---: | :---: | :---: | :---: |
| 16060669 | Capacitor $=0.1 \mathrm{~F}+80 \%-20 \% 50 \mathrm{~V}$ (C469) | 1 | 61 | 153* |

- DENOTES NEW ITEM


## TECH SERVICE BULLETIN 830/950-017

PAGE 3 OF 3

## UNITS AFFECTED:

All SS950 priports manufactured after Serial Number 219004XXXX will have the capacitor Installed on the master processing control board during production.

- UPDATE NO. 4 - THERMAL HEAD DRIVE BOARD - The following components of the thermal head drive board have been added to ensure reliability and durability of the thermal head. This modification will turn "OFF" the electrical supply to the thermal head during the thermal head standby condition.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PAR7 NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2038032 | C2038028 | Thermal Head Drive Board |  | YES | 47/67 | $3{ }^{*}$ |
|  | 14010298: | Transistor -2SC2712Y | 1 |  | 67 | 137* |
|  | 14010855i | Transistor - 2S.143 | 6 |  | 67 | 138* |
|  | 14020949 | Zener Diode -RD15ESB3 | 1 |  | 67 | 139* |
|  | 14080408 | IC -PST518A. | 1 |  | 67 | 140* |
|  | 14060764 | IC - UPD5556G | 1 |  | 67 | 141 |
|  | 16091026 | Resistor Array -1K Ohms @ $5 \%$ | 1 |  | 67 | 142* |
|  | 16042165 | Capacitor - 3.3uF 50V @20\% | 1 |  | 67 | 143 |
|  | 16042168 | Capacitor -1000uF 50V @ 20\% | 1 |  | 67 | 144* |
|  | 16061693 | Capacitor -0.1MF 50V | 1 |  | 67 | 145 |
|  | 16100035 | Resistor - 1 K Ohms 1/8W @5\% | 6 |  | 67 | 146 |
|  | 16100063 | Resistor -2.7K Ohms 1/8W | 1 |  | 67 | 147* |
|  | 16100067 | Resistor - 4.7K Ohms 1/8W@5\% | 3 |  | 67 | 148* |
|  | 16100071 | Resistor -10K Ohms @5\% | 1 |  | 67 | 149* |
|  | 16100089 | Resistor - 100 K Ohms 1/8W@5\% | $i$ |  | 67 | 150* |

## . DENOTES NEW ITEM

## UNITS AFFECTED:

All SS950 priports manufactured after Serial Number 219004 XXXX will have the modified thermal head drive board installed during production.


## TELHMILRL SERUILE BLLLETIT

BULLETIN NO.
830/950-018
DATE
8/13/90

## SUBJECT LEFT SIDE PLATE

## GENERAL:

The left side plate configuration has been changed and a key counte plate nut added to ensure proper installation of the accessory counter. Retain this information with all $\$ 830 / 950$ Parts Catalog documentation until a new micropublications package with this update is distributed.

## Plate Nut - Koy Counter



|  |  |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD P/N | NEW P/NM | DESCRIPTION | QTY | INT | PAGE | ITEM |  |
|  |  |  |  |  |  | SS830 | SS950 |
| 22032016 | C2032048 | Left Side Plate |  | AS A | 5 | 26 | 26 |
|  | A0301339 | Plate Nut - Key Counter |  | SET | 5 | 45* | 47* |

## * DENOTES NEW ITEM

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 221005XXXX and 219005XXXX will have the key counter plate nut installed during production.

## BULLETIN NUMBER 830/950-019 <br> 10/8/90 APPLICABLE MODEL SS830/950 PRIPORTS

## SUBJECT: REAR DRUM FLANGE AND GEAR



## GENERAL:

A spring pin has been press-fitted into the gear and rear drum flange to prevent the 30T qear from loosening during operation. The drum flarge rear shield (P/N C2004679) and ink roller drive flange(EP/NC2004674) have been modified to prevent the spring pin from dislodging from the rear drum flange.Retain this information with all SS830/950 Parts Catalog documentation until a new micropublications package with this update is distributed.


SS830-Page 35
17. DRUM SECTION II


SS950 - Page 35


## INTERCHANGEABILITY:

The gear 30T ( $\mathrm{P} / \mathrm{N}$ C2014652) and the rear drum flange ( $\mathrm{P} / \mathrm{NC} 2014654$ ) have been combined as $\mathrm{P} / \mathrm{N}$ C2034560 and are interchangeable.

## UNITS AFFECTED:

All SS830/950 Priports manufactured after Serial Numbers 2212040000 and 2199040000 respectively wili have the modified rear drum flange installed during production.

# TECHOILRAL SERUILE BULLETIT 

## SUBJECT: OFFSETTING

## SYMPTOM:

Offsetting on rear side of prints.

## CAUSE:

The voltage nay be sslightly high, even with the voltage adjusied within the specification standard (voltage on decal +0.0 to - 0.1 V).

## FIELD COUNTERMEASURE:

The use of the 800 master in theSS950 Priports will in most cases eliminate the offsetting effect as the Image density is slightly reduced. However; thermal heads with a higher reference voltage such as 24.9 V may have to be reduced to $24.2 \mathrm{~V}-24.3 \mathrm{~V}$ to effectively minimize offsetting. Refer to page $5-21$ of the Field Service Manual for the thermalhead voltage adjustment procedure.

# TELHOILRL SERUILE BULLETIM 

## SUBJECT SERVICE CALL INDICATION E-06

## SYMPTOM:

E-06 is displayed in the counter, and the machine stops without the drum unit mechanically locking.

## CAUSE:

A motor coil wire connected to a commutator has broken. The main motor stops when the carbon brush stops at the damaged commutator_


## FIELD COUNTERMEASURE:

Replace the motor (P/N C2038451).

## PRODUCTION COUNTERMEASURE:

A new method is used to connect the wires to the commutators. The part number of the main motor
(C2038451) remains the same. However, the color of the characters on the mainmotor serial number plate have been changed from BLACK to RED.

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 221008XXXX and 219008XXXX respectively will have the new style main motor installed during production.

TELHOILAL SERUILE BULLETIM

BULLETIN NO. 830/950-022REISSUE $\star$
6/26/91

## SUBJECT THIN LINES DO NOT APPEAR

## SYMPTOM:

Thin vertical lines and characters do not appear after continuous printings done from several originals (three or more) in the "Auto" cycle mode.


Copy


## CAUSE:

The shading plate is positioned slightly low causing the CCD to receive more intense light than normal.This symptom may not occur after the fluorescent lamp turns on because the light intensity of the lamp is stillow. However, when prints are made from 4 or 5 originals this symptom may occur due trstabilized light intensity.

## *FIELD COUNTERMEASURE:

Reposition the shading plate up 0.3 mm as follows:

Tech Service Bulletin No. 830/950-022REISSUE
Page 2 of 3

1. Mark the position of the shading plate as illustrated.


NOTE: The image density on the copies decreases when the shading plate is set too high.
2. Loosen the screws which secure the shading plate, reposition up 0.3 mm and then tighten screws.
3. Confirm the adjustment by placing 5 originals with thin lines/characters similar to the figure illustrated under symptom.
4. Make 10 continuous prints of each original in the "Auto" cycle mode.
5. Confirm whether the image problem appears on the print made from the 4 th or 5 th original.

## *PRODUCTION COUNTERMEASURE:

The lamp stabilizer and A/D conversion board have been modified. The lamp stabilizer slightly reduces the intensity of the light output by the fluorescent lamp. The amplification of the A/D conversion board has been increased (resistor R632 changed) to compensate for the CCD output voltage decrease caused by the reduced light intensity.

