

Konica



Models FS-110/FS-210 Finishers

with Parts Catalog
(Used on Model 7165)

SERVICE MANUAL and PARTS CATALOG

FS-110/FS-210 SERVICE MANUAL

NOVEMBER 2001

**Used on Konica Model
7165**

IMPORTANT NOTICE

Because of the possible hazards to an inexperienced person servicing this equipment, as well as the risk of damage to the equipment, Konica Business Technologies strongly recommends that all servicing be performed by Konica-trained service technicians only.

Changes may have been made to this equipment to improve its performance after this service manual was printed. Accordingly, Konica Business Technologies, Inc., makes no representations or warranties, either expressed or implied, that the information contained in this service manual is complete or accurate. It is understood that the user of this manual must assume all risks or personal injury and/or damage to the equipment while servicing the equipment for which this service manual is intended.

Corporate Publications Department



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SAFETY PRECAUTIONS

Installation Environment

Safety considerations usually are directed toward machine design and the possibility of human error. In addition, the environment in which a machine is operated must not be overlooked as a potential safety hazard.

Most electrical equipment is safe when installed in a normal environment. However, if the environment is different from what most people consider to be normal, it is conceivable that the combination of the machine and the room air could present a hazardous combination. This is because heat (such as from fusing units) and electrical arcs (which can occur inside switches) have the ability to ignite flammable substances, including air.

When installing a machine, check to see if there is anything nearby which suggests that a potential hazard might exist. For example, a laboratory might use organic compounds which, when they evaporate, make the room air volatile. Potentially dangerous conditions might be seen or smelled. *The presence of substances such as cleaners, paint thinners, gasoline, alcohol, solvents, explosives, or similar items should be cause for concern.*

If conditions such as these exist, take appropriate action, such as one of the following suggestions.

- Determine that the environment is controlled (such as through the use of an exhaust hood) so that an offending substance or its fumes cannot reach the machine.
- Remove the offending substance.
- Install the machine in a different location.

The specific remedy will vary from site to site, but the principles remain the same. To avoid the risk of injury or damage, be alert for changes in the environment when performing subsequent service on any machine, and take appropriate action.

Unauthorized Modifications

Konica equipment has gained a reputation for being reliable products. This has been attained by a combination of outstanding design and a knowledgeable service force.

The design of the equipment is extremely important. It is the design process that determines tolerances and *safety margins* for mechanical, electrical, and electronic aspects. It is not reasonable to expect individuals not involved in product engineering to

know what effect may be caused by altering any aspect of the machine's design. Such changes have the potential of degrading product performance and reducing safety margins.

For these reasons, installation of any modification not specifically authorized by Konica Business Machines U.S.A., Inc., is strictly prohibited.

The following list of prohibited actions is not all-inclusive, but demonstrates the intent of this policy.

- Using an extension cord or any unauthorized power cord adapter.
- Installing any fuse whose rating and physical size differs from that originally installed.
- Using wire, paper clips, solder, etc., to replace or eliminate any fuse (including temperature fuses).
- Removing (except for replacement) any air filter.
- Defeating the operation of relays by any means (such as wedging paper between contacts).
- Causing the machine to operate in a fashion other than as it was designed.
- Making any change which might have a chance of defeating built-in safety features.
- Using any unspecified replacement parts.

General Safety Guidelines

This equipment has been examined in accordance with the laws pertaining to various product safety regulations prior to leaving the manufacturing facility to protect the operators and service personnel from injury. However, as with any operating device, components will break down through the wear-and-tear of everyday use, as will additional safety discrepancies be discovered. For this reason, it is important that the technician periodically performs safety checks on the equipment to maintain optimum reliability and safety.

The following checks, not all-inclusive, should be made during each service call:

CAUTION: Avoid injury. Ensure that the equipment is disconnected from its power source before continuing.

- Look for sharp edges, burrs, and damage on all external covers and copier frame.
- Inspect all cover hinges for wear (loose or broken).
- Inspect cables for wear, frays, or pinched areas.

- Ensure that the power cord insulation is not damaged (no exposed electrical conductors).
- Ensure that the power cord is properly mounted to the frame by cord clamps.
- Check the continuity from the round lug (GND) of the power cord to the frame of the copier – ensure continuity. An improperly grounded machine can cause an electrically-charged machine frame.

Safeguards During Service Calls

Confirm that all screws, parts, and wiring which are removed during maintenance are installed in their original positions.

- When disconnecting connectors, do not pull the wiring, particularly on AC line wiring and high voltage parts.
- Do not route the power cord where it is likely to be stepped on or crushed.
- Carefully remove all toner and dirt adhering to any electrical units or electrodes.
- After part replacement or repair work, route the wiring in such a way that it does not contact any burrs or sharp edges.
- Do not make any adjustments outside of the specified range.

Applying Isopropyl Alcohol

Care should be exercised when using isopropyl alcohol, due to its flammability. When using alcohol to clean parts, observe the following precautions:

- Remove power from the equipment.
- Use alcohol in small quantities to avoid spillage or puddling. Any spillage should be cleaned up with rags and disposed of properly.
- Be sure that there is adequate ventilation.
- Allow a surface which has been in contact with alcohol to dry for a few minutes to ensure that the alcohol has evaporated completely before applying power or installing covers.

Summary

It is the responsibility of every technician to use professional skills when servicing Konica products. There are no short cuts to high-quality service. Each piece of equipment must be thoroughly inspected with respect to safety considerations as part of every routine service call. The operability of the copier, and more importantly, the safety of those who operate or service the equipment, are directly dependent upon the conscientious effort of each and every technician.

Remember...when performing service calls, use good judgment (have a watchful eye) to identify safety hazards or potential safety hazards that may be present, and correct these problem areas as they are identified – the safety of those who operate the equipment as well as those who service the copier depend on it!



OUTLINE

TONER

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FS-110/FS-210 PRODUCT SPECIFICATIONS

[1] Type

FS-110:

Finishing device with offset collation (sort and group), stapling, and sub-tray eject features.

FS-210:

Finishing device with offset collation (sort and group), stapling, sub-tray eject, booklet (stitch-and-fold), and three-folding features.

[2] Functions

Type of Paper:

Same as the main body

Paper Size:

		FS-110/210				FS-210 only	
		Non-sort	Sort/group	Staple	Sub-tray	Booklet	Three-folding
A/B standards	A3	○	○	○	○	○	
	B4	○	○	○	○	○	
	F4R	○	○	○	○		
	A4R	○	○	○	○	○	○*1
	A4	○	○	○	○		
	B5R	○	○	○	○		
	B5	○	○	○	○		
	A5R	○	○		○		
	A5	○	○	○	○		
	B6R	○			○		
By inch	11 x 17	○	○	○	○	○	
	8.5 x 14	○	○	○	○	○	
	8.5 x 11R	○	○	○	○		○*1
	8.5 x 11	○	○	○	○		
	5.5 x 8.5R	○	○	○	○		
	5.5 x 8.5	○	○		○		
	Wide	○	○	○	○	○	
	Other				○		

*1 The position of the stopper must be changed when using paper with different size.

Paper Stacking Capacity (80g/m² or 20lbs):

Sub-tray exit mode:

Maximum 200 sheets (same-size sheets only)

Non-Staple, Group, and Offset modes:

Maximum 1500 sheets (A3, B4, F4R, 11 x 17, and 8.5 x 14)

Maximum 3000 sheets (A4, A4R, B5, B5R, 8.5 x 11, and 8.5 x 11R)

Maximum 500 sheets (A5, A5R, B6R, 5.5 x 8.5, and 5.5 x 8.5R)

Note: For FS-210, the maximum stacking capacity is 2500 sheets for A4, A4R, B5, B5R, 8.5 x 11, and 8.5 x 11R paper.

Staple Mode:

Maximum 1000 sheets (paper must be the same size)

Main-Tray Capacity

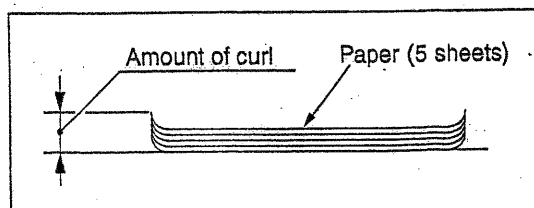
Original pages	A3, 11 x 17, A5, and 5.5 x 8.5	Other paper types
2 to 9	50 stacks	100 stacks
10 to 20	50 stacks	50 stacks
21 to 30	30 stacks	30 stacks
31 to 40	25 stacks	25 stacks
41 to 50	20 stacks	20 stacks

Booklet Mode (FS-210 only):

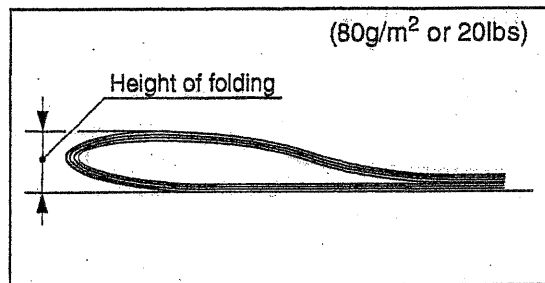
- **Stitch-and-fold**
20 booklets with 5 sheets folded each. 15 booklets in case of small size paper (A4R/8.5 x 11R). One booklet with 6 sheets folded is taken as two and more booklets.
- **Folding**
33 booklets with 3 or less sheets folded each 25 booklets in case of small size paper (A4R/8.5 x 11R).
- **Three-folding**
Tray capacity is a maximum of 50 individual folded sheets.

Paper curling:

10mm or less



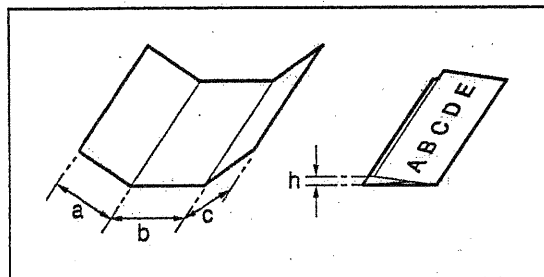
Height of folding in the booklet mode (FS210 only):



Original pages	A3, 11 x 17	B4, 8.5 x 14	A4R, 8.5 x 11R
0 to 5	25mm or less	25mm or less	25mm or less
6 to 10	50mm or less	50mm or less	Not specified*
11 to 20	Not specified*	Not specified*	Not specified*

* The height of folding may be larger after exit, although the booklet must be folded with ease manually.

Width (a, b and c) and height (h) in the three-folding mode:



Width/height	Measurements	Nominal values		Allowance
		A4R	8.5 x 11R	
Width	a	93mm	86.4mm	±2mm
	b	102mm	97mm	±2mm
	c	102mm	97mm	±2mm
Height	h	25mm or less	25mm or less	

Note: Measurements must be made using a single sheet.

Amount of sort offsetting:

30mm (after sorting and grouping)

[3] Staple Mode

Number of sheets to be stapled:

50 sheets or less (the height must be 5mm or less when using 80g/m² or 20lbs quality paper)

Positions for stapling:

A = 8.5mm ± 3mm

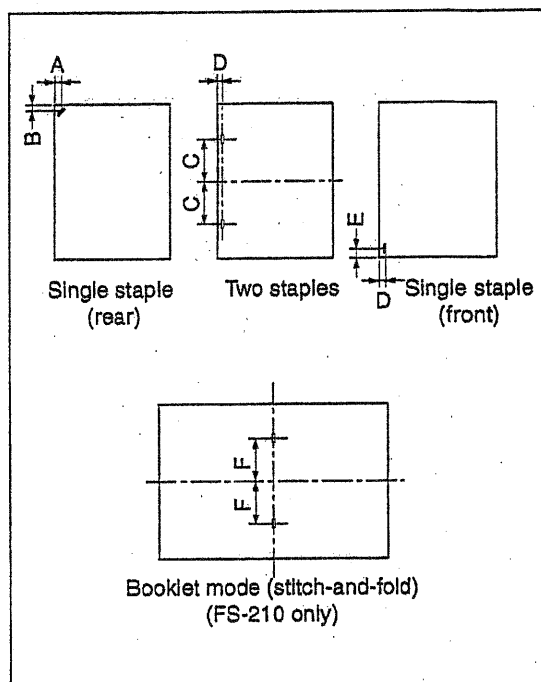
B = 8.5mm ± 3mm

C = 60mm ± 3mm

D = 8.5mm ± 3mm

E = 14mm ± 3mm

F = 60mm ± 3mm



Staple capacity:

5000 staples/cartridge

[4] Booklet Mode (FS-210 only)**Stitch-and-fold:**

Maximum 20 sheets (when using 80g/m² or 20lbs quality paper)

Maximum 19 sheets (when using 80g/m² or 20lbs quality paper) + one sheet (200g/m² or 45lbs quality paper)

Folding:

Maximum 3 sheets (when using 80g/m² or 20lbs quality paper)

[5] Three-folding Mode (FS-210 only)**Number of three-folding:**

Maximum 3 sheets (when using 80g/m² or 20lbs quality paper)

However, special paper cannot be used.

[6] Option**PI-110**

(Cover sheet feeder)

PK-110

(Puncher)

[7] Machine Specifications**Power source:**

24V, 5VDC (supplied from the main body)

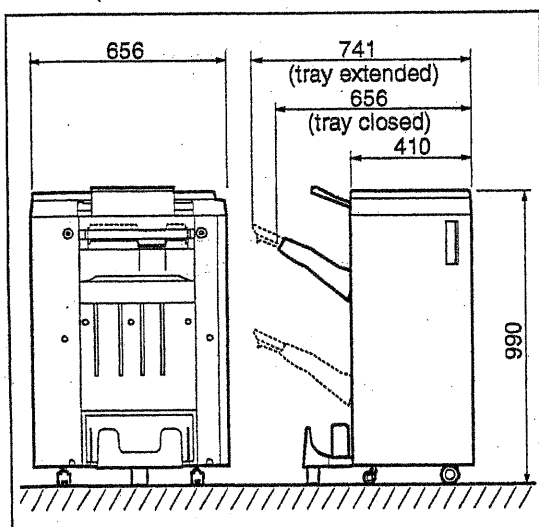
Maximum power consumption:

100VA

Weight:

FS-110: Approx. 55kg

FS-210: Approx. 65kg

External Dimensions:**[8] Maintenance****Maintenance procedures:**

Same as the main body

Service life:

Same as the main body

[9] Operating Environment**Temperature:**

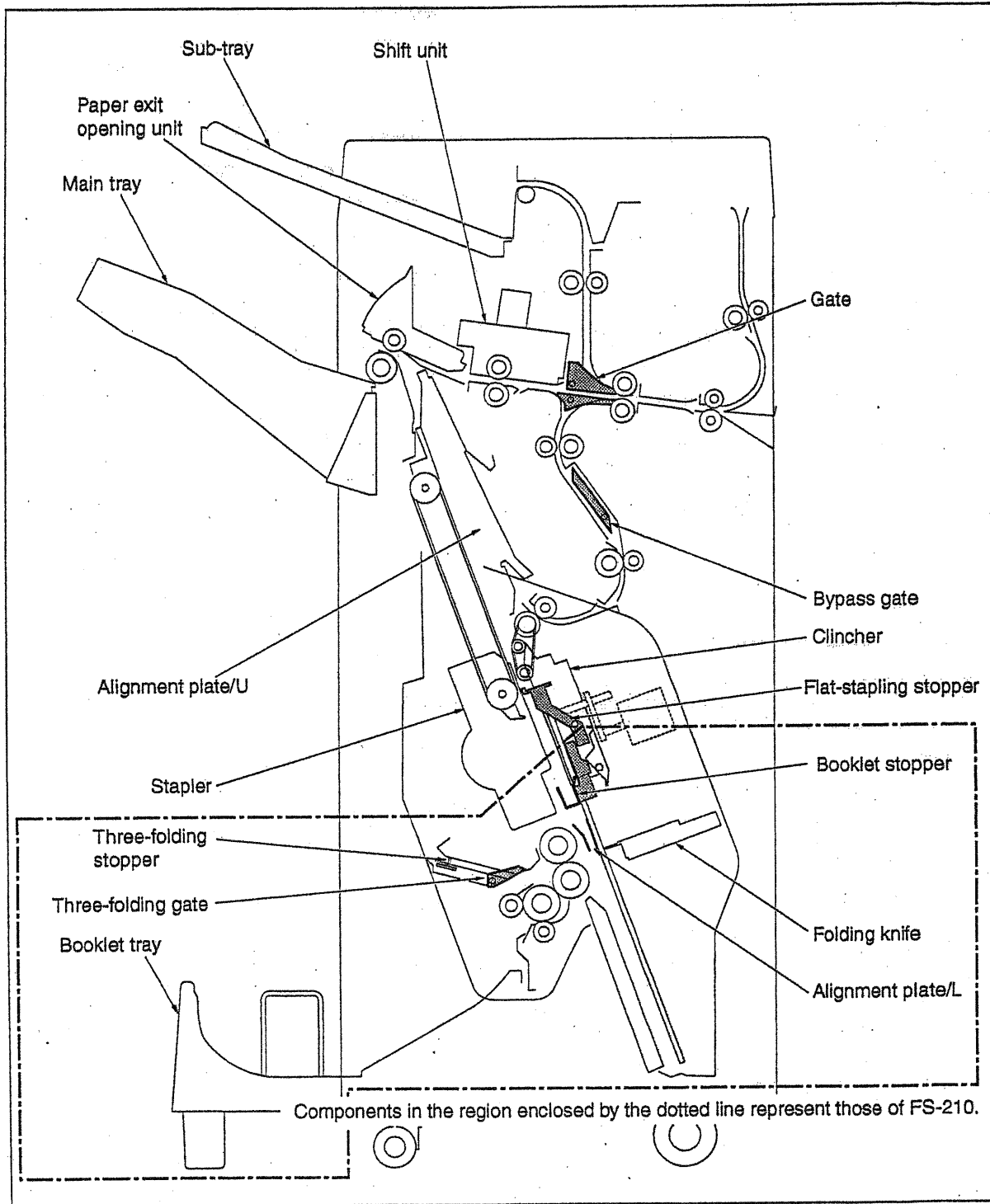
10 to 30 °C (50 °F to 86°F)

Humidity:

10 to 80% RH

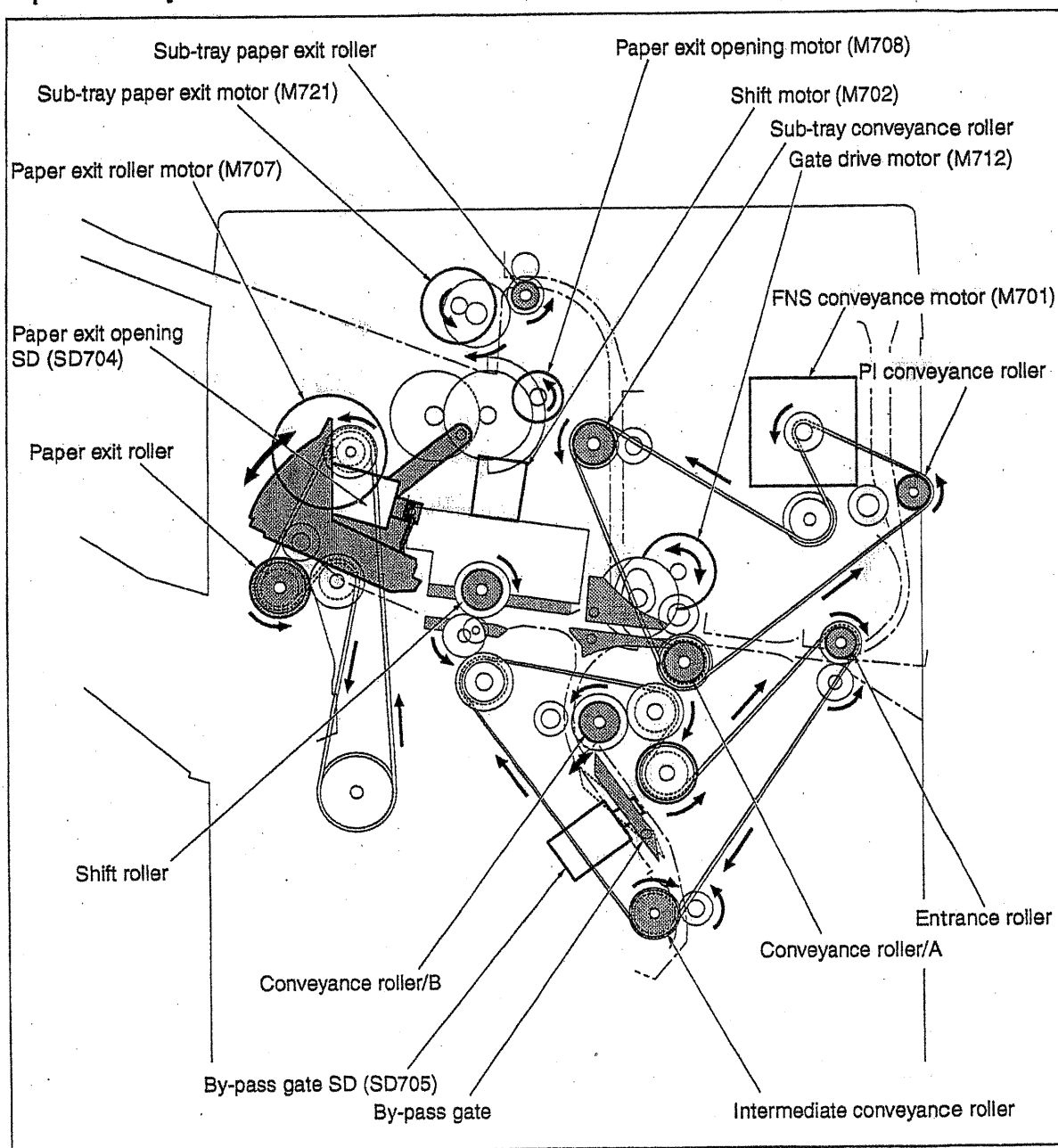
Note: The information herein may be subject to change for improvement without notice.

