ST-103/S-105

SERVICE MANUAL

MINOLTA

CONTENTS

i
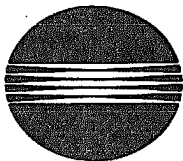
CONTENTS

GENERAL, MECHANICAL/ ELECTRICAL

1 SPECIFICATIONS

Type	: 10-Moving-Bin Sorter (S-105)
	10-Moving-Bin Sorter with Automatic Stapler (ST-103)
Installation	: Appendant to copier
No. of Bins	: 11
Modes	: Non-Sort
	Sort
	Group ——————— *1
	Sort Staple ——— ST-103 only*2
	Manual Staple ——— ST-103 only
	*1: Not available for an ST-103 mounted together with an AFR-9.
	*2: Available only for a system equipped also with an AFR-9.

In the Non-Sort Mode

Copy Medium	: Recommended paper weighing 60 to 90 g/m^2 or 16 to 24 lbs., translucent paper, transparencies, heavy paper (91 to 157 g/m^2 or 25 to 41 lbs.).
Size	: A5 lengthwise to A3, and A3 Wide or 5-1/2" × 8-1/2" to 11" × 17" and Full Bleed
Max. Capacity	: Recommended paper : 1st Bin - 50 (80 g/m^2 or 22 lb.) : 2nd to 10th Bin - 25/Bin
	: Transparencies: 10 (max. size: A4 or 8-1/2" × 11")
	: Other special paper: 10

In the Sort/Group Mode

Copy Medium	: Recommended paper weighing 60 to 80 g/m^2 or 16 to 22 lbs.
Size	: A5 lengthwise to A3, 5-1/2" × 8-1/2" to 11" × 17"
Max. Capacity	: 25 sheets of 80 g/m^2 or 22 lb. paper per Bin

In the Sort Staple Mode

Copy Medium	: Recommended paper weighing 60 to 80 g/m^2 or 16 to 22 lbs.
Size	: A4 to A3, 8-1/2" × 11" to 11" × 17"
Max. Capacity	: 25 sheets of 80 g/m^2 or 22 lb. paper per Bin
No. of Copies That Can be Stapled	: 2 to 25 copies of 80 g/m^2 or 22 lb. paper

Power Requirement	: DC24V (supplied from copier)
Power Consumption	: 72W or less
Dimensions	: Width - 400 mm or 15-3/4"
	Depth - 562 mm or 22-1/4"
	Height - 404 mm or 16"
Weight	: S-105 - 15.8 kg or 34-3/4 lbs. (excl. Mounting Bracket)
	ST-103 - 18.1 kg or 40 lbs. (excl. Mounting Bracket)
Environmental Requirements	: Same as copier
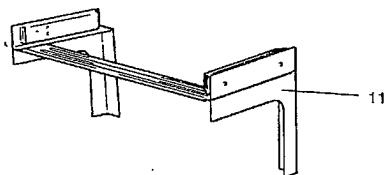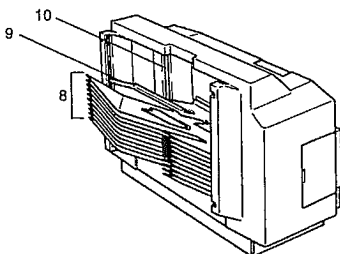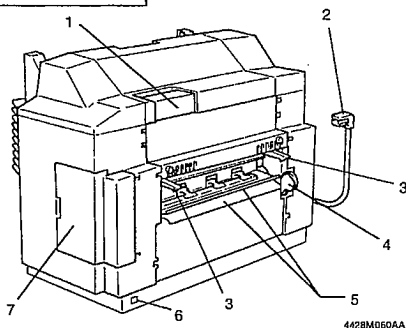
4428M060AA

4428M061AA

1. Sorter Lock Release Lever
2. Hookup Connector
3. Sorter Lock Lever
4. Drive Coupling Gear
5. Transport Guide Plates
6. Sorter Set Detector
7. Stapler Cover
   (Cannot be opened on S-105)

8. 1st to 10th Bins
9. Top Bin
10. Paper Aligning Bar
    (ST-103 only)
11. Mounting Bracket

4426M062AA

1. 1st to 10th Bins
2. Top Bin
3. Spiral Cam
4. Bin Empty Sensor LED Board PWB-B
5. Sorter Lock Release Lever
6. Bin Upper Limit Interlock Switch S1
7. Sorter Lock Lever
8. Sorter Exit Sensor PC2
9. Bin Lower Limit Interlock Switch S2
10. Bin Lower Limit Position Sensor PC4
11. Bin Empty Sensor PQ Board PWB-C

M-3

4428M052AA

Symbol	Length
Belt 1	150 mm
Belt 2	918 mm
Belt 3	160 mm
Belt 4	150 mm

Symbol	Gear/Pulley: No. of Teeth
G1	25/15
G2	36
G3	37
G4	34/16
G5	30
GP1	12/60
GP2	23/19

Symbol	Pulley: No. of Teeth
P1	22
P2	22
P3	28
P4	28
P5	20
P6	20
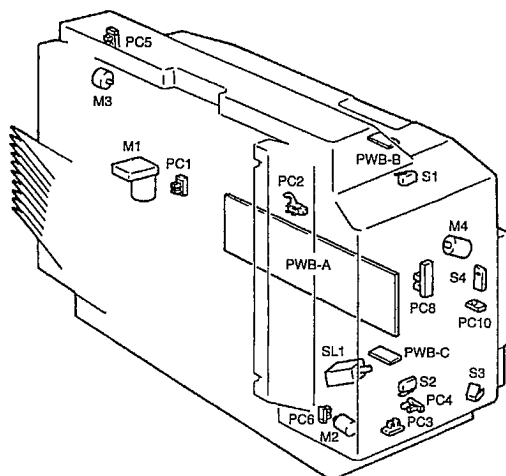
4428M004AA

SYMBOL	PARTS NAME	SYMBOL	PARTS NAME
PWB-A	Control Board	*PC5	Paper Aligning Home Position Sensor
PWB-B	Bin Empty Sensor LED Board		
PWB-C	Bin Empty Sensor PQ Board	*PC6	Paper Clamp Home Position Sensor
M1	Bin Moving Motor		
*M2	Paper Clamp Motor	*PC8	Paper Clamping Sensor
*M3	Paper Aligning Motor	*PC10	Staple Empty Detecting Sensor
*M4	Stapling Motor	S1	Bin Upper Limit Interlock Switch
*SL1	Paper Clamp Solenoid	S2	Bin Lower Limit Interlock Switch
PC1	Bin Moving Pulse Sensor	S3	Sorter Set Switch
PC2	Sorter Exit Sensor	*S4	Stapler Home Position Detecting Switch
PC3	Bin Positioning Sensor		
PC4	Bin Lower Limit Position Sensor		

* ... ST-103 Only

6-1. INITIAL OPERATION

The following operations are performed sequentially when Sorter Set Switch S3 is first actuated after the Power Switch of the copier has been turned ON. S-105 performs step ④ only.

① The Paper Aligning Bar is detected at its home position.
(For details, see p. M-14.)

② The Paper Clamp Unit is detected at its home position.
(For details, see p. M-22.)

③ A check is made to ensure that the Stapler Arm is at its home position.
* If not at the home position, the Stapler Arm is moved to the home position. (For details, see p. M-27.)

④ The 1st Bin is detected at the reference position.
(For details, see p. M-19.)

6-2. NON-SORT MODE

When in the Non-Sort Mode, the ST-103/S-105 feeds all copies out onto the 1st Bin. It feeds copies into the subsequent Bin as soon as the capacity of the current Bin is exceeded. (As soon as 25 copies have been fed into the 10th Bin, the Remove Copies Indicator on the copier control panel lights up and the copier inhibits the initiation of a new copy cycle.)

Example: Making 80 copies

Bin	No. of Copies Fed. In
1st	50
2nd	25
3rd	5

Outline of Operation

Repeats for the no. of copies set to be made.

Out of Copier

Through ST-103/S-105

Fed into 1st Bin

Aligning ...ST-103 only

End of Operation

When the capacity of the current Bin is exceeded

Bin Moving
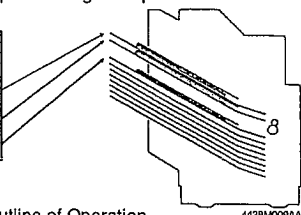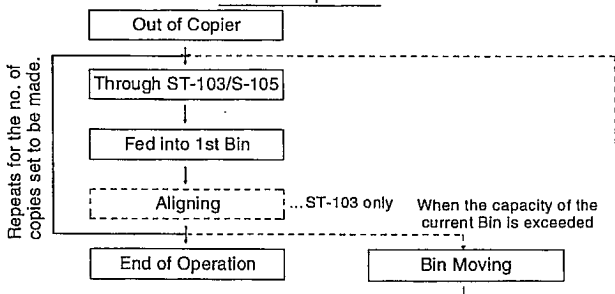
6-3. SORT MODE

● When in the Sort Mode, the ST-103/S-105 sorts copies into complete sets of originals, each set being fed out onto a Bin. Sorting is bi-directional: the copies of the odd-numbered originals are sorted in the sequence from the 1st Bin to 10th Bin (the Bins moving upward). Copies of the even-numbered originals are sorted in the sequence from the 10th Bin to 1st Bin (the Bins moving downward).

Example: Making 10 Copies Each from 3 Different Originals

Direction of Bin Moving for
Copies of 1st Original

Copy

Direction of Bin
Moving for
Copies of 2nd
Original

Direction of Bin Moving for
Copies of 3rd Original

4428M010AA   4428M011AA   4428M010AA
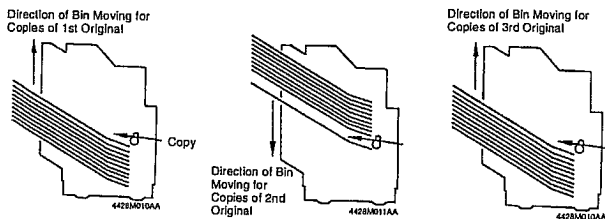
● When 25 copies have been fed out into the last Bin, the Remove Copies Indicator lights up on the copier control panel and the copier inhibits the initiation of a new copy cycle. If, however, the 6th and subsequent Bins are not used in the Sort Mode (i.e., the number of copies to be made has been set to 5 or less), the Remove Copies Indicator does not light up. Instead, the ST-103/S-105 is automatically switched to the Auto Dual Mode and copying continues using the 6th and subsequent Bins until the Remove Copies Indicator lights up or the copy cycle is completed.

Example: Making 3 Copies Each from 30 Different Originals

Bin	Original	No. of Copies Fed Out
1st		
2nd	1st to 25th	25
3rd		
6th		
7th	26th to 30th	5
8th		

4428M013AA
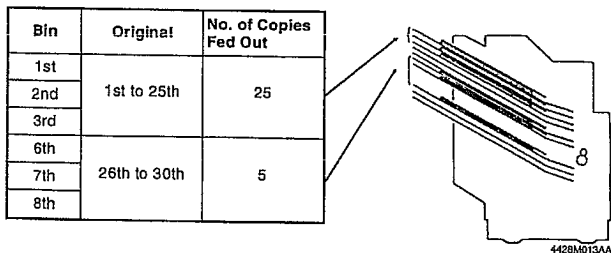
● When the Start Key is pressed with 11 or more set for the number of copies to be made, the number on the Multi-Copy Display is automatically changed to 10 and the ST-103/S-105 operates in the Sort Mode.

Outline of Operation

```
                    ┌──────────────────────┐
                    │    Out of Copier     │
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │ Through ST-103/S-105 │
                    └──────────────────────┘
                               │
                    ┌──────────────────────┐
                    │     Fed into Bin     │
                    └──────────────────────┘
                               ┆
                    ┌──────────────────────┐
                    │      Aligning        ┆ ...ST-103 only     After the last copy
                    └──────────────────────┘                    has been aligned
                               │
                    ┌──────────────────────┐        ┌──────────────────────┐
                    │     Bin Moving       │        │   End of Operation    │
                    └──────────────────────┘        └──────────────────────┘
```

Repeats for the no. of copies set to be made.
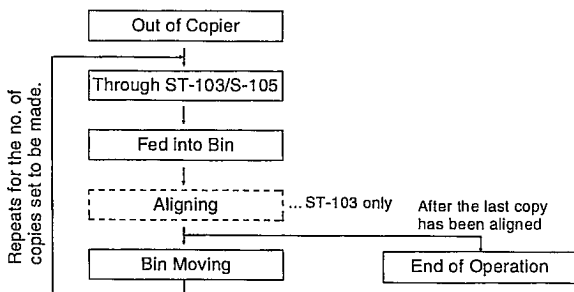
6-4. GROUP MODE

● When in the Group Mode, the ST-103/S-105 separates copies made from a single original into groups, each group containing the same, or a different, number of copies. If the number of copies set to be made exceeds 25, the 26th and subsequent copies are fed into the next Bin.

Example: Making 30 Copies Each from 2 Different Originals

Bin	Original	No. of Copies Fed Out
1st	1st	25
2nd		5
3rd	2nd	25
4th		5
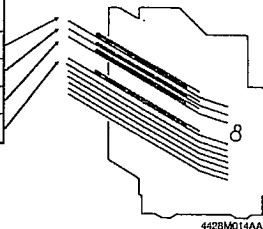
● If the settings on the copier control panel and other conditions require more than 10 Bins, during execution of the copy job, the copier stops the initiation of a new copy cycle and the Remove Copies Indicator lights up. If space remains available in the 10th Bin, the Start Key can be pressed again. All copies of the subsequent original or originals are now fed into the 10th Bin. However, as soon as the capacity of the 10th Bin is exceeded, the copier inhibits the initiation of the new copy cycle.

Outline of Operation
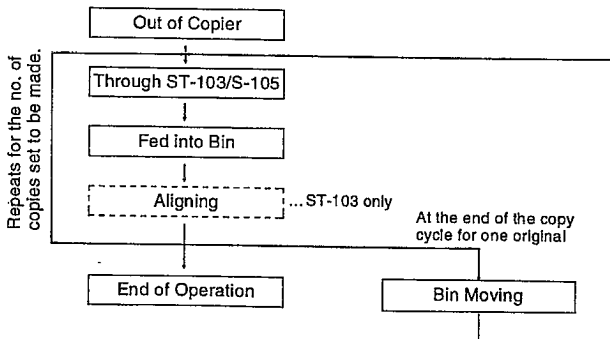
6-5. SORT STAPLE MODE (ST-103 ONLY)

● When in the Sort Staple Mode, the ST-103 automatically staples each of the copy sets sorted into each Bin (the sorting operation is the same as in the Sort Mode).

● Stapling action occurs starting with the lowest Bin in use. (For instance, if 1st to 4th Bins are in use, the copy sets are stapled starting with the 4th Bin.)

● If copies are to be sorted only into the 1st Bin (i.e., when making one copy each of two different originals), after both copies have been fed into the 1st Bin, the ST-103 moves the Bins to the 2nd Bin position and then back to the 1st Bin position before initiating the stapling action.
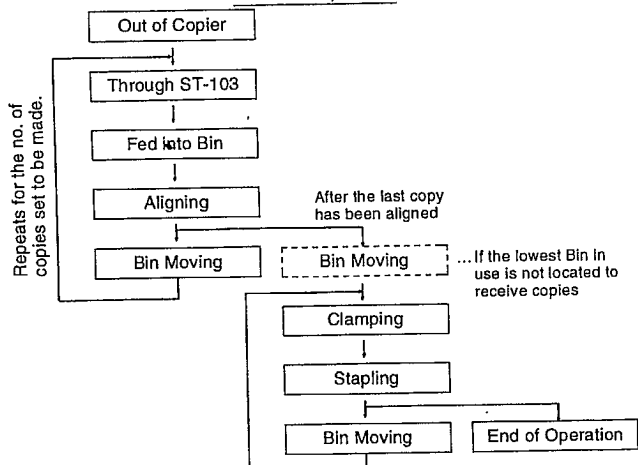
● If the ST-103 is switched to the Auto Dual Mode during sorting, it cancels the stapling action and sets the ST-103 into the Sort Mode.