Tech Service Bulletin No. 830/950-022REISSUE
Page 3 of 3
$\rightarrow$ indicates change $\oplus$ indicates new item
$\star$ PAGE 61 (SE830) 30. SCANNER SECTION IV

| $\begin{gathered} \hline \text { Index } \\ \text { NO. } \end{gathered}$ | Part No. | Description | $\begin{aligned} & 0^{\prime} \text { ry Per } \\ & \text { Assembly } \end{aligned}$ |
| :---: | :---: | :---: | :---: |
| 1 | C200 3002 | Scanner Unit Shaft | 1 |
| 2 | C200 3072 | Leaf Spring | 4 |
| 3 | C200 3006 | Scanner UnitMirror | 2 |
| 4 | 54663147 | Adjusting Knob | 2 |
| 5 | C201 3071 | Shading Plate |  |
| 6 | C200 3091 | Lens - FL. 5138 |  |
| 7 | C201 3040 | Lens Holder |  |
| 8 | C201 8023 | CCD Board | 1 |
| 9 | C201 3070 | Scanner Frame Sprins |  |
| 10 | C201 800 | Fluorescent Lamp Stabilizer | 1 |
| 11 | C201 3075 | Scanner Stay | $!$ |
| 12 | C2013105 | Flat Cable - Mdstcr Processing | 1 |
| 13 | C201 8017 | A/DConversion Board | 1 |

tPAGE 71 (SS830)
35, A/D CONVERSION BOARD


## INTERCHANGEABILITY:

Part numbers C2018006, C2018017 and 16302621 are replacing C2008465, C2018012 and 16100053 respectively.

Part numbers C2018006 and C2018017 must be replaced as a set only.
女 UNITS AFFECTED:
AliSS830 Priports manufactured after Serial Number 221 104XYXX will have the modified lamp stabilizer and $\mathrm{A} / \mathrm{D}$ conversion board installed during production.

## SUBJECT: ROM MODIFICATION

## GENERAL:

The ROM on the main control board has been modified so that the "Stop" key may be depressed to stop the paper feed table while it is moving up or down.

NOTE: The paper feed table cannot be stopped by depressing the Stop key when the paper feed table is moving up to correct the paper feed position during the printing process.

| MODEL | OLD PART NO. | NEW PART NO. | DESCRIPTION |
| :--- | :--- | :--- | :--- |
| SS830 | C2068035B | C2068035C | Main Control Board |
|  | C2068036B | C2068036C | PROM |
| SS950 | C2038042P | C2038042Q | Main Control Board |
|  | C2038045J | C2038045K | PROM |

## INTERCHANGEABILITY:

Part numbers C2068035B, C2068036B, C2038042P and C2038045J are replacing C2068035C, C2068036C, C2038042Q and C2038045K respectively.

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 221006 XXXX and 219006XXXX respectively will have the updated ROM's installed during production.

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts updates are being issued to update all Ricoh SS830/950 Parts Catalogs. This information should be incorporated into all existing Ricoh SS830/950 Parts Catalog documentation until a new micropublications package with these updates is distributed.
-UPDATE NO. 1- SEARING SUPPORTER - Individual bearing holders have been installed in place of the. bearing supporter to prevent bearing from dislodging.

PAGE 6 (SS830)
PAGE 8 (SS950)


PAGE 7 (SS830)
PAGE 7 (SS950)
3. DRIVE SECTION :

| Index <br> No. | Parr No. | Description | Q'ty Per <br> Assemb 1y |
| :---: | :--- | :--- | :---: |
| 1 | C2O1 2218 | Stud \& Gear - 30T | 1 |
| 12 | C203 2304 | Support Side Plate |  |
| 35 | C200 2266 | Bearing Holder | 1 |



## INTERCHANGEABILITY:

$\rightarrow$ indicates change $\oplus$ indicates new item
Parts numbers C2032304, C2002266, and 08011135 are interchangeable as a set only.

## UNITS AFFECTED:

All S\$830 priports manufactured after Serial Number 221009XXXX will have the new style bearing hdder installed during production.

## - UPDATE NO. 2 - FIXING SCREW - The configuration of the fixing screw has been changed for easier

 replacement.PAGE42(SS830
PAGE 50 (SS950)


PAGE43 SS830)
PAGE51|SS950)
21. PLOTTER/MASTER FEED SECTION III


## INTERCHANGEABILITY:

Part numbers C2044150 and C2074150 are interchangeable.

## UNITS AFFECTED:

All SS830/950 priports wiil utilize these screws as service parts only.

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: C216/C224-001
05/20/98

## APPLICABLE MODEL:

GESTETNER - 5327
RICOH - VT2200
SAVIN - 3200DNP
The chart listed below shows the Last Bulletin
Number issued for the C216/C224 series.

| Bulletin Cross Reference |  |
| :--- | :--- |
| Ricoh Group Companies | Last Bulletin No. |
| Gestetner | N/A |
| Ricoh | 011 |
| Savin | 001 |

## SUBJECT: DRUM DRIVE GEAR ASSEMBLY

GENERAL:
The following parts updates are being issued for all C224 Parts Catalogs.


| OLD PART NO. |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2132218 |  | Stud \& Gear - 30T | $1 \rightarrow 0$ |  |  |  |
|  | $\rightarrow$ C2262330 | Drum Drive Gear Ass'y | $0 \rightarrow 1$ | 1 | 7 | 1 |
| C2232217 |  | Gear Shaft | $1 \rightarrow 0$ |  |  |  |
|  | $\rightarrow$ C2012217 | Gear - 50T | $0 \rightarrow 1$ | 1 | 7 | 16 |
| C2002308 | C2232311 | Image Shifting Arm - Small | $1 \rightarrow 1$ | 3 | 7 | 14 |
| C219226 | C2232226 | Gear - 22Z | $2 \rightarrow 2$ | 3 | 7 | 33 |
| C2242302 | C2232302 | Image Shifting Arm - Large | $1 \rightarrow 1$ | 3 | 7 | 34 |
|  | 08077013 | Spacer - $10.2 \times 14 \times 0.2 \mathrm{~mm}$ | $\mathrm{n} \rightarrow \mathrm{n}+4$ | 3 | 7 | 110 |
|  | C2232225 | Image Shifting Arm Ass'y | $0 \rightarrow 1$ |  | 7 | *44 |
| C2232229 |  | Feed Cam Gear | $1 \rightarrow 0$ |  |  |  |
|  | $\rightarrow$ C2012229 | Gear - 50T | $0 \rightarrow 1$ | 1 | 19 | 19 |
| C2075231 |  | Gear - 2ND Feed Roller | $1 \rightarrow 0$ |  |  |  |
|  | $\rightarrow$ C2095200 | Gear - 14Z | $0 \rightarrow 1$ | 3 | 21 | 12 |
| C2245230 | C2195005 | Lower Feed Roller | $1 \rightarrow 1$ | 3 | 21 | 18 |

* New Item number

Continued...

Tech Service Bulletin No. C216/C224-001
Page 2 of 2

## UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style parts installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner 5327 | 59577070001 |
| Ricoh VT2200 | C3457060411 |
| Savin 3200DNP | S3457070001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or units <br> previously modified, use the new individual part numbers. |  |  |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER:
C216/C224-002
06/25/98

## APPLICABLE MODEL:

GESTETNER - 5327
RICOH - VT2200
SAVIN - 3200DNP

## SUBJECT: PARTS MANUAL CORRECTIONS

## GENERAL:

The following Parts updates are being issued for all C224 Parts Catalogs.
Corrections Page 3:
Operation Panel Parts Changes:


REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| :---: | :--- | :--- | :---: | :---: | :---: |
| C2242720 |  | Operation Panel - LT | $1 \rightarrow 0$ | 3 | 7 |
| C2242725 |  | Operation Panel - A4 | $1 \rightarrow 0$ | 3 | 7 |
|  |  | C2242440 | Operation Panel Cover | $0 \rightarrow 1$ | 3 | 7 | 7 |
| :--- |

Change part numbers on Page 5 and 7 :

| OLD PART NO. | NEW PART NO. | DESCRIPTION | REFERENCE |  |  |
| :---: | :---: | :--- | :---: | :---: | :---: |
| C2242117 | C2262117 | Right Grip - Paper Delivery | 1 | PAGE | ITEM |
| C2032120 | C2032107 | Right Grip - Paper Feed | 1 | 5 | 5 |
| C2154505 | C2194505 | Drum Stopper Ass'y | 1 | 5 | 27 |
| C2154506 | C2194506 | Stopper Base | 1 | 5 | 40 |
| C2034512 | C2244512 | Grounding Spring Plate | 1 | 5 | 46 |
| C2243019 | C2242019 | Grounding Plate | 1 | 5 | 51 |
| C2098234 | C2248450 | Drum Lock Solenoid | 2 | 7 | 6 |

Continued.

