STAPLER FOLDER

DBM-120

MAINTENANCE MANUAL

Duplo

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CHAPTER 1
MECHANISM

1. OUTLINE OF EACH MECHANISM AND ADJUSTMENTS

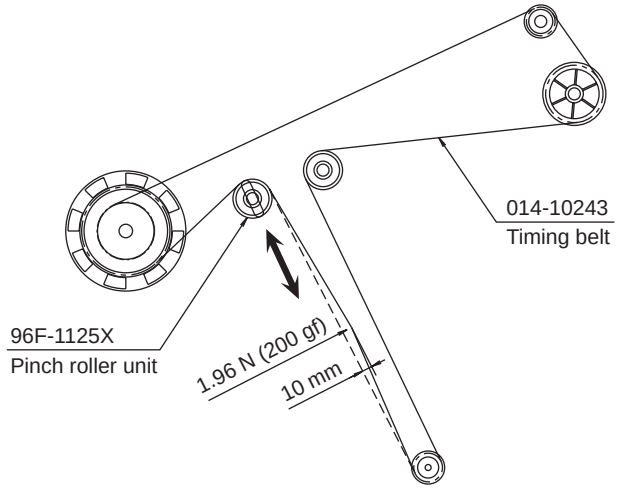
1-1. Conveyance Mechanism (Entrance)

Paper is conveyed by the flat belt.

Adjustments

(1) Adjusting the tension of the timing belt

Adjust the position of the pinch roller unit so that the belt slacks by 10 mm when a pressure of 1.96 N (200 gf) is applied.



Precautions on replacing the flat belt

- Replace taking note of the rotating direction of the flat belt. (Arrow at the back of the flat belt)
- Replace the flat belt in pairs.

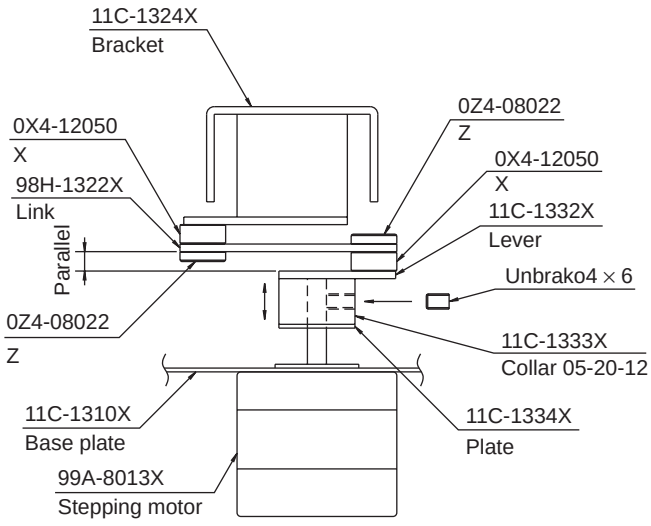
1-2. Back Jogger Mechanism

The base moves forward and backward by changing the rotating movements of the stepping motor to linear movements.
The pusher attached to the base pushes in the paper.

Adjustments

(1) Adjusting the position of the collar 05-20-12

Adjust the position of the collar 05-20-12 so that the lever and link become parallel.



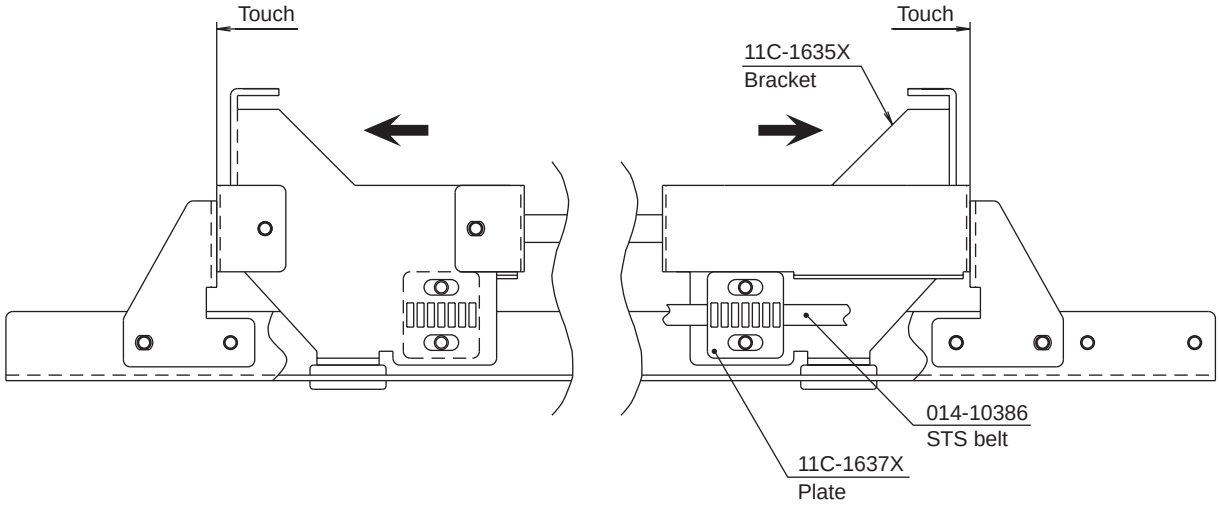
1-3. Side Jogger Mechanism

The timing belt moves forward and backward from the rotating movements of the stepping motor.
The jog plate pushes in the paper.

Adjustments

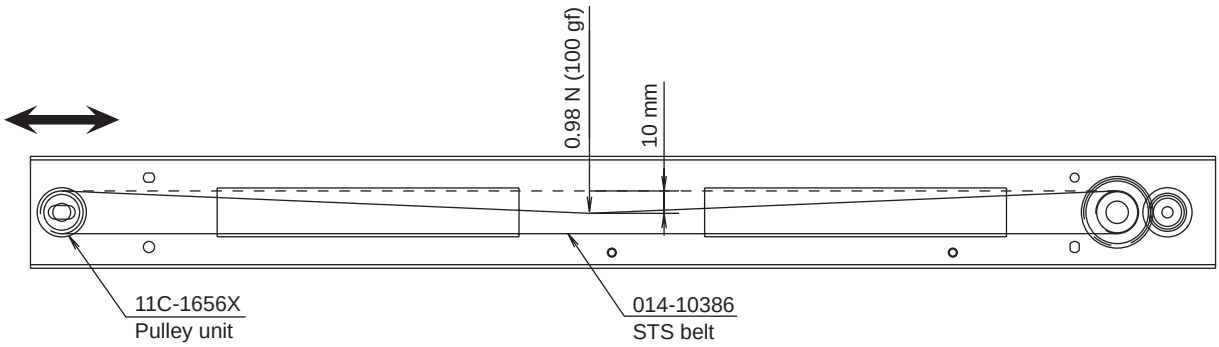
(1) Fixing the STS belt and bracket

With the bracket touches against the two sides, fix the plate and STS belt.



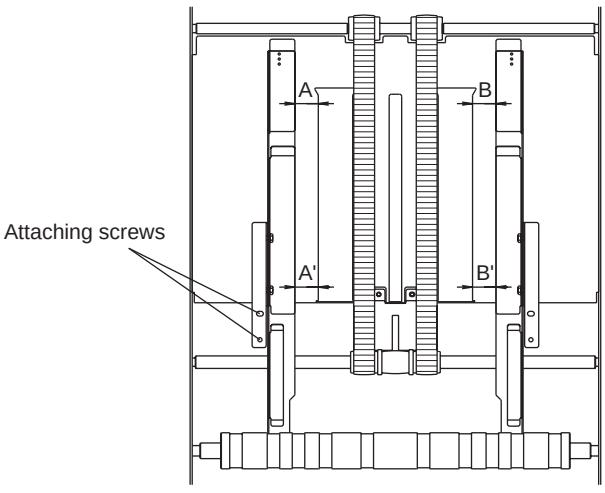
(2) Adjusting the tension of the STS belt

Adjust the position of the pulley unit so that the belt slacks by 10 mm when a pressure of 0.98 N (100 gf) is applied.



(3) Adjusting the parallelity of the jog plate

Adjust the distance (difference between A and A' and that between B and B') between the groove of the guide plate and jog plate to below 0.5 mm.



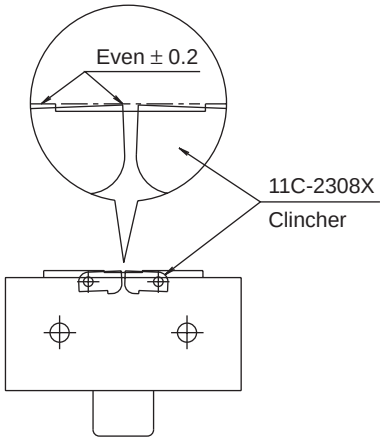
1-4. Stapler/Clincher Mechanism

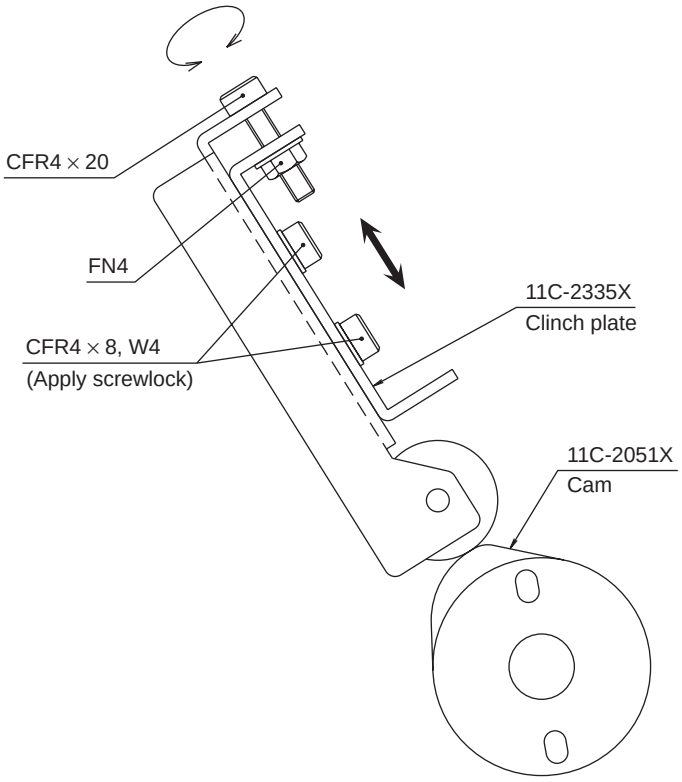
The stapler unit staples the paper while the crank shaft makes one round by the DC motor, and at the same time, the cam drives the clincher to bend the staple flat.

Adjustments

(1) Adjusting the height of the clincher

When the cam is at the top dead point, adjust so that the upper surface of the clinch plate and tip of the clincher are of the same level.





(2) Adjusting the front and back positions of the stapler unit

Adjust the position at which staples come out of the stapler unit to the groove of the clincher.

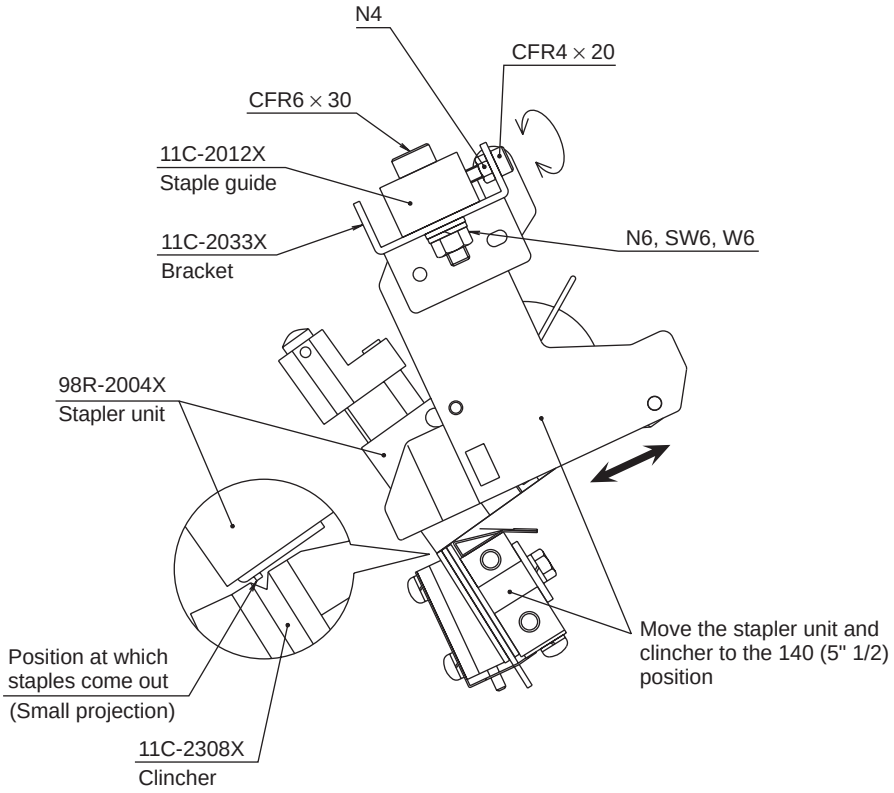
① Set the stapler unit with the staple cartridge removed and clincher at the 140 (5" 1/2) position of the indication label.