Outline of Operation

● Stapling action is inhibited under any of the following conditions even if the copy cycle has been initiated in the Sort Staple Mode:

① There is a copy or copies present in any of the Bins when the Power Switch is turned ON and the copy cycle is initiated without having removed it.
② The copy cycle is initiated with copies made in a preceding Non-Sort cycle still in the Bins.
③ The copy cycle is initiated with paper inserted into the Bin externally.
④ There is only one copy in the Bin after sorting.
⑤ Copies with different crosswise lengths are in the Bins.
⑥ The copy set is not properly conveyed to the stapling position because of a clamping or other failure (in which case, the ST-103 goes on to staple the copy set in the next Bin).

6-6. MANUAL STAPLE MODE (ST-103 ONLY)

The following two different operations are possible in the Manual Staple Mode.

• When the Manual Staple Key on the copier control panel is pressed after copies have been made in the Sort or Group Mode, the ST-103 staples together two or more copies in a Bin. (The stapling action and stapling inhibiting conditions are the same as those in the Sort Staple Mode.)

• When there are no copies in any of the Bins, the ST-103 can staple together sheets of paper inserted into the 1st Bin by hand when the Manual Staple Key on the copier control panel is pressed. At this time, the ST-103 performs no aligning action.

Operation

```
┌─────────────────────────────────┐
│  Press the Manual Staple Key.   │
└─────────────────────────────────┘
                 │
        ┌─────────────────┐
        │    Clamping     │
        └─────────────────┘
                 │
        ┌─────────────────┐
        │    Stapling     │
        └─────────────────┘
                 │
        ┌─────────────────┐
        │ End of Operation │
        └─────────────────┘
```
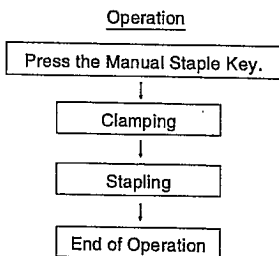
No stapling action occurs if the sheets of paper have not properly been conveyed to the stapling position because of a clamping or other failure.

6-7. BIN MOVEMENT AT END OF COPY CYCLE

If the 1st Bin is not located to receive copies at the end of a copy cycle, the Bins are moved so that the 1st Bin will be located to receive copies 2 sec. after copies have been removed from the Bins. This sets the ST-103/S-105 into a state ready for the next copy cycle. At this time, Bins are moved according to "Bin Moving Control" (see p. M-19).

7-1. PAPER TRANSPORT MECHANISM

● **Paper Path**

The paper fed out of the Copier by the Exit Roller in the copier is fed directly onto the Transport Roller in the ST-103/S-105. The Transport Roller turns to feed the paper almost straight into the Bin. During this time, Sorter Exit Sensor PC2 is unblocked ($\boxed{H}$) as the leading edge of the paper moves past it and blocked ($\boxed{L}$) as the trailing edge of the paper moves past it. The paper path is constant, as shown below, regardless of the operating mode selected for use.

Light Blocking Plate

PC2 Paper

Copier

PC2 Exit Roller in Copier
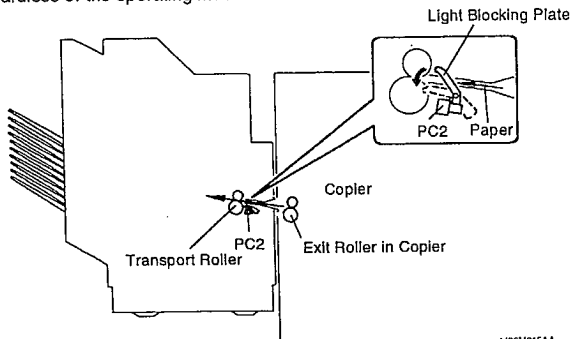
Transport Roller

4428M015AA

● **Transport Roller Drive**

The Transport Roller is driven by the Drive Coupling Gear Assy which receives drive from the Exit Roller Drive Gear inside the copier (or Duplex Unit). This means that the Transport Roller turns in phase with the paper take-up drive of the copier.

= Viewed from Rear of System =

Transport Roller Pulley

Drive Coupling Gear Assy

Timing Belt

4428M053AA

Copier or Duplex Unit

ST-103/S-105

Drive Coupling Gear Assy

Transport Roller Pulley

Exit Roller Drive Gear

4428M016AA
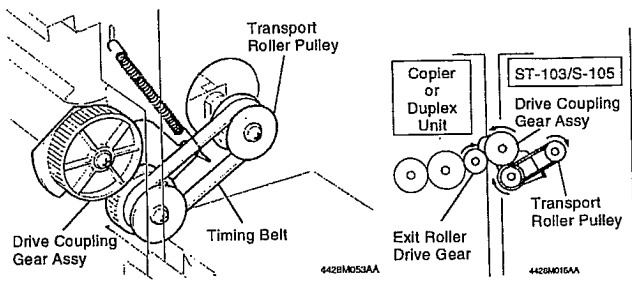
7-2. PAPER ALIGNING MECHANISM (ST-103 ONLY)

● The Paper Aligning Mechanism presses the copies fed into the Bins up against the Aligning Reference Plate so that they can be aligned in the crosswise direction. This mechanism will operate only with B5 Lengthwise, 8" × 10" Lengthwise or greater size.

● The copies are aligned by the Paper Aligning Bar which is moved by Paper Aligning Motor M3 turning forward or backward. The movement of the Paper Aligning Bar differs depending on the paper size.

4428M017AA
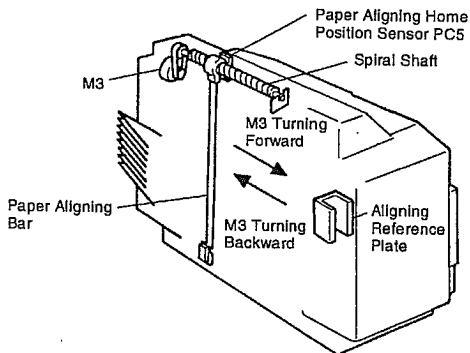
● **Paper Aligning Motor M3**
Paper Aligning Motor M3 is a two-phase stepping motor. The output pulses from pins 12 to 15 of IC1A are applied via IC6A and IC9A to M3 to control the direction and distance of movement of the Paper Aligning Bar. Each output pulse from IC1A turns M3 one angular increment, or a step, which is 7.5°. This is equivalent in the movement of the Paper Aligning Bar to approx. 0.3 mm. The number of output pulses from IC1A therefore controls the distance of movement of the Paper Aligning Bar. The output sequence of pulse signals (steps 1, 2, 3, and 4 or steps 4, 3, 2, and 1), on the other hand, determines the direction of rotation of M3.

IC1A (Pin No.)	Step			
	1	2	3	4
12	L	L	H	H
13	H	H	L	L
14	H	L	L	H
15	L	H	H	L

Output Sequence ⟶ M3 Turning Forward
⟵ M3 Turning Backward

● **Paper Aligning Bar Home Position Detection**
The home position of the Paper Aligning Bar is where the Light Blocking Plate fitted to the Paper Aligning Bar has just blocked Paper Alig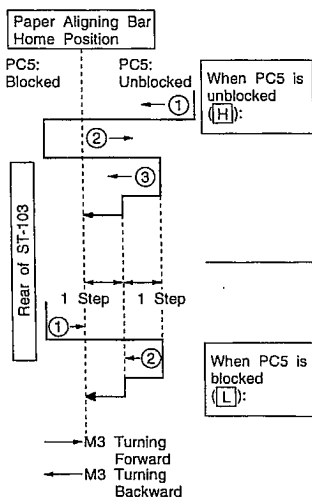ning Home Position Sensor PC5 ($\boxed{L}$). This position serves as the reference point, based on which the number of output pulses from IC1A is calculated for different paper sizes.

Operation When Paper Aligning Bar is Detected at its Home Position

① M3 is turned backward until PC5 is blocked.

② M3 is turned forward until PC5 is unblocked.

③ M3 is turned backward by one pulse until PC5 is blocked, at which time M3 is deenergized. (See NOTE below.)

① M3 is turned forward until PC5 is unblocked.

② M3 is turned backward by one pulse until PC5 is blocked, at which time M3 is deenergized. (See NOTE below.)

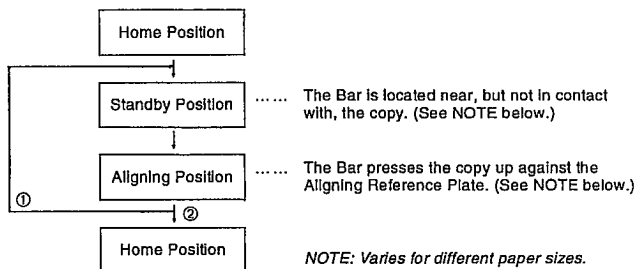4428F50MCA

NOTE: CPU checks whether PC5 is blocked or unblocked each time M3 is energized for one pulse.

The home position of the Paper Aligning Bar is detected under any of the following timings:
• When Sorter Set Switch S3 is turned ON.
• At the end of each mode (when the last copy has been aligned).

● Outline of Paper Aligning Bar Operation

```
┌─────────────────────┐
│   Home Position     │
└─────────────────────┘
     ┌──────────┤
     │  ┌─────────────────────┐
     │  │  Standby Position   │ ...... The Bar is located near, but not in contact
     │  └─────────────────────┘        with, the copy. (See NOTE below.)
     │
     │  ┌─────────────────────┐
     │  │  Aligning Position  │ ...... The Bar presses the copy up against the
     │  └─────────────────────┘        Aligning Reference Plate. (See NOTE below.)
  ① ─┤          ┌─ ②
     └──────────┤
        ┌─────────────────────┐
        │   Home Position     │        NOTE: Varies for different paper sizes.
        └─────────────────────┘
```

① During a multi-copy cycle, the Paper Aligning Bar repeatedly moves between the standby and aligning position until it completes aligning the last copy.

② The Paper Aligning Bar returns to the home position when it has completed aligning the last copy.

● Number of Pulses (Paper Aligning Bar Movement) for Different Paper Sizes

Paper Size	Predetermined No. of Pulses	
	From Home to Standby Position	From Standby to Aligning Position
A3	0	51
11" × 17"	56	51
8-1/2" × 11"L	259	51
A4L	278	51

L: Lengthwise

● Aligning Operation

Paper Aligning Bar at home position

> 60 msec. after Sorter Exit Sensor PC2 has been unblocked (H) as the leading edge of the copy fed out of the copier reaches it

Paper Aligning Motor M3 turns forward for the predetermined number of pulses corresponding to the paper size, thereby moving the Paper Aligning Bar to the standby position.

> 270 msec. after PC2 has been blocked (L) as the trailing edge of the copy moves past it

M3 turns forward for the predetermined number of pulses (51), which moves the Paper Aligning Bar to the aligning position to align the copy.

> 60 msec. later

In a multi-copy cycle

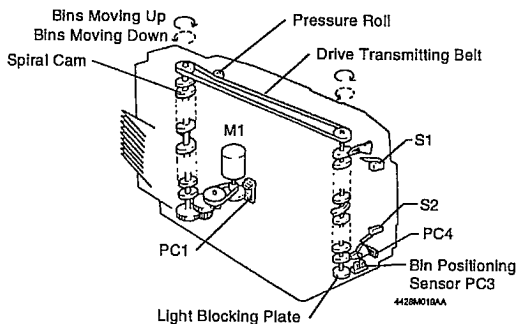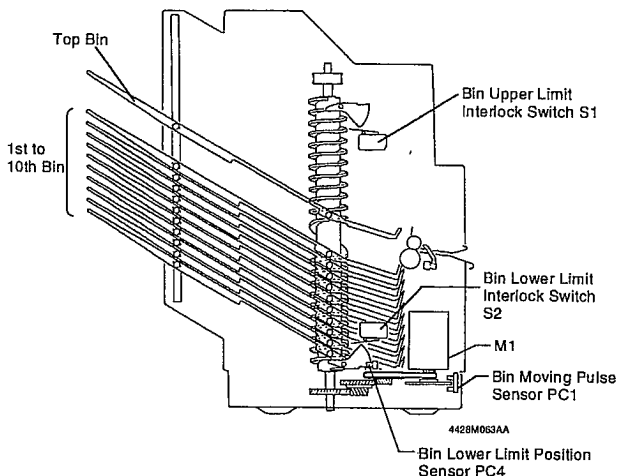> In a single-copy cycle or at the end of aligning the last copy

M3 turns backward for the predetermined number of pulses (51) to return the Paper Aligning Bar to the standby position.

M3 turns backward and the Paper Aligning Bar is detected at its home position.

7-3. BIN MOVING MECHANISM

● The Top Bin and 1st to 10th Bin are all held in position by the grooves in the Side Plate and those in the Spiral Cams. When the Spiral Cams are turned one complete turn by Bin Moving Motor M1, all Bins and Top Bin are at once moved up or down (depending on the turning direction of the Spiral Cam) one Bin position along the grooves in the Spiral Cams.

Top Bin

Bin Upper Limit Interlock Switch S1

1st to 10th Bin

Bin Lower Limit Interlock Switch S2

M1

Bin Moving Pulse Sensor PC1

4428M063AA

Bin Lower Limit Position Sensor PC4

Bins Moving Up
Bins Moving Down

Pressure Roll

Spiral Cam

Drive Transmitting Belt

M1

S1

S2

PC4

PC1

Bin Positioning Sensor PC3

Light Blocking Plate

4428M010AA

● Bin Moving Motor M1

Bin Moving Motor M1 is a DC motor. The outputs from pins 5 and 6 of IC1A are applied via IC7A and IC10A to M1. This energizes or deenergizes M1 and controls the direction of M1 rotation.

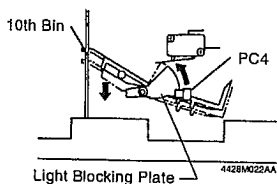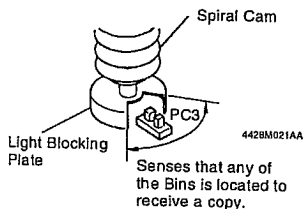| IC1A-5	IC1A-6	Direction of M1 Rotation
L	H	Forward (Bins Moving Up)
H	L	Backward (Bins Moving Down)
H	H	Deenergized

If M1 is turned at its maximum speed, Bins vibrate heavily as they move, resulting in a greater noise. M1 speed is controlled by pulse width modulation, or PWM, which varies the width of pulses applied to M1, thereby changing the average voltage applied to M1. The M1 shaft is fitted with a Pulse Disk and Bin Moving Pulse Sensor PC1 is used to convert the M1 shaft speed to pulse signals. The CPU knows the shaft speed by means of the pulse frequency. Based on the output from PC1, the M1 drive pulses are controlled, thereby minimizing vibration as it occurs during Bin moving. This contributes to quieter operation.
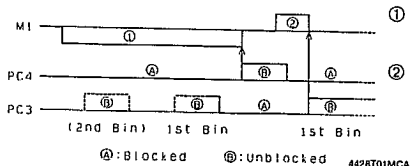

Pulse Disk

M1

PC1

PC1
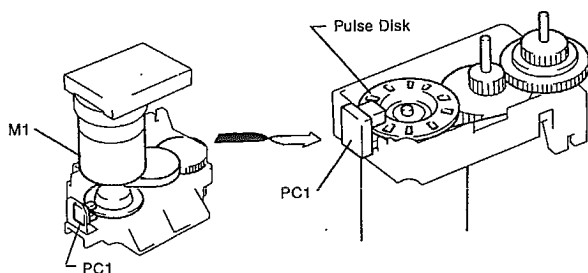
4428M020AA

● Bin Home Position Detection

The home position of the Bins is where the 1st Bin is located to receive copies fed out of the copier. Movement of each Bin is controlled with this position as the reference. The Bin home position is detected by Bin Positioning Sensor PC3 and Bin Lower Limit Position Sensor PC4. PC3 is blocked ($\boxed{L}$) and unblocked ($\boxed{H}$) by a Light Blocking Plate which turns in phase with the Spiral Cam. It is unblocked when any of the Bins is located to receive the copy. PC4 is normally kept blocked ($\boxed{L}$) by a Light Blocking Plate. However, when the 1st Bin is located lower than the level to receive the copy, the 10th Bin pushes the Light Blocking Plate, which unblocks PC4 ($\boxed{H}$).

