FrameMaker Ver.5.5E(PC) FS-231 OPTION For 8020/8031
02.08.23

FS-231

SERVICE MANUAL



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Preface

Features

a. The adoption of the through-type stapler
The machine adopts the through-type stapler, which enables the saddle stitch with one stapler.

b. Three Auto-Staple Functions
The machine has three stapling positions (front stapling at a point, rear stapling at a point, center stapling at two points).

c. The Saddle Stitch Function (the book-binding)
The machine ejects up to ten sheets of paper which are saddle stitched and center folded.

d. The Punch Function (an option)
With the punch unit, the machine ejects papers punched for the binders (This function is available for papers with 64 - 90 g/m2, but not available for OHP film).

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GENERAL

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1. SPECIFICATIONS

Type :Multi Staple Finisher with Saddle (Booklet)
Installation :Freestanding
Modes :

Normal	Hole Punch (optional)
Non-Sort	Non-Sort Hole Punch
Sort	Sort Hole Punch
Sort Staple	Sort Staple Hole Punch
Saddle Staple	———

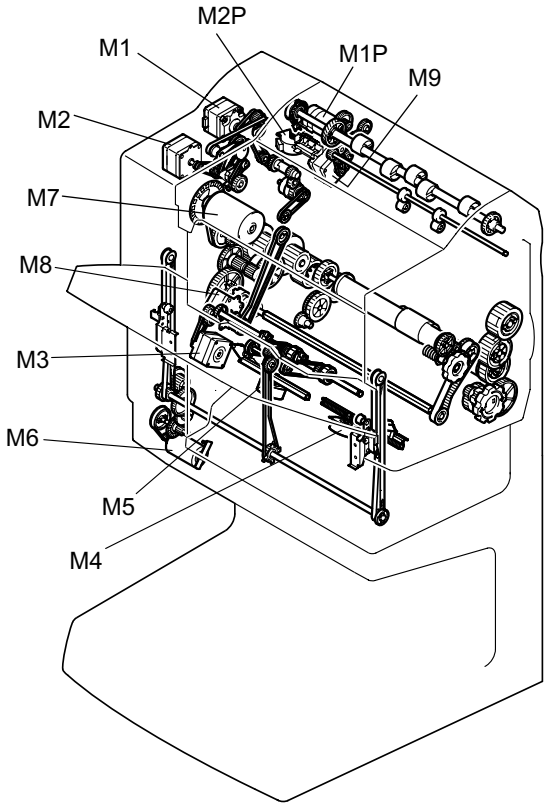
Paper

Mode	Paper Type	Paper Size	Weight (g/m2)	Tray Capacity	Exit Tray	No. of Sheets to be Stapled
Non-Sort	Plain Paper Recycled Paper	A6T to A3 Wide 5-1/2 x 8-1/2" 8-1/2 x 5-1/2" 8-1/2 x 11" 11 x 8-1/2" 8-1/2 x 14" 11 x 17" 12-1/4 x 18"	64 to 256 g/m2	64 to 90g/m2 No. of Sheets: A4L / LTR or smaller 1000; LGL or larger 500 Height: 150mm; 75mm Controlled by whichever reached earlier	Elevator Tray	———
	Post Card Envelop OHP Film Label Paper Cardboard	Max. CD311.5mm FD457.2mm Min. 86mm 139.7mm		20 sheets		
Sort	Plain Paper	A4L, A4C, A3 8-1/2 x 11" 11 x 8-1/2" 8-1/2 x 14" 11 x 17"	64 to 90 g/m2	No. of Sheets: A4L / LTR or smaller 1000; LGL or larger 500 Height: 150mm; 75mm Controlled by whichever reached earlier	Elevator Tray	
Sort Staple	Plain Paper Cardboard	A4L, A4C, A3 8-1/2 x 11" 11 x 8-1/2" 8-1/2 x 14" 11x17"	Normal Mode 64 to 90 g/m2	No. of Sheets: A4L / LTR or smaller 1000; LGL or larger 500 Height: 150mm; 75mm No. of Sets: 30; 30 Controlled by whichever reached earlier	Elevator Tray	Normal Mode *1 A4L / LTR or smaller: 2 to 50 LGL or larger: 2 to 25
Saddle Staple	Plain Paper	A4L, A3 8-1/2 x 11" 11 x 8-1/2" LGL, 11 x 17"	64 to 90 g/m2	10 sets (No. of Sheets to be Stapled: 6 to 10)pages 20 sets (No. of Sheets to be Stapled: 2 to 5)pages	Booklet Tray	2 to 10 sheets (Max. 40 pages)
Hole Punch (optional)	Plain Paper	4 holes: A4C, A3L 2 holes: 8-1/2 x 11",11 x 8-1/2", 8-1/2 x 14", 11 x 17" 3 holes: 8-1/2 x 11", 11 x 17"	64 to 209 g/m2		Elevator Tray	

*1: The number of Sheets to be Stapled is limited for high-density images. (Color Wise: 3 to 20 sheets)

Registration	:	Center
No. of Holes (optional)	:	Metric: 4holes, Inch: 2holes / 3holes
Stapling		
Staple Filling Mode	:	Dedicated Staple Cartridge Mode (5000 staples)
Staple Detection	:	Available (Nearly Empty: 40 remaining staples)
Stapling Position	:	Rear: Parallel 1 point
	:	Front: Parallel 1 point
	:	Center: Parallel 2 points
Stapled Paper Size	:	A4L, A4C, A3, 8-1/2 x 11", 11 x 8-1/2", 8-1/2 x 14", 11 x 17"
Manual Staple	:	None
Folding Mode	:	Roller Pressure Folding
Folding Position	:	Center of Paper
Power Requirement	:	DC24V (supplied from the copier)
	:	DC5V (generated within the FS)
Power Consumption	:	65W or less
Dimensions	:	601mm (W)x933mm (H)x603mm (D)
Weight	:	41.6kg
Environmental Require-ments	:	Same as the copier
Supplies	:	Staple Cartridge

2. ELECTRICAL COMPONENT LAYOUT



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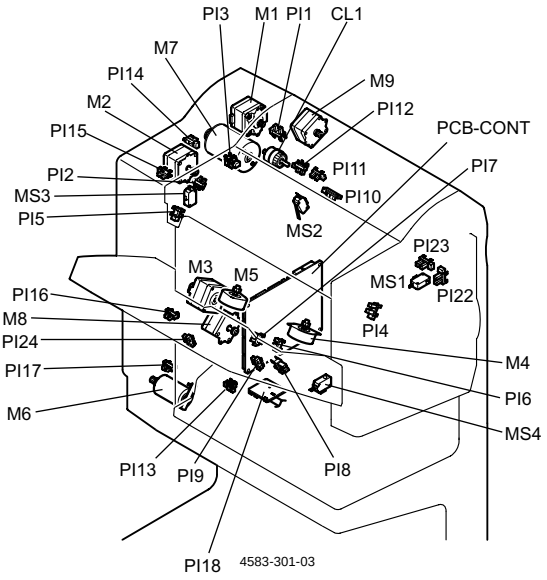
Symbol	Name
M1	Transport Motor
M2	Paddle Motor
M3	Exit Motor
M4	Front Aligning Motor
M5	Rear Aligning Motor
M6	Shift Motor
M7	Staple / Folding Motor
M8	Slide Motor
M9	Entrance Motor

3. DRIVE SYSTEM



Symbol	Name	Symbol	Name
PCB-CONT	Finisher Control Board	PI7	Exit Belt Home Position Sensor
		PI8	Exit Tray Sensor
M1	Transport Motor	PI9	Exit Home Position Sensor
M2	Paddle Motor	PI10	Folding Position Sensor
M3	Exit Motor	PI11	Folding Home Position Sensor
M4	Front Aligning Motor	PI12	Folding Roller Home Position Sensor
M5	Rear Aligning Motor	PI13	Saddle Tray Sensor
M6	Shift Motor	PI14	Staple / Folding Motor Clock Sensor
M7	Staple / Folding Motor	PI15	Shift Upper Limit Sensor
M8	Slide Motor	PI16	Shift Lower Limit Sensor
M9	Entrance Motor	PI17	Shift Motor Clock Sensor
SL1	Entrance Switching Solenoid	PI18	Slide Home Position Sensor
PI1	Entrance Sensor	PI22	Front Door Open Sensor
PI2	Paddle Home Position Sensor	PI23	Upper Cover Open Sensor
PI3	Swing Guide Home Position Sensor	PI24	Stack Full Sensor
		MS1	Front Door Open Sensor
PI4	Front Aligning Plate Home Position Sensor	MS2	Joint Open Sensor
		MS3	Staple Safety Sensor (Rear)
PI5	Rear Aligning Plate Home Position Sensor	MS4	Staple Safety Sensor (Front)
PI6	Finisher Tray Sensor		

SWITCHES ON PCB



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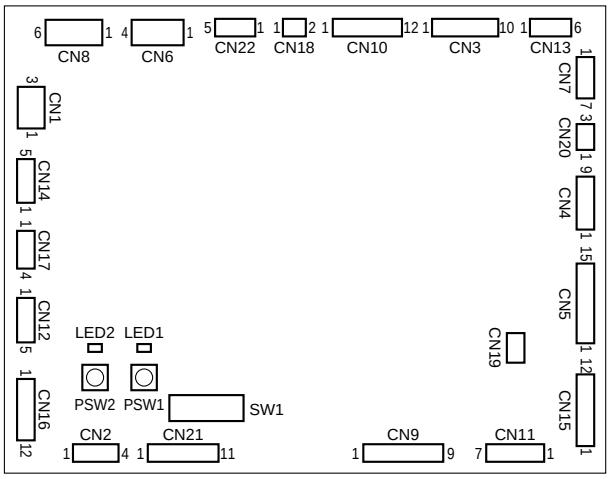
1. CONTROL BOARD

1-1. Finisher Control Board



4583-301-03

Switch	Function
SW1	Used to adjust the folding position and adjust the center 2-point stapling position.
PSW1	Used to adjust the folding position and adjust the center 2-point stapling position.
PSW2	Used to adjust the folding position and adjust the center 2-point stapling position.

1-2. SW1/PSW1/PSW2

By using SW1, PSW1 and PSW2 on the Control Board, basic adjustment for the folding positions and the stapling positions can be made independently from the Finisher.

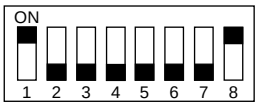
(1) Adjustment of the Folding Positions

When a folding position is adjusted, adjust the folding position to the stapling position. Make this adjustment after replacing the Finisher Control Board or when the folding position must be changed for some reason.

NOTES

Depending on the type of paper, both the folding position and the stapling position may be inaccurate. In this case, make adjustment independently from the Finisher. In this independent adjustment from the Finisher, set the adjustment value of "Center Stapling Position" and "Folding Position" in the service mode to +/- 0mm on the copier.

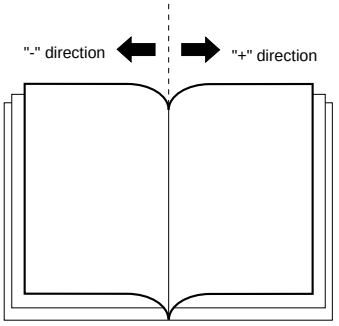
1. Set SW1 on the Finisher Control Board as shown below:



4583-101-16

2. Press PSW1 or PSW2 on the Finisher Control Board for the required times to adjust the folding position. One pressing of the switch moves the folding position by approx. 0.16mm.