② Rotate the crank shaft to the stapling position (bottom dead point).

③ Loosen the M4 nut and M6 nut.

④ Rotate the position adjusting screw (M4 capscrew bolt), and adjust the position of the staple guide so that the position at which staples come out of the stapler unit (small projection) coincides with the groove of the clincher.

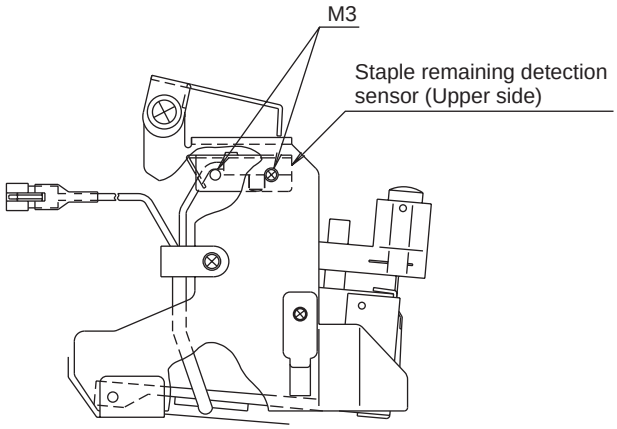
⑤ After completing the adjustment, tighten the M4 nut and M6 nut.



(3) Adjusting the pushing amount of the stapler unit

Set to the stapling position (bottom dead point) and check the pushing amount of the stapler unit by inserting the tool.

① Remove the M3 screws, and remove the staple remaining detection sensor (upper side).



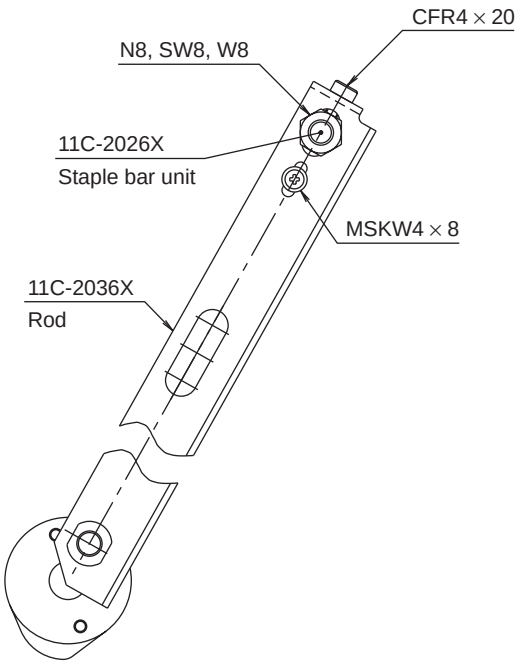
② Set the stapler unit with the staple cartridge removed and clincher at the 140 (5" 1/2) position of the indication label.

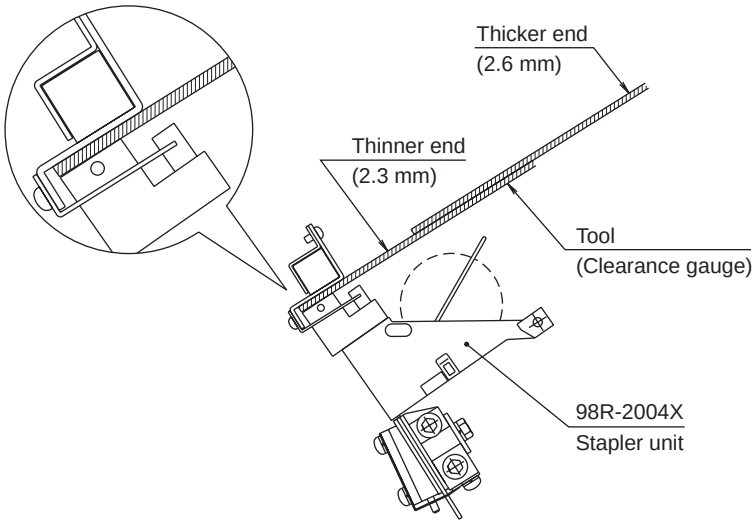
③ Loosen the M8 nut and M4 bolt.

④ Set the stapling state (bottom dead point), and check the pushing amount of the stapler unit using the tool.
As the thickness of the tool differs between the two ends, if the thinner end fits the space while the thicker end does not, it means it has been adjusted.

* If both ends of the tool fit the space, rotate the adjusting screw (M4 capscrew bolt) to the left.
  If both ends of the tool do not fit the space, rotate the adjusting screw to the right.

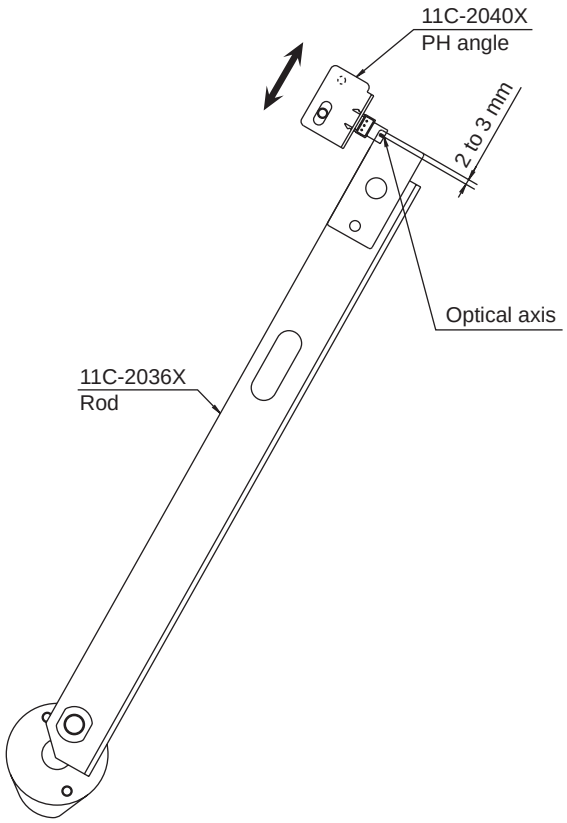
⑤ After adjusting, tighten the M8 nut and M4 bolt, and attach the staple remaining detection sensor (upper side) removed at ①.





(4) Adjusting the position of the stapler home sensor

When the rod is at the top dead point, adjust the PH angle to the position where it blocks the optical axis of the photointerrupter by 2 to 3 mm.



(5) Adjusting the position of the stopper

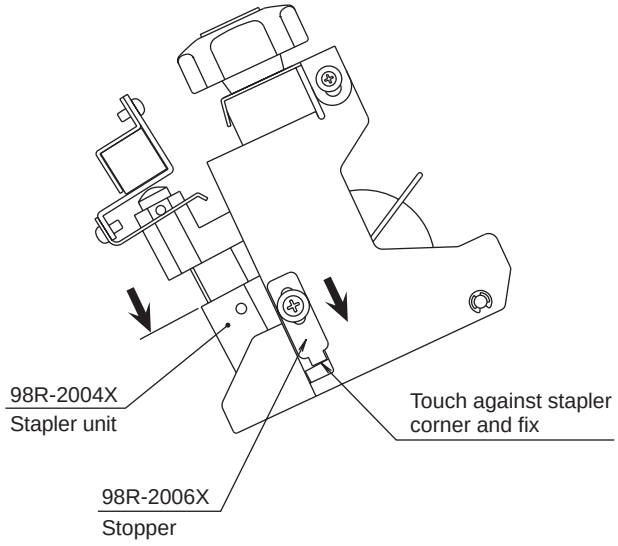
To prevent mis-stapling (no staples are stapled), adjust the stopper position so that the stapler unit does not shake at the standby position (top dead point).

① Loosen the screw.

② Lower the stapler unit.

③ Lower the stopper, and fix it when it touches the stapler.
(Fix the left and right sides at the same height.)

NOTE : If this adjustment is not complete, staples will not be conveyed inside the stapler unit and therefore no staples will be stapled.



(6) Checking stapling

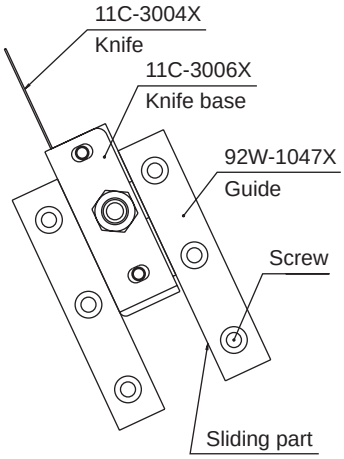
Set the stapler unit and clincher at the 40 (1" 5/8) position of the indication label, staple, and check the stapled condition.

1-5. Folding Knife/Folding Roller Mechanism

Adjustments

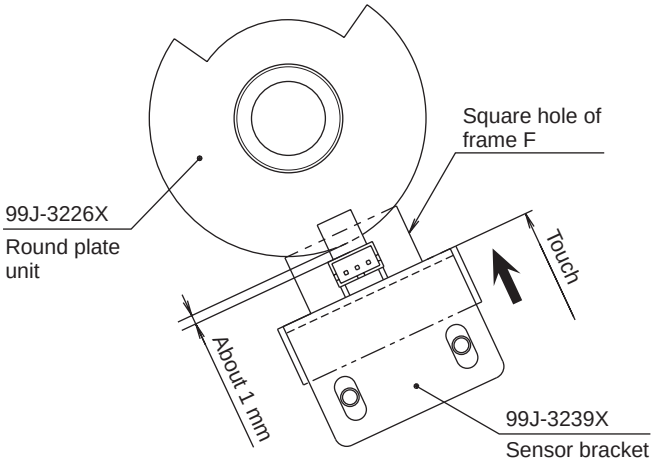
(1) Adjusting the sliding part of the knife base

Adjust the guide so that the knife base moves over the sliding part smoothly without shaking.



(2) Adjusting the height of the home sensor of the folding knife

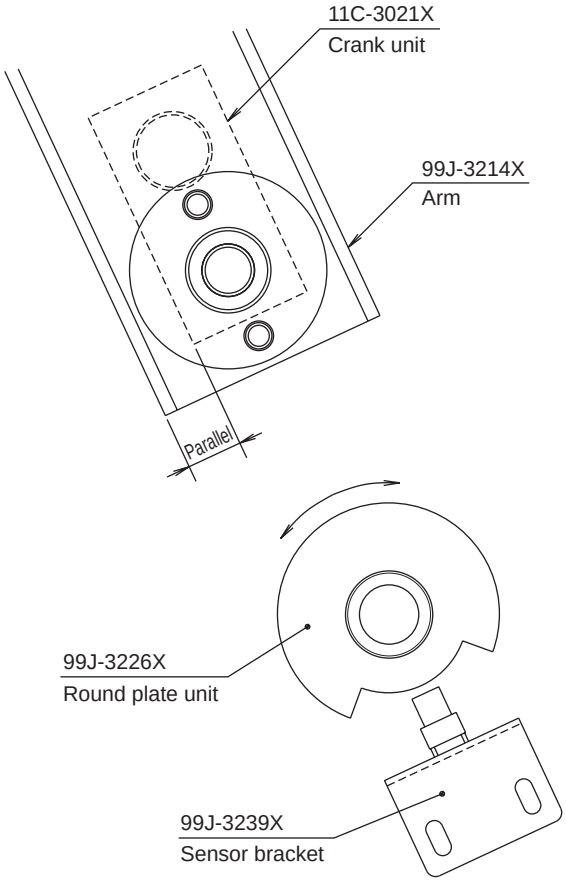
Touch the sensor bracket against the edge of the square hole of the frame F and fix it.



(3) Adjusting the home position of the folding knife

To stop the folding knife at the lower limit position, adjust so that the arm and crank unit are parallel, and adjust the position of the round plate unit.

