

COPY BOARD

M-11S/M-11W

SERVICE MANUAL

PLUS

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1. COMPLIANCE OF SAFE REPAIR

Be sure to read this Service Manual before providing services. In the PLUS Copyboard, full consideration is taken to ensure the safety for a fire, electric shock, injury, harmful radiation, and substance. Therefore, observe the notice described in this Service Manual so that the safety is kept when providing services. Moreover, be sure to observe the notice described in the Instruction Manual.

Pay attention to the following during service inspection.

1-1. Cautions during Product Movement

- It is necessary to remove the products when making the service of products put on the wall. At that time, hold the products by two or more persons to prevent the products from dropping or a person from falling down.

1-2. Cautions during disassembling and assembling

1. This equipment contains parts under high voltage. When doing repairs, make sure that power plug is pulled out to insure safety.
2. Make sure that parts and screws and wiring, etc. are returned to their original positions. Tube, tape and other insulation materials have been used for safety reasons. The internal wiring has been designed to avoid direct contact with hot parts or parts under high voltage when using clamps or other tools.
3. The parts used in this device have special safety features such as flame-resistance and anti-voltage properties. When replacing parts, always use parts supplied from the factory.
4. After finishing operations make sure that all parts and wires have been returned to their original position and that there has been no deterioration of the area around the location that was worked on.
5. Be sure to use an earth band (wrist band) during repair and inspection.

2. SPECIFICATIONS

2-1. Product Specifications

BOARD TYPE (Model name)		Standard (M-11S)	Wide (M-11W)
Form	Installation method	Self-standing (T-shaped legs), or wall mounting	
	External dimensions (T-shaped legs* 1)	W1470 X D700 X H1970 (Max) mm	W1970 X D700 X H1970 (Max) mm
	Main unit weight	26.0 kg (excluding printer)	30.0 kg (excluding printer)
	T-shaped legs weight	9.6 kg	
Board	Panel Size	H920 X W1300 mm	H920 X W1800 mm
	Effective reading size	H900 X W1280 mm	H900 X W1780 mm
	Number of Pages	2	
	Paging	Endless in one direction (Horizontal scrolling)	
	Drive method	Sheet movement	
	Reading method	CCD sensor reduction optical system	
	Reading illumination light source	RGB LED	
	Reading resolution	Main scanning direction (vertical sheet surface) 2.4 dots/mm (60 dpi or equivalent) Sub scanning direction (horizontal sheet surface) 2.4 dots/mm (60 dpi or equivalent)	
	Reading time	Black & white: approx. 15 s Color: approx. 23 s	Black & white: approx. 20 s Color: approx. 31 s
Memory	Type	USB Flash memory*2	
	Compatible FAT types	FAT 12, 16, 32	
	File format	PNG format*3 and associated TML format	
	Interface	USB1.1 or USB2.0 full-speed mode*4	
Control panel	Control buttons	ON/Standby, +, -, Print, Save, Reprint, Color, Density, Feed/Stop	
	LED Indicators	Density, Color	
	Display	7-Segment (Page, Error #),	
Added functions	Clock	Used for the timestamp and for file dating properties (Includes backup battery for when there is a loss of power)	
	PC connection	Transfer of sheet surface image data via USB (TWAIN supported)	
Power supply	AC power adapter	Input : AC100 - 240V/50 - 60 Hz, Max 1.5A Output : DC24 V, 2.71 A	
Operating conditions	Temperature	10 - 35°C	
	Humidity	30 - 85% (No condensation)	
Recording section	Printer interface	USB1.1 or USB2.0 full-speed mode*4 compliant printers are supported	
Miscellaneous	Ruled lines	50 mm cross-ruled squares	
	Miscellaneous	Special markers (black, red, blue, and green)	

Remarks

*1: The height is adjustable at 1770, 1870 and 1970 mm.

*2: A USB memory is not included in the package.

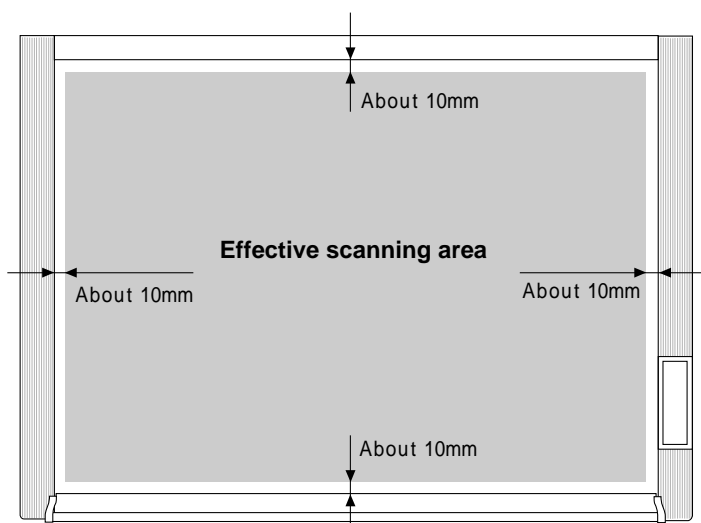
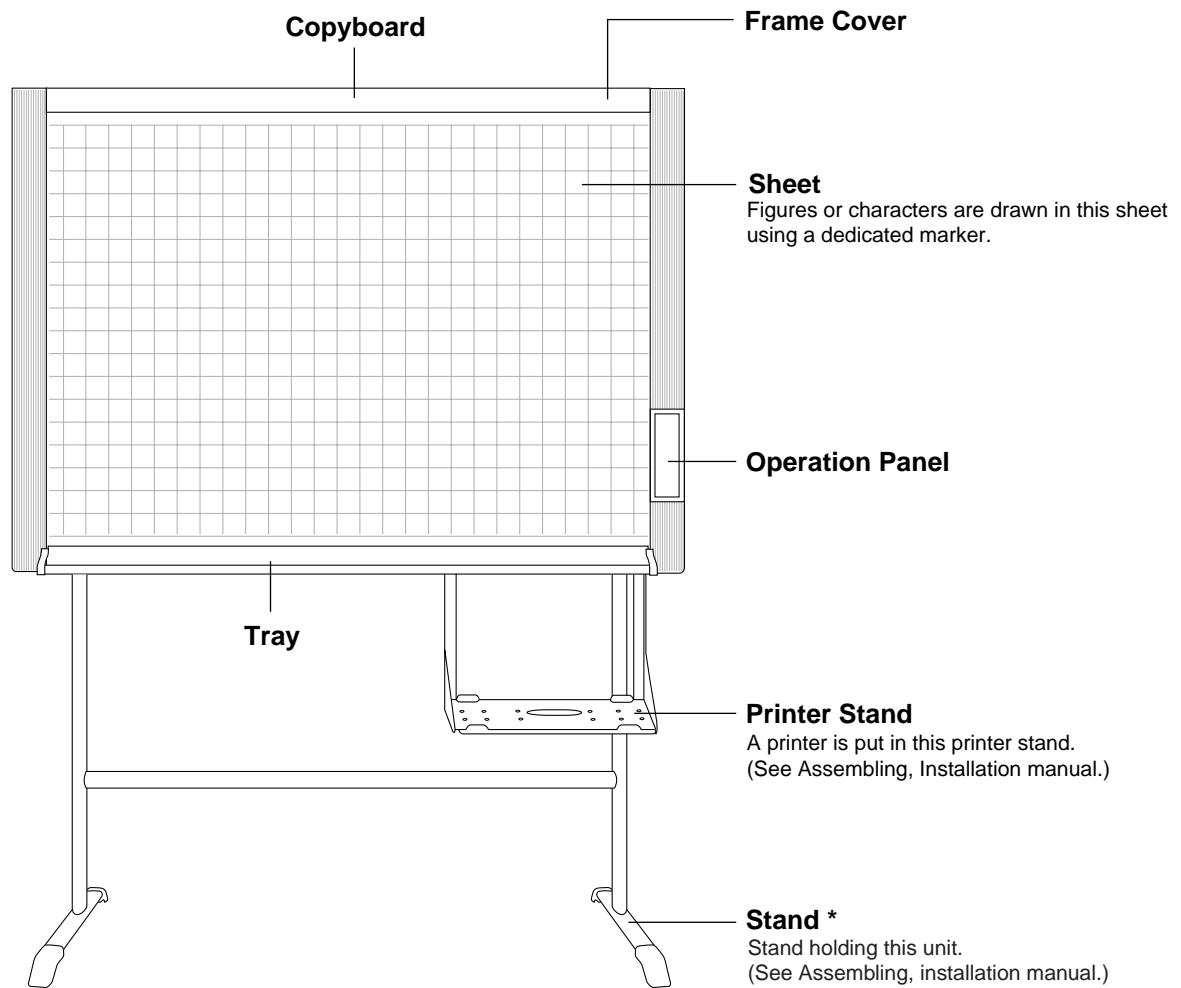
*3: The PNG format can be opened with internet Explorer 6.0 or above, or with a Web browser that supports PNG file access.

*4: Not correspond High-speed mode.

- Please note that for quality improvement purposes, specifications and design subject to change without prior notice.
- Depending on the product, the printer and T-shaped legs (stand) will be available separately.

2-2. Location of Parts and Controls

Front panel of main unit



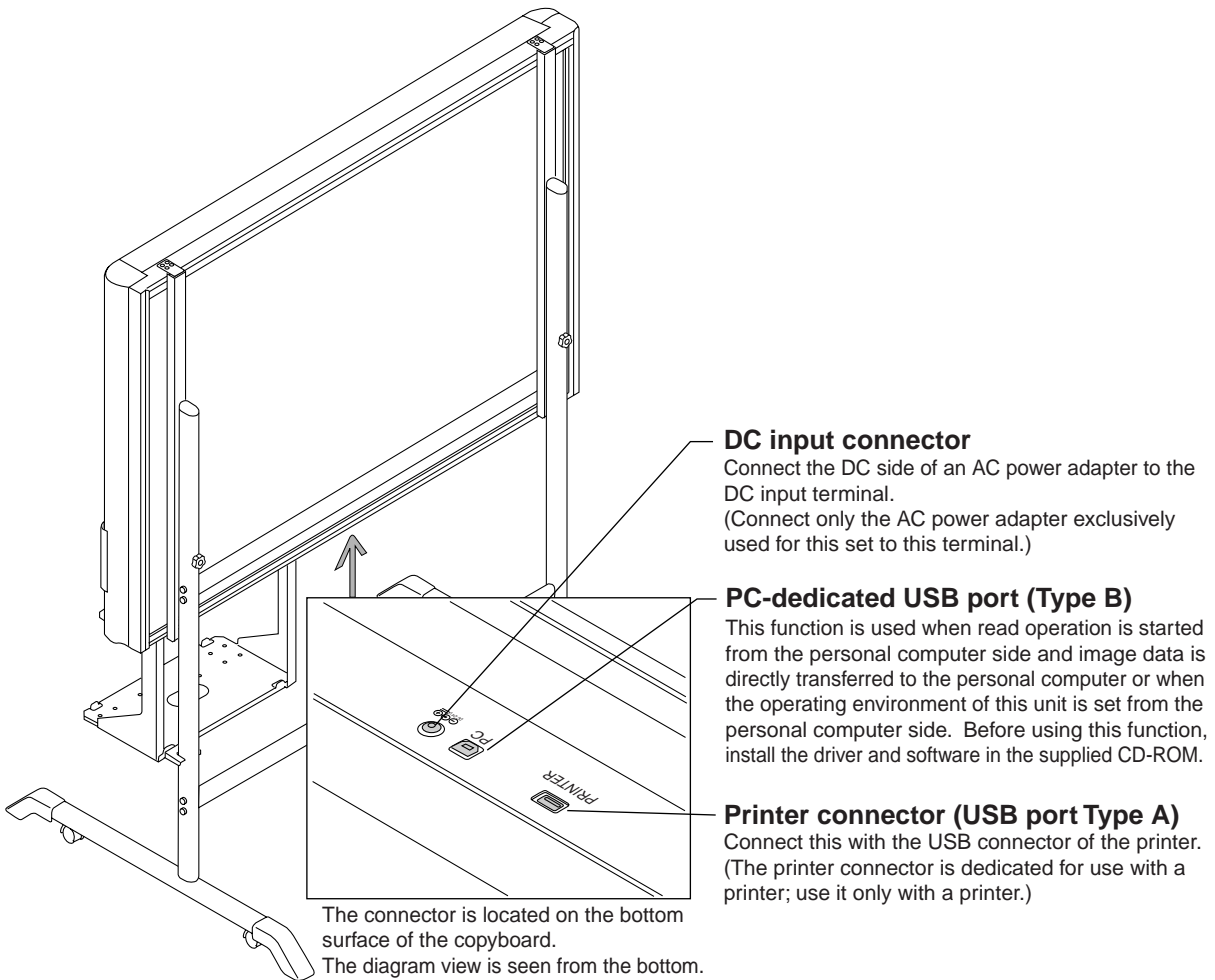
Effective scanning area

The portion where a copy can be made is displayed in gray in the figure.

* In the portion other than described above, a copy may not be able to be made during print, and USB memory or personal computer saving.

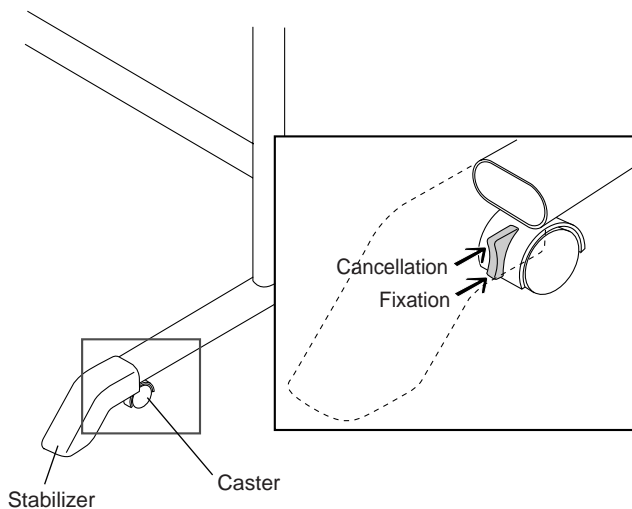
* A printer and stand may be available optionally.

Back panel of main unit



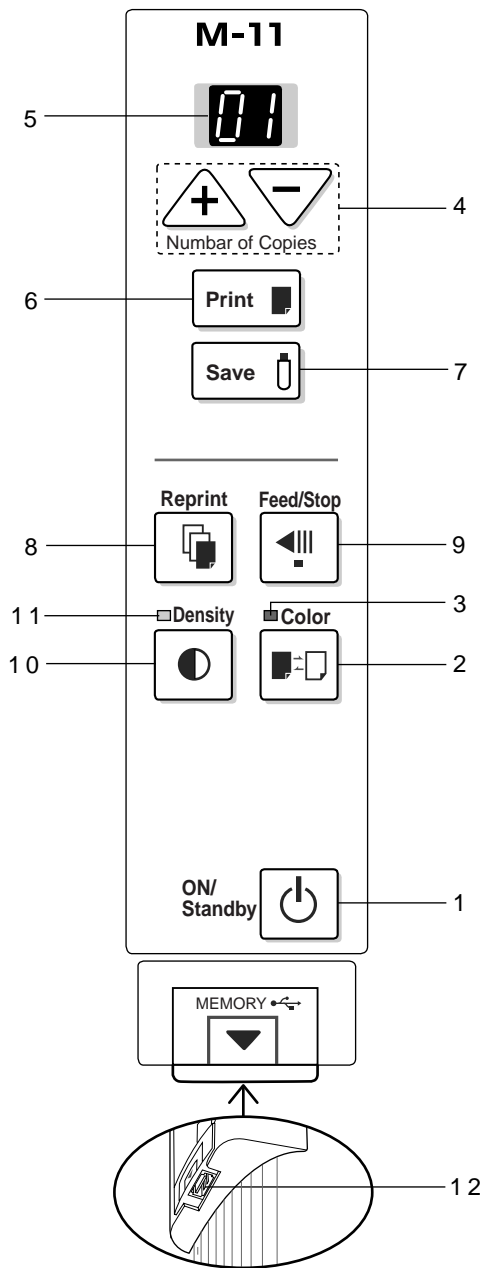
Locking and unlocking the caster of a stand*

After installation, fix the caster using a stopper. Remove a stabilizer during movement and unlock the stopper of a caster. To fix a stopper, push the lower position of the stopper. To unlock a stopper, push the upper position of it.