Spiral Cam

PC3

4428M021AA

Light Blocking Plate

Senses that any of the Bins is located to receive a copy.

10th Bin

PC4

4428M022AA

Light Blocking Plate

Operation at Bin Home Position Detection

M1

①

②

PC4

Ⓐ

Ⓑ

Ⓐ

PC3

Ⓑ   Ⓑ   Ⓐ   Ⓐ

(2nd Bin)   1st Bin   1st Bin

Ⓐ:Blocked   Ⓑ:Unblocked   4428T01MCA

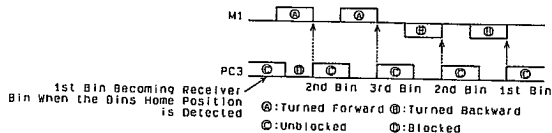① M1 is turned backward until PC4 is unblocked.

② M1 is turned forward and is deenergized as soon as PC3 is unblocked. (This is where the 1st Bin receives the copy.)

The Bin home position is detected under the following timing:
• Sorter Set Switch S3 is turned ON for the first time after the Power Switch of the copier has been turned ON.

● Bin Moving Control

After the Bin home position is detected, at which time the 1st Bin is located to receive the copy, movement of the Bins is controlled by the direction of M1 rotation and the number of times PC3 is blocked and unblocked.

M1

Ⓐ   Ⓐ   Ⓑ   Ⓑ

PC3

Ⓒ   Ⓓ   Ⓒ   Ⓒ   Ⓒ   Ⓒ

1st Bin Becoming Receiver Bin when the Bins Home Position is Detected

2nd Bin   3rd Bin   2nd Bin   1st Bin

Ⓐ:Turned Forward   Ⓑ:Turned Backward

Ⓒ:Unblocked   Ⓓ:Blocked

4428T02MCA

● Bin Upper Limit Interlock Switch S1 and Bin Lower Limit Interlock Switch S2

For a mechanical or electrical failure, Bin Moving Motor M1 can keep on turning even when it should remain stationary. Bin Upper Limit Interlock Switch S1 and Bin Lower Limit Interlock Switch S2 are installed to shut down the DC24V power supply to M1, thereby bringing it to a stop if such trouble occurs.

Bin Upper Limit Interlock Switch S1
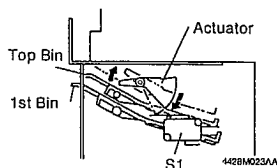
If, during the upward motion of the Bins, the Bins continue moving upward above the upper limit position (which is where the 10th Bin is located to receive the copy), the Actuator is swung by the Top Bin as shown on the left, actuating S1 to cut off the power supply to M1.

Bin Lower Limit Interlock Switch S2
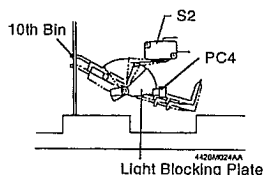
If, during the downward motion of the Bins, the Bins continue moving downward, having moved past the level which unblocks Bin Lower Limit Position Sensor PC4, the Light Blocking Plate of PC4 actuates S2 as shown on the left, thus shutting down the power supply to M1.

● Purpose of Installation of Top Bin

The paper this machine handles is mainly colored copies. Colored copies tend to develop a slight face curl and, as a result, the copies fed out into the 1st Bin in the Sort mode can be misaligned with each other in the bin. (With the 2nd Bin and lower, the copies fed into each bin are held by the immediately upper bin and therefore the curl is minimized in the copies.) The Top Bin in this machine therefore functions to keep the copies down as they are fed into the 1st Bin.

7-4. PAPER CLAMPING MECHANISM (ST-103 ONLY)

● The Paper Clamp Unit uses its jaws to clamp the copy set in the Bin and moves it to the stapling position. After the copy set has been stapled together, the jaws return it back to the Bin.


Jaws

Paper Clamp
Solenoid SL1

Paper Clamp
Motor M2

Paper Clamp Home
Position Sensor PC6
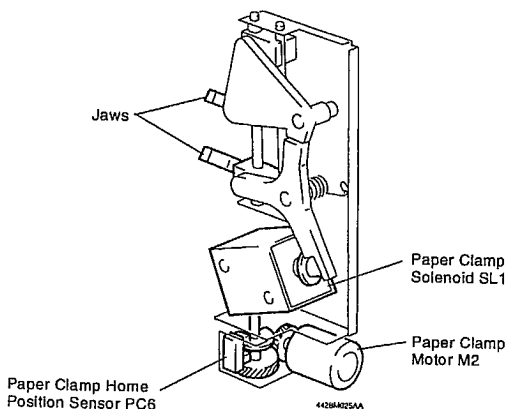
● The paper clamping operation consists of, (1) the Paper Clamp Unit being moved between the home position (which is the stapling position) and the clamping position by Paper Clamp Motor M2, and (2) the Jaws of the Paper Clamp Unit clamping and unclamping the copy set as Paper Clamp Solenoid SL1 is energized and deenergized.

● Paper Clamp Motor M2
A DC motor is used as Paper Clamp Motor M2. The output from pin 17 of IC1A energizes or deenergizes M2 which turns in one direction only.

IC1A-17	M2
L	Energized
H	Deenergized

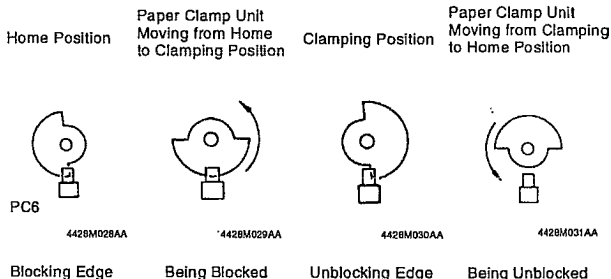● Moving Mechanism and Position Detection of Paper Clamp Unit
The Paper Clamp Unit is supported by four Rolls which run along the
Rails fitted to the Front Frame. Installed under the Paper Clamp Unit is a
Cam Slider, in which a Cam coupled to the drive shaft of M2 is fitted.
When M2 is energized to turn the Cam one turn, the Paper Clamp Unit
moves from home to the clamping position and then back to home
position.

4428M026AA   4428M027AA
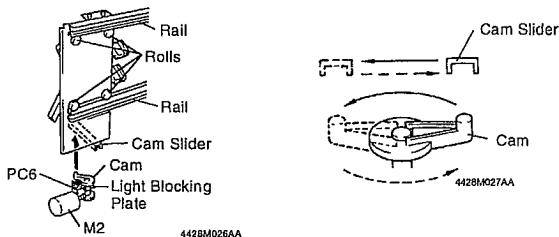
Paper Clamp Home Position Sensor PC6 detects the Paper Clamp Unit at its
home (stapling) position and clamping position. PC6 is blocked ($\boxed{L}$) and
unblocked ($\boxed{H}$) by a semicircular Light Blocking Plate that turns in phase
with the Cam. The home position and clamping position are detected by the
Blocking Edge and Unblocking Edge of the Plate.

The Blocking Edge is where PC6 is just blocked, which is the home
position.
The Unblocking Edge is where PC6 is just unblocked, which is the
clamping position.

Home Position	Paper Clamp Unit Moving from Home to Clamping Position	Clamping Position	Paper Clamp Unit Moving from Clamping to Home Position

PC6

4428M028AA   4428M029AA   4428M030AA   4428M031AA

Blocking Edge	Being Blocked	Unblocking Edge	Being Unblocked

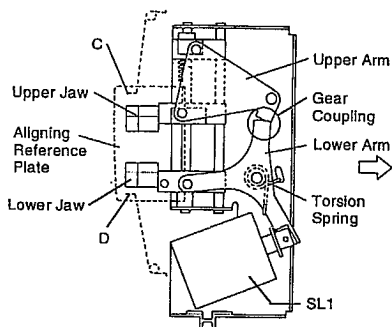M2 is energized under the following timing to detect the home position of the
Paper Clamp Unit:
• Sorter Set Switch S3 is turned ON for the first time after the Power Switch
of the copier has been turned ON.
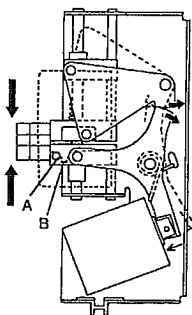
● Paper Clamping Mechanism

As Paper Clamp Motor M2 turns, the Paper Clamp Unit moves to the paper clamping position. Paper Clamp Solenoid SL1 is then energized. When SL1 is energized, it moves the Lower Jaw upward by way of the Lower Arm. At the same time, the Upper Arm which is in gear with the Lower Arm pushes the Upper Jaw down. This results in the Upper and Lower Jaws clamping the copy set. In addition, Pin A of the Lower Jaw hooks catch B of the Aligning Reference Plate. This is done to move the Aligning Reference Plate, together with the copy set, to the stapling position.

SL1 is deenergized when the Paper Clamp Unit moves back again to the clamping position after stapling. When SL1 is deenergized, the Jaws are returned back to the original position via the Upper and Lower Arms by the torsion spring fitted to the Lower Arm. (The Aligning Reference Plate is returned to the original position by torsion springs C and D fitted to it, as the Paper Clamp Unit moves to the paper clamping position.)

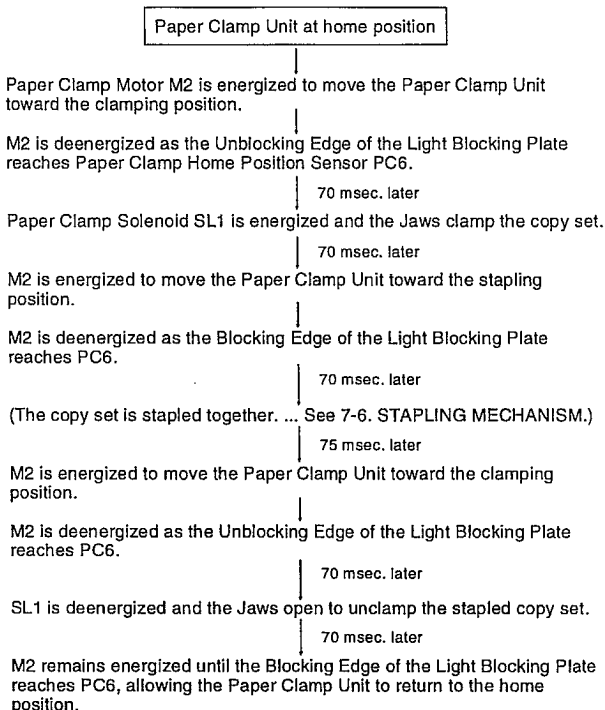Home Position (Before Operation)   At Clamping

4428M032AA

● Paper Clamping Operation

| Paper Clamp Unit at home position |

Paper Clamp Motor M2 is energized to move the Paper Clamp Unit toward the clamping position.

M2 is deenergized as the Unblocking Edge of the Light Blocking Plate reaches Paper Clamp Home Position Sensor PC6.

70 msec. later

Paper Clamp Solenoid SL1 is energized and the Jaws clamp the copy set.

70 msec. later

M2 is energized to move the Paper Clamp Unit toward the stapling position.

M2 is deenergized as the Blocking Edge of the Light Blocking Plate reaches PC6.

70 msec. later

(The copy set is stapled together. ... See 7-6. STAPLING MECHANISM.)

75 msec. later

M2 is energized to move the Paper Clamp Unit toward the clamping position.

M2 is deenergized as the Unblocking Edge of the Light Blocking Plate reaches PC6.

70 msec. later

SL1 is deenergized and the Jaws open to unclamp the stapled copy set.

70 msec. later

M2 remains energized until the Blocking Edge of the Light Blocking Plate reaches PC6, allowing the Paper Clamp Unit to return to the home position.

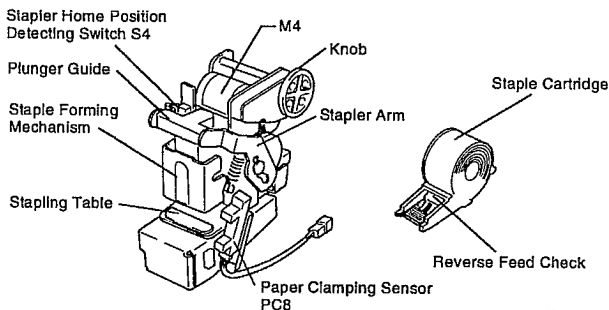## 7-5. PAPER DETECTION AT STAPLING MECHANISM (ST-103 ONLY)

In the beginning of a stapling sequence, the copy set in the Bin is moved to the stapling position by the Paper Clamp Unit. Paper Clamping Sensor PC8 is used to check to see whether the copy set has been properly moved to the stapling position before each stapling action occurs. If PC8 is not blocked ($\boxed{H}$) by the copy set even when the Paper Clamp Unit has moved to the stapling position because of a clamp failure or other reason, the stapling action for that particular Bin is canceled and the sequence is started for the stapling action for the next Bin.

PC8
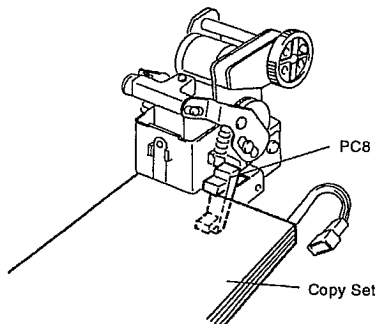
Copy Set

4428M033AA

7-6. STAPLING MECHANISM (ST-103 ONLY)

● The Staple Unit has a Stapler Arm that is moved up and down by Stapling Motor M4 to drive a staple into the copy set.

Stapler Home Position Detecting Switch S4

M4

Knob

Plunger Guide

Staple Cartridge

Staple Forming Mechanism

Stapler Arm

Stapling Table

Reverse Feed Check

Paper Clamping Sensor PC8

4428M034AA

Stapling Motor M4

Stapling Motor M4, a DC motor, is energized or deenergized by the output from pin 20 of IC1A. It turns in one direction only.