- Press PSW1 to move the folding position in the "-" direction.
- Press PSW2 to move the folding position in the "+" direction.
- Press PSW1 and PSW2 simultaneously to clear the present set adjustment value.



4583-101-26

3. After setting the adjustment value of the folding position, set all bits of SW1 on the Finisher Control Board to OFF.
4. Perform the "Booklet Creation" on the copier, and confirm that the folding position has been correctly adjusted. If not, redo the adjustment.

(2) Adjustment of the Center Stapling Position

When a stapling position is adjusted, adjust the stapling position to the folding position. Make this adjustment after replacing the Finisher Control Board or when the stapling position must be changed for some reason.

NOTES

Depending on the type of paper, both the folding position and the stapling position may be inaccurate. In this case, make adjustment independently from the Finisher. In this independent adjustment from the Finisher, set the adjustment value of "Center Stapling Position" and "Folding Position" in the service mode to +/- 0mm on the copier.

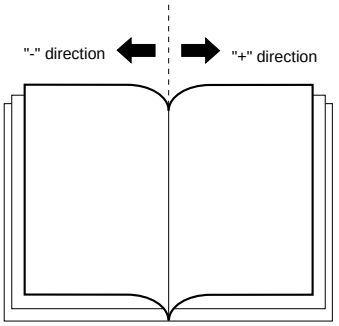
1. Set SW1 on the Finisher Control Board as shown below:



4583-101-18

2. Press PSW1 or PSW2 on the Finisher Control Board for the required times to adjust the stapling position. One pressing of the switch moves the stapling position by approx. 0.14mm.

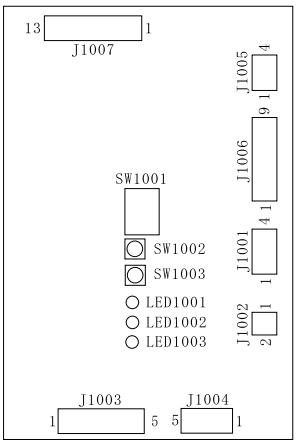
- Press PSW1 to move the stapling position in the "-" direction.
- Press PSW2 to move the stapling position in the "+" direction.
- Press PSW1 and PSW2 simultaneously to clear the present set adjustment value.



4583-101-26

3. After setting the adjustment value of the stapling position, set all bits of SW1 on the Finisher Control Board to OFF.
4. Perform the "Booklet Creation" on the copier, and confirm that the stapling position has been correctly adjusted. If not, redo the adjustment.

1-3. Punch Control Board



4583-602-01

Switch	Function
SW1001	Used to register the number of punched holes and adjust the sensor output.
SW1002	Used to register the number of punched holes and adjust the sensor output.
SW1003	Used to register the number of punched holes and adjust the sensor output.

(1) Adjustment of the Sensor Output

Be sure to make this adjustment after replacing the Punch Control Board, the Side Registration Sensor (Photosensor Board or LED Board) or the Punch Dust Full Sensor (Punch Dust Full Sensor Board or Punch Dust Full LED Board).

1. Set the bits 1 through 4 of DIPSW1001 on the Punch Control Board as shown below:



4583-102-57

2. Press SW1002 or SW1003 on the Punch Control Board. The sensor output will be automatically adjusted.

• When all LED1001, LED1002 and LED1003 light up, the adjustment has been completed.

3. Set all bits of DIPSW1001 to OFF.

(2) Registration of the Number of Punch Holes

In order for the Finisher to recognize the number of punch holes that can be achieved by the installed Punch Unit, such number of punch holes is registered in the IC on the Punch Control Board. Make this registration whenever the Punch Control Board has been replaced.

- However, this registration is not necessary if the EEP-ROM used on an old board has been reinstalled to a new board.

1. Set the bits 1 through 4 of DIPSW1001 on the Punch Control Board as shown below:



4583-102-58

2. Press SW1002 on the Punch Control Board to select the number of punch holes.

- Each time SW1002 is pressed, the following display changes in the descending order shown below:

Number of Punch Holes	LED 1001	LED 1002	LED 1003
2 (Punch Unit J1)	ON	OFF	OFF
2/3 (Punch Unit K1)	ON	ON	OFF
4 (Punch Unit G1)	OFF	ON	OFF
4 (Punch Unit H1)	OFF	OFF	ON

3. Press SW1003 on the Punch Control Board twice. The number of punch holes will be registered in the Punch Control Board.

- The pressing of SW1003 changes the steady lighting of the LED to flickering, and the pressing of SW1003 again changes the flickering of the LED to steady lighting. This completes the registration.

4. Set all bits of DIPSW1001 to OFF.

(3) Procedure after Replacing the EEP-ROM (IC1002)

1. Turn OFF the POWER switch of the copier.
2. Set the bits 1 through 4 of DIPSW1001 on the Punch Control Board as shown below:



4583-102-59

3. Press SW1002 and SW1003 on the Punch Control Board simultaneously.

- This will initialize the EEP-ROM. After the initialization, all LED1001, LED1002 and LED1003 light up.

4. Adjust the sensor output, and register the number of punch holes.
5. Set all bits of DIP SW 1001 to OFF.

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DIS/REASSEMBLY, ADJUSTMENT



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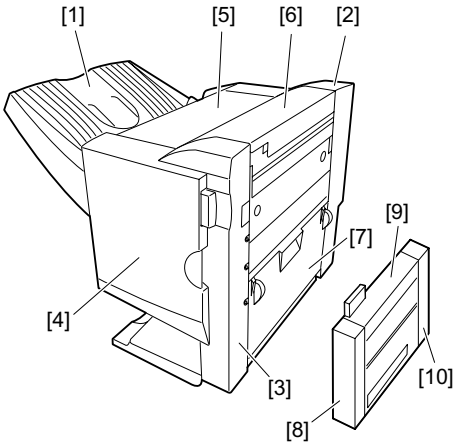
1. LIST OF COMPONENTS TO BE PERIODICALLY CHECKED

- In order for you to always take satisfactory copies from your copier and also to hold your copier steady for a long time, periodic maintenance is required for the following components:

Component to be Periodically Checked	Cleaning (K)	Cleaning Means	Possible Trouble
Roller and Roll at Paper Transport Section	300	Alcohol or Water	Transport Error
Transport Path: Guide Plate	300	Brush, Blower Brush	Transport Error
Sensor	300	Brush, Blower Brush	Detection Error

2. STAPLING UNIT (DRIVE SECTION)

2-1. Removal of the External Covers and Components

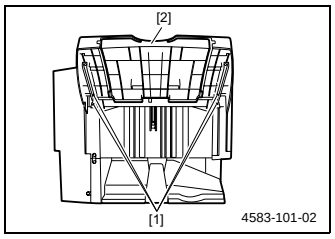


4583-101-01

[1]	Exit Tray (4)	[2]	Rear Cover (3)
[3]	Front Cover (4)	[4]	Front Door
[5]	Upper Door	[6]	Upper Cover (4)
[7]	Jam Access Cover	[8]	Middle Font Cover (2)
[9]	Middle Upper Cover	[10]	Middle Rear Cover (2)

The figure in ( ) indicates the number of fixing screws.

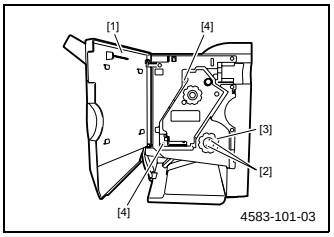
(1) Removal of the Exit Tray



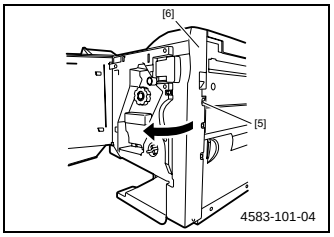
4583-101-02

1. Remove the four screws [1], and remove the Exit Tray [2].

(2) Removal of the Front Cover

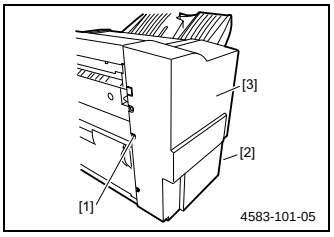


1. Remove the Horizontal Transport Unit.
2. Remove the Middle Transport Unit.
3. Open the Font Door [1].
4. While pinching the claws [2], remove the Folding Jam Release Dial [3].
5. Remove the two screws [4].

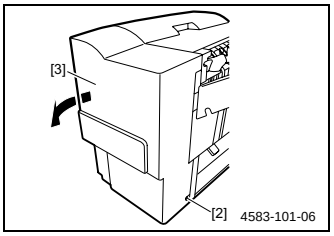


6. Remove the one screw [5], and remove the Front Cover [6].

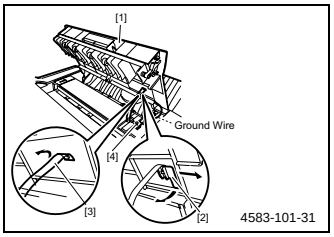
(3) Removal of the Rear Cover



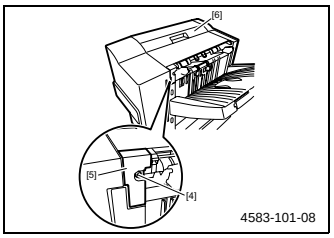
1. Remove the Horizontal Transport Unit.
2. Remove the Middle Transport Unit.
3. Remove the one screw [1] at the Paper Take-Up Section and the one screw [2] at the Paper Exit Section, and remove the Rear Cover [3].



(4) Removal of the Upper Door

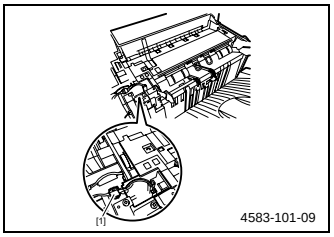


1. Open the Upper Door [1], remove the Door Band Holder [2] by turning it clockwise.
2. Remove the Door Band [3]. Remove the screw [4], and remove the grounding wire.

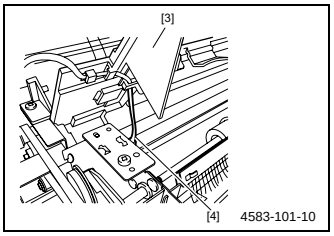


3. Remove the screw [4], remove the Finisher Tray Rear Cover [5], and remove the Upper Door [6].

(5) Removal of the Finisher Tray Upper Door

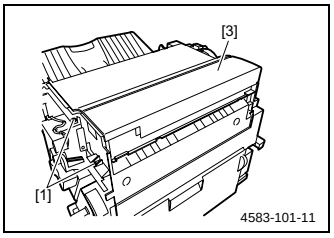


1. Remove the Horizontal Transport Unit.
2. Remove the Middle Transport Unit.
3. Remove the Front Cover. (Refer to 2-1. (2).)
4. Remove the Rear Cover. (Refer to 2-1. (3).)
5. Remove the Upper Door. (Refer to 2-1. (4).)
6. Unplug the connector [1].

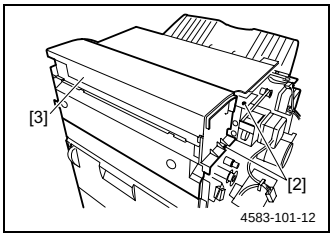


7. Unplug the connector [4] while holding up the Finisher Tray Upper Door [3], and remove the Finisher Tray Upper Door [3].