∗ In the **"Parts Catalog"**, the crank unit is part of the shaft unit (11C-3019X).



1-6. Folding Conveyance Mechanism

The flat belts sandwich and convey the paper single-folded by the folding roller.

Precautions on replacing the flat belt

- Replace taking note of the rotating direction of the flat belt. (Arrow at the back of the flat belt)
- Replace the flat belt in pairs.

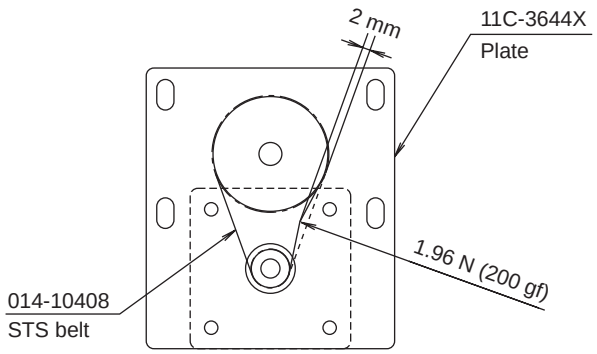
1-7. Stopper Mechanism

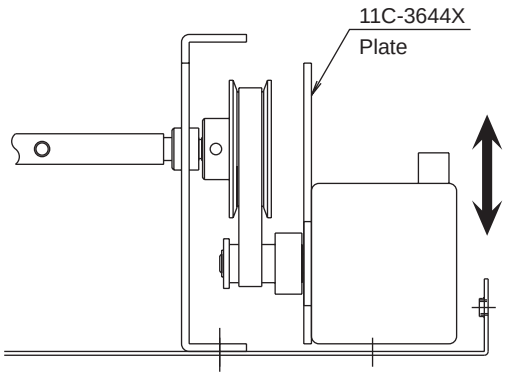
The timing belt moves forward and backward from the rotating movements of the stepping motor, and the stopper moves up and down.

Adjustments

(1) Adjusting the tension of the STS belt

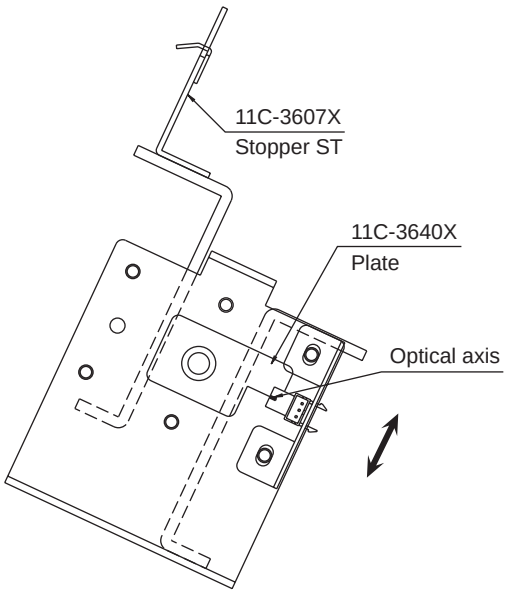
Adjust the position of the plate so that the belt slacks by 2 mm when a pressure of 1.96 N (200 gf) is applied.





(2) Adjusting the position of the stopper home sensor

When the stopper ST is at the upper limit position, adjust the photointerrupter so that the plate comes to the position of the optical axis.



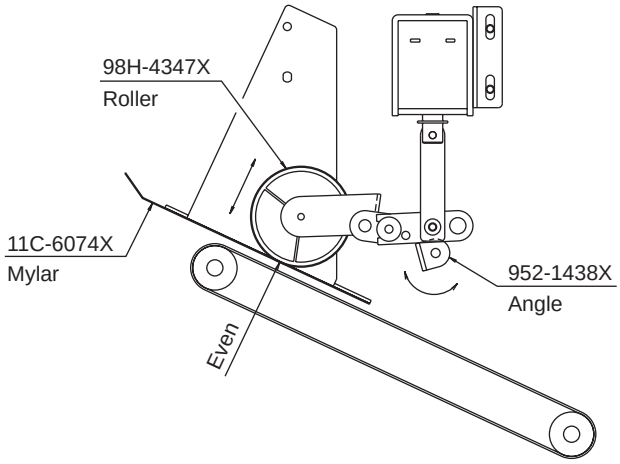
1-8. Conveyance Mechanism (Exit)

Paper is conveyed by the flat belt.

Adjustments

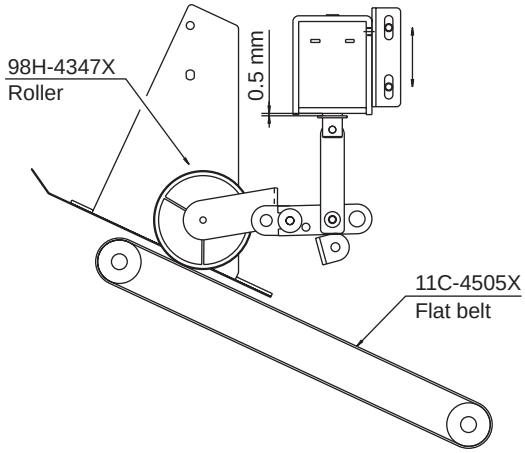
(1) Adjusting the standby position of the roller

Adjust the angle of the angle so that the mylar and roller become even.



(2) Adjusting the position of the solenoid

With the roller touching the flat belt, adjust the solenoid to the position where a 0.5 mm clearance is formed with the plunger.



Precautions on replacing the flat belt

- Replace taking note of the rotating direction of the flat belt. (Arrow at the back of the flat belt)
- Replace the flat belt in pairs.

2. MAINTENANCE

Clean the following parts

- Rubber roller
- Resin roller
- Flat belt
- Folding roller
- Index plate
- Photointerrupter
- Main unit
- Remote unit
- Switching power supply

Oil the following parts (Equivalent to Nisseki Mitsubishi Co. Ld. FBK oil R028)

- Sintering bearing
- Link rotating fulcrum of the solenoid

Grease the following parts (Equivalent to Dowconning Co. Ld. MOLY KOTE X5-6020)

- Stapler head
- Where the flat cogwheels are engaged
- Where the worm gears are engaged
- Clincher mechanism sliding part
- Folding knife sliding part
- Folding roller sliding part
- Resin idler (Apply to center pin)

Grease the following parts (Equivalent to Kyodoyushi Co. Ld. uniloob No.2)

- Chain

Grease the following parts (Equivalent to Orelube G90-140 oil)

- Driving plate (Apply a thin layer only to the part sliding over the clincher)

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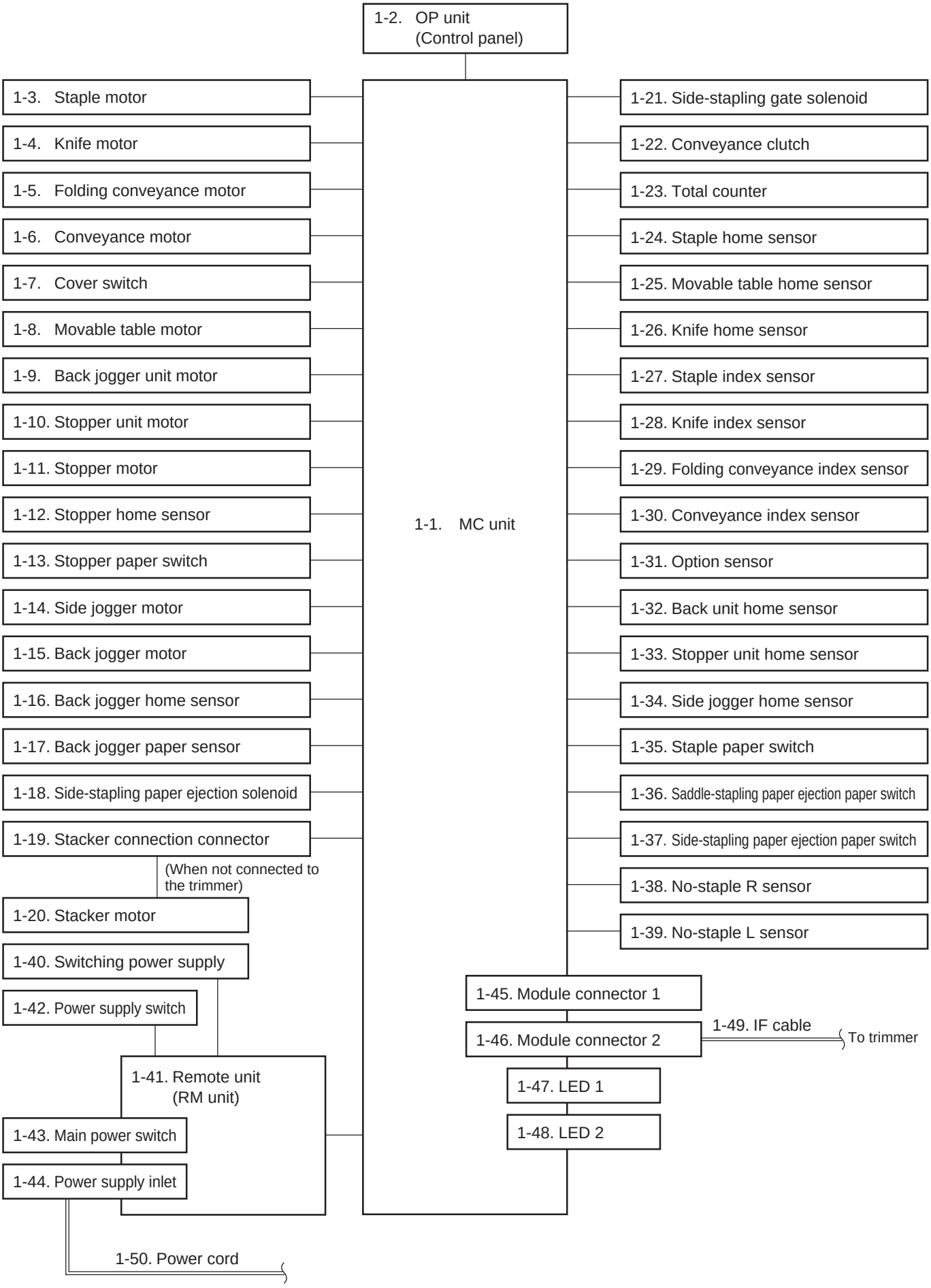
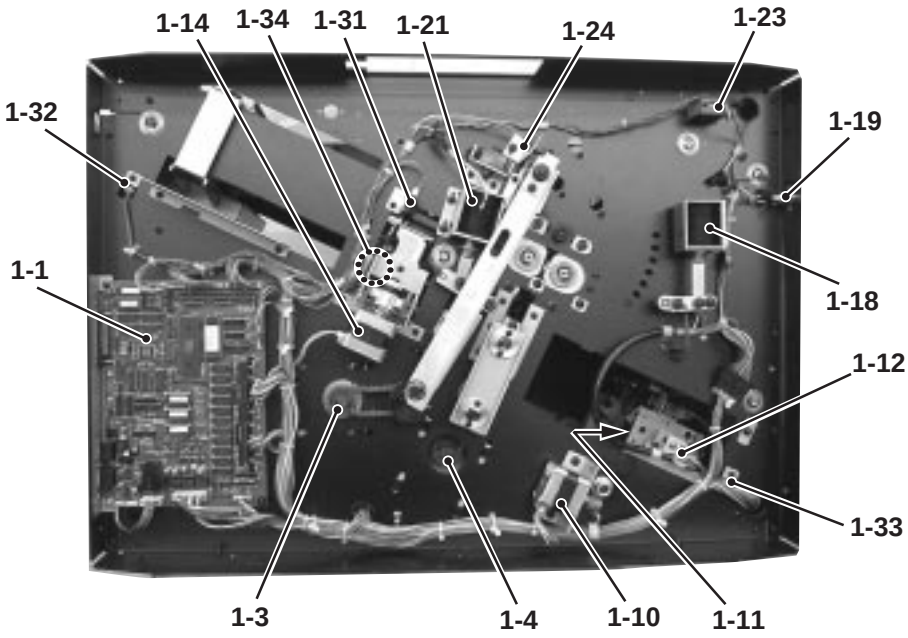
CHAPTER 2
ELECTRICAL COMPONENTS