* A stand may be available optionally.

2-3. Operation Panel of Main Unit



During button operation, press the center (round convex section) of the button. Do not press the corner of the button. No function operates in this case.

1 ON /Standby button

Press this button to turn on and off the power of the copyboard. The POWER button is not interlocked with the main power supply. The current time and print compression ratio can be set through combined use of other buttons and the POWER button.

2 Color button

Press this button to select whether to print a sheet in "color" or "monochrome". The Color lamp lights when you select "color".
* When a monochromatic printer has been connected, a sheet is printed in monochrome even if you select "color".

3 Color mode lamp

This Color mode lamp lights in green when you select "color" using a Color button .

4 + / - buttons (Number of copies)

Press the + or - button to set the number of printed sheets. (The maximum number of printed sheets is 20.)
The number of printed sheets appears on the display window.

5 Display window

The printed sheet count, print density, memory storage operating state, or error information is notified using seven-segment LED.

6 Print button

The sheet is moved for read operation by one plane and printed proportionally to the number of printed sheets.

7 Save button (USB memory storage)

The sheet is moved for read operation by one plane and stored in a compact flash card.

8 Reprint button

The previously printed sheet plane is printed once again. (The sheet is not then moved.)
The number of printed sheet can be changed, but the density and color/monochrome cannot be changed.

9 Feed/Stop button

The sheet is scrolled to the left by one plane and stopped automatically. The scroll stops when you press this button during scrolling.

10 Density button

Press the Density button to select "Standard" or "Dark" as the density of a print. The Density lamp lights when you select "Dark". This button is validated during print, USB memory saving, and personal computer saving.

11 Density mode lamp

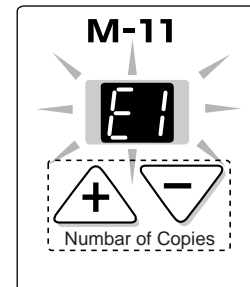
This density lamp lights in green when you select "Dark" using a Density button .

12 Memory button (USB port Type A)

The read image of this unit is saved in optional USB memory.

2-4. Error Display

Confirm the contents of the table shown below when E1 to E6 and the blink display (blinks for ten seconds) appear on the display window of the operation panel.

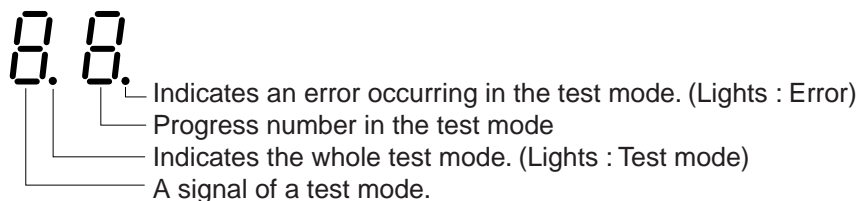


Error display number	Description	Remedy
Printer not connected No printer paper Printer failure	<ul style="list-style-type: none"> Is a printer cable connected? Is the power of a printer turned on? Is the cable not disconnected for a printer that uses an AC power adapter? 	<ul style="list-style-type: none"> Connect the printer definitely, and turn on the power.
	<ul style="list-style-type: none"> Is paper put in a printer? 	<ul style="list-style-type: none"> A4 paper is put in a printer.
	<ul style="list-style-type: none"> Do not the error lamp of a printer blinks? 	<ul style="list-style-type: none"> See the Instruction Manual of a printer.
USB memory not recognized	<ul style="list-style-type: none"> Is the USB memory formatted? 	<ul style="list-style-type: none"> This unit supports FAT12/16 and FAT32 formats. Format the USB memory using a personal computer.
	<ul style="list-style-type: none"> Is not used an incompatible in this unit? 	<ul style="list-style-type: none"> Browse our homepage for the USB memory and CF adaptor that can be used in this unit. (http://www.plus-vision.com)
	<ul style="list-style-type: none"> Is not properly inserted a USB memory? 	<ul style="list-style-type: none"> Check the operation using a personal computer.
	<ul style="list-style-type: none"> Is the USB memory not damaged? 	
Defective USB memory storage	<ul style="list-style-type: none"> An error occurred during USB memory storage. 	<ul style="list-style-type: none"> Repeat storage again. The USB memory is not removed or inserted during storage.
Read failure	<ul style="list-style-type: none"> A read lamp does not light properly or a read signal error occurred. 	<ul style="list-style-type: none"> Pull out the power plug from the wall outlet and insert it into the wall outlet again.
System error	<ul style="list-style-type: none"> A memory or internal are defective. 	<ul style="list-style-type: none"> Pull out the power plug from the wall outlet and insert it into the wall outlet again.
USB memory not installed When "USB" character display appears Forget-to-pull out warning. 	<ul style="list-style-type: none"> The USB memory is not installed in the main unit. 	<ul style="list-style-type: none"> Install the USB memory in the USB port.
	<ul style="list-style-type: none"> Did you press the POWER button with the USB memory installed in the main unit? 	<ul style="list-style-type: none"> The USB memory is installed in the main unit. Pull out the USB memory, so the power is turn off and the set enters the standby state.
USB memory is full	<ul style="list-style-type: none"> There is no empty capacity in the USB memory. 	<ul style="list-style-type: none"> Delete unnecessary data using a personal computer.
An incompatible printer is connected.	<ul style="list-style-type: none"> An incompatible printer in this unit is connected. 	<ul style="list-style-type: none"> Press the power button and turn off the power. Turn on the power and save the recording in USB memory when requiring recording.

2-5. Test and Adjustment Functions

The specifications for inspection and the start of a calibration program are described below.

1) Seven-segment display specifications.



2) To shift to the test/adjustment mode, press the “+” and “-” buttons simultaneously in the sleep mode and then press the power button.

The numeric LED display is <AP>.

3) Shift to each test mode by the button operation below.

Button operation	Test mode	Valid key	Numeric LED display
① ON/Standby	Exits the special mode and enters the sleep mode.	-	-
② -	Program version display & internal information write.	ON/Standby, - (*2)	<1.SPC>(*1)
③ Print	Start the calibration mode	ON/Standby, Print (*2)	<2.SPC>(*1)
④ Save	USB memory, Test mode	ON/Standby, Save (*2)	<3.SPC>(*1)
⑤ Feed/Stop	Printer, Test mode	ON/Standby, Print, Density, Color, Save	<4.SPC>(*1)
⑥ Density	SW display, Test mode	ON/Standby	<5.SPC>(*1)
⑦ Reprint	CCD Adjustment mode	ON/Standby	<6.SPC>(*1)
⑧ Color	Extended, Test mode	ON/Standby, Save, Density, Feed, Color	<7.SPC>(*1)

*1. SPC indicates the non-lighting state.

*2. Processing is performed repeatedly.

Program version display & internal information write. <1.SPC>

The major version of a program is displayed when you press the “-” button once.

The minor version of a program is displayed when you press the “-” button second.

The model information, the version number of internal software, the read width, the sheet length, and the information of the connected printer are written in USB memory as a text file.

Program rewrite (for maintenance)

When USB memory is used

The program in FLASH ROM and a color judgment table are updated from USB memory so as to improve maintenance.

* All contents of FLASH ROM are erased when the power is turned off during program rewrite.

- 1) Only the application program of a version you want to update to USB memory is stored.
The file name of the application program is M11 _xx _xx.mot (xx _xx indicates major and minor version numbers), and the place where the application program is stored is a root directory.
- 2) USB memory is recognized, and the program file described above can be rewritten when it exists in memory.
- 3) The file describe above is detected in the sleep mode or standby mode.
The existing application is executed when no USB memory or file exists.
The current program version blinks on the numeric LED display for confirmation at intervals of 500 ms. (‘01’ to ‘99’)
- 4) Press the “Save” button to start write operation.
- 5) After write operation is normally completed, a new version blinks on the numeric LED display.
An old version blinks (at intervals of 250 ms) when write operation is not completed normally. “00” lights on the numeric LED display when no old version exists.
“EE” lights when an error occurs (write fails).

When PC is used

1. Tools Required

PC: PC in which Windows XP and Windows 2000 operate and that has a USB (of version 1.1 or higher) terminal.

USB cable

Setup utility: Setup utility (contained in CD-ROM) for M-11

USB screwdriver (contained in CD-ROM) for M-11

2. Preparations (Set PC first only once.)

Install setup utility in PC.

Connect PC to M-11 using a USB cable with the AC power turned on.

Select "Install from a list or specific place" because new hardware is detected on the PC side.



Fig.1 Detection wizard screen of new hardware (1)

Install the driver while referring to the folder (the M11USB folder of a CD-ROM drive in case of CD-ROM) in which a USB driver is contained.

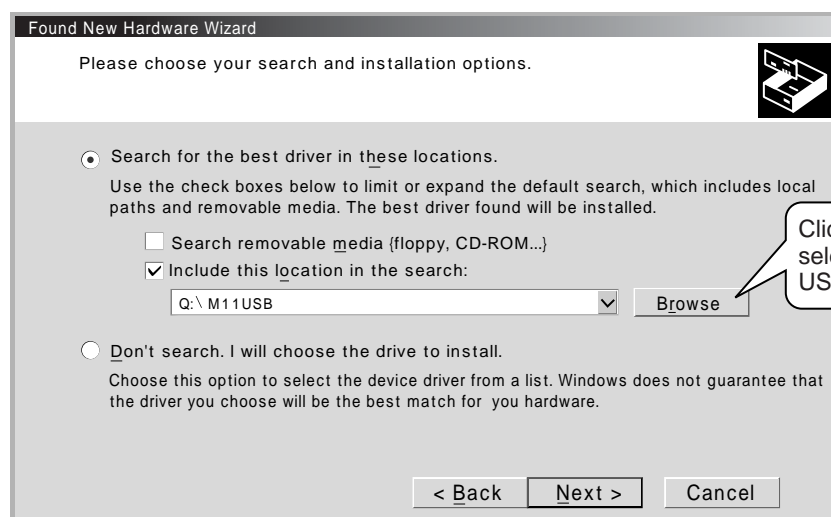
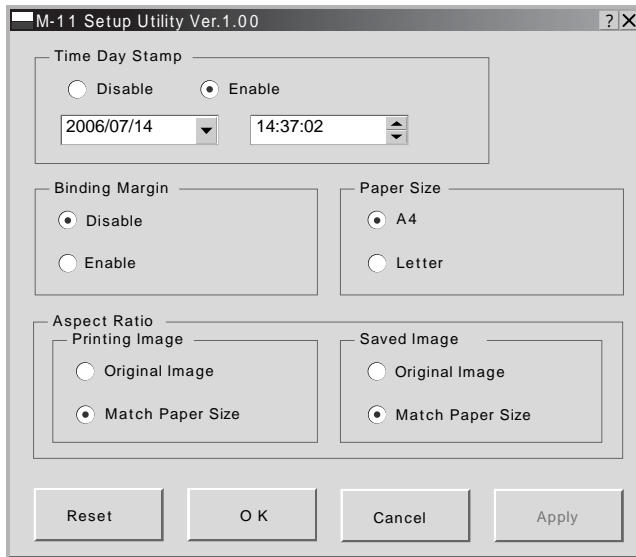


Fig.2 Detection wizard screen of new hardware (2)

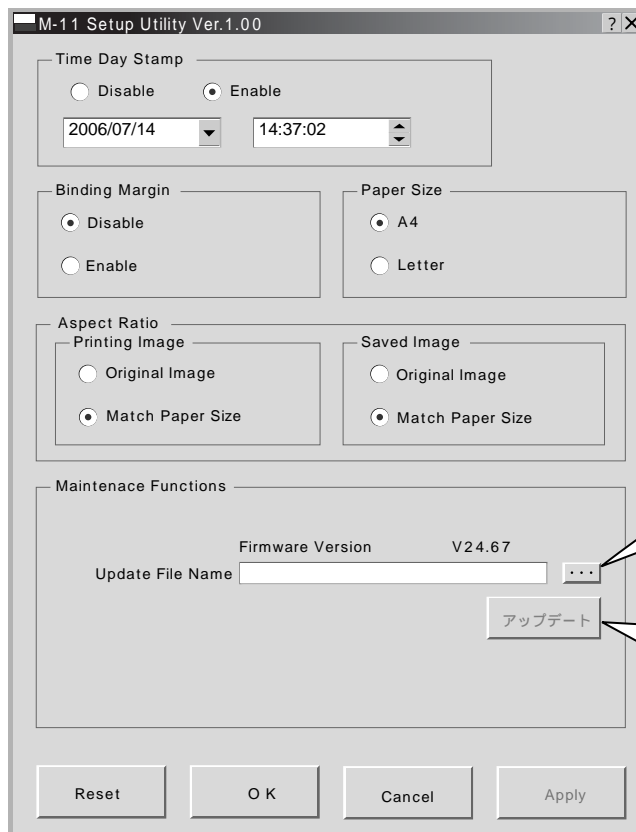
3. Rewrite operation

Connect PC and M-11 using a USB cable.
Screen on which setup utility is started.



Press the "Ctrl", "alt", and "F12" keys simultaneously in the dialog box of setup utility.

Fig.3 Setup utility start screen



Select the (.MOT) file of firmware.

Firmware begins to be updated when you click the "Update" button.

NOTE:
Do not operate M-11 and setup utility during firmware rewrite.

Fig.4 Maintenance functions screen

Rewrite operation is completed when the progress bar of setup utility reaches 100% and when the seven-segment LED of M-11 blinks to display a new version.
Turn off the power of M-11 and terminate the setup utility.

3. TROUBLE SHOOTING

By checking operations normal usage time, it is possible to carry out judgments on malfunction to a certain extent. Carry out the following checks before disassembling the equipment.

1. Press the ON/Standby button and turn on the power.

Is the power turned on?

- No →
- The power cord is disconnected from the wall outlet.
 - The AC Adapter is defective.
 - The Main Board Assy is defective.
 - The Switch Box Unit is defective.
 - The connector of the Switch Harness is disconnected.

Yes

Does the error display appear?

- Yes → The error display (E4) appears.
- The connectors of the CCD Harness Assy is disconnected.
 - The CCD Unit is out of adjustment.
 - The CCD Unit is defective.
 - The Main Board Assy is defective.

- The error display appears.
- The Main Board Assy is defective.

No

2. Press the Feed/Stop button.

Does the sheet operate normally?

- No →
- The connector of the Motor Harness is disconnected.
 - The Timing Belt is disconnected or loosened.
 - The Sheet Motor Assy is defective.
 - The Main Board Assy is defective.

Yes

3. Press the Print button (when a printer is used).

Does the error display (E1) appear?