(6) Removal of the Upper Cover

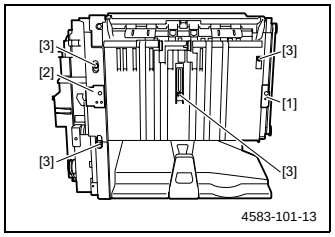


1. Remove the Horizontal Transport Unit.
2. Remove the Middle Transport Unit.
3. Remove the Front Cover. (Refer to 2-1. (2).)
4. Remove the Rear Cover. (Refer to 2-1. (3).)
5. Remove the two front screws [1] and the two rear screws [2], and remove the Upper Cover [3].

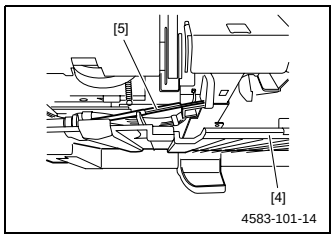


Remove the Middle Transport Unit.

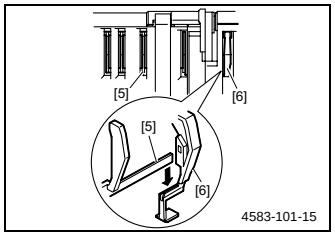
(7) Removal of the Side Guide



1. Remove the Horizontal Transport Unit.
2. Remove the Middle Transport Unit
3. Remove the Exit Tray. (Refer to 2-1 (1).)
4. Remove the Front Cover. (Refer to 2-1. (2).)
5. Remove the Rear Cover. (Refer to 2-1. (3).)
6. Derail the Exit Tray Support Plate (Front) [1] and the Exit Tray Support Plate (Rear) to the outside off the respective rail grooves.
7. Remove the four screws [3].

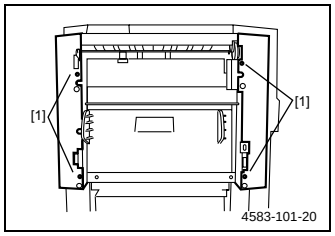


8. Pull down the Side Guide [4] lightly, disengage the Exit Tray Home Position Detecting Lever (Rear) [5], and then remove the Side Guide [4].

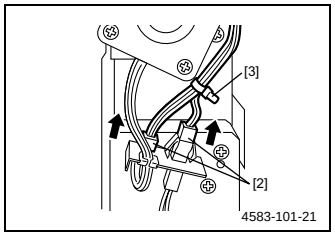


NOTE
In reassembling, ensure of exact installation with the Exit Tray Home Position Detecting Lever (Rear) [5] set in the slot of the Exit Tray Home Position Detecting Lever (Center) [6].
After reassembly, press each of these levers for several times to make sure of exact installation.

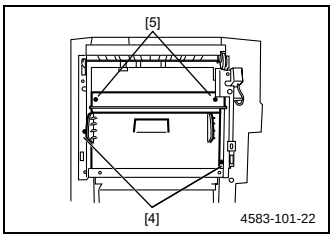
(8) Removal of the Middle Transport Unit



1. Remove the four screws [1]. Hold up the Middle Front Cover and the Middle Rear Cover, and remove them while shifting them back and forth.

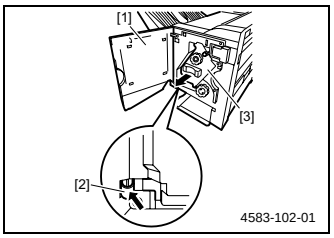


2. Unplug the two connectors [2]. Pinch the tie band [3], and remove it from the sheet metal.

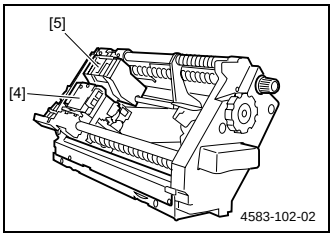


3. Remove the two screws [4].
4. Loosen the two screws [5]. Remove the Middle Transport Unit by sliding it upwards.

2-2. Removal of the Stapler

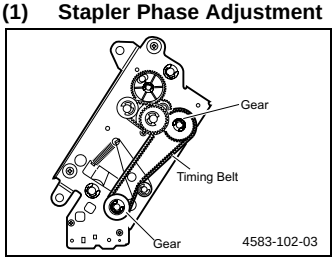


1. Open the Front Door [1].
2. Pull out the Stapler [3] while pressing the Stop Lever [2].

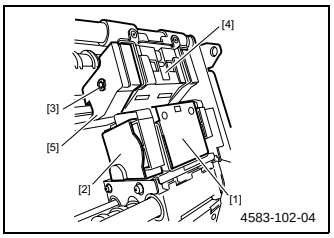


NOTE
Do not remove the Stapler from the shaft of the stapler frame, or displacement will be caused between the position to which the Staple Driver [4] (the lower unit of the Stapler) feeds staples and the position from which the Staple Clincher [5] (the upper unit of the Stapler) receives them.

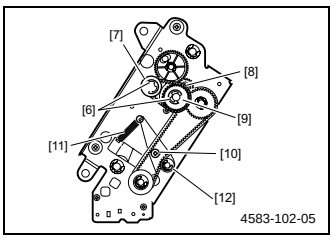
(1) Stapler Phase Adjustment



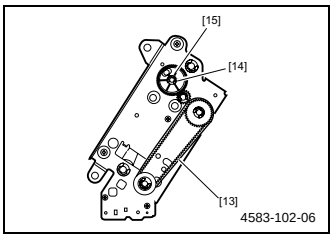
Make phase adjustment of the Stapler following the procedures given below whenever the Gear or Timing Belt in front of the Stapler has been replaced or removed for some reason, since such replacement or removal will cause mistiming between the staple driving by the Staple Driver (the lower unit of the Stapler) and the staple clinching by the Staple Clincher (the upper unit of the Stapler).



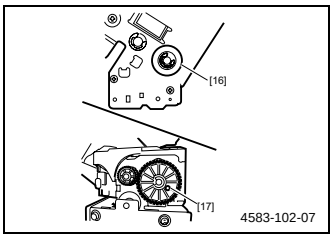
1. Remove the Gear Cover [2] from the Staple Driver [1].
2. Remove the E-Ring [3], and remove the Side Cover [5] from the Staple Clincher [4].



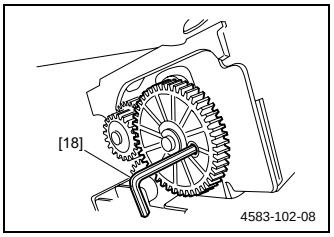
3. Remove the two E-Rings [6], and remove the Staple Jam Release Gear [7], the Timing Belt [8] and the Middle Gear 1 [9]. Also, remove the spacer and the spring located behind the Staple Jam Release Gear.
4. Remove the screw [10] and the spring [11], and remove the Belt Tension Roll [12].



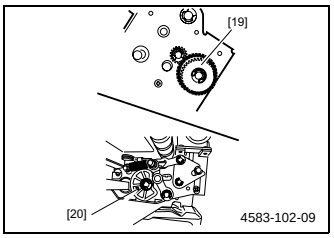
5. Remove the Timing Belt [13].
6. Remove the E-Ring [14], and remove the Staple Position Confirm Gear [15].



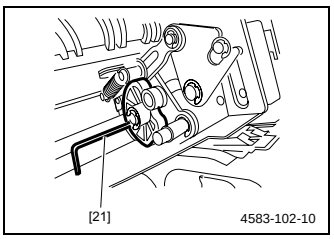
7. Turn the Gear [16] to position the hole [17] in the Gear of the Staple Driver to the hole behind.



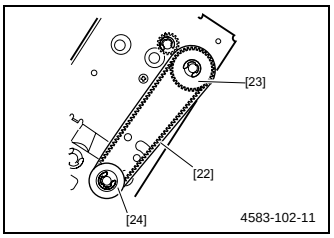
8. Insert a pin of approx.ϕ2 [18] (alternatively, 2mm hexagonal wrench or the like can be preferably used) into the hole, and fix the Gear.



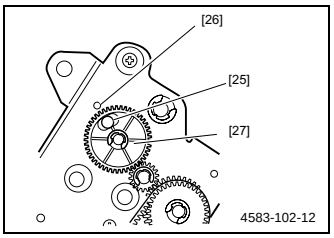
9. Turn the Gear [19] to position the hole [20] in the Cam of the Staple Clincher to the hole behind.



10. Insert a pin of approx. ϕ2 [21] (alternatively, 2mm hexagonal wrench or the like can be preferably used) into the hole, and fix the Cam.



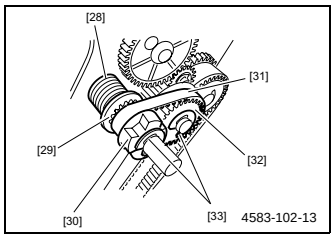
11. Set the Timing Belt [22] to the Gear [23] and Gear [24] with the Gear and the Cam in the fixed condition.



12. Install the Staple Position Confirm Gear [27] in such a way that the blue mark [25] of the Gear comes face to face with the hole [26] in the frame.

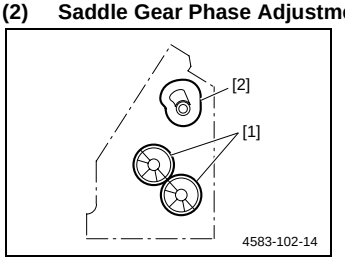
NOTE

The position in which the blue mark meets face to face with the hole is the home position for stapling. If the Staple Jam Release Gear is turned for some reason, this home position will shift and the Staple Cartridge will not come off. In this case, the Staple Position Confirm Gear plays a role of resuming the stapling home position by referring to the blue mark. Therefore, the Gear should be set in place correctly.



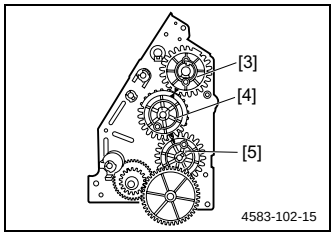
13. Remove the pin fixing the Gear and the Cam to release them.
14. Set the spring [28], the spacer [29], the Staple Jam Release Gear [30], the Timing Belt [31] and the Middle Gear 1 [32], and fix them with the E-Rings [33].

(2) Saddle Gear Phase Adjustment



Whenever the Gear in front of the Saddle or the Folding Roller has been replaced or removed for some reason, make gear phase adjustment following the procedures given below.

1. Set the Folding Roller [1] and Saddle Cam [2] within the Saddle as shown in the figure.

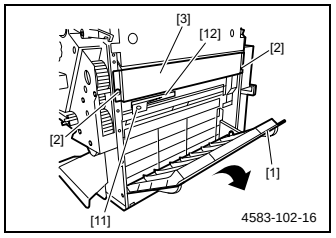


2. With the Folding Roller and the Saddle Cam positioned as shown in Fig. 4583-102-14, set the gears as shown in the figure in the following way:

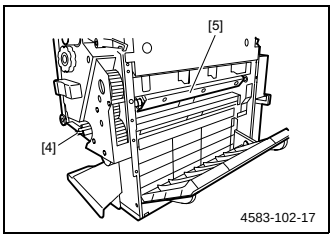
- The mark ▲I the Saddle Cam Drive Gear [3] (either of the two marks) comes face to face with the mark ▲I the Middle Gear [4] (the mark on the semispherical part with narrow gear face width).

3. With the Saddle Cam Drive Gear [3] and the Middle Gear [4] positioned as above, the mark ▲I the Middle Gear [4] (the mark on the other semispherical part) meets face to face with the rib of the Folding Roller Drive Gear [5].