Tech Service Bulletin No. C216/C224-002
Page 2 of 6

Change Part Numbers and Descriptions on Page 11:

| OLD PART \#. | NEW PART \#. | OLD DESCRIPTION | NEW DESCRIPTION | QTY | PAGERE | PAGE |
| :---: | :---: | :--- | :--- | :---: | :---: | :---: |
| 55061535 | C2095092 | Right Side Pad | Rubber Plate Lever | 2 | 11 | 6 |
| C2245094 | C2245074 | Shielding Sheet | Actuator-Table Lwr Sw. | 1 | 11 | 28 |

Change illustration on page 16:


Tech Service Bulletin No. C216/C224-002

## Page 3 of 6

Change Part Numbers and Descriptions on Page 41:


|  |  |  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |  |  |  |
| C2174593 | C2174592 | Front Bank Plate | $1 \rightarrow 1$ | 41 | 3 |  |  |  |
| C2174595 | C2174594 | Rear Bank Plate | $1 \rightarrow 1$ | 41 | 14 |  |  |  |
| C2174596 |  | Sponge - Front Bank Plate | $2 \rightarrow 1$ | 41 | 21 |  |  |  |
|  | C2174597 | Sponge - Rear Bank Plate | 1 | 41 | $23 *$ |  |  |  |

[^2]Add to parts to list and change Part Numbers and Descriptions on Page 43:

|  | REFERENCE |  |  |  |  |  |
| :---: | :---: | :--- | :--- | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | NEW DESCRIPTION | QTY | PAGE | ITEM |
|  | C2243220 | ADF Unit - LT |  | 1 | 43 | $*$ |
|  | C2243225 | ADF Unit -A4 |  | 1 | 43 | $*$ |
|  | C2243235 | ADF Unit - China |  | 1 | 43 | $*$ |
| C2248090 | C2243070 | Orig. Pressure Roll | ADF Solenoid | $1 \rightarrow 1$ | 43 | 18 |

* Denotes new Item.

Continued...

Tech Service Bulletin No. C216/C224 - 002
Page 4 of 6
Change Part Numbers and Descriptions on Page 47 and 51:

|  |  |  |  | REFERENCE |  |
| :---: | :---: | :--- | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| C2243024 |  | Original Table | $1 \rightarrow 0$ | 47 | 2 |
|  | $\rightarrow$ C2243250 | Original Table Ass'y - LT | $0 \rightarrow 1$ | 47 | 2 |
|  | $\rightarrow$ C2243255 | Original Table Ass'y - A4 | $0 \rightarrow 1$ | 47 | 2 |
| C2033011 | C2243021 | Dust Shielding | $1 \rightarrow 1$ | 47 | 32 |
| C2244016 | C2194022 | Master Roller Catcher | $1 \rightarrow 1$ | 51 | 22 |

Add items 21 to page 55:


The Description for the illustration on page 62 stated " 230 V only". The illustration is for $110 / 120 \mathrm{~V}$ machines. Correct the illustration on page 62 as shown below:


Tech Service Bulletin No. C216/C224-002
Page 5 of 6

Change Descriptions and Part Numbers on page 65:


|  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| C2248007 |  | IC - IPU | $1 \rightarrow 0$ | 65 | 9 |
|  | $\rightarrow \mathrm{C} 2248047$ | ROM IC108 - HN27256P | $0 \rightarrow 1$ | 65 | 9 |
| C2248008 |  | IC - THD | $1 \rightarrow 0$ | 65 | 10 |
|  | $\rightarrow$ C2248075 | ROM IC134-M27C512-15F1 | $0 \rightarrow 1$ | 65 | 10 |
| C2242440 |  | Operation Panel Cover | $1 \rightarrow 0$ | 65 | 44 |
|  | $\rightarrow$ C2242720 | Operation Panel Ass'y - LT | $0 \rightarrow 1$ | 65 | 44 |
|  | $\rightarrow$ C2242725 | Operation Panel Ass'y - A4 | $0 \rightarrow 1$ | 65 | 44 |
| 10242267 | 12042376 | Micro Switch - V - 162 3c25 | - | 65 | 125 |
| C2182071 | C2182071 | Safety Switch Stopper | 1 | 65 | 8 |
| AA143005 |  | Stepped Screw - M $4 \times 2.5$ | $1 \rightarrow 0$ | 65 | 20 |
|  | C2182185 | Stepped Screw | $0 \rightarrow 1$ | 65 | 20 |
| C2182173 | C2182173 | Support Plate - Safety Switch | 1 | 65 | 22 |
| AW020041 |  | Photointerruptor | $2 \rightarrow 0$ | 65 | 43 |
|  | $\rightarrow$ AW020021 | Photointerruptor - 175487-3 | $0 \rightarrow 2$ | 65 | 43 |
| C2248110 | C2248120 | AC Drive Harness | 1 | 65 | 47 |
| 03140140Z |  | Philips Screw $4 \times 14$ | - | 65 | 104 |
|  | >03130140Z | Philips Screw M3 $\times 14$ | - | 65 | 104 |
|  | C2015125 | Shoulder Screw - M4 | 1 | 65 | 51* |
|  | C2182172 | Safety Switch Lever | 1 | 65 | 52 * |
|  | C2192306 | Drum Sensor Bracket | 2 | 65 | 53 * |

* Denotes new Item number.

NOTE: See illustration on next page for more changes to page 64.

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## Page 6 of 6

Page 64 Illustration changes:


Change Quantities and Part Numbers on page 73:

|  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| C2134041 | C2134042 | Master Flange | 1 | 73 | 1 |
| C2033075 | C2243077 | Original Exit Tray | 1 | 73 | 4 |
| C2013023 |  | Right Bracket - Original Tray | $1 \rightarrow 0$ | 73 | 5 |
| C2013020 |  | Left Bracket - Original Tray | $1 \rightarrow 0$ | 73 | 6 |

## SUBJECT: PARTS CATALOG UPDATE

## GENERAL:

The following Parts updates are being issued to update all Ricoh SS830/950 Parts Catalogs. This information should be incorporated into all existing Ricoh SS830/950 Parts Catalog documentation until a new micropublications package with these updates is distributed.

- UPDATE NO. 1 - UPPER MASTER FEED ROLLER and UPPER REVERSE ROLLER - The upper master feed roller has been changed to an electrically conductive type and the upper reverse roller has been changed to an antistatic type. This will prevent the master paper from wrapping around the upper master feed roller or upper reverse roller when master paper is feeding.

NOTE: The following is for identification purposes.

- The color of the upper reverse roller has been changed from gray to pink.
- The shaft of the new upper master feed roller has a groove; however, some of the first production rollers do not have the groove. They can be distinguished by the part number.

PAGE 43 (SS830)
21. PLOTTER/MASTER FEED SECTION III


PAGE 51 (SS950)
25. PLOTTER/MASTER FEED SECTION III


## INTERCHANGEABILITY:

Part numbers C2074181 and C2074046 are replacing C2004181 and C2034046.

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 221009XXXX and 219009XXXX respectively will have the new style rollers installed during production.

- UPDATE NO. 2 - MASTER PROCESSING FLAT CABLE - A strip of tape (Mark "A") and marks ("A" and "B") have been added to the flat cable between the machine frame and scanner unit. This is to facilitate assembly on the production line and prevent possible cable damage from incorrect installation.