1. BLOCK DIAGRAM OF STRUCTURE AND OUTLINE OF EACH BLOCK

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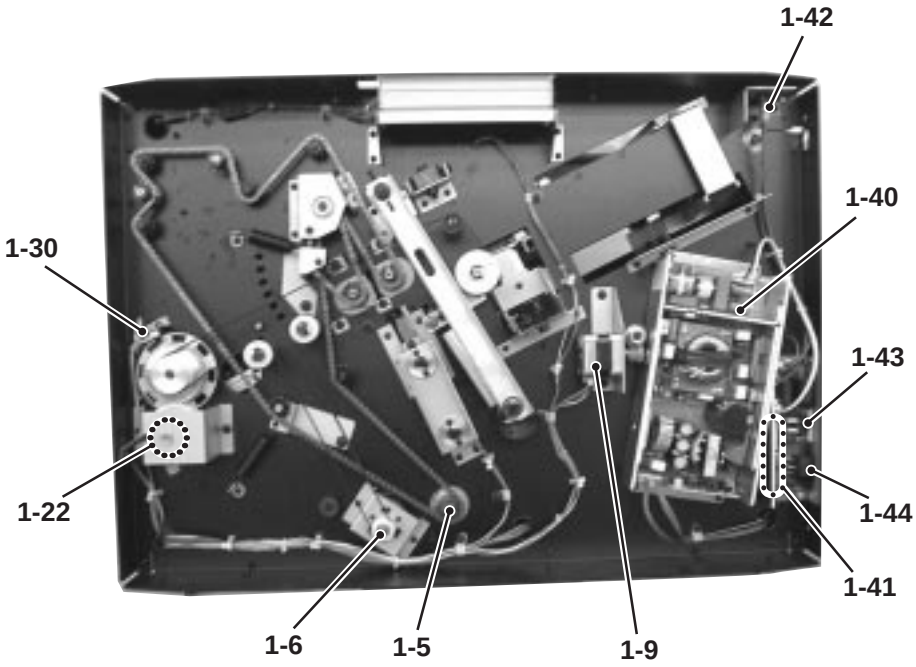
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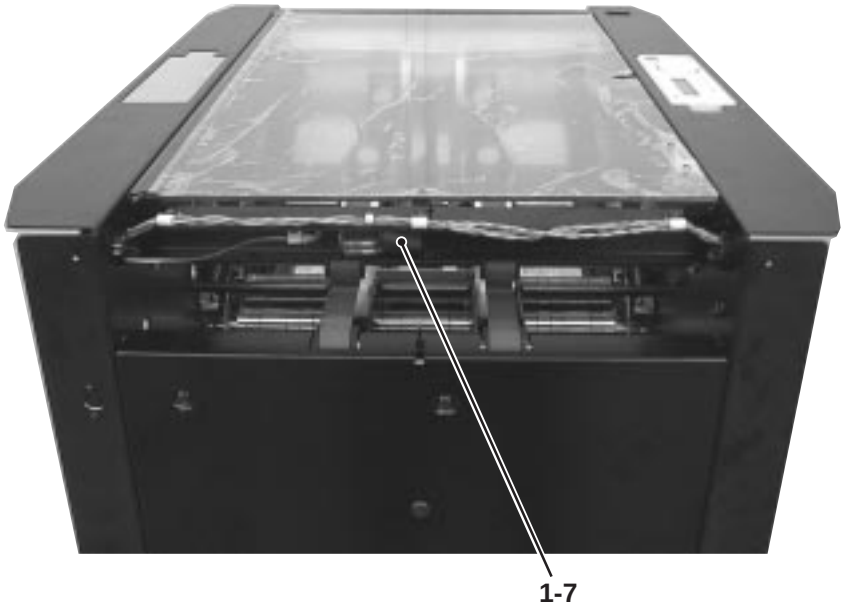
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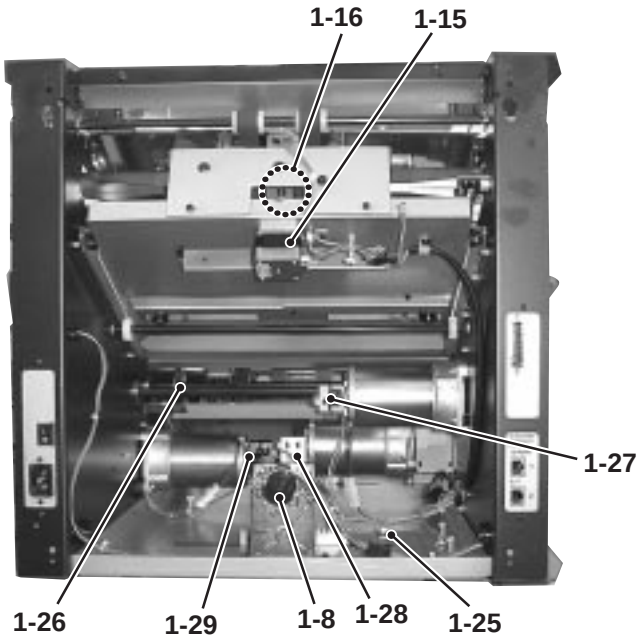
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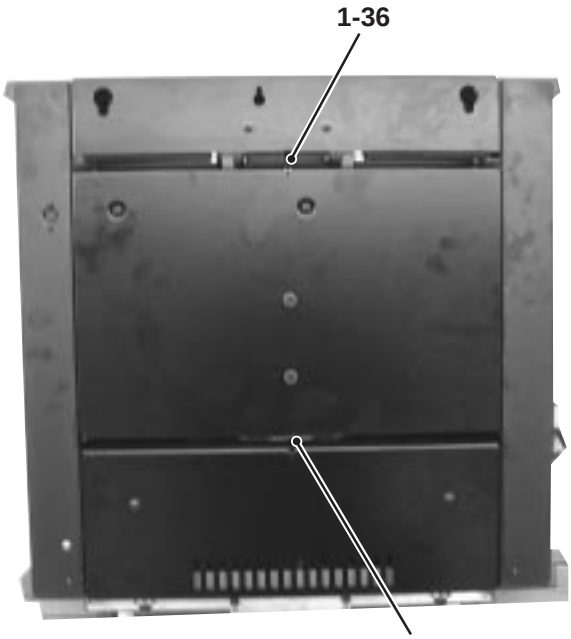
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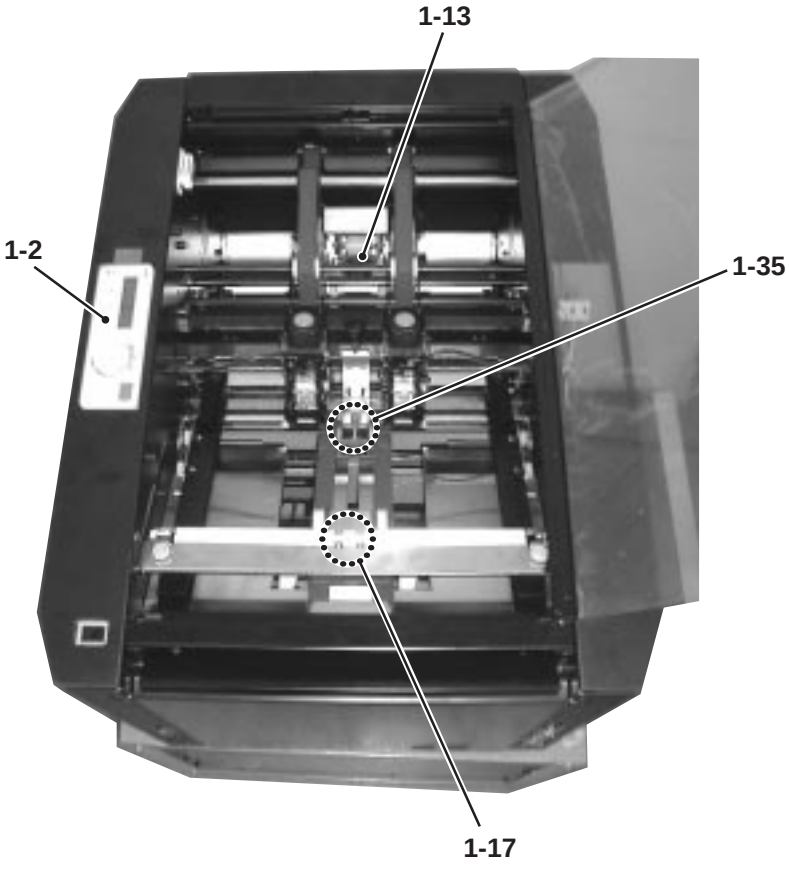
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1-1. MC Unit

The MC unit controls the whole machine by the 8-bit microprocessor. It also incorporates a stepping motor, DC motor, and solenoid driving circuit. It has a built-in DC converter which generates +5 V with the DC +24 V power supply input. A DC +5 V power supply is used for ICs and sensors while a DC +24 V is used for driving the motor and solenoid. The board is mounted with six microprocessors and one ROM. Of the six microprocessors, one is for main control, three for controlling the stepping motors, one for controlling communication with the control panel, and the remaining one for controlling communication other than the control panel. One stepping motor control microprocessor is used for controlling two stepping motors. The ROM is a 128K-byte EPROM written with the main control program. The stepping motor control program and communication control program are written in the built-in ROM of the respective microprocessors. The MC unit is connected with the OP unit (control panel) by communication.

1-2. OP Unit (Control Panel)

The control panel is controlled by a one-chip 8-bit microprocessor. It is mounted with a 16-character 2-line liquid crystal display and a jog dial. The control program is written in the built-in ROM of the microprocessor. It is connected with the MC unit by communication.

1-3. Staple Motor

DC +24 V power supply brush motor. Drives the stapler.

1-4. Knife Motor

DC +24 V power supply brush motor. Drives the folding knife.

1-5. Folding Conveyance Motor

DC +24 V power supply brush motor. Drives the folding rollers and folding conveyance section.

1-6. Conveyance Motor

DC +24 V power supply brushless motor. Drives the main conveyance section.

1-7. Cover Switch

Normal open microswitch. When the cover is closed, contact is established. This switch is connected to the control coil of the relay mounted to the MC unit. The contact of this relay is connected with the DC +24 V supplied to the staple motor, knife motor, folding conveyance motor, and conveyance motor. As it is connected in this way, operating the microswitch opens and closes the relay contact. When the top cover is opened, the DC +24 V supplied to the staple motor, knife motor, folding conveyance motor, and conveyance motor is cut off.

1-8. Movable Table Motor

DC +24 V power supply brush motor. When the paper reference is set to “Center”, this motor drives the machine and automatically adjusts it to the position of the upstream processing unit.

1-9. Back Jogger Unit Motor

DC +24 V power supply stepping motor. Moves the back jogger unit incorporating the back jogger.

1-10. Stopper Unit Motor

DC +24 V power supply stepping motor. Moves the stopper unit incorporating the stapling/folding stoppers.

1-11. Stopper Motor

DC +24 V power supply stepping motor. Drives the stapling/folding stoppers.

1-12. Stopper Home Sensor

Sensor for detecting the home positions of the stapling/folding stoppers. Uses a photointerrupter.

1-13. Stopper Paper Switch

Normal closed switch. Used for detecting paper tip and jams caused by paper remaining in the machine.

1-14. Side Jogger Motor

DC +24 V power supply stepping motor. Motor for driving the side jogger.

1-15. Back Jogger Motor

DC +24 V power supply stepping motor. Motor for driving the back jogger.

1-16. Back Jogger Home Sensor

Sensor for detecting the home position of the back jogger. Uses a photointerrupter.

1-17. Back Jogger Paper Sensor

Sensor for detecting paper tip and jams caused by paper remaining in the machine. Uses a photointerrupter.

1-18. Side-stapling Paper Ejection Solenoid

Solenoid for driving the rollers at the top of the stapling/folding stopper section. Uses a DC +24 V power.

1-19. Stacker Connection Connector

When the trimmer is not connected, connects the stacker unit.

1-20. Stacker Motor

Motor for driving the belt of the stacker unit. Uses a DC +24 V power.

1-21. Side-stapling Gate Solenoid

Solenoid for driving the stoppers for side-stapling and corner-stapling. Uses a DC +24 V power.

1-22. Conveyance Clutch

Electromagnetic clutch for transmitting the conveyance force to the stapling/folding stopper section. Uses a DC +24 V power.

1-23. Total Counter

Electromagnetic counter. Uses a DC +24 V power. Counts up with each stapling/folding or folding operation.

1-24. Staple Home Sensor

Sensor for detecting the home position of the stapler. Uses a photointerrupter.