IC1A-20	M4
L	Energized
H	Deenergized

Stapler Arm Moving Mechanism

A cam slot is cut into the Stapler Arm, which the Roll on Gear D fits in. When Stapling Motor M4 is energized to turn Gear D one complete turn through a gear train of Gears A, B, and C, the Roll on Gear D causes the Stapler Arm to move through the upper and lower limit positions once.
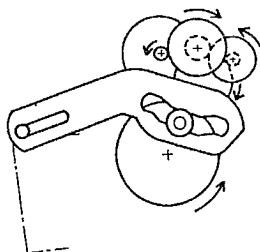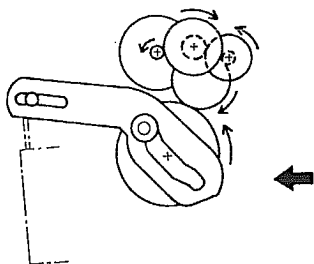
Upper Limit Position (Home Position)

In Downward Stroke

Stapler Arm — M4 — Gear A

Gear B
Gear C

Roll

Gear D

Cam slot
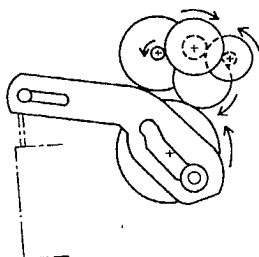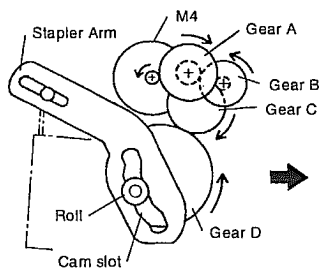
In Upward Stroke

Lower Limit Position
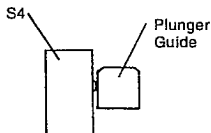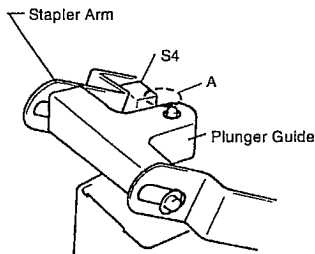

4426M035AA

● Stapler Arm Home Position Detection
The home position of the Stapler Arm is detected by Stapler Home
Position Detecting Switch S4 which is actuated and deactuated by part A
of the Plunger Guide fitted to the Stapler Arm. The output from S4 is
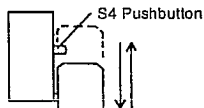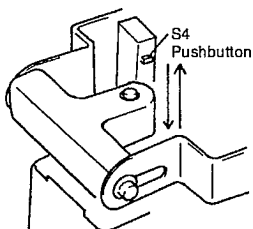applied to pin 1 of IC1A.

	S4	IC1A-1
At Home Position	ON	L
When Arm Moves	OFF	H

At Home Position   When Arm Moves

S4: ON   S4: OFF

A check is made to make sure if the Stapler Arm is at the home position
under the following timing. If the Stapler Arm is not detected at its home
position (S4 is deactuated), Stapling Motor M4 is energized and, when S4 is
actuated, is deenergized. (This is the sequence of operation to detect the
home position of the Stapler Arm.)
• Sorter Set Switch S3 is turned ON for the first time after the Power Switch
of the copier has been turned ON.

● Staple Forming Mechanism
  The staple forming mechanism consists of the Guide Plate, Former,
  Driver, and Face Plate.

Guide Plate (Front Sheath) — Former — Plunger Guide — Body — Bending Block — A — Driver — Face Plate — Staple Sheet
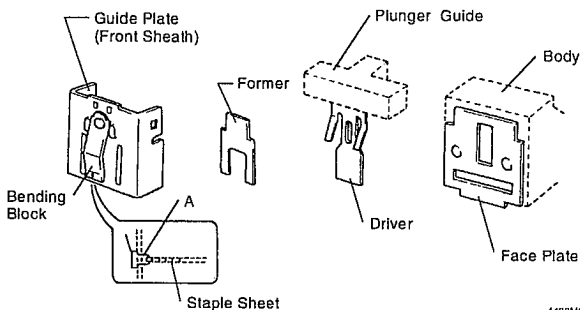
4428M037AA

- The Guide Plate functions as a guide to hold the Former and Driver. The
  Bending Block of the Guide Plate serves as a stopper for the staple sheet
  being fed. The groove at A in the Bending Block holds the first, or front
  staple of the staple sheet.
- The Former forms the front staple of the staple sheet held by the Bending
  Block into an inverted-U shape.
- The Driver, fixed onto the Plunger Guide, separates the formed staple from
  the staple sheet and drives it into the copy set.
- The Face Plate is fixed to the Body and presses the copy set down when
 the staple is driven into it.

● Operation of the Staple Forming Mechanism
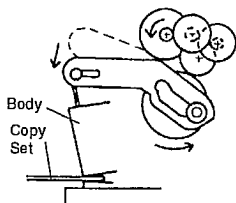
1. As Stapling Motor M4 turns, the Stapler Arm moves downward. At this time the Body is pushed downward by the Plunger Guide.
2. The Body reaches the copy set and stops moving. At this time, the Face Plate presses the copy set downward.

Body
Copy Set

4428M038AA

Plunger Guide
Driver
A
Former
Bending Block
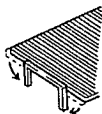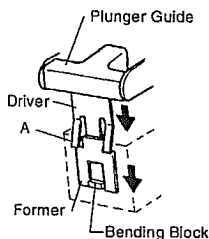
4428M039AA

3. As the Stapler Arm (i.e. Plunger Guide) moves further downward, the Former is pushed by Claws A of the Driver and moves downward to form into an inverted-U the first staple of the staple sheet held in position by the Bending Block.

Guide Plate
Driver
B
A
Staple Sheet
Bending Block
Former
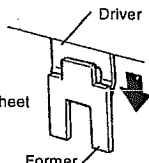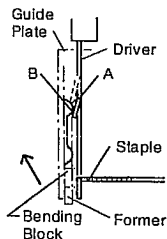
Driver
Former

4428M040AA

4. Claws A of the Driver slide along protrusions B of the Guide Plate, slipping behind the Former. The tip of the Driver then reaches the first staple of the staple sheet. (At this time, the Bending Block is pushed in the direction of the arrow by the tip of the Driver, releasing the first staple.)

Copy Set

Driver
Former
Stapling Table
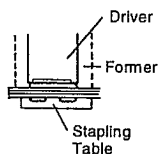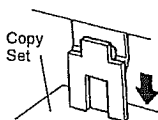
4428M041AA

5. The Former reaches the copy set and stops moving. The Driver, on the other hand, moves further downward to separate the formed staple from the staple sheet and drives it into the copy set. (The staple driven into the copy set is bent by the Stapling Table. This completes the stapling action.)

M-29

Former Moves Upward As Driver Does So.

Plunger Guide

C

Driver

Former

4428M042AA
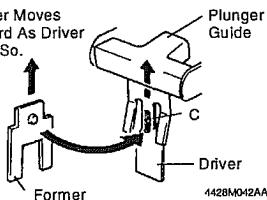
6. The Stapler Arm (i.e. Plunger Guide) moves upward from the lower limit position. At this time, the Driver moves upward.

7. Since the protrusion of the Former fits into slot C in the Driver, the Former is moved upward as the Driver moves upward.

Body Moves Upward As Driver and Former Do So.

D

Face Plate

Body

4428M043AA
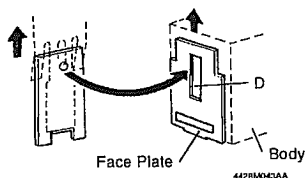
8. Since the protrusion of the Former fits into rectangular hole D in the Face Plate, the Body also moves upward.

S4

Plunger Guide

4428M044AA
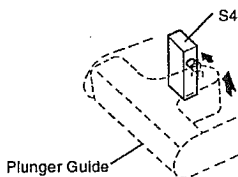
9. The Plunger Guide actuates Stapler Home Position Detecting Switch S4, which deenergizes M4. This completes the stapling action.

● Moving Stapler Arm Pivot Axis
The lower limit position of the Stapler Arm varies depending on the number of sheets of paper to be stapled together. Since the Roll on Gear D fits into the cam slot in the Stapler Arm, however, the Stapler Arm at its cam slot end can move along only a given trajectory.

The pivot axis of the Arm is therefore made movable, thereby compensating for the varying lower limit positions of the Arm depending on the number of sheets of paper to be stapled together.
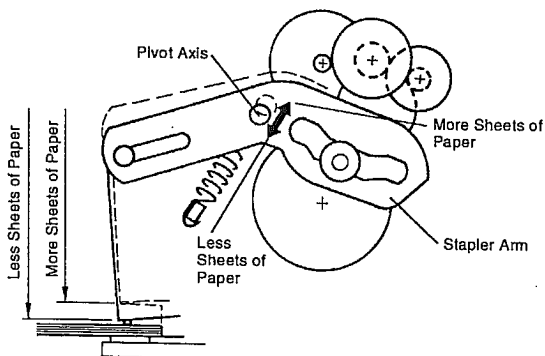
4428M045AA

● Staple Feed Mechanism
The staple sheet is fed one staple at a time onto the Bending Block by the
Feed Spring fitted to the Feeder.

Staple Feeding

When a Staple Cartridge is placed in position, tension is applied to the
Feeder in the direction of the arrow by the Cartridge, meaning that the
Feeder is pressed against the Driver.

4428M045AA
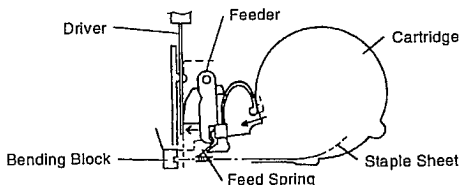
When the Driver and Former move down as the Stapler Arm moves down,
the protrusion of the Former pushes the Feeder back in the direction of
the arrow, moving the Feed Spring one staple backward. (Because of the
Reverse Feed Check of the Staple Cartridge, the staple sheet is not
moved backward by the Feed Spring at this time.)

4428M046AA
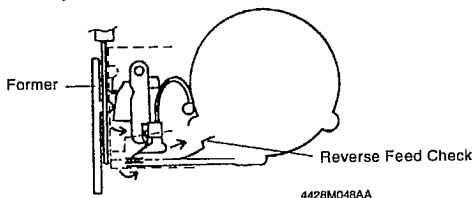
When the Stapler Arm moves up after a staple has been driven into the
copy set, the Driver and Former move up. As a result, the Feeder is no
longer pushed by the protrusion of the Former and, instead, it is again
pushed toward the Driver. Since the Feed Spring moves in the direction of
the arrow at this time, the staple sheet is fed one staple to the Bending
Block.

4428M047AA
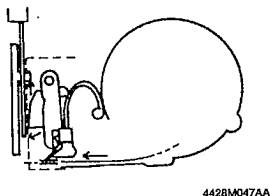
● Staple Sheet Empty Detection
Staple Empty Detecting Sensor PC10 is used to detect whether there is a staple sheet or not in the Staple Cartridge. PC10 is a reflector-type photosensor. When there is a staple sheet, the light from PC10 LED is reflected by the staple sheet, turning ON the PC10 phototransistor. This results in a LOW signal being input to pin 62 of IC1A. If there is no staple sheet, the LED light is not reflected, which turns OFF the phototransistor. At this time, a HIGH signal is input to pin 62 of IC1A and the Add Staple Indicator lights up on the copier control panel.

Staple Sheet	IC1A-62
Present	L
Not Present	H

Staple Sheet

Body

PC10

4428M049AA
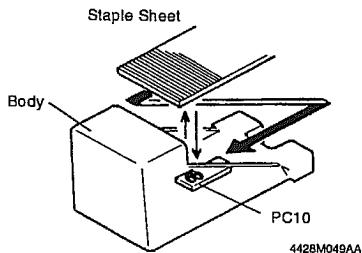
• A staple-sheet-empty condition is detected when there are about 60 staples remaining in the Staple Cartridge.
= If a staple-sheet-empty condition is detected during a stapling action, that particular stapling sequence is continued until it is completed. After the sequence has been completed, the Add Staple Indicator lights up.
• Immediately after a new Staple Cartridge has been installed, the Stapler is operated to complete four consecutive stapling sequences (it is stopped when Stapler Home Position Detecting Switch S4 is actuated a fourth time). This is done to prevent a "dummy run" (an operation of the Stapler without actually driving a staple into the paper) immediately following the replacement of the Cartridge.

● Stapling Operation Sequence

The Paper Clamp Unit moves the copy set in the Bin to the stapling position.

Paper Clamping Sensor PC8 is blocked ($\boxed{\text{L}}$) by the copy set moved into the stapling position.

A LOW signal is output from pin 20 of IC1A to energize Stapling Motor M4.

The Stapler Arm moves down and then up. (This completes the stapling of the copy set.)

Stapler Home Position Detecting Switch S4 is actuated.

A HIGH signal is output from pin 20 of IC1A to deenergize M4.

The Paper Clamp Unit returns the stapled copy set back into the Bin.

7-7. SORTER SET SWITCH

● Sorter Set Switch S3 is used to detect whether or not the ST-103/S-105 is locked to the copier. When the ST-103/S-105 is locked to the copier, the protrusion of the mounting bracket actuates S3. The output from S3 is detected by pin 2 of IC1A.

● When S3 is turned ON, the DC24V power of the copier is supplied to the ST-103/S-105.

	S3	IC1A-2
When Connected	ON	L

S3

Protrusion of Mounting Bracket

4428M050AA
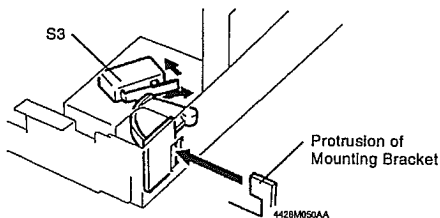
7-8. BIN EMPTY DETECTION

● Bin Empty Sensor LED Board PWB-B and Bin Empty Sensor PQ Board PWB-C work as a pair to detect a sheet of paper present in any of the Bins. Depending on whether there is a sheet of paper present in the Bin, PWB-B is blocked or unblocked, changing the output from pin 2 of IC1C on PWB-C as follows.

● Pulses are output from pin 4 of IC1C on PWB-C and these pulses turn ON and OFF LD1 on PWB-B repeatedly. IC1C on PWB-C determines if a sheet of paper is present in the bin based on a light beam that strikes it in synchronism with these pulses. This prevents erroneous detection of a paper-empty condition caused by extraneous light.

Paper in Bin	IC1C-2
Present	H
Not Present	L

4428M051AA
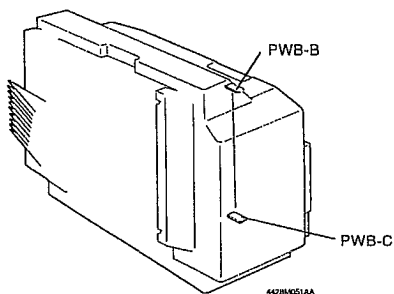
8-1. NON-SORT MODE

* [____] ... ST-103 Only.

When the Fusing Motor begins in the copier, the Transport Roller is turned by the Drive Coupling Gear Assy.

Sorter Exit Sensor PC2 is unblocked ($\boxed{H}$) as the leading edge of the copy moves past it.

---
60 msec. later

Paper Aligning Motor M3 turns forward for the specified number of pulses (which varies depending on the paper size) to move the Paper Aligning Bar to the standby position.

PC2 is blocked ($\boxed{L}$) as the trailing edge of the copy moves past it.

---
270 msec. later

M3 turns forward for the specified number of pulses, causing the Paper Aligning Bar to align the copy fed into the Bin.

60 msec. later

M3 turns backward for the specified number of pulses to move the Paper Aligning Bar to the standby position.

When the capacity of the current Bin is exceeded: 480 msec. later

Bin Moving Motor M1 is turned forward until Bin Positioning Sensor PC3 (in an unblocked state, $\boxed{H}$) is blocked ($\boxed{L}$) and then unblocked to move the Bins so that the 2nd Bin, instead of the previous 1st Bin, receives the copy.

PC2 is unblocked as the leading edge of the next copy moves past it.

PC2 is blocked as the trailing edge of the last copy moves past it.

---
270 msec. later

M3 turns forward for the specified number of pulses, causing the Paper Aligning Bar to align the copy fed into the Bin.

60 msec. later

M3 turns backward, then the Paper Aligning Bar is detected at its home position.

When the Fusing Motor stops turning in the copier, the Transport Roller stops turning.

8-2. SORT MODE

Example: Making 2 copies each of 2 different originals in the Sort Mode

When the Fusing Motor begins in the copier, the Transport Roller is turned by the Drive Coupling Gear Assy.