Mark "B"


PAGE 61 (SS830)
30. SCANNER SECTION IV


PAGE 45 (SS950)
22. SCANNER SECTION III


## INTERCHANGEABILITY:

Part number C2018105 is replacing C2018102.

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 221009XXXX and 219009XXXX respectively will have the new style cable installed during production.
-UPDATE NO. 3- MAIN CONTROL BOARD - Fuses "FU1" and "FU2" have been added to ensure reliability and durability of the main control board. These fuses protect IC102, IC108 and IC123 from damage due to excessive current.


## PAGE 63 (SS830)

31. EDITING CONTROL BOARD


## PAGE 57 (SS950)

28. ELECTRICAL SECTION


## PAGE 59 (SS950)

29. MAIN CONTROL BOARD


## INTERCHANGEABILITY:

Part numbers C2068033 and C2038035 are replacing C2068035 and C2038042 respectively.

## UNITS AFFECTED:

All SS830/950 priports manufactured after Serial Numbers 221009XXXX and 219009XXXX respectively will have the new style main control board with the fuses installed during production.

- UPDATE NO. 4 - A/D CONVERSION BOARD - Fuse "FU1" has been added to the main control board to ensure reliability.


PAGE 45 (SS950)
22. SCANNER SECTION III


PAGE 65 (SS950)
32. A/D CONVERSION BOARD


## INTERCHANGEABILITY:

Part number C2038018 is replacing C2038012.

## UNITS AFFECTED:

All SS950 priports manufactured after Serial Number 219009XXXX will have the new style A/D conversion board installed during production.

## SUBJECT: PARTS CATALOG UPDATE

$\rightarrow$ indicates change $\oplus$ indicates new item

## GENERAL:

The following Parts updates are being issued to update all Ricoh SS830/950 Parts Catalogs. This information should be incorporated into all existing Ricoh SS830/950 Parts Catalog documentation until a new micropublications package with these updates is distributed.
-UPDATE NO. 1 - DRUM CLAMPER ASSEMBLY - The drum clamper assembly is available as a service part.

PAGE 34 (SS830) (SS950)


PAGE 35 (SS830)


PAGE 35 (SS950)


## INTERCHANGEABILITY:

This assembly is to be used to when replacing the clamper plate or drum clamper base assembly.

UNITS AFFECTED:
$\rightarrow$ indicates change $\oplus$ indicates new item
All SS830/950 Priports will utilize this assembly as a service part only.
-UPDATE NO. 2 - AC DRIVE BOARD - The photocoupler on the ac drive board has been changed to increase electrical resistance. The main motor may start turning soon after the main switch is turned on if this photocoupler fails. There is no change in the part number of the ac drive board, suffix change only.

PAGE 75 (SS830)
PAGE 71 (SS950)


## INTERCHANGEABILITY:

Part number 14030519 is replacing 14030222.

## UNITS AFFECTED:

All SS830 Priports manufactured after Serial Numbers 221012XXXX will have the installed during production.
All SS950 Priports will utilize this part as a service part only.

- UPDATE NO. 3- DRUM DRIVE GEAR/PULLEY - The drum drive gear/pulley is available as a service part to facilitate service.

PAGE 6 (SS830) (SS950)


Tech Service Bulletin No. 830/950-026
Page 3 of 3
$\rightarrow$ indicates change
$\oplus$ indicates new item
PAGE 7 (SS830)
PAGE 7 (SS950)
3. DRIVE SECTION I

| Index No. | Part No. | Description | $\begin{aligned} & \text { Q'ty Per } \\ & \text { Assembly } \end{aligned}$ |
| :---: | :---: | :---: | :---: |
| 1 | C201 2218 | Stud \& Gear - 30T | 1 |
| 2 | C2014561 | Drum Clamper Roller | 2 |
| 3 | C200 455: | Slide Guide | 2 |
| 4 | C200 4554 | Connector Plate | 2 |
| 5 | C200 4561 | Clamper Spring | 2 |
| 6 | C200 8437 | Master Eject Solenoid | 1 |
| ? | C203 2080 | Solenoid Bracket | 1 |
| 8 | C200 8116 | Ink Detecting Board | 1 |
| 9 | C203 2318 | Reinforcement Plate | 1 |
| 10 | C203 8091 | Drum Harness | 1 |
| 11 | C201 2211 | Stud | 2 |
| 12 | C203 2304 | Support Side Plate | 1 |
| 13 | C200 4516 | Slide Guide - Drive Shaft | 1 |
| 14 | C200 2308 | Image Shifting Arm - Small | 1 |
| 15 | C200 2311 | Image Shifting Link | 2 |
| 16 | C201 2217 | Gear - 50T | 1 |
| 17 | C200 4553 | Slide Shaft | 2 |
| 18 | C201 8061 | Motor - DC25.8W | 1 |
| 19 | C200 2248 | Fixing Plate | 1 |
| 20 | C203 2315 | Tension Shaft | 1 |
| 21 | C203 2317 | Pulley - 26T | 1 |
| 22 | C203 2316 | Timing Belt | 1 |
| 23 | $C 2032303$ | Snap Bushing | ! |
| 24 | C200 2340 | Washer | $!$ |
| 25 | C200 2339 | Blake Spring | 1 |
| 26 | C200 2338 | Gear - 20 T | 1 |
| 27 | C200 8450 | Encorder | 1 |
| 28 | C200 2321 | Bracket - Image Shifting Unit | 1 |
| 29 | C201 2221 | Gear - 40 T | 1 |
| 30 | C201 2222 | Coupled Gear -- 20 T \& 60T | 1 |
| 31 | C200 2331 | Gear - 20T | 2 |
| 32 | C200 2332 | Gear - 16T | 1 |
| 33 | C201 2226 | Gear - 22T | 2 |
| 34 | C200 2302 | Image Shifting Arm - Iarge | $!$ |
| 35 | C200 2266 | Bearing Holder | 1 |
| 36 | C203 2330 | Drum Drive Gear/Pulley Assembly | 1 |

## UNITS AFFECTED:

All SS950 priports will utilize this assembly as a service part only.

## TELHNILRL SERUILE BULLETIN

## SUBJECT: SEAL - INK CARTRIDGE

## GENERAL:

A transparent seal has been added to the exit tube of the ink cartridge (all colors) to prevent ink spillage during cartridge installation. It is not necessary to remove the seal; as the projection on the ink pump inlet will break the seal when the cartridge is set into the drum cartridge holder.

PAGE 3-9 (SS830/950)


## UNITS AFFECTED:

All SS830/950 priport ink manufactured after December 1990, will have the seal added during production.


кกセロฒ

## SUBJECT: DRUM BLADES - PREVENT INK LEAKAGE SYMPTOM:

Possible ink leakage from the drum.

## CAUSE:

Ink build-up on the ink roller edges may transfer to the inside of the drum screen and leak from the drum edges during large duplicating runs.

## $\star$ FIELD COUNTERMEASURE:

Install drum blade kit (P/N C2079011) and perform the following installation and adjustment procedures.
Part number C2079011; which contains:
QTY.
1 C2074745 - Front Drum Blade
1 C2074746 - Rear Drum Blade
2 05940080E - Internal Hexagon Head Screw - M4x8
2 07010040Z - Flat Washer - M4

## INSTALLATION PROCEDURE:

1. Remove the drum clamper assembly.
2. Remove the tetron screens from the drum.
3. Remove the stainless steel screen from the drum.
4. Remove the old front drum blade (C2004745) [A] (1 screw).
5. Remove the internal hexagon head screw (M4×6) [B] securing the ink roller shaft stay [C], then install the new front drum blade (C2074745) [D] and secure it with the internal hexagon head screw (M4x8) [E] and the flat washer M4 [F].
6. Remove the old rear drum blade (C2004746) [G] (1 screw).
7. Remove the internal hexagon head screw (M4×6) [H] securing the ink roller shaft stay [C], then install the new rear drum blade (C2074746) [I] and secure it with the internal hexagon head screw (M4×8) [J] and the flat washer M4 [K].
8. Reassemble.