- Yes → Printer failure
- The printer is defective. (See the Instruction Manual of a printer.)
 - The power of a printer is not turned on.
 - The paper of a printer is exhausted.
 - The printer is not connected.
 - The Main Board Assy is defective.

No

Is the object written in the board printed normally?

- No → A black line is put in printing.
- Out-of-adjustment of CCD Unit: Slight (It is improved by calibration.)
 - Out-of-adjustment of CCD Unit: Severe (Perform the CCD adjustment again.)
 - Dust adheres to the mirror of the board body.
- Printing becomes blurred.
- The marker (written character) becomes blurred
 - The ink (toner) of a printer is exhausted.
- A specific color is not printed or the printed color is improper (when a color printer is used).
- The ink of a printer is exhausted.
 - The ink cartridge of a printer is defective.

Yes

4. Press the Save button (when a USB memory is used).

Do the error displays (E2 and E3) appear?

- Yes → Error display: E2 is displayed.
- A USB memory is not formatted.
 - An incompatible USB memory is used.
 - A USB memory is defective.
- Error display: E3 is displayed.
- Memory storage error: Repeat storage again.
 - The Main Board Assy is defective.

No

Is the object written in the board stored normally?

- No → A black line is put in a picture.
- Out-of-adjustment of CCD Unit: Slight (It is improved by calibration. See section 5-2.)
 - Out-of-adjustment of CCD Unit: Severe (Perform the CCD adjustment again. See section 5-1.)
 - Dust adheres to the mirror of the board body.
- A picture becomes blurred.
- Out-of-installation of CCD Unit. (It is improved by calibration.)
 - The marker (written character) becomes blurred.

Yes

Normal operation

4. DISASSEMBLY AND ASSEMBLY

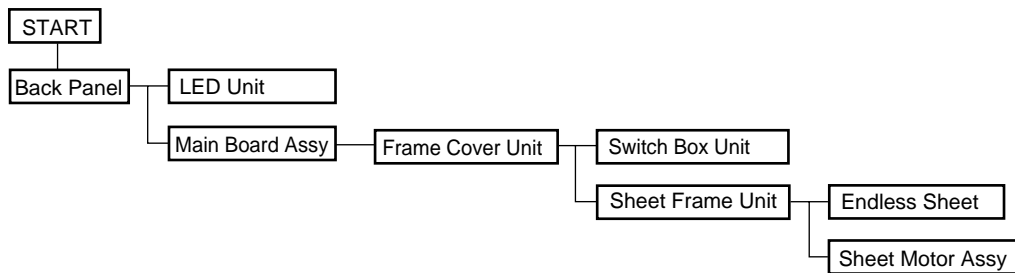
4-1. Tools Required

- Phillips screwdriver (+) No. 2
- Cutting pliers
- Electrostatic elimination wrist band

4-2. Caution

- See “1. Compliance of Safety Repair and Safety Inspection” before disassembling and assembling.
- Put on gloves so that you do not cut your hand at the sharp edge of a frame during disassembly and assembly.
- See “6. Wiring Diagram” and “7. Parts List” for the parts name or wiring.
- The point especially requiring attention when handling parts or performing disassembly and assembly contains a caution. Be sure to follow this caution.

4-3. Disassembly and Assembly Procedures



4-4. Disassembly and Assembly

This section describes one example of disassembly and assembly procedures. For the actual operation, disassemble and assemble the required parts with reference to “4-3. Disassembly and Assembly Procedures”.

1) Remove the Back Panel. (See Figs. 1 and 2.)

1. Remove the “S-7” screws shown in Fig. 1 and then remove the Back Panel Corner.
2. Remove the Back Panel as shown in Fig. 2.

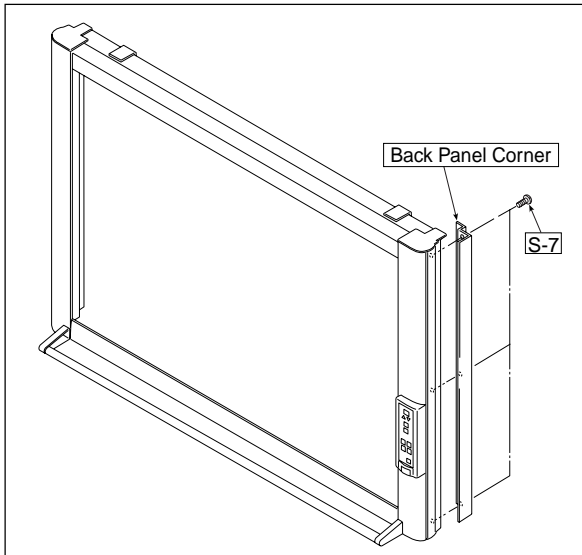


Fig. 1

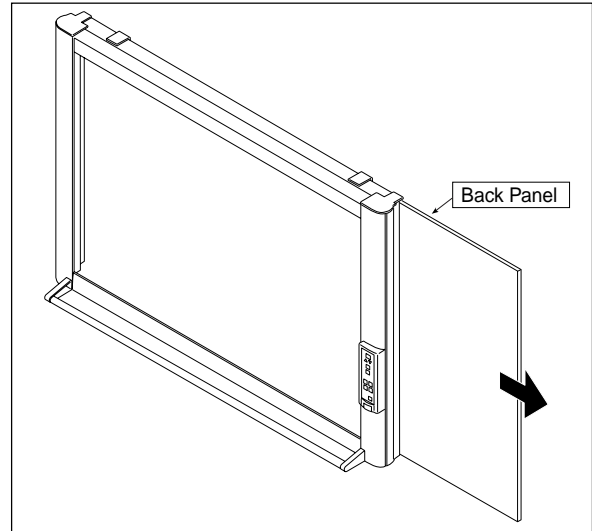


Fig. 2

2) Remove the Main Board Assy. (See Figs. 3 and 4.)

1. Disconnect the connectors (CN2, 7~12) connected to the Main Board Assy shown in Fig. 3.
2. Remove the “S-3” screws shown in Fig. 4 and then remove the Main Board Assy.

Note:

- Be careful when the screws are removed and installed.
- * Calibration is required after replaced the Main Board Assy and adjusted R82 (CCD signal volume).
- * The battery installed in the Main Board Assy can be used without any functional problem for ten years or more.

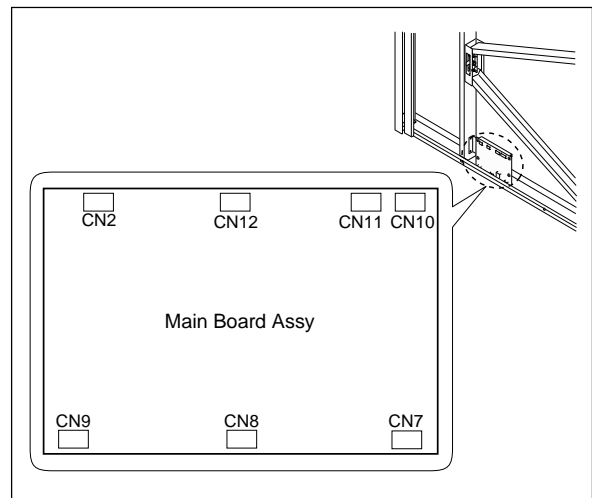


Fig. 3

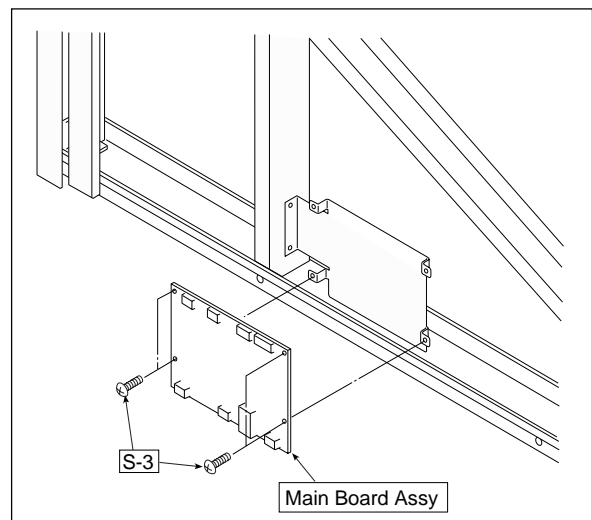


Fig. 4

DISASSEMBLY AND ASSEMBLY

- 3) Remove the CCD Unit. (See Fig. 5.)
1. Remove the "S-3" screws shown in Fig. 5.
 2. Remove the "S-4" screws shown in Fig. 5 and then remove the CCD Unit.

Note:

The CCD Unit requires adjustment when it is replaced and removed. (See 5. Adjustment.)

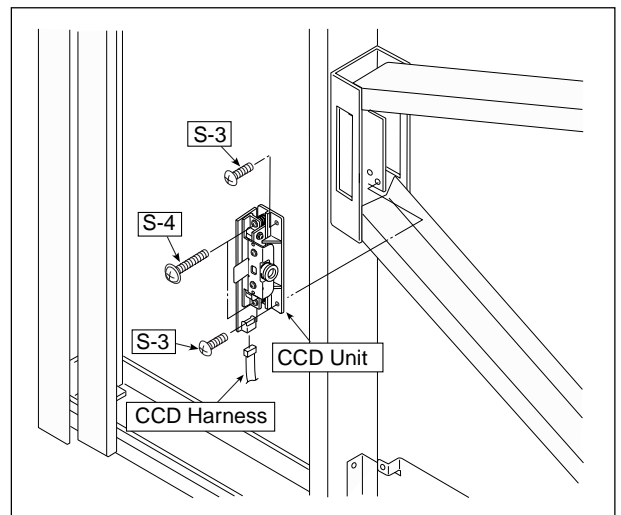


Fig. 5

- 4) Remove the Frame Cover Section. (See Fig. 6.)
1. Remove the "S-9" screws shown in Fig. 6.

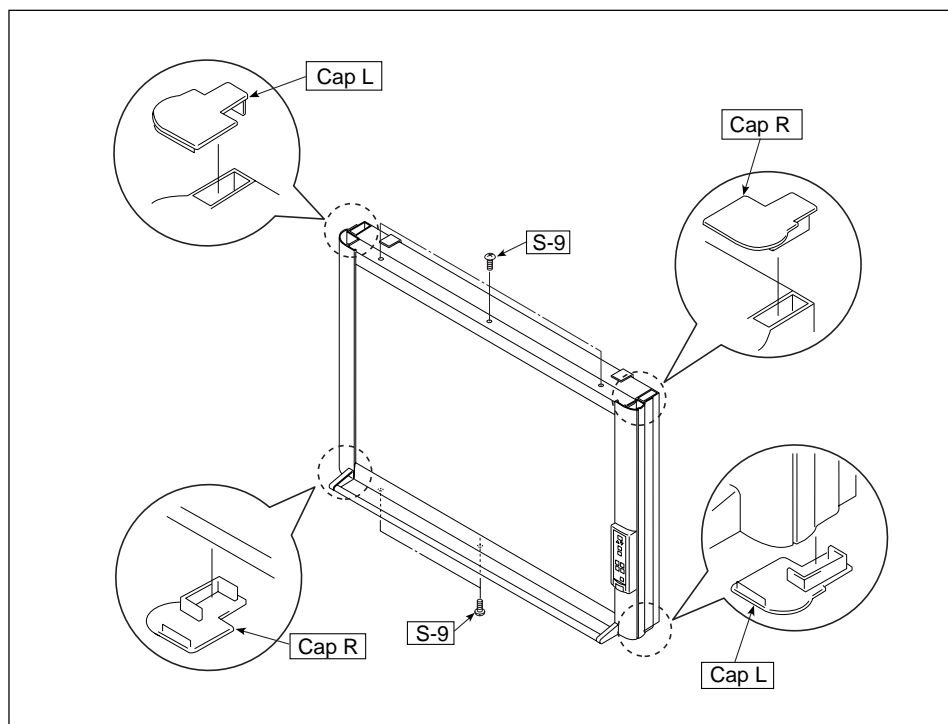


Fig. 6

DISASSEMBLY AND ASSEMBLY

5) Remove the Switch Box Unit. (See Fig. 7.)

1. Remove the "S-8" and "S-10" screws shown in Fig. 7.
2. Remove the "S-5" screws shown in Fig. 7 and then remove the Switch Box Unit.

Notes:

- Be careful not to mistake the hole through which the Switch Harness is passed. (See Fig. 8.)
- Pay attention to a kind of screw.

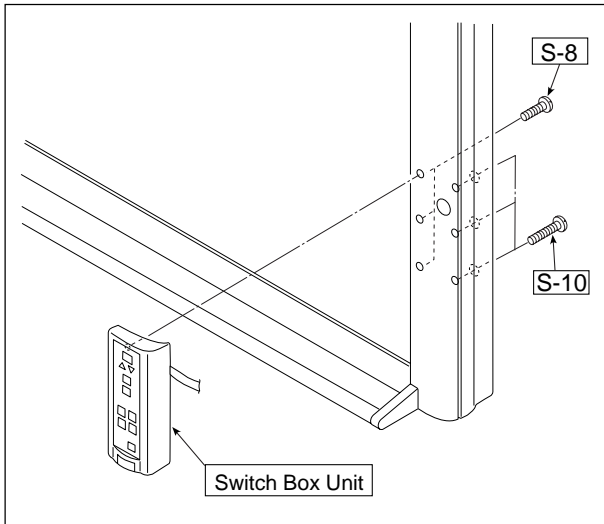


Fig. 7

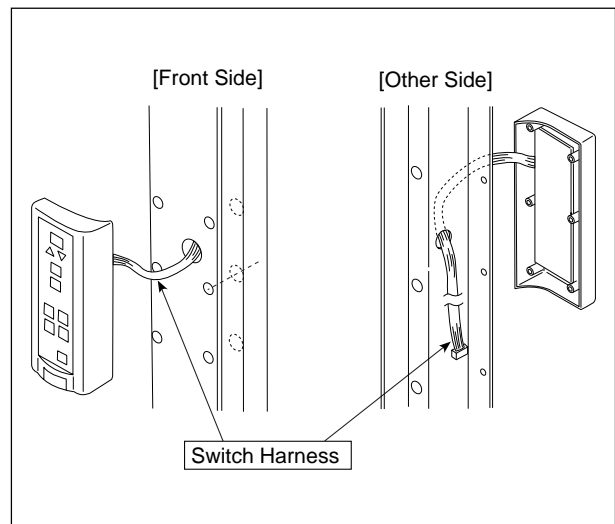


Fig. 8

6) Disassemble the Frame Cover Section. (See Fig. 9.)

Remove the "S-1" and "S-6" screws shown in Fig. 9 and disassemble the Frame Cover.