1-25. Movable Table Home Sensor

Sensor for detecting the home position of the machine moving mechanism (Movable table). Uses a photointerrupter.

1-26. Knife Home Sensor

Sensor for detecting the home position of the folding knife. Uses a photointerrupter.

1-27. Staple Index Sensor

Uses a photointerrupter. When the staple motor rotates and the notch of the index plate attached to the motor shaft passes by the sensor, the sensor outputs pulses at a fixed cycle.
Used for detecting the rotation of the staple motor.

1-28. Knife Index Sensor

Uses a photointerrupter. When the knife motor rotates and the notch of the index plate attached to the motor shaft passes by the sensor, the sensor outputs pulses at a fixed cycle.
Used for detecting the rotation of the knife motor.

1-29. Folding Conveyance Index Sensor

Uses a photointerrupter. When the folding conveyance motor rotates and the notch of the index plate attached to the motor shaft passes by the sensor, the sensor outputs pulses at a fixed cycle.
Used for detecting the rotation of the folding conveyance motor.

1-30. Conveyance Index Sensor

Uses a photointerrupter. When the conveyance motor rotates and the notch of the index plate passes by the sensor, the sensor outputs pulses at a fixed cycle.
Used for detecting the rotation of the conveyance motor.

1-31. Option Sensor

Sensor for detecting the optional guides. Uses a photointerrupter.

1-32. Back Unit Home Sensor

Sensor for detecting the home position of the back jogger unit. Uses a photointerrupter.

1-33. Stopper Unit Home Sensor

Sensor for detecting the home position of the stopper unit. Uses a photointerrupter.

1-34. Side Jogger Home Sensor

Sensor for detecting the home position of the side jogger. Uses a photointerrupter.

1-35. Staple Paper Switch

Normal closed switch. Used for detecting paper tip, end, and jams caused by paper remaining in the machine.

1-36. Saddle-stapling Paper Ejection Paper Switch

Normal closed switch. Located at the top of the paper ejection slot for folding and stapling/folding, used for detecting paper tip, end, and jams caused by paper remaining in the machine.

1-37. Side-stapling Paper Ejection Paper Switch

Normal closed switch. Located at the top of the paper ejection slot for ejecting paper, side-stapling, and corner-stapling, used for detecting paper tip, end, and jams caused by paper remaining in the machine.

1-38. No-staple R Sensor

Sensor for detecting the remaining staple in the stapler on the right in the direction in which the paper moves.

1-39. No-staple L Sensor

Sensor for detecting the remaining staple in the stapler on the left in the direction in which the paper moves.

1-40. Switching Power Supply

Outputs DC +24 V. Mounted with a 6.3 A fuse.
Used also for 100 V, 120 V, 220 to 240 V, and 50/60 Hz.
Incorporates a protection circuit for overcurrent and overvoltage. If the protection circuit turns on due to some reason, turn OFF the power, wait 3 minutes before turning it ON again.

1-41. Remote Unit (RM Unit)

When machines with remote functions are connected, the remote unit is able to turn ON and OFF the power of the two machines using an interface cable. Mounted with a 6.3 A fuse.
Incorporates an internal inlet (for supplying power) and main power switch.

1-42. Power Supply Switch

Used to turn ON/OFF the power supply using the remote unit. Even if this switch is set to OFF, the power supplied to the inside of the machine will not be cut off.
When connecting with a downstream processing unit with remote function, the power of the downstream processing unit will also turn ON simultaneously.

1-43. Main Power Switch

Incorporated in the remote unit. Used to turn ON/OFF the power supply of the machine.

1-44. Power Supply Inlet

Incorporated in the remote unit. Connected to the power cord.

1-45. Module Connector 1

Connector for communication with the machine connected. When performing communication from the upstream processing unit, insert an interface cable.

1-46. Module Connector 2

Connector for communication with the machine connected. When performing communication to the downstream processing unit, insert an interface cable.

1-47. LED 1 (Green)

Lights up in green when power is supplied to the machine.

1-48. LED 2 (Orange)

Lights up only when the remote function is effective and the power is supplied from the upstream processing unit.

1-49. IF Cable

Interface cable for communication with the downstream processing unit.

1-50. Power Cord

Supplies primary power to the machine.

2. ERRORS AND CAUSES

2-1. When Paper Jams Occur

The first line of the LCD on the control panel displays “Paper Jam”. The second line displays “In Paper Conveyer” (paper conveyer section), “In Stapler” (stapler section), or “In Folder” (folder section) according to where the paper has jammed. Turning the jog dial displays the jam code on the next screen. Refer to the following table.

Place of paper jam

Display in 2nd Line	Place	Conveyance Route
In Paper Conveyer	Paper conveyer section	From upstream processing unit paper ejection to back jogger paper sensor, or from back jogger paper sensor to side-stapling paper ejection paper switch
In Stapler	Stapler section	From back jogger paper sensor to staple paper switch, or from staple paper switch to stopper paper switch
In Folder	Folder section	From stopper paper switch to saddle-stapling paper ejection paper switch

Jam codes

Jam Code	Name of Jam	Description
J1	Not reaching back jogger section	After receiving paper ejection signal of the upstream processing unit, paper does not reach back jogger paper sensor within specified time.
J2	Not reaching side-stapling paper ejection section and remaining in stopper section	After paper reaches back jogger paper sensor, paper does not reach side-stapling paper ejection paper switch even after the specified time. There is also paper remaining in the stopper paper switch.
J3	Not reaching side-stapling paper ejection section	After paper reaches back jogger paper sensor, paper does not reach side-stapling paper ejection paper switch even after the specified time.
J4	Remaining in back jogger section	There is paper remaining on the back jogger paper sensor even after the specified time.
J5	Not reaching stapler section	The paper does not reach the staple paper switch even after the specified time after the paper end passes the back jogger paper sensor.
J6	Remaining in stapler section	There is paper remaining in the staple paper switch even after the specified time after the stopper has been lowered.
J7	Not reaching stopper section	The paper does not reach the stopper paper switch even after the specified time after the stopper has been lowered.
J8	Remaining in stopper section	There is paper remaining on the stopper paper switch even after the specified time after the folding knife has been turned ON.
J9	Not reaching saddle-stapling paper ejection section	The paper does not reach the saddle-stapling paper ejection paper switch even after the specified time after the folding knife has been turned ON.
J10	Remaining in saddle-stapling paper ejection section	There is paper remaining on the saddle-stapling paper ejection paper switch even after the specified time.
J11	No setting	No setting
J12	Remaining in side-stapling paper ejection section	There is paper remaining on the side-stapling paper ejection paper switch even after the specified time.

NOTE : The following causes may be suspected if jam codes are displayed even though no paper jam has actually occurred.

- **The lever of the paper switch does not return**
- **There are paper bits or foreign objects jammed on the paper switch**
- **The paper switch is faulty**
- **The connection between the paper switch and MC unit is faulty**
- **The MC unit is faulty**

2-2. Troubleshooting

When a problem occurs, the first line of the message on the LCD of the control panel will display “Malfunction”. The second line will display the name of the problem. Details are provided below.

■ Details of problems (1/2)

Display in 2nd Line		Description
(First Half)	(Second Half)	
Feed Motor	Trouble	The output of the conveyance motor index sensor is not normal.
		<Causes> ● Overload and restriction of the conveyance system mechanism ● Foreign objects jammed in the detecting section of the index sensor. ● Faulty connection between the index sensor and MC unit ● Malfunction of the index sensor ● Faulty connection between the conveyance motor and MC unit ● Malfunction of the MC unit ● Malfunction of the conveyance motor
Fold Feed Motor	Trouble	The output of the folding conveyance motor index sensor is not normal.
		<Causes> ● Overload and restriction of the folding conveyance system mechanism ● Foreign objects jammed in the detecting section of the index sensor. ● Faulty connection between the index sensor and MC unit ● Malfunction of the index sensor ● Faulty connection between the folding conveyance motor and MC unit ● Malfunction of the MC unit ● Malfunction of the folding conveyance motor
Knife Motor	Home-Out Trouble	The home sensor does not turn OFF (penetrating) within the specified time after the motor has turned ON.
	Home-In Trouble	The home sensor does not turn ON (blocking) within the specified time after the motor has turned ON.
	Index Trouble	The output of the knife index sensor is not normal.
		<Common causes> ● Overload and restriction of the folding knife mechanism ● Foreign objects jammed in the detecting section of the index sensor. ● Faulty connection between the index sensor, home sensor and MC unit ● Malfunction of the index sensor, home sensor ● Faulty connection between the knife motor and MC unit ● Malfunction of the MC unit ● Malfunction of the knife motor

Display in 2nd Line		Description
(First Half)	(Second Half)	
Stapler Motor	Home-Out Trouble	The home sensor does not turn OFF (penetrating) within the specified time after the motor has turned ON.
	Home-In Trouble	The home sensor does not turn ON (blocking) within the specified time after the motor has turned ON.
	Index Trouble	The output of the stapler index sensor is not normal.
		<Common causes> ● Overload and restriction of the stapler mechanism ● Foreign objects jammed in the detecting section of the index sensor. ● Faulty connection between the index sensor, home sensor and MC unit ● Malfunction of the index sensor, home sensor ● Faulty connection between the stapler motor and MC unit ● Malfunction of the MC unit ● Malfunction of the stapler motor
Machine Move Motor	Home-Out Trouble	The home sensor does not turn OFF (penetrating) within the specified time after the motor has turned ON.
	Home-In Trouble	The home sensor does not turn ON (blocking) within the specified time after the motor has turned ON.
	Index Trouble	The output of the movable table motor index sensor is not normal.
		<Common causes> ● Overload and restriction of the movable table mechanism ● Foreign objects jammed in the detecting section of the index sensor. ● Faulty connection between the index sensor, home sensor and MC unit ● Malfunction of the index sensor, home sensor ● Faulty connection between the movable table motor and MC unit ● Malfunction of the MC unit ● Malfunction of the movable table motor
Stacker Motor	Trouble	The overcurrent detection of the stacker motor drive circuit operates.
		<Causes> ● Overload and restriction of the stacker, paper ejection mechanism ● Faulty connection between the stacker motor and MC unit ● Malfunction of the stacker motor ● Malfunction of the MC unit

Display in 2nd Line		Description
(First Half)	(Second Half)	
** Motor **: Side Jog, Back Jog, Back Jog Unit, Stopper Unit, Stopper	Home-In Trouble	When the home sensor is OFF (penetrating), the motor turned ON for moving ** to the direction towards the home, but the home sensor does not turn ON (blocking) within the specified time.
	Home-Out Trouble	When the home sensor is ON (blocking), the motor turned ON for moving ** to the direction away from the home, but the home sensor does not turn OFF (penetrating) within the specified time.
	Home-Out/In Trouble	When the home sensor is ON (blocking), after the motor turned ON for moving ** to the direction away from the home, the motor reversed. At this time, the sensor does not turn ON again within the specified time.
	Counter-Out Trouble	After ** has been moved for a certain distance away from the home, and was moved back for the same distance, it reached the home and proceeded forwarded more than the specified distance. (The motor was out of step in the movement away from the home.)
	Counter-In Trouble	After ** has been moved for a certain distance away from the home, and was moved back for the same distance, it does not return to the home. When the ** is moved for the specified distance again, it does not return to the home. (The motor was out of step in the movement towards the home.)
		<Common causes> ● Overload and restriction of the ** unit moving mechanism ● Foreign objects jammed in the detecting section of the home sensor. ● Faulty connection between the home sensor and MC unit ● Malfunction of the home sensor ● Faulty connection between the motor and MC unit ● Malfunction of the MC unit ● Malfunction of the motor

Details of problems (2/2)

Display in 2nd Line	Description
Motor MPU ∗ CRC Error ∗: 1, 2, 3	Communication error between the stepping motor control microprocessor and main control microprocessor in the MC unit **<Cause>** ● Malfunction of the MC unit
Motor MPU ∗ ACK Error ∗: 1, 2, 3	Communication error between the stepping motor control microprocessor and main control microprocessor in the MC unit **<Cause>** ● Malfunction of the MC unit
Panel MPU ∗∗∗ Error ∗∗∗: CRC, ACK	Communication error between the MC unit and OP unit (panel) **<Causes>** ● Faulty connection between the OP unit and MC unit ● Malfunction of the OP unit ● Malfunction of the MC unit
Panel Interface MPU Error	Communication error between the control microprocessor for panel communication and main control microprocessor in the MC unit **<Cause>** ● Malfunction of the MC unit
Internal Interface MPU Error	Communication error between the control microprocessor for I^2C (other than panel) communication and main control microprocessor in the MC unit **<Cause>** ● Malfunction of the MC unit
Interface ∗∗∗ Error ∗∗∗: CRC, ACK	Not setting
Memory Data Error	Memory error and communication error in the MC unit
Memory Write ACK Error	**<Cause>** ● Malfunction of the MC unit
DA Converter ACK Error	