NOTE: DO NOT re-use the old front and rear drum blades.


## ADJUSTMENT PROCEDURE:

1. Tighten each (front and rear) internal hexagon head screw $[A]$ so the drum blade $[B]$ contacts the lower edge [C] of the side plate.

NOTE: Ensure the clearance between the ink roller $[D]$ and the drum blade $[B]$ is 0.3 to 1.0 mm .
[Front Side] [Rear Side]


NOTE: Ensure the drum blade's edge [E] contacts the ink roller [F]


## PRODUCTION COUNTERMEASURE:

The following has been implemented to prevent leakage:

- The front and rear drum blades have been changed to scrape off ink build-up on the ink roller edges.
- A groove has been added to the edge of the front and rear bank plates. This prevents accumulated ink on the ink roller edges from being scraped off by the edge of the bank plates and falling inside of the drum screen.
- A hole has been added to the front and rear side plates of the ink roller unit to allow installation of the new drum blades.


## PAGE 37 (SS830/950) 18. DRUM SECTION III

|  | Index No. | Part No. | Description | Q'ty Per Assembly |
| :---: | :---: | :---: | :---: | :---: |
|  | 1 | C200 4749 | Ground Plate | 1 |
| $\longrightarrow$ | 2 | C203 4662 | Rear Side Plate - Ink Roller | 1 |
| $\rightarrow$ | 3 | C207 4766 | Rear Bank Plate | 1 |
|  | 4 | C200 8520 | Ink Detector Harness | 1 |
|  | 5 | C203 4543 | Ink Detector | 1 |
|  | 6 | C200 4733 | Ink Detector Bracket | 1 |
|  | 7 | C200 4715 | Shaft Stay - Ink Roller | 1 |
|  | 8 | C200 4748 | Gear - 45T | 1 |
|  | 9 | C2014665 | Bearing Holder | 2 |
|  | 10 | C200 3629 | Gear - 20T | 1 |
|  | 11 | C200 4723 | Adjusting Plate - Doctor Roller | 2 |
| $\longrightarrow$ | 12 | C203 4661 | Front Side Plate - Ink Roller | 1 |
| $\longrightarrow$ | 13 | C207 4745 | Front Drum Blade | 1 |
| $\rightarrow$ | 14 | C207 4765 | Front Bank Plate | 1 |
|  | 15 | C200 4722 | Drum Doctor Roller | 1 |
|  | 16 | C2014664 | Ink Roller Stay | 1 |
|  | 17 | C2014666 | Drum Ink Roller | 1 |
| $\rightarrow$ | 18 | C207 4746 | Rear Drum Blade | 1 |
|  | 19 | C200 4724 | Gear - 36T | 1 |
|  | 20 | C200 4726 | Gear - 30T | 1 |
| $\oplus$ | 21 | C207 9011 | Drum Blade Kit | 1 |

## INTERCHANGEABILITY:

Part numbers C2074745, C2074746, C2034661, C2034662, C2074765 and C2074766 are replacing C2004745, C2004746, C2014661, C2014660, C2004765 and C2004766 respectively.

Part numbers C2074765, C2074766, C2034661, C2034662 and C2079011 (kit) must be replaced AS A SET ONLY.

## UNITS AFFECTED:

All SS830 Priports manufactured after Serial Number 221102XXXX will have the new style blades and plates installed during production.

All SS950 Priports will utilize these parts as service parts only.

## TELHOILRL SERUILE BULLETIM

BULLETIN NUMBER 830/950-029
4/26/91
APPLICABLE MODEL SS830/950 PRIPORTS

## SUBJECT: THERMAL HEAD CLEANER BOTTLE CAP

## GENERAL:

The internal cap $[A]$ has been changed to a lid $[B]$ as illustrated to prevent the cap from lodging inside the thermal head cleaner bottle.

NOTE: There is no change in part number of the thermal head cleaner.


## UNITS AFFECTED:

All SS830 Priports manufactured after Serial Number 221011XXXX will have the new style bottle included during production.

All SS950 Priports will utilize this part as a service part only.

TELHOILRL SERUILE BULLETIM

BULLETIN NUMBER 830/950-030
4/26/91

## SUBJECT: PARTS CATALOG UPDATE

## $\rightarrow$ indicates change $\oplus$ indicates new item

## GENERAL:

The following Parts updates are being issued to update all Ricoh SS830/950 Parts Catalogs. This information should be incorporated into all existing Ricoh SS830/950 Parts Catalog documentation until a new micropublications package with these updates is distributed.
-UPDATE NO. 1 - UPPER AND LOWER HINGE AND HINGE BRACKET - The hinges and brackets have been modified to improve durability and prevent the possibility of the front door dislodging.

PAGE 2 (SS830/950)
[Old]

[New]


PAGE 3 (SS830) 1. EXTERIOR


## $\rightarrow$ indicates change $\oplus$ indicates new item

PAGE 3 (SS950) 1. EXTERIOR


## INTERCHANGEABILITY:

Part numbers C2072475, C2072478 and C2072479 are replacing C2012485, C2012481 and C2012483.
Part numbers C2072475, C2072478 and C2072479 must be replaced AS A SET.

## UNITS AFFECTED:

All SS830 Priports manufactured after Serial Number 221012XXXX will have the modified parts installed during production.

All SS950 Priports will utilize these parts as service parts only.
-UPDATE NO. 2-A/D CONVERSION BOARD FUSE - Fuse (FU601) which is soldered onto the A/D conversion board has been changed to a socket type to facilitate service. The part number of the A/D conversion board has a suffix change only (C2038018A).

## PAGE 65 (SS950)

32. A/D CONVERSION BOARD

$\longrightarrow$| Index <br> No. | Part No. | Description | Q'ty Per <br> Assembly |
| :---: | :---: | :---: | :---: |
| 203 | 11070585 | Fuse-2A |  |

## UNITS AFFECTED:

All SS950 Priports will utilize this part as a service part only.

## TEEHOILRL SERUIEE BLLLETIM

## SUBJECT: PAPER MISFEEDS/NO FEED

## SYMPTOM:

Misfeeds or no paper feed may occur at the paper feed area.

## CAUSE:

The one-way clutches inside the paper feed and second feed roller gears have worn the roller shafts causing the clutch to slip resulting in failure to feed paper.


NOTE: This failure only occurs during operation; if operated manually, the paper will feed correctly.

## SOLUTION:

Remove the paper feed roller gear $[A]$ and the second feed roller gear $[B]$.
Lightly sand the roller shaft's surface at the contact point of the one-way clutch.

NOTE: If misfeeds continue, replace the one-way clutch and roller shaft.

## UNITS AFFECTED:

All SS830/950 Priports exhibiting the above symptom.

## SUBJECT: PRINT PRESSURE CAM

## SYMPTOM:

A low density horizontal band may appear approximately 30 mm from the lead edge.

## CAUSE:

When printing at a speed of 100 or 120 ppm (4th or 5th step) the pressure roller is bound when it contacts the drum surface.

## SOLUTION:

Replace the print pressure cam with $\mathrm{P} / \mathrm{N} \mathrm{C} 2075560$. This will apply print pressure to the pressure roller $5^{\circ}$ (approximately 7 mm ) earlier in the drum rotation angle.

NOTE: Perform exit pawl timing adjustment (Pg. 5-77 of the Field Service Manual) as this modification affects the exit pawl timing. This will prevent the exit pawl from contacting the master clamper.


Pressure Roller Contact

## PAGE 9 (SS830/950) 4. DRIVE SECTION II



PAGE 25 (SS830/950) 12. PRESS ROLLER


## INTERCHANGEABILITY:

Part number C2075560 is replacing C2005560.

## UNITS AFFECTED:

All SS830 Priports manufactured after Serial Number 221104XXXX will have the new style cam installed during production.

All SS950 Priports will utilize this part as a service part only.