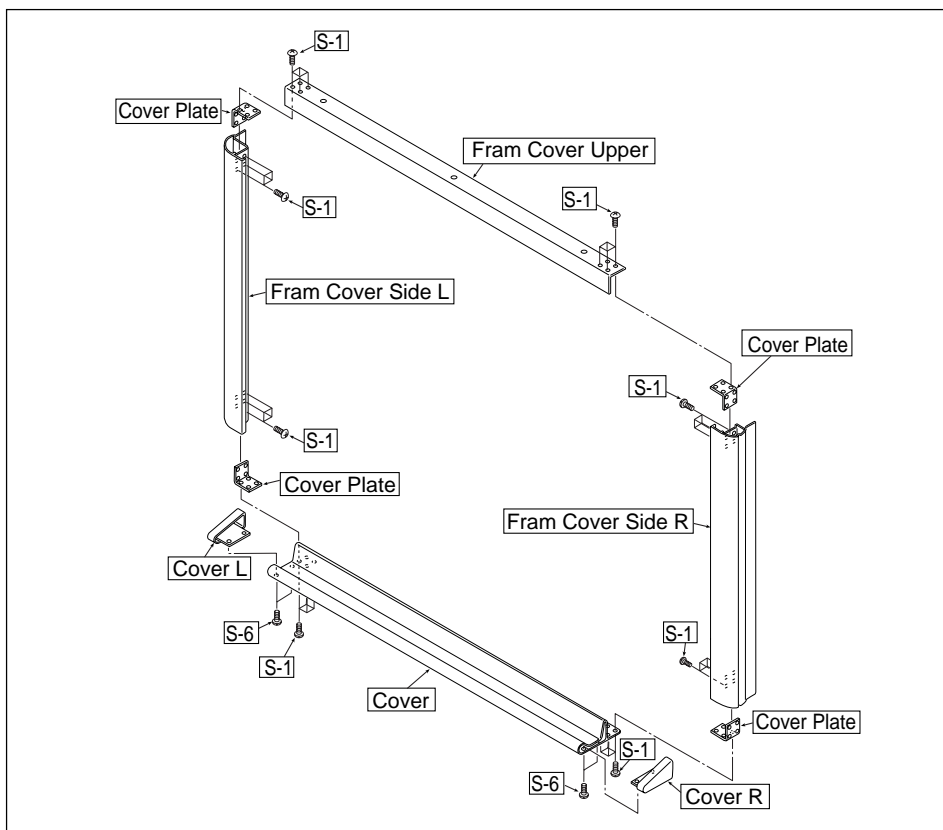


Fig. 9

7) Remove the Sheet Frame Unit. (See Figs. 10 and 11.)

1. Remove the "S-1" screws shown in Fig. 10.
2. Remove the Sheet Frame Unit as shown in Fig. 11.

Notes:

- The Sheet Frame Unit is caught on a hook as shown in the portion A of Fig. 10.
- Remove the Motor Harness earlier when the Sheet Frame Unit is removed.

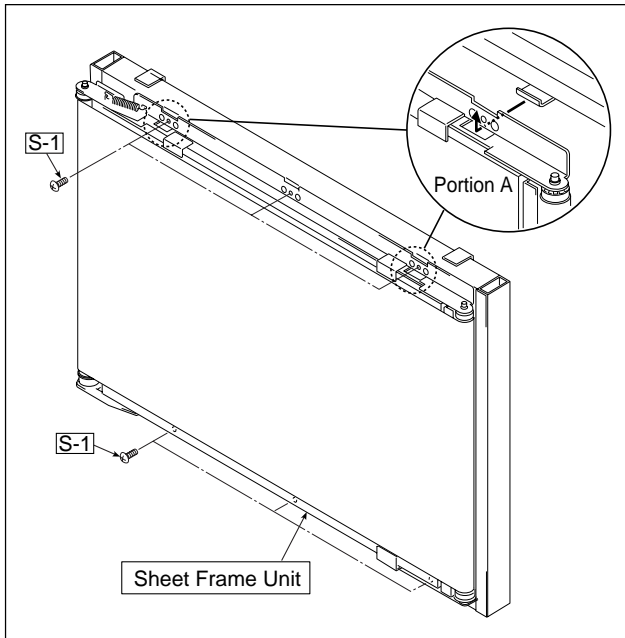


Fig. 10

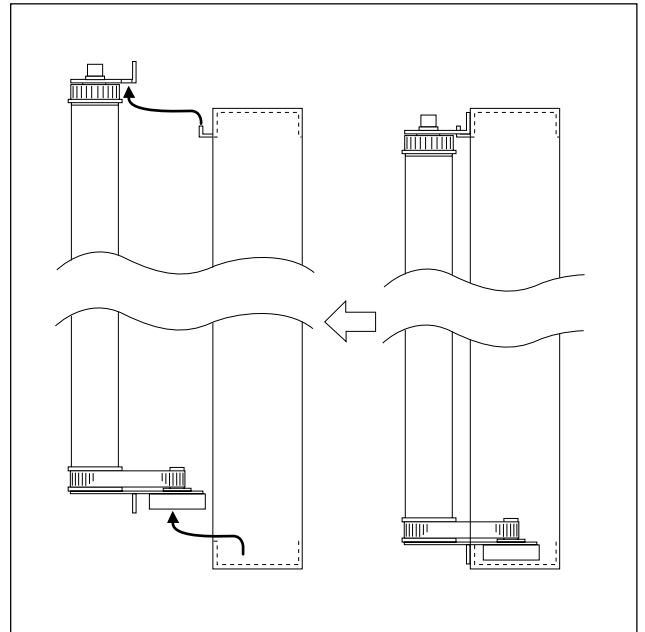


Fig. 11

8) Remove the Sheet Motor Assy. (See Fig. 12.)

1. Remove the "S-3" screws shown in Fig. 12.

Note:

Adjust the tension of the Timing Belt when the Sheet Motor Assy is installed. (See 5. Adjustment.)

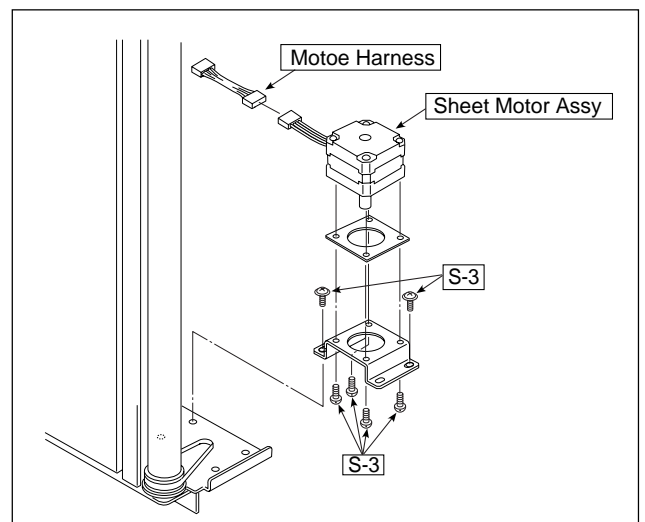


Fig. 12

DISASSEMBLY AND ASSEMBLY

9) Remove the Endless Sheet. (See Figs. 13, 14, and 15.)

1. Push the sheet roller section inside as shown in Figs. 13 and 14.
2. Remove the Endless Sheet as shown in Fig. 15.

Note:

- Be careful not to damage or fold it when handling the Endless Sheet.

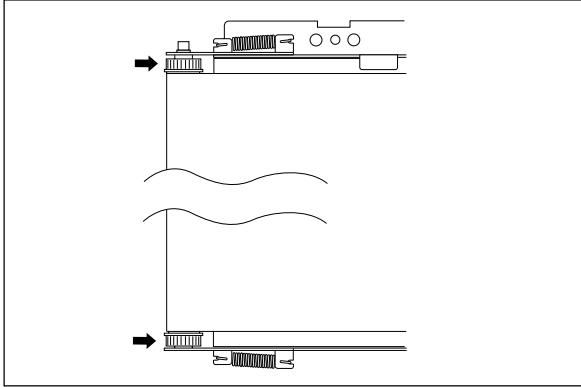


Fig. 13

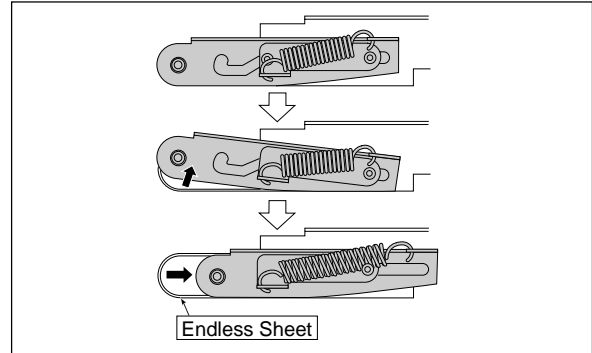


Fig. 14

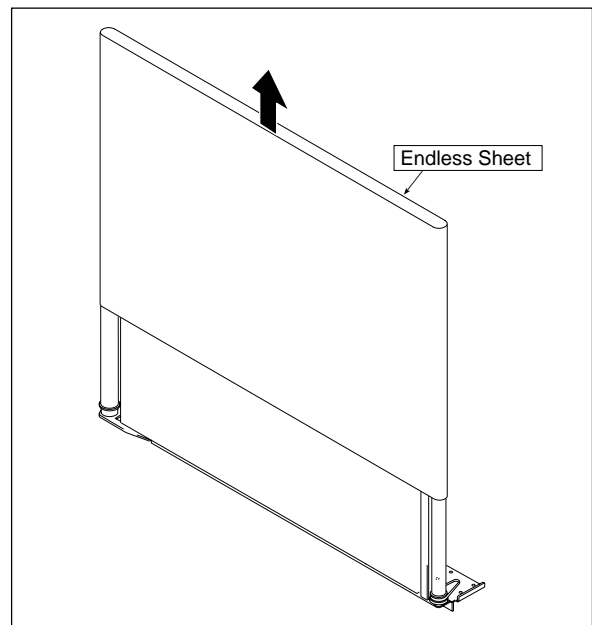


Fig. 15

10) Remove the LED Unit. (See Fig. 16.)

1. Remove the LED Harness as shown in Fig. 16.
2. Remove the "S-3" screws as shown in Fig. 16.
3. Remove the LED Unit as shown in Fig. 16.

Note:

Use the parts assembled in a factory during replacement of an LED unit.

* Calibration is required after replaced.

* Be sure to confirm the CCD waveform after the LED unit is replaced. (An oscilloscope is required in this case.)

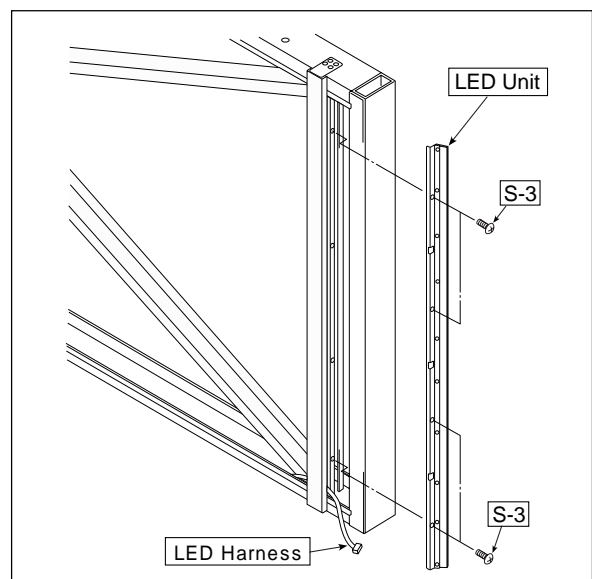
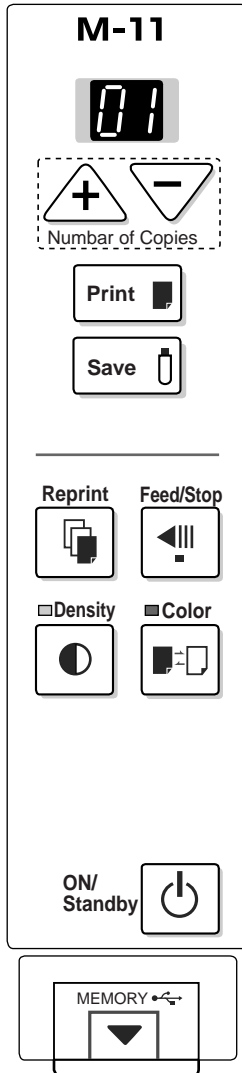


Fig. 16

5. SETTING THE TIME

The clock of the copyboard should be set correctly because the date and time (timestamp) is printed on the printer paper, and it is also recorded in the file information when saving.

Overview of the Operation

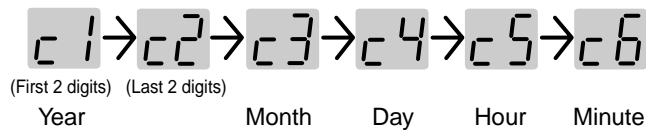


1. Switch to "Time setting"

Press the ON/Standby button while holding down the Density button.

2. Display the day and hour setting mode

Each press of the Print button switches the setting mode as illustrated below.



3. Adjust the date and time of the selected setting mode

One press of the + or the - button will enable the settings to be made. Press the + or - button and make the adjustment.

4. Press the Print button to finalize

There is a change to the next setting mode. Perform operation 2, or 3 and 4 to set the current time.

5. Completion

Change over to the minutes setting mode (c6 display) and press the Print button to complete the "Time setting".

Pressing the ON/Standby button during operations 2 to 4 will cancel the incomplete settings and return to the time prior to starting the settings.

Preparation:

Connect the AC power adapter to the copyboard. See Page E-13.

Example: Set the time to 2:16 pm, November 8, 2006 (2006.11.08 14:16)

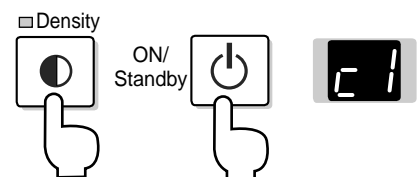
1. Press the ON/Standby button to switch on the power.

The LED of the display window will light and power will be switched on.



2. Press the ON/Standby button while holding down the Density button to switch to "Time setting"

The LED of the display window will light and display "c 1"

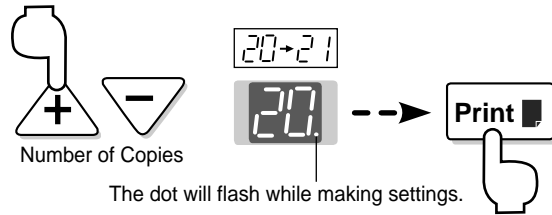


3. Press the + button or the - button, select 20 (the first 2 digits of the year), and press the Print button to finalize.

There will be a change to the "last 2 digits of the year" setting mode (c2 display).

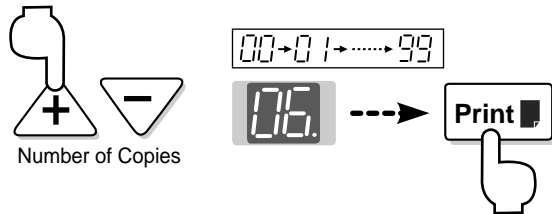
Note:

The factory default setting is 20. Pressing the Print button in this condition will result in a change to the "last 2 digits of the year" setting mode.



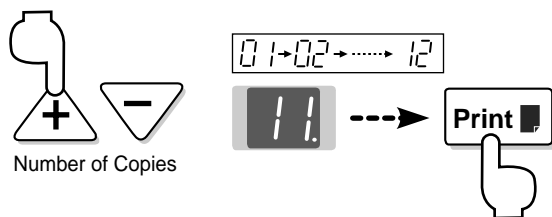
4. Press the + button or the - button, select 06 (the last 2 digits of the year), and press the Print button to finalize.

There will be a change to the "month" setting mode (c3 display).



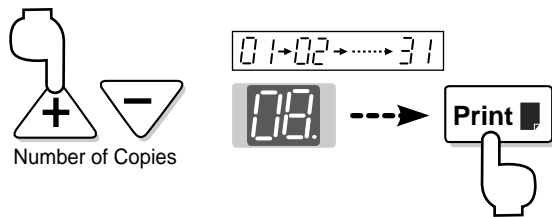
5. Press the + button or the - button, select 11 (the month), and press the Print button to finalize.