Sorter Exit Sensor PC2 is unblocked ($\boxed{H}$) as the leading edge of the first copy moves past it.

```
                    60 msec. later
Paper Aligning Motor M3 turns forward for the specified number of pulses
(which varies depending on the paper size) to move the Paper Aligning Bar
to the standby position.
```

PC2 is blocked ($\boxed{L}$) as the trailing edge of the first copy moves past it.

```
          270 msec. later                        480 msec. later
M3 turns forward for the specified    Bin Moving Motor M1 is turned
number of pulses, causing the Paper   forward until Bin Positioning
Aligning Bar to align the copy fed    Sensor PC3 (in an unblocked
into the Bin.                         state, H ) is blocked ( L ) and
                                      then unblocked to move the
          60 msec. later              Bins so that the 2nd Bin,
                                      instead of the previous 1st Bin,
M3 turns backward for the specified   receives the copy.
number of pulses to move the Paper
Aligning Bar to the standby position.
```

PC2 is unblocked as the leading edge of the second copy moves past it.

PC2 is blocked as the trailing edge of the second copy moves past it.

```
                    270 msec. later
M3 turns forward for the specified number of pulses, causing the Paper
Aligning Bar to align the copy fed into the Bin.

                    60 msec. later
M3 turns backward for the specified number of pulses to move the Paper
Aligning Bar to the standby position.
```

PC2 is unblocked as the leading edge of the first copy of the second original moves past it.

PC2 is blocked as the trailing edge of the first copy of the second original moves past it.

①   ②

| 270 msec. later

M3 turns forward for the specified number of pulses, causing the Paper Aligning Bar to align the copy fed into the Bin.

| 60 msec. later

M3 turns backward for the specified number of pulses to move the Paper Aligning Bar to the standby position.

| 480 msec. later

M1 is turned backward until PC3 (in an unblocked state, $\boxed{H}$) is blocked ($\boxed{L}$) and then unblocked to move the Bins so that the 1st Bin, instead of the previous 2nd Bin, receives the copy.

PC2 is unblocked as the leading edge of the second copy of the second original moves past it.

PC2 is blocked as the trailing edge of the second copy of the second original moves past it.

| 270 msec. later

M3 turns forward for the specified number of pulses, causing the Paper Aligning Bar to align the copy fed into the Bin.

| 60 msec. later

M3 turns backward, then the Paper Aligning Bar is detected at its home position.

When the Fusing Motor stops turning in the copier, the Transport Roller stops turning.

8-3. GROUP MODE

Example: Making 2 copies each of 2 different originals in the Group Mode

When the Fusing Motor begins in the copier, the Transport Roller is turned by the Drive Coupling Gear Assy.

Sorter Exit Sensor PC2 is unblocked ($\boxed{H}$) as the leading edge of the first copy moves past it.

```
                    60 msec. later
Paper Aligning Motor M3 turns forward for the specified number of pulses
(which varies depending on the paper size) to move the Paper Aligning Bar
to the standby position.
```

PC2 is blocked ($\boxed{L}$) as the trailing edge of the first copy moves past it.

```
                    270 msec. later
M3 turns forward for the specified number of pulses, causing the Paper
Aligning Bar to align the copy fed into the Bin.

                    60 msec. later
M3 turns backward for the specified number of pulses to move the Paper
Aligning Bar to the standby position.
```
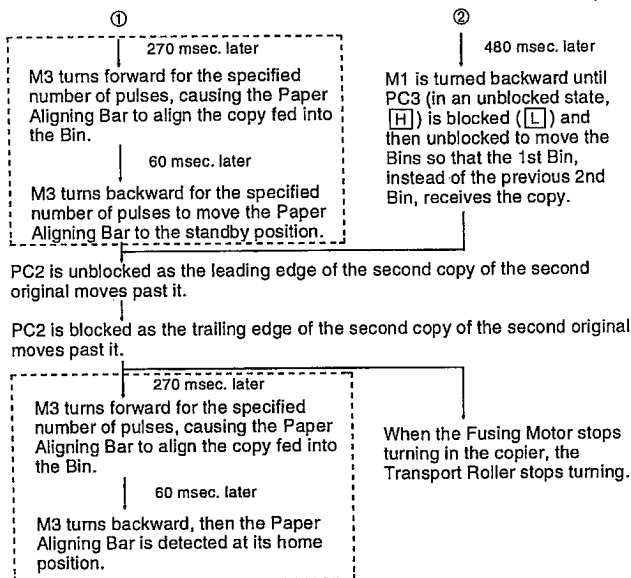
PC2 is unblocked as the leading edge of the second copy moves past it.

PC2 is blocked as the trailing edge of the second copy moves past it.

```
       270 msec. later                  |        480 msec. later
M3 turns forward for the specified      | Bin Moving Motor M1 is turned
number of pulses, causing the Paper     | forward until Bin Positioning
Aligning Bar to align the copy fed into | Sensor PC3 (in an unblocked
the Bin.                                | state, $\boxed{H}$) is blocked ($\boxed{L}$) and
                                        | then unblocked to move the
       60 msec. later                   | Bins so that the 2nd Bin,
M3 turns backward for the specified     | instead of the previous 1st Bin,
number of pulses to move the Paper      | receives the copy.
Aligning Bar to the standby position.   |
```

PC2 is unblocked as the leading edge of the first copy of the second original moves past it.

PC2 is blocked as the trailing edge of the first copy of the second original moves past it.

```
                    270 msec. later
M3 turns forward for the specified number of pulses, causing the Paper
Aligning Bar to align the copy fed into the Bin.
```

To ① on next page

①

| 60 msec. later

M3 turns backward for the specified number of pulses to move the Paper Aligning Bar to the standby position.

PC2 is unblocked as the leading edge of the second copy of the second original moves past it.

PC2 is blocked as the trailing edge of the second copy of the second original moves past it.

| 270 msec. later

M3 turns forward for the specified number of pulses, causing the Paper Aligning Bar to align the copy fed into the Bin.

| 60 msec. later

M3 turns backward, then the Paper Aligning Bar is detected at its home

---

When the Fusing Motor stops turning in the copier, the Transport Roller stops turning.

8-4. SORT STAPLE MODE (ST-103 ONLY)

Example: Making 2 copies each of 2 different originals in the Sort Staple
Mode

All copies have been fed out into the Bins and the Paper Aligning Bar
returns to the home position. (The operation to feed copies into the Bins
is the same as in the Sort Mode.)

480 msec. after Sorter Exit Sensor PC2 has been blocked as the
trailing edge of the last copy moves past it

Bin Moving Motor M1 is turned forward until Bin Positioning Sensor PC3 (in
an unblocked state, [H]) is blocked ([L]) and then unblocked to move the
Bins so that the 2nd Bin, instead of the previous 1st Bin, receives the copy.

85 msec. later

Paper Clamp Motor M2 is energized to move the Paper Clamp Unit toward
the paper clamp position. ....(A)

M2 is deenergized as the Unblocking Edge of the Light Blocking Plate
reaches Paper Clamp Home Position Sensor PC6.

70 msec. later

Paper Clamp Solenoid SL1 is energized and the Jaws clamp the copy set.

70 msec. later

M2 is energized to move the Paper Clamp Unit which holds the copy set
toward the stapling position.

When the copy set is
successfully clamped

M2 is deenergized as the Blocking Edge   Paper Clamping Sensor PC8 is
of the Light Blocking Plate reaches PC6.   blocked.

70 msec. later

Stapling Motor M4 is energized and the stapling sequence is started (only if
PC8 is blocked).

M4 is deenergized when Stapler Home Position Detecting Switch S4 (in the
ON position) is turned OFF and then turned ON, completing the stapling
sequence.

75 msec. later

M2 is energized to move the Paper Clamp Unit toward the clamping position
(to return the stapled copy set back into the Bin).

M2 is deenergized as the Unblocking Edge of the Light Blocking Plate
reaches PC6.

70 msec. later

SL1 is deenergized and the Jaws open to unclamp the stapled copy set.

①
| 70 msec. later

M2 remains energized until the Blocking Edge of the Light Blocking Plate reaches PC6, allowing the Paper Clamp Unit to return to the home position. ....(B)

| 205 msec. later

M1 is turned backward until PC3 (in an unblocked state, $\boxed{H}$) is blocked ($\boxed{L}$) and then unblocked to move the Bins so that the 1st Bin, instead of the previous 2nd Bin, receives the copy.
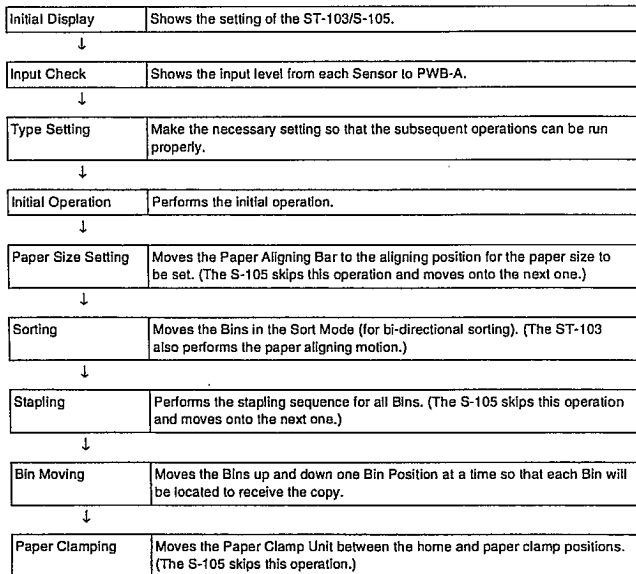
| 85 msec. later

Steps are performed between (A) and (B) to complete the stapling of the copy set in the 1st Bin.
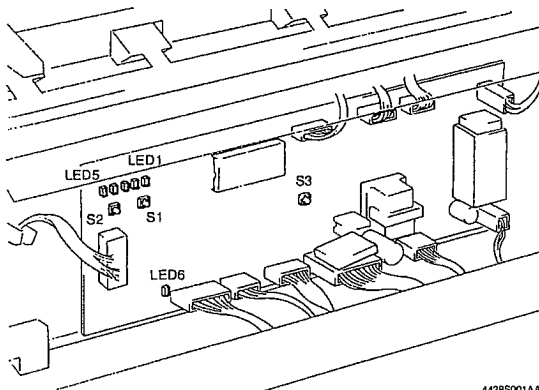
TEST MODE

* The ST-103/S-105 requires no Test Mode Jig for performing the Test Mode operations.

The ST-103/S-105 can be checked for different operations by using the Test Mode as detailed below. It can be set into each Test Mode operation sequentially by switch operation.

Initial Display	Shows the setting of the ST-103/S-105.

↓

Input Check	Shows the input level from each Sensor to PWB-A.

↓

Type Setting	Make the necessary setting so that the subsequent operations can be run properly.

↓

Initial Operation	Performs the initial operation.

↓

Paper Size Setting	Moves the Paper Aligning Bar to the aligning position for the paper size to be set. (The S-105 skips this operation and moves onto the next one.)

↓

Sorting	Moves the Bins in the Sort Mode (for bi-directional sorting). (The ST-103 also performs the paper aligning motion.)

↓

Stapling	Performs the stapling sequence for all Bins. (The S-105 skips this operation and moves onto the next one.)

↓

Bin Moving	Moves the Bins up and down one Bin Position at a time so that each Bin will be located to receive the copy.

↓

Paper Clamping	Moves the Paper Clamp Unit between the home and paper clamp positions. (The S-105 skips this operation.)

* Switches S1 to S3 on PWB-A are used to set the ST-103/S-105 into the Test Mode and select each Test Mode operation. Be also sure to turn ON Sorter Set Switch S3 to ensure that power is supplied to each Motor of the ST-103/S-105. (For this purpose, the Front Cover and Lower Right Cover must be removed. ⏎ See p. D-1.)
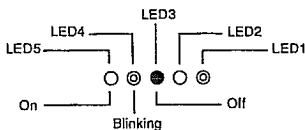

44285001AA

Sorter Set Switch S3
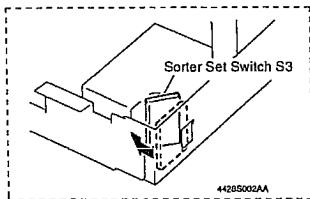
44285002AA

* A particular Test Mode operation can be identified by LED1 through LED5 on PWB-A which may be lit up, blinking, or off. In the text that follows, the following symbols are used to represent a lit, blinking, and off LED.

* Where a particular LED gives a different indication between ST-103 and S-105, that for S-105 is shown in ( ).

S-2

r------------------ Setting ST-103/S-105 into Test Mode ------------------
| • Holding down S1, press S3 (on PWB-A) once, and keep pressing S1 for about 5 sec.
| • To exit from the Test Mode, press S3 (PWB-A).
L--

[Initial Display]

LED5 ◎ ◎ ● ◎ ●　LED1
　　　　(●)
```
r------------------------------------------------------------------------
| '●' if Sorter Set Switch S3 is OFF.
| To ensure correct operation in the subsequent Test Mode
| operations, be sure to keep Sorter Set Switch S3 in the
| ON position.
L------------------------------------------------------------------------
```

Press S1.

[Input Check]
```
r------------------------------------------------------------------------
| Indicates by a lit or off LED the state of the input from
| each Sensor or Switch to PWB-A. The following shows the
| states when the corresponding LED lights up. The
| indication given in ( ) for S-105 is for all times.
L------------------------------------------------------------------------
```
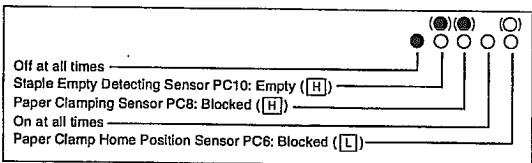
The LEDs look like

● ● ● ● ◎── Press S2 to check for the state of inputs from the following Sensors and
Switches.

```
                                                    (●)
                                                    ○ ○ ○ ○ ○
Paper Aligning Home Position Sensor PC5: Blocked ([L]) ─────┘ │ │ │ │
Bin Lower Limit Position Sensor PC4: Unblocked ([H]) ─────────┘ │ │ │
Bin Upper Limit Interlock Switch S1: ON ───────────────────────┘ │ │
Bin Positioning Sensor PC3: Unblocked ([H]) ─────────────────────┘ │
Bin Moving Pulse Sensor PC1: Blocked ([L]) ────────────────────────┘
```
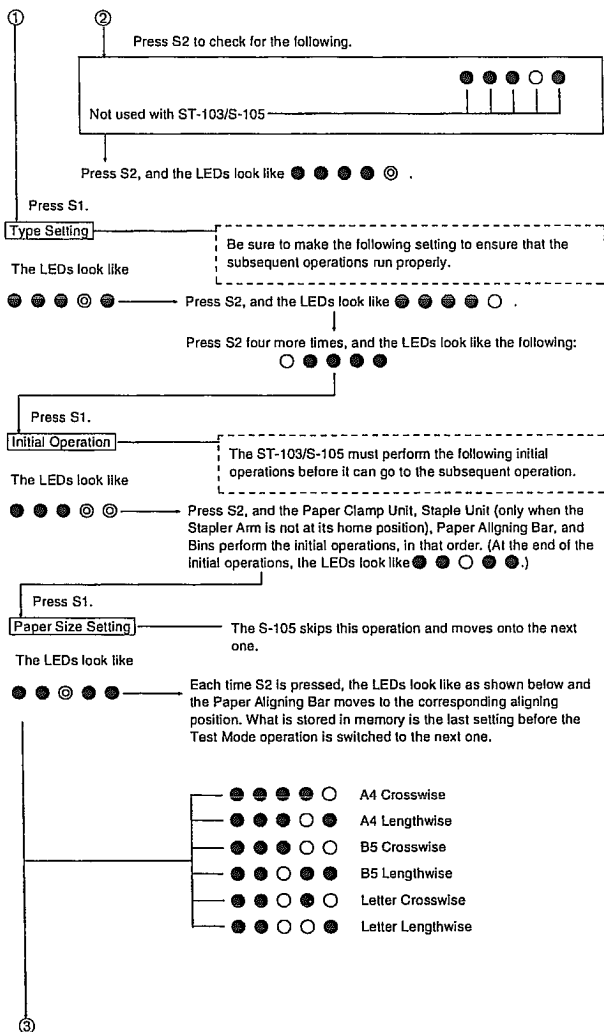
Press S2 to check for the state of inputs from the following Sensors
and Switches.

```
                                              (●)   (●)
                                              ○ ○ ○ ○ ○
Sorter Exit Sensor PC2: Unblocked ([H]) ─────────┘ │ │ │ │
Bin empty detection: Empty ([L]) ──────────────────┘ │ │ │
Staple Unit connection (CN5): Connected ─────────────┘ │ │
Sorter Set Switch S3: ON ──────────────────────────────┘ │
Stapler Home Position Detecting Switch S4: ON ───────────┘
```

Press S2 to check for the state of inputs from the following Sensors.

```
                                           (●)(●)    (○)
                                           ● ○ ○ ○ ○ ○
Off at all times ───────────────────────────┘ │ │ │ │ │
Staple Empty Detecting Sensor PC10: Empty ([H]) ─┘ │ │ │ │
Paper Clamping Sensor PC8: Blocked ([H]) ──────────┘ │ │ │
On at all times ─────────────────────────────────────┘ │ │
Paper Clamp Home Position Sensor PC6: Blocked ([L]) ────┘
```

①　　　②

S-3

① ②

Press S2 to check for the following.