CROSS SECTION DIAGRAM

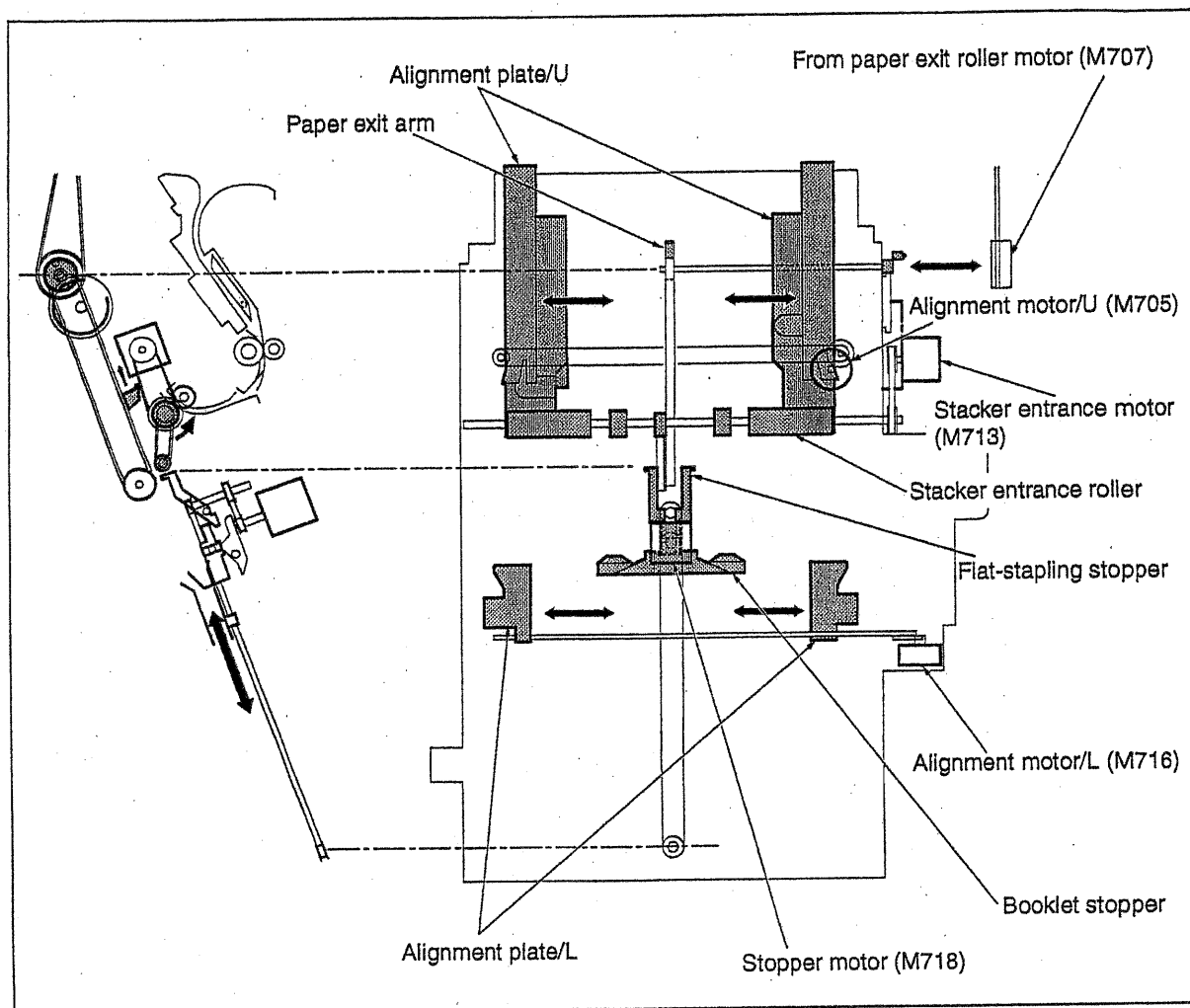


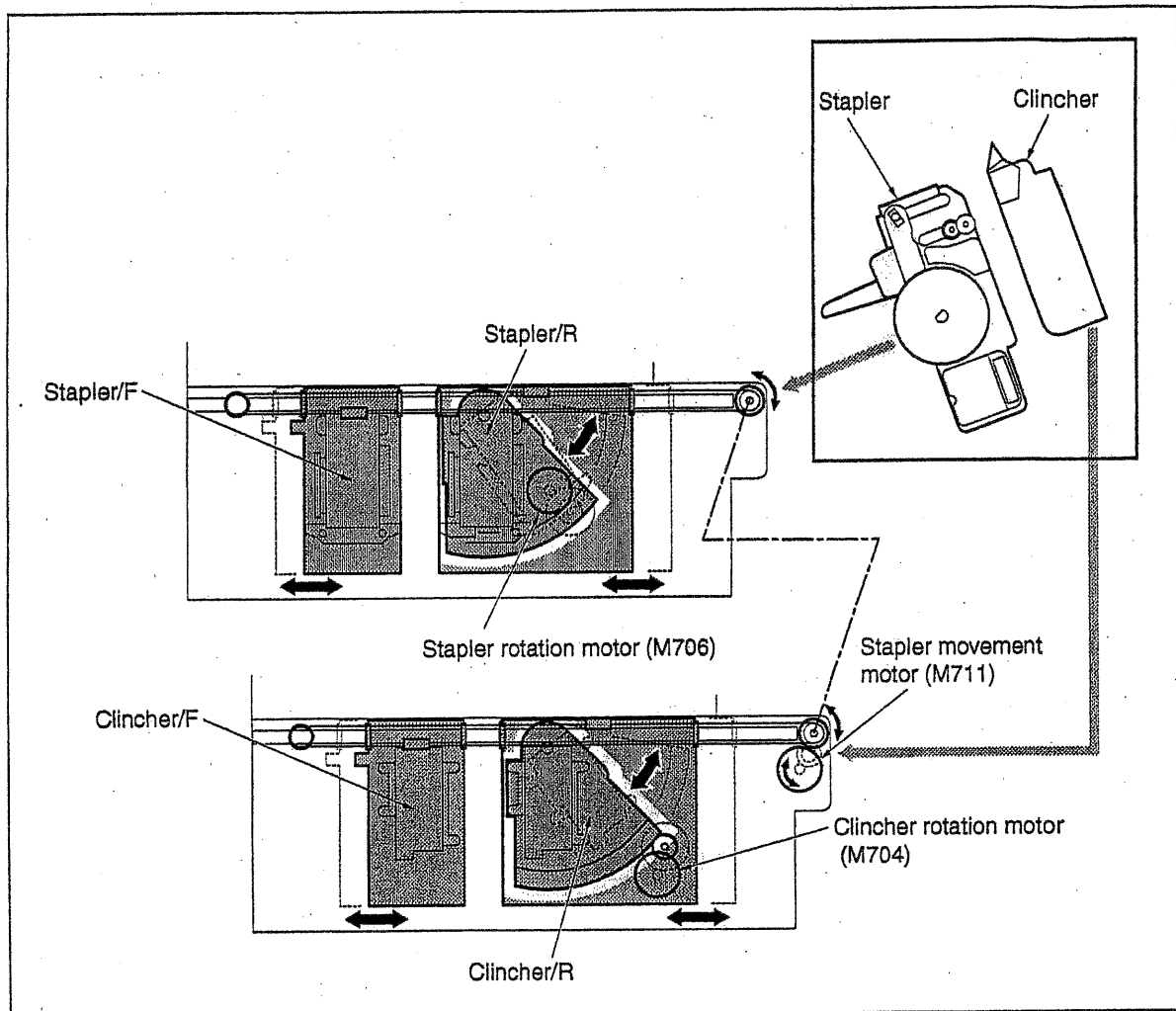
DRIVE SYSTEM DIAGRAM

[1] Paper Conveyance Drive

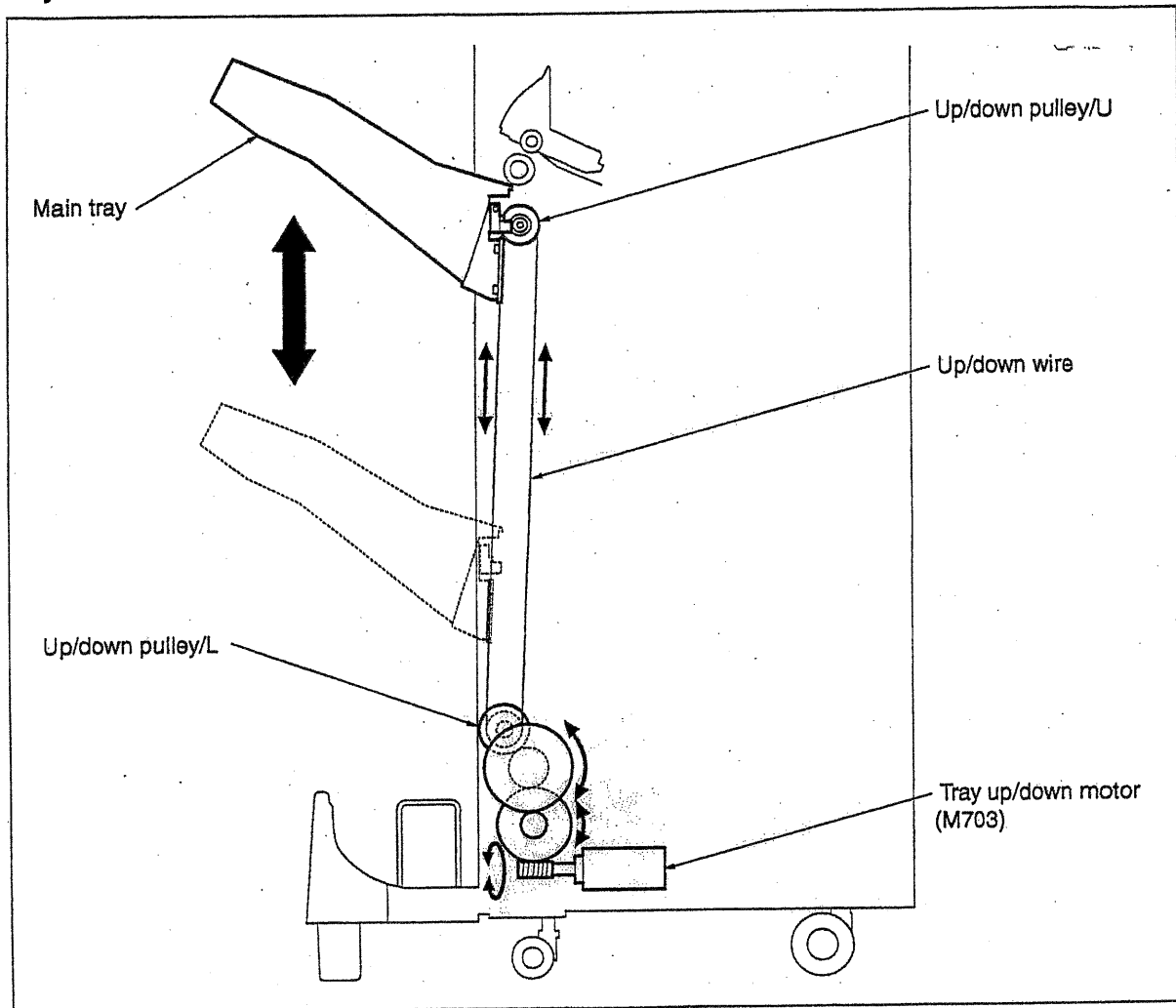


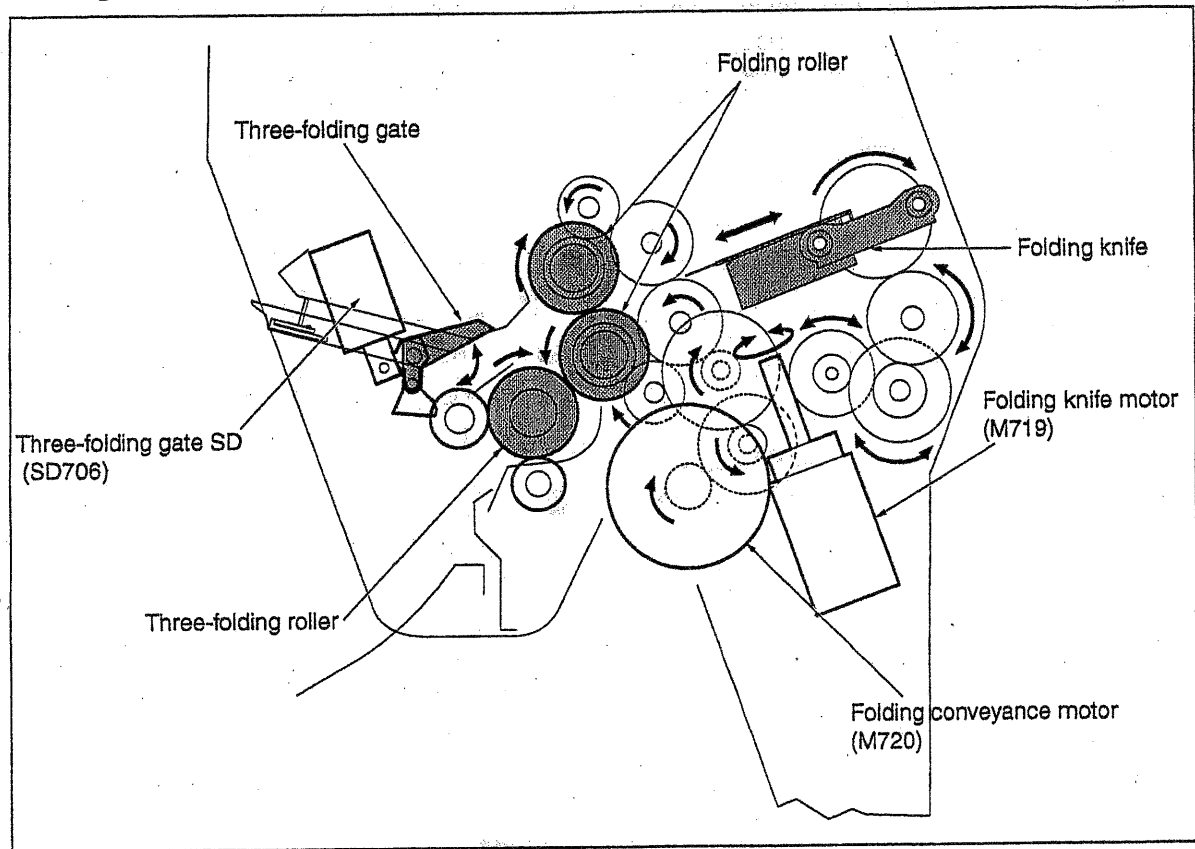
[2] Stacker Drive



[3] Staple Drive

[4] Tray Drive



[5] Folding Drive

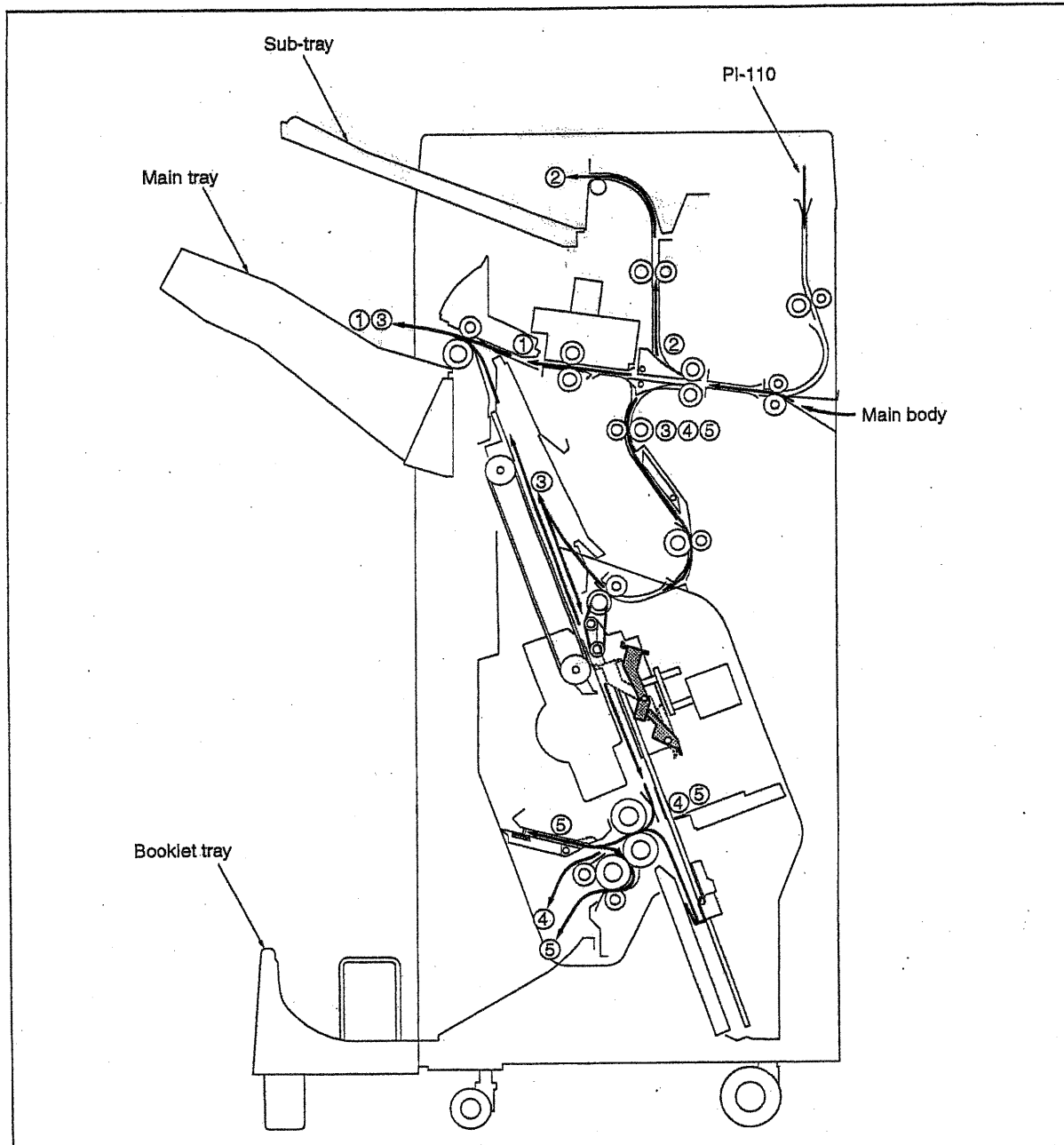
PAPER CONVEYANCE PATH

[1] Paper Conveyance Path

The finisher (FNS) consists of five paper paths, as shown in the diagram below.

Sheets are turned over by the main body's exit page inverter, and then passed to the FNS.

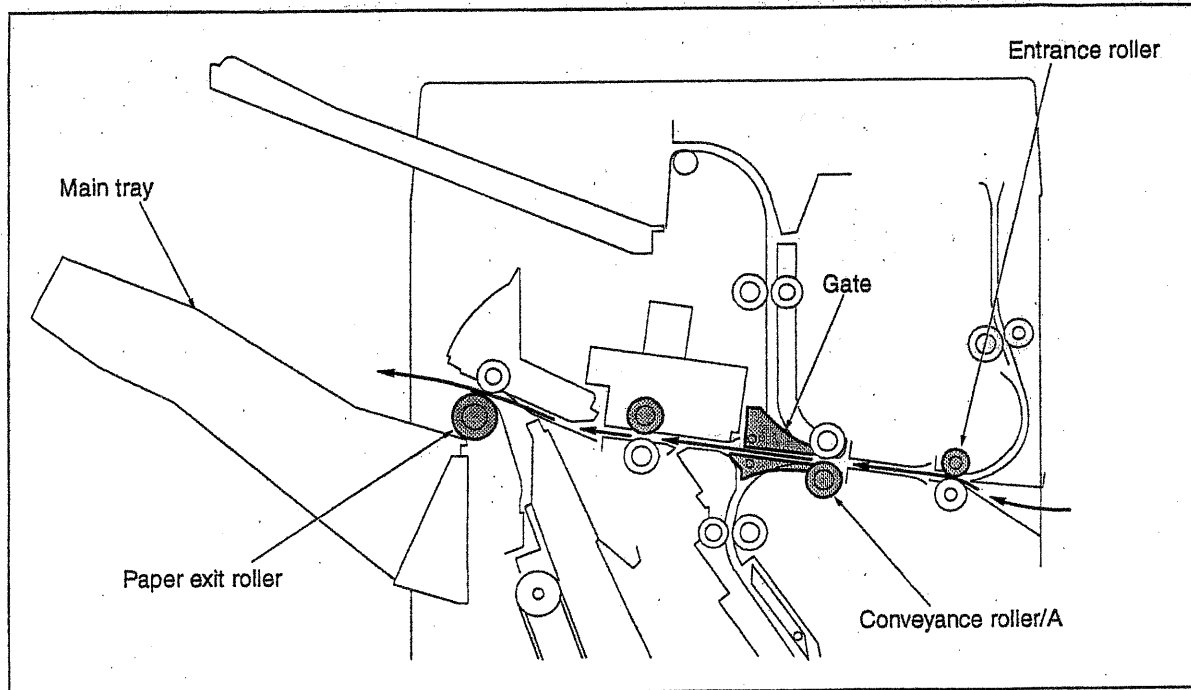
The FNS has two paper entrance connections: one from the main body, and the other from PI-110 (optional).



Paper conveyance path	Finishing mode
①	Non-sort, sort, and group modes
②	Sub-tray mode
③	Staple mode
④	Booklet mode (FS-210 only)
⑤	Three-folding mode (FS-210 only)

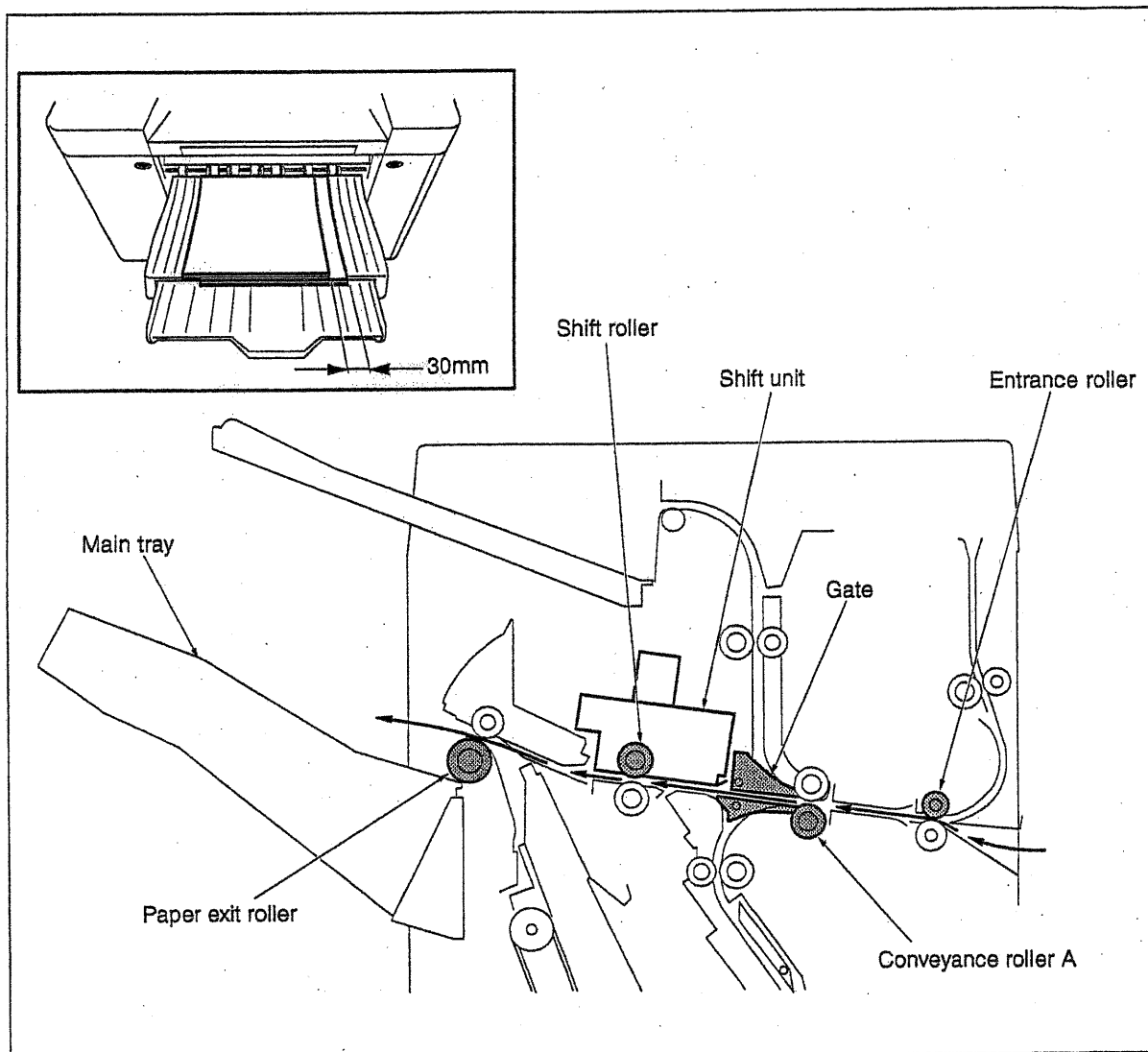
[2] Non-Sort Mode

In the non-sort mode, the gate is set to the position to carry paper to the main tray. Each sheet, delivered from the main body, is carried to the main tray through the gate.



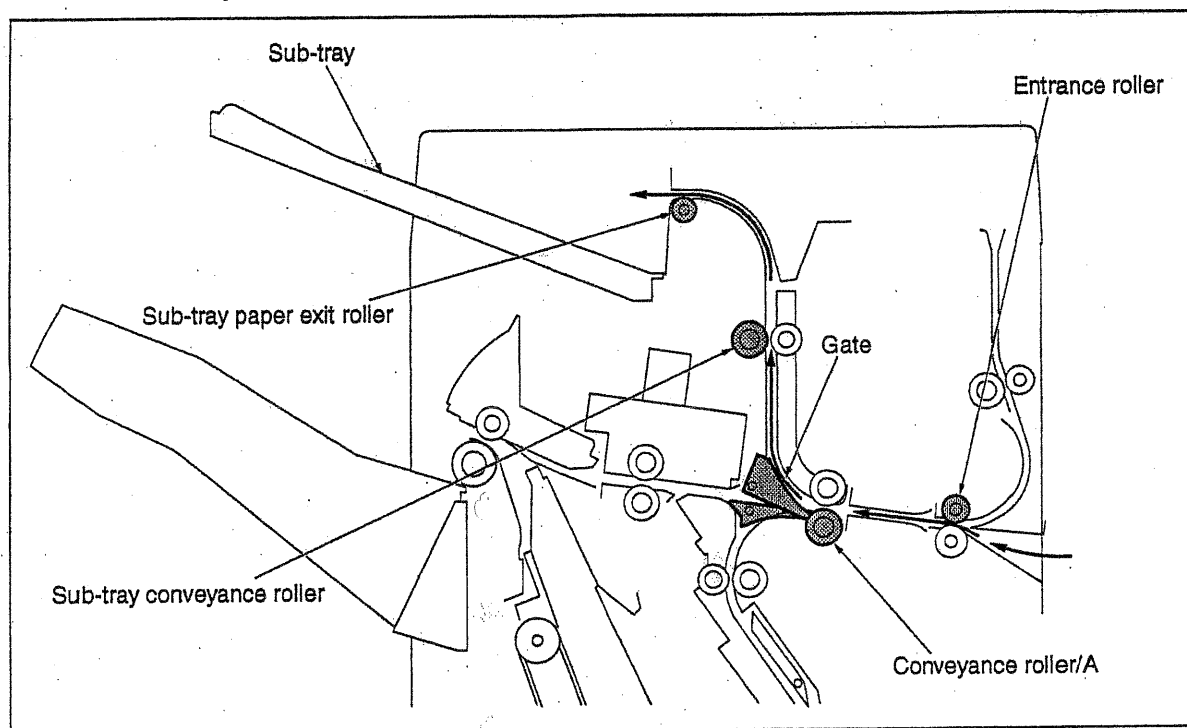
[3] Sort, and Group Modes

In the sort and group modes, the gate is set to the position to carry paper to the main tray. Each sheet, delivered from the main body, is conveyed to the main tray while the sheet is shifted by 30mm to the rear. The shift roller of the shift unit performs the shift action. In the sort mode, even pages are offset. In the group mode, even numbered copies are offset.



[4] Sub-tray Mode

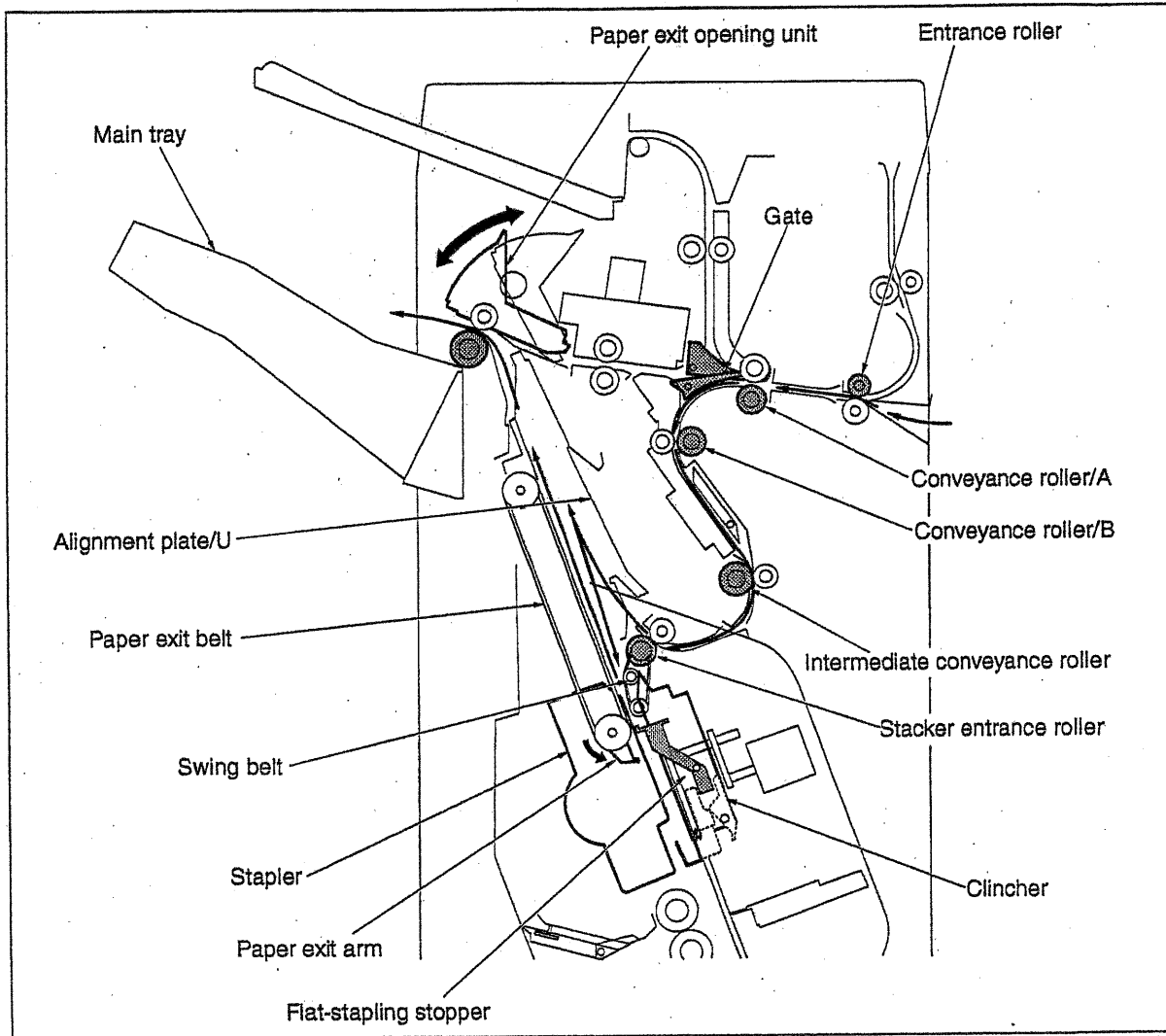
In the sub-tray mode, the gate is set to the position to carry paper to the sub-tray. Each sheet, delivered from the main body, is delivered to the sub-tray



[5] Staple Mode

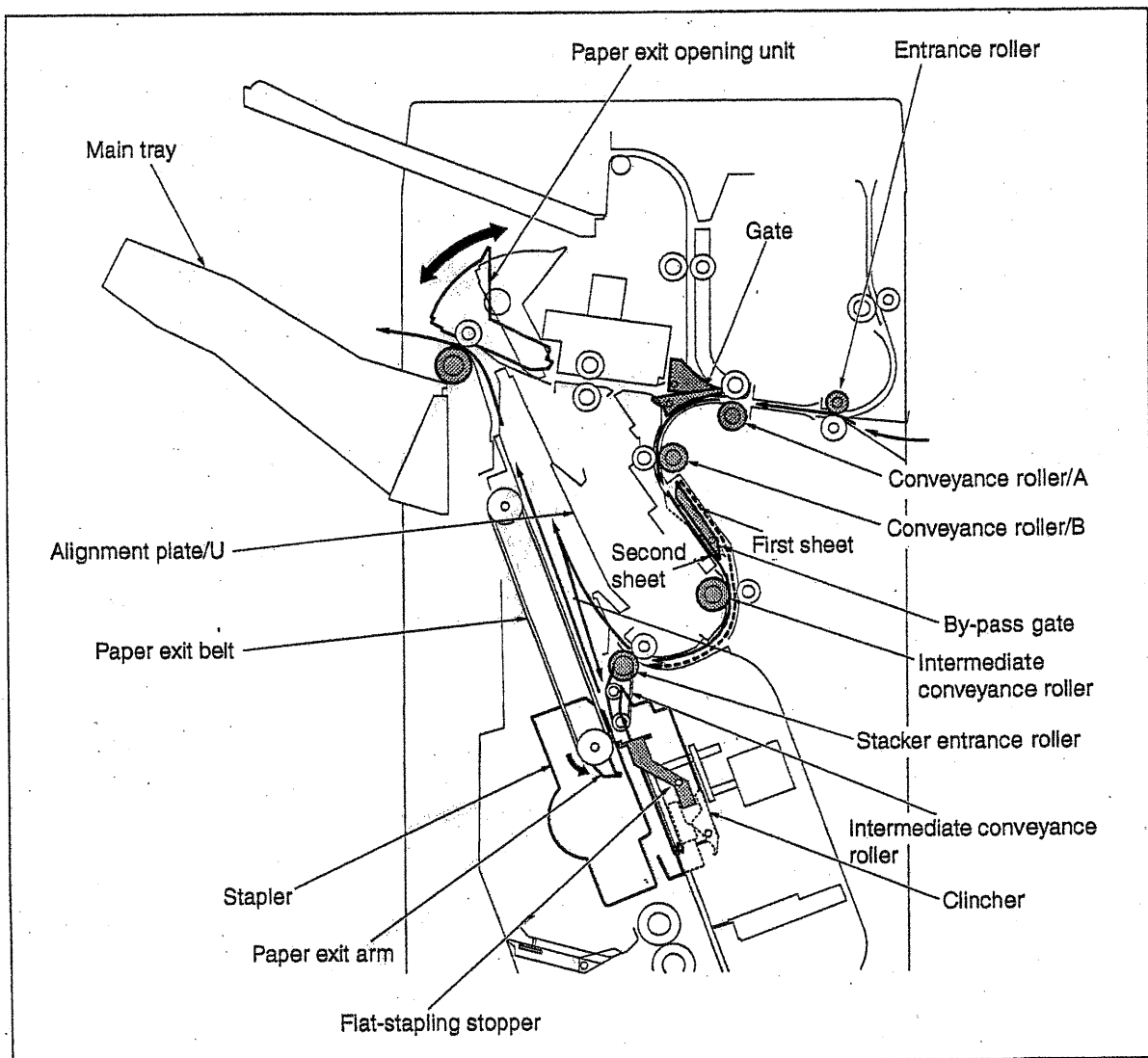
For sheets of all size except A4, B5, and 8.5 x 11:

- (1) The gates are set to the position to carry paper to the stacker.
- (2) If paper is larger than A4R, the paper exit opening will open.
- (3) Each sheet is carried to the flat-stapling stopper and its vertical position (feeding direction) is adjusted.
- (4) The horizontal position (widthwise direction) of each sheet is adjusted by the alignment plate/U.
- (5) When all necessary sheets are stacked, they are stapled with the stapler and the clincher.
- (6) The set of stapled sheets is delivered by the paper exit arm to the main tray.
- (7) Steps (3) through (6) are repeated for each set of sheets to be stapled.



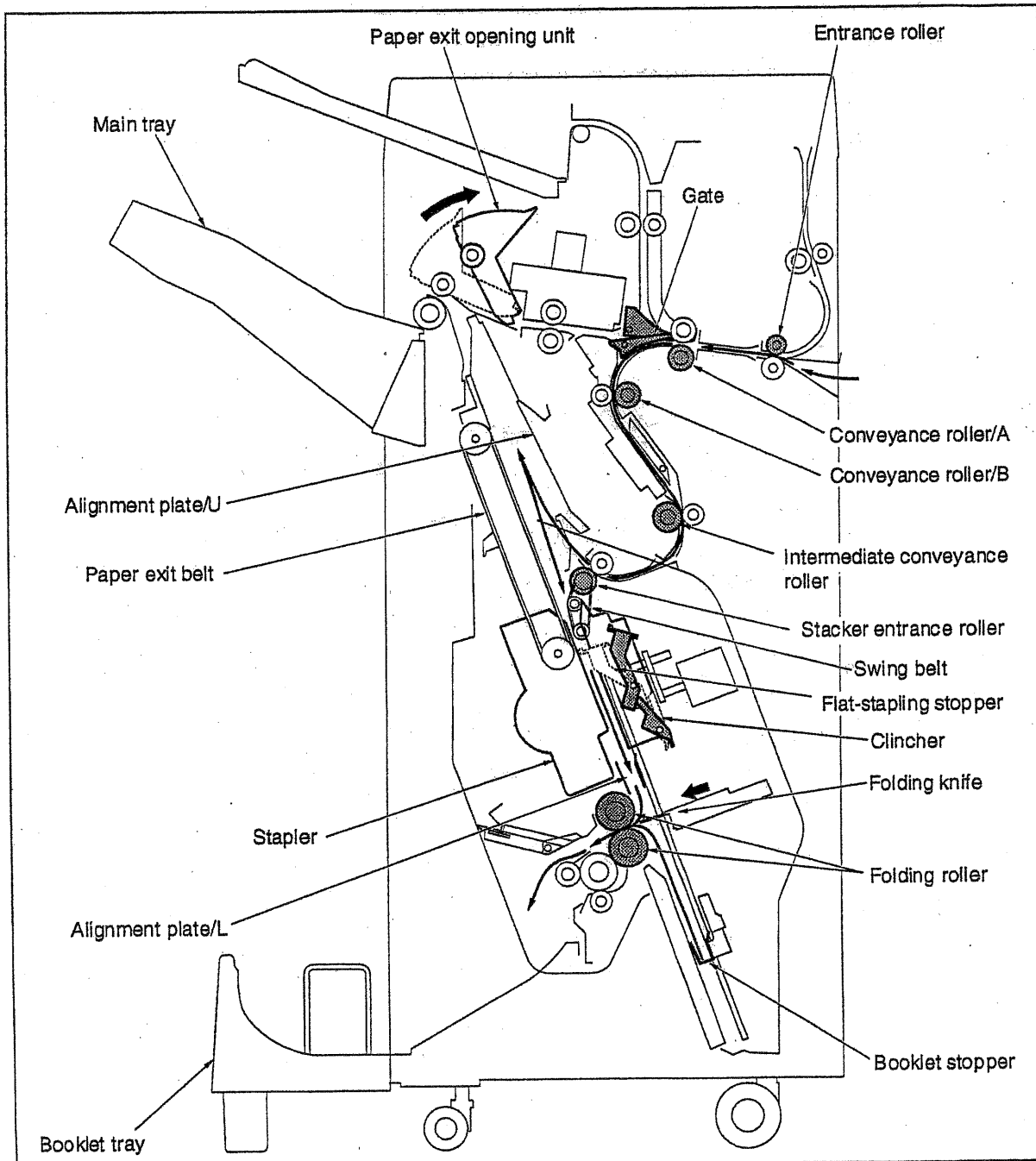
For sheets of A4, B5, and 8.5 x 11:

- (1) The first set is stapled and delivered to the main tray in the same manner as sheets of all size except A4, B5, and 8.5 x 11.
- (2) As the front of the first set is being discharged, the stacker entrance roller stops and the by-pass gate opens. The first sheet of the second set (and subsequent sets) is conveyed to the stacker entrance.
- (3) The by-pass gate closes, and a second sheet is laid over the first sheet which is fixed by the stacker entrance roller.
- (4) When the front of the first set has been delivered, the stacker entrance roller starts to rotate. The first and second sheets are conveyed to the stacker.
- (5) The alignment plate/U lines up each sheet in the widthwise direction.
- (6) When all sheets are stacked, they are stapled with the stapler and the clincher.
- (7) The set of stapled sheets is delivered by the paper exit arm to the main tray.
- (8) Steps (2) through (7) are repeated for each set of sheets.