There will be a change to the "day" setting mode (c4 display).



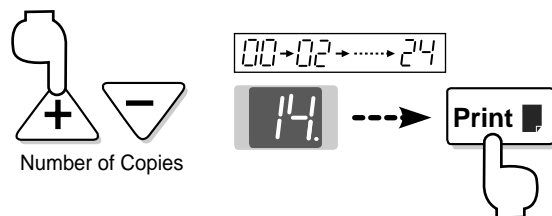
6. Press the + button or the - button, select 08 (the day), and press the Print button to finalize.

There will be a change to the "hour" setting mode (c5 display).



7. Press the + button or the - button, select 14 (the hour of the 24-hour display), and press the Print button to finalize.

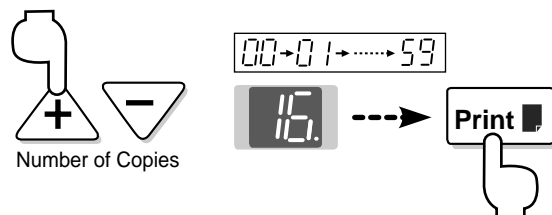
There will be a change to the "minute" setting mode (c6 display).



8. Press the + button or the - button, select 16 (the minutes), and press the Print button to finalize.

The display will change to being lit steadily, and there will be a return to the display indicating the number of sheets to copy.

The completes the time setting.



Note:

The factory default print timestamp is set to "enable (print)." If you do not wish to print the timestamp, use the setup utility in the supplied CD-ROM and set to "disable (do not print)" See the "Setup guide of the supplied software" on Page E-24.

6. ADJUSTMENT

6-1. CCD Adjustment

Tools Required

- Phillips screwdriver (+) No.2
- Ceramic screwdriver
- Oscilloscope
- Electrostatic elimination wrist band

Adjustment is required in the following cases. (Calibration operation is also required after adjustment.)

- When a CCD Board Assy is replaced
- When a LED Unit is replaced
- When adjustment got out of order due to the failure during arrival of products
- When the picture quality deteriorates remarkably

Preparation

Turn ON the power of an oscilloscope. Clean the plate surface.

* Insufficient cleaning influences the subsequent calibration. Color irregularity may sometimes occur in this case.

CCD adjustment procedure

- 1) Shift the rear panel to the right side (LED side) so that the Main Board Assy can be viewed.
At that time, put a Back Panel completely to the end of the main board Assy so that the outer light does not influence the CCD waveform. (See Figure 10.)
- 2) Connect the probe of an oscilloscope to the Main Board Assy. (See Figure 1.)
 - Connect GND in Ch1 to J5, connect the measurement pin in Ch1 to J4.
 - Connect GND in trigger (or Ch2) to J6.
 - Connect the measurement pin in trigger (or Ch2) to J7.
 - Set the Ch1 mode to 1.0 V/DIV AC.
 - Set the trigger to 2 V/DIV DC.
 - Set the sweep to 400 ~ 500 μ sec/DIV.

* Set the trigger to EXT or Ch2. Only Ch1 is displayed.

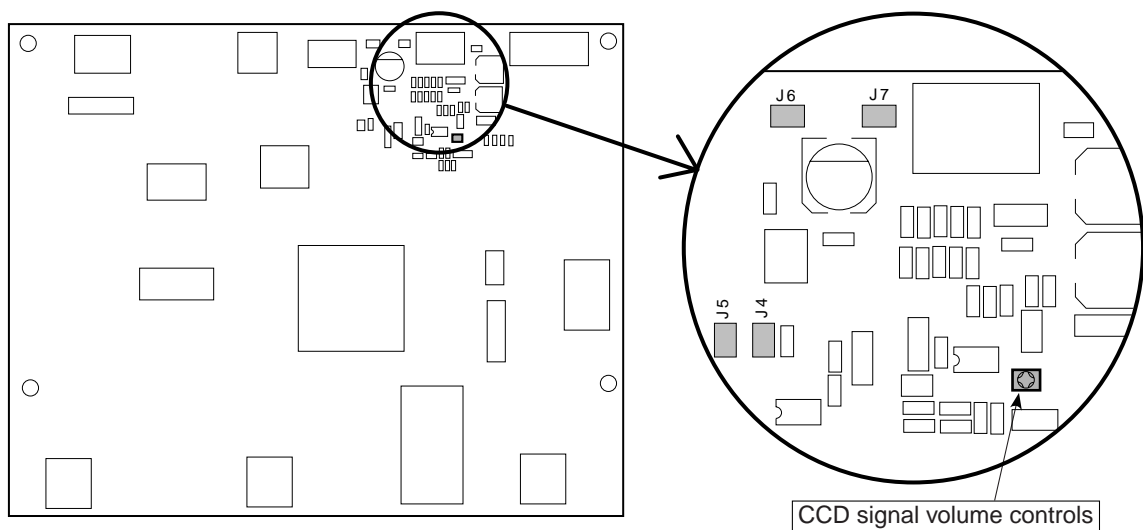


Fig. 1 Main Board Assy

3) Temporary focus adjustment

Adjust the lens to the reference position and fix the two lens fixing screws temporarily. (See Figure 2.)

* Install the lens so that the lens marking is located horizontally and toward you.

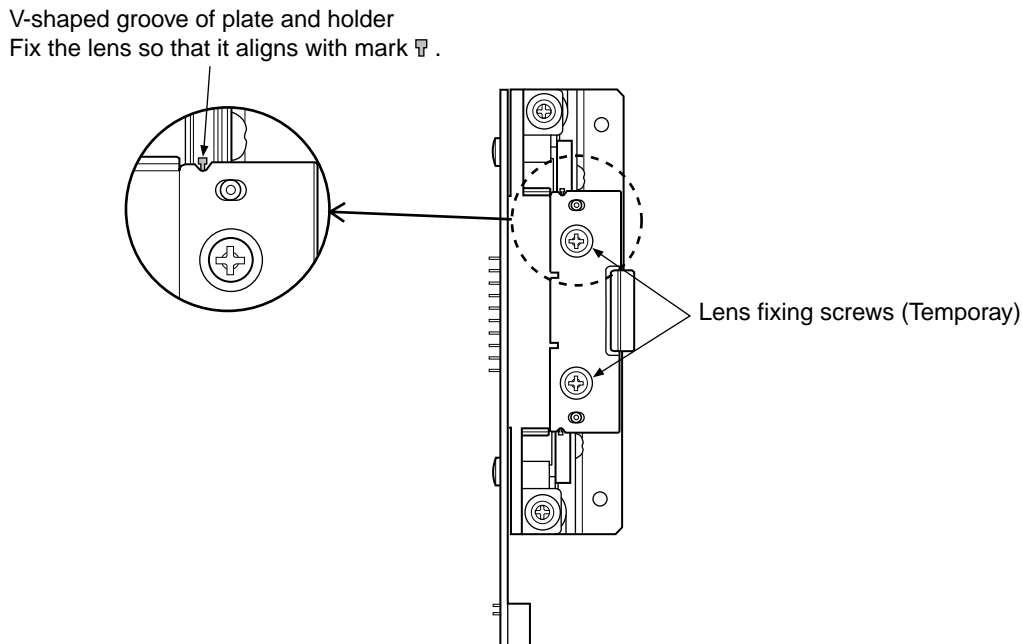


Fig. 2 Temporary focus adjustment

4) Clean the plate surface and then write an adjustment pattern.

(Clean the plate surface sufficiently. If not, the subsequent calibration cannot be performed accurately.)

- ① Place the joint of a sheet in the switch panel position.
- ② As shown in Figure 3, write the adjustment pattern using a black marker.
- ③ Write three horizontal lines of 100 mm long in the upper, middle, and lower positions according to the rule.
- ④ Write a vertical line of 100 mm long (thickness 4 ~ 5 mm) in the center 100 mm away from the middle position, and write two vertical lines of 50 mm long in the upper, lower positions by one of them.
- ⑤ Move the sheet so that the two horizontal lines at the top and bottom are located in the center of the LED irradiation range of the sheet surface.

Note:

1. Draw the three vertical lines so that they become vertical in the same line.
2. If it is difficult to perform adjustment, draw the vertical lines more boldly and perform tentative adjustment. After that, return the vertical lines to the former state and perform accurate adjustment.

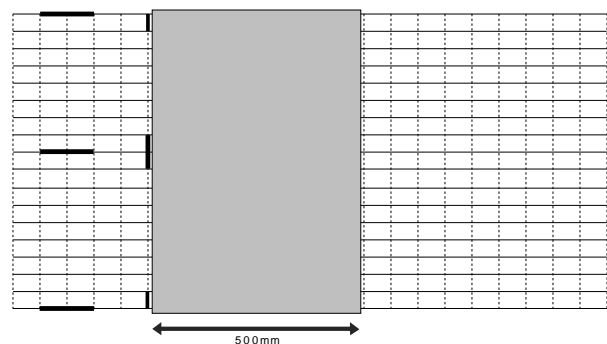
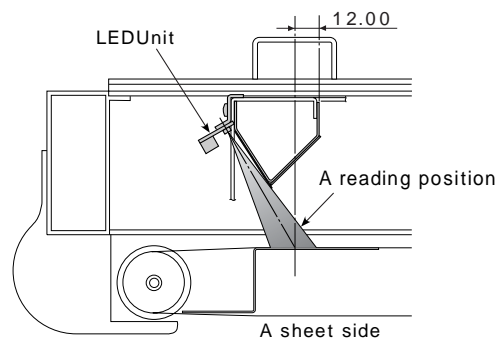


Fig. 3 CCD Adjustment pattern



Scanning position

5) Put the set into the CCD adjustment mode.

Turn OFF the POWER.

- Turn ON the ON/Standby button while pressing and holding the “+” and “-” buttons, so the LED display is “AP”.
- Press the “Reprint” button, so the set is put into the CCD adjustment mode. (LED display is “6”.)
- The light-source LED lights in red when you press the Reprint button.
- The LED repeatedly lights in green, blue, and red when you press the Reprint button. (See Figure 4.)

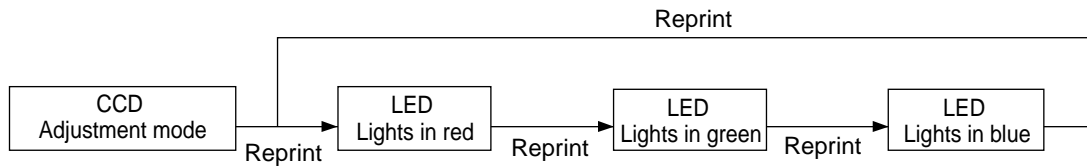


Fig. 4 Adjustment mode sequence

6) Adjustment of oscilloscope

Adjust the trigger level and Ch1 vertical position so that a CCD waveform appears on the oscilloscope display with the light-source LED turned on in red. Adjust the horizontal position, luminance, and focus. (See Figure 5.)

When a waveform is saturated, turn the volume control shown in Figure 1 counterclockwise and adjust the waveform to the position where it is not saturated.

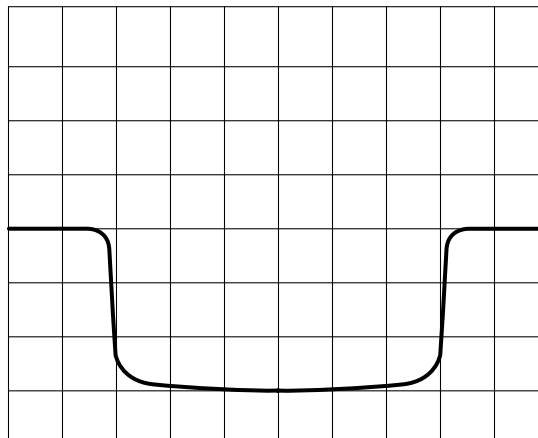


Fig. 5 CCD waveform (Adjustment of oscilloscope)

7) CCD monitoring angle adjustment

Turn the CCD position adjustment screws (see Figure 6.) so that the waveform on the oscilloscope is symmetric on the right and left and so that the three vertical lines at the upper, middle, and lower positions can be read in the same level. Then, fix the screws. (See Figure 6.)

Note:

Fix the CCD fixing screw tentatively so that the CCD Holder smoothly moves and does not float from the Lens Holder.

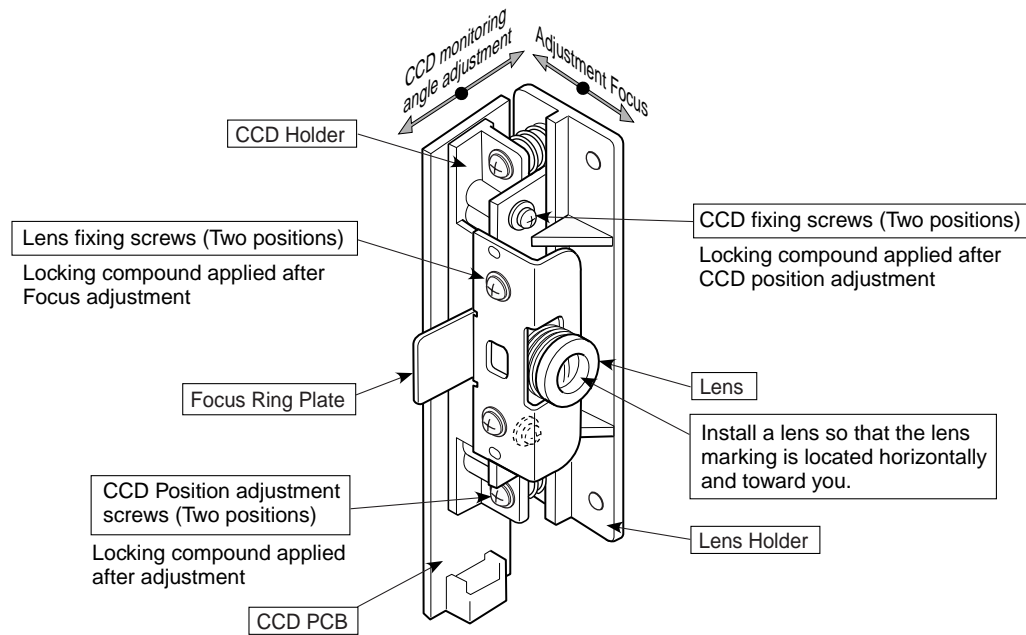


Fig. 6 CCD adjustment screws

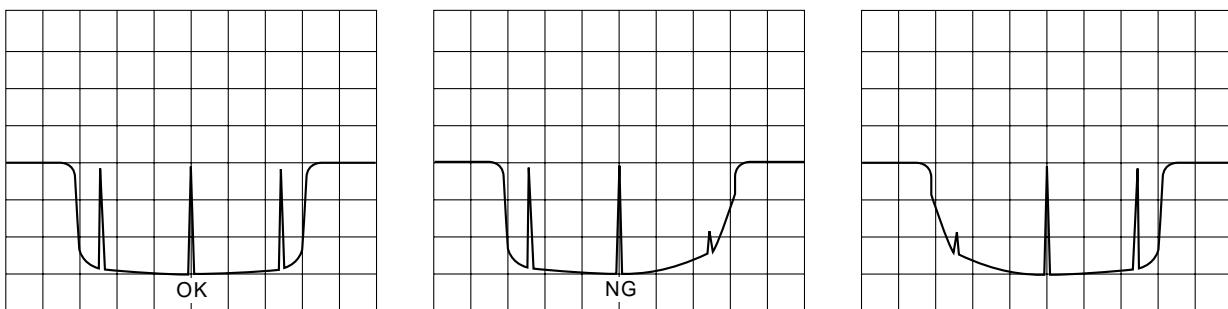


Fig.7 CCD waveform (Monitoring angle adjustment)

8) Focus adjustment

Move the sheet so that an adjustment pattern is displayed on the oscilloscope.