● ● ● ○ ●
| | | | |

Not used with ST-103/S-105 ——

Press S2, and the LEDs look like ● ● ● ● ◎ .

Press S1.

| Type Setting |

Be sure to make the following setting to ensure that the subsequent operations run properly.

The LEDs look like

● ● ● ◎ ● ——→ Press S2, and the LEDs look like ● ● ● ● ○ .

Press S2 four more times, and the LEDs look like the following:

○ ● ● ● ●

Press S1.

| Initial Operation |

The ST-103/S-105 must perform the following initial operations before it can go to the subsequent operation.

The LEDs look like

● ● ● ◎ ◎ ——→ Press S2, and the Paper Clamp Unit, Staple Unit (only when the Stapler Arm is not at its home position), Paper Aligning Bar, and Bins perform the initial operations, in that order. (At the end of the initial operations, the LEDs look like ● ● ○ ● ●.)

Press S1.

| Paper Size Setting | —— The S-105 skips this operation and moves onto the next one.

The LEDs look like

● ● ◎ ● ● —— Each time S2 is pressed, the LEDs look like as shown below and the Paper Aligning Bar moves to the corresponding aligning position. What is stored in memory is the last setting before the Test Mode operation is switched to the next one.

┌— ● ● ● ● ○ A4 Crosswise

├— ● ● ● ○ ● A4 Lengthwise

├— ● ● ● ○ ○ B5 Crosswise

├— ● ● ○ ● ● B5 Lengthwise

├— ● ● ○ ● ○ Letter Crosswise

└— ● ● ○ ○ ● Letter Lengthwise

③

S-4

③

Press S1.

[Sorting]

The LEDs look like

● ● ◎ ● ◎

┌───┐
│ Use S2 to enable or disable the ST-103/S-105 for sorting │
│ and use S1 to start or stop the sorting operation.   │
└───┘

Press S2 to enable the ST-103/S-105 for sorting
(● ● ● ● ○).

Press S1 to set the ST-103/S-105 to the standby state
(● ● ● ○ ○).
In the ST-103, the Paper Aligning Bar moves at this time to the
standby position for the paper size set in "Paper Size Setting."

Each time Sorter Exit Sensor PC2 is blocked and unblocked by a
sheet of paper, the Bins are moved one Bin position to locate a
new Bin for receiving the copy, bi-directionally from 1st to 10th
Bins, and from 10th to 1st Bins. With the ST-103, it also performs
the paper aligning motion (the Paper Aligning Bar moving between
the standby and paper aligning position).

PC2   44285003AA
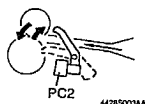
Press S1 to stop the sorting operation (● ● ● ● ○).
In the ST-103, the Paper Aligning Bar returns at this time to the
home position.

Press S2 to disable the ST-103/S-105 for sorting
(● ● ◎ ● ◎).

Press S1.

[Stapling] ──────── The S-105 skips this operation and moves onto the next
one.

The LEDs look like

● ● ◎ ● ◎ ──→Press S2 and the Bins are moved to locate the 10th Bin for
receiving the copy. The ST-103 performs the stapling sequence
sequentially from the 10th Bin upward to the 1st Bin (at this time,
stapling occurs only if PC8 is blocked). Here are the indications
given by LEDs during this operation.

┌───┐
│   ● ● ○ ○ ○   │
│ Off at all times ─────────────────────┘ │ │ │ │   │
│ Off at all times ───────────────────────┘ │ │ │   │
│ When PC8 detects a sheet of paper ─────────┘ │ │   │
│ On at all times ─────────────────────────────┘ │   │
│ When the Paper Clamp Unit is at the home position ─┘   │
└───┘

At the end of the operation

④   ⑤

S-5

④   ⑤

Press S1.

Bin Moving

The LEDs look like
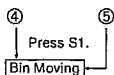
● ◎ ● ● ◎ ─────→ Press S1, and the LEDs look like ● ● ● ● ○.
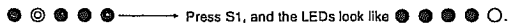
Each time S1 is pressed, the Bins are moved up one Bin to locate a
new Bin for receiving the copy. Each time S2 is pressed, the Bins
are moved downward one Bin to locate a new Bin for receiving the
copy.

Holding down S2, press S1.

Paper Clamping ───────── The S-105 skips this operation and goes back to "Initial
Display."

The LEDs look like

● ◎ ● ● ◎ ─────→ Each time S2 is pressed, the following operation is repeated.
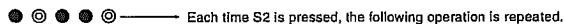
──── 1. (After the Bins are moved to locate the 1st Bin for receiving
the copy if they are located otherwise,)
The Paper Clamp Unit is moved to the paper clamp position.
──── 2. The Paper Clamp Unit is moved to the home position.

Press S1, and the Paper Clamp Unit is detected at its home position
before the ST-103 returns to:

Initial Display

DIS/REASSEMBLY, ADJUSTMENT

* The text contained herein is based on the ST-103. In the text, there may appear some parts which you will not find in the S-105.

* Precautions for Disassembly, Reassembly, and Adjustments

1. Before attempting to disassemble the ST-103/S-105, always make sure that no power is being supplied from the copier.
2. While power is being supplied to the ST-103/S-105, do not attempt to remove/install the print jacks from/to the PWBs or unplug/plug in the connectors.
3. If the ST-103/S-105 is run with its Covers removed, use care not to allow your clothing to be caught in revolving parts such as the Timing Belt.
4. The basic rule is do not run the ST-103/S-105 any time during dis/reassembly.
5. To reassemble the ST-103/S-105, reverse the order of disassembly unless otherwise specified.
6. Do not attempt to loosen or remove the screws to which red paint has been applied.

------------------ Purpose of Applying Red Paint ------------------
Red paint is applied to those screws that cannot be readjusted or reinstalled in the field.

1-1. REMOVAL OF EXTERIOR COVERS
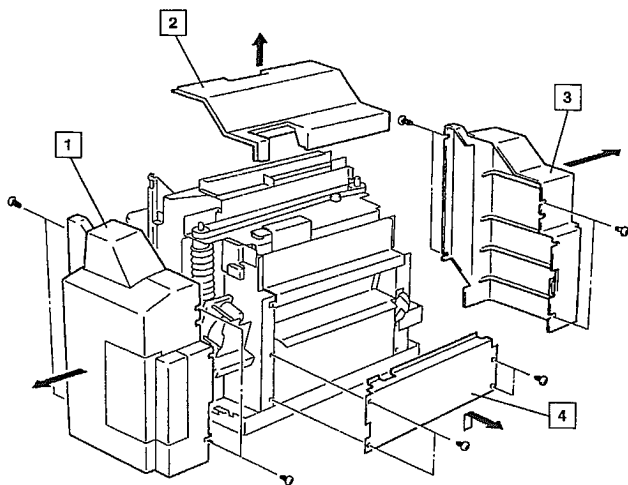
4428D001AA

1	Front Cover:	Remove four screws and slide the Cover to the front to remove it from the main body.
2	Upper Cover:	Remove the Front and Rear Covers and then lift the Upper Cover up to remove it from the main body.
3	Rear cover:	Remove four screws and slide the Cover to the rear to remove it from the main body.
4	Lower Right Cover:	Remove four screws and lift the Cover up to remove it from the main body.

1-2. REMOVAL OF THE TRANSPORT GUIDE PLATE ASSY
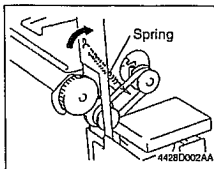
1. Remove the Front, Rear, and Lower Right Covers.
2. Remove the spring for the Drive Coupling Gear Assy.
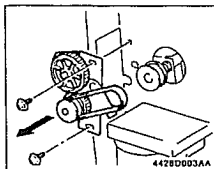
3. Remove two screws and the Gear Assy and Belt.

   * At reinstallation, adjust the tension of the Belt. (See p. D-9.)
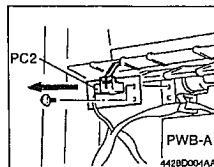
4. Remove one screw and the Mounting Bracket for Sorter Exit Sensor PC2.
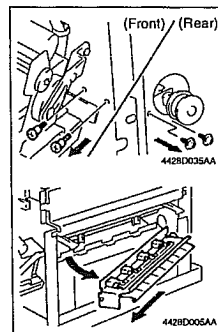
5. Remove two shoulder screws from the front of the unit and two screws from the rear of the unit. Pull the Transport Guide Plate Assy to the front as shown.

1-3. REMOVAL OF THE BIN MOVING MOTOR M1 UNIT

4428D006AA
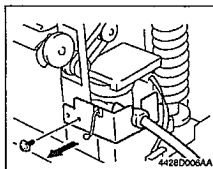
1. Remove the Rear Cover.
2. Remove one screw and the Hookup Support.

PJ1

4428D007AA
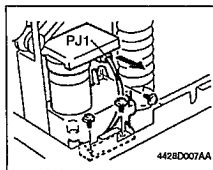
3. Unplug PJ1 (M1) and remove three screws.

PJ2

4428D008AA
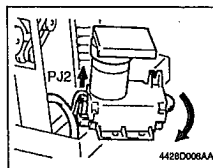
4. Slide out the M1 Unit to the front and unplug PJ2 (PC1) to free the M1 Unit.

M1 Unit

Pitch Ring

0

4428D009AA
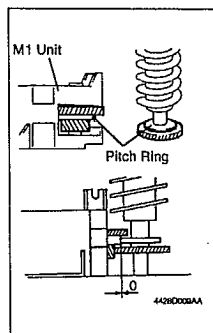
* At reinstallation, mate the two Pitch Rings with each other as shown and, at the same time, tighten the screws.

1-4. REMOVAL OF PAPER CLAMP SOLENOID SL1 (ST-103 ONLY)
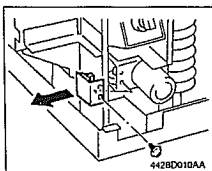
1. Remove the Front Cover.
2. Remove one screw and the Mounting Bracket for Paper Clamp Home Position Sensor PC6.
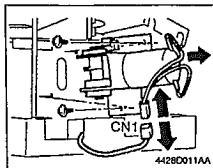
3. Unplug CN1 and remove two screws to remove the Paper Clamp Motor M2 Assy.
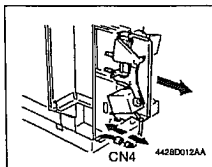
4. Unplug CN4 and slide the Paper Clamp Unit to the front to remove it from the main body.
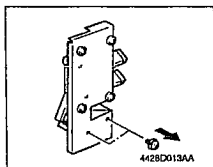
5. Remove two screws and SL1.

   * At reinstallation, adjust the stroke of SL1. (See p. D-9.)

1-5. REMOVAL OF THE STAPLE UNIT (ST-103 ONLY)
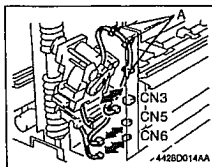
1. Remove the Front Cover.
2. Unplug CN3, CN5, and CN6.
3. Remove the CN3 Cord on the Staple Unit end from Cord Clamps A.
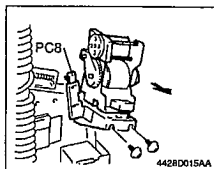
4. Remove two screws and the Staple Unit.

PC8

4428D015AA

1-6. REMOVAL OF THE SORTER LOCK RELEASE LEVER
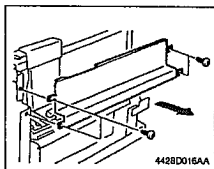
1. Remove the Front, Rear, and Upper Covers.
2. Remove four screws and the Upper Right Cover.

4428D016AA

Lock Lever Spring Hook
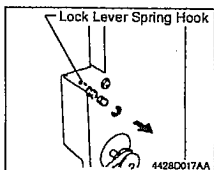
3. Unhook the Lock Lever Spring in the rear of the unit and snap off the E-ring from the Lock Lever Shaft.

4428D017AA
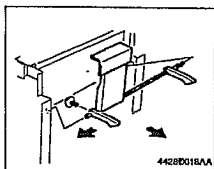
4. Slide and remove the Lock Lever Shaft. Remove one screw and one of the two Lock Levers.

4428D018AA
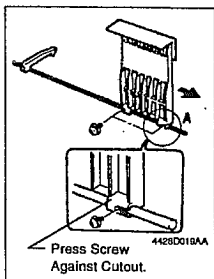
5. Remove two screws and the Lock Release Lever.

* At reinstallation, press the screw up against the cutout in the Lock Release Lever as shown at A on the left.

Press Screw Against Cutout.

4428D019AA

D-5

1-7. REMOVAL OF THE BINS (Omit steps marked with ☆ for S-105.)
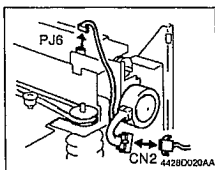
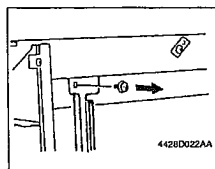

1. Remove the Front, Rear, and Upper Covers.
☆2. Go to the rear of the unit and unplug CN2 (Paper Aligning Motor M3) and PJ6 (Paper Aligning Home Position Sensor PC5).
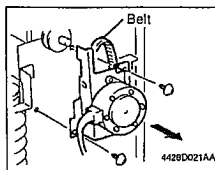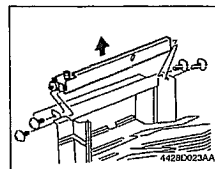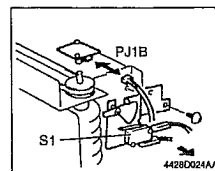

☆3. Remove two screws and the M3 Assy and Belt.

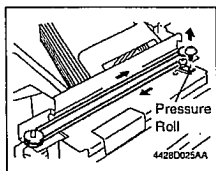   * At reinstallation, adjust the tension of the Belt. (See p. D-9.)

☆4. Remove one screw and the Paper Aligning Bar.


5. Remove four screws and the Upper Aligning Frame.

6. Unplug PJ1B (Bin Empty Sensor LED Board PWB-B) from the top of the unit and remove one screw to remove the Mounting Bracket for Bin Upper Limit Interlock Switch S1.
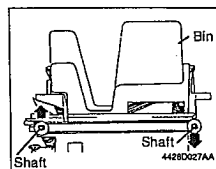
7. Turn the Spiral Cam Drive Transmitting Belt to move the Bins to the upper limit position.
8. Remove one screw and the Pressure Roll of the Drive Transmitting Belt.