## SUBJECT: SEPARATION PLATE

## GENERAL:

When installing a new separation plate, inspect the bond between the rubber separation pad and separation plate. If the bond is insufficient, apply a strong adhesive (i.e. super glue).


Separation Plate

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: SS830/950/VT2130-034REISSUE $\dagger$ 12/27/91 APPLICABLE MODEL: SS830/950/VT2130 PRIPORTS

## SUBJECT: PARTS CATALOG UPDATE

## GENERAL:

Retain this information with all SS830/950/VT2130 Parts Catalog documentation until a new micropublications package with this revision is distributed.

UPDATE NO. 1-2 $2^{\text {nd }}$ FEED ROLLER GEAR - The one-way clutch of the gear has been changed to prevent image shifting ( varying registration) in the paper feed direction. The new style clutch utilizes a new type of grease to improve durability.

NOTE: A groove has been added to distinguish old from new gear styles.


|  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT |  |  | REFERENCE |  |
|  |  |  |  |  | SSAGE | ITEM |  |  |
| C2035231 | C2075231 | Gear -14T | $1-1$ | 1 | 21 | 27 | 12 |  |

## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C2801070011 will have the new style gear installed during production.
All SS830/950 Priports will utilize this gear as a service part only.
INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. NEW <br> parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

- UPDATE NO. 2 - FEED ROLLER ARM - The shape of the feed roller arm has been changed as illustrated. This will prevent the arm from contacting the side pad lever when the paper feed side plates are fully opened and the paper table is lowered.




## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C2801070011 will have the new style feed roller arm installed during production.

All SS830/950 Priports will utilize the feed roller arm as a service part only.

- UPDATE NO. 3 - PAPER DETECTING ARM - The paper detecting arm has been changed to improve strength and durability.

| Paper |  |  |  |  | xagon Hea Screw - |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | REFERENCE |  |  |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | SS830/950 | VT2130 |  |
| C2035515 | C2095515 | Paper Detecting Arm | 1-1 | 3 | 21 | 27 | 13 |
| 08046090 |  | Hexagon Bolt - M4 | X-1 |  | 21 | 27 | 105 |
| 07130040B |  | Hexagon Nut - M4 | X-1 |  | 21 | 27 | 106 |
|  | 05730050E | Hexagon Headless Set Screw - M3x5 | 1 | 3 | 21 | 27 | 114* |

[^3]
## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C2801070011 will have the modified parts installed during production.

All SS830/950 Priports will utilize these parts as service parts only.
t UPDATE NO. 4 - POWER SUPPLY UNIT - Capacitor "C126" has been changed and a Ferrite Core added to the anode of diode "D115" to increase the response of the power supply circuit.

NOTE: There is no change in the part number of the power supply unit, only a suffix change (P/N C2138302B).

|  |  |  |  |  | REFERENCE |  |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| 16061492 |  | Capacitor $-1 \mu \mathrm{~F} \pm 30-80 \% 50 \mathrm{~V}$ | $1-0$ |  | 73 | 130 |
|  | 10600807 | Capacitor $-0.1 \mu \mathrm{~F} 50 \mathrm{~V}$ | 1 | 1 | 73 | 130 |
|  | C2138339 | Ferrite Core $-\mathrm{B}-20 \mathrm{~F}-38$ | 1 |  | 72 | $254^{*}$ |

* DENOTES NEW ITEM



## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C2801070011 will have the modified power supply unit installed during production.

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UPDATE NO. 5 - A/D CONVERSION BOARD - The following parts have been changed to facilitate part standardization with other models.

NOTE: There is no part number change for the A/D conversion board, only a suffix change (P/N C2038018A
to C2038018B). to C2038018B).

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| 14072339 |  | TTL-IC-SN74LS24INS | 1-0 |  | 65 | 132 |
|  | 14071600 | TTL-IC-SN74LS244NS | 1 | 1 | 65 | 132 |
| 16100079 |  | Resistor - $22 \mathrm{~K} \Omega 1 / 8 \mathrm{~W} \pm 5 \%$ | 2-1 |  | 65 | 188 |
|  | 16302472 | Resistor - $4.7 \mathrm{~K} \Omega 1 / 8 \pm 5 \%$ | 1 | 1 | 65 | 204* |

* DENOTES NEW ITEM


## UNITS AFFECTED:

All SS950 Priports will utilize the A/D conversion board as a service part only.

TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: SS830/950/VT2130-035

11/27/91

## SUBJECT: PARTS CATALOG UPDATE

## GENERAL:

Retain this information with all SS830/950/NT2130 Parts Catalog documentation until a new micropublications package with this revision is distributed.

UPDATE NO. 1-BLACK INK CARTRIDGE SEAL - The transparent seal will be removed from the spout of the black ink cartridge $(500 \mathrm{cc})$. The instructions on the cartridge have been modified as illustrated below.

NOTE: The transparent seal will remain on the color ink cartridges.


## UNITS AFFECTED:

All black ink cartridges manufactured after Lot Number 1101102 will have the transparent seal removed during production.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. NEW <br> parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

- UPDATE NO. 2 - MAGNET PLATE - The holes of the magnet plate have been enlarged so the magnet plate fits properly.


|  |  |  |  |  | REFERENCE |  |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2002432 | C2132435 | Magnet Plate | $1-1$ | 1 | 9 | 24 |

## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C2801080004 will have the modified magnetic plate installed during production.

TECHNICAL SERVICE BULLETIN
BULLETIN NUMBER: SS830/950/VT2130-036
12/10/91
APPLICABLE MODEL: SS830/VT2130

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

This information should be incorporated into all existing SS830/950/VT2130 Parts Catalog documentation.

UPDATE NO. 1 - ANTISTATIC BRUSH - An antistatic brush [A] has been added to the upper second feed roller guide plate [B] as illustrated. The brush will reduce static electricity between the paper and the master which may cause paper misfeeds at the drum.


|  | REFERENCE |  |  |  |
| :---: | :--- | :---: | :---: | :---: | :---: |
| NEW PART NUMBER | DESCRIPTION | QTY | PAGE | INDEX |
| C2135500 | Antistatic Brush | 1 | 27 | 27* |

*DENOTES NEW ITEM

## UNITS AFFECTED:

All VT2130 priports manufactured after serial number C2801070001 will have the antistatic brush installed during production.

UPDATE NO. 2 - THERMAL HEAD DRIVE BOARD - A protective cut off circuit has been added to the thermal head drive PCB. The new circuit will protect the thermal head heating elements from receiving power after the copy cycle is complete.


## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. NEW <br> parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the $\mathrm{S} / \mathrm{N}$ cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

## UNITS AFFECTED:

All SS830 priports will utilize the thermal head drive board as a service part only.

TECHNICAL SERVICE BULLETIN
BULLETIN NUMBER: SS830/950/VT2130-037
12/27/91 APPLICABLE MODEL: SS830/950/VT2130 PRIPORTS

## SUBJECT: SCANNER UNIT LOCK LEVER

## GENERAL:

The direction of the screw which secures the lock lever to the shaft has been changed and the cutout of the bracket enlarged. This eliminates the need to remove the scanner unit to gain access to the screw. Retain this information with all SS830/950NT2130 Parts Catalog documentation until a new micropublications package with this revision is distributed.


| Lock Lever - Transmission |  |  |  |  | REFERENCE |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  |  | ITEM |  |  |
|  |  |  |  |  | SS830 | SS950 | VT2130 | SS830 | SS950 | VT2130 |
| C2033031 | C2033030 | Grip Bracket | 1-1 | 1 | 59 | 43 | 49 | 10 | 15 | 10 |
| C2033032 | C2133032 | Lock Lever | 1-1 | 3 3 | 59 | 43 | 49 | 35 | 18 | 35 |
| C2033033 | C2133033 | Lock Lever Transmission | 1-1 | 3 3 | 59 | 43 | 49 | 25 | 16 | 25 |
| 05530100E |  | Allen Screw - M3x10 | 1-0 |  | 59 | 43 | 49 | 116 | 110 | 116 |
|  | 05530060E | Allen Screw - M3x6 | 1 | 1 | 59 | 43 | 49 | 116 | 110 | 116 |