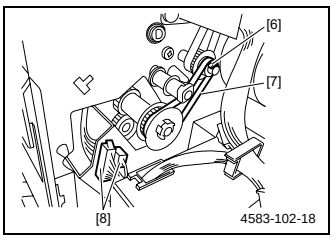
2-3. Removal of the Saddle



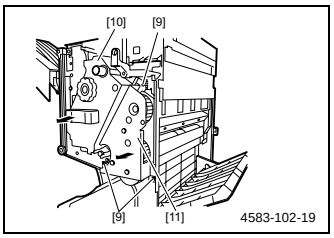
1. Remove the Horizontal Transport Unit.
2. Remove the Middle Transport Unit.
3. Remove the Front Cover. (Refer to 2-1. (2).)
4. Remove the Rear Cover (Refer to 2-1. (3).)
5. Open the Jam Access Cover [1], remove the two screws [2], and remove the Right Stay [3].
6. Remove the two screws [11], and remove the Lever [12].



7. Turn the Folding Jam Release Dial [4] to move the Paper Pressure [5] inside.

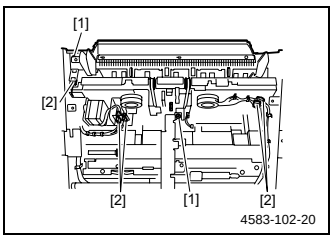


8. Remove the Stopper Ring [6], and remove the Timing Belt [7].
9. Unplug the two connectors [8].

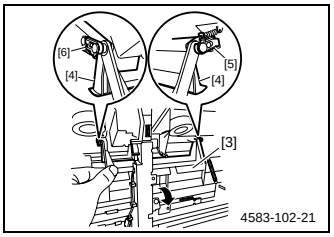


10. Remove the three screws [9], and slightly pull out the Stapler [10].
11. Pull out and remove the Saddle [11].

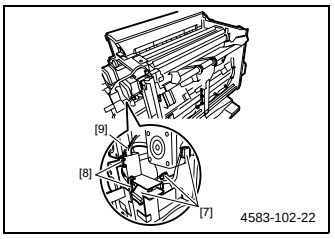
2-4. Removal of the Finisher Tray



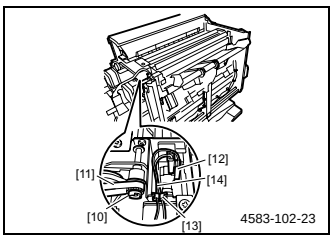
1. Remove the Finisher Tray Upper Door. (Refer to 2-1. (5).)
2. Remove the Side Guide. (Refer to 2-1. (7).)
3. Remove the two screws [1], and unplug the five connectors [2].



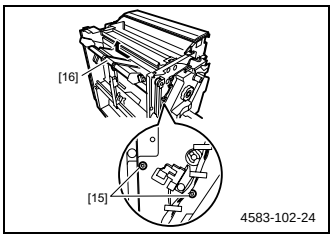
4. Pull out the Finisher Stopper Base [3], and disengage the front claw [5] and the rear claw [6] of the Finisher Stopper [4].



5. Unplug the three connectors [7].
6. Disengage the two claws [8] of the Wire Harness Clamp, and remove the Motor Wire Harness [9].

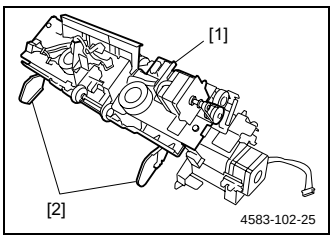


7. Remove the Stopper Ring [10], and remove the Timing Belt [11].
8. Unplug the connector [12], and remove the Wire Harness [14] from the Wire Saddle [13].



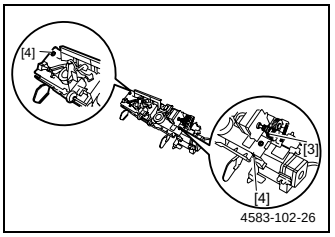
9. Remove the two screws [15], and remove the Finisher Tray [16] by sliding it to the far side and lifting it.

2-5. Removal of the Paddle Section

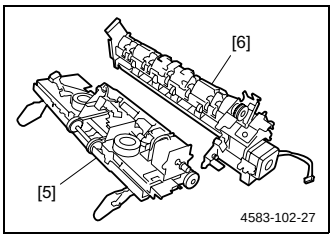


1. Remove the Finisher Tray. (Refer to 2-4.)
2. Place the Finisher Tray [1] as shown in the figure.

NOTES
Be careful not to damage the Aligning Plate [2].

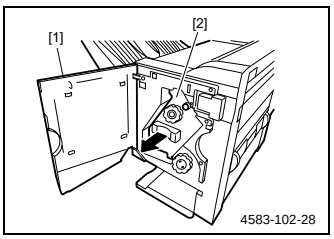


3. Remove the Timing Belt [3], and remove the two screws [4].

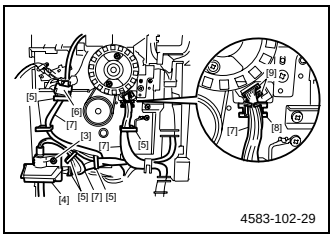


4. Separate the section into the Finisher Tray [5] and the Paddle Section [6].

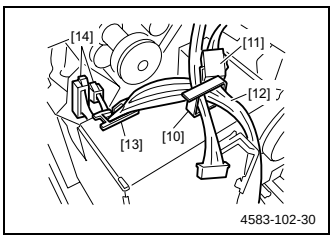
2-6. Removal of the Stapler/Folding Drive Unit



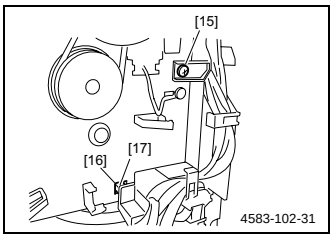
1. Open the Front Door [1], and slightly pull out the stapler section [2].



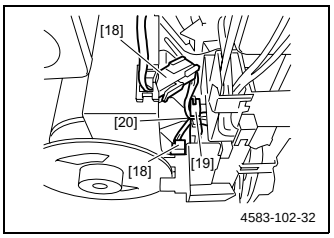
2. Remove the screw [3], and remove the interface cable presser [4].
3. 3. Release the six Wire Harness Clamps [5], and unplug the connector [6].
4. 4. Remove the Wire Harness [7] from the Wire Harness Clamp [5].
5. 5. Remove the Wire Harness [7] from the Wire Saddle [8], and unplug the two connectors [9].



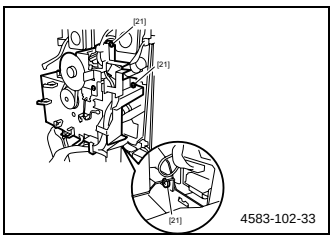
6. 6. Release the Wire Harness Clamp [10], and unplug the connector [11].
7. 7. Remove the Wire Harness [12] from the Wire Harness Clamp [10].
8. 8. Remove the Wire Harness [12] from the Wire Saddle [13], and unplug the two connectors [14].



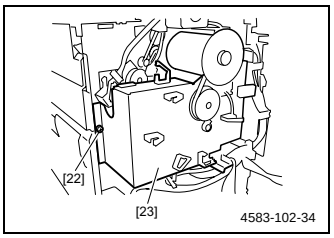
9. Remove the screw [15], and remove the claw of Wire Harness Guide [17] from the square hole [16] in the base plate.



10. Unplug the two connectors [18], and remove the Wire Harness [20] from the Wire Saddle [19].

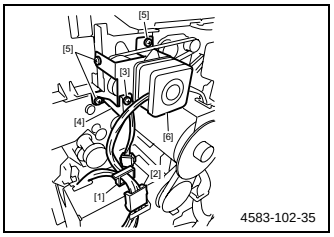


11. Remove the three screws [21].



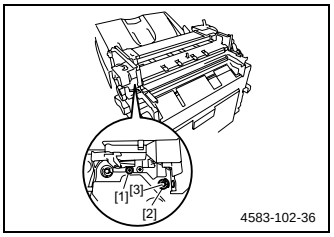
12. Remove the screw [22], and remove the Stapler/ Folding Drive Unit [23].

2-7. Removal of the Transport Motor Unit

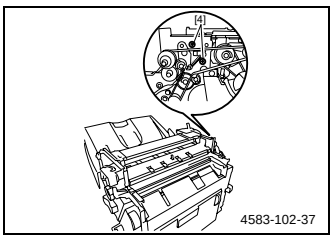


1. Remove the Horizontal Transport Unit.
2. Remove the Middle Transport Unit.
3. Remove the Rear Cover. (Refer to 2-1. (3).)
4. Open the Wire Harness Clamp [1], and unplug the two connectors [2].
5. Remove the screw [3], and remove the Wire Harness Guide [4].
6. Remove the three screws [5], and remove the Transport Motor Unit [6].

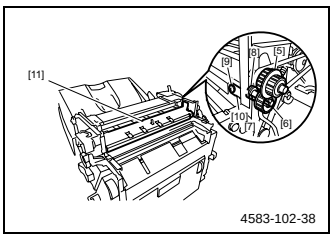
2-8. Removal of the Transport Roller



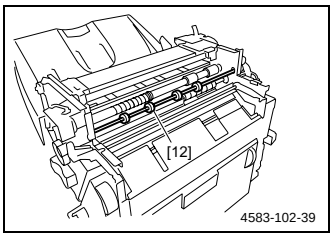
1. Remove the Upper Door. (Refer to 2-1. (4).)
2. Remove the Upper Cover. (Refer to 2-1. (6).)
3. Remove the Transport Motor Unit. (Refer to 2-7.)
4. Remove the screw [1].
5. Remove the Stopper Ring [2], and remove the Bushing [3].



6. Remove the two screws [4].

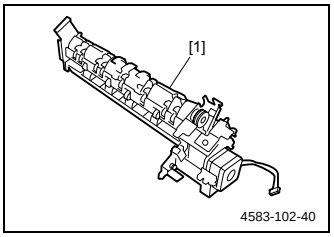


7. Remove the gear [5], and remove the gear [6] while disengaging the claw.
8. Remove the Stopper Ring [7], and remove the Bushing [8].
9. Remove the screw [9], and remove the Entrance Sensor [10].
10. Remove the Paper Guide (Lower) [11].

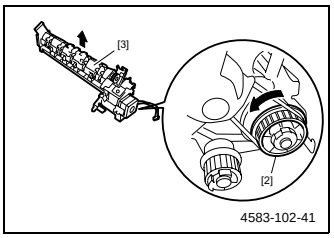


11. Remove the Transport Roller [12].

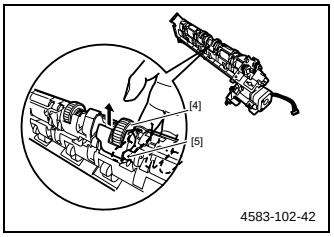
2-9. Removal of the Finisher Exit Roller (Upper)



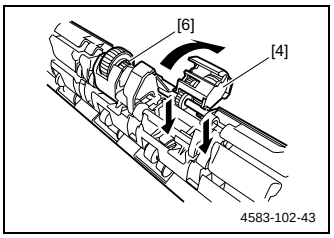
1. Remove the Paddle Section. (Refer to 2-5.)
2. Place the Paddle Section [1] as shown in the figure.



3. Turn the gear [2] in the direction indicated by an arrow to move up the Exit Roller (Upper) section [3].



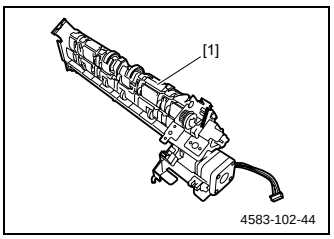
4. Push up the Exit Roller (Upper) [4] from the bottom to release it from the shaft [5].