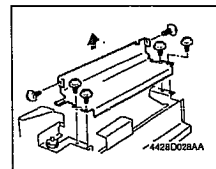   * At reinstallation, adjust the tension of the Belt. (See p. D-9.)
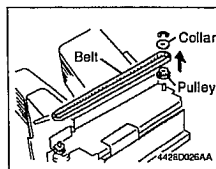
9. Snap off the E-ring from the Spiral Cam (either the front or rear one) and remove the Collar, Belt, and Pulley.
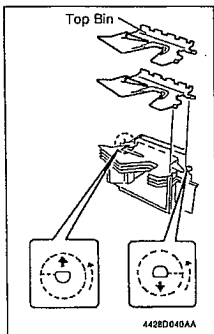
   * Precaution at Reinstallation
     When the Belt has been reinstalled, check that each Bin is level and that the D-shaped Shafts for the front and rear Spiral Cams are oriented as shown.

10. Remove six screws and the Upper Frame.

D-7

Top Bin

4428D040AA

11. Turn the front and rear Spiral Cams one complete turn each and remove the Top Bin, and then Bins 1-10, one Bin at a time.

* At reinstallation, first check that the D-shaped Shafts of the front and rear Spiral Cams are oriented as shown. With that position as a reference, turn front and rear Spiral Cams each one complete turn whenever one Bin has been reinstalled.
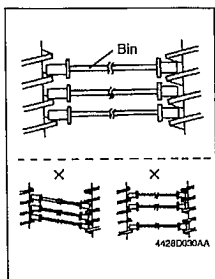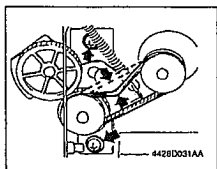
* Check that each Bin is installed in each cam groove as shown.

Bin

×   ×

4428D030AA

D-8

### 2-1. COUPLING BELT (AT DRIVE COUPLING GEAR) TENSION ADJUSTMENT

1. Remove the Rear Cover.
2. Loosen the two screws that secure the Drive Coupling Gear Assy. Press (with a force of 100 g) the Coupling Belt by hand and obtain a Belt deflection of 4 ± 1 mm. When this deflection is obtained, tighten the two screws.

2-2. PAPER CLAMP SOLENOID SL1 STROKE ADJUSTMENT (ST-103 ONLY)
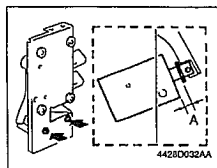
1. Remove the Paper Clamp Unit. (See p. D-4.)
2. Loosen the two screws that secure SL1 and, when dimension A measures 8.0 to 8.5 mm, tighten the two screws.

2-3. PAPER ALIGNING MOTOR M3 DRIVE TRANSMITTING BELT TENSION ADJUSTMENT (ST-103 ONLY)
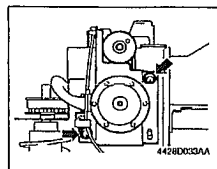
1. Remove the Rear Cover.
2. Loosen the two screws that secure the M3 Assy. When the Belt is tight due to the weight of the M3 Assy, tighten the two screws.

2-4. SPIRAL CAM DRIVE TRANSMITTING BELT TENSION ADJUSTMENT

120 ± 20g
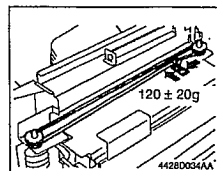
1. Remove the Front, Rear, and Upper Covers.
2. Loosen the screw that secures the Pressure Roll for the Drive Transmitting Belt. Press the Pressure Roll against the Belt (with a force of about 120 g) and, at the same time, tighten the screw.

D-9

TROUBLESHOOTING

1-1. MISFEED DETECTION

A misfeed in the ST-103/S-105 is detected at any of the following timings and, when one is detected, the Misfeed Indicator lights up on the copier control panel.

Type	Detection Timing
Paper left in ST-103/S-105	The output from Sorter Exit Sensor PC2 is HIGH (unblocked) when the copier Power Switch is turned ON or a malfunction condition reset.
Transport misfeed	The output from PC2 remains LOW approx. 500 msec. after the leading edge of the paper has moved past the Paper Exit Sensor of the copier.
Exit misfeed	The output from PC2 is HIGH even after the lapse of approx. 2,000 to 4,500 msec. (varying depending on the paper size) after PC2 has been unblocked (HIGH) by the leading edge of the paper.

1-2. TROUBLESHOOTING PROCEDURES

1	Paper Left in ST-103/S-105

Step	Check Item	Result	Action
1	Is there a sheet of paper present at the Transport Section of the ST-103/S-105 and is Sorter Exit Sensor PC2 unblocked by that sheet of paper?	YES	Remove the sheet of paper from the inside of the ST-103/S-105.
2	Does the Actuator of PC2 operate properly?	NO	Check PC2 for its installed position and check to see if its Actuator is deformed or contaminated.
3	Is the PC2 output signal input correctly to PWB-A?	YES	Replace PWB-A.
	* Is the voltage across PJ7A-2 and GND DC0V or does it change to DC5V when PC2 is unblocked by a sheet of paper?	NO	Check wiring between PWB-A and PC2 and, if it is intact, replace PC2.

Step	Check Item	Result	Action
1	Does the paper being used meet production specifications?	NO	Instruct the user to use paper that meets product specifications.
2	Is the paper curled, waved, or damp?	YES	Replace the paper. Instruct the user on the better storage of paper.
3	Is there a foreign object on the Transport Guide Plate or is it contaminated or deformed?	YES	Remove foreign object from, or clean, the Transport Guide Plate. Correct or replace the Plate (see p. D-2).
4	Does the Drive Coupling Gear turn smoothly when turned by hand? Does the Drive Coupling Gear mesh correctly with the Exit Roller of the copier when the ST-103/S-105 is locked to the copier?	NO	Check the Gear for chipped tooth, deformation, and foreign object. Check also the tension spring and gear mounting bracket of the Drive Coupling Gear Assy, and check tension of the Drive Transmitting Belt.
5	Is the Transport Roller deformed or worn?	YES	Replace the Transport Roller.
6	Does the Actuator of Sorter Exit Sensor PC2 operate properly?	NO	Check PC2 for its installed position and check to see if its Actuator is deformed or contaminated.
7	Is the PC2 output signal input correctly to PWB-A?	YES	Replace PWB-A.
	* Does the voltage across PJ7A-2 and GND change from DC0V to DC5V when PC2 is unblocked by a sheet of paper?	NO	Check wiring between PWB-A and PC2 and, if it is intact, replace PC2.

4428C01TAB

T-2

2-1. MALFUNCTION DETECTION

The following malfunctions are detected and, when any is detected, the corresponding malfunction code is shown on the copier display. Note that, with the S-105, only the malfunctions coded under "Communications" (C0b40) and "Bin Moving Mechanism" (C0b60 to 64) are applicable.

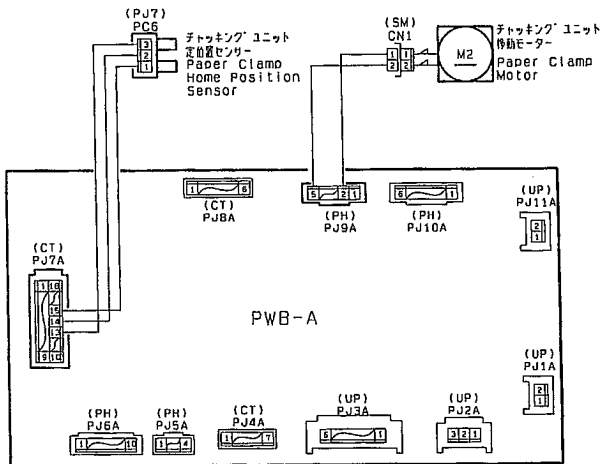| Mecha-nism	Malfunction Code	Possible Malfunctioning Components	Detection Timing
Paper Clamp Unit	C0b10	• Paper Clamp Motor M2 • Paper Clamp Home Position Sensor PC6	The Unblocking/Blocking Edge of the Light Blocking Plate for PC6 is not detected with the PC6 output remaining LOW (blocked) even after the lapse of approx. 1,000 msec. after M2 has been energized.
Paper Clamp Unit	C0b11	• Paper Clamp Motor M2 • Paper Clamp Home Position Sensor PC6	The Unblocking/Blocking Edge of the Light Blocking Plate for PC6 is not detected with the PC6 output remaining HIGH (unblocked) even after the lapse of approx. 1,000 msec. after M2 has been energized.
Paper Aligning Mechanism	C0b30	• Paper Aligning Motor M3 • Paper Aligning Home Position Sensor PC5	The PC5 output does not go HIGH (unblocked) (i.e., it remains LOW) even when M3 turns forward for approx. 1,000 msec. during a motion to detect the home position of the Paper Aligning Bar.
Paper Aligning Mechanism	C0b31	• Paper Aligning Motor M3 • Paper Aligning Home Position Sensor PC5	The PC5 output does not go LOW (blocked) (i.e., it remains HIGH) even when M3 turns backward for approx. 3,000 msec. during a motion to detect the home position of the Paper Aligning Bar.
Communi-cations	C0b40	• Control Board PWB-A	There is a communications failure between the copier and Sorter under normal operating conditions.
Staple Unit and Related Mechanism	C0b50	• Stapling Motor M4 • Stapler Home Position Detecting Switch S4	S4 is not deactuated (i.e., it remains actuated) even after the lapse of approx. 250 msec. after M4 has been energized.
Staple Unit and Related Mechanism	C0b51	• Stapling Motor M4 • Stapler Home Position Detecting Switch S4	S4 is not actuated (i.e., it remains deactuated) even after the lapse of approx. 750 msec. after M4 has been energized.
Staple Unit and Related Mechanism	C0b52 (for prevention of dummy stapling action, that is, a stapling sequence without actually driving a staple into paper)	• Paper Clamping Sensor PC8	• The PC8 output is HIGH (blocked) when the sequence of operation is completed to detect the home position of the Paper Clamp Unit. • The PC8 output is HIGH immediately before the initiation of a paper clamp motion in the Sort Staple or Manual Staple Mode.

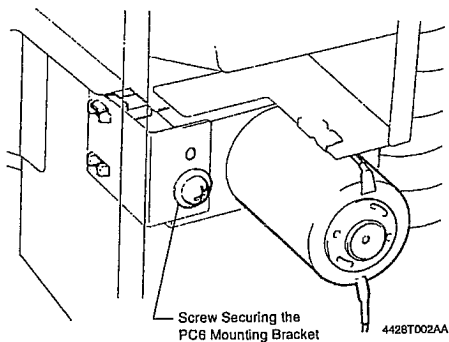| Mecha-nism	Malfunction Code	Possible Malfunctioning Components	Detection Timing
Bin Moving Mechanism	C0b60	• Bin Moving Motor M1 • Bins overloaded (Bins do not move at all.)	Bin Positioning Sensor PC3 is not blocked L (from the unblocked state) or unblocked H (from the blocked state) and no pulses are output from Bin Moving Pulse Sensor PC1 even after the lapse of approx. 500 msec. after a signal has been output to turn M1 forward or backward.
	C0b61	• Bins overloaded • Bin Moving Motor M1	PC3 is not blocked (from the unblocked state) or unblocked (from the blocked state) even after the lapse of approx. 500 msec. and even with the maximum width of drive pulses input to M1 after M1 has started turning forward or backward. (PC1 does output pulses, but they are longer in cycle.)
	C0b62	• Bin Positioning Sensor PC3	The PC3 output does not go LOW or HIGH, though M1 has turned forward or backward for approx. 500 msec. and pulses have been output properly from PC1.
	C0b63	• Bin Lower Limit Position Sensor PC4	The PC4 output is not switched to LOW (blocked) (i.e., remains HIGH) when the sequence of operations to detect the Bin home position is completed.
	C0b64	• Bin Moving Pulse Sensor PC1	No pulses have been output from PC1 when a sequence of operations to detect the Bin home position is completed.

2-2. TROUBLESHOOTING PROCEDURES

The initial operations (see p. M-6) cited in the "Check Item" column are performed only when Sorter Set Switch S3 is first actuated after the Power Switch of the copier has been turned ON. If repeated initial operations are necessary, therefore, the copier Power Switch must be turned ON for each time.

1	C0b10, C0b11

Step	Check Item	Result	Action
1	Does the Paper Clamp Unit move in the initial operations?	YES	Check step 4.
2	Does the Paper Clamp Unit slide smoothly along the rails when the Paper Clamp Motor M2 Assy has been removed (see p. D-4)?	NO	Check the rails for deformation, installation, and foreign object.
	Is the M2 Assy intact?	NO	Check the gears for chipped tooth, deformation, and foreign object.
3	Is a signal being sent from PWB-A to M2? * Does the voltage across PJ9A-2 and GND become DC24V when the initial operations are performed?	YES	Check wiring between PWB-A and M2, and connector CN1; if they are intact, replace M2.
		NO	Replace PWB-A.
4	Is there a foreign object on Paper Clamp Home Position Sensor PC6 or its Light Blocking Plate, or is it contaminated? * Make the check with the PC6 mounting bracket removed.	YES	Remove foreign object from, or clean, PC6 or its Light Blocking Plate.
	Is a signal from PC6 being properly input to PWB-A?	YES	Replace PWB-A.
	* Does the voltage across PJ7A-14 and GND change from DC5V to DC0V when PC6 is blocked by a sheet of paper?	NO	Check wiring between PWB-A and PC6 and, if it is intact, replace PC6.

(PJ7)
PC6
チャッキング ユニット
定位置センサー
Paper Clamp
Home Position
Sensor

(SM)
CN1
チャッキング ユニット
移動モーター
Paper Clamp
Motor

M2

(CT)
PJ8A

(PH)
PJ9A

(PH)
PJ10A

(UP)
PJ11A

(CT)
PJ7A

PWB-A

(UP)
PJ1A

(PH)
PJ6A

(PH)
PJ5A

(CT)
PJ4A

(UP)
PJ3A

(UP)
PJ2A

4428C02TAA

Screw Securing the
PC6 Mounting Bracket

4428T002AA

T-6

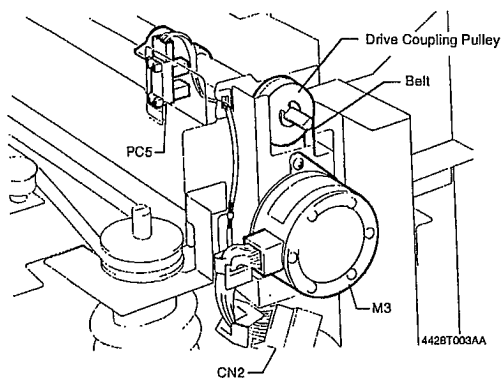| Step	Check Item	Result	Action
1	Is the Paper Aligning Bar deformed or off the rail at the bottom?	YES	Replace or reinstall the Paper Aligning Bar. (See p. D-6.)
2	Does the Drive Coupling Pulley turn smoothly when turned manually and, at that time, does the Paper Aligning Bar move smoothly?	NO	Check the Spiral Shaft for deformation, scratches, and foreign object. Check also the Drive Transmitting Belt and Pulley.
	Is there a foreign object on Paper Aligning Home Position Sensor PC5 or is it contaminated?	YES	Remove the foreign object from, or clean, PC5.
3	Does the Paper Aligning Bar move each time Sorter Set Switch S3 is actuated?	YES	Check step 5.
4	Is the connection between PWB-A and Paper Aligning Motor M3 correct?	YES	First, replace M3. If problem persists, replace PWB-A.
5	Is a signal from PC5 being properly input to PWB-A?	YES	Replace PWB-A.
	* Does the voltage across PJ8A-2 and GND change from DC5V to DC0V when PC5 is blocked by a sheet of paper?	NO	Check wiring between PWB-A and PC5 and, if it is intact, replace PC5.