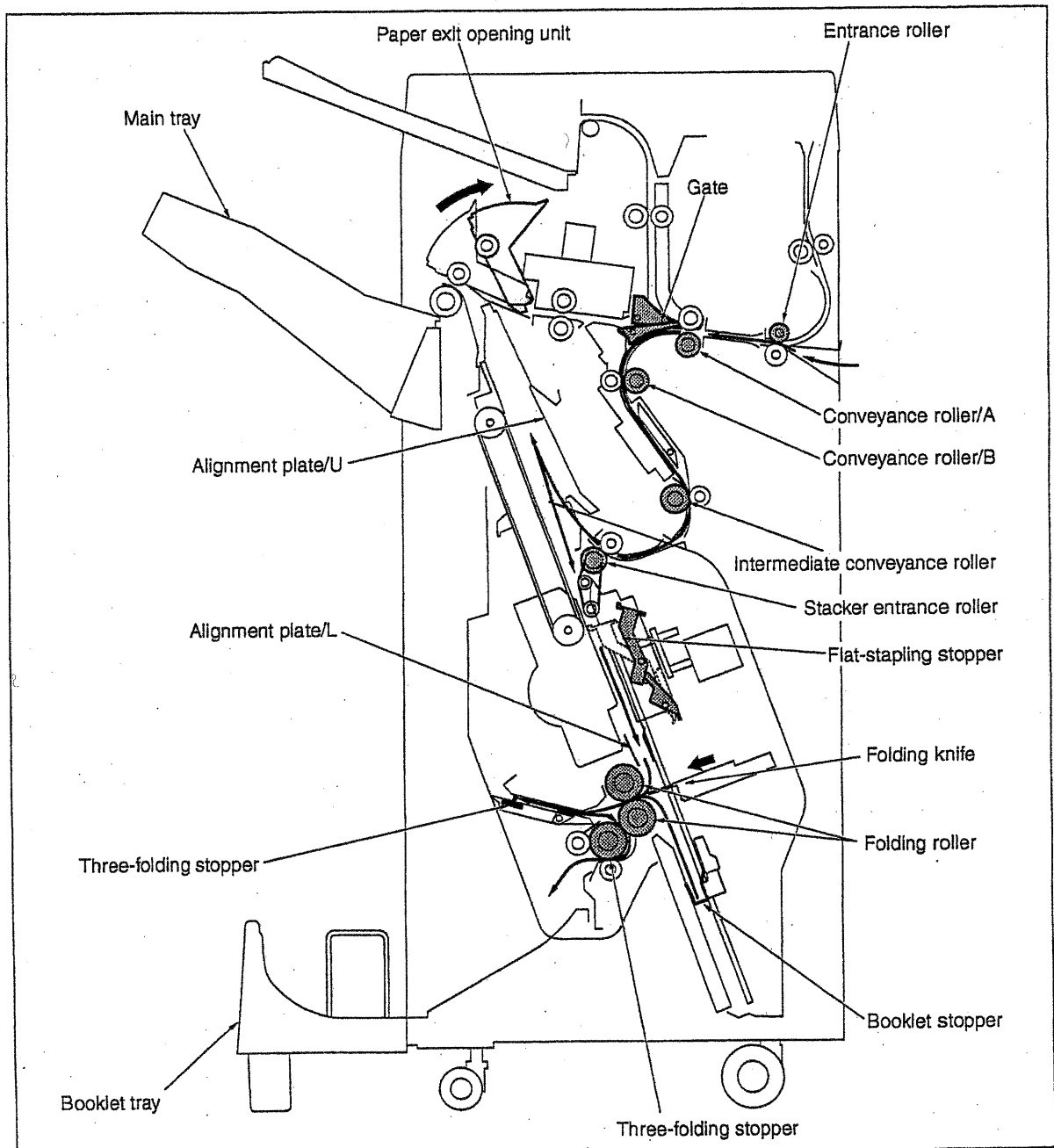
[6] Booklet Mode

- (1) The gates are set to the position to carry paper to the stacker.
- (2) The paper exit opening opens.
- (3) The booklet stopper lowers to the stitch-and-fold position. The flat-stapling stopper is released as the booklet stopper lowers.
- (4) The paper is conveyed to the booklet stopper to line up sheets in the lengthwise direction.
- (5) The alignment plate/U and alignment plate/L line up each sheet in the widthwise direction.
- (6) When the stitch-and-fold mode is selected, the sheets are stapled by the stapler and the clincher.
- (7) The booklet stopper lowers to the folding position for setting the paper to the folding position.
- (8) The folding knife and the folding roller fold the sheets, which are delivered to the booklet tray.



[7] Three-folding Mode

- (1) The gates are set to the position to carry paper to the stacker.
- (2) The paper exit opening opens.
- (3) The booklet stopper lowers to the stitch-and-fold position. The flat-stapling stopper is released as the booklet stopper lowers.
- (4) The paper is conveyed to the booklet stopper to line up in the lengthwise direction.
- (5) The alignment plate/U and the alignment plate/L line up each sheet in the widthwise direction.
- (6) The booklet stopper lowers to the first folding position, and the sheet is set to the first folding position.
- (7) The folding knife and the folding roller perform the first folding, and the paper is conveyed toward the three-folding stopper.
- (8) The three-folding stopper curls the sheet, and the second folding is made by drawing it to the three-folding roller. The three-folded sheet is delivered to the booklet tray.



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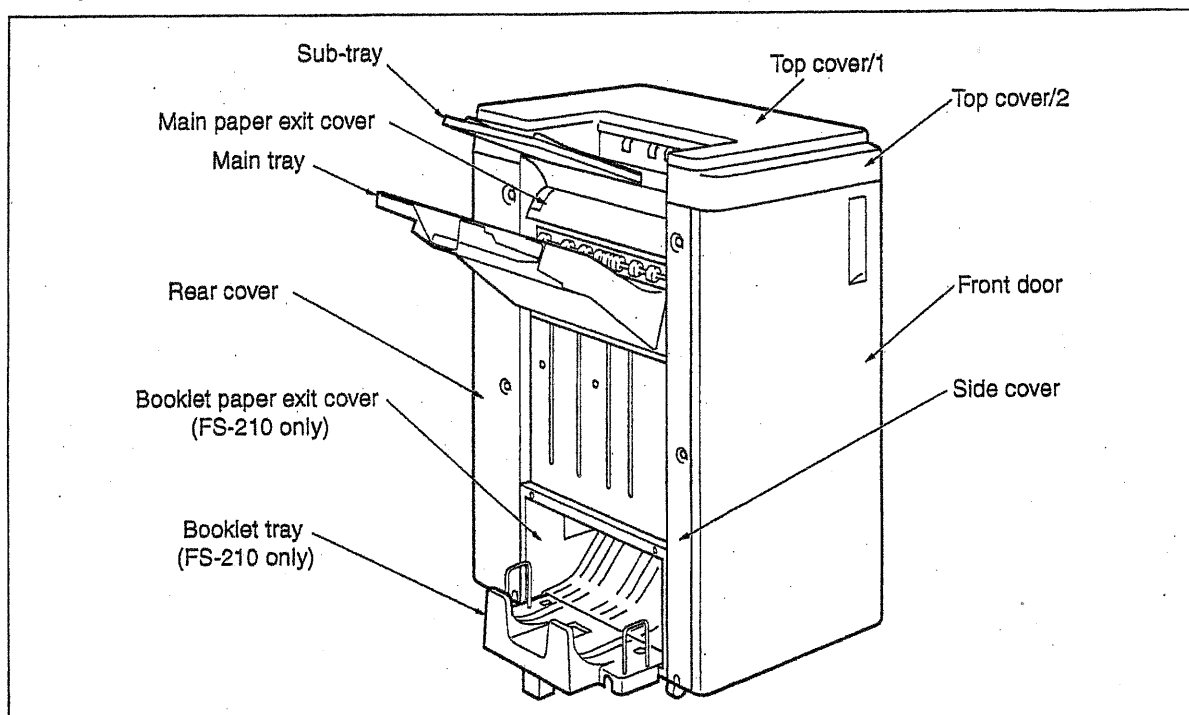


UNIT EXPLANATION

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EXTERNAL SECTION

[1] Composition



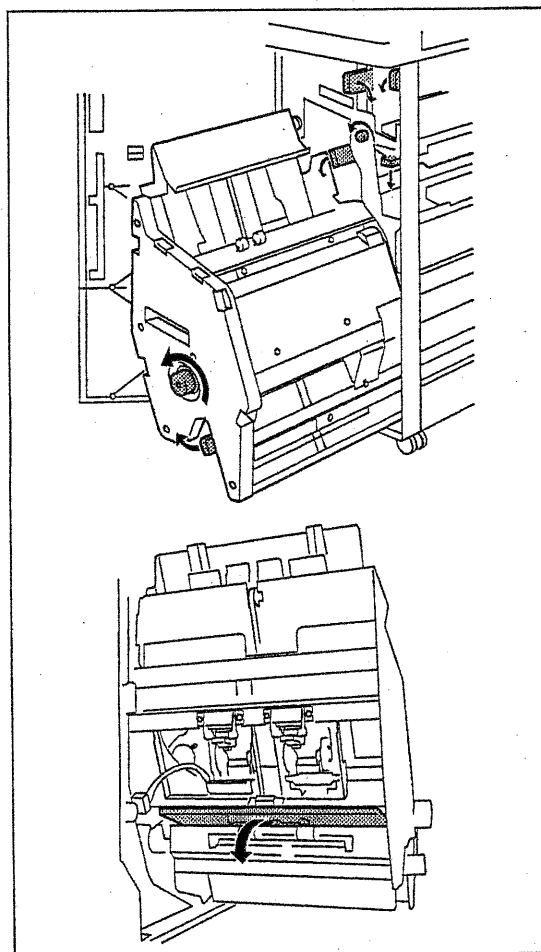
[2] Mechanism

Mechanism	Method
Jam removal*1	Through the rotation of roller(s) and the opening/closing operation of the guide plates.

*1 Jam removal

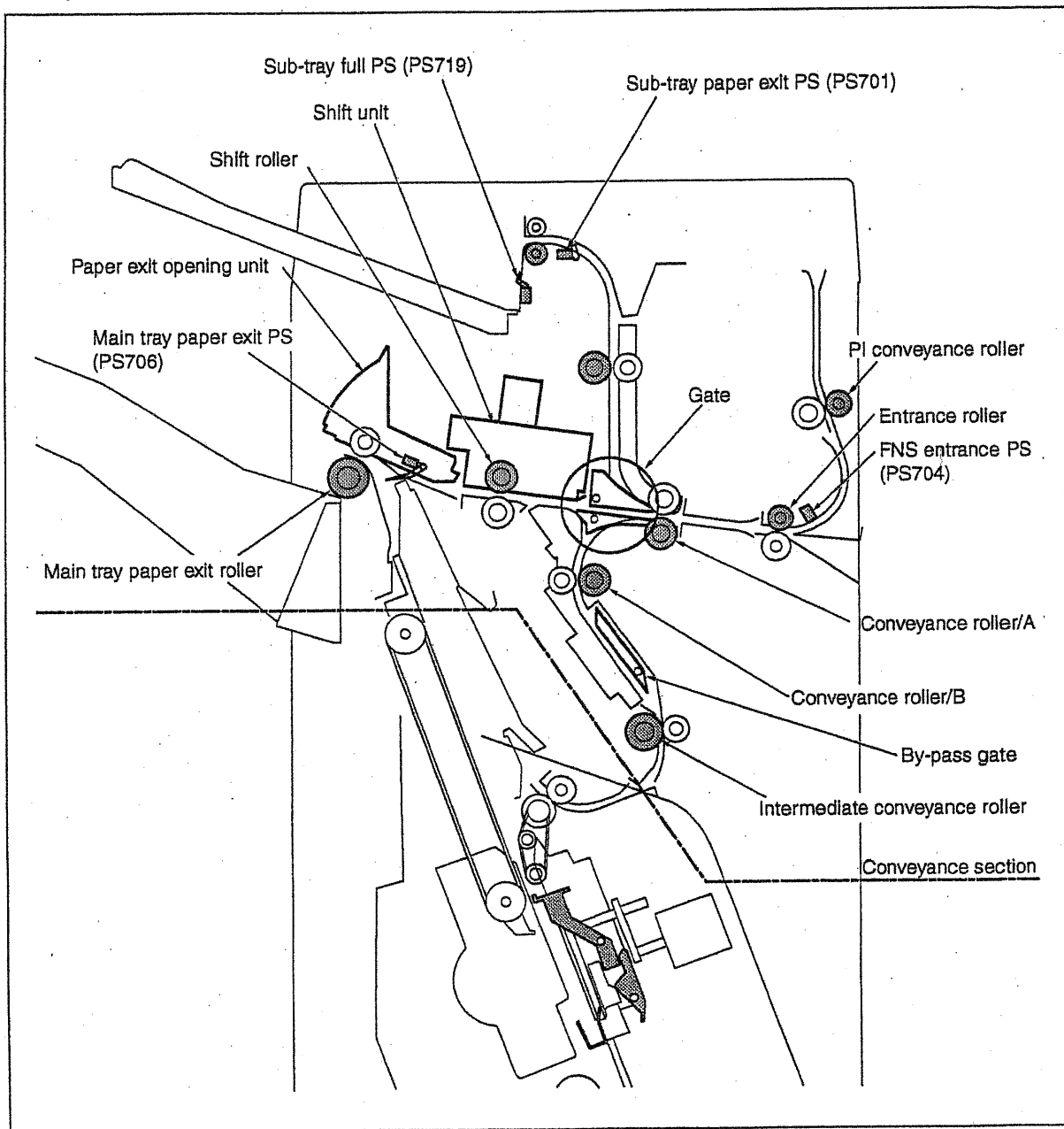
When a jam occurs in the conveyance section, open the front door, turn the conveyance roller, open the guide plates, and remove the jammed paper.

When a jam occurs in the stacker section, open the front door, draw out the stacker section, rotate the folding roller, open the guide plates, and remove the jammed paper.



CONVEYANCE SECTION

[1] Composition

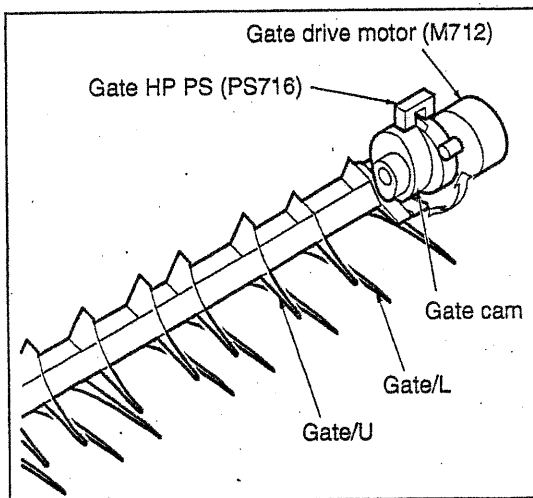


[2] Mechanism

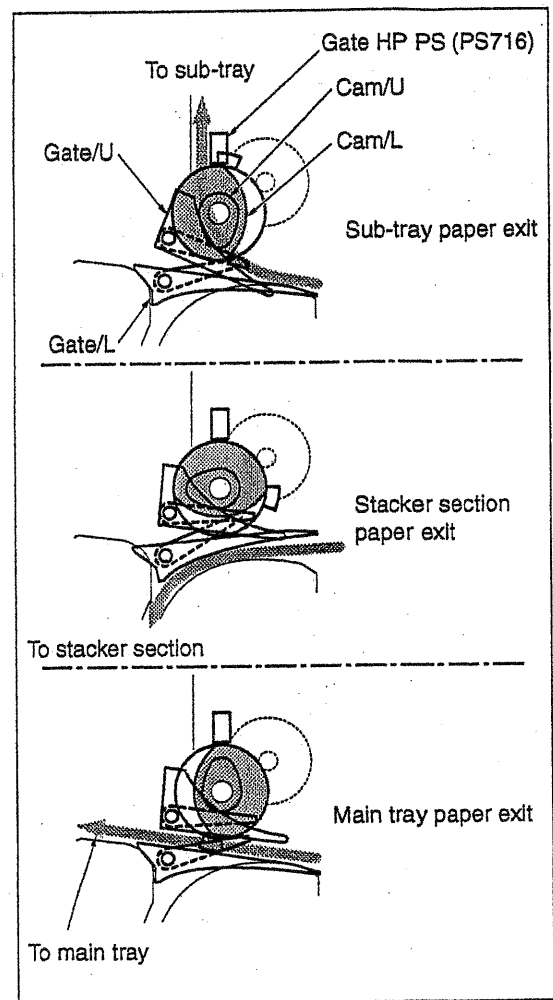
Mechanism	Method
Gate switching*1	Driven by the stepping motor/cam.
By-pass gate*2	Solenoids
Shift mechanism of the shift unit*3	Crank mechanism
Open/close of paper exit opening*4	Crank mechanism
Paper exit opening nip*5	Pressure rollers driven by solenoid.

*1 Gate Switching

The two gates (/U and /L) switch the paper path to three directions: the sub-tray, the main tray, and the stacker section. The upper and lower gates (/U and /L) are driven by the gate cam, which is driven by the gate drive motor (M712).

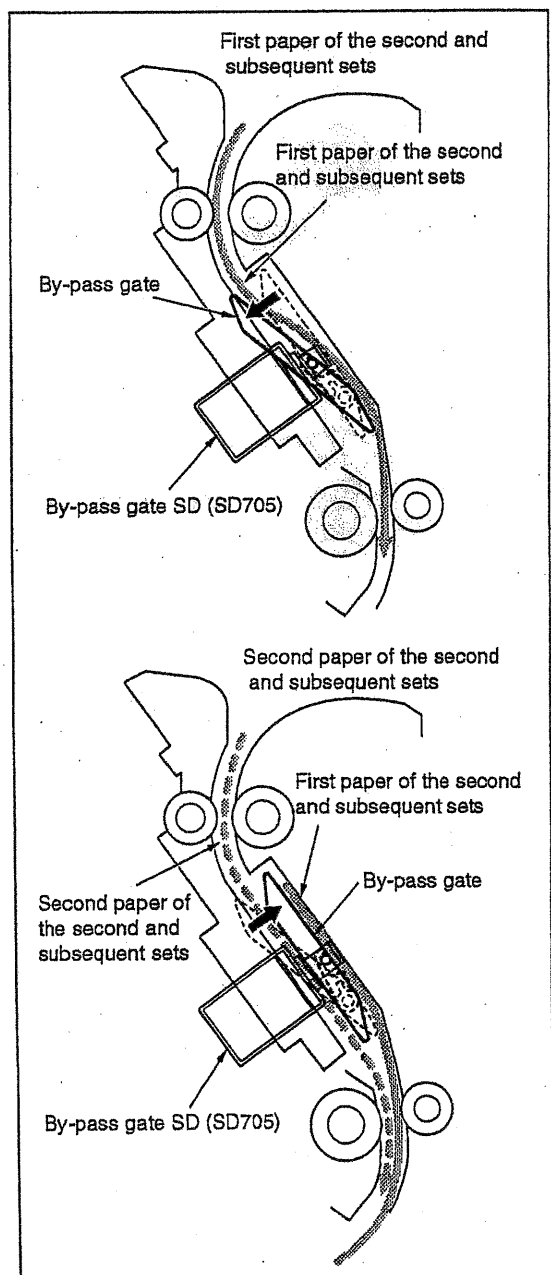


The gate cam consists of two cams (/U and /L) on the same shaft. The position of the cams determines the paper path.



*2 By-pass Gate

The by-pass gate is located on the path to the stacker. This gate changes the conveyance path of the next sheet while the stapling is being performed, saving time and improving performance. This gate is used for small size papers (A4, B5, and 8.5 x 11). The gate changes the feeding direction of the second sheet so that it is laid over the first sheet. The first and second sheets will be conveyed to the stacker simultaneously. The by-pass gate SD (SD705) drives the by-pass gate.

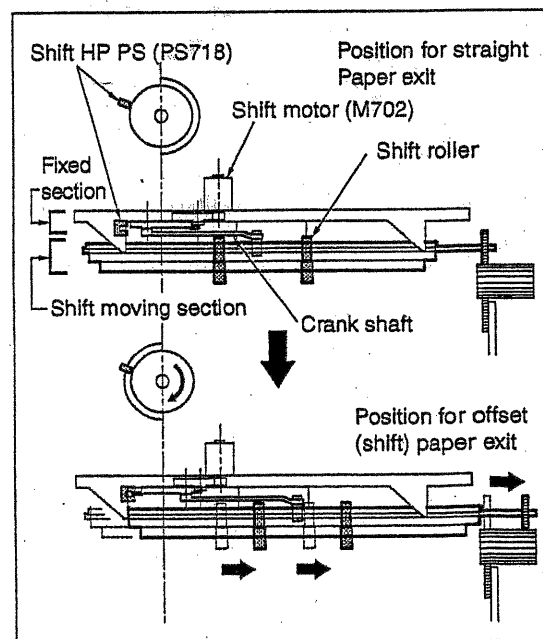
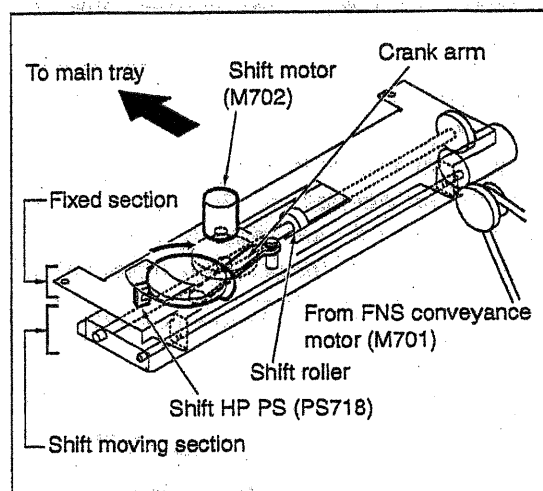


*3 Shift Mechanism of the Shift Unit

The FNS conveyance motor (M701) drives the shift roller, conveying the paper forward to the main tray.

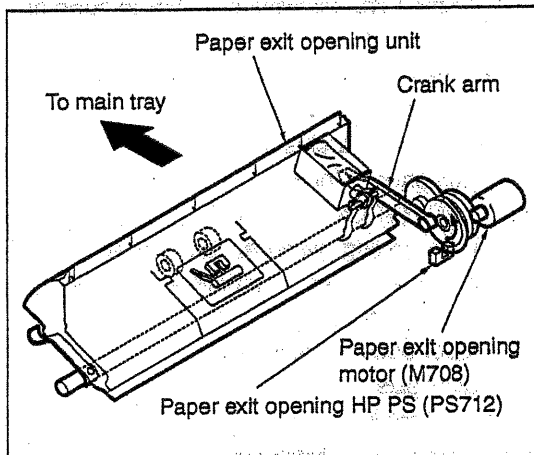
While the paper is conveyed to the main tray, the shift motor (M702) rotates to activate the crank mechanism. This mechanism moves the shift moving section (including the shift roller) by 300mm toward the rear, which also moves the paper and then it is delivered.

The shift HP PS (PS718) detects the shift position.

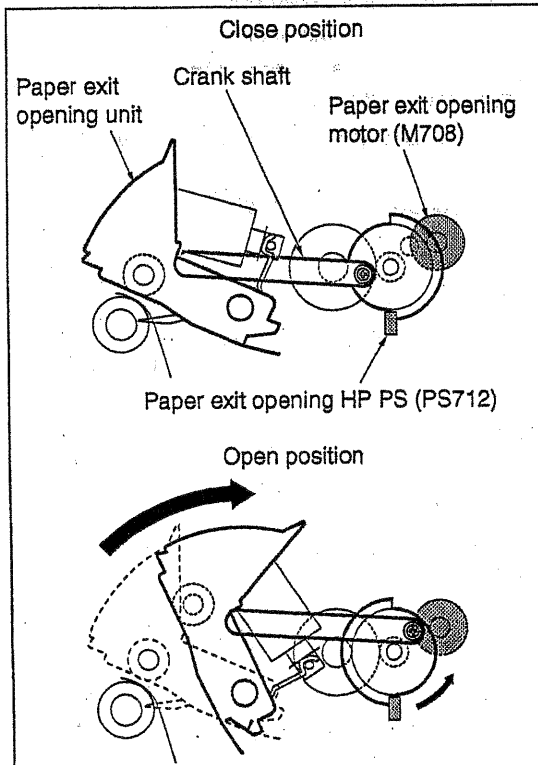


*4 Open/close of Paper Exit Opening

When paper is conveyed to the stacker, and it is larger than B5R in the vertical length (feeding direction), it does not fit the paper exit opening. This mechanism addresses this problem by opening the paper exit opening from the start of copying until the completion of stapling.

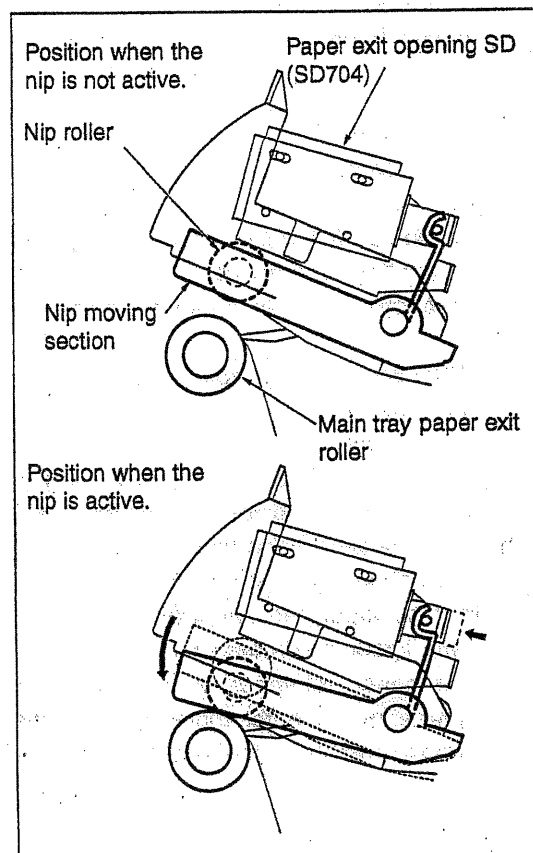
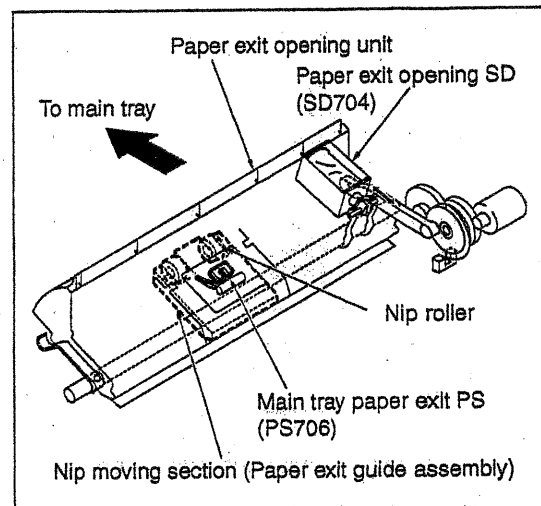


The paper exit opening motor (M708) rotates to activate the crank mechanism, lifting the paper exit opening unit. The paper exit opening opens.

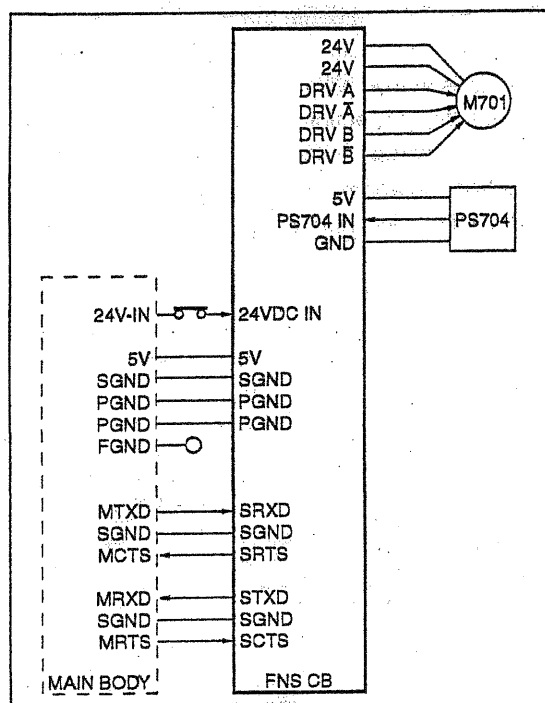


*5 Paper Exit Opening Nip

Because the rotational speed of the paper exit roller is slower than that of the conveyance roller, the nip is in the released position except during the paper exit action. When a sheet of paper reaches the paper exit opening, the paper exit opening solenoid (SD704) activates the nip roller. The roller nips the sheet to deliver to the main tray.



[3] M701 (FNS Conveyance) Control



M701 (FNS conveyance) operation is performed by the 24V DC motor and controlled by the FNS CB (FNS Control Board).

The related signals is PS704 (FNS Entrance).

1. Operation

a. Interlock control

FNS paper conveyance drive control is initiated by the ON signal from the main body's START button. If MS701 (interlock) is OFF at this time, however, the finisher transmits an error signal to the main body's PRCB and does not begin this control.

b. M701 (FNS conveyance) control

When the position of the START button is ON, and the paper exit speed is high, ON from PS37 (main body paper exit) sets the speed to low, and ON from PS704 (FNS entrance) sets the speed to high after a predefined time period. For the main tray paper exit operation, PS704 detects the end of the paper, and, after a predefined time period, the speed mode switches to medium to match the paper exit speed of the FNS. Then, after a predefined time, the mode returns to the high speed to prepare for the next conveyance of paper.

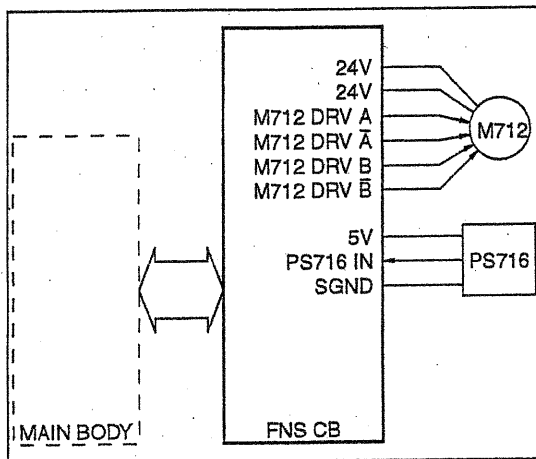
2. Signals

a. Input signals

- (1) SRXD (Main body to FNS CB)
Serial data line; transmits the operating status of the main body's CB to the FNS CB.
- (2) SCTS (Main body to FNS CB)
Acknowledgment signal, sent from the main body to the FNS, allowing the FNS to send data to the main body.
- (3) 24V-IN (MS701 to FNS CB)
Interlock signal:
[H]: Front cover is closed.
[L]: Front cover is open.
- (4) PS704 IN (PS704 to FNS CB)
Signal indicating whether the paper passes through the entrance. The front and rear ends of the paper are detected.
[H]: Paper does not exist.
[L]: Paper exist.

b. Output signals

- (1) SRTS (FNS CB to Main body)
Acknowledgment signal, sent from the FNS to the main body, allowing the main body to send data to the FNS.
- (2) STXD (FNS CB to Main body)
Serial data line; transmits the operating status of the FNS to the main body's CB.
- (3) M701 DRV A, \bar{A} (FNS CB to M701)
Pulse signal to drive/control the Phase A of M701
- (4) M701 DRV B, \bar{B} (FNS CB to M701)
Pulse signal to drive/control the Phase B of M701

[4] M712 (gate drive) Control

M712 (gate drive) performs the paper conveyance path switching between the sub-tray, main tray or stacker section. The FNS CB (FNS control board) controls the operation of M712. The related signal is PS716 (gate HP).