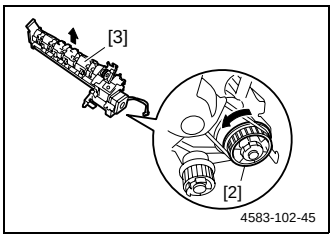
5. Turn up the Exit Roller (Upper) [4], and then push it down to remove it.

6. Remove the front Exit Roller (Upper) [6] as well in the same way.

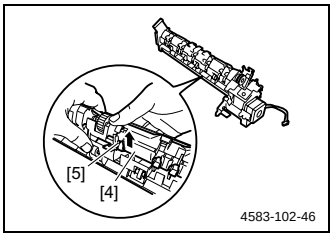
2-10. Removal of the Paddle



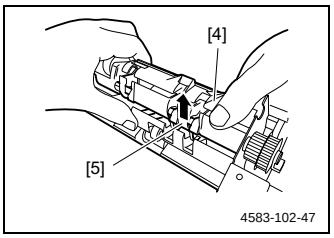
1. Remove the Paddle Section. (Refer to 2-5.)
2. 2. Place the Paddle Section [1] as shown in the figure.



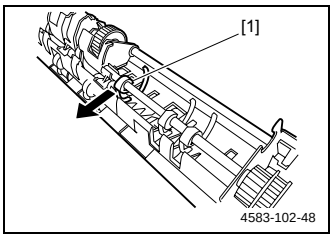
3. Turn the gear [2] in the direction indicted by an arrow to move up the Exit Roller (Upper) section [3].



4. Push up the Safety Guide [4] from the bottom to release it on one side from the shaft [5].

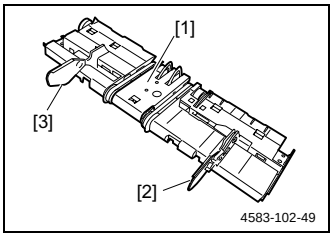


5. Push up the Safety Guide [4] from the bottom to release it from the shaft [5] and remove it.

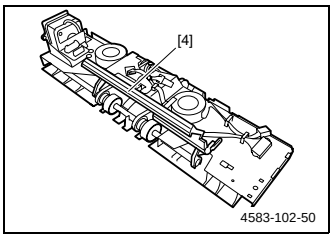


6. Remove the Paddle [6] to the direction indicated by an arrow.
7. Remove the other Paddles as well in the same way.

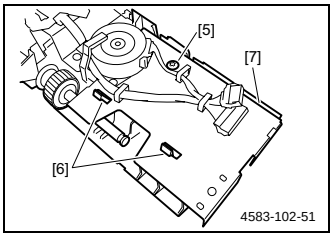
2-11. Removal of the Exit Roller (Lower) and the Paper Exit Belt



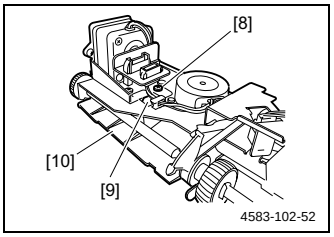
1. Remove the Paddle Section to separate it from the Finisher Tray. (Refer to 2-5.)
2. 2. Slide the Aligning Plate (Front) [2] and the Aligning Plate (Rear) [3] outside to remove them from the Finisher Tray [1].



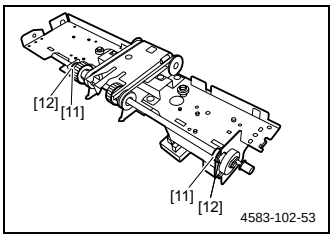
3. Remove the Finisher Tray Stopper [4].



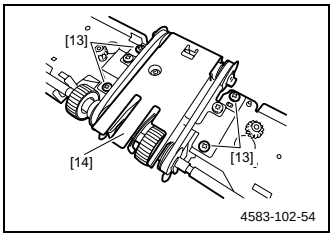
4. Remove the screw [5], and remove the Paper Guide (Front) [7] while disengaging the two claws [6].



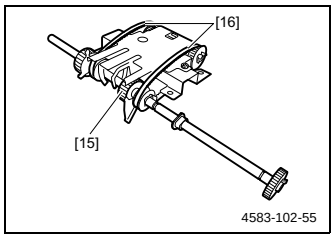
5. Remove the screw [8], and remove the Paper Guide (Rear) [10] while disengaging the claw [9].



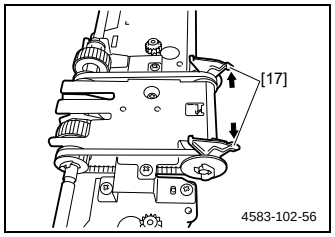
6. Remove the two Stopper Rings [11], and move the two Bushings [12] inside, respectively.



7. Remove the four screws [13], and remove the Exit Roller (Lower) section [14] by lifting it.

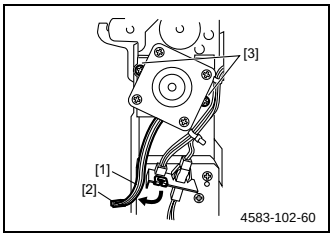


8. Remove the Exit Roller (Lower) [15] and the two Paper Exit Belts [16].



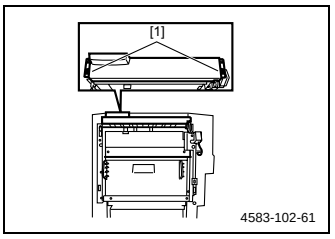
NOTES
When installing, align the edge of claws of the Paper Exit Belt [17].

2-12. Removal of the Middle Transport Motor

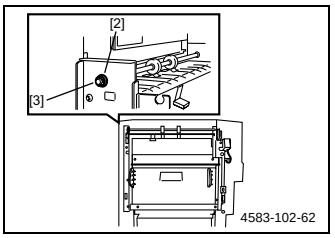


1. Remove the Middle Rear Cover.
2. Remove the harness from the Wire Saddle [1], and remove the harness from the connector [2].
3. Remove the two screws [3].

2-13. Removal of the Middle Transport Roller



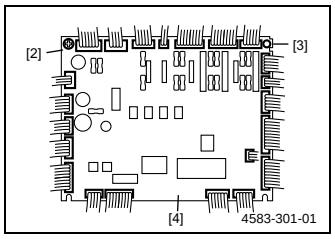
1. Remove the Middle Front and Rear Cover.
2. Remove the screw [1], and remove the Middle Upper Door.



3. Remove the Stopper Ring [2], and remove the Bushing [3].

3. Control Board (PCB-CONT)

3-1. Removal of the Finisher Control Board

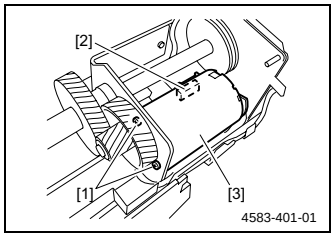


1. Remove the Rear Cover. (Refer to 2-1. (3).)
2. Unplug the 22 connectors [1], and remove the screw [2].
3. Release the PCB support [3], and remove the Finisher Control Board [4].

4. Punch Section (Optional)

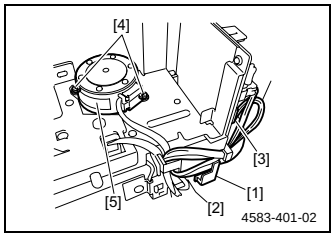
4-1. Removal of the Punch Drive Section

(1) Removal of the Punch Motor



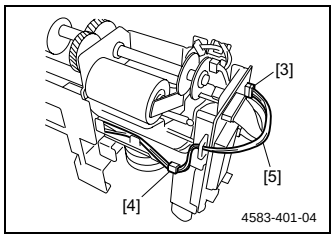
1. Remove the two screws [1].
2. Unplug the connector [2], and remove the punch motor [3].

(2) Removal of the Side Registration Motor

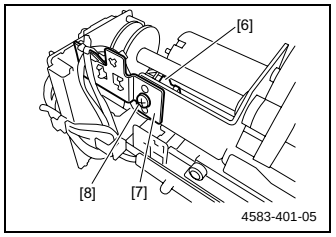


1. Unplug the connector J1001 [1].
2. Remove the Wire Harness [3] from the Wire Harness Guide [2].
3. Remove the two screws [4], and remove the Side Registration Motor [5].

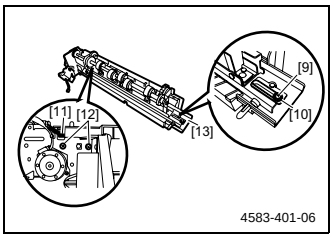
(3) Removal of the Punch Unit



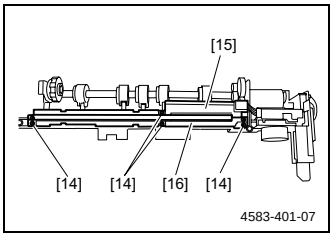
1. Remove the Punch Trash Box.
2. Unplug the connector J1005 [3].
3. Remove the Wire Harness [5] from the Wire Harness Guide [4].



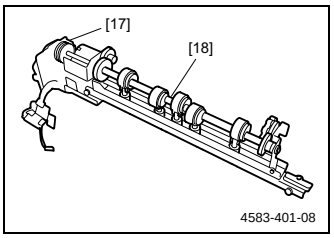
4. Unplug the connector [6].
5. Remove the screw [8], and remove the Sensor Support Plate [7].



6. Remove the screw [9] and the washer [10].
7. Unplug the connector [11].
8. Remove the two screws [12], and remove the base cover [13].



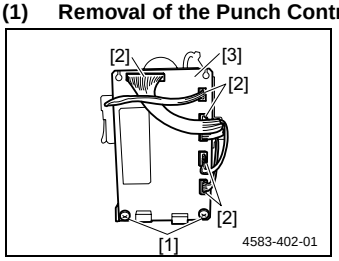
9. Remove the four screws [14], and remove the Sensor Unit (Upper) [15] and the Sensor Unit (Lower) [16].



10. Remove the Punch Unit [18] from the Side Registration Motor section [17].

4-2. Removal of the Punch Board Section

(1) Removal of the Punch Control Board



1. Remove the two screws [1].
2. Unplug the five connectors [2], and remove the Punch Control Board [3].

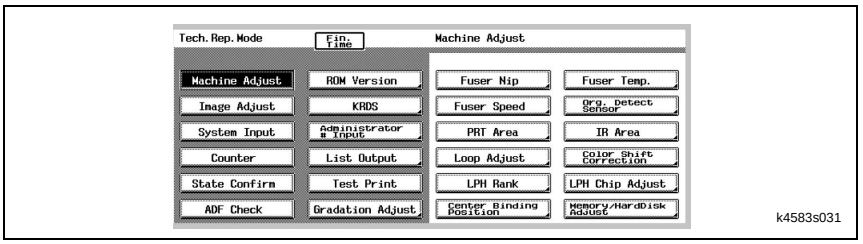
5. ADJUSTMENT

5-1. Adjustment of the Stapling Position

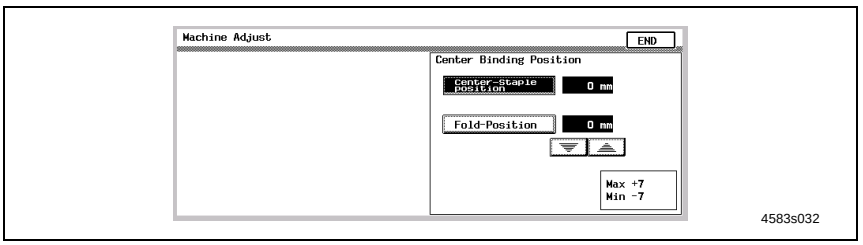
The stapling position is adjusted by aligning the stapling position to the folding position. This adjustment is made in the Tech. Rep. Mode of the main unit. Since the adjustment is made in increments of 1mm, this adjustment is useful for eliminating a displacement of 1mm or more.
For the effective adjustment of a minimal displacement smaller than 1mm, refer to "SWITCHES ON PCB"
Adjustable range: -7 to +7mm (Increment: 1mm)

(1) ADF-equipped machine

1. Set A3 or 11 x 17" to the Feed Tray.
2. Select Original ,Copy --> 4in1 / Booklet --> Booklet Creation --> Booklet.
3. Set five sheets of A3 or 11 x 17" original (blank paper acceptable) in the Original Tray.These five sheets are used for adjustment to minimize variation.
4. Press the Start Key.
5. Set the mode to the Tech. Rep. Mode.
6. Touch "Machine Adjust."
7. Touch "Center Binding Position."