## UNITS AFFECTED:

All SS830/950 Priports will utilize these parts as service parts only.
All VT2130 Priports manufactured after Serial Number C2801090000 will have the modified parts installed during production.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | $\mathbf{2}$ | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. NEW <br> parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: SS830/950/VT2130-038

## SUBJECT: MASTER ROLL FLANGE

## GENERAL:

As per field request, a decal has been added to the master roll flange which will indicate the remaining master material. Retain this information with all SR200 Parts Catalog documentation until a new micropublications package with this revision is distributed.


| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | INDEX |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C2014005 |  | Master Roll Flange - LG/A4 |  |  | 87 | 2 |
|  | C2074010 | Master Roll Flange - LG | 1 | 1 | 87 | 2 |
|  | C2114025 | Master Roll Flange - A4 | 1 | 1 | 87 | 2 |
| C2134042 | C2134041 | Master Roll Flange - B4 | 1 | 1 | 87 | 2 |
|  | C2074011 | Master Flange Decal - LG/B4 | 0-1 |  | 87 | 24* |
|  | C2114026 | Master Flange Decal - A4 | 0-1 |  | 87 | 24* |

*DENOTES NEW ITEM

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. NEW <br> parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

## UNITS AFFECTED:

All VT2130 Priports copiers manufactured after Serial Number C2801090001 will have the master flange decal installed during production.

TECHNICAL SERVICE BULLETIN
BULLETIN NUMBER: SS830/950/VT2130-039

## SUBJECT: PRESSURE SPRING LINK

## GENERAL:

The pressure roller spring link has been modified as illustrated. The adjustment standard of the bolt clearance $[A]$ has been changed from 10 mm to 16 mm due to this modification.

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 5 sets of replacement page(s). Additional sets can be ordered through NSPC, reference part number P2130039.

PAGES:
The revised areas have been highlighted by an arrow. $\Rightarrow$

- 5-57 Updated Information


|  |  |  |  |  |  | REFERENCE |  |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |  |
| C2005543 | C2095543 | Pressure Roller Spring Link | $1-1$ | $3 S$ | 31 | 21 |  |
|  | C2095521 | Joint Shaft | 1 | $3 S$ | 31 | $28^{\star}$ |  |
|  | $07200030 Z$ | Retaining Ring - M3 | 2 | $3 S$ | 31 | $29^{\star}$ |  |

[^4]
## INTERCHANGEABILITY CHART:

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| :---: | :--- | :---: | :--- |
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| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C2801110000 will have the modified pressure spring link installed during production.

TECHNICAL SERVICE BULLETIN
BULLETIN NUMBER: SS830/950/VT2130-040
APPLICABLE MODEL: SS830/950/VT2130 PRIPORTS

## SUBJECT: DRUM DRIVE GEAR

## GENERAL:

The material of the drum drive gears has been changed to increase durability. Retain this information with all SS830/950/VT2130 Parts Catalog documentation until a new micropublications package with this revision is distributed.

|  |  |  |  |  | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  | ITEM |  |
|  |  |  |  |  | SS830/950 | VT2130 | SS830/VT2130 | SS950 |
| C2012218 | C2132218 | Stud \& Gear - 30T | 1-1 | 1 | 7 | 13 | 1 | 1 |
| C2032330 | C2132330 | Drum Drive Gear/Pulley Assembly | 1-1 | 1 | 7 | 13 | 36 | 36 |
| C2034560 | C2134560 | Rear Drum Flange | 1-1 | 1 | 35 | 41 | 41 | 34 |

## INTERCHANGEABILITY CHART:

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| :---: | :--- | :---: | :--- |
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| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

## UNITS AFFECTED:

All SS830/950 Priports will utilize these parts as service parts only.
All VT2130 Priports manufactured after Serial Number C280207XXXX will the these parts installed during production.

## SUBJECT: REVERSE ROLLER CLUTCH

## GENERAL:

REVERSE ROLLER CLUTCH - It has been reported that a small horizontal white line may appear 64 mm from the leading edge of prints. This occurs only when in photo modeand is caused by a shock wave when the master is clamped by the drum master clamper. To prevent this white line, the Main PCB ROM has been changed to delay the timing of the master clamping. As a result of the new software, the image on the prints is moved forward approximately 2 mm due to the slow response of the current reverse roller and master clamper mechanisms. To compensate for the new software, the reverse roller clutch mechanism has been changed from the combination of a solenoid and a spring clutch to a magnetic clutch. The parts listed on the part chart on page
 2 have been changed to accommodate the new style clutch.

NOTE: The part number of the ROM and Main PCB for the VT2130 has been changed. The Main PCB has not been changed except for the ROM. The old and new PCB's are interchangeable.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2118112 | C2118116 | Main Control Board - LG | $1 \rightarrow 1$ | 0 | 63 | 30 |
| C2118114 | C2118118 | Main Control Board - A4 | $1 \rightarrow 1$ | 0 | 63 | 30 |
| C2118113 | C2118117 | Main Control Board - B4 | $1 \rightarrow 1$ | 0 | 63 | 30 |
| C2118045 | C2118057 | IC -TMM27256BD-20 | $1 \rightarrow 1$ | 0 | 63 | 29 |

TABLE CONTINUED ON PAGE 2

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
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| 3/S | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured aft er the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

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|  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2008440 | Reverse Roller Solenoid | $1 \rightarrow 0$ |  | 57 | 16 |
| C2004223 | Reverse Solenoid Bracket | $1 \rightarrow 0$ |  | 57 | 17 |
| C2004216 | Reverse Roller Clutch Barrel | $1 \rightarrow 0$ |  | 57 | 20 |
| C2004217 | Reverse Roller Clutch Sleeve | $1 \rightarrow 0$ |  | 57 | 21 |
| C2004215 | Reverse Roller Clutch Spring | $1 \rightarrow 0$ |  | 57 | 19 |
| C2004213 | Pulley - 28T | 1 $\rightarrow 0$ |  | 57 | 18 |
| C2014068 | Reverse Roller Clutch Pawl | $1 \rightarrow 0$ | - 3/S | 57 | 15 |
| 56073616 | Guide Plate Spring | $1 \rightarrow 0$ |  | 57 | 14 |
| 06220060E | Spring Pin - $2 \times 6 \mathrm{~mm}$ | $1 \rightarrow 0$ |  | 57 | 105 |
| 03140080Z | Philips Screw | $1 \rightarrow 0$ |  | 57 | 106 |
| 05740060E | Hexagon Headless Screw-M4 x 6 | 1 $\rightarrow 0$ |  | 57 | 108 |
| 03130200Z | Philips Screw - $3 \times 20$ | $1 \rightarrow 0$ |  | 57 | 111 |
| C2134046 | Upper Reverse Roller | $1 \rightarrow 0$ |  | 57 | 52 |
| C2154200 | Clutch Stopper | $0 \rightarrow 1$ |  | 57 | 14 * |
| C2158240 | Reverse Roller Clutch | $0 \rightarrow 1$ |  | 57 | 15 * |
| $09604008 Z$ | Flange Head Screw | $0 \rightarrow 1$ | S | 57 | 120 |
| C2154046 | Upper Reverse Roller | $0 \rightarrow 1$ |  | 57 | 52 * |

DENOTES NEW ITEM

## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C2803040001 will have the new style Main CPU ROM and reverse roller clutch installed during production.

## SUBJECT: PARTS CATALOG UPDATE

## GENERAL:

To facilitate servicing, the stepped screw supporting the paper feed pressure lever has been changetb a combination of a spacer and a Philips screw ( $\mathrm{M} 4 \times 10$ ). This information should be incorporated intall existing VT2103 Parts Catalog documentation.