1. Operation

M712 (gate drive) is activated by the FNS operation signal from the main body, selecting one of the three positions depending on the paper exit destinations: the sub-tray (home position), main tray or stacker. However, when the current paper exit destination is the sub-tray, M712 is not activated (it is already in the home position).

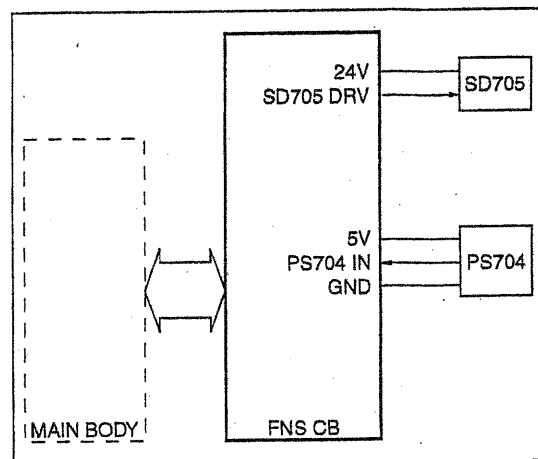
After the operation, M712 returns to its home position based on PS716 (gate HP).

2. Signals**a. FNS CB input signals**

- (1) PS716 IN (PS716 to FNS CB)
Signal relating to the gate home position
[H]: HP
[L]: Non-HP

b. FNS CB output signals

- (1) M712 DRV A, \bar{A} (FNS CB to M712)
Pulse signal to drive/control the Phase A of M712
- (2) M712 DRV B, \bar{B} (FNS CB to M712)
Pulse signal to drive/control the Phase B of M712

[5] SD705 (by-pass gate) Control

SD705 (by-pass gate) only operates for small size papers (A4, B5 or 8.5 x 11). The FNS CB (FNS control board) controls SD705.

The related signal is PS704 (FNS entrance).

1. Operation**(1) First set:**

While the sheets of the first set are being processed, SD705 (by-pass gate) does not operate.

(2) Second set:

The stapling operation for the first set is activated, and, after a predefined time, SD705 (by-pass gate) is activated to pull the first sheet of the second set toward the by-pass.

SD705 stops its operation when a predefined time has elapsed since PS704 (FNS entrance) detected the rear end of the first sheet of the second set.

SD705 does not operate when the second and subsequent sheets of the second set are processed.

(3) Third and subsequent sets:

PS704 (FNS entrance) detects the rear end of the last sheet of the second set. Then, after a predefined time, SD705 (by-pass gate) is activated to pull the first sheet of the third set toward the by-pass.

SD705 stops its operation when a predefined time has elapsed since PS704 (FNS entrance) detected the rear end of the first sheet of the third set.

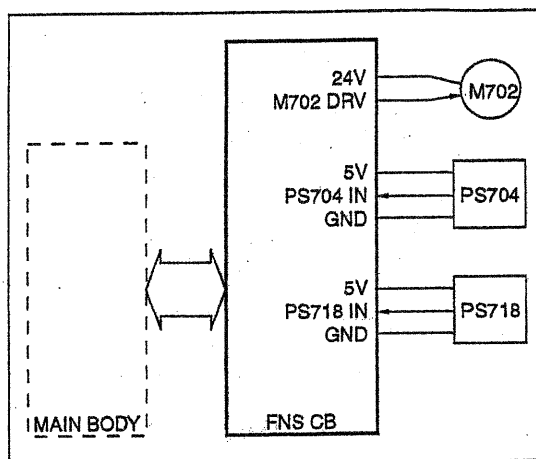
SD705 does not operate when the second and subsequent sheets of the third and subsequent sets are processed.

2. Signals

a. FNS CB output signals

- (1) PS705 DRV (FNS CB to SD705)
Signal to drive/control the SD705.
[H]: SD705 is ON.
[L]: SD705 is OFF.

[6] M702 (shift) Control



M702 (shift) performs the paper offset operation in the sort or group mode.

The FNS CB (FNS control board) controls M702. The related signals are PS704 (FNS entrance) and PS718 (shift HP).

1. Operation

In the sort or group mode, PS704 (FNS entrance) detects the rear end of the paper. After a predefined time period, M702 (shift) operates. Its rotation triggers the shift (travel) of the shift moving section. The shift roller, rotated by M701 (FNS conveyance), carries the paper while the shift operation is being performed.

The completion of the shift operation is detected by the change of PS718 (shift HP) signal, from OFF to ON, and then M702 is deactivated.

After a predefined time period has elapsed since M702 was deactivated, it is activated again. M702 stops when PS718 (shift HP) signal changes from ON to OFF. This operation allows the shift moving section to return to its original position to wait for the next paper to be shifted. This sequence of actions is repeated for each sheet to achieve offsetting of paper.

2. Signals

a. FNS CB Input signals

PS718 IN (PS718 to FNS CB)

Signal relating to the shift position

[L] to [H]: Straight position

[H] to [L]: Shift position

b. FNS CB output signals

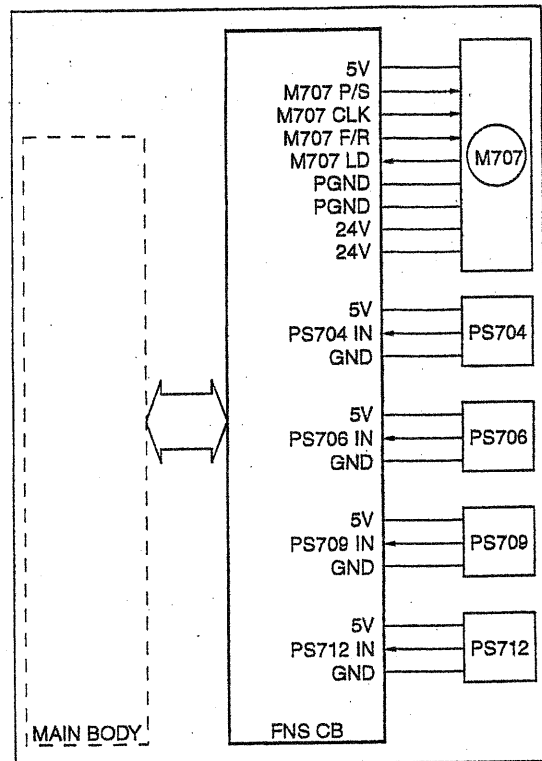
(1) M702 DRV (FNS CB to M702)

Signal to drive/control M702.

[L]: M702 ON

[H]: M702 OFF

[7] M707 (paper exit roller) Control



M707 (paper exit roller) drives the main tray paper exit roller and the paper exit belt of the stacker section.

The FNS CB (FNS control board) controls M707. The related signals are PS704 (FNS entrance), PS706 (main tray paper exit), PS709 (paper exit belt HP), and PS712 (paper exit opening HP).

1. Operation

a. Straight, sort, and group modes

When PS704 (FNS entrance) detects the leading edge of the paper, M707 starts to rotate at a high speed. When PS704 has detected the trailing edge of the paper and a predefined time period has elapsed, the rotation of M707 changes to low. Then the paper delivery action is performed.

When PS706 (main tray paper exit) has detected the trailing edge of the paper (preparation for the next paper conveyance) and a predefined time period has elapsed, the rotation speed of M707 returns to high.

When PS704 has detected the last paper and a predefined time period has elapsed, M707 ceases to rotate.

b. Staple mode (for papers whose length in the feeding direction is smaller than B5R)

The FNS operation signal from the main body lets M707 (paper exit roller) rotate. When PS709 (paper exit belt HP) signal has changed from OFF to ON and a predefined time period has elapsed, M707 stops. The paper exit arm moves to the staple mode HP.

When the stapling operation has been completed, M707 rotates to drive the paper exit belt of the stacker section. This action allows the paper exit arm to lift the paper to the level of the paper exit roller, which delivers it to the main tray. When PS709 detects the change in signal, from OFF to ON, M707 stops.

c. Staple mode (other than those above)

The FNS operation signal from the main body lets M707 (paper exit roller) rotate. When PS709 (paper exit belt HP) signal has changed from OFF to ON and a predefined time period has elapsed, M707 stops. The paper exit arm moves to the staple mode HP.

When paper other than those described above is used, the paper exit opening is open. The paper exit opening is closed by M708 upon the completion of stapling. When PS712 (paper exit opening HP) detects that the paper exit opening has been closed, M707 starts rotating to drive the paper exit arm. This allows the paper exit arm to lift the paper to the level of the paper exit roller, which delivers it to the main tray.

When PS709 detects the change in signal, from OFF to ON, M707 stops.

d. Folding and stitch-and-fold modes

The FNS operation signal from the main body lets M707 (paper exit roller) counter-rotate. When PS709 (paper exit belt HP) signal has changed from OFF to ON, M707 stops. The paper exit arm moves to the booklet mode HP. When the stapling operation has completed, the paper is moved to the folding position. At this stage, the paper exit arm will not operate. This is because the paper exit arm may come into contact with the paper, which is waiting for a process at the folding position.

e. Three-folding mode

The FNS operation signal from the main body lets M707 (paper exit roller) counter-rotate. When PS709 (paper exit belt HP) signal has changed from OFF to ON, M707 stops. The paper exit arm moves to the booklet mode HP. When the paper alignment has been completed, M707 (paper exit roller) counter-rotates helping the paper to be carried to the three-folding position. When PS709 signal has changed from OFF to ON, M707 stops.

2. Signals

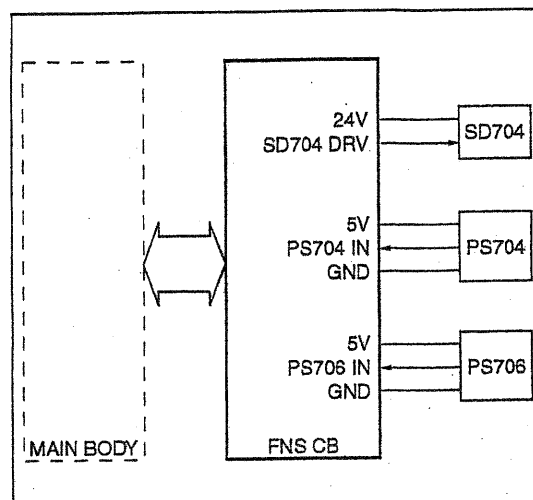
a. FNS CB input signals

- (1) PS706 IN (PS706 to FNS CB)
Signal relating to the main tray paper exit.
[L]: Paper does not exist.
[H]: Paper exists.
- (2) PS709 IN (PS709 to FNS CB)
Signal relating to the paper exit belt HP.
[L]: Paper exit belt is not at the HP.
[H]: Paper exit belt is at the HP.
- (3) PS712 IN (PS712 to FNS CB)
Signal relating to the paper exit opening HP.
[L]: Paper exit opening is open.
[H]: Paper exit opening is close.
- (4) M707 LD (M707 to FNS CB)
Signal relating to the rotation speed of M707.
[L]: Operating at a specified rotation speed.
[H]: Operating at a speed other than a specified rotation speed.

b. FNS CB output signals

- (1) M707 P/S (FNS CB to M707)
Signal relating to rotation/stop of M707
[L]: M707 ON
[H]: M707 OFF
- (2) M707 CLK (FNS CB to M707)
Signal relating to the clock for controlling the rotation speed of M707
- (3) M707 F/R (FNS CB to M707)
Signal to control the rotation direction of M707
[L]: CCW
[H]: CW

[8] SD704 (paper exit opening solenoid) Control



SD704 (paper exit opening) drives the nip moving section. This solenoid allows the nip paper exit roller to firmly contact the main tray paper exit roller for nipping the paper. The FNS CB (FNS control board) controls the operation of SD704. The related signals are PS704 (FNS entrance) and PS706 (main tray paper exit).

1. Operation

a. SD704 ON

- (1) Straight, sort, and group modes:
When PS704 (FNS entrance) has detected the rear end of the paper, and a predefined time period has elapsed, SD704 is activated (ON).
- (2) Staple mode:
When the stapling operation has been completed and a predefined time period has elapsed, SD704 is activated (ON) for nipping the paper.

b. SD704 OFF

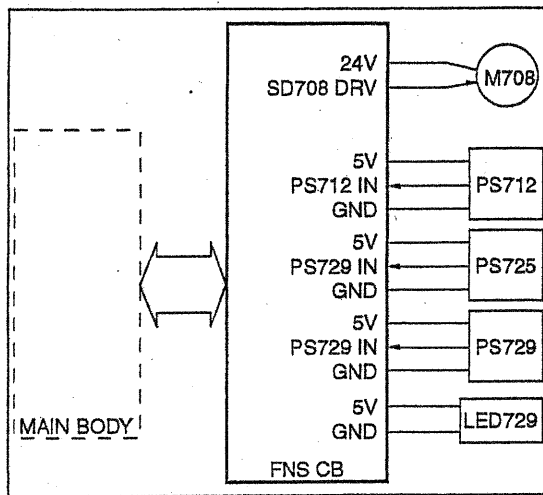
In each mode, when PS706 (main tray paper exit) has detected the paper and a predefined time period has elapsed, SD704 is deactivated (OFF).

2. Signals

a. FNS CB output signals

- (1) SD704 DRV (FNS CB to SD704)
Signal to drive/control SD704
[L]: SD704 ON
[H]: SD704 OFF

[9] M708 (paper exit opening) Control



In the staple (when the length of the paper in the feeding direction is larger than B5R), booklet, or three-folding mode, M708 (paper exit opening) drives the open/close operation of the paper exit opening through the link mechanism.

The FNS CB (FNS control board) controls the operation of M708.

The related signals are PS712 (paper exit opening HP), PS725 (folding exit), and PS729 (folding full PS).

1. Operation

a. Staple mode (for papers whose length in the feeding direction is larger than B5R)

The FNS operation signal from the main body lets M708 (paper exit opening) rotate, causing the paper exit opening to be opened.

Upon completion of the stapling operation, M708 (paper exit opening) rotates again to start the closing operation of the paper exit opening. When PS712 (paper exit opening HP) detects the closed position, M708 stops.

The steps above are repeated for each set of the sheets that will be stapled.

b. Folding, stitch-and-fold, and three-folding modes

The ON signal from the main body's START button lets M708 (paper exit opening) rotate, causing the paper exit opening to be opened.

When PS725 (folding paper exit) or PS729 (folding full PS) has detected the trailing edge of the last sheet, and a predefined time period has elapsed since then, M708 again rotates to start the closing operation of the paper exit opening.

When PS712 (paper exit opening HP) detects the position closed, M708 stops.

2. Signals

a. FNS CB output signals

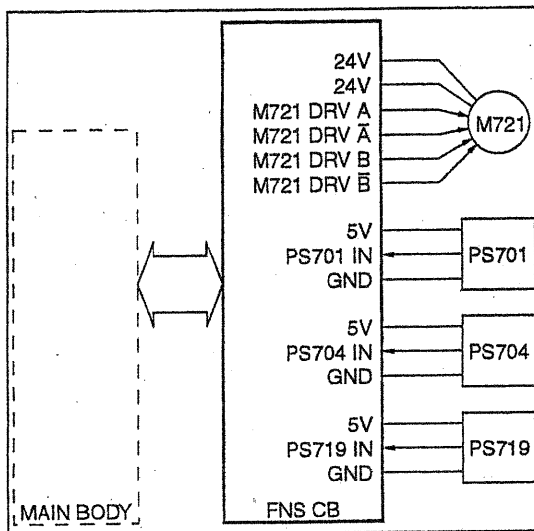
(1) M708 DRV (FNS CB to M708)

Signal to drive/control M708

[L]: M708 ON

[H]: M708 OFF

[10] M721 (sub-tray paper exit) Control



M721 (sub-tray paper exit), controlled by the FNS CB (FNS control board), drives the sub-tray paper exit roller.

The related signals are PS701 (sub-tray paper exit), PS704 (FNS entrance), and PS719 (sub-tray full).

1. Operation

a. M721 (sub-tray paper exit) Control

M721 (sub-tray paper exit) starts its high-speed rotation when PS701 (sub-tray paper exit) detects the leading edge of the paper.

When PS704 (FNS entrance) has detected the trailing edge of the paper and a predefined time period has elapsed since then, the rotation of M721 changes to low.

When PS701 detects the trailing edge of the paper and a predefined time period has elapsed, M721 stops.

b. Sub-tray full detection

When the papers ejected to sub-tray reach to specified height, PS719 (sub-tray full) turns ON, and FNS transmits "sub-tray full" information to the main body.

When the main body receives it, the message is displayed on the operation panel.

2. Signals

a. FNS CB input signals

(1) PS701 IN (PS701 to FNS CB)

Signal indicating the existence of the paper at the location of the sub-tray paper exit sensor.

[L]: Paper does not exist.

[H]: Paper exists.

(2) PS719 IN (PS719 to FNS CB)

Signal indicating the sub-tray full

[L]: Sub-tray full

[H]: Sub-tray not full

b. FNS CB output signals

(1) M721 DRV A, \bar{A} (FNS CB to M721)

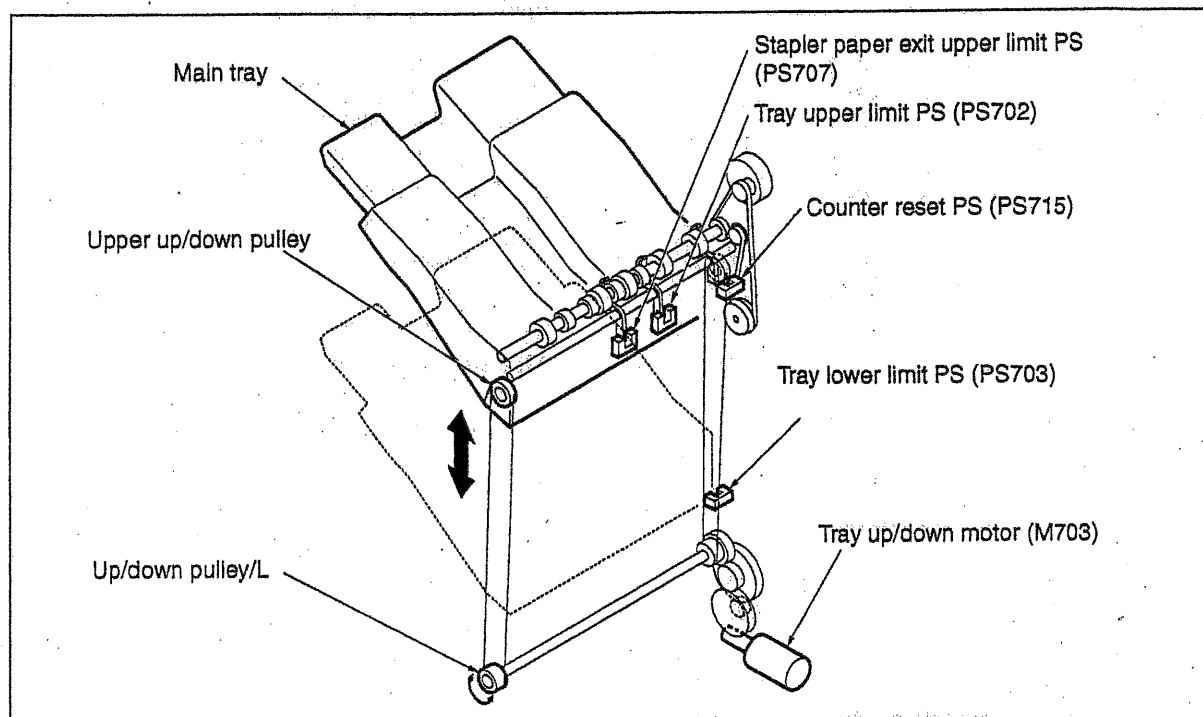
Pulse signal to drive/control the Phase A of M721

(2) M721 DRV B, \bar{B} (FNS CB to M721)

Pulse signal to drive/control the Phase B of M721

MAIN TRAY SECTION

[1] Composition



[2] Mechanism

Mechanism	Method
Main tray up/down*1	Wire drive
Paper detection*2	Photo sensor

*1 Main Tray Up/Down

The tray up/down motor (M703) and the worm gear installed on the motor shaft perform the winding operation of the up/down wire. The rotation direction of the motor shaft determines the moving direction of the main tray, i.e. rise or fall. If the up/down pulley/L rotates clockwise seen from the front, the main tray rises. Otherwise, the main tray falls.

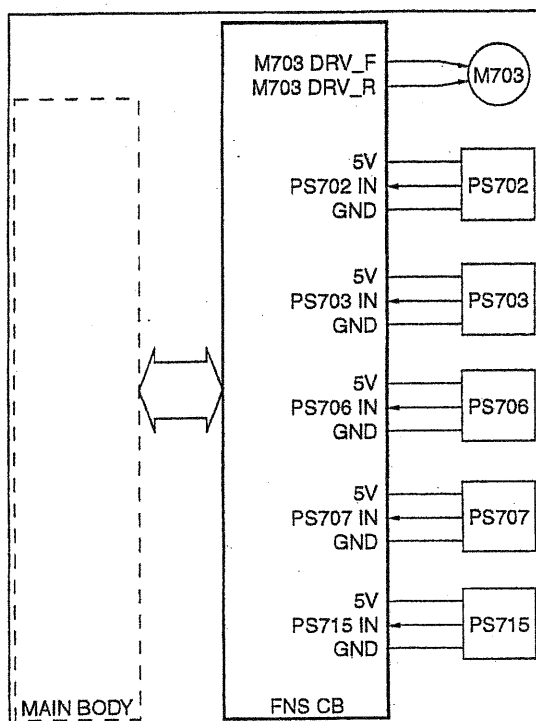
*2 Paper Detection

The distance between the top surface of the piled sheets on the main tray (the top surface of the main tray if there's no sheet on the tray) and the paper exit opening is monitored using the tray upper limit PS (PS702) and the stapler paper exit upper limit PS (PS707). This distance is kept constant to avoid misalignment of delivered sheets.

The counting program, built in the FNS, counts the number of delivered sheets on the main tray during continuous copying. When the total number of delivered sheets reaches a maximum (val-

ues are predefined depending on type/size of paper), the copying operation is suspended. However, when some delivered sheets are removed, the main tray is raised and the counter reset PS is activated. This resets the current sheet counter. This enables limitless delivery. The tray lower limit PS (PS703) detects the bottom of the main tray. The number of delivered sheets on the main tray is not counted by the software counter during non-continuous copying. PS703 is used for the limitation of the number.

[3] M703 (tray up/down) Control



M703 (tray up/down) raises or lowers the main tray by a normal or reverse rotation. The FNS CB (FNS control board) controls the operation of M703.

The related signals are PS702 (tray upper limit), PS703 (tray lower limit), PS707 (stapler exit upper limit), PS715 (counter reset), and PS706 (main tray paper exit).

1. Operation

a. Non-sort, sort, and group modes

According to the FNS operation signal from the main body, M703 (tray up/down) elevates the main tray until PS702 (tray upper limit) responds (ON).

When PS706 (main tray paper exit) detects the paper, M703 lowers the tray. When the signal from PS702 has changed to OFF, and a pre-defined time period has elapsed, M703 raises the tray again. M703 stops with PS702 signal ON.

b. Staple mode

When M707 (paper exit roller) has started rotating and a predefined time period has elapsed, M703 (tray up/down) lowers the main tray. The rotation of M703 is reversed to raise the main tray when PS706 (main tray paper exit) detects the trailing edge of the paper stack on the tray. M703 stops when the signal from PS707 (stapler paper exit upper limit) changes from ON to OFF.

2. Signals

a. FNS CB input signals

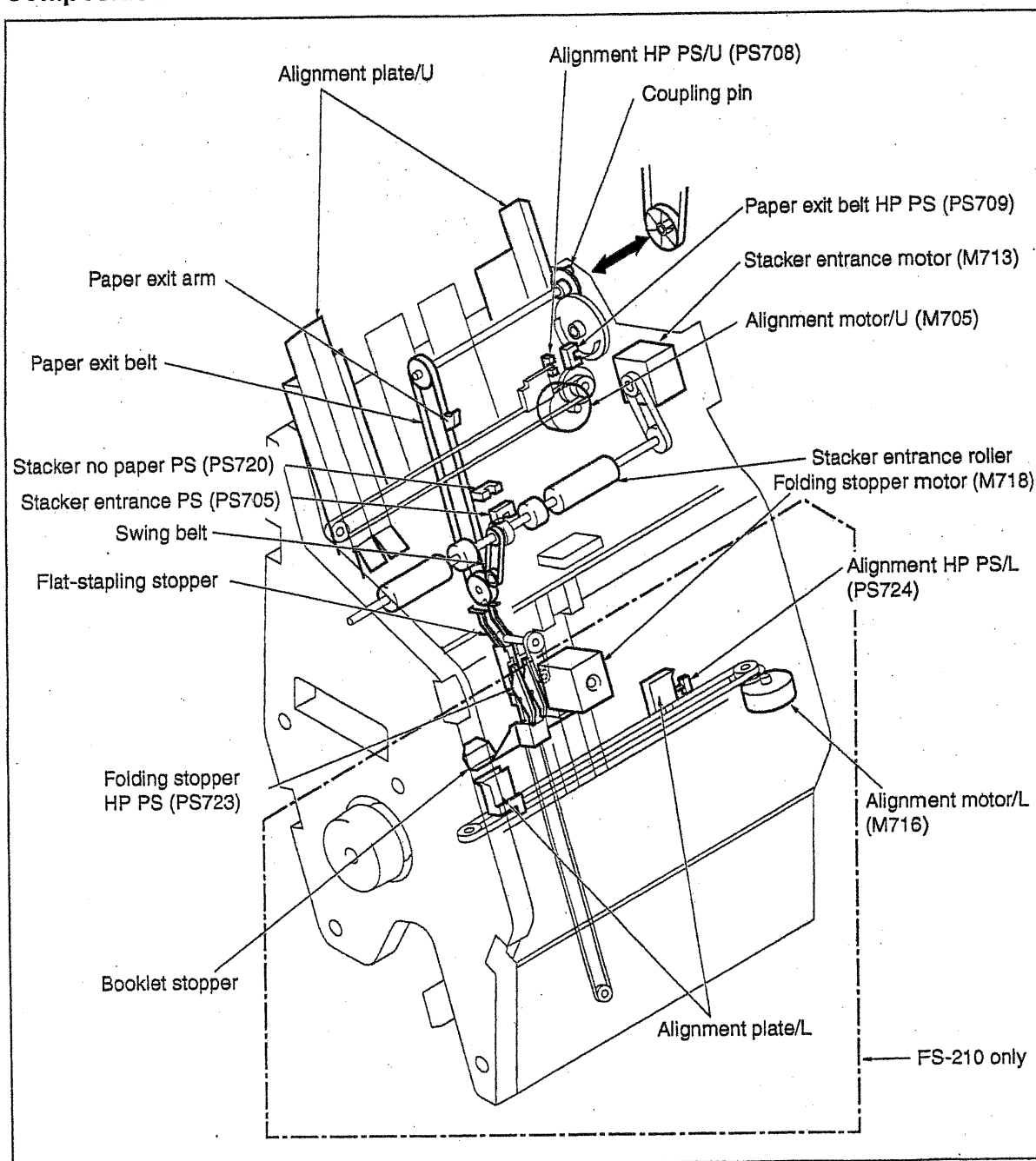
- (1) PS702 IN (PS702 to FNS CB)
Signal relating to the main tray upper limit position
[L]: Non-upper limit position
[H]: Upper limit position
- (2) PS703 IN (PS703 to FNS CB)
Signal relating to the main tray lower limit position
[L]: Non-lower limit position
[H]: Lower limit position
- (3) PS707 IN (PS707 to FNS CB)
Signal relating to the main tray upper limit position in the staple mode
[L]: Upper limit position
[H]: Non-upper limit position
- (4) PS715 IN (PS715 to FNS CB)
Signal relating to the counter reset
[L]: Non-counter reset position
[H]: Counter reset position

b. FNS CB output signals

- (1) M703 DRV_F (FNS CB to M703)
Signal to drive/control the normal rotation of M703
- (2) M703 DRV_R (FNS CB to M703)
Signal to drive/control the reverse rotation of M703

STACKER SECTION

[1] Composition

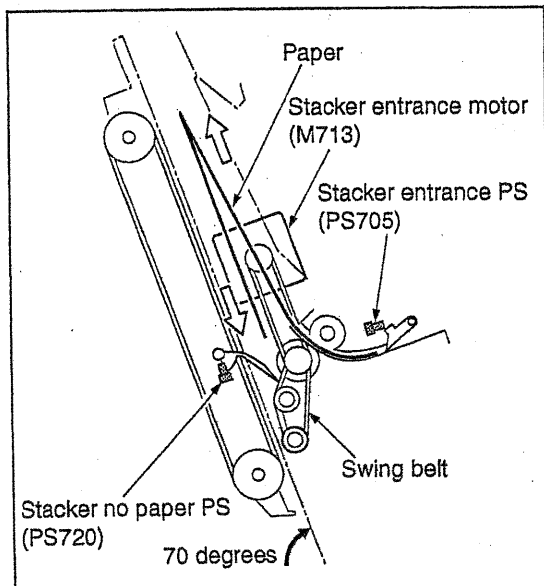


[2] Mechanism

Mechanism	Method
Stack*1	Corrugation roller Swing belt + own weight
Paper exit belt*2	Timing belt driven by coupling connection
Booklet stopper*3	Driven by timing belt using stepping motor (the flat stapling stopper is released by the interlocking mechanism)
Paper alignment/U*4	Stepping motor
Paper alignment/L*5	Stepping motor

*1 Stack

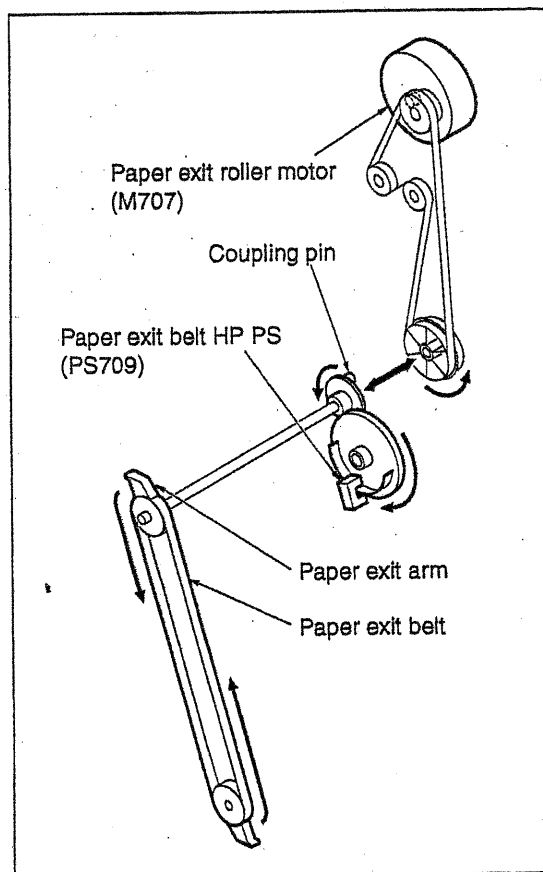
The stacker section features a compact component design using the stack with an inclination of 70 degrees. The corrugation roller is employed for the stacker entrance roller, which facilitates a smooth paper delivery to the stacker. The paper sinks under its own weight into the stacker, of which lower end is supported by the swing belt.