8. Touch "Center-Staple Position."

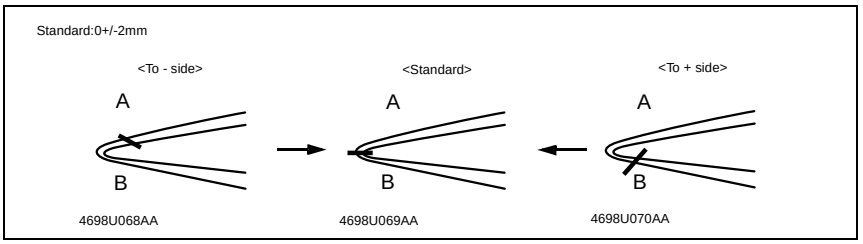


9. Renew the center folding of the finished copies.
- Take the top surface of the finished copies as "A," and the under surface as "B."

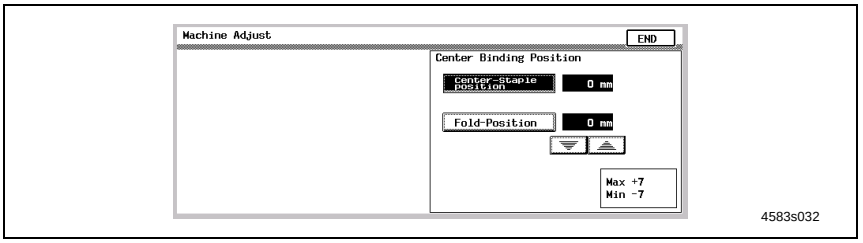
10. Check the deviation of the stapling position from the newly folded position.

NOTES

In checking the deviation, refer not to the folded position by the Finisher but to the newly folded position.



11. Press the Clear Key.
12. Adjust with the ▲ and ▼ Keys.When the stapling position is shifted to the direction A: Adjust the value to the - side.When the stapling position is shifted to the direction B: Adjust the value to the + side.
13. Touch "OK."



14. Select "Booklet Creation" and take copies.

NOTES

Set five or more sheets of original under the ADF, and then take copies and bind them into a booklet.

(2) ADF-unequipped machine

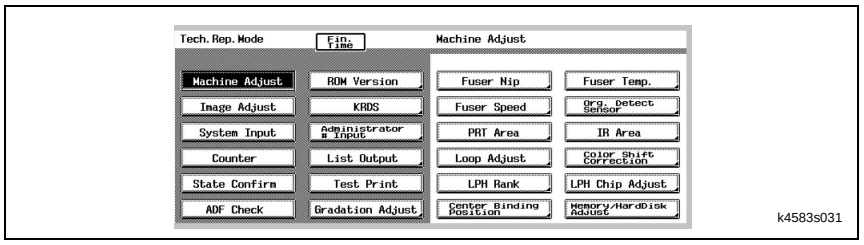
1. Set A3 or 11 x 17" to the Tray.
2. Select Original, Copy --> 4in1 / Booklet --> Booklet Creation --> Booklet.
3. Set A3 or 11 x 17" original (blank paper acceptable) on the Original Glass.
4. Press the Start Key five times (to cause reading operation five times) Adjust the variation to the minimum by using five sheets.
5. Press the "Read End" Key.
6. Press the Start Key.
7. Take the Steps from 5 to 14 of (1) "ADF-equipped machine" in "5-1. Adjustment of the Stapling Position."

5-2. Adjustment of the Folding Position

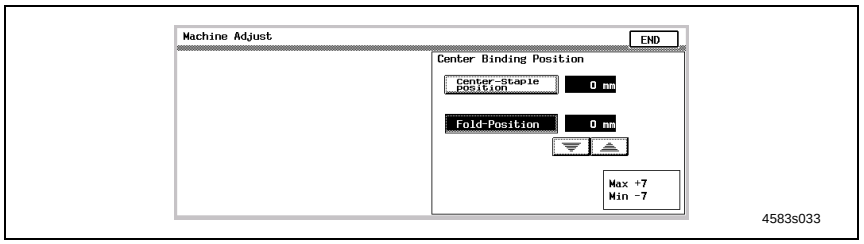
The folding position is adjusted by aligning the folding position to the stapling position. This adjustment is made in Tech. Rep. Mode of the main body of the copier when any PCB in the Finisher Controller has been replaced or the folding position has to be changed for some reasons.
Adjustment range: -7 to +7mm (Increment: 1mm)

(1) ADF-equipped machine

1. Return to the basic screen.
2. Select Original ,Copy --> 4in1 / Booklet --> Booklet Creation --> Booklet.
3. Set five sheets of A3 or 11 x 17" original (blank paper acceptable) in the Original Tray.These five sheets are used for adjustment to minimize variation.
4. Press the Start Key.
5. Set the mode to the Tech. Rep. Mode.
6. Touch "Machine Adjust."
7. Touch "Center Binding Position."

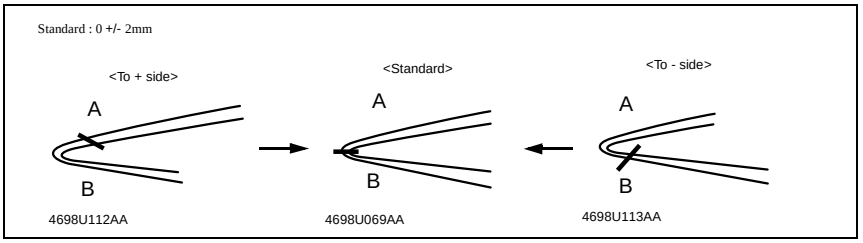


8. Touch "Fold-Position."

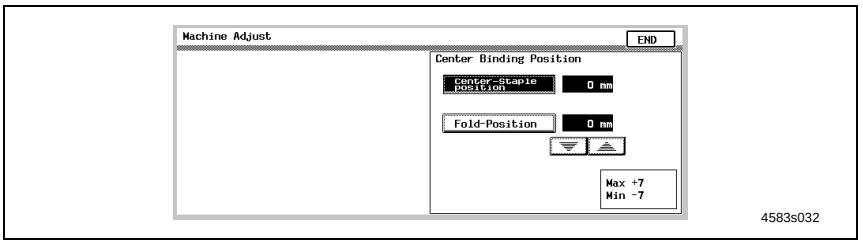


9. Check the finished copies for deviation of the stapling position of from the newly folded position.

• Take the top surface of the finished copies as "A," and the under surface as "B."



10. Press the Clear Key.
11. Adjust with the ▲ and ▼ Keys.When the stapling position is shifted to the direction A: Adjust the value to the + side.When the stapling position is shifted to the direction B: Adjust the value to the - side.
12. Touch "OK."

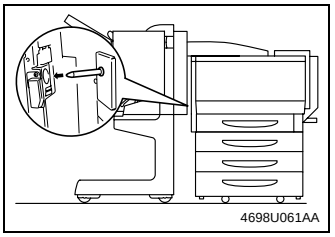


13. Select the booklet of "Booklet Creation" and take copies. Check the stapling position. If the position is displaced, redo the procedure from Step 5.

(2) ADF-unequipped machine

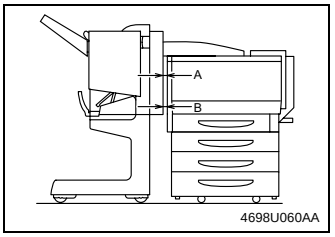
1. Return to the basic screen.
2. Select Original ,Copy --> 4in1 / Booklet --> Booklet Creation --> Booklet.
3. Set A3 or 11 x 17" original (blank paper acceptable) in the tray for original.
4. Press the Start Key five times (to cause reading operation five times) Adjust the variation to the minimum by using five sheets.
5. Touch the "Finish" of the panel.
6. Press the Start Key.
7. Take the Steps from 5 to 13 of (1) "ADF-equipped machine" in "5-2. Adjustment of the Folding Position."

5-3. Adjustment of Height and Inclination



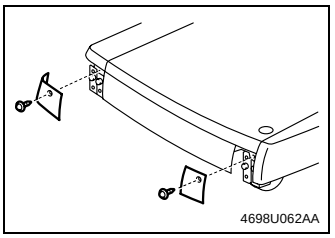
1. Bring Finisher slowly closer to the main unit, and check to confirm the following points:

• The positioning pin is on a level with the hole in the Finisher.

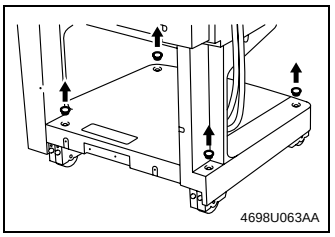


• The Horizontal Transport section is not on the extreme slant.
• The clearances A and B are uniform.

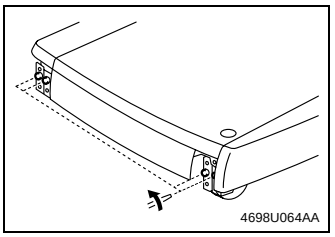
Make the necessary adjustments by using the following order:



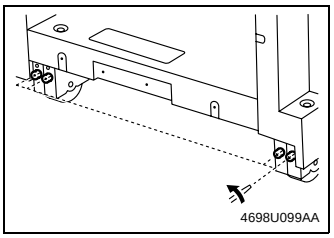
2. Remove the Finisher from the main unit, and remove the two caster covers.

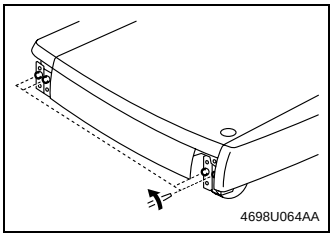


3. Remove the four adjustment screw covers.



4. Loosen the four caster fixing screws, two for each caster.





5. Turn the adjustment screw to make adjustment.
- To heighten: Turn the screw counterclockwise.
- To bring down: Turn the screw clockwise.

6. Fasten the caster fixing screws.
7. Install the caster covers and the adjustment screw covers.

TROUBLESHOOTING



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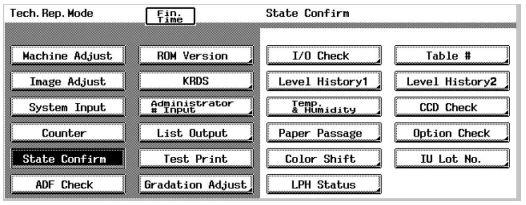
1. SENSOR CHECK

- To ensure an easy and safe check for sensor operation, signals can be checked whether they are properly input or not by checking the sensor input data when the machine is in the standby state (including misfeed, malfunction and setting failure conditions).