Move the sheet so that three horizontal adjustment patterns are displayed on the oscilloscope.

Monitor the display on the oscilloscope and move the lens so that the displayed waveform is sharp. Adjust the focus and fix the lens fixing screws (see Figure 2). (See Figure 8.)

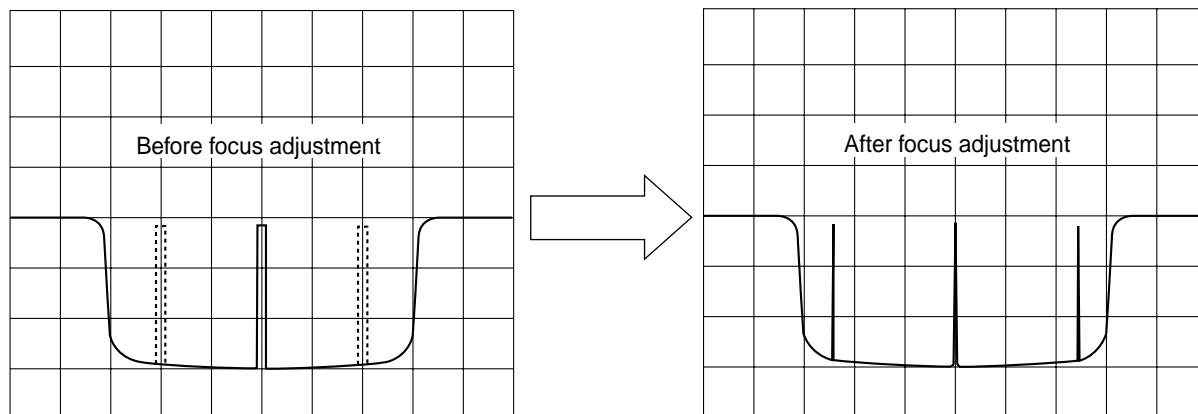


Fig.8 CCD waveform (Focus adjustment)

9) Volume control adjustment

Change the light-source LED color using a Reprint button while viewing the CCD waveform monitor.

Using Main Board Assy (R82), adjust so that the CCD waveform is saturated by about 20 to 80% with the lowest (darkest) signal LED turned on. (See Figure 9.)

* Used a ceramic screwdriver (1.8 X 4) when the volume control adjustment.

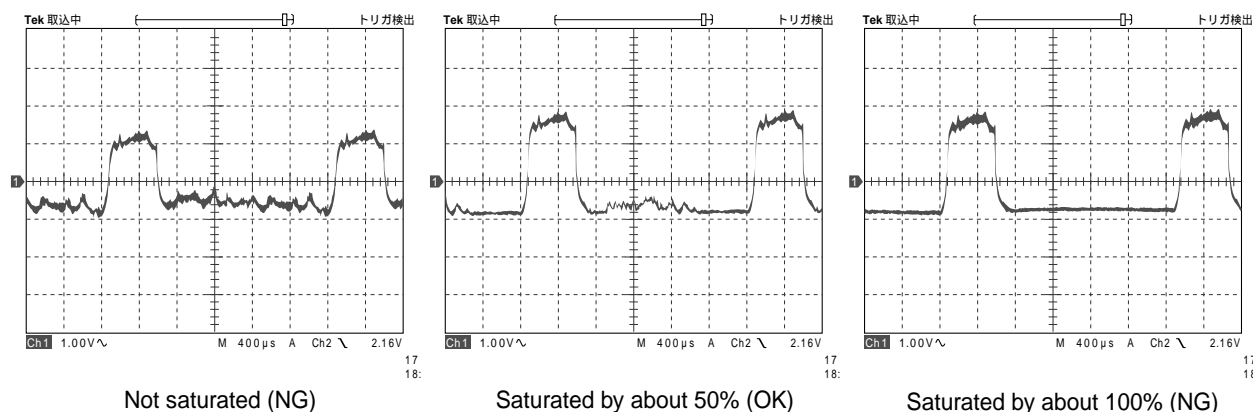


Fig.9. Volume control adjustment

10) Waveform confirmation

The brightness of the light-source LED is automatically adjusted by CPU when you press the Feed/Stop button in the CCD adjustment mode.

Confirm that the shape of the waveform automatically adjusted for each color (R.G.B) is equal on the right and left.

6-2. Calibration procedure

1) Write a calibration adjustment pattern. (See Figure 3.)

Clean the sheet (on two planes) before performing calibration, and be sure to return the back panel to the prescribed position.

* Move an adjustment pattern so that it is located on the left when viewed from the front.

* Take care that outer light is not put with the Back Panel completely closed when performing calibration.

2) Start calibration.

- Press the ON/Standby button and turn off the power.
- Turn ON the ON/Standby button while pressing and holding the “+” and “-” keys.
- LED display is “AP”.
- Press the Print button, so calibration starts. (LED display “2.”)

Start Calibration

	Display
a. When Calibration is started.	<2.SPC>*
b. LED for light quantity adjustment.	<2.0>
c. Search the place where a vertical line is written.	<2.2>
d. Turn by one cycle and move the sheet until a vertical line appears again.	<2.2>
e. Move the sheet to the position where reference data is gotten.	<2.3>
f. Adjust the light quantity of LED again in the position where reference data is gotten.	<2.4>
g. Get the reference data.	<2.5>
h. Move the sheet so that the center of a horizontal line is almost put in the image pickup range of CCD.	<2.6>
i. Write the following data into flash ROM.	<2.7>

Operation is normally terminated when <A A> display appears. Turn off the power in this case.

* SPC indicates the non-lighting state.

* <0.0.> is displayed respectively when an error occurred.

Confirmation of printing

Make a copy using four-color markers.

At that time, confirm that the data written in the inner position about 10 mm away from the portion where the upper and lower sheets can be viewed is printed.

* The outside range (about 30 mm) of a ruled line is also valid.

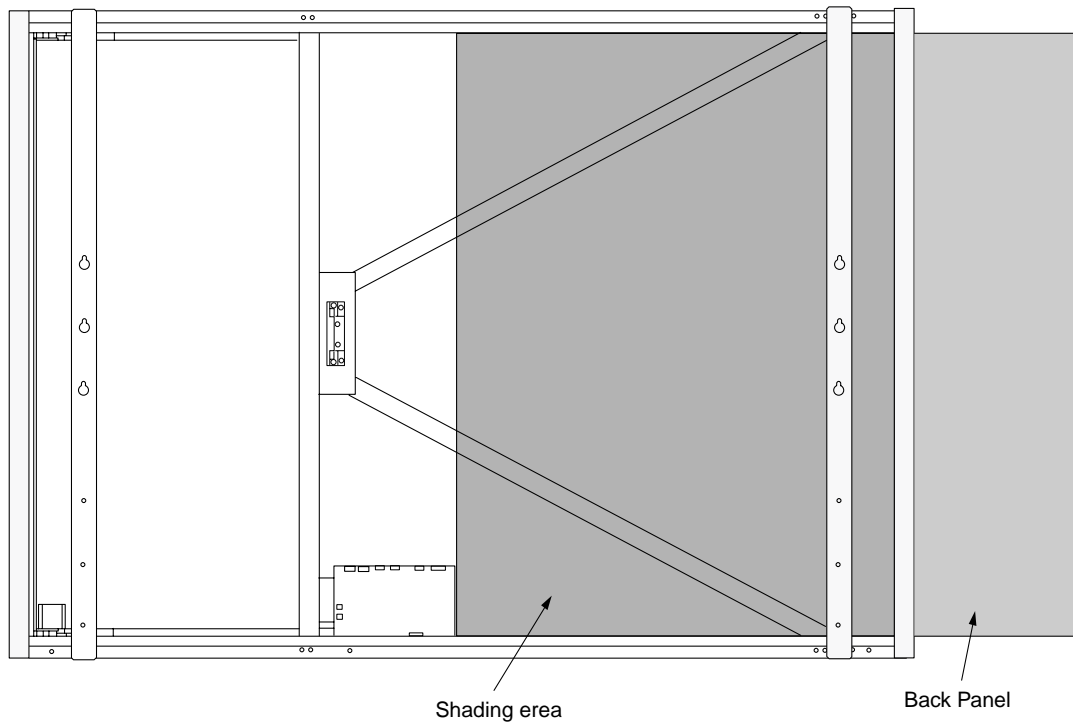


Fig.10 Shielding area

6-3. Tension Adjustment of Timing Belt

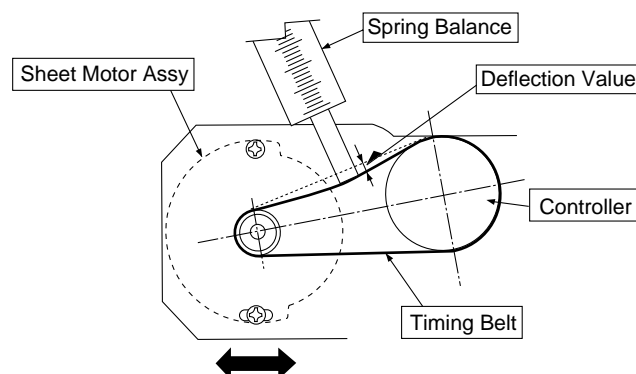
The tension of a timing belt must be adjusted when the Sheet Motor Assy is replaced and removed.

Tool required

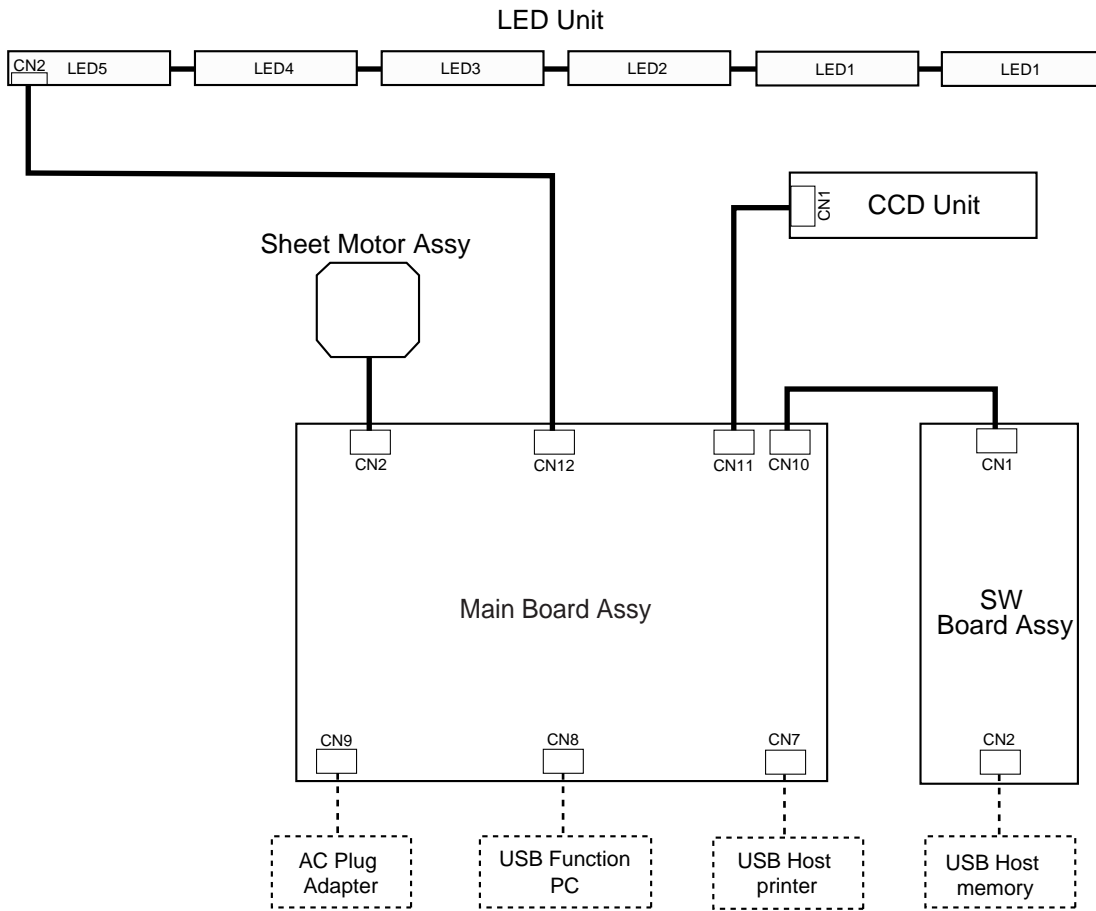
- Spring balance

Adjustment (See the illustration shown below.)

- Fix the Sheet Motor Assy tentatively and measure the tension of a timing belt using a spring balance.
- Move the Sheet Motor Assy and fix it in the position where proper load is obtained.
- The proper load is 0.3 to 0.6 kgf with the timing belt bent by approximately 1 mm.