*2 Paper Exit Belt

The paper exit arm delivers the paper to the main tray in the staple mode, or to the folding section in the three-folding mode. The paper exit arm is driven by the paper exit belt, which is in turn driven by the paper exit roller motor (M707) through the coupling connection.

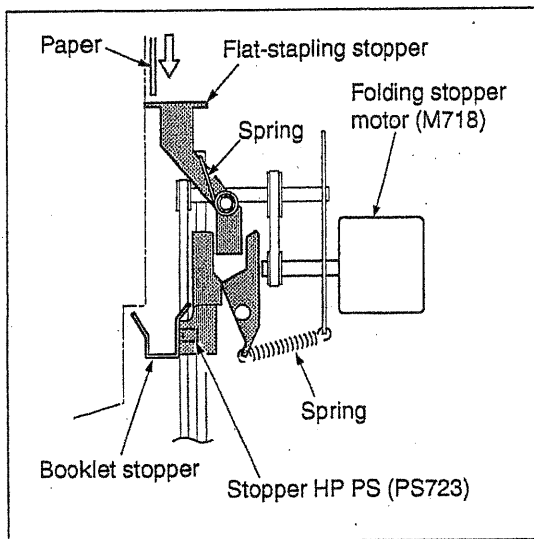
The paper exit belt HP PS (PS709) detects the home position of the paper exit arm.



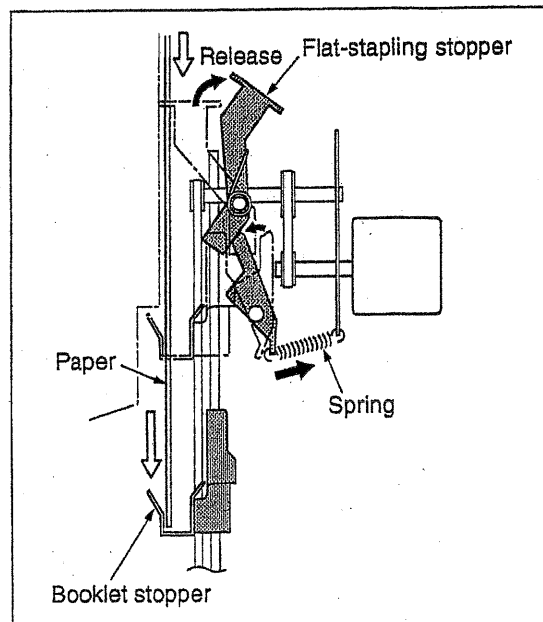
*3 Booklet Stopper (FS210 only)

The folding stopper motor (M718) operates the booklet stopper.

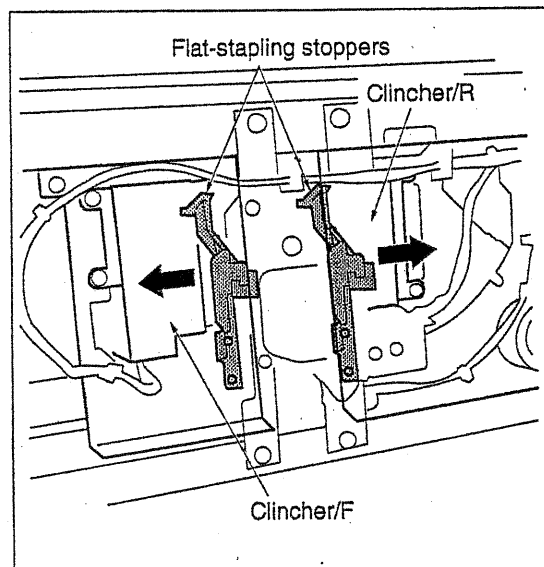
The folding stopper HP PS (PS723) detects the home position of the booklet stopper. The booklet stopper is interlocked with the flat-stapling stopper. When the booklet stopper is at its home position, the flat-stapling stopper is in the position to support the paper by the pressure of the spring. With this configuration, stapling is performed in the staple mode.



When the booklet stopper lowers, the flat-stapling stopper is released via the link mechanism. The booklet stopper catches the paper that falls.



One flat-stapling stopper is fixed on each of two clinchers (R and F). When the two clinchers move away from each other, the two stoppers also become remote.



***4 Paper Alignment/U**

In the staple (flat-stapling) mode, the paper alignment plate/U (front and rear) oscillate to align the sheets.

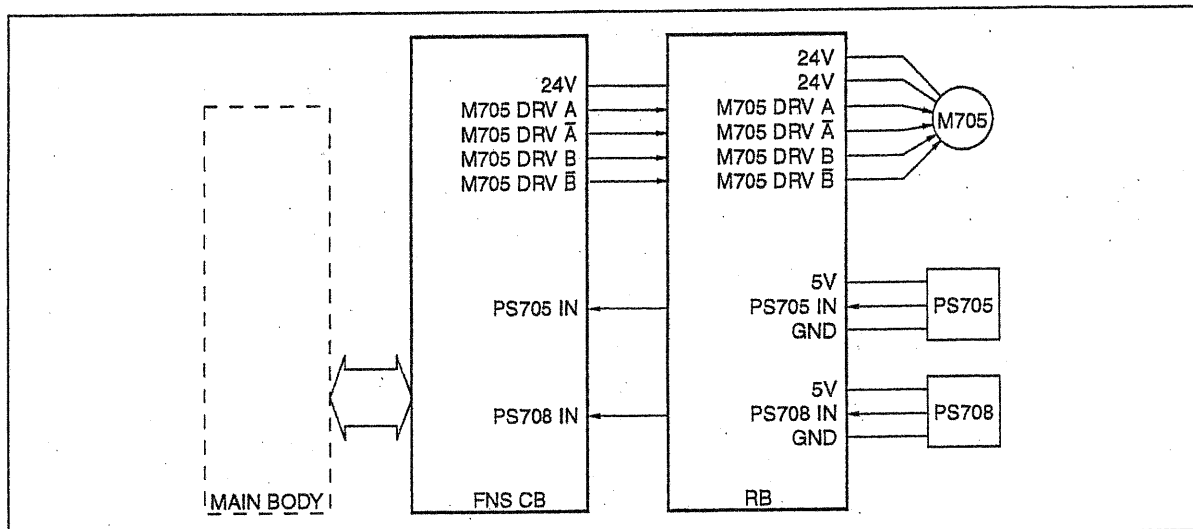
The oscillation of the paper alignment plate/U is achieved by the normal and reverse rotations of the alignment motor/U (M705). The alignment HP PS/U (PS708) detects the home position of the paper alignment plate/U.

***5 Paper Alignment/L (FS-210 only)**

In the stitch-and-fold, folding, three-folding modes, both the paper alignment plate/U and the paper alignment plate/L oscillate to align the sheets.

The oscillation of the paper alignment plate/L is achieved by the normal and reverse rotations of the alignment motor/L (M716). The alignment HP PS/L (PS724) detects the home position of the paper alignment plate/L.

[3] M705 (alignment/U) Control



In the staple, folding, stitch-and-fold, three-folding modes, the widthwise alignment operation of the paper carried into the stacker section is performed by the alignment plate/U. The space between the two alignment plates/U extends or shrinks by means of the rotation of the M705 (alignment/U). The FNS CB (FNS control board) controls the operation of M705 through the RB (relay board).

The related signals are PS705 (stacker entrance) and PS708 (alignment HP/U).

1. Operation

The FNS operation signal from the main body lets M705 (alignment/U) rotate so that the space between the two alignment plates/U will become narrower. The rotation of M705 stops when the plates reach their waiting positions that provide a little wider space for the paper to be accommodated.

When PS705 (stacker entrance) has detected the trailing edge of the paper and a predefined time period has elapsed, the alignment plates/U horizontally oscillate to align the paper. The oscillation is provided by the normal and reverse rotations of M705. This paper alignment action is repeated each time a sheet of paper is fed.

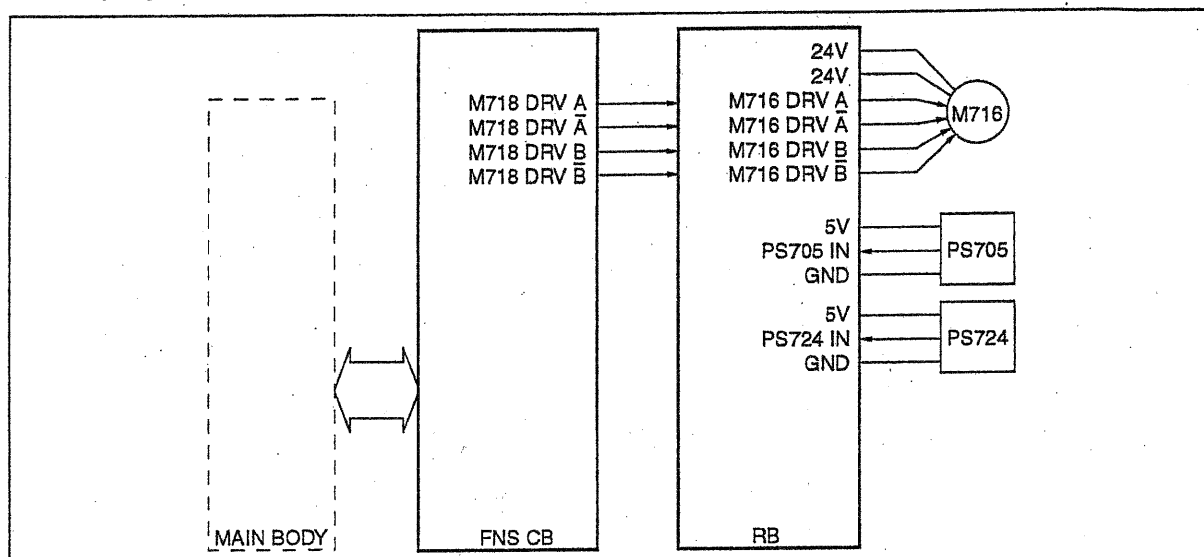
2. Signals

a. FNS CB input signals

- (1) PS705 IN (PS705 to RB to FNS CB)
Signal relating to the detection of the paper by the stacker entrance sensor
[L]: Paper not detected
[H]: Paper detected
- (2) PS708 IN (PS708 to RB to FNS CB)
Signal relating to the detection of the home position of the alignment plate/U
[L]: Not in the home position
[H]: In the home position

b. FNS CB output signals

- (1) M705 DRV A, \bar{A} (FNS CB to RB to M705)
Pulse signal to drive/control the Phase A of M705
- (2) M705 DRV B, \bar{B} (FNS CB to RB to M705)
Pulse signal to drive/control the Phase B of M705

[4] M716 (alignment/L) Control (FS-210 only)

In the folding, stitch-and-fold, three-folding modes, the widthwise alignment operation of the paper carried into the stacker section is performed by the alignment plate/L. The space between the two alignment plates/L extends or shrinks by means of the rotation of M716 (alignment/L).

The FNS CB (FNS control board) controls the operation of M716 through the RB (relay board). The related signals are PS705 (stacker entrance) and PS724 (alignment HP/L).

1. Operation

The FNS operation signal from the main body lets M716 (alignment/L) rotate so that the space between the two alignment plates/L will become narrower. The rotation of M716 stops when the plates reach their waiting positions that provide a little wider space for the paper to be accommodated.

When PS705 (stacker entrance) has detected the rear end of the paper and a predefined time period has elapsed, the alignment plates/L horizontally oscillate to align the paper. The oscillation is provided by the normal and reverse rotations of M716. This paper alignment action is repeated each time a sheet of paper is fed.

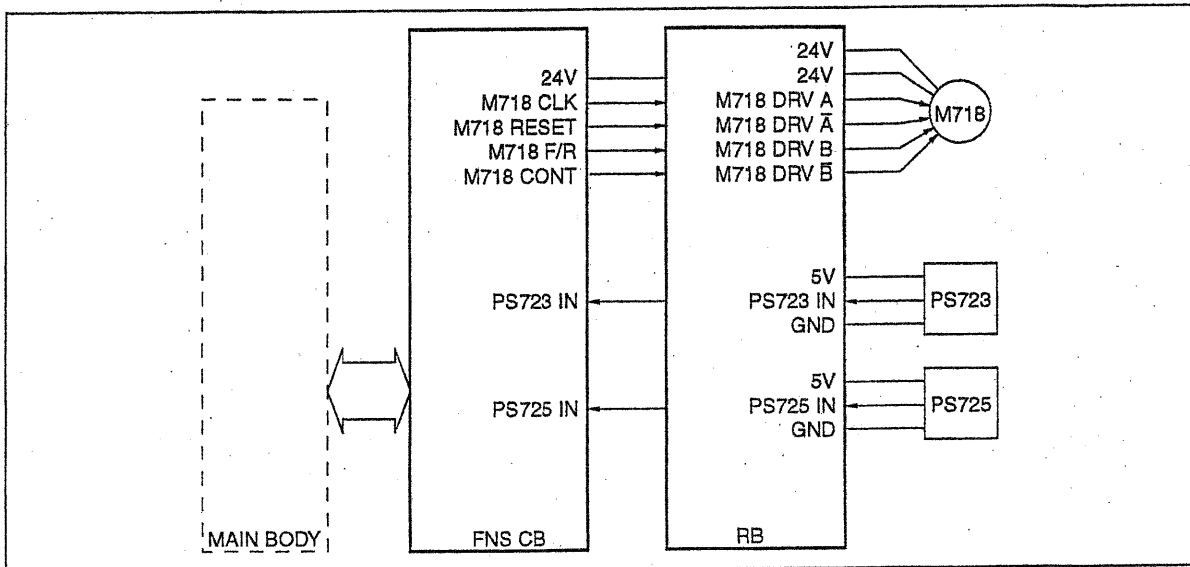
2. Signals**a. FNS CB input signals**

- (1) PS724 IN (PS724 to RB to FNS CB)
Signal relating to the detection of the home position of the alignment plate/L
[L]: Not in the home position
[H]: In the home position

b. FNS CB output signals

- (1) M716 DRV A, \bar{A} (FNS CB to RB to M716)
Pulse signal to drive/control the Phase A of M716
- (2) M716 DRV B, \bar{B} (FNS CB to RB to M716)
Pulse signal to drive/control the Phase B of M716

[5] M718 (folding stopper) Control (FS-210 only)



M718 (folding stopper) moves the booklet stopper. The link mechanism releases the flat-stapling stopper when the booklet stopper comes down.

The FNS CB (FNS control board) controls the operation of M718 through the RB (relay board). The signals (or sensors) related to this component include PS723 (folding stopper HP), PS725 (folding paper exit) and PS729 (folding full PS).

1. Operation

a. Folding mode

The FNS operation signal from the main body lets M718 (folding stopper) drive to lower the booklet stopper. The booklet stopper comes down to the appropriate alignment position that fits the size of the paper to be handled.

When the last sheet has been aligned, M718 rotates to lower it to the folding position.

When the folding has been completed and the trailing edge of the set has been detected by PS725 (folding paper exit), M718 is activated. The booklet stopper is raised to the paper-size specific position. The machine waits for the sheet of the next set.

b. Stitch-and-fold mode

The FNS operation signal from the main body lets M718 (folding stopper) drive to lower the booklet stopper. The booklet stopper comes down to the appropriate stitch-and-fold position that fits the size of the paper.

When the stapling has been completed, M718 rotates to lower the paper to the folding position. When the folding has been completed and the trailing edge of the set has been detected by PS725 (folding paper exit), M718 is activated. The booklet stopper is raised to the paper-size specific position. The machine waits for the sheet of the next set.

c. Three-folding mode

The FNS operation signal from the main body lets M718 (folding stopper) drive to lower the booklet stopper. The booklet stopper comes down to the appropriate alignment position that fits the size of the paper.

When the last sheet has been aligned, M718 operates to lower it to the first folding position for three-folding.

When the folding has been completed and the trailing edge of the set has been detected by PS729 (folding full PS), M718 is activated. The booklet stopper is raised to the paper-size specific position. The machine waits for the sheet of the next set.

2. Signals

a. FNS CB input signals

- (1) PS723 IN (PS723 to RB to FNS CB)
Signal relating to the detection of the booklet stopper's home position
[L]: Not in the home position
[H]: In the home position
- (2) PS725 IN (PS725 to RB to FNS CB)
Signal relating to the detection of the paper at the folding paper exit position
[L]: Paper not detected
[H]: Paper detected

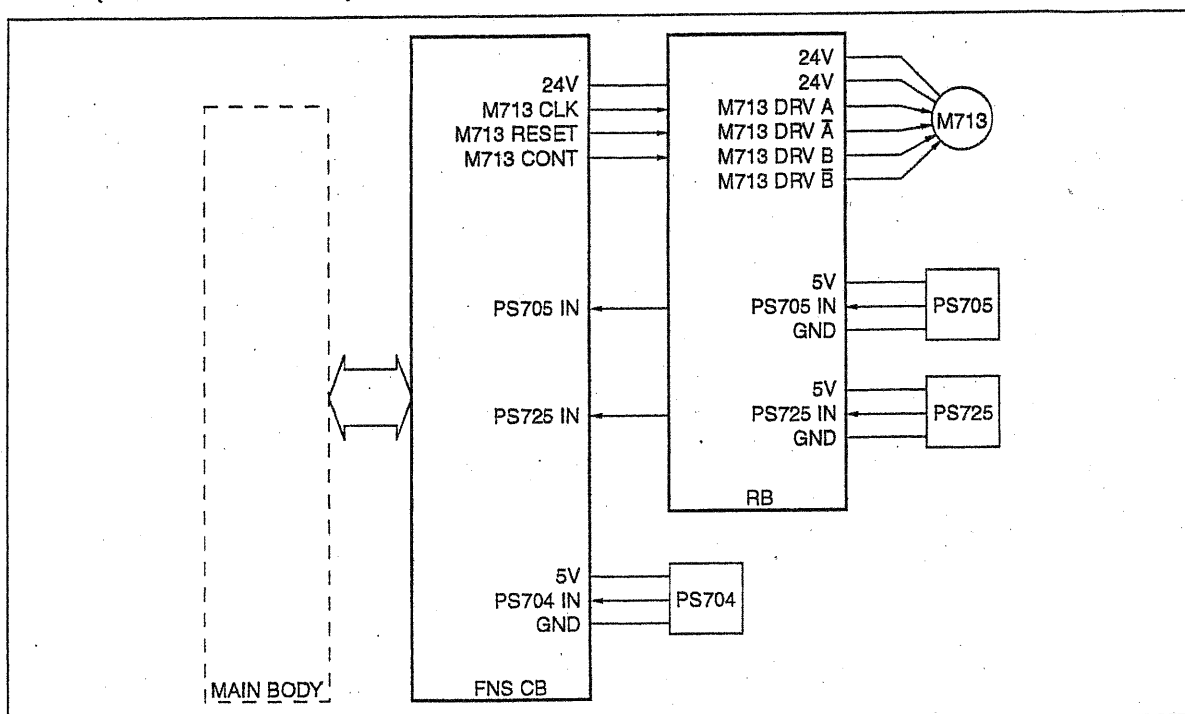
b. FNS CB output signals

- (1) M718 CLK (FNS CB to RB)
Signal relating to the clock for controlling the rotation speed of the M718
- (2) M718 RESET (FNS CB to RB)
Reset signal for the M718
- (3) M718 F/R (FNS CB to RB)
Signal to control the rotation direction of the M718
[L]: CCW
[H]: CW
- (4) M718 CONT (FNS CB to RB)
Signal to activate or deactivate the M718
[L]: M718 ON
[H]: M718 OFF

c. RB output signals

- (1) M718 DRV A, \bar{A} (RB to M718)
Pulse signal to drive/control the Phase A of M718
- (2) M718 DRV B, \bar{B} (RB to M718)
Pulse signal to drive/control the Phase B of M718

[6] M713 (stacker entrance) Control



M713 (stacker entrance) drives the stacker entrance roller and the swing belt. These components are responsible for conveying the paper to the stacker, aligning the paper rear end, and controlling the timing for stapling.

The FNS CB (FNS control board) controls the operation of M713 through the RB (relay board). The related signals are PS704 (FNS entrance), PS705 (stacker entrance), and PS725 (folding paper exit).

1. Operation

a. Staple mode (for sheets of all paper sizes except A4, B5, and 8.5 x 11 = without by-pass feature)

The FNS operation signal from the main body lets M713 (stacker entrance) start to rotate at a high-speed.

When PS705 (stacker entrance) has detected the rear end of the paper, the rotation speed of M713 changes to low, conveying the paper slowly to the stacker. Then, after a predefined time has elapsed, the rotation returns to the high-speed mode to prepare for the next conveyance of paper.

When the last sheet of the set has passed through and the stapling operation has started, M713 stops.

When M708 (paper exit) has closed the opening, the rotation of M713 changes to a high speed to prepare for the conveyance of the paper to be stapled.

b. Staple mode (for sheets of paper sizes A4, B5, and 8.5 x 11 = with by-pass feature)

(1) Sheets of the first set

The sheets of the first set are processed in the same way as in the staple mode described above (for sheets of all paper sizes except A4, B5, and 8.5 x 11 = without by-pass feature).

(2) First sheets of the second and subsequent sets

When PS705 (stacker entrance) has detected the rear end of the last sheet of the first set, and a predefined time period has elapsed, M713 (stacker entrance) stops. This action ensures that the stapling of the first set completes before the sheets of the second set are fed to the stacker section (the first sheet waits on the by-pass channel).

- (3) Second sheets of the second and subsequent sets

When PS704 (FNS entrance) has detected the trailing edge of the second sheet of the second (and subsequent sets), and a predefined time period has elapsed, M713 (stacker entrance) rotates as a high speed. This action allows the first and second sheets to be conveyed to the stacker section at the same time.

- (4) Third and subsequent sheets of the second and subsequent sets

The third and subsequent sheets of the second (and subsequent sets) are conveyed to the stacker in the same manner as the sheets of the first set.

c. Folding and stitch-and- folding modes

The FNS operation signal from the main body lets M713 (stacker entrance) start to rotate at a high-speed.

When PS705 (stacker entrance) has detected the rear end of the paper, the rotation speed of M713 changes to low, conveying the paper slowly to the stacker. Then, after a predefined time has elapsed, the rotation returns to the high-speed mode to prepare for the next conveyance of paper.

When the last sheet of the set has been aligned, M713 stops.

When PS725 (folding paper exit) has detected the rear end of the set, M713 (stacker entrance) returns to its high-speed rotation mode to prepare for the next paper conveyance.

d. Three-folding mode

The FNS operation signal from the main body lets M713 (stacker entrance) start to rotate at a high-speed.

When PS705 (stacker entrance) has detected the trailing edge of the paper, the rotation speed of M713 changes to low, conveying the paper slowly to the stacker. Then, after a predefined time has elapsed, the rotation returns to the high-speed mode to prepare for the next conveyance of paper.

When the last sheet of the set has been aligned and the booklet stopper has moved to the three-folding position, M713 stops.

When PS729 (folding full) has detected the trailing edge of the set, M713 (stacker entrance) returns to its high-speed rotation mode to prepare for the next paper conveyance.

2. Signals

a. FNS CB output signals

- (1) M713 CLK (FNS CB to RB)

Signal relating to the clock for controlling the rotation speed of M713

- (2) M713 RESET (FNS CB to RB)

Reset signal for M713

- (3) M713 CONT (FNS CB to RB)

Signal to activate or deactivate M713

[L]: M713 ON

[H]: M713 OFF

b. RB output signals

- (1) M713 DRV A, \bar{A} (RB to M713)

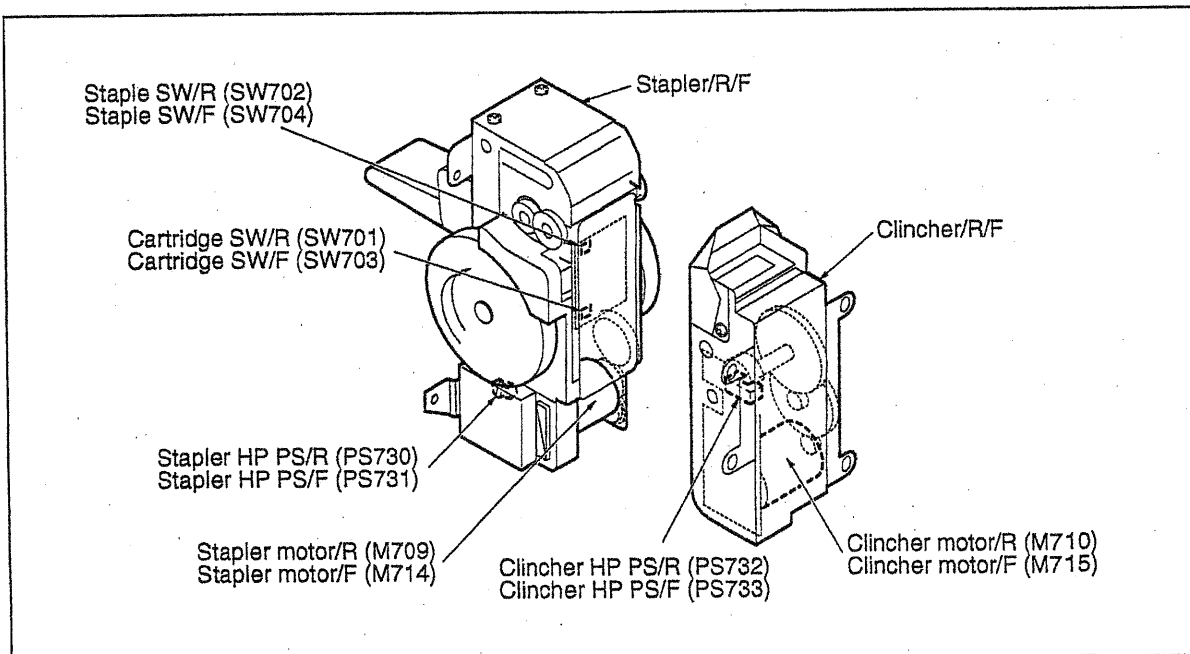
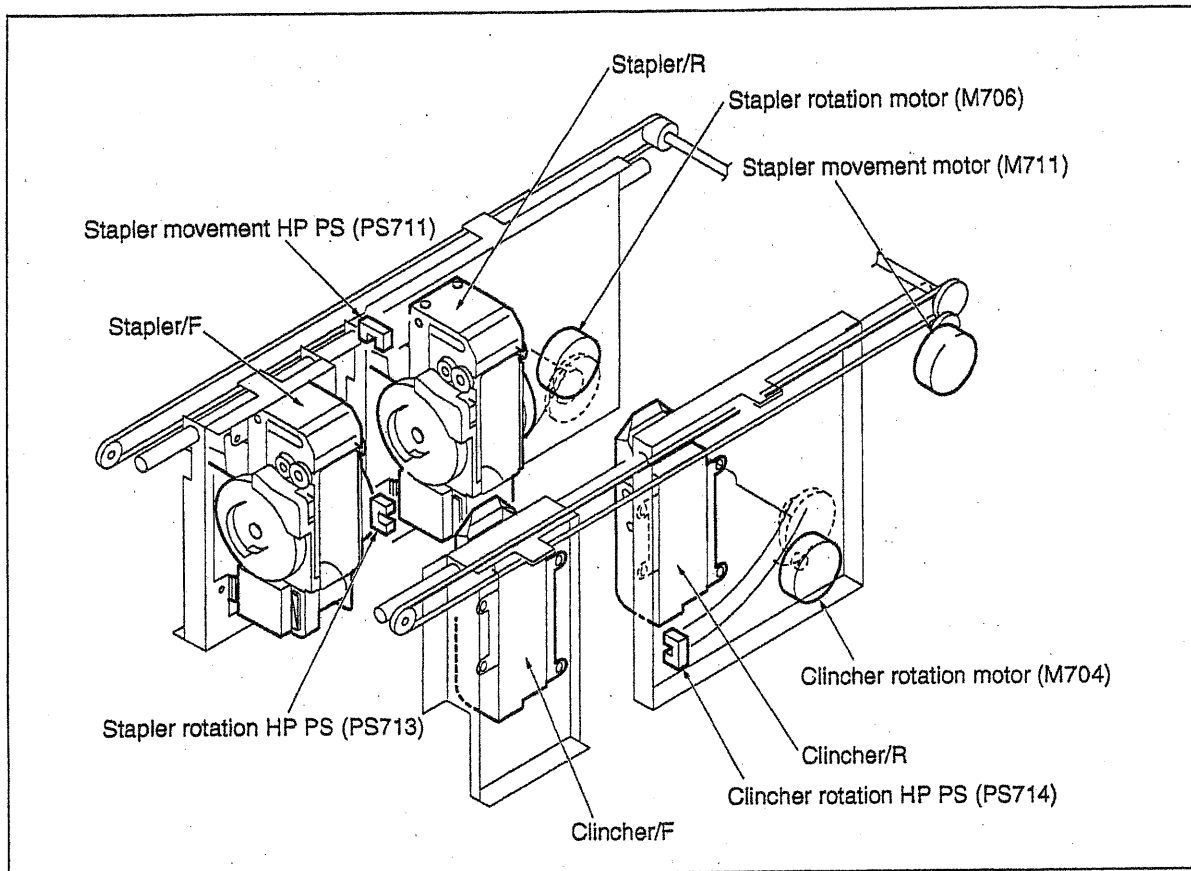
Pulse signal to drive/control the Phase A of M713

- (2) M713 DRV B, \bar{B} (RB to M713)

Pulse signal to drive/control the Phase B of M713

STAPLER SECTION

[1] Composition

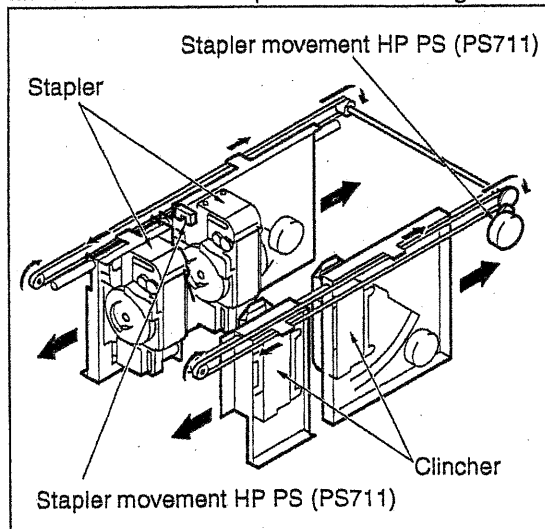


[2] Mechanism

Mechanism	Method
Stapler horizontal movement*1	Interlocked mechanism by stapler and clincher with stepping motor and timing belt
Stapler/clincher rotational movement*2	Stepping motor Ball locking mechanism
Stapling*3	Flat clinch

***1 Stapler horizontal movement**

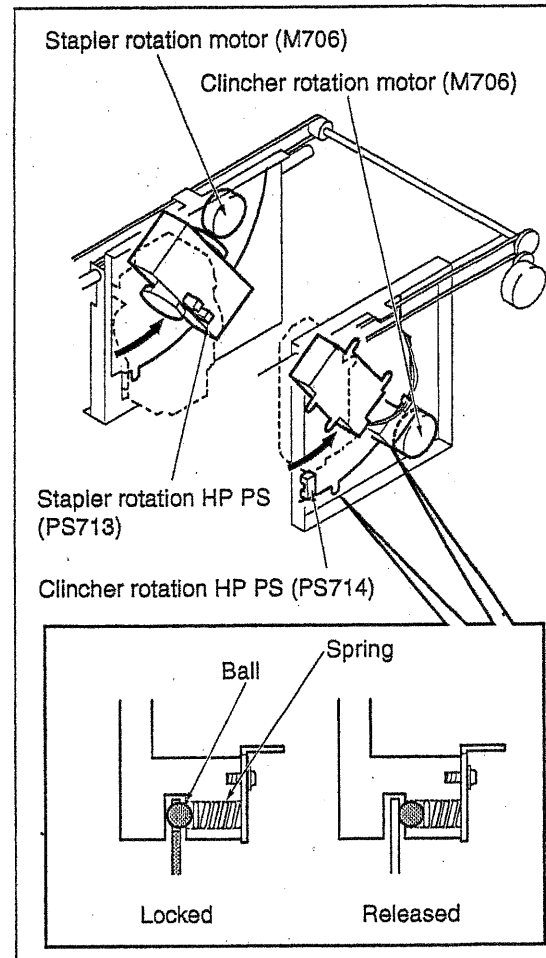
The stapler movement motor (M711) drives the timing belts. The stapler/R is attached to the upper part of one timing belt. Also the clincher/R is attached to the upper part of another timing belt. The stapler/F and the clincher/F are attached to the lower part of each timing belt.