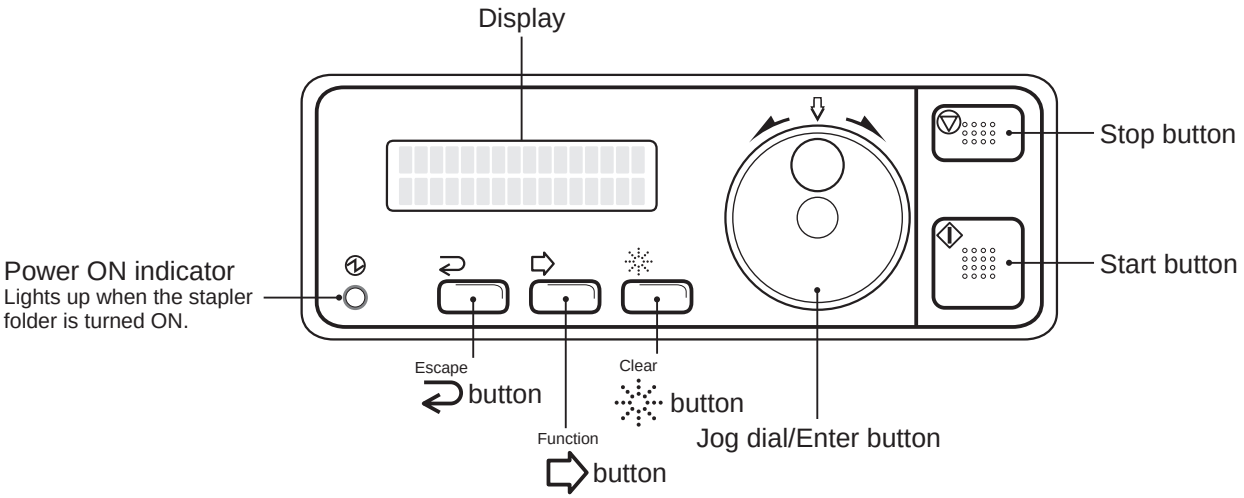
2-3. Other Condition Messages

The control panel also displays messages of other conditions of the machine such as when a door is opened, etc. The causes of such messages are shown below. In some cases, if the message and actual condition differ such as when “Top Cover Open” is displayed despite the door being closed, an error may be suspected. Details are provided below.

■ Condition display

Display	Description
Top Cover Open	The contact of the cover switch is open.
	<Other causes> ● The door is not closed completely. ● Malfunction of the switch ● Faulty connection between the switch and MC unit ● Malfunction of the MC unit
Trimmer Error	An error signal was received from the trimmer.
	<Other causes> ● Jam occurred at the trimmer. ● The top cover of the trimmer is open. ● An error other than jamming occurred at the trimmer. ● Faulty connection between the trimmer and MC unit ● Malfunction of the MC unit ● Malfunction of the trimmer
Staple ∗ Nearly Empty ∗: L, R, (Blank)	The staples in the stapler ∗ are running out.
	<Other causes> ● Faulty connection between the stapler ∗ and MC unit ● Malfunction of the stapler ∗ ● Malfunction of the MC unit

3. MAINTENANCE MODE



3-1. Entering the Maintenance Mode

Press the escape button once on the initial screen of the control panel. Turn the jog dial by three clicks towards the right, “Number of Sheets” will be displayed. Press the clear button here once. A beep will be sounded.
Turn the jog dial by 5 clicks towards the left, “Fine Adjustment” will be displayed. Press the clear button here once. A beep will be sounded.
After “Maintenance Menu” is displayed, press the jog dial once. Two beeps will be sounded.
The maintenance menu has four modes for selection – ROM version display, simulation mode, sensor check mode, and motor/solenoid test mode.

3-2. ROM Version Display

Select ROM version display from the maintenance menu. The control program version of the MC unit, stepping motor driver (SPM), or OP unit will be displayed.

3-3. Simulation Mode

When the simulation mode is selected from the maintenance menu, “Simulation Mode” will be displayed. Before starting the simulation mode, be sure to remove the staple cartridge from the stapler.
Press the start button to start the machine in the simulation mode, and stop with the stop button.
In the simulation mode, each mechanism operates without paper.

3-4. Sensor Check Mode

When the sensor check mode is selected from the maintenance menu, “Sensor Check” will be displayed. Turn the jog dial to display the name of the sensor to be checked. The name can be checked as shown in the following examples.

(Example 1) To check the back jogger paper sensor

- Pushing down the switch lever sets the display to “on”.
  Display: “B. Jogger PSW on”
- Returning the switch lever sets the display to “off”.
  Display: “B. Jogger PSW off”

(Example 2) To check the conveyance index sensor (photointerrupter)

- If something is blocking the detecting section of the sensor, the display will be set to “on”.
  Display: “Feed Index on”
- If nothing is blocking the detecting section of the sensor, the display will be set to “off”.
  Display: “Feed Index off”

3-5. Motor/Solenoid Test Mode

When the motor/solenoid test mode is selected from the maintenance menu, “Motor Sol. Test” will be displayed. Turn the jog dial to display the name of the motor or solenoid to be tested.
Press the start button to turn on the motor or solenoid selected. Press the stop button to turn them off. For the side jogger motor, back jogger unit motor, back unit motor, stopper unit motor, and stopper gate motor, forward and backward operations will be repeated until the position of the smallest paper size from the home position.

3-6. Changing the Display Language

When the language is selected from the maintenance menu, “Select Language” will be displayed. Turn the jog dial to select the language used and press the jog dial to confirm the language. To activate this setting, the power needs to be turned off and then on again.

3-7. Changing the Paper Reference

Normally do not change this setting. When the paper reference selection is selected from the maintenance menu, “Select Paper Ref” will be displayed. Turn the jog dial to select “Center” or “Side”. To activate this setting, the power needs to be turned off and then on again.

4. PRECAUTIONS ON REPLACING THE MC UNIT

Fine adjustment data and customized sizes are registered in the EEPROM (nonvolatile memory) on the MC unit (board). Therefore previous data will be lost when the MC unit is replaced. Note down the fine adjustment data and customized sizes prior to replacement and input them after replacement. Also be sure to perform the following procedures and checks after replacement.

(1) Initializing the memory

Turn on the power with the function button pressed. Keep pressing until initialization of the machine ends. This procedure initializes data registered in the EEPROM (nonvolatile memory) on the MC unit (board).

(2) Checking the paper reference setting

Check the setting of the paper reference in the maintenance menu. If the setting at “Select Paper Ref” is not appropriate, set it again. (Refer to **“3-7. Changing the Paper Reference”**)

(3) Checking the fine adjustment data

Enter the fine adjustment mode and check the fine adjustment data. For settings other than 0, +1 to +9, –1 to –9, the fine adjustment data memory will need to be initialized. Perform the following procedure to initialize. Turn off the power, and while pressing the center button (function button) on the control panel, turn on the power again. After this, enter the fine adjustment mode. Even if there is no need to set the fine adjustment data, be sure to enter the fine adjustment mode.

(4) Inputting fine adjustment data and customized sizes

Enter the fine adjustment mode, and input the fine adjustment data and customized sizes noted down before replacement.

5. PRECAUTIONS ON REPLACING FUSES

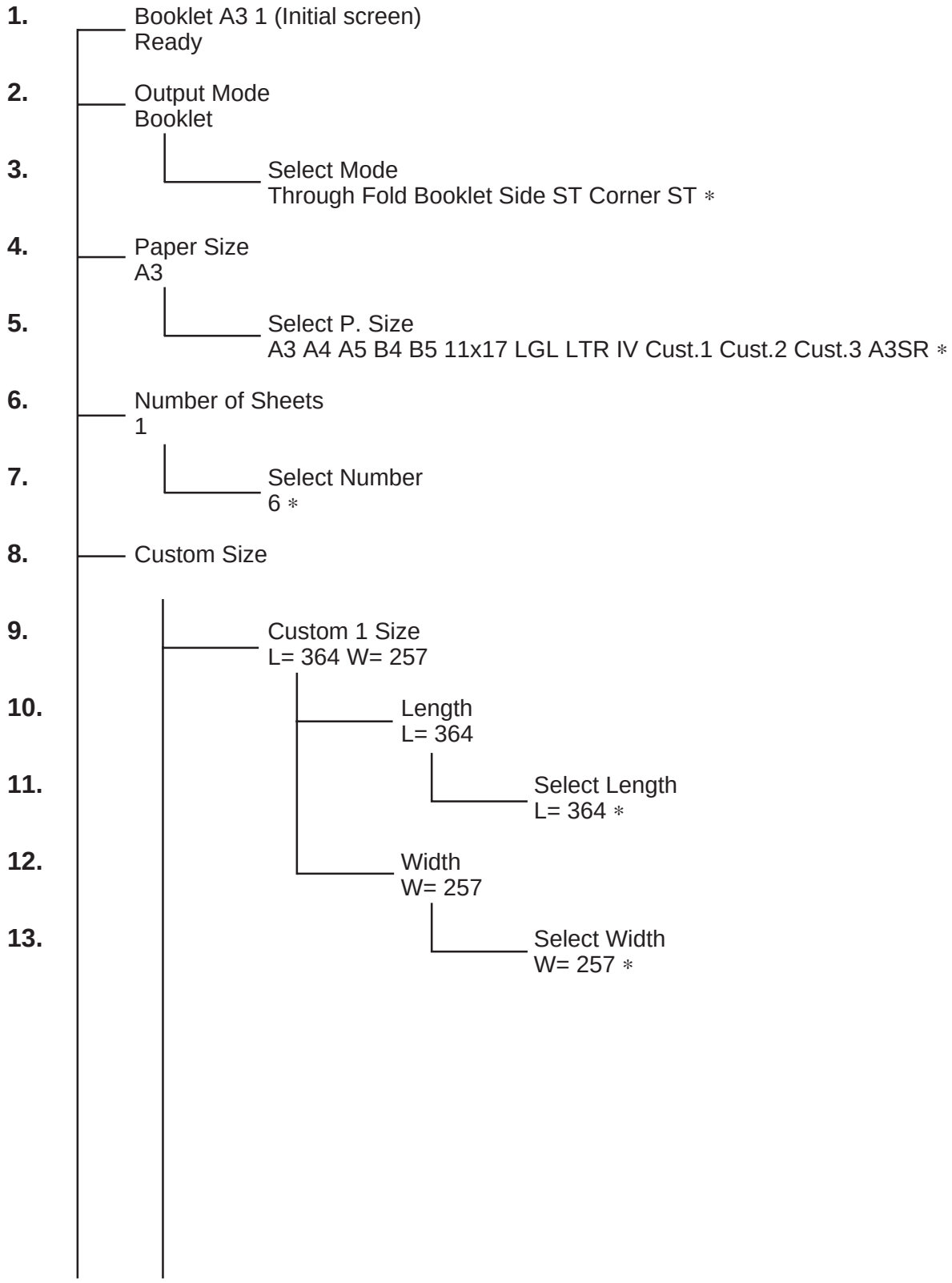
CAUTION : For continued protection against risk of fire, replace only with same type and rating of fuse.