Old New


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| C2035010 ${ }^{\text {- }}$ |  | Lever Shaft | $2 \rightarrow 0$ |  | 23 | 4 |
|  | C2095220 | Spacer - $4 \times 20 \times 6$ | $0 \rightarrow 2$ | 3/5 | 23 | 4 |
|  | 03140100Z | Philips Screw - M $4 \times 10$ | $0 \rightarrow 2$ |  | 23 | 111* |

DENOTES NEW ITEM

INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
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| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured aft er the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts Updates are being issued for all VT2130 Parts Catalogs. This information shoulde incorporated into all existing VT2130 Parts Catalog documentation.

- UPDATE NO. 1- CIRCUIT BREAKER - Due to a vendor change, the following parts have been changed.


## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C211403XXXX will have the new style Circuit Baker and Bracket installed during production.

|  |  |  |  | INT | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY |  | PAGE | ITEM |
| C2032059 | C2162059 | Circuit Breaker Bracket | $1 \rightarrow 1$ | $\begin{gathered} " 1 " \\ -A S \\ \text { A } \\ \text { SET } \end{gathered}$ | 63 | 40 |
| 11070134 | 11070783 | Circuit Breaker - 5A (220/240V) | $1 \rightarrow 1$ |  | 63A | 121 |
| 11070154 | 11070782 | $\begin{aligned} & \begin{array}{l} \text { Circuit Breaker - 5A } \\ (110 / 120 \mathrm{~V}) \end{array} \\ & \hline \end{aligned}$ | $1 \rightarrow 1$ |  | 63A | 121 |
| 12081245 |  | Relay - DC24V | $4 \rightarrow 2$ |  | 75 | 109 |
|  | 12081042 | Power Relay - DC24V | $0 \rightarrow 2$ | 1 | 75 | 129 * |

DENOTES NEW ITEM

- UPDATE NO. 2 - AC DRIVE BOARD - To improve reliability, the relays (RA303 and RA304) used to control the Table Drive Motor have been changed.


## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C211408XXXX will have the new style Relays installed during production.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured aft er the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

## SUBJECT: EJECT ROLLERS

## SYMPTOM:

1. Master eject jams.
2. Dislodged Master Eject Belt.

## CAUSE:

1. The current configuration of the Master Eject Rollers creases the edges of the Master.
2. The operator removes the jammed Master roughly.

## SOLUTION:



To prevent the ejected Master from creasing (resulting in a Master eject jam), the 2 outside sets obllers of the 1st Upper and 1st Lower Eject Rollers have been moved inward 20 mm for improved contact with the Master and the following changes have been implemented.

1) The Bottom Plate of the Master Eject Unit has been changed (the guides for the 2 rollers, which are fixed to the Bottom Plate, have been moved.)
2) The positions of the E-rings that fix the rollers to the Upper Pulley Shaft have been moved.
3) The Pressure Plate has been changed (the cutouts corresponding with the Eject Rollers have been moved).

|  |  |  |  | INT |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY |  |  | PAGE | ITEM |
| C2013530 | C2113531 | Upper Pulley Shaft | $1 \rightarrow 1$ | $3 \square$ |  | 59 | 35 |
| C2003539 | C2113549 | 1st Upper Eject Roller | $1 \rightarrow 1$ | $3-$ |  | 59 | 8 |
| C2003542 | C2113552 | 1st Lower Eject Roller | $1 \rightarrow 1$ |  | A | 59 | 6 |
| C2033527 | C2113535 | Bottom Plate-Master Eject | $1 \rightarrow 1$ | $3-$ | SET | 61 | 14 |
| C2003708 | C2113709 | Pressure Plate | $1 \rightarrow 1$ | 1- |  | 61 | 17 |

## UNITS AFFECTED:

All VT2130 Priports manufactured after Serial Number C211408XXXX will have the new style Eject Rolite, Upper Pulley Shaft, Bottom Plate and Pressure Plate installed during production.

## BULLETIN NUMBER: SS830/950/VT2130-045

## SUBJECT: INK ON REVERSE SIDE OF PRINTS AND MASTER DAMAGE

NOTE: There are two types of master for the VT2130 Priport. They are the VT-II-M/S (new style) and the VT-M/S (old style). The VT-II-M/S is slightly more sensitive to the heat of the thermal head than the old style VT-M/S. The following symptom applies to the VT-II-M/S master only.

## SYMPTOM:

1. Ink off-set on the reverse side of prints.
2. Peeling of the master surface (the polyester film layer) during printing. The damaged areas will appar as black patches on prints.

## CAUSE:

The thermal head produces holes that are larger than required on the master.

## SOLUTION:

Adjust the intensity of the thermal head by the following procedure:

1. Install the new style Image Processing PCB ROM - IC422. This ROM, (C2119006), enables a wider adjustment range of the thermal head output via DIP Switches.

NOTE: This ROM can be obtained through normal NSPC channels or by downloading a Hex file for local programming via the Ricoh Technical Services BBS (refer to Service News and Information No.147)
2. Reduce the thermal head output by $15 \%$ by setting DPS400-5 of the Image Processing PCB to OFF and DPS400-6 to ON (see table below).

| DPS400-5 | ON | ON | OFF | OFF |
| :---: | :---: | :---: | :---: | :---: |
| DPS400-6 | ON | OFF | ON | OFF |
| Thermal Head Energy | STANDARD | $-10 \%$ | $-15 \%$ | $-20 \%$ |

NOTE: 1. Although the thermal head input voltage can be reduced by performing the Thermal Head Voltage Adjustment procedure found in the Field Service Manual, this will not prevent the above mentioned symptom. The new ROM enables the adjustment of the pulse length which determines the period that voltage is applied to the thermal head.
2. After reducing the thermal head output, solid fill areas will appear slightly lighter. Therefore, you should not reduce the thermal head energy by more than $15 \%$.
3. If the fences on the paper delivery table are not adjusted exactly to the paper size used, off-setting on the reverse side of prints will increase.

## RICBM TECHNICAL SERVICE BULLETIN <br> CUSTOMER SERVICE GROUP

BULLETIN NUMBER: SS830/950/VT2130-046
06/28/96

## APPLICABLE MODEL: VT2130

## SUBJECT: PARTS CATALOG CORRECTIONS

## GENERAL:

The following corrections are being issued for all VT2130 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

Page 31 PRESS ROLLER SECTION
Add the following part:


|  |  |  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |  |  |  |  |
| C2032083 | Exit Pawl Bushing | 1 | 31 | $30^{*}$ |  |  |  |  |

## Page 54 PLOTTER / MASTER FEED SECTION II

Correct the illustration for the cutter motor (C2008415) as follows:

* Index 24
(The motor and flat cable are soldered and provided as an assembled part.)


Tech Service Bulletin No. SS830/950/VT2130-046 Page 2 of 2

## Page 57 PLOTTER / MASTER FEED SECTION III

Incorrect (*: Incorrect index number or illustration)


Correct (*: New index number or corrected illustration)


CORRECT

|  |  | REFERENCE |  |  |
| :---: | :--- | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |
| C2002338 | Gear - 20T | 1 | 57 | 56 |
| 53241658 | Bushing $-4 \times 8 \times 4.5 \mathrm{~mm}$ | 1 | 57 | 57 |
| H0022226 | Bushing - Head Roller | 1 | 57 | 58 |
| H0121181 | Bushing - M6 | 2 | 57 | 59 |
| $07200020 Z$ | Retaining Ring - M2 | 1 | 57 | 121 |
| $07200025 Z$ | Retaining Ring - M2.5 | 1 | 57 | 122 |


[^0]:    * Optional Test Tool, Refer to Section 6.6 Step 8.

[^1]:    - UPDATE NO. 2 -THERMAL HEAD COVER AND GUIDEPLATE - The configuration of the thermal heed cover and thermal head guide plate has been modified as illustrated to ensure proper master placement.

[^2]:    * Denotes new Item number.

[^3]:    * DENOTES NEW ITEM

[^4]:    * DENOTES NEW ITEM