***2 Stapler/clincher rotational movement**

The stapler/R and clincher/R are rotatable up to 45° for the single staple (rear).

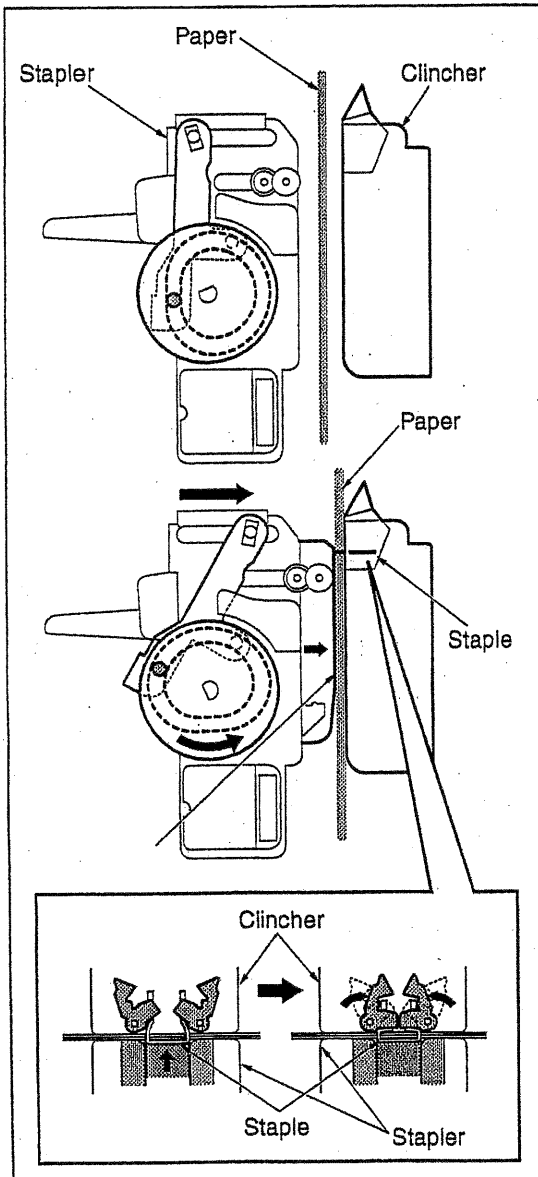
The stapler rotation motor (M706) rotates the stapler/R. The clincher rotation motor (M704) rotates the clincher/R.

The ball lock mechanism locks the stapler/clincher at angles of 0° or 45°.

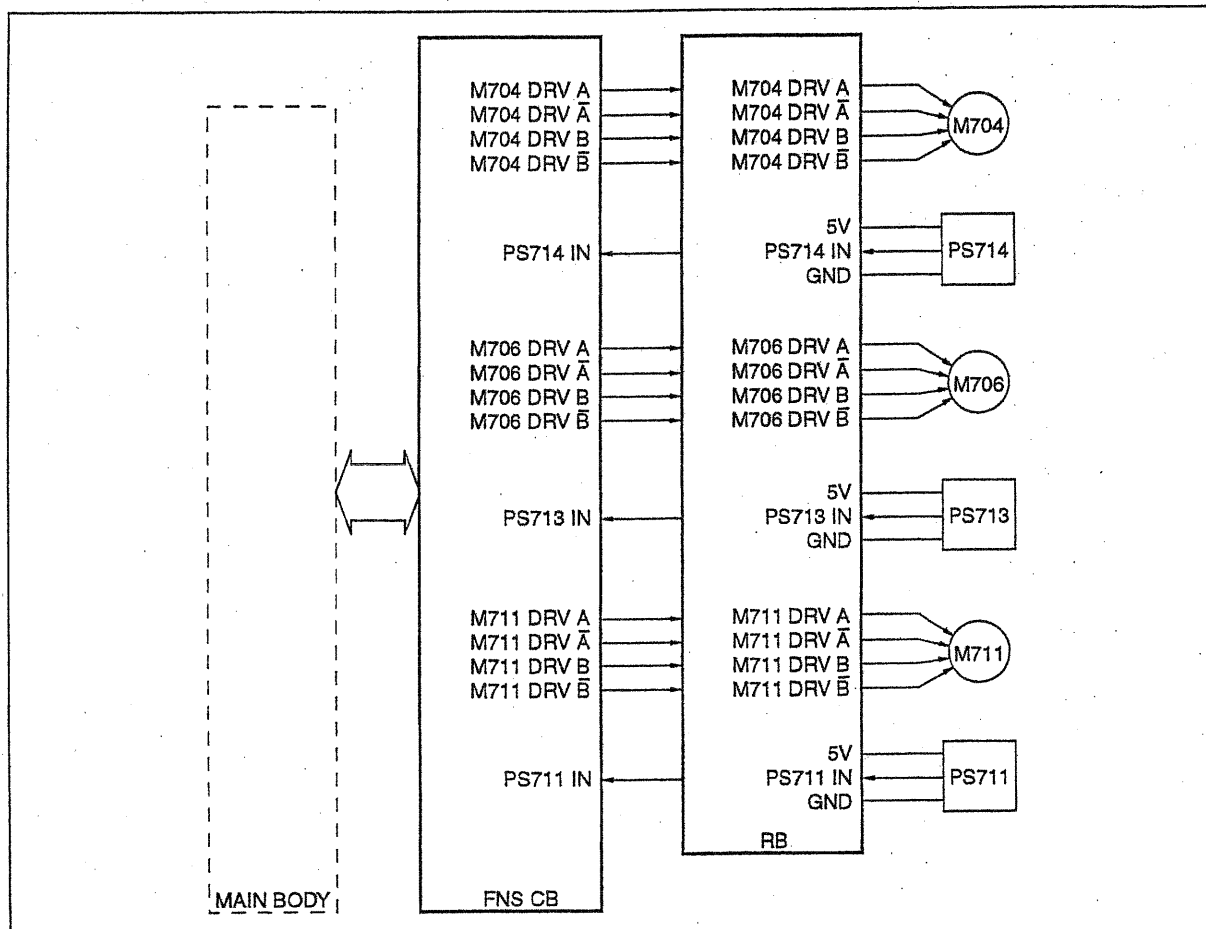


***3 Stapling**

For stapling, first the stapler motors /R and /F (M709 and M714) in the staplers /R and /F push out the paper pressure unit to press the paper respectively. Then the staples are pushed out. Finally, the staples are folded inside by the force of the clincher motors /R and /F (M710 and M715) mounted in the clinchers /R and /F respectively.



[3] Stapler Movement Control



The stapler/F and the stapler/R move horizontally in opposite directions each other. In addition, the stapler/R rotates up to 45° according to the current staple mode.

The horizontal movement of the staplers is performed by M711 (stapler movement), whereas the rotation is performed by M704 (clincher rotation) and M706 (staple rotation).

The FNS CB (FNS control board) controls the operations of M711, M704, and M706 through the RB (relay board).

The related signals are PS711 (stapler movement HP), PS713 (stapler rotation HP), and PS714 (clincher rotation HP).

1. Operation

a. Single staple (front)

The FNS operation signal from the main body activates M711 (stapler movement) to carry the staplers to extend the distance between the staplers and the clinchers, and then M711 stops at the appropriate positions.

When PS706 (main tray paper exit) has detected the last sheet and a predefined time period has elapsed, M711 is activated again to move the staplers to the home position, and M711 stops when PS711 (stapler movement HP) turns ON.

b. Single staple (rear, oblique)

The FNS operation signal from the main body activates M711 (stapler movement) to extend the distances between the two staples as well as the two clinchers. After a predefined time period has elapsed, M706 (stapler rotation) and M704 (clinchers rotation) start to rotate the stapler/R and the clincher/R respectively. When the staplers and clinchers are set in place, M704, M706, and M711 stop.

PS706 (main tray paper exit) turns ON by detecting the last paper, and after a predefined time has elapsed, M704 and M706 start to rotate the stapler/R and the clincher/R back to their home positions. The rotating actions of the stapler/R and the clincher/R stop when PS713 (stapler rotation HP) and PS714 (clinchers rotation HP) detect them respectively. At the same time, M711 starts moving the staplers to the home position. The operation of M711 stops when PS711 (stapler movement HP) turns ON.

c. Two staples

When two staples are used, the staplers and the clinchers stay in their home positions for the stapling operation.

2. Signals

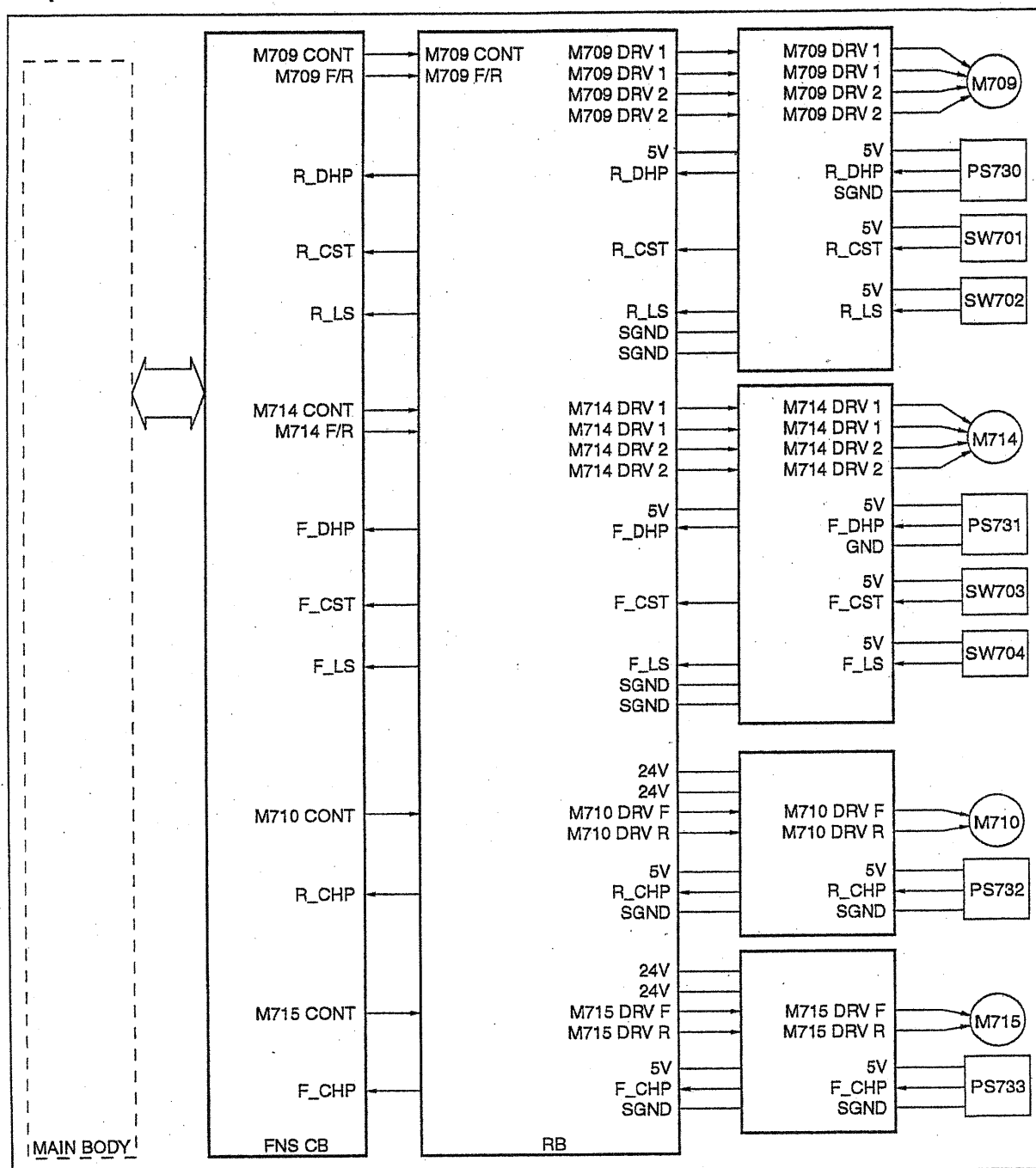
a. FNS CB Input signals

- (1) PS711 IN (PS711 to RB to FNS CB)
Signal indicating whether the staplers (/F and /R) are in the home position
[L]: Not in the home position
[H]: In the home position
- (2) PS713 IN (PS713 to RB to FNS CB)
Signal indicating whether the stapler/R is in the home position
[L]: Not in the home position
[H]: In the home position
- (3) PS714 IN (PS714 to RB to FNS CB)
Signal indicating whether the clincher/R is in the home position
[L]: Not in the home position
[H]: In the home position

b. FNS CB output signals

- (1) M704 DRV A, \bar{A} (FNSCB to RB to M704)
Pulse signal to drive/control the Phase A of M704
- (2) M704 DRV B, \bar{B} (FNSCB to RB to M704)
Pulse signal to drive/control the Phase B of M704
- (3) M706 DRV A, \bar{A} (FNSCB to RB to M706)
Pulse signal to drive/control the Phase A of M706
- (4) M706 DRV B, \bar{B} (FNSCB to RB to M706)
Pulse signal to drive/control the Phase B of M706
- (5) M711 DRV A, \bar{A} (FNSCB to RB to M711)
Pulse signal to drive/control the Phase A of M711
- (6) M711 DRV B, \bar{B} (FNSCB to RB to M711)
Pulse signal to drive/control the Phase B of M711

[4] Staple Control



The stapling operation is performed using four motors: M709 (stapler/R), M714 (stapler/F), M710 (clincher/R), and M715 (clincher/F).

The stapler pushes out the staple, which is bent by the clincher.

The FNS CB (FNS control board) controls the operations of the four motors: M709, M714, M710, and M715.

The related signals are PS730 (stapler HP PS/R), PS731 (stapler HP /F), PS732 (clincher HP /R), PS733 (clincher HP /F), SW701 (cartridge /R), SW703 (cartridge /F), SW702 (staple /R), and SW704 (staple /F).

1. Operation

a. Staple

Upon completion of the alignment operation by the alignment plates, M709 and M714 (stapler /R and /F) initiate the operation of pushing the needles into the paper. After a predefined time period has elapsed, M710 and M715 (clincher /R and /F) start bending of the needles. The stapling operation finishes when PS732 (clincher HP /R) and PS733 (clincher HP /F) as well as PS730 (stapler HP /R) and PS731 (stapler HP /F) detect the clinchers and the staplers at their home positions (OFF to ON).

b. Staple clogging detection

During the stapling action, if one or more signals from PS730, PS731 (stapler HP /R and /F), PS732 and/or PS733 (clincher HP /R and /F) do not return to ON within a predefined time period since they have changed to OFF, the machine recognizes that a needle clogging error has occurred. In this case, M709, M714 (stapler /R and /F), M710, and M715 (clincher /R and /F) initiate reverse rotations to return the staplers and the clinchers to their home positions.

c. Cartridge detection

SW701 and SW703 (cartridge /R and /F) in the staplers detect whether the cartridges are properly installed or not.

If the cartridge is not found or is considered to be improperly installed, an error message will be displayed on the LCD of the main body.

d. Staple detection control

When SW702 (staple /R) or SW704 (staple /F) detects the state of no needle remaining staples, an error message will be displayed on the LCD of the main body.

2. Signals

a. FNS CB Input signals

- (1) R_DHP (PS730 to RB to FNS CB)
Signal from the stapler HP PS/R, indicating whether the stapler/R is in the home position
[L]: In the home position
[H]: Not in the home position
- (2) F_DHP (PS731 to RB to FNS CB)
Signal from the stapler HP PS/F, indicating whether the stapler/F is in the home position
[L]: In the home position
[H]: Not in the home position
- (3) R_CHP (PS732 to RB to FNS CB)
Signal from the clincher HP PS/R, indicating whether the clincher/R is in the home position
[L]: In the home position
[H]: Not in the home position
- (4) F_CHP (PS733 to RB to FNS CB)
Signal from the clincher HP PS/F, indicating whether the clincher/F is in the home position
[L]: In the home position
[H]: Not in the home position
- (5) R_CST (SW701 to RB to FNS CB)
Signal from the cartridge SW/R, indicating whether the cartridge is properly installed
[L]: Properly installed
[H]: Not properly installed
- (6) R_LS (SW702 to RB to FNS CB)
Signal from the staple SW/R, indicating the remaining volume of needles
[L]: Sufficient staples
[H]: Out of staples
- (7) F_CST (SW703 to RB to FNS CB)
Signal from the cartridge SW/F, indicating whether the cartridge is properly installed
[L]: Properly installed
[H]: Not properly installed
- (8) F_LS (SW704 to RB to FNS CB)
Signal from the staple SW/F, indicating the remaining volume of staples.
[L]: Sufficient staples.
[H]: Out of staples.

b. FNS CB output signals

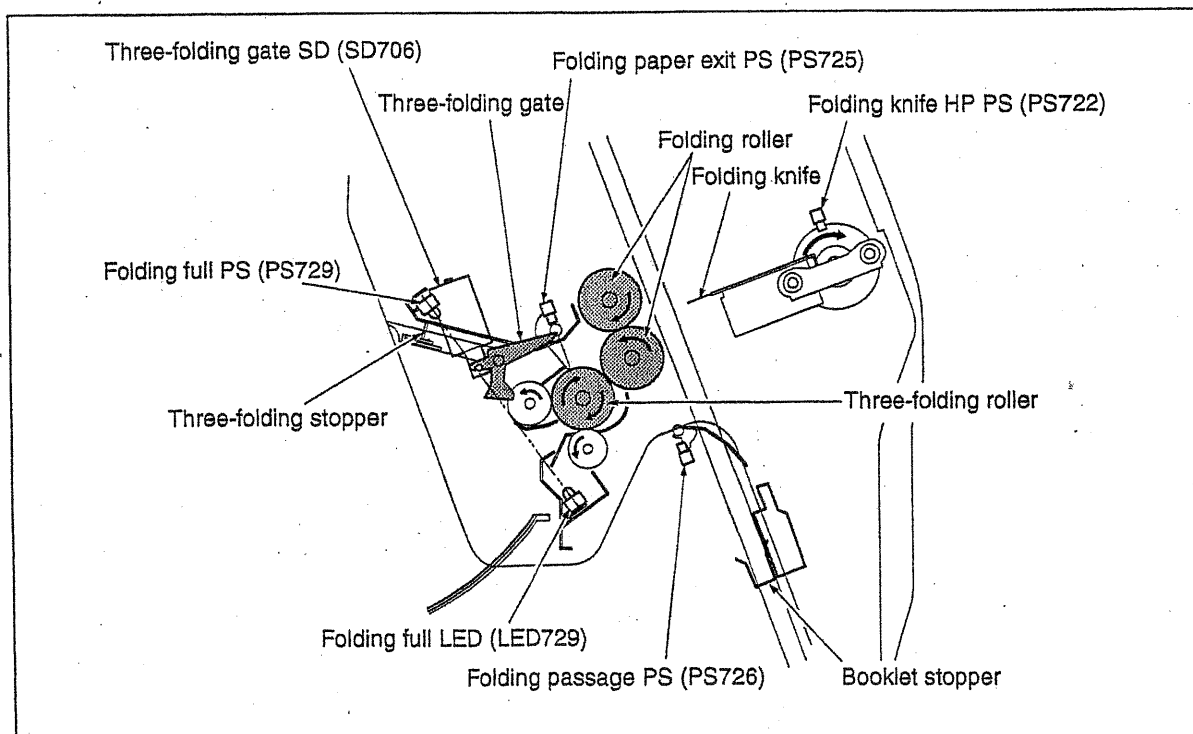
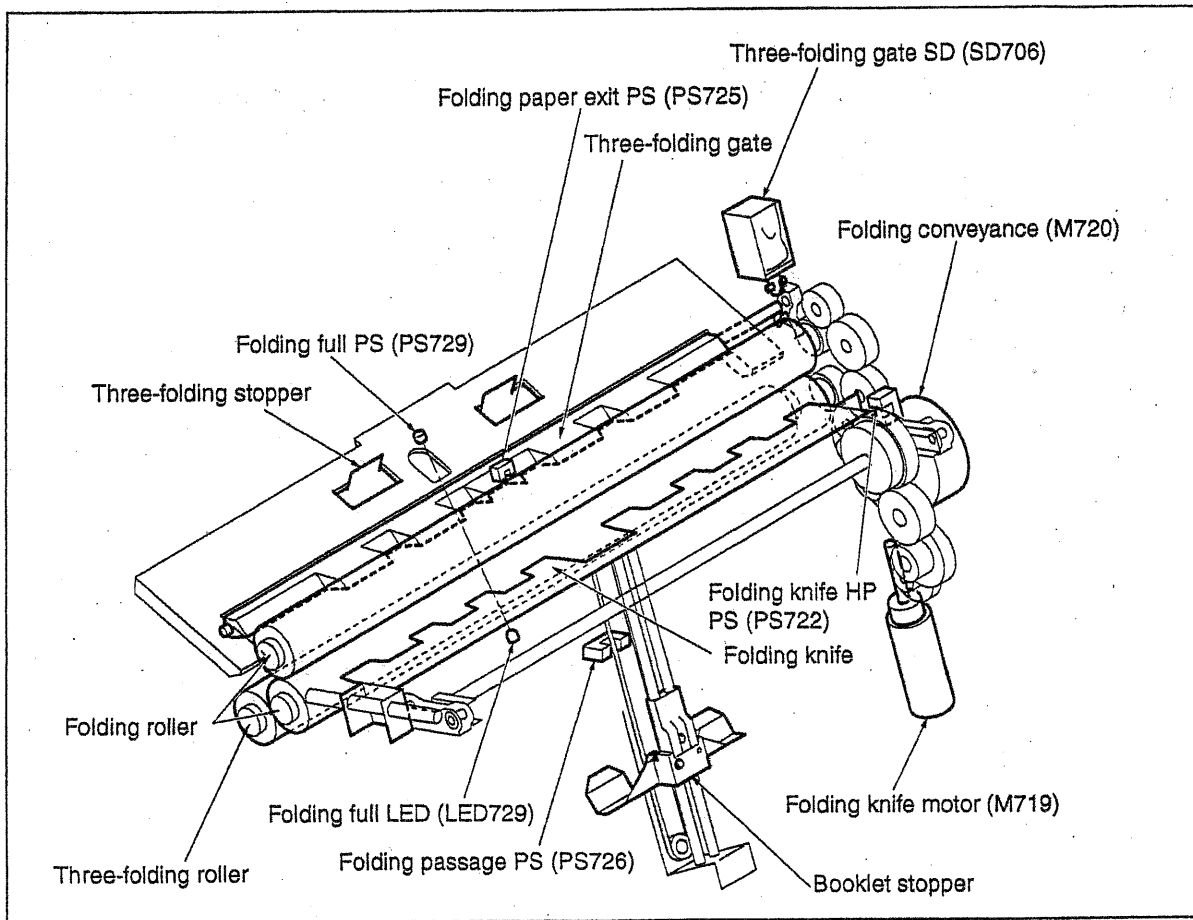
- (1) M709 CONT (FNS CB to RB)
Signal to activate or deactivate M709
[L]: M709 ON
[H]: M709 OFF
- (2) M709 F/R (FNS CB to RB)
Signal to control the rotation direction of M709
[L]: CW
[H]: CCW
- (3) M710 CONT (FNS CB to RB)
Signal to activate or deactivate M710
[L]: M710 ON
[H]: M710 OFF
- (4) M714 CONT (FNS CB to RB)
Signal to activate or deactivate M714
[L]: M714 ON
[H]: M714 OFF
- (5) M714 F/R (FNS CB to RB)
Signal to control the rotation direction of M714
[L]: CW
[H]: CCW
- (6) M715 CONT (FNS CB to RB)
Signal to activate or deactivate M715
[L]: M715 ON
[H]: M715 OFF

c. RB output signals

- (1) M709 DRV 1 (RB to M709)
Pulse signal to drive/control the Phase A of M709
- (2) M709 DRV 2 (RB to M709)
Pulse signal to drive/control the Phase B of M709
- (3) M710 F (RB to M710)
Pulse signal to start or stop the normal rotation of M710
- (4) M710 R (RB to M710)
Pulse signal to start or stop the reverse rotation of M710
- (5) M714 DRV 1 (RB to M714)
Pulse signal to drive/control the Phase A of M714
- (6) M714 DRV 2 (RB to M714)
Pulse signal to drive/control the Phase B of M714
- (7) M715 F (RB to M715)
Pulse signal to start or stop the normal rotation of M715
- (8) M715 R (RB to M715)
Pulse signal to start or stop the reverse rotation of M715

FOLDING/THREE-FOLDING SECTION (FS-210 ONLY)

[1] Composition



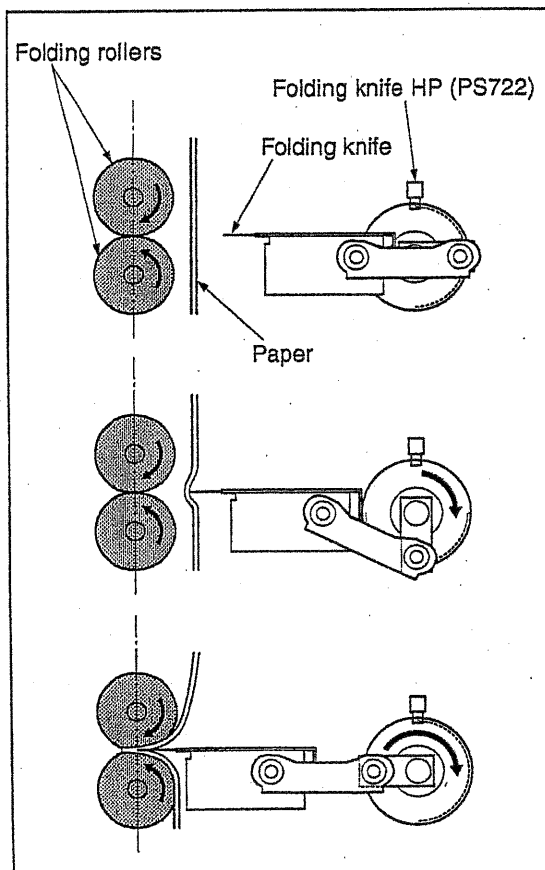
[2] Mechanism

Mechanism	Method
Folding/Three-folding (first folding)*1	Folding knife and roller folding
Three-folding (second folding)*2	Roller folding
Booklet full detection*3	Translucent sensor

*1 Folding/Three-folding (first folding)

The folding knife motor (M719) rotates the crank axle 180°, which protrudes the folding knife toward the contact surface of two folding rollers. The two folding rollers rotate to drag and fold the sheet(s) of paper.

The location at which the paper is folded will be controlled by the position of the booklet stopper.

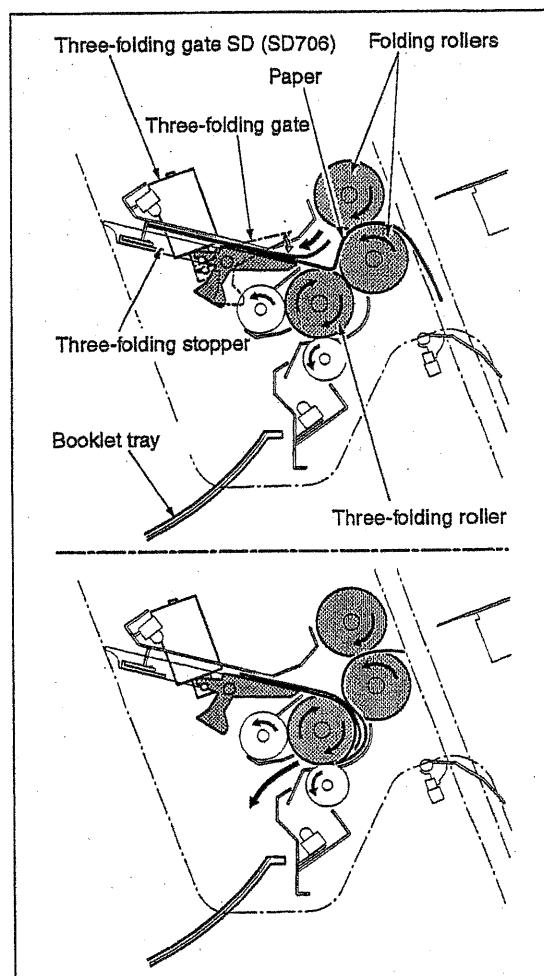


*2 Three-folding (second folding)

The three-folding gate SD (SD706) changes the position of the three-folding gate so that the paper carried from the folding rollers will be conveyed toward the three-folding stopper.

After the paper has been stopped by the three-folding stopper, it is bent along the surfaces of the upper folding roller and the three-folding roller. Then the paper is carried through the contact surface of the two rollers, which completes the second folding operation.

The location for the second folding is determined by the position of the three-folding stopper.

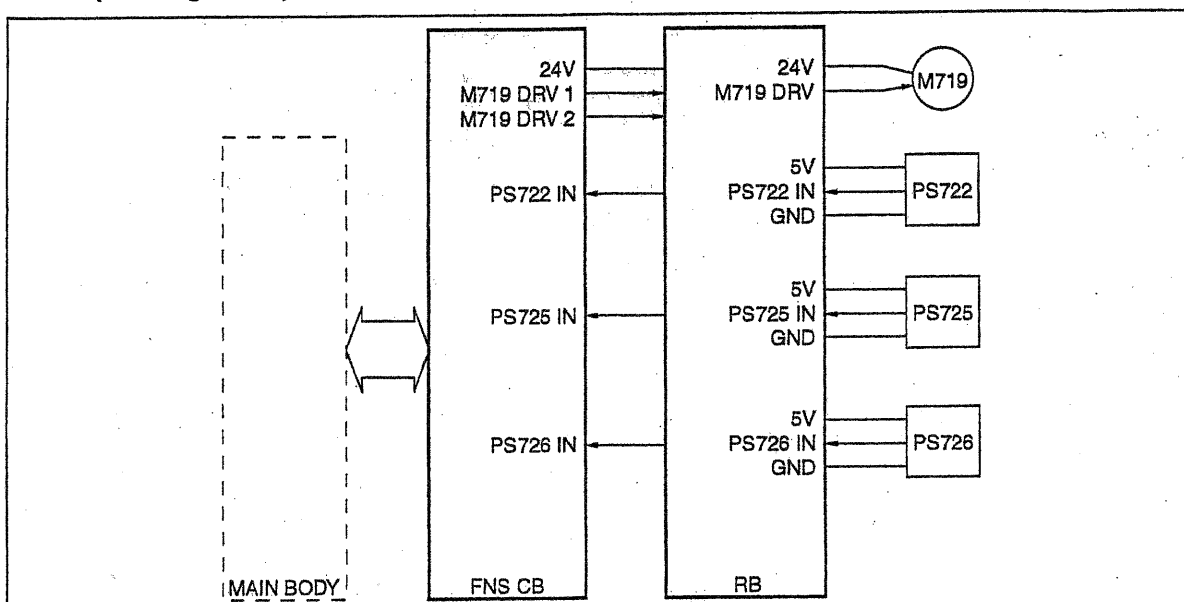


*3 Booklet full detection

The folding full LED (LES729) and the folding full PS (PS729), which consist of a pair of translucent sensors, detect the booklet tray full condition.