1-1. Sensor Check Screen

- Select the function in the following order: Tech. Rep. Mode → State Confirm → I/O Check.



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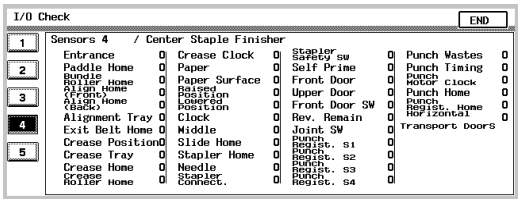
- A sample screen is shown below. Note that the port data may not be displayed exactly as shown.

<Sensor Monitor 4>



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1-2. Sensor Check Procedure

1. When a misfeed or malfunction occurs, select the function in the following order:
2. Tech. Rep. Mode → State Confirm → I/O Check → Sensors 4.
3. Check the input of the sensor that is probably defective.

(Example)
When a misfeed occurs, the First Tray Exit Sensor is considered to be defective:
<Procedure>
1. Remove the sheet of misfed paper to reset the misfeed.
2. Select the function in the following order: Tech. Rep. Mode → State Confirm → I/O Check → Sensors 4.
3. Check that the data of "First Tray Exit S" is "0" on the screen.
4. Check that the data has changed from "0" to "1" by blocking the light for the First Tray Exit Sensor (PC1).

1: PC1 is operational. 0: PC1 is faulty.

1-3. Sensor Check List

Symbol	Panel Display	Signal Name	Operational Characteristics /Panel Display		Input PCB	CN/PJ No.
PI1	Entrance Sensor	ENT-S	SUPPLIED	EMPTY	PCB CONT	CN16-12
PI2	Paddle Home Position Sensor	PDL-HP		HP		CN9-3
PI3	Bundle Roller Home Position Sensor	BDL-ROL-HP	HP			CN9-4
PI4	Align Home Position Sensor	FJOG-HP	HP			CN4-3
PI5	Rear Align Home Position Sensor	RJOG-HP	HP			CN5-15
PI6	Alignment Tray Sensor	ADJ-TRAY-S	EMPTY	SUPPLIED		CN5-3
PI7	Exit Belt Home Position Sensor	EJCT-BLT-HP		HP		CN5-6
PI10	Crease Position Sensor	BIND-POS	EMPTY	SUPPLIED		CN16-2/3
PI13	Crease Tray Sensor	BIND-EMPS	EMPTY	SUPPLIED		CN15-3
PI11	Crease Home Position Sensor	BIND-HP		HP		CN16-6
PI12	Crease Roller Home Position Sensor	BIDL-ROL-HP		HP		CN16-9
PI14	Crease Clock Sensor	BIND-CLK				CN9-5
PI8	Paper Sensor	TRAY-EMPS	EMPTY	SSUPPLIED		CN5-9
PI9	Paper Surface Detecting Sensor	LVL-S		DETECTED		CN5-12
PI15	Raised (Upper Limit) Position Sensor	SIFT-UPLMT		UPPER LIMIT		CN15-9
PI16	Lowered (Lower Limit) Position Sensor	SIFT-DNLMT		LOWER LIMIT		CN15-12
PI17	Lift Clock Sensor	SIFT-CLK				CN15-6
——	Lift Middle Sensor			FULL		CN
PI18	Slide Home Position Sensor	SLID-HP	HP			CN11-3
PI19	Stapler Home Position Sensor	STPL-HP		HP		CN11-4
PI20	Staple Detecting Sensor	HOOK-S	EMPTY	SUPPLIED		CN11-5
——	Stapler Connecting Sensor	STPL-CNCT		DETECTED		CN11-1
MS3	Stapler Safety Switch	STPLSAFE-SW		OPEN		CN8-1
PI21	Self Prime Sensor	SELF-P		READY		CN11-6
PI22	Front Door Sensor	FDOOR-S		OPEN		CN4-9
PI23	Upper Door Switch	TOPCOV-S		OPEN		CN4-6
MS1	Front Door Switch	FDOOR-SW		OPEN		CN8-2/3
——	Reverse Remain Sensor			HORIZONTAL		

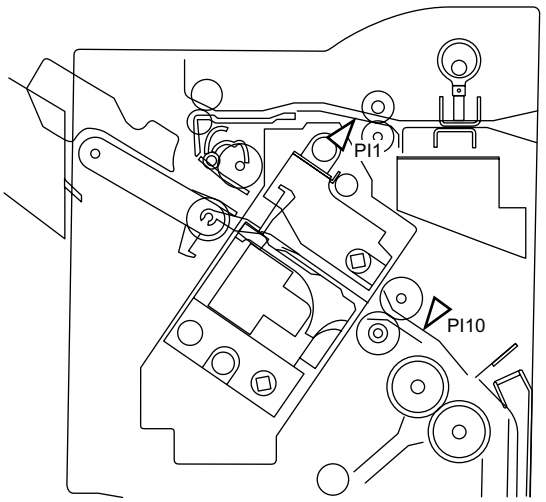
Symbol	Panel Display	Signal Name	Operational Characteristics /Panel Display		Input PCB	CN/PJ No.
MS2	Joint Switch	JOINT-SW		OPEN		CN8-4/5
PC4	Horizontal Unit Door Sensor	HTD		OPEN		CN21-8
——	Punch Regist. S1				PCB P CONT	
——	Punch Regist. S2					
——	Punch Regist. S3					
——	Punch Regist. S4					
——	Punch Wastes Sensor			FULL		
——	Punch Timing Sensor	PNCH-TIM-S				CN12-5
PI3P	Punch Motor Clock Sensor	CLOCK	BLOCK			J1006-9
PI1P	Punch Home Position Sensor	PUNCH	HP			J1006-6
PI2P	Punch Regist. Home Position Sensor	SLIDE		HP		J1006-3

2. MISFEED DETECTION AND TROUBLESHOOTING PROCEDURES

2-1. Outline

The check timing for detecting misfeed at the Finisher Saddle Punch (optional) is registered beforehand in the microcomputer (CPU) on the Finisher Control Board. With this check timing, the occurrence of misfeed is determined by judging whether there is paper in the sensor sections. When misfeed occurs, the Finisher Control Board sends the details of the misfeed to the units.

2-2. Locations of the Misfeed Sensors



PI1: Entrance Sensor
PI10: Crease Position Sensor

4583-202-02

2-3. Misfeed Detection

- When misfeed occurs, message, misfeed location and paper location are displayed on the Touch Panel of the copier.

Misfeed location	Blinking.
Paper location	Lighting.

- The misfeed display can be released by resetting this unit to the copier.

Type	Detection Timing
Transport misfeed	• The Entrance Sensor does not detect paper even after the lapse of approx. 1.5 sec. after the Entrance Sensor has received the paper exit signal from the main unit. • Paper is not removed from the Entrance Sensor (PS1) even after the lapse of approx. 2 sec. after the Entrance Sensor has detected paper edge.
Folding position misfeed	• The Crease Position Sensor does not detect paper even after the lapse of 1200 msec. after the paper has been fed from the Transport Booklet Tray to the stapling position during stapling operation. • Paper is not removed from the Crease Position Sensor even after the lapse of approx. 10.5 sec. after the Stapler/Folding Monitor has been driven during stapling operation.
Stapler misfeed	The Stapler Home Position Sensor (PI19) is not turned OFF or does not return to its home position even after the lapse of 600 msec. after the stapler has been driven.

3. MALFUNCTIONS DETECTION AND TROUBLE-SHOOTING PROCEDURES

3-1. Malfunctions Detection

- Any of the following operational failures are detected, and the malfunction codes are shown on the panel display of the main unit.
- Open/close the Front Door of the main unit for troubleshooting.

Note:
Before starting the troubleshooting in relation to the Punch Mechanism C0B7X, be sure to turn OFF the POWER switch of the main unit.

Code	Description
COB0X	Finisher/Sorter Transport Drive
COB2X	Stapler Unit Drive
COB3X	Finisher Alignment System
COB4X	Finisher Booklet Transport Mechanism
COB5X	Stapler Mechanism
COB7X	Punch Mechanism
COB81	Shift Mechanism

3-2. Troubleshooting Procedures for Each Malfunction Code

(1) C0B00 Transport System Drive malfunctions

Step	Check Item	Result	Action
1	Does the sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Control Board and the Transport Motor correct?	NO	Correct the wiring.
3	When the Booklet Transport Roller Shaft is turned manually, does the Booklet Roller move up/down normally?	NO	Adjust the mechanism.
4	Is the malfunction fixed when the Transport Motor is replaced?	YES	End.
		NO	Replace the Control Board.

(2) C0B05 Paddle Motor malfunctions

Step	Check Item	Result	Action
1	Does the Paddle Home Position Sensor operate normally?	NO	Replace the sensor.
2	Does the Oscillating Guide Home Position Sensor operate normally?	NO	Replace the sensor.
3	Is the wiring between the Control Board and the Paddle Motor correct?	NO	Correct the wiring.
4	When the Paddle Motor is turned forward/ backward manually, is the rotation of the Paddle or up/down movement of the Oscillating Guide caught mechanically?	YES	Adjust the mechanism.
5	Is the malfunction fixed when the Paddle Motor is replaced?	YES	End.
		NO	Replace the Control Board.

(3) C0B25 Stapler Unit Slide Motor malfunctions

Step	Check Item	Result	Action
1	Does the Slide Home Position Sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Control Board and the Slide Motor correct?	NO	Correct the wiring.
3	Is the movement of the Stapler caught mechanically in its route?	YES	Adjust the mechanism.
4	Is the malfunction fixed when the Slide Motor is replaced?	YES	End.
		NO	Replace the Control Board.

(4) C0B39 Front Aligning Plate Motor malfunctions

Step	Check Item	Result	Action
1	Does the sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Control Board and the Front Aligning Motor correct?	NO	Correct the wiring.
3	Is the movement of the Aligning Pate caught mechanically in its route?	YES	Adjust the mechanism.
4	Is the malfunction fixed when the Front Aligning Motor is replaced?	YES	End.
		NO	Replace the Control Board.

(5) C0B3A Rear Aligning Plate Motor malfunctions

Step	Check Item	Result	Action
1	Does the sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Control Board and the Rear Aligning Motor correct?	NO	Correct the wiring.
3	Is the movement of the Aligning Pate caught mechanically in its route?	YES	Adjust the mechanism.
4	Is the malfunction fixed when the Rear Aligning Motor is replaced?	YES	End.
		NO	Replace the Control Board.

(6) C0B4C Booklet Exit Motor malfunctions

Step	Check Item	Result	Action
1	Does the sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Control Board and the Booklet Exit Motor correct?	NO	Correct the wiring.
3	When the Booklet Exit Belt is turned manually, does the belt turn smoothly?	NO	Adjust the mechanism.
4	Is the malfunction fixed when the Booklet Exit Motor is replaced?	YES	End.
		NO	Replace the Control Board.

(7) C0B55 Stapler/Folding Motor malfunctions

• Wiring

Step	Check Item	Result	Action
1	Is the wiring between the Control Board and the Stapler/Folding Motor correct?	NO	Correct the wiring.
2	When turned, is the Staple Jam Release Dial caught mechanically?	YES	Adjust the mechanism.
3	Is the malfunction fixed when the Stapler/Folding Motor is replaced?	YES	End.
		NO	Replace the Control Board.

• Stapler/Crease Clock Sensor (Stapler Section)

Step	Check Item	Result	Action
1	Does the Stapler/Crease Clock Sensor operate normally?	NO	Replace the sensor.
2	Does the Stapler/Folding Motor operate with the preset timing?	YES	Replace the Control Board.
		NO	Check the Stapler Section Drive Mechanism. If any malfunctions, repair it. If no malfunctions, go to Step 3.
3	Is the malfunction fixed when the Stapler/Folding Motor is replaced?	YES	End.
		NO	Replace the Control Board.