4428C03TAA

T-7

Drive Coupling Pulley

Belt

PC5

M3

4428T003AA

CN2
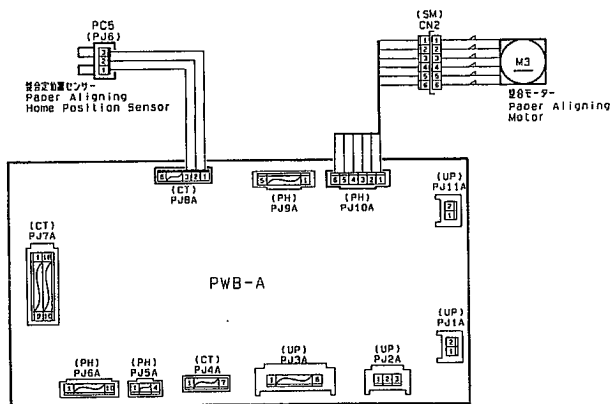
3	C0b40

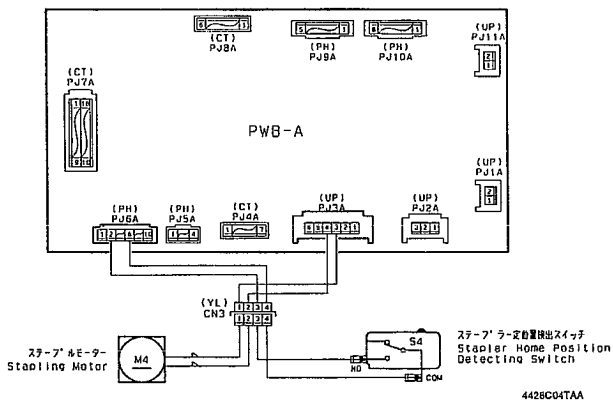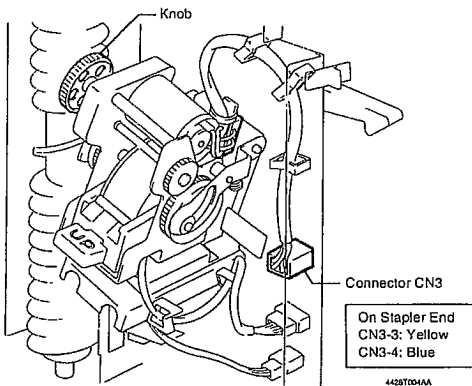| Step	Check Item	Result	Action
1	Is the Sorter connected properly to the copier?	YES	Replace PWB-A on the Sorter and Master Board PWB-I on the copier, in that order.
		NO	Correct the connection.

4	C0b50

Step	Check Item	Result	Action
1	Is the Stapler motion smooth when the knob of the Stapler Unit is turned manually?	NO	Check the gears for deformation and foreign objects.
2	Turn OFF the copier Power Switch and unplug connector CN3. Does the circuit across CN3-3 and 4 on the Stapler end become nonconductive when the Stapler Unit Knob is turned to deactuate Stapler Home Position Detecting Switch S4?	NO	Check wiring between CN3 and S4 and, if it is intact, replace the Staple Unit (S4).
	Is the circuit across PJ6A-2 and 6 conductive in this condition?	YES	Check wiring between PWB-A and CN3 and, if it is intact, replace PWB-A.
3	Is a signal being sent from PWB-A to Stapling Motor M4? * Does the voltage across PJ3A-4 and GND become DC24V when letting the ST-103/S-105 perform the initial operations with CN3 connected and S4 deactuated?	YES	Check wiring between PWB-A and M4, and check CN3. If they are intact, replace the Staple Unit (M4).
		NO	Replace PWB-A.

5	C0b51

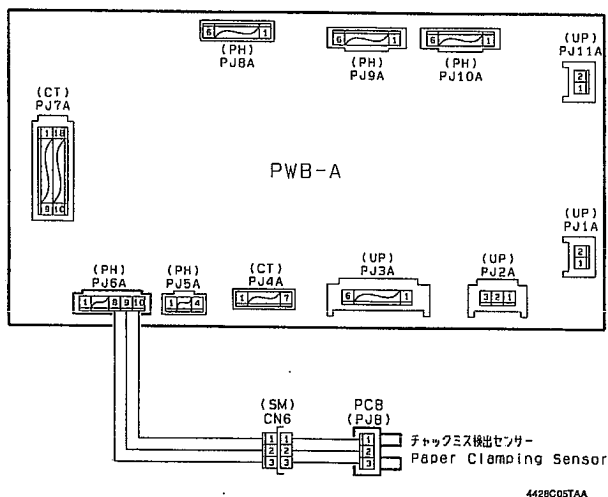| Step	Check Item	Result	Action
1	Is S4 in the deactuated position as checked visually?	NO	Check step 5.
2	Does the Stapler operate in the initial operations?	YES	Check step 5.
3	Is the Stapler motion smooth when the Knob of the Stapler Unit is turned manually?	NO	Check the gears for deformation and foreign objects.
4	Is a signal being sent from PWB-A to M4? * Does the voltage across PJ3A-4 and GND become DC24V when the initial operations are performed?	YES	Check wiring between PWB-A and M4, and check CN3. If they are intact, replace the Staple Unit (M4).
		NO	Replace PWB-A.
5	Is the circuit across PJ6A-2 and 6 conductive when the Staple Unit Knob is turned to actuate S4 with the copier Power Switch in the OFF position?	YES	Replace PWB-A.
		NO	Check wiring between PWB-A and S4, and check CN3. If they are intact, replace the Staple Unit (S4).

Knob

Connector CN3

On Stapler End
CN3-3: Yellow
CN3-4: Blue

4426T004AA

(CT)
PJ8A

(PH)
PJ9A

(PH)
PJ10A

(UP)
PJ11A

(CT)
PJ7A

PWB-A

(UP)
PJ1A

(PH)
PJ6A

(PH)
PJ5A

(CT)
PJ4A

(UP)
PJ3A

(UP)
PJ2A

(YL)
CN3

ステープ゜ルモーター
Stapling Motor

M4

S4

NO

COM

ステープ゜ラー定位置検出スイッチ
Stapler Home Position
Detecting Switch

4426C04TAA

T-10

Step	Check Item	Result	Action
1	Is there a foreign object on Paper Clamping Sensor PC8 or is it contaminated?	YES	Remove the foreign object from, or clean, PC8.
2	Is the PC8 output signal properly input to PWB-A?	YES	Replace PWB-A.
	* Is the voltage across PJ6A-9 and GND DC0V? Does that voltage change to DC5V when PC8 is blocked by a sheet of paper?	NO	Check wiring between PWB-A and PC8, and check connector CN6. If they are intact, replace PC8.

PWB-A

(PH) PJ8A
(PH) PJ9A
(PH) PJ10A
(UP) PJ11A
(CT) PJ7A
(UP) PJ1A
(PH) PJ6A
(PH) PJ5A
(CT) PJ4A
(UP) PJ3A
(UP) PJ2A

(SM) CN6
PC8 (PJ8)
チャックミス検出センサー
Paper Clamping Sensor

4428C05TAA

T-11

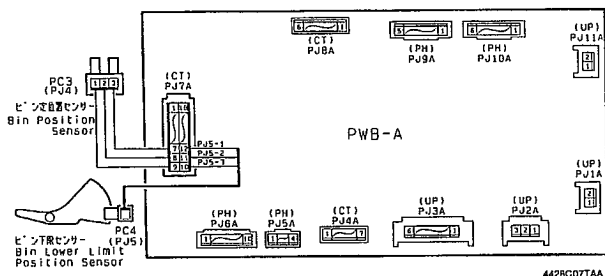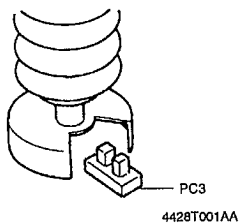| Step	Check Item	Result	Action
1	Is any of the Bins out of position or damaged, hampering proper movement of the Bins?	YES	Reinstall or replace the Bins. (See p. D-6.)
2	Is Bin Upper Limit Interlock Switch S1 or Bin Lower Limit Interlock Switch S2 in the actuated position as checked visually?	YES	Check the Actuator and Light Blocking Plate for operation. If S1 or S2 is in the actuated position by the Bins at their upper or lower limit position, turn the Spiral Cam Drive Transmitting Belt to deactuate it.
3	Does the Spiral Cam turn smoothly when the Spiral Cam Drive Transmitting Belt is turned manually?	NO	Check the drive train from Bin Moving Motor M1 for foreign object, deformation, and damage.
4	With Sorter Set Switch S3 in the actuated position: Is the voltage across PJ3A-1 and GND DC24V?	NO	Check wiring between PWB-A and S1 and, if it is intact, replace S1.
	Is the voltage across PJ3A-2 and GND DC24V?	NO	Replace PWB-A.
	Is the voltage across PJ3A-6 and GND DC24V?	NO	Check wiring between PWB-A and S2 and, if it is intact, replace S2.
5	Does the voltage across PJ11A-1 and GND become DC24V when the initial operations are performed with Bin Lower Limit Position Sensor PC4 in the blocked state (if PC4 is unblocked, turn the Spiral Cam Drive Transmitting Belt to block it)?	YES	Check wiring between PWB-A and M1 and, if it is intact, replace M1.
		NO	Replace PWB-A.

442BC06TAA

T-12
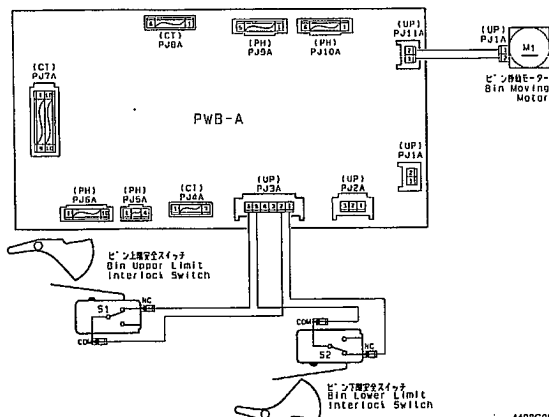
8	C0b61

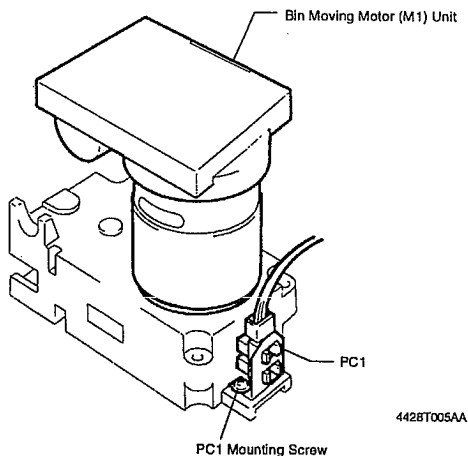| Step	Check Item	Result	Action
1	Does the Spiral Cam turn smoothly when the Spiral Cam Drive Transmitting Belt is turned manually?	YES	Replace Bin Moving Motor M1.
		NO	Check the drive train from M1 for foreign object, deformation, and damage.

9	C0b62

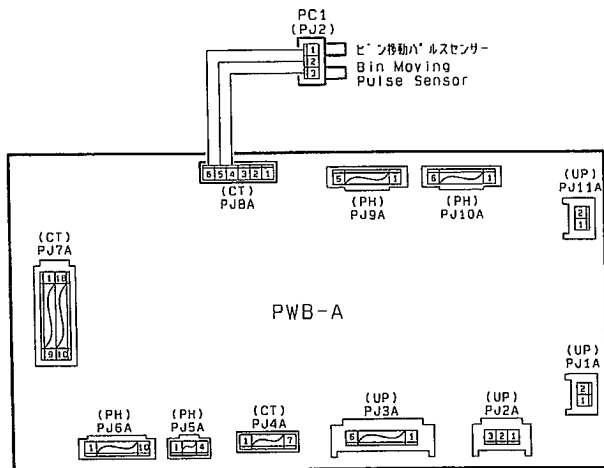| Step	Check Item	Result	Action
1	Is there a foreign object on Bin Positioning Sensor PC3 or is it contaminated?	YES	Remove the foreign object from, or clean, PC3.
2	Is the PC3 output signal properly input to PWB-A?	YES	Replace PWB-A.
	* Does the voltage across PJ7A-8 and GND change from DC5V to DC0V when PC3 is blocked by a sheet of paper? (If PC3 is blocked by the Light Blocking Plate, turn the Spiral Cam Drive Transmitting Belt to move the Light Blocking Plate.)	NO	Check wiring between PWB-A and PC3 and, if it is intact, replace PC3.

10	C0b63

Step	Check Item	Result	Action
1	Does the Light Blocking Plate for Bin Lower Limit Position Sensor PC4 operate properly?	NO	Check the Light Blocking Plate for deformation, installation, and foreign object.
	Is there a foreign object on PC4 or is it contaminated?	YES	Remove the foreign object from, or clean, PC4.
2	Is the PC4 output signal properly input to PWB-A?	YES	Replace PWB-A.
	* Does the voltage across PJ7A-11 and GND change from DC5V to DC0V when PC4 is blocked by the Light Blocking Plate?	NO	Check wiring between PWB-A and PC4 and, if it is intact, replace PC4.

4428T001AA

PC3
(PJ4)
ビン定位置センサー
Bin Position
Sensor

PC4
ビン下限センサー (PJ5)
Bin Lower Limit
Position Sensor

(CT)
PJ7A

PJ5-1
PJ5-2
PJ5-3

(CT)
PJ8A

(PH)
PJ9A

(PH)
PJ10A

(UP)
PJ11A

PWB-A

(UP)
PJ1A

(PH)
PJ6A

(PH)
PJ5A

(CT)
PJ4A

(UP)
PJ3A

(UP)
PJ2A

442BC07TAA

T-14

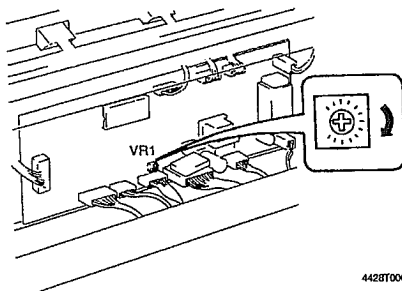| Step	Check Item	Result	Action
1	Is there a foreign object on Bin Moving Pulse Sensor PC1 or is it contaminated? Is there a foreign object on the Pulse Disk? * Remove the Bin Moving Motor M1 Unit (see p. D-3) and remove PC1 from the Unit for a close check.	YES	Remove the foreign object from, or clean, PC1 and/or the Pulse Disk.
2	Is the PC1 output signal properly input to PWB-A? * Does the voltage across PJ8A-5 and GND change from DC5V to DC0V when PC1 is blocked by a sheet of paper?	YES	Replace PWB-A.
		NO	Check wiring between PWB-A and PC1 and, if it is intact, replace PC1.

Bin Moving Motor (M1) Unit

PC1

4428T005AA

PC1 Mounting Screw

T-15

PC1
(PJ2)
ビン移動パルスセンサー
Bin Moving
Pulse Sensor

(CT)
PJ8A

(PH)
PJ9A

(PH)
PJ10A

(UP)
PJ11A

(CT)
PJ7A

PWB-A

(UP)
PJ1A

(PH)
PJ6A

(PH)
PJ5A

(CT)
PJ4A

(UP)
PJ3A

(UP)
PJ2A

4428C08TAA

12	Erroneous Bin Empty Detection

Step	Check Item	Result	Action
1	Is the Bin empty detection holes in the Bins and/or the hole in the lower frame for Bin Empty Sensor PQ Board PWB-C plugged by a foreign object?	YES	Remove the foreign object.
		NO	Turn VR1 on PWB-A fully clockwise.

VR1

4428T006AA

T-16

MINOLTA