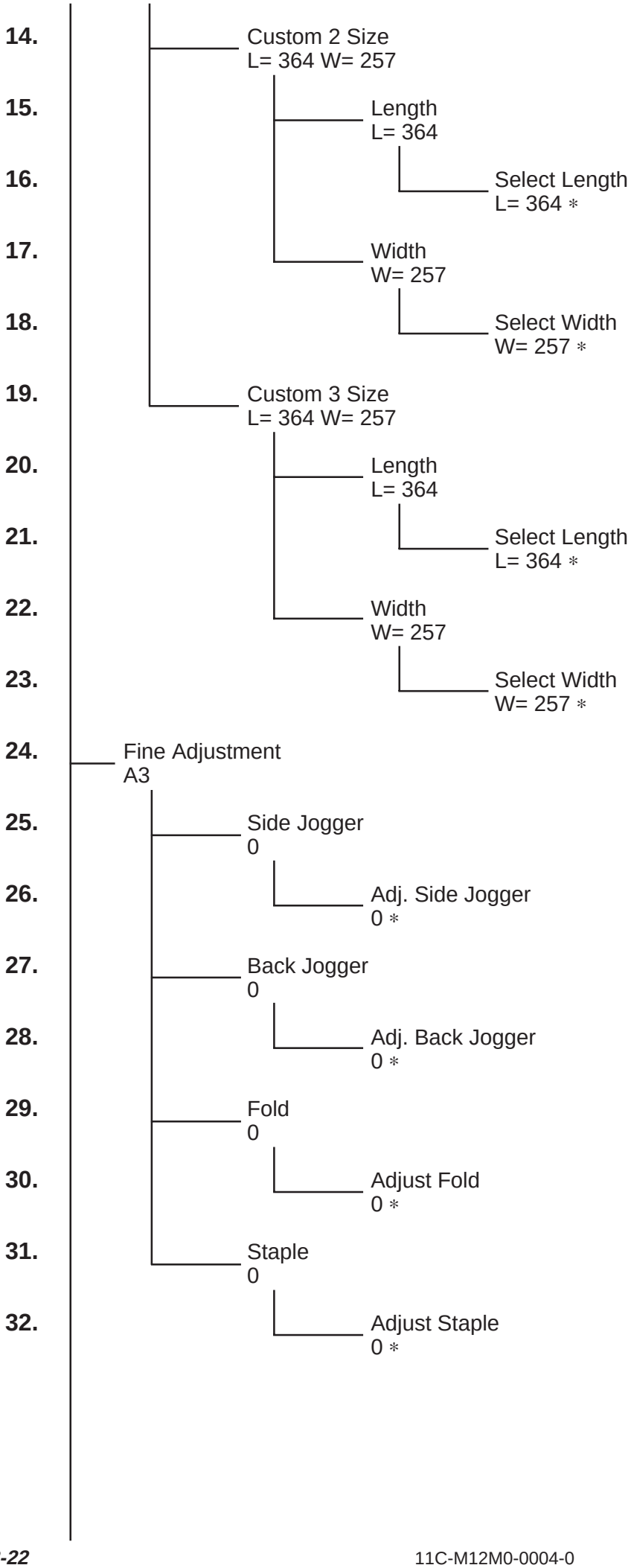
- Fuse type and rating: UL, IEC127 Fuse T 6.3 A
- Board display: FUSE 1

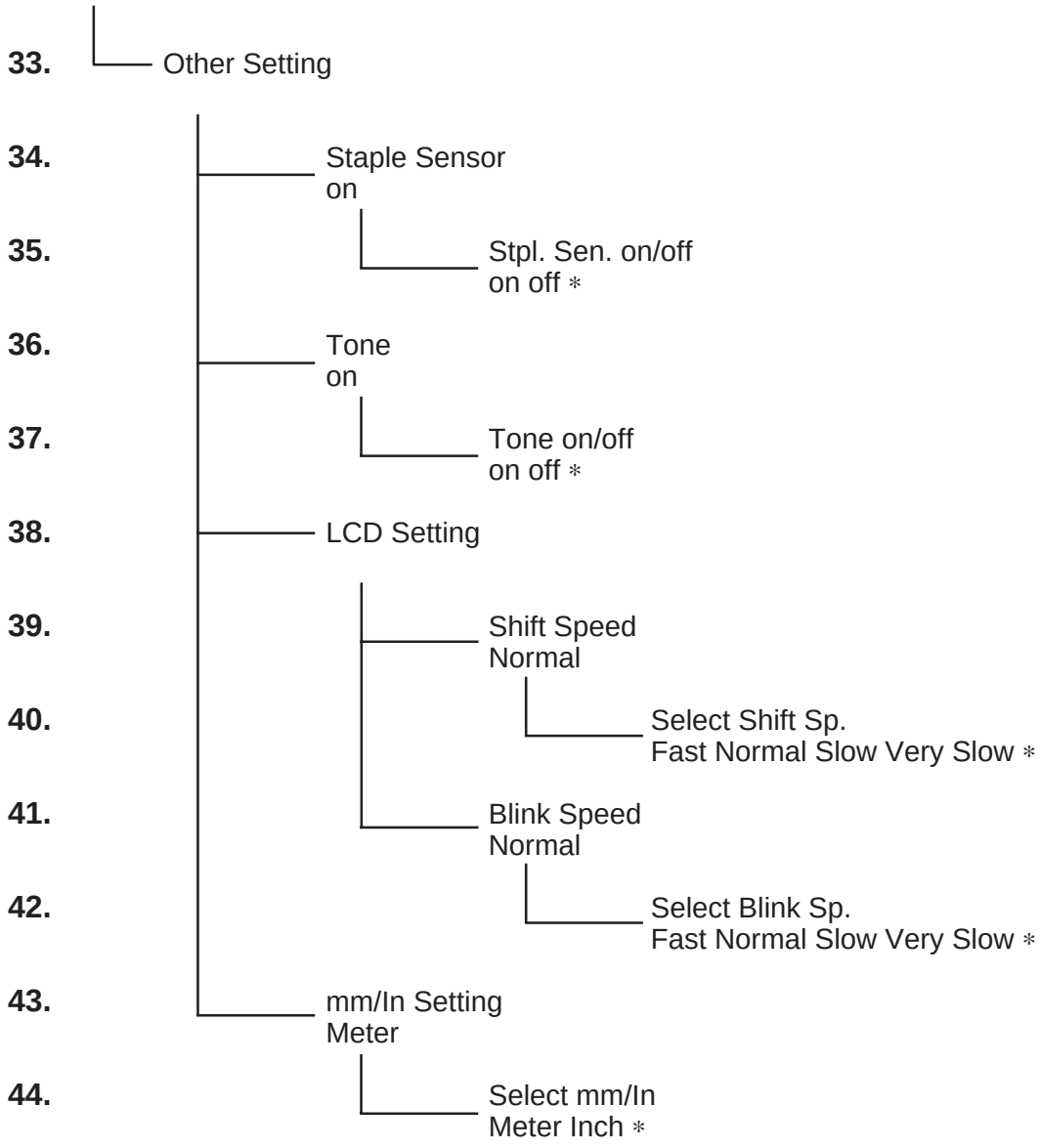
6. LCD MAP

6-1. LCD Map (Normal Menu)

NOTE : ● Turning the jog dial switches the display within the same hierarchy. Pressing it enters the hierarchy below.
● If no hierarchy exists below, turning the jog dial selects an item or sets a value. Pressing it confirms the selected item or value set.
● The ∗ mark indicates that items can be selected and values set by turning the jog dial.
● Pressing the escape button (left side of the control panel) returns to the hierarchy above. Pressing for the number of hierarchies moved down from the initial screen returns to the initial screen.

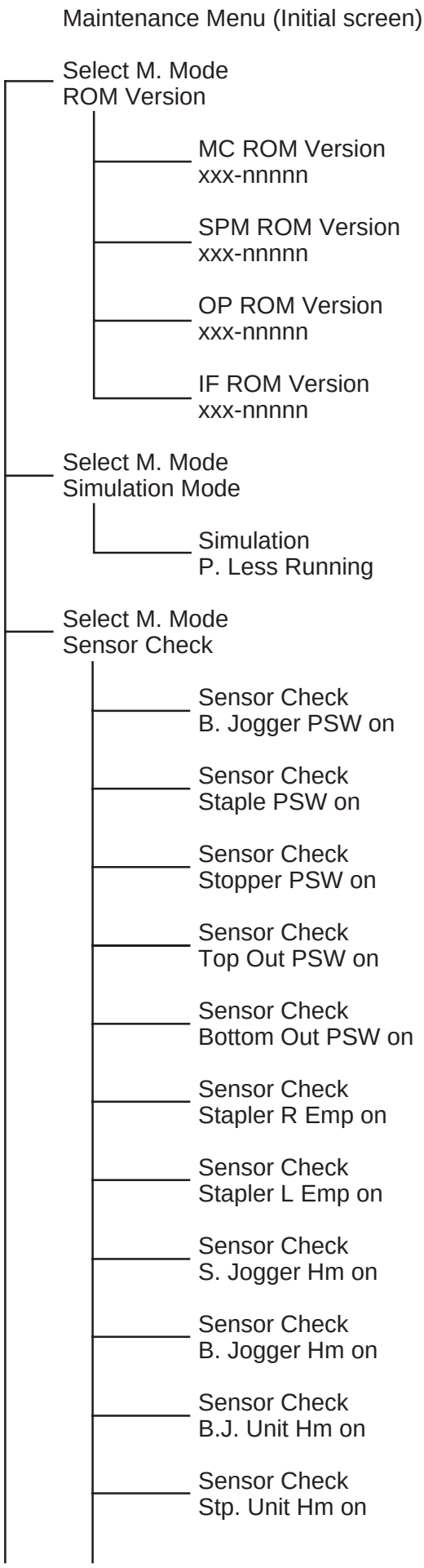



14.
Custom 2 Size
L= 364 W= 257
15.
Length
L= 364
16.
Select Length
L= 364 *
17.
Width
W= 257
18.
Select Width
W= 257 *
19.
Custom 3 Size
L= 364 W= 257
20.
Length
L= 364
21.
Select Length
L= 364 *
22.
Width
W= 257
23.
Select Width
W= 257 *
24.
Fine Adjustment
A3
25.
Side Jogger
0
26.
Adj. Side Jogger
0 *
27.
Back Jogger
0
28.
Adj. Back Jogger
0 *
29.
Fold
0
30.
Adjust Fold
0 *
31.
Staple
0
32.
Adjust Staple
0 *


33.
Other Setting
34.
Staple Sensor
on
35.
Stpl. Sen. on/off
on off *
36.
Tone
on
37.
Tone on/off
on off *
38.
LCD Setting
39.
Shift Speed
Normal
40.
Select Shift Sp.
Fast Normal Slow Very Slow *
41.
Blink Speed
Normal
42.
Select Blink Sp.
Fast Normal Slow Very Slow *
43.
mm/In Setting
Meter
44.
Select mm/In
Meter Inch *

6-2. LCD Map (Maintenance Mode)

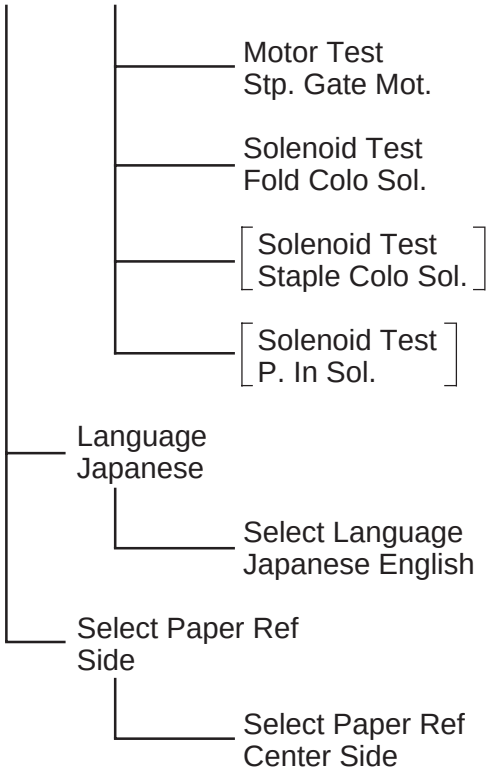
NOTE : In the sensor check mode, the sensor state will be displayed as “on” or “off”.