• Home Position Sensor

Step	Check Item	Result	Action
1	Does the Crease Home Position Sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Control Board and the Stapler/Folding Motor correct?	NO	Correct the wiring.
3	When turned, is the Folding Jam Release Dial caught mechanically?	YES	Adjust the mechanism.
4	Is the malfunction fixed when the Stapler/ Folding Motor is fixed?	YES	End.
		NO	Replace the Control Board.

• Stapler/Crease Clock Sensor (Saddle Section)

Step	Check Item	Result	Action
1	Does the Stapler/Crease Clock Sensor operate normally?	NO	Replace the sensor.
2	Does the Stapler/Folding Motor operate with the preset timing?	YES	Replace the Control Board.
		NO	Check the Saddle Section Drive mechanism. If any malfunctions, repair it. If no malfunctions, go to Step 3.
3	Is the malfunction fixed the Stapler/Folding Motor is replaced?	YES	Completed.
		NO	Replace the Control Board.

(8) C0B75 Punch Control Board malfunctions

Step	Check Item	Result	Action
1	Is the malfunction fixed when POWER ON is renewed?	YES	End.
2	Is the wiring between the Control Board and the Punch Unit correct?	NO	Correct the wiring.
3	Measure the voltage between CN14-5 (+) and CN14-3 (-) of the Control Board. Is the voltage 24VDC?	YES	Replace the Punch Unit Board.
		NO	Replace the Control Board.

(9) C0B76 Punch Side Registration Motor malfunctions

Step	Check Item	Result	Action
1	Does the Side Registration Home Position Sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Punch Unit Board and the Side Registration Home Position Sensor correct?	NO	Correct the wiring.
3	Does the Side Registration Mechanism operate normally?	YES	Replace the Side Registration Motor.
		NO	Adjust the Side Registration Mechanism.
4	Is the malfunction fixed when the Punch Unit Board is replaced?	YES	End.
		NO	Replace the Control Board.

(10) C0B77 Punch Motor malfunctions

Step	Check Item	Result	Action
1	Does the Punch Home Position Sensor operate normally?	NO	Replace the sensor.
2	Does the Punch Motor Clock Sensor operate normally?	NO	Replace the sensor.
3	Is the wiring between the Punch Unit Board and each sensor correct?	NO	Correct the wiring.
4	Is there any malfunction in the Punch Mechanism?	YES	Repair the Punch mechanism.
		NO	Replace the Punch Motor.
5	Is the malfunction fixed when the Punch Unit Board is replaced?	YES	End.
		NO	Replace the Control Board.

(11) C0B79 Punch Sensor malfunctions

- Side Registration Sensor

Step	Check Item	Result	Action
1	Does the Side Registration Sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Punch Unit Board and the Side Registration Sensor correct?	NO	Correct the wiring.
3	Is the malfunction fixed when the Punch Unit Board is replaced?	YES	End.
		NO	Replace the Control Board.

• Wastes Full Sensor

Step	Check Item	Result	Action
1	Does the Wastes Full Sensor operate normally?	NO	Replace the sensor.
2	Is the wiring between the Punch Unit PCB and the Wastes Full Sensor correct?	NO	Correct the wiring.
3	Is the malfunction fixed when the Punch Unit Board is replaced?	YES	End.
		NO	Replace the Control Board.

(12) C0B81 Shift Mechanism malfunctions

Step	Check Item	Result	Action
1	Does the Paper Surface Sensor operate normally?	NO	Replace the sensor.
2	Does the Tray Elevator Mechanism operate normally?	NO	Repair the mechanism.
3	Is 24VDC supplied from the Control Board to the Shift Motor with the tray drive timing?	NO	Replace the Control Board.
4	Is the wiring between the Control Board and the Shift Motor correct?	YES	Replace the Shift Motor.
		NO	Correct the wiring.

(13) C0BA0 Elevate Mechanism malfunctions

• Upper Limit Sensor

Step	Check Item	Result	Action
1	Has the tray reached the Upper limit Sensor position?	YES	Lower the Tray.
2	Does the Upper Limit Sensor operate normally?	NO	Replace the sensor.
3	Is the wiring between the Control Board and the Raised Position Sensor correct?	YES	Replace the Control Board.
		NO	Replace or correct the wiring.

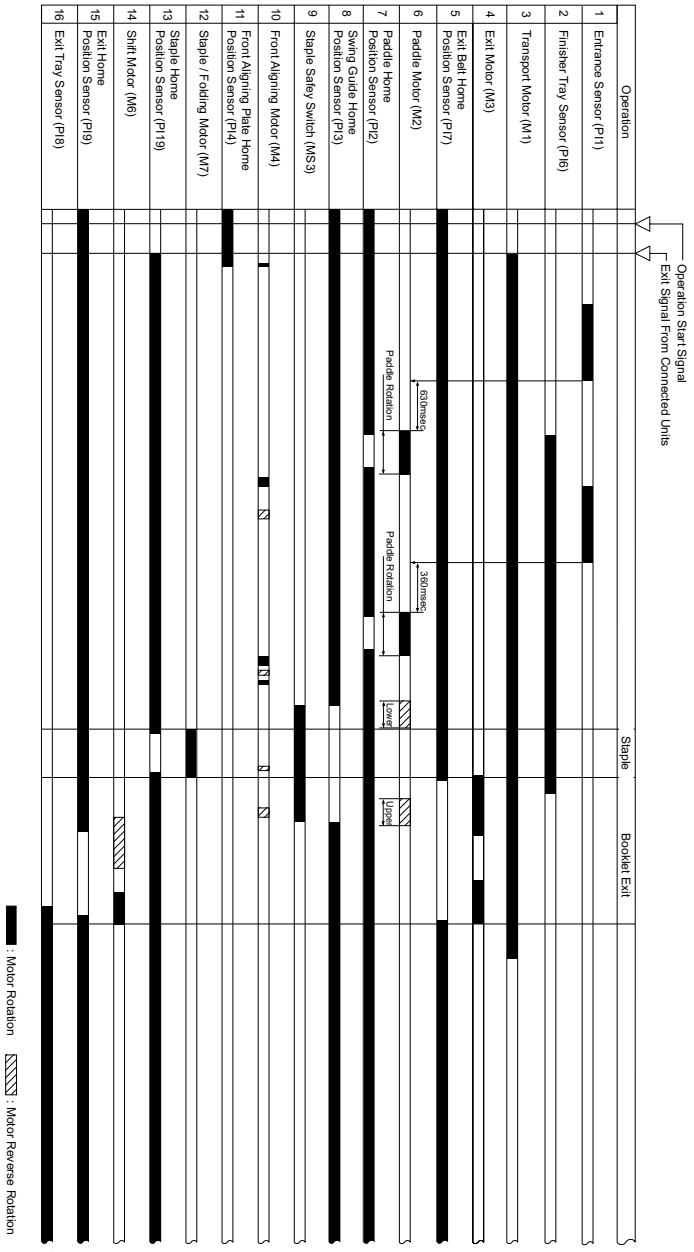
• Control Board

Step	Check Item	Result	Action
1	Is the tray moving up?	YES	Go to Step 4.
		NO	Go to Step 2.
2	Is 24VDC supplied from the Control Board to the Motor with the Tray up/down timing?	YES	Go to Step 3.
		NO	Replace the Control Board.
3	Is there any malfunction in the Tray up/down Mechanism?	YES	Repair the Tray up/down Mechanism.
		NO	Replace the Tray up/down Motor.
4	Does the Shift Motor Clock Sensor operate normally?	YES	Replace the Control Board.
		NO	Replace the Sensor.

4. Overall Timing Chart

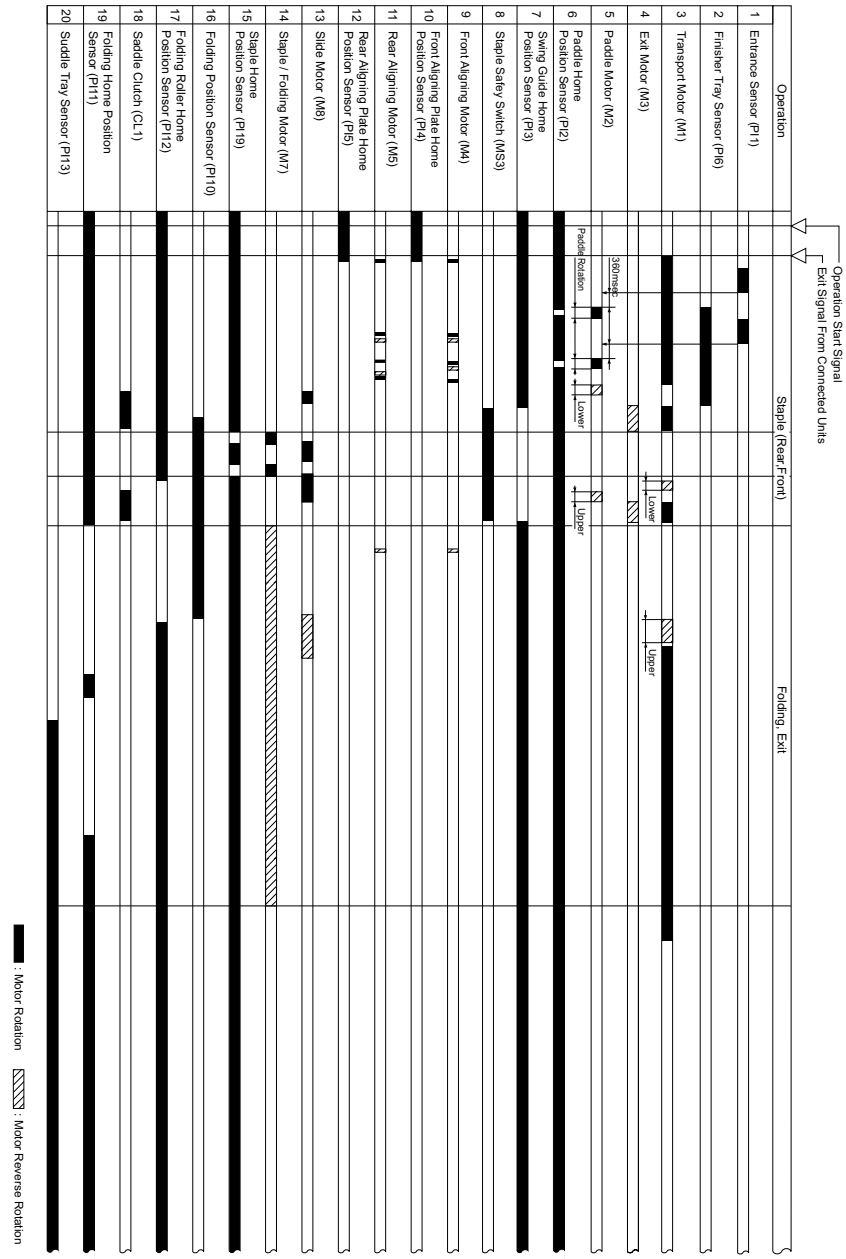
4-1. Finisher Section

Staple A-4 size paper, Two originals, Rear binding at a point.



4-2. Saddle Section

Booklet Creation LTR Size Paper, Two Original Feeds, One Copies.



4-3. Punch Section (Option)

Punch A-4 Size Paper, Two Original Feeds, Two Copies.