If a predefined time period has elapsed since the paper shielded the sensor light, a booklet full condition is reported.

[3] M719 (folding knife) Control



M719 (folding knife) drives the folding knife. This knife is used when the mode is folding, stitch-and-fold, or three-folding.

The FNS CB (FNS control board) controls the operation of M719.

The related signals are PS722 (folding knife HP), PS725 (folding paper exit), and PS726 (folding passage).

1. Operation

PS726 (folding passage) detects the paper and the booklet stopper stops at the folding position. After a predefined time period has elapsed since then, M719 (folding knife) is activated, letting the folding knife protrude toward the paper.

The operation of PS726 ends when the folding knife returns and the signal from PS722 (folding knife HP) changes from H to L.

a. FNS CB input signals

- (1) PS722 IN (PS722 to RB to FNS CB)

Signal indicating whether the folding knife is in the home position

[L]: In the home position

[H]: Not in the home position

- (2) PS726 IN (PS726 to RB to FNS CB)

Signal indicating whether the paper has passed through the folding passage sensor.

[L]: Paper exists.

[H]: Paper does not exist.

b. FNS CB output signals

- (1) M719 DRV 1 and 2 (FNS CB to RB)

Signal to activate or deactivate M719

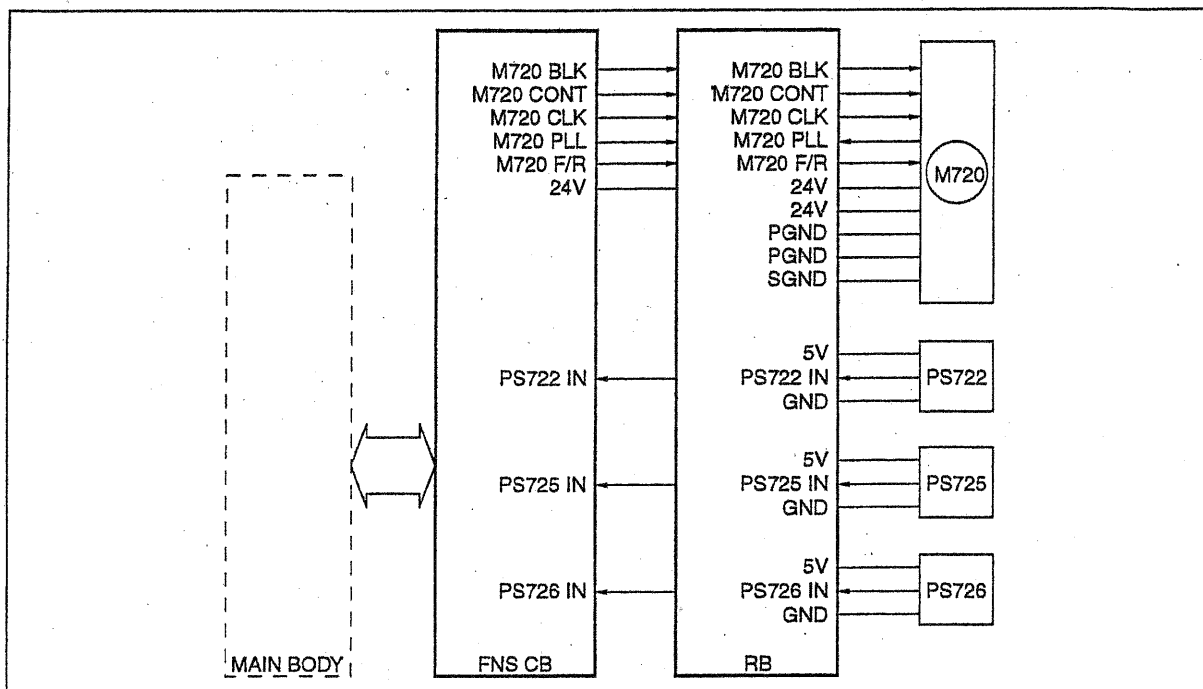
	DRV1	DRV2
Normal rotation	H	L
Reverse rotation	L	H
Halt	L	L

c. RB output signals

- (1) M719 DRV (RB to M719)

Signal to drive/control M709

[4] M720 (folding conveyance) Control



M720 (folding conveyance) operates the folding roller(s), which rotates the three-folding roller. The FNS CB (FNS control board) controls the operation of M720.

The related signals are PS722 (folding knife HP), PS725 (folding paper exit), and PS726 (folding passage).

1. Operation

PS726 (folding passage) detects the paper and the booklet stopper stops at the folding position. After a predefined time period has elapsed since then, M719 (folding knife) is activated. When PS722 (folding knife HP) detects the paper, M720 (folding conveyance) is activated to fold the paper with the folding roller(s) and the three-folding roller. The folded paper is delivered to the booklet tray.

When PS725 (folding paper exit) has detected the trailing edge of the paper and a predefined time period has elapsed since then, M720 stops.

2. Signals

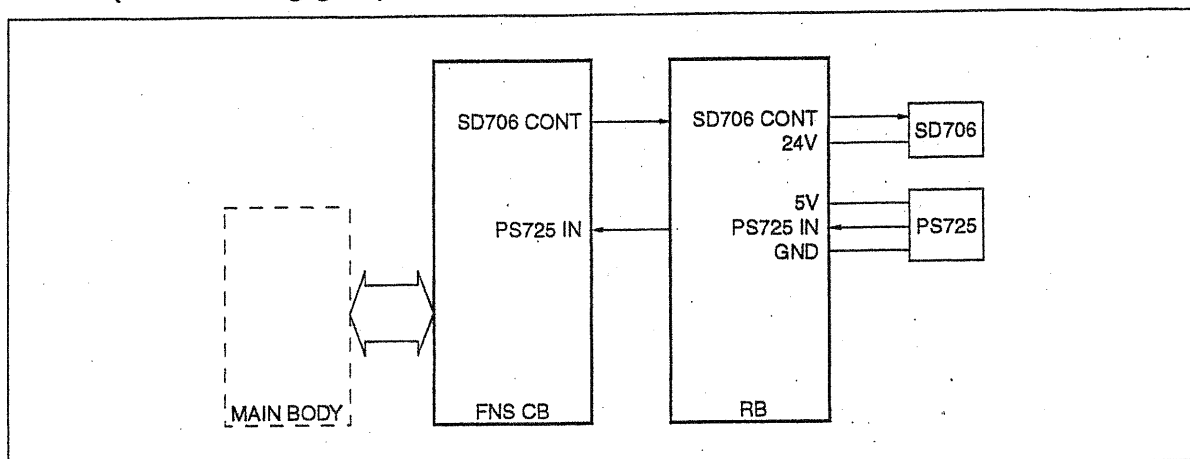
a. FNS CB input signals

- (1) M720 PLL (M720 to RB to FNS CB)
Signal for monitoring the rotation of M720
[L]: M720 is rotating as a specified speed
[H]: M720 is not rotating as a specified speed

b. FNS CB output signals

- (1) M720 BLK (FNS CB to RB to M720)
Signal to apply braking to the M720
[L]: Braking ON
[H]: Braking OFF
- (2) M720 CONT (FNS CB to RB to M720)
Signal to drive/control M720
[L]: M720 ON
[H]: M720 OFF
- (3) M720 CLK (FNS CB to RB to M720)
Signal relating to the clock for controlling the rotation speed of M720
- (4) M720 F/R (FNS CB to RB to M720)
Signal to control the rotation direction of M720
[L]: CW
[H]: CCW

[5] SD706 (three-folding gate) Control



SD706 (three-folding gate) operates the three-folding gate, which provides the appropriate paper passage for either one of the three operations: folding, stitch-and-fold, or three-folding. The FNS CB (FNS control board) controls the operation of SD706.

The related signal is PS725 (folding exit).

1. Operation

When the booklet stopper stops at the three-folding position, SD706 (three-folding gate) is activated. This operates the three-folding gate, providing the paper passage that leads to the three-folding stopper.

When PS725 (folding exit) has detected the trailing edge of the paper and a predefined time period has elapsed since then, SD706 is deactivated.

2. Signals

a. FNS CB output signals

- (1) SD706 CONT (FNS CB to RB to SD706)
Signal to activate/deactivate SD706
[L]: SD706 ON
[H]: SD706 OFF

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DISASSEMBLY/ASSEMBLY

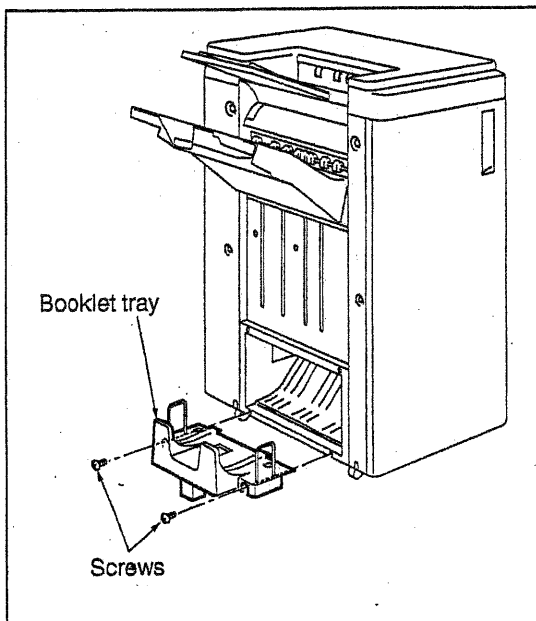
Note the following points when you detach the finisher from the main body:

1. Be sure the power cord has been unplugged from the wall outlet.
2. The disassembled parts must be reassembled following the disassembly procedure in reverse unless otherwise specified.
3. Care should be taken not to lose small parts. Care should also be taken not to install small parts in wrong places.
4. Do not operate the machine before installing all the disassembled parts completely.
5. Removal of some screws is prohibited in this section. Never loosen them.
6. For FS-210, the booklet tray must be removed prior to starting the service. If the unit is moved with the booklet tray attached, the mounting section may be damaged.

EXTERNAL SECTION

[1] Removing and Reinstalling the Booklet Tray (FS-210 only)

- (1) Remove two screws to detach the booklet tray.

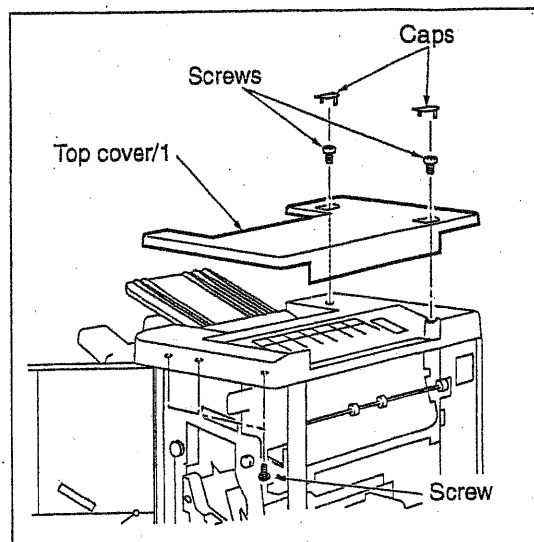


- (2) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Top Cover/1

a. Procedure

- (1) Remove the two caps.
(2) Open the front door, and remove five screws to detach the top cover/1.



- (3) Reinstall the above parts following the removal steps in reverse.

[3] Removing and Reinstalling the Top Cover/2

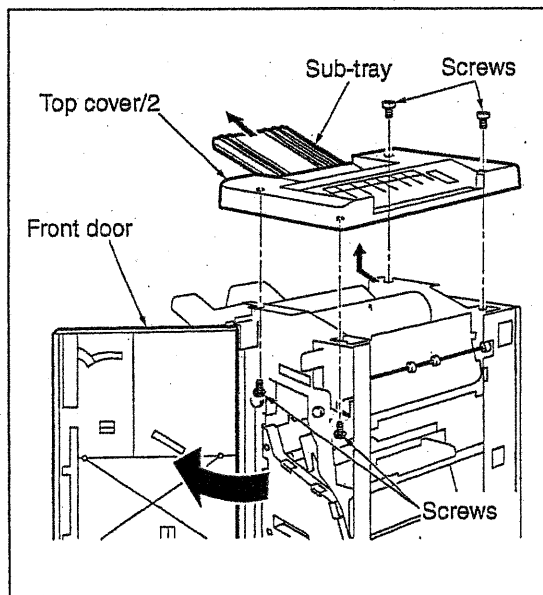
⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

CAUTION: Uninstall the PI (optional) if installed.

a. Procedure

- (1) Remove the top cover/1.
- (2) Open the front door.
- (3) Remove four screws, and pull out the sub-tray. Then remove the top cover/2.



- (4) Reinstall the above parts following the removal steps in reverse.

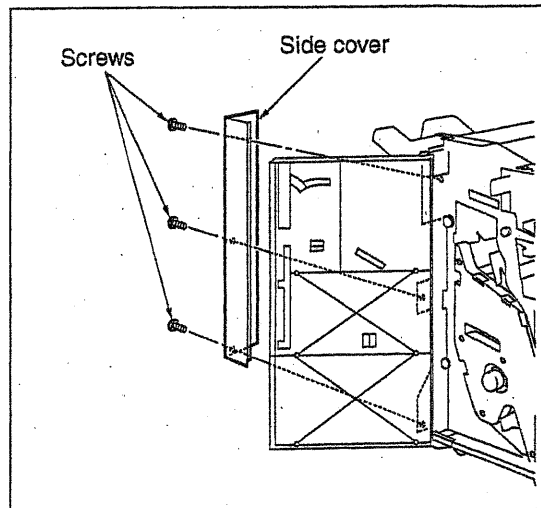
[4] Removing and Reinstalling the Side Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Open the front door.
- (2) Remove three screws, and remove the side cover.



- (3) Reinstall the above parts following the removal steps in reverse.

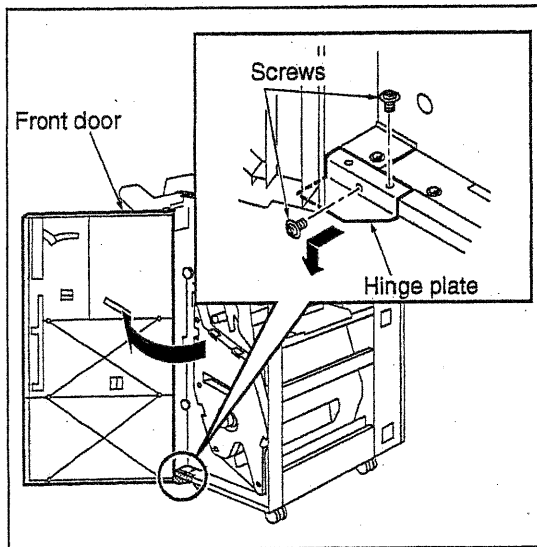
[5] Removing and Reinstalling the Front Door

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Open the front door.
- (2) Remove the two mounting screws holding the hinge plate at the bottom, and remove the front door.



- (3) Reinstall the above parts following the removal steps in reverse.

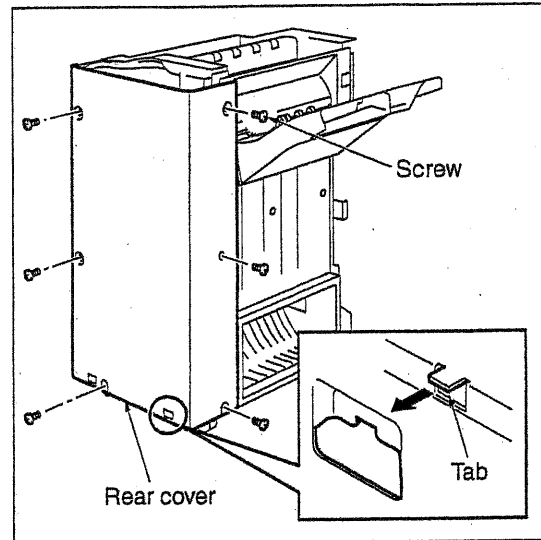
[6] Removing and Reinstalling the Rear Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Remove the six mounting screws, and detach the rear cover.



- (2) Reinstall the above parts following the removal steps in reverse.

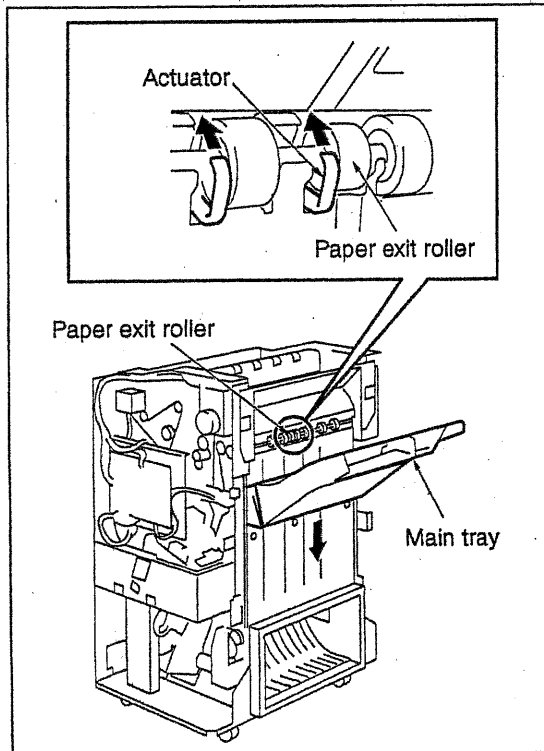
[7] Removing and Reinstalling the Main Tray

⚠ Caution:

After you have lowered the main tray, be sure to unplug the power cord of the main body from the power outlet.

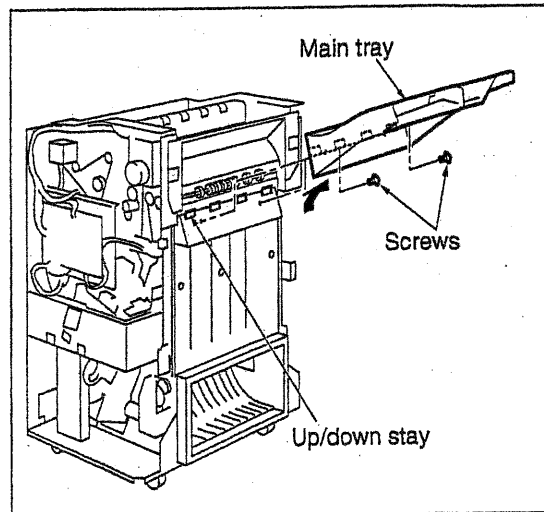
a. Procedure

- (1) Push up the actuator of the main tray exit with your finger to lower the main tray.



- (2) Turn the main body's main power switch (SW1) OFF, and unplug the power cord from the power outlet.

- (3) Remove the two mounting screws.
- (4) Lift the main tray and detach it from the hooks of the up/down stay.



- (5) Reinstall the above parts following the removal steps in reverse.

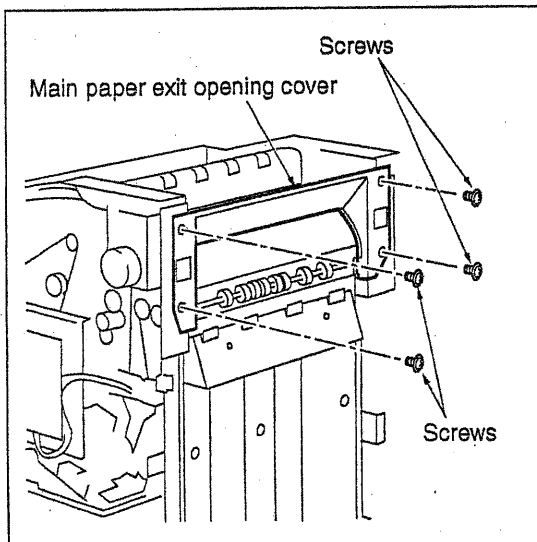
[8] Removing and Reinstalling the Main Paper Exit Opening Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Remove the following parts:
 - Top cover/1 or optional PI (if installed)
 - Top cover/2
 - Side cover
 - Rear cover
 - Main tray
- (2) Remove four screws and detach the main paper exit opening cover.

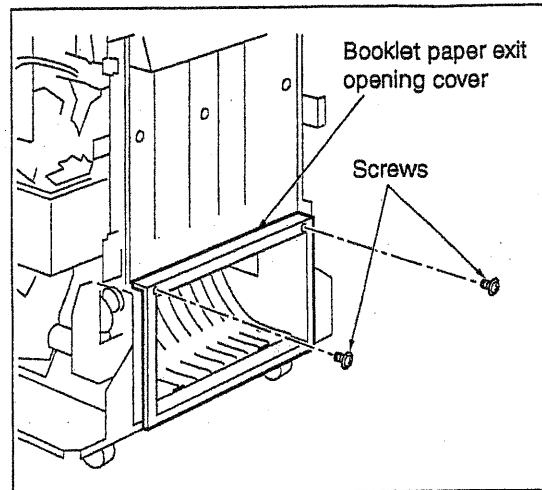


- (3) Reinstall the above parts following the removal steps in reverse.

[9] Removing and Reinstalling the Booklet Paper Exit Opening Cover (FS-210 ONLY)

a. Procedure

- (1) Remove the booklet tray.
- (2) Remove two screws and detach the booklet paper exit opening cover.



- (3) Reinstall the above parts following the removal steps in reverse.

CONVEYANCE SECTION

[1] Replacing the Paper Exit Roller (Sponge Roller)

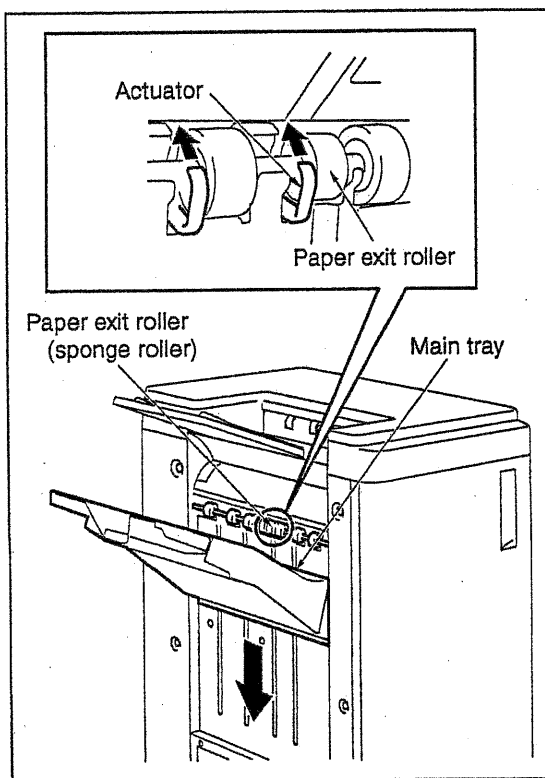
⚠ Caution:

After you have lowered the main tray, be sure to unplug the power cord of the main body from the power outlet.

CAUTION: When replacing the sponge rollers, all of the 5 pairs (10 components) must be replaced.

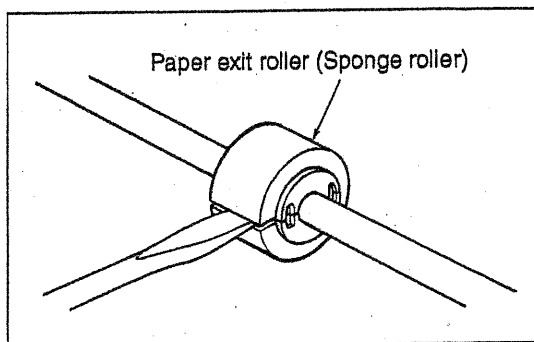
a. Procedure

- (1) Push up the actuator of the main tray exit with your finger to lower the main tray.

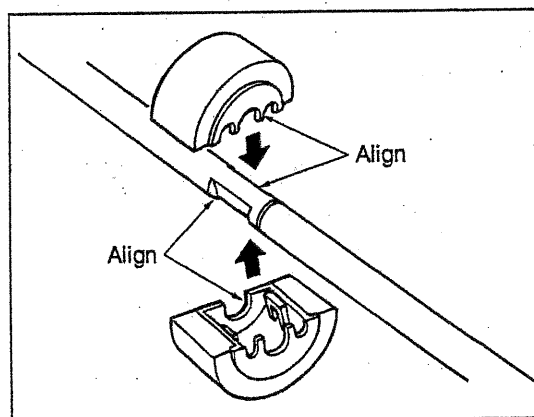


- (2) Turn the main body's main power switch (SW1) OFF, and unplug the power cord from the power outlet.

- (3) Insert the end of the blade screwdriver into the slot in the sponge roller, and twist the screwdriver to pry apart.



- (4) Place the two components of a new sponge roller around the roller shaft so that the tabs of the components are aligned with the dents on the shaft. Press the components together firmly until you hear the "click" sound.



- (5) To reattach the sponge roller shaft, perform the same procedure in reverse order.

[2] Replacing the Intermediate Conveyance Roller (Sponge Roller)

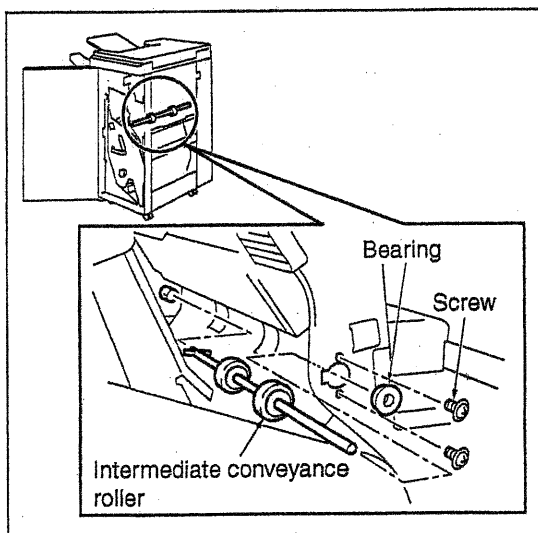
⚠ Caution:

Make sure that the power cord of the main tray is unplugged from the power outlet.

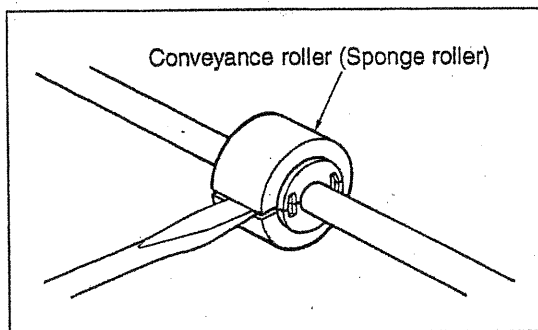
CAUTION: When replacing the sponge rollers, all of the 2 pairs (4 components) must be replaced.

a. Procedure

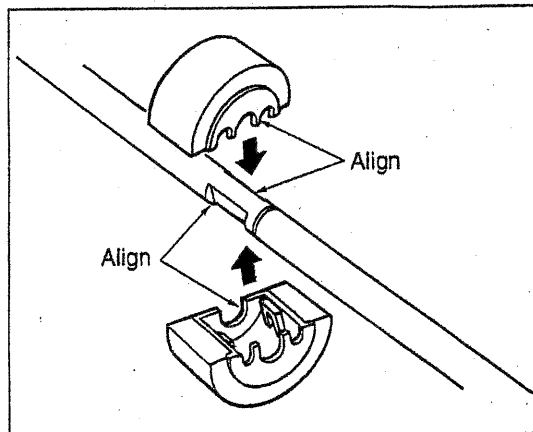
- (1) Open the front door.
- (2) Remove two screws and a bearing, and detach the intermediate conveyance rollers.



- (3) Insert the end of the blade screwdriver into the slot in the sponge roller, and twist the screwdriver to pry apart.



- (4) Place the two components of a new sponge roller around the roller shaft so that the tabs of the components are aligned with the dents on the shaft. Press the components together firmly until you hear the "click" sound.



- (5) To reattach the sponge roller shaft, perform the same procedure in reverse order.

CAUTION: When reinstalling the shaft, make sure that the pin on the far end of the shaft is placed properly in the slot.

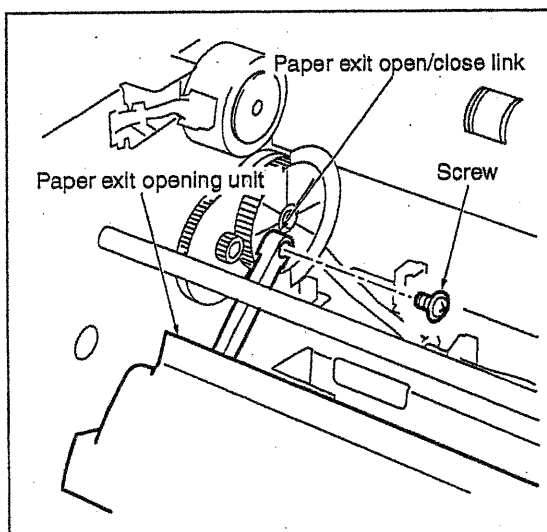
[3] Removing and Reinstalling the Paper Exit Opening Unit

⚠ Caution:

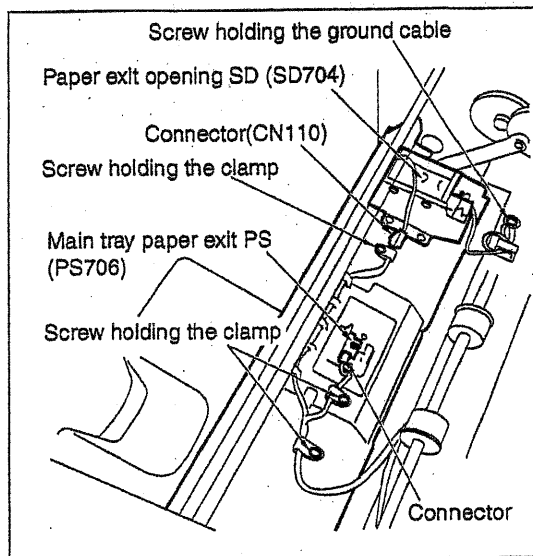
Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

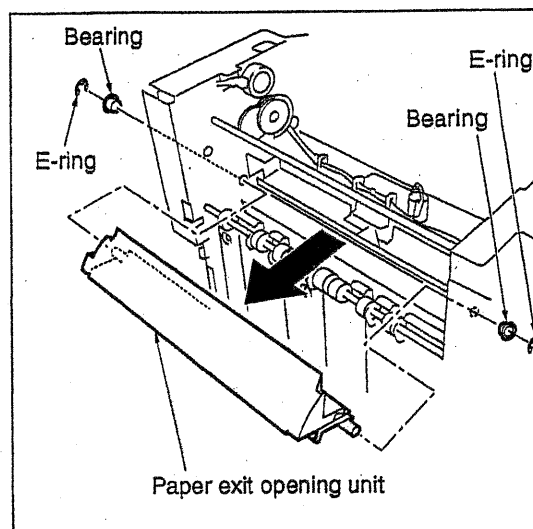
- (1) Remove the following parts:
 - Top cover/1 or optional PI (if installed)
 - Top cover/2
 - Side cover
 - Rear cover
 - Main tray
 - Main paper exit opening cover
- (2) Remove a mounting screw on the paper exit open/close link.



- (3) Remove three screws holding the clamps, one screw holding the ground. Also remove the connector (CN110) for the paper exit opening SD (SD704) and the main tray paper exit PS (PS706).



- (4) Remove the two E-rings and the two shaft holders (at the front and rear side). Remove the paper exit opening unit.