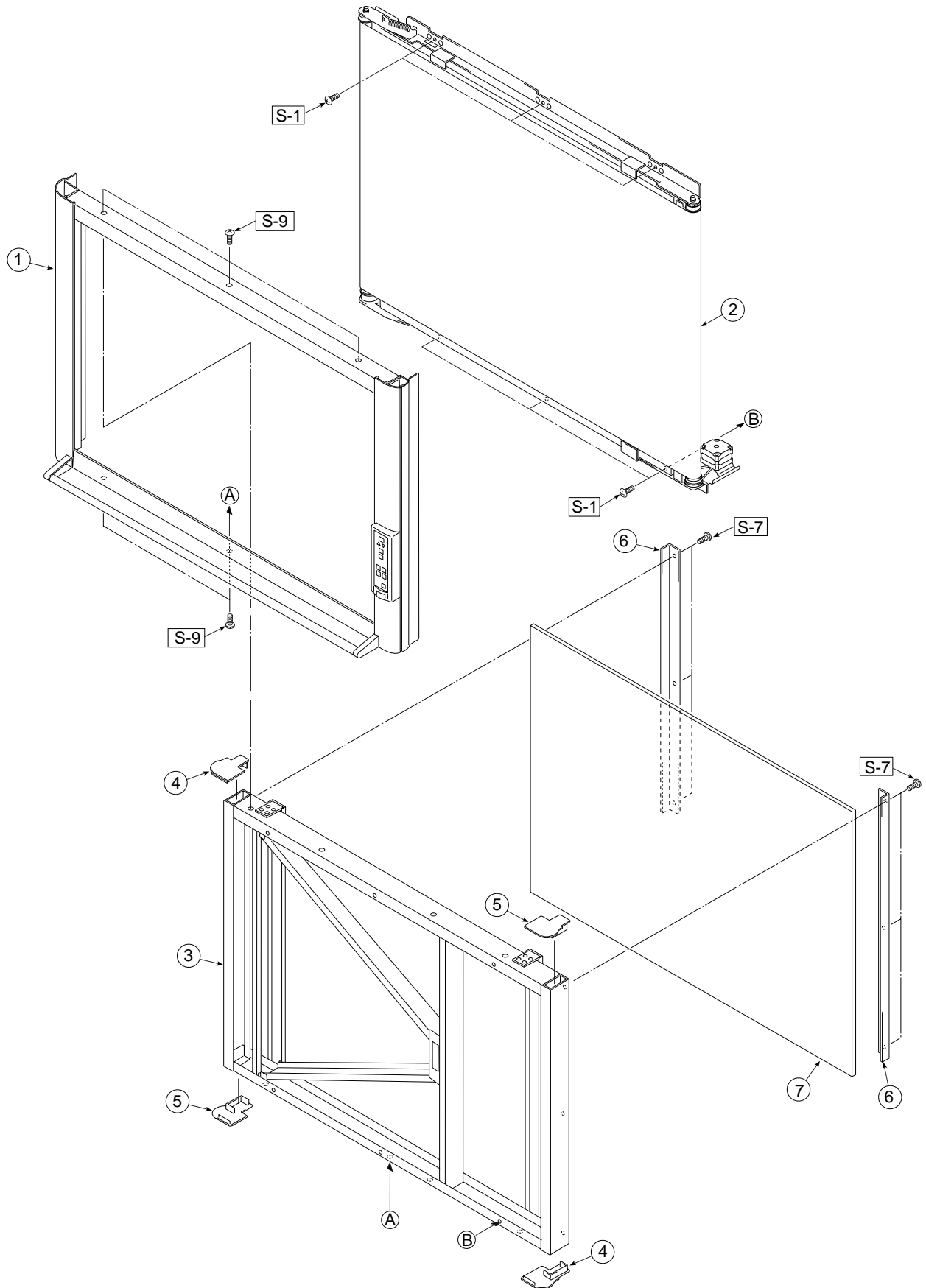


7. CABLE AND CABLE CONNECTION



8. PARTS LIST

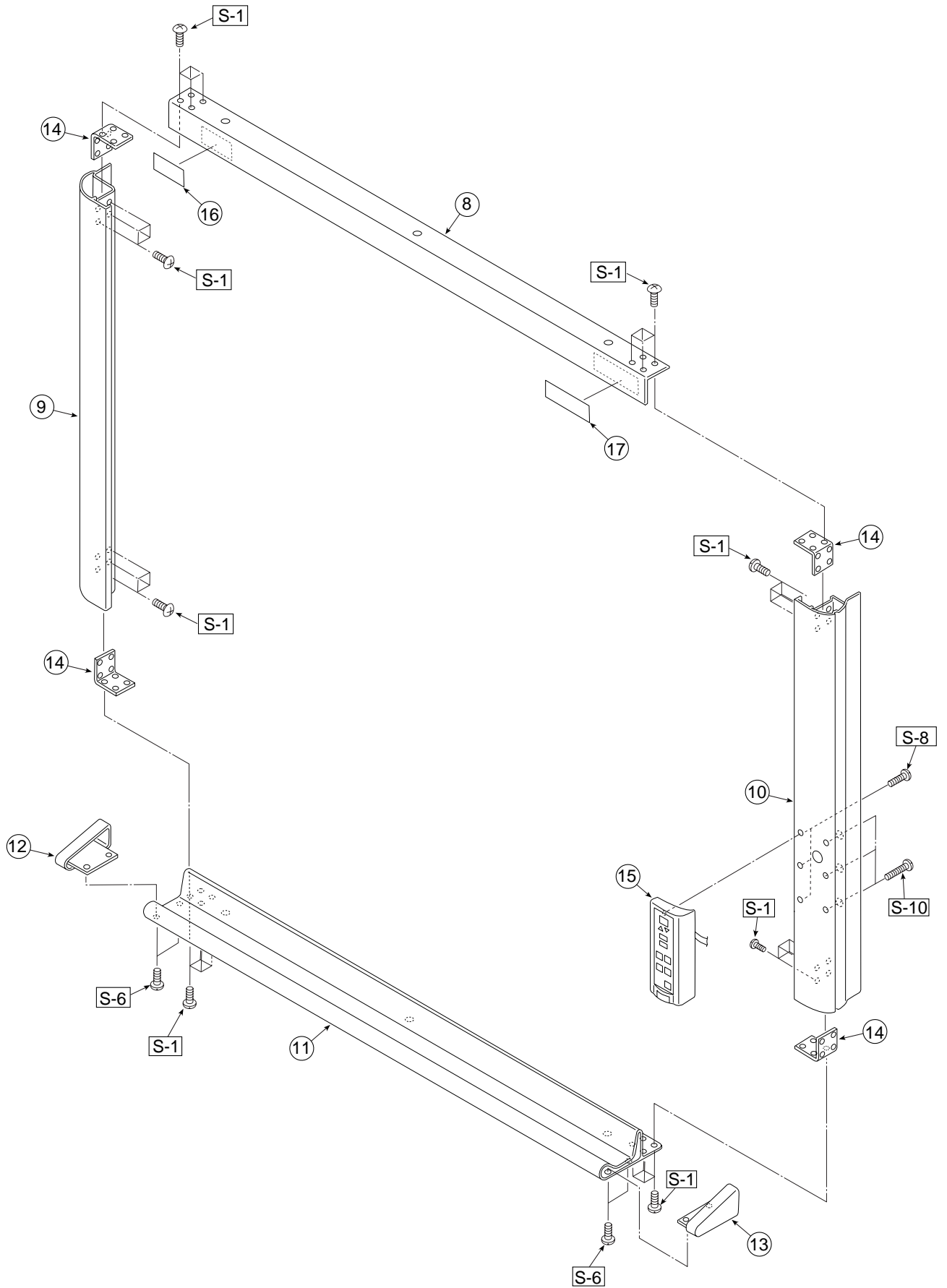
1. Overall configuration



PARTS LIST

1.Overall configuration					
No	PARTS NAME	PARTS No.		Q' ty	REMARK
		S	W		
1	Frame Cover Unit	-	-	1	No Parts Supply
2	Sheet Unit	-	-	1	No Parts Supply
3	Board Unit	-	-	1	No Parts Supply
4	Cap L	715201800	715201800	2	
5	Cap R	715201900	715201900	2	
6	Back Panel Corner	715357900	715357900	2	
7	Back Panel (S)	715357700	-	1	Standard
	Back Panel (W)	-	715357800	1	Wide

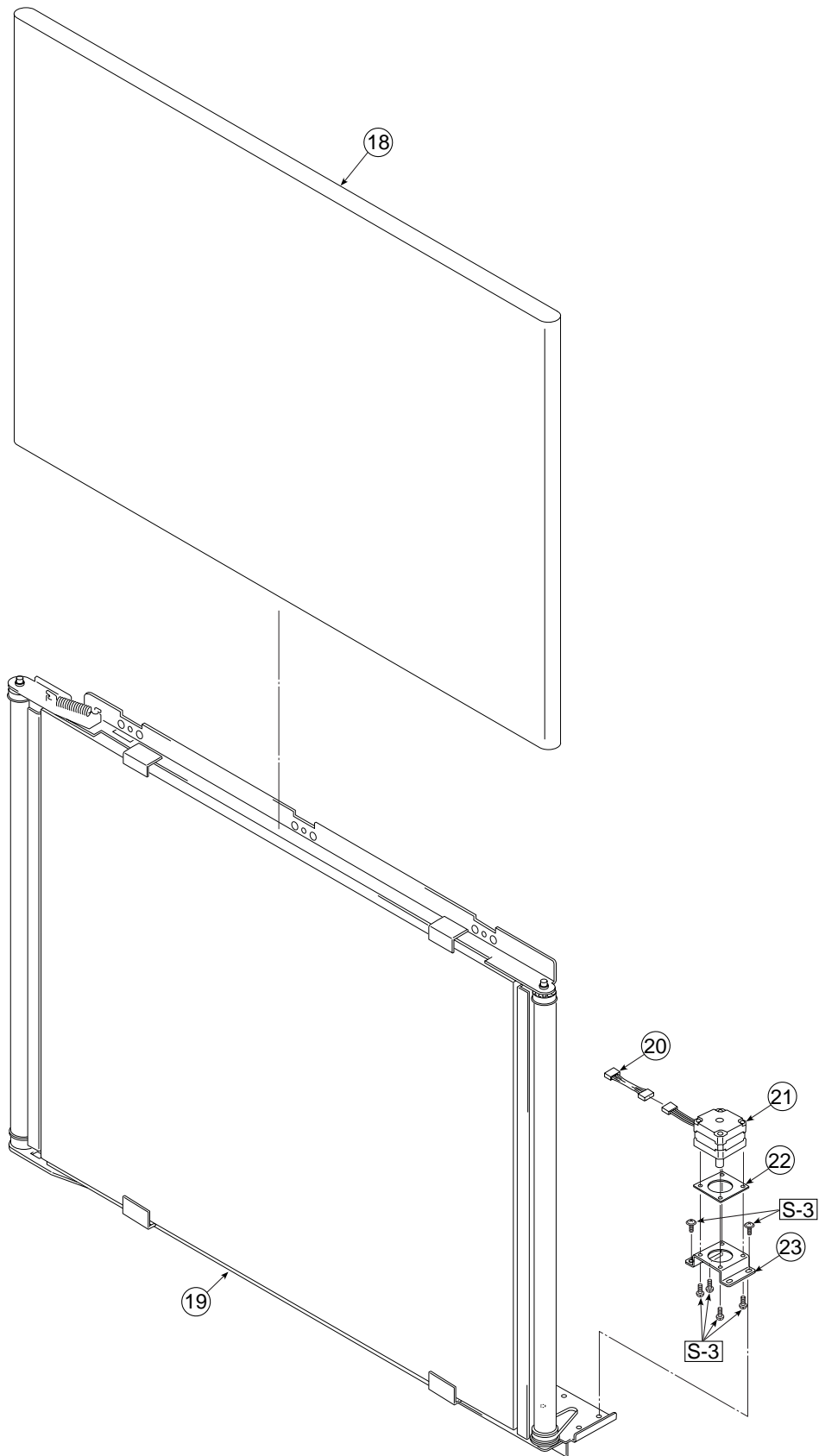
2. Frame Cover Section



PARTS LIST

2. Frame Cover Section					
No	PARTS NAME	PARTS No.		Q' ty	REMARK
		S	W		
8	Frame Cover Upper (S)	715357000	-	1	Standard
	Frame Cover Upper (W)	-	715357200	1	Wide
9	Frame Cover Side L	715387500	715387500	1	
10	Frame Cover Side R	715357400	715357400	1	
11	Frame Cover Lower Unit (S)	715090023	-	1	Standard
	Frame Cover Lower Unit (W)	-	715090024	1	Wide
12	Cover L	715357900	715357900	1	
13	Cover R	715358000	715358000	1	
14	Cover Plate	715201000	715201000	4	
15	Switch Box Unit (S)	715090015	-	1	Standard
	Switch Box Unit (W)	-	715090017	1	Wide
16	Name Plate	715202900	715202900	1	
17	Sheet Maintenance Caution Label	715359300	715359300	1	