- Sensor Check
  Stp. Gate Hm on
- Sensor Check
  M. Move Hm on
- Sensor Check
  M. Move Index on
- Sensor Check
  Staple Hm on
- Sensor Check
  Staple Index on
- Sensor Check
  Knife Hm on
- Sensor Check
  Knife Index on
- Sensor Check
  Feed Index on
- Sensor Check
  F. Feed Index on

Select M. Mode
Motor Sol. Test

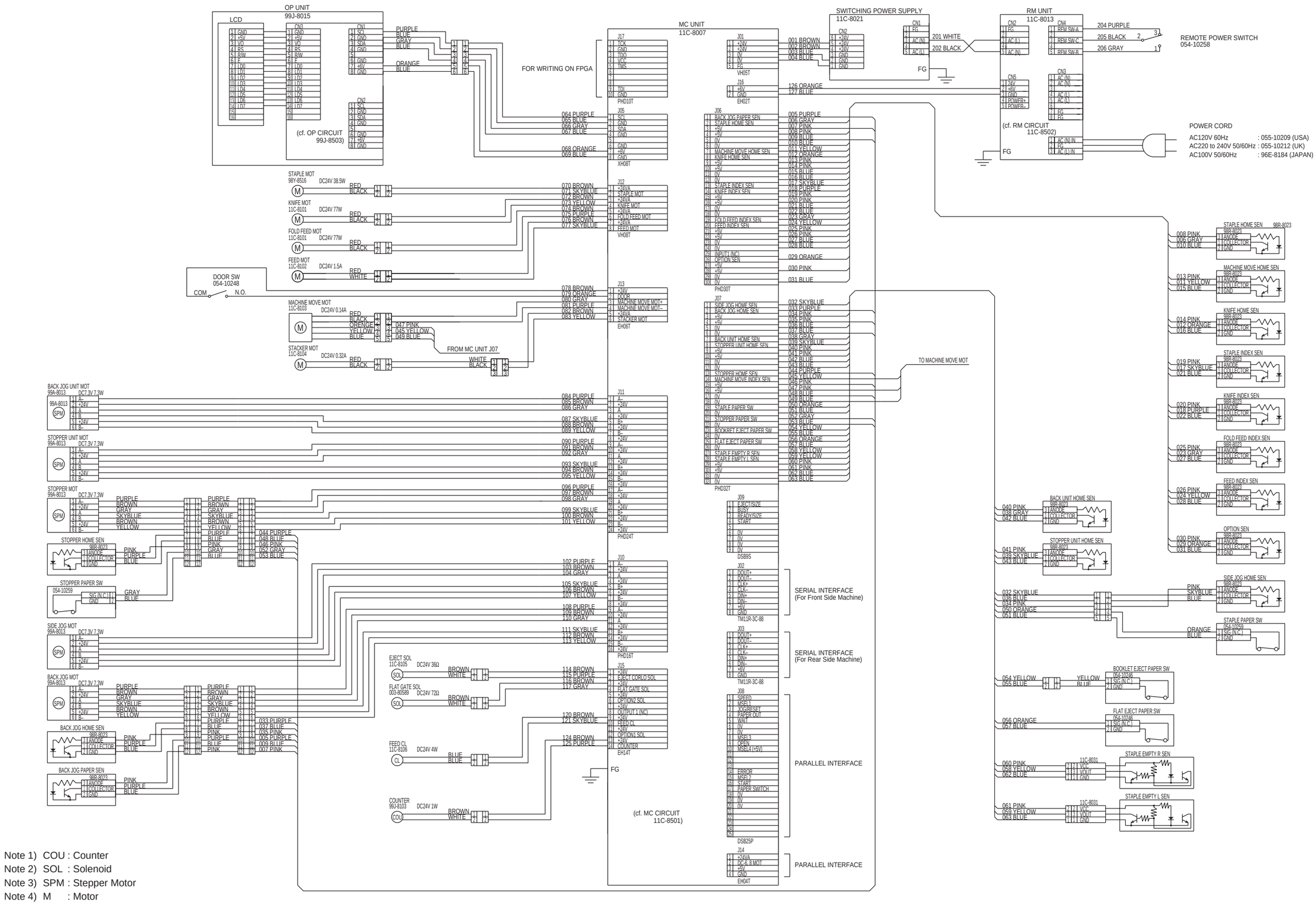
- Motor Test
  Feed Mot.
- Motor Test
  F. Feed Mot.
- Motor Test
  Knife Mot.
- Motor Test
  S. Jogger Mot.
- Motor Test
  M. Move Mot.
- Motor Test
  B.J. Unit Mot.
- Motor Test
  Stp. Unit Mot.
- Motor Test
  Staple Mot.
- Motor Test
  Stacker Mot.
- Solenoid Test
  S.ST Gate Sol.
- Motor Test
  B.J. Mot.



NOTE) Displayed but no operations performed.

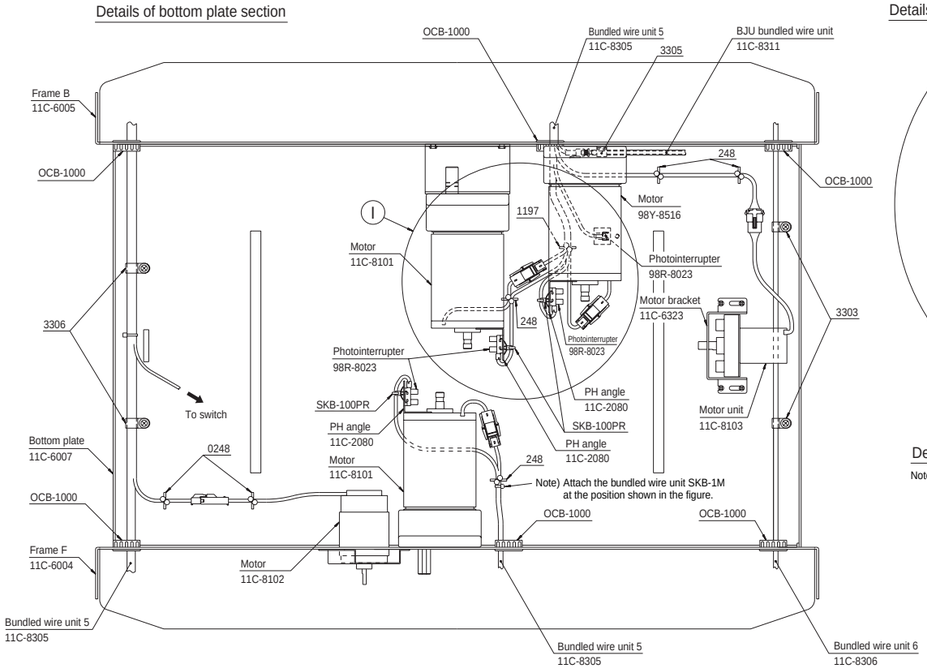
NOTE) Displayed but no operations performed.

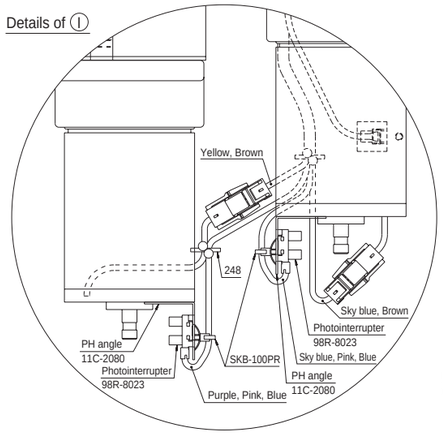
7. OVERALL SCHEMATIC DIAGRAM

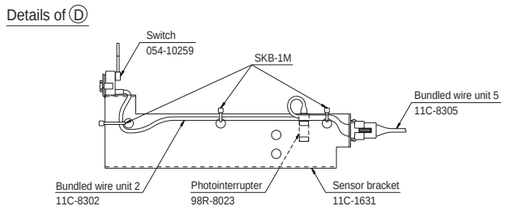


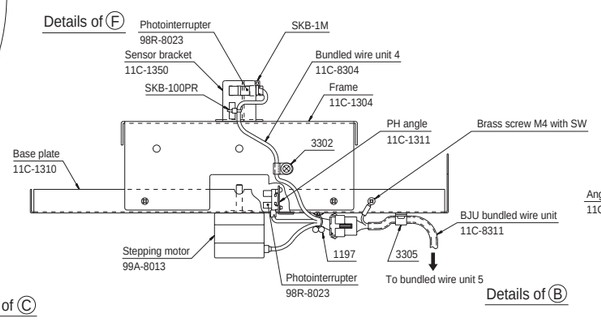
Note 1) COU : Counter
Note 2) SOL : Solenoid
Note 3) SPM : Stepper Motor
Note 4) M : Motor
Note 5) CL : Clutch

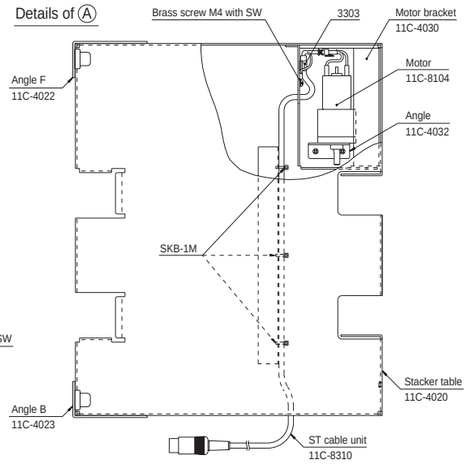
8. WIRING DIAGRAM

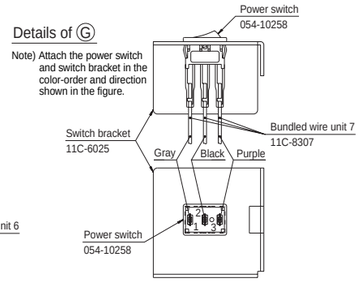


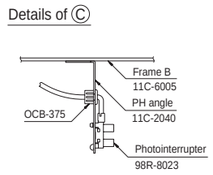


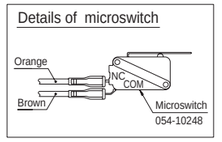


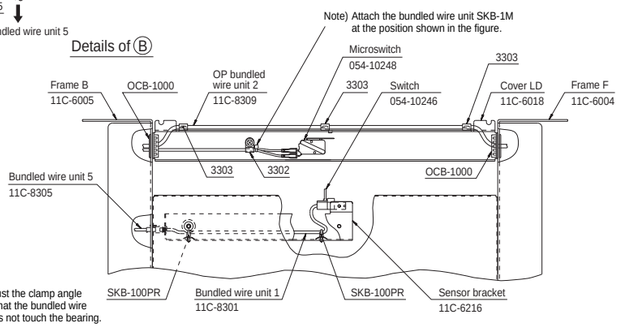


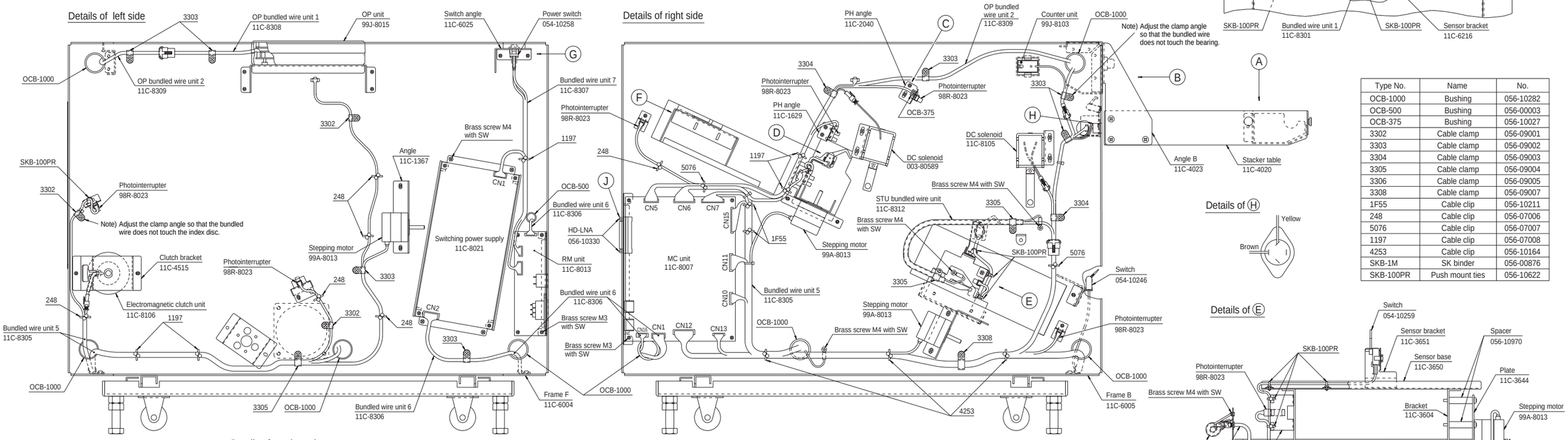












Type No.	Name	No.
OCB-1000	Bushing	056-10282
OCB-500	Bushing	056-00003
OCB-375	Bushing	056-10027
3302	Cable clamp	056-09001
3303	Cable clamp	056-09002
3304	Cable clamp	056-09003
3305	Cable clamp	056-09004
3306	Cable clamp	056-09005
3308	Cable clamp	056-09007
1F55	Cable clip	056-10211
248	Cable clip	056-07006
5076	Cable clip	056-07007
1197	Cable clip	056-07008
4253	Cable clip	056-10164
SKB-1M	SK binder	056-00876
SKB-100PR	Push mount ties	056-10622