- (5) Reinstall the above parts following the removal steps in reverse.

MAIN TRAY SECTION

[1] Replacing the Tray Up/down Motor (M703)

⚠ Caution:

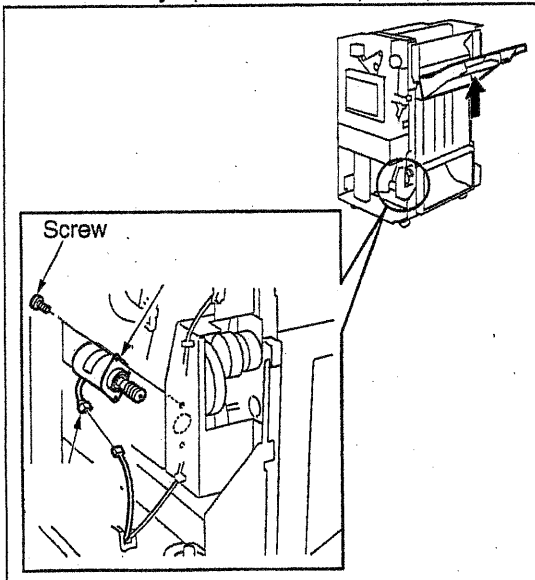
Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

When removing the tray up/down motor, be sure to hold the main tray to prevent it from falling.

a. Procedure

- (1) Remove the rear cover.
- (2) Remove the connector. Remove two mounting screws while holding the main tray, and then detach the tray up/down motor (M703).



- (3) Reinstall the above parts following the removal steps in reverse.

[2] Replacing the Up/Down Wire

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

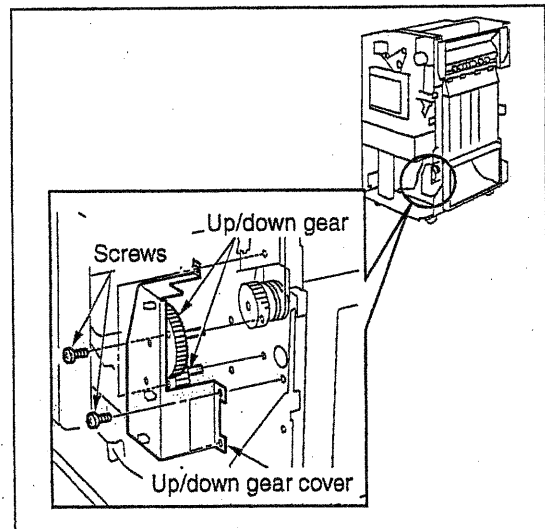
When removing the tray up/down motor, be sure to hold the main tray to prevent it from falling.

CAUTION1: The wire replacing procedure described below is of the rear side. For the front side, the design as well as the winding direction of the wire is symmetrical.

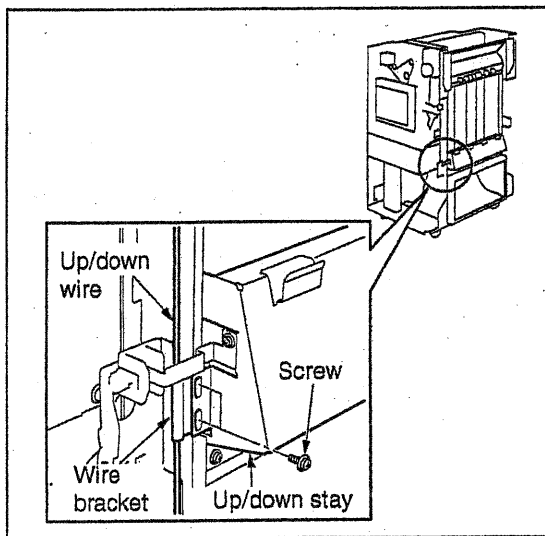
CAUTION2: "F" is impressed on the front side surface of the wire bracket. Also "R" is impressed on the rear side surface. Be sure of the direction when installing.

a. Procedure

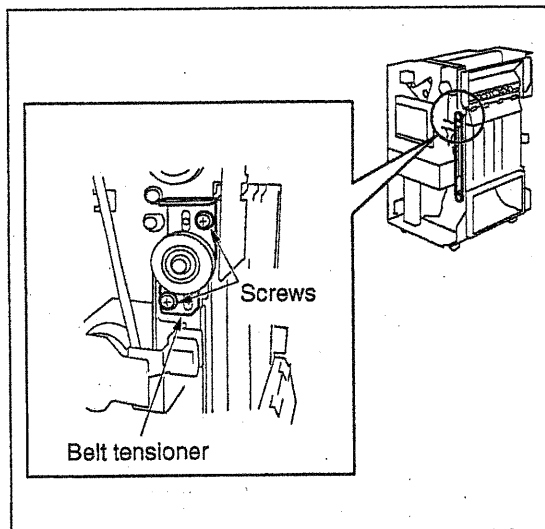
- (1) Remove the following parts:
 - Side cover
 - Front door
 - Rear cover
 - Tray up/down motor (M703)
 - Main tray
- (2) Remove five mounting screws. Remove the up/down gear cover and the gear.



- (3) Remove two screws. Detach the wire bracket on the rear from the up/down stay.

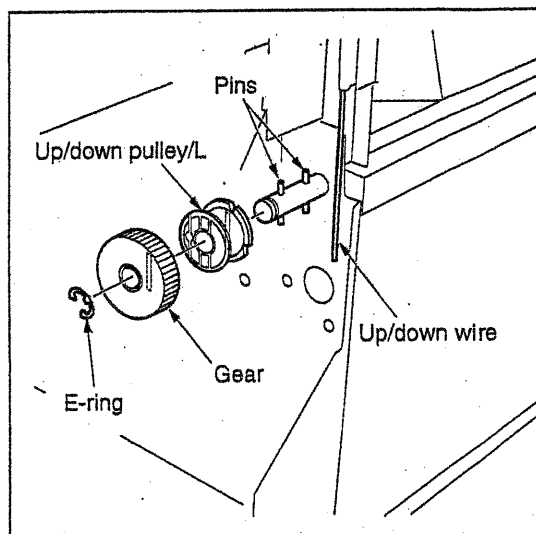


- (4) Loosen the two screws on the belt tensioner.



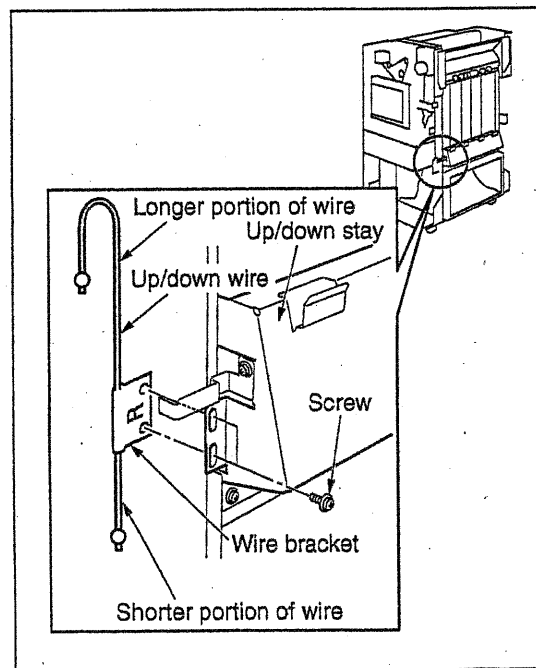
- (5) Remove the E-ring and the up/down pulley/L. Then remove the up/down wire.

CAUTION: When you remove the up/down pulley, the pin falls. Be careful not to lose the pin.

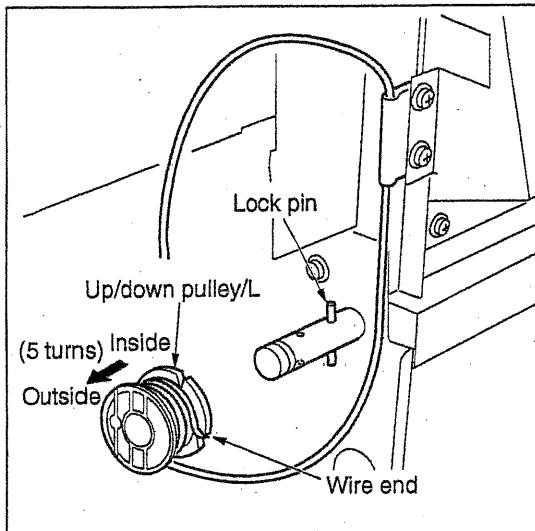


- (6) Temporarily attach the wire bracket to the up/down stay with two screws.

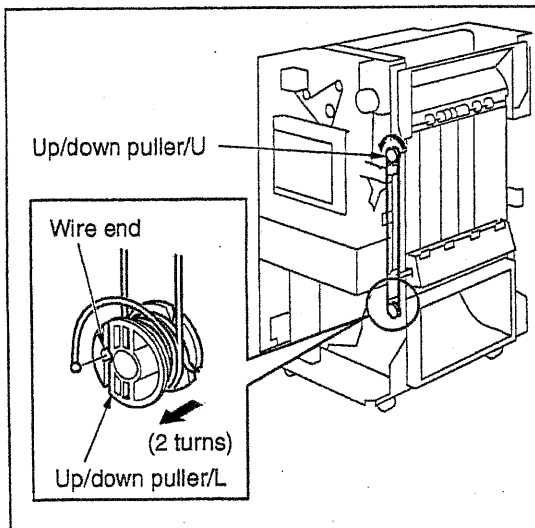
CAUTION: The wire bracket must be installed with the longer portion of the wire facing upward.



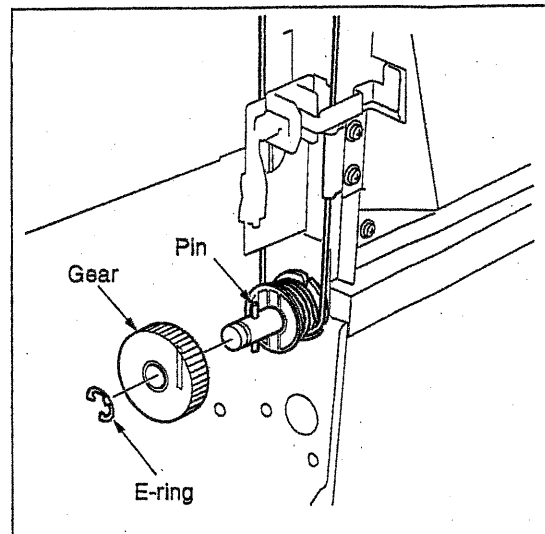
- (7) Secure the end of a new up/down wire to the wire end of the up/down pulley/L. Wind the wire tightly around the up/down pulley/L approx. 5 turns from inside to outside. Insert the pulley/L into the shaft so that the slots on the pulley/L align with the lock pin on the shaft.



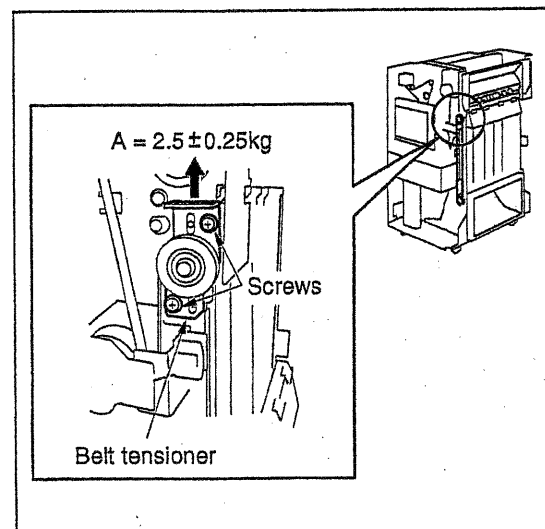
- (8) Hook the up/down wire around the up/down pulley/U. Wind the wire tightly around the up/down pulley/L 2 turns from inside to outside. Secure the end of the wire to another wire end (outside) of the up/down pulley/L.



- (9) Insert the pin into the hole in the shaft. Put the gear into the shaft and fix the gear with the E-ring.

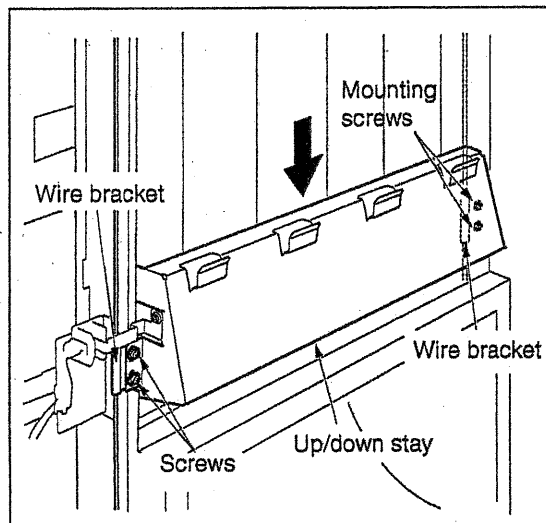


- (10) Use a tension gauge or a spring balance to pull the belt tensioner upward at a specified level of force, A, and tighten the securing screws. Specified force: $A = 2.5 \pm 0.25\text{kg}$



- (11) Loosen the two screws securing the front wire bracket. Adjust the height of the front wire bracket to level the up/down stay. Tighten the four mounting screws on the wire brackets (front and rear).

CAUTION: Make sure that the up/down stay is level. If the stay is mounted aslant, an unnecessary load is put on the tray up/down motor (M703) or the gear, which may result in damage to these components.



- (12) Reinstall the above parts following the removal steps in reverse.

STACKER SECTION

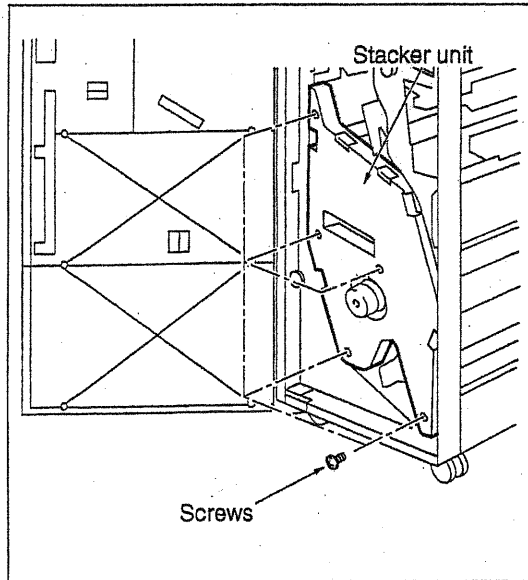
[1] Removing and Reinstalling the Stacker Unit Cover

⚠ Caution:

Make sure that the power cord of the main body is unplugged from the power outlet.

a. Procedure

- (1) Open the front door.
- (2) Remove five screws to detach the stacker unit cover.



- (3) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Stacker Unit

⚠ Caution:

We recommend that at least two people perform this service.

⚠ Caution:

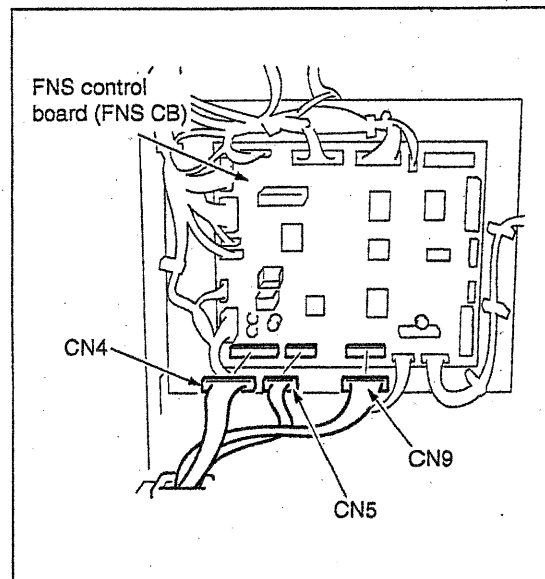
Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

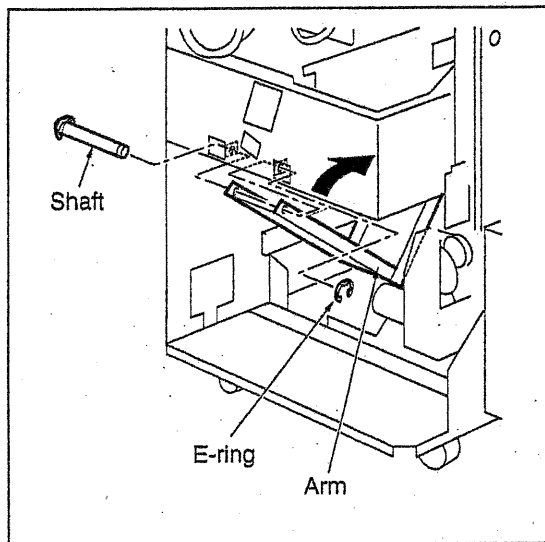
Be careful when detaching the stacker unit. If you remove the stopper, and in succession pull out the stacker unit, the FNS may fall due to the weight of the stacker unit. This may cause injury.

a. Procedure

- (1) Remove the following parts:
 - Booklet tray
 - Side cover
 - Front door
 - Rear cover
- (2) Detach the FNS from the main body.
- (3) Pull the handle and draw the stacker unit.
- (4) Disconnect the three connectors (CN4, CN5, CN9) from the FNS control board (FNS DCB).

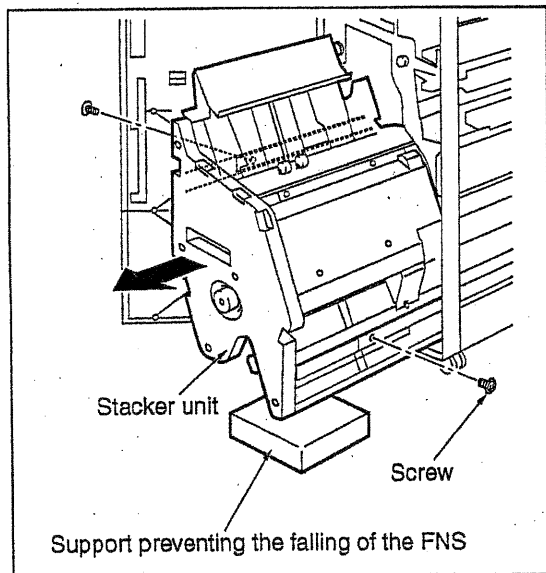


- (5) Remove the E-ring to remove the shaft, then fold up the arm and secure it using tape or other materials.



- (6) Remove two screws, and further pull stacker unit out.

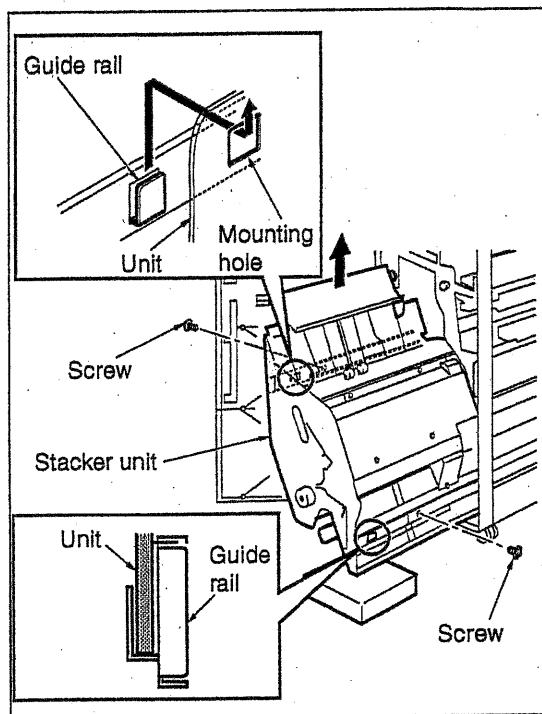
CAUTION: Place something under the drawn stacker unit to prevent the FNS from falling due to the weight of the unit.



- (7) Remove two screws. Lift the stacker unit to detach from the guide rail.

⚠ Caution:

Take care of your posture when servicing to avoid damage to your back or other joints.



- (8) Reinstall the above parts following the removal steps in reverse.

CAUTION: Make sure that the hook in the guide rail is inserted into the mounting hole of the stacker unit, and then tighten the securing screw..

STAPLER SECTION

[1] Removing and Reinstalling the Stapler Unit Cover

⚠ Caution:

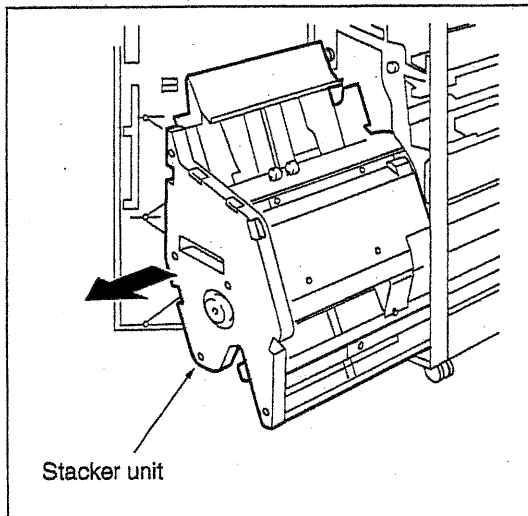
Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

Be careful when you detach the FNS from the main body. If you pull out the stacker unit, the FNS may fall. This may cause injury.

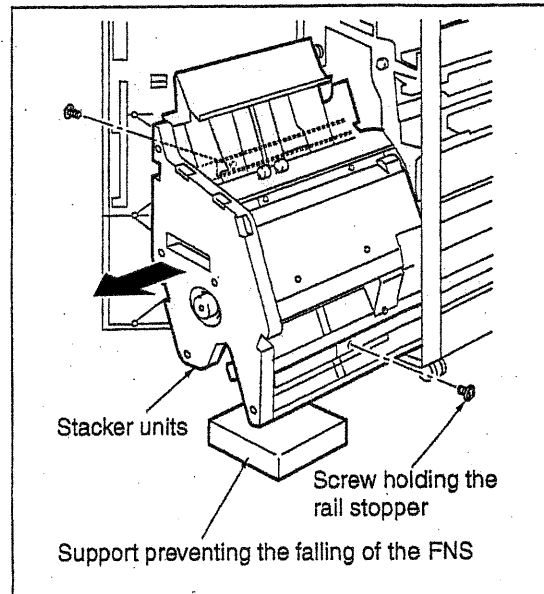
a. Procedure

- (1) Open the front door.
- (2) Draw the stacker unit out.

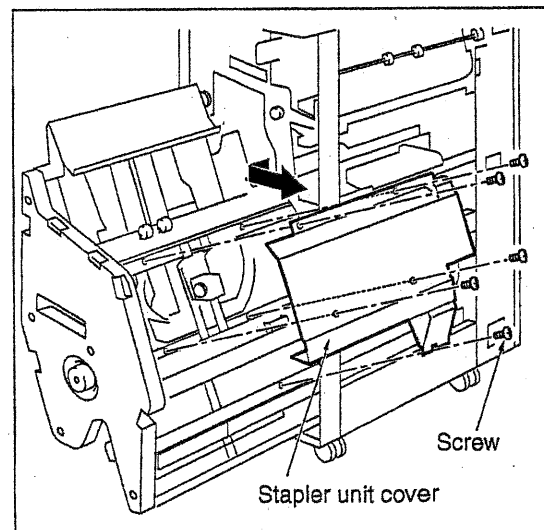


- (3) Remove the two screws securing the rail stopper. Further pull the stacker unit out.

CAUTION: Place something under the drawn stacker unit to prevent the FNS from falling due to the weight of the unit.



- (4) Remove five screws and detach the cover.



- (5) Reinstall the above parts following the removal steps in reverse.

[2] Removing and Reinstalling the Clincher

⚠ Caution:

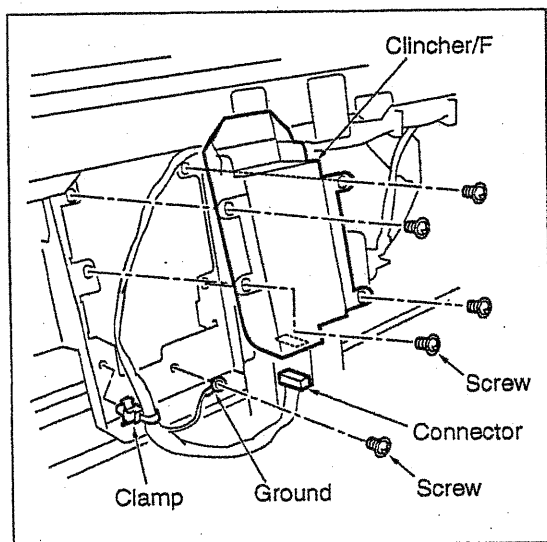
Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

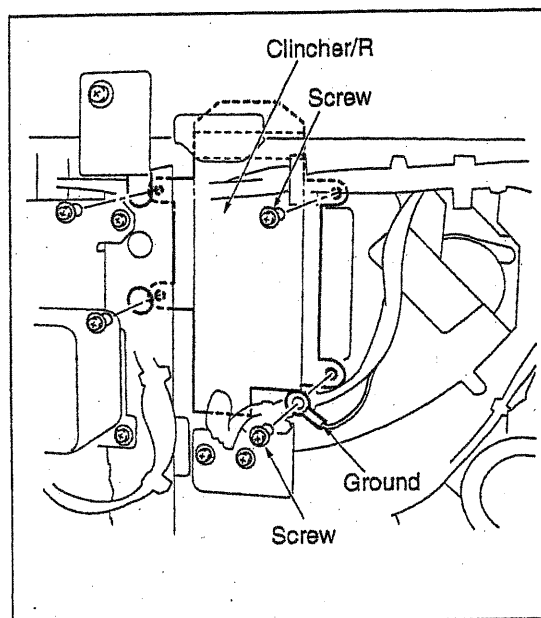
Be sure to perform the adjustment work described in the "FNS Stapler Upper/Lower Positions Adjustment" of the manual, "Adjustment," after you have attached the clincher.

a. Procedure

- (1) Open the front door.
- (2) Pull the stacker unit out and remove the stapler unit cover.
- (3) Remove a mounting screw holding the ground cable. Remove the ground cable and the clamp.
- (4) Remove four screws securing the clincher. Detach the clincher/F and the connector.

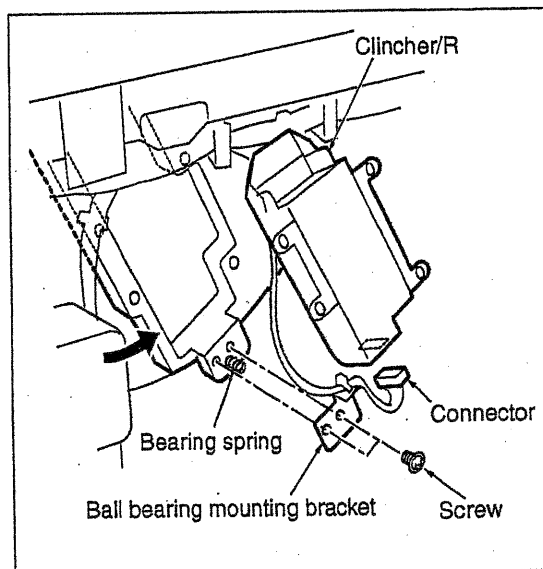


- (5) Remove four mounting screws holding the clincher/R.



- (6) Remove two screws. Detach the ball bearing bracket, and then remove the clincher/R by rotating it to the appropriate position. Remove the connector.

CAUTION: Do not lose the bearing spring and the ball.



- (7) Reinstall the above parts following the removal steps in reverse.

[3] Removing and Reinstalling the Stapler

⚠ Caution:

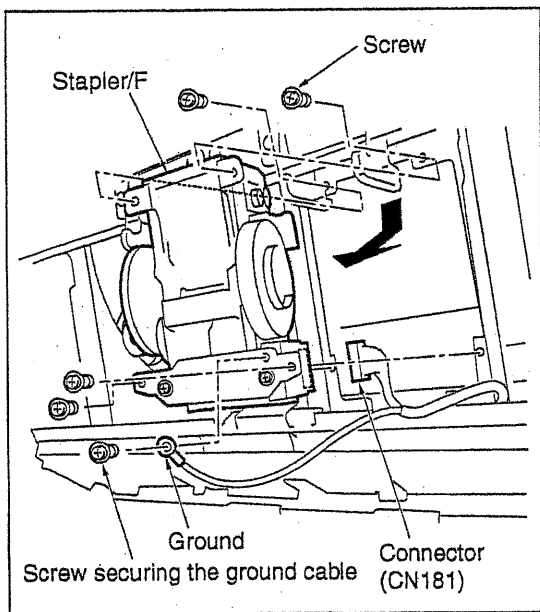
Make sure that the power cord of the main body is unplugged from the power outlet.

⚠ Caution:

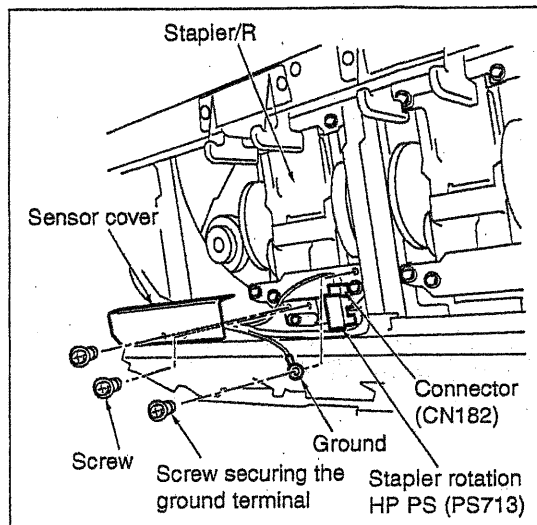
Be sure to perform the adjustment work described in the "FNS Stapler Upper/Lower Positions Adjustment" of the manual, "Adjustment," after you have attached the stapler.

a. Procedure

- (1) Open the front door.
- (2) Draw the stacker unit out.
- (3) Remove the cartridge from the stapler.
- (4) Remove four mounting screws securing the stapler and the screw holding the ground cable. Detach the stapler/F and the connector (CN181).

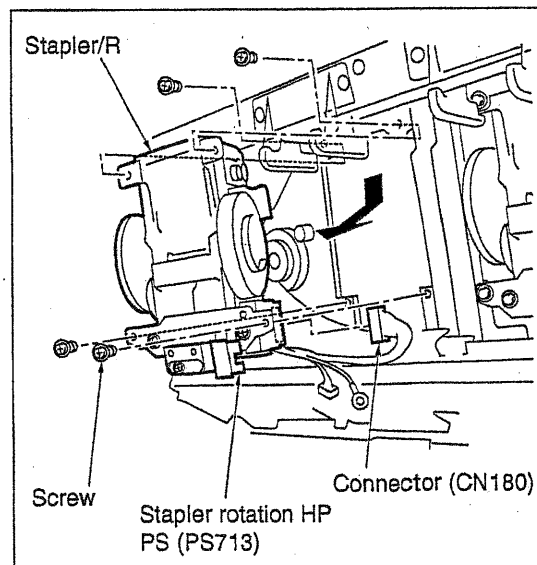


- (5) Remove two screws holding the sensor cover of the stapler/R. Remove the screw securing the ground cable. Detach the connector (CN182) of the stapler rotation HP PS (PS713).



- (6) Remove four screws. Detach the stapler/R and the connector (CN180).

CAUTION: Take care not to damage the stapler rotation HP PS (PS713) when removing the stapler/R.



- (7) Reinstall the above parts following the removal steps in reverse.

CAUTION: When installing the sensor cover of the stapler/R, take care that the bundled cable does not disturb the stapler rotation HPPS (PS713) and is not nip by the gears.

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