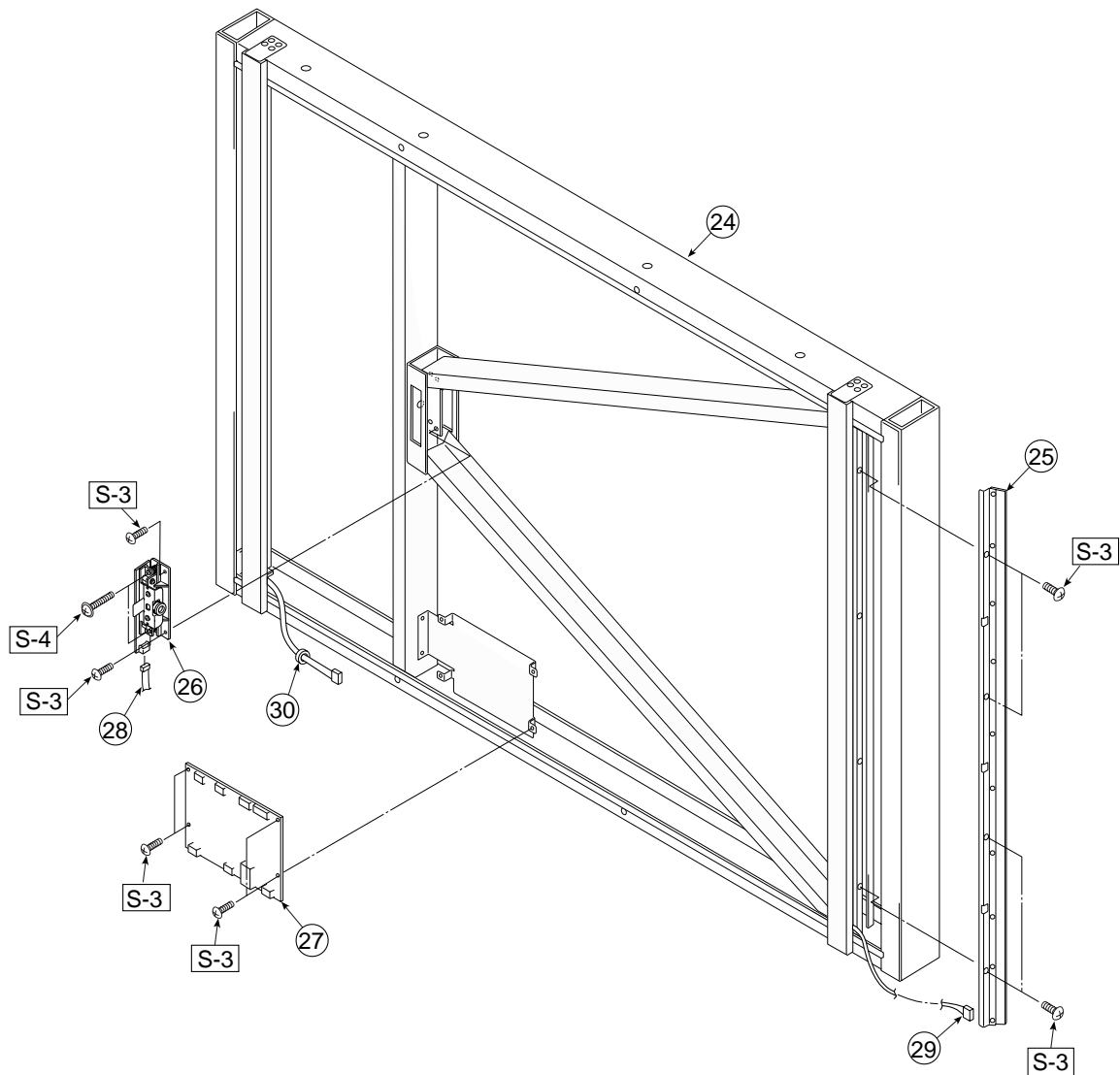
3. Sheet Frame Section



PARTS LIST

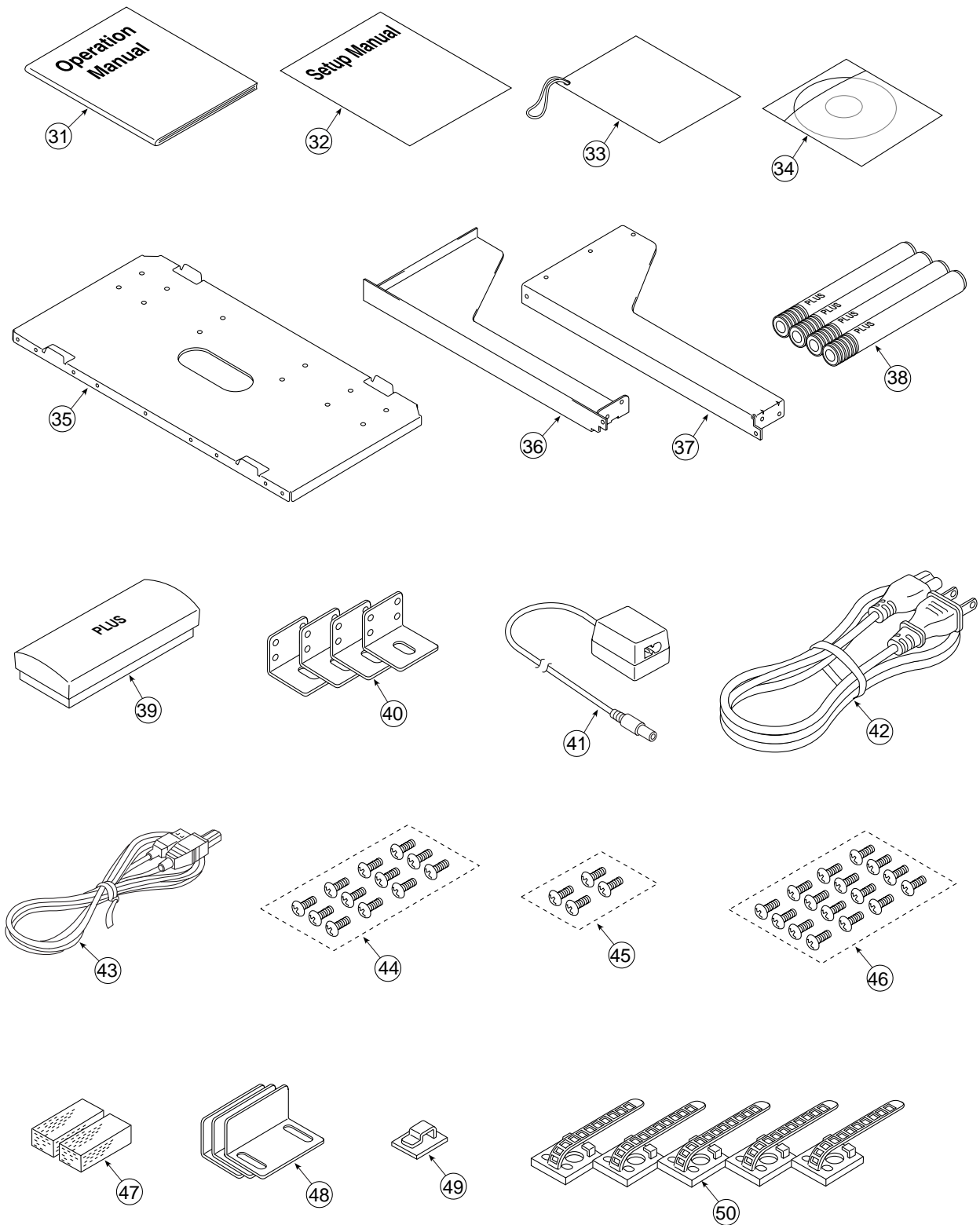
3. Sheet Frame Section					
No	PARTS NAME	PARTS No.		Q' ty	REMARK
		S	W		
18	Endless Sheet (S)	714722400	-	1	Standard
	Endless Sheet (W)	-	714622400	1	Wide
19	Sheet Frame Unit (S)	715090021	-	1	Standard
	Sheet Frame Unit (W)	-	715090022	1	Wide
20	Motor Harness (S)	715257800	-	1	Standard
	Motor Harness (W)	-	715258300	1	Wide
21	Sheet Motor Assy	715213000	715213000	1	
22	Vibration Proof Rubber	718209300	718209300	1	
23	Motor Bracket	715353300	715353300	1	

4. Board Frame Section



4. Board Frame Section					
No	PARTS NAME	PARTS No.		Q' ty	REMARK
		S	W		
24	Board Frame Unit (S)	715090019	-	1	Standard
	Board Frame Unit (W)	-	715090020	1	Wide
25	LED Unit	715090012	715090012	1	
26	CCD Unit	715090013	715090013	1	
27	Main Board Assy	715255700	715255700	1	
28	CCD Harness	715257700	715257700	1	
29	LED Harness	715257900	715257900	1	
30	DK Core	714890100	714890100	1	Through harness

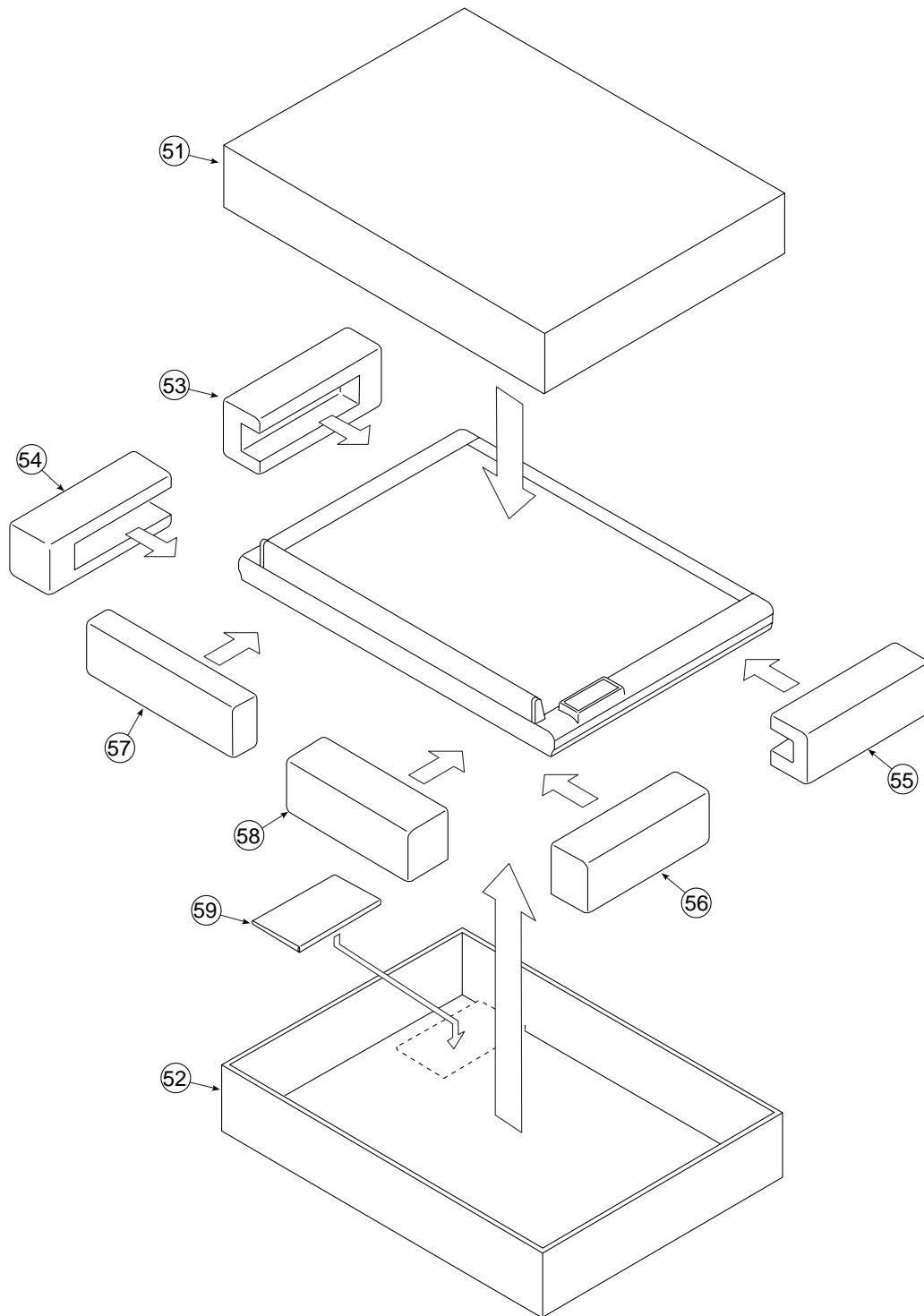
5. Accessories Section



PARTS LIST

5. Accessories Section					
No	PARTS NAME	PARTS No.		Q' ty	REMARK
		S	W		
31	Operation Manual (OS)	715360200	715360200	1	
32	Assembly Manual (OS)	715360300	715360300	1	
33	Quick guide (J-E)	715360500	715360500	1	
34	CD-ROM	715363700	715363700	1	
35	Printer Platform	715353600	715353600	1	
36	Printer Bracket L	715358200	715358200	1	
37	Printer Bracket R	715358100	715358100	1	
38	Marker Set	-	-	1	No Parts Supply
39	Dry Eraser	715237200	715237200	1	No Parts Supply
40	Wall Mount Plate	715359900	715359900	4	
41	AC Adapter	715359000	715359000	1	
42	Power Cable (2.5m) EU	715259200	715259200	1	
	Power Cable (2.5m) UK	715259300	715259300	1	
	Power Cable (2.5m) US	715259400	715259400	1	
	Power Cable (2.5m) AU	715259500	715259500	1	
	Power Cable (2.5m) CH	715259600	715259600	1	
43	USB Cable	715255400	715255400	1	
44	M3-6 Cross Recessed Binding Head	953630650	953630650	12	
45	M4-6 S-Tight Cross Recessed Binding Head	951240650	951240650	4	
46	M4-8 Cross Recessed Binding Head	951240850	951240850	16	
47	Printer Bracket Spacer	715217700	715217700	2	
48	Printe Guide Assy	715090025	715090025	3	
49	Quick Guide Hang	715354600	715354600	1	
50	Cable Clip	714461800	714461800	5	

6. Carton & Packing



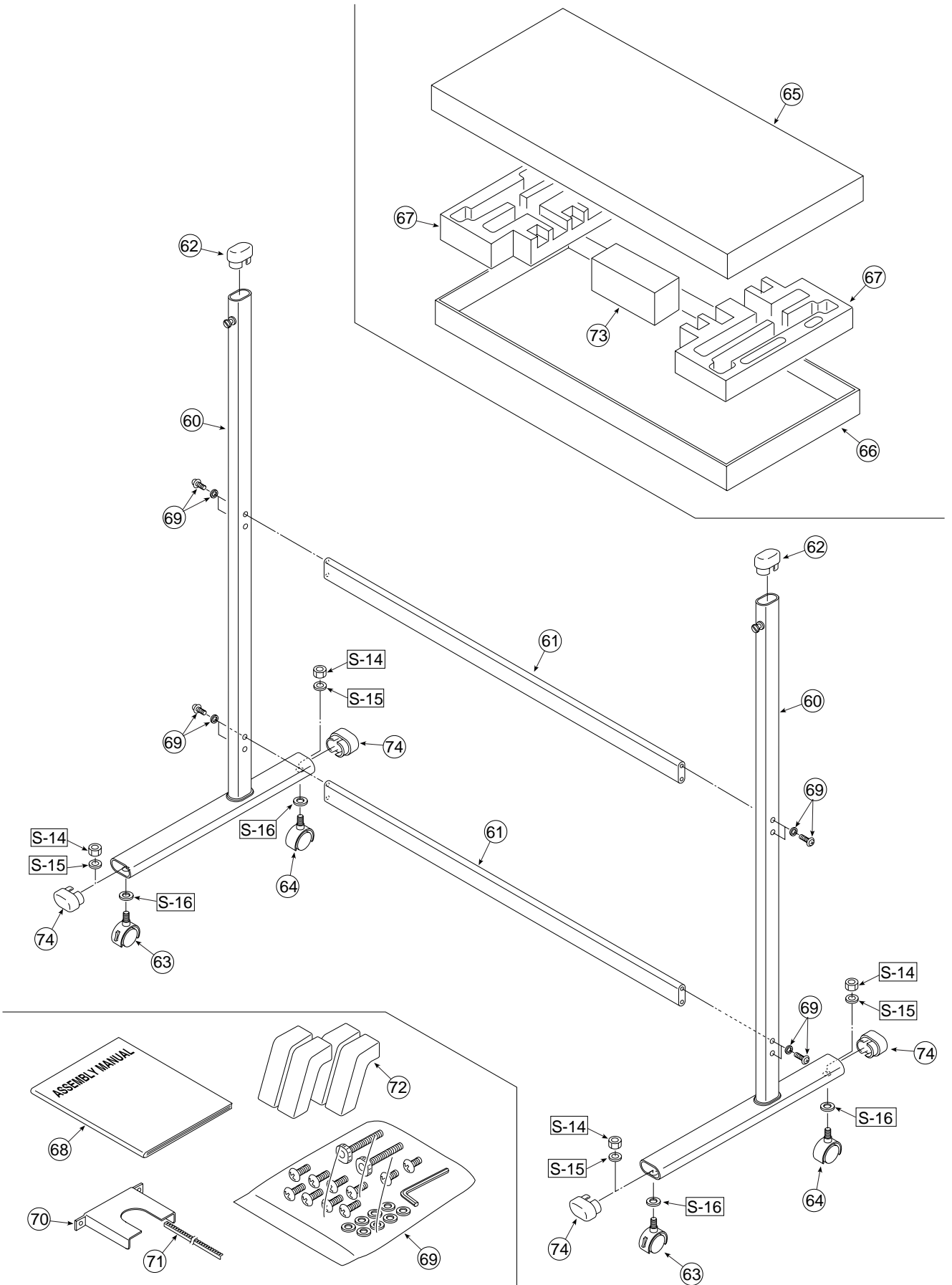
PARTS LIST

6. Carton & Packing					
No	PARTS NAME	PARTS No.		Q' ty	REMARK
		S	W		
51	Carton Upper S	715355000	-	1	Standard
	Carton Upper W	-	715355200	1	Wide
52	Carton Lower S	715355800	-	1	Standard
	Carton Lower W	-	715355300	1	Wide
53	Corner Packing Upper (L)	715205600	715205600	1	
54	Corner Packing Lower (L)	715207700	715207700	1	
55	Corner Packing Upper (R)	715205500	715205500	1	
56	Corner Packing Lower (R)	715207600	715207600	1	
57	Accessory Box	715205800	715205800	1	
58	Push Accessory Box (S)	715205700	-	1	Standard
	Push Accessory Box (W)	-	715206400	1	Wide
59	Printer Platform Pad A	715235000	715235000	1	

PARTS LIST

7. Screws & Washers					
No	PARTS NAME	PARTS No	Q' ty		SURFACE
			S	W	
S-1	M4-6 Cross Recessed Binding Head	951240650	42	42	MFZn I-C-B
S-2	M4-8 Cross Recessed Binding Head	951240850	16	16	MFZn I-C-B
S-3	M3-8 Pan Head with Spring Washer and Plane	952530810	20	20	MFZn I-C
S-4	M3-25 Pan Head with Spring Washer and Plane	952532510	2	2	MFZn I-C
S-5	M3-6 P-Tight Cross Recessed Binding Head	953230610	8	8	MFZn I-C
S-6	M3-8 P-Tight Cross Recessed Binding Head	953230850	6	6	MFZn I-C-B
S-7	M3-6 Cross Recessed Binding Head	951230650	28	28	MFZn I-C-B
S-8	M4-10 P-Tight Cross Recessed Binding Head	953241010	3	3	MFZn I-C
S-9	M4-12 Cross Recessed Binding Head	951241250	5	8	MFZn I-C-B
S-10	M4-15 P-Tight Cross Recessed Binding Head	953241510	3	3	MFZn I-C

8. M-11-T



PARTS LIST

8. M-11-T				
No	PARTS NAME	PARTS No.	Q' ty	REMARK
60	T-Shaped Stand Assy	715358500	2	
61	Side Bar Assy	715358600	2	
62	Pipe Frame Cap	714112600	2	
63	Front Caster	714660400	2	
64	Back Caster	714660500	2	
65	Carton Upper (Stand)	715355600	1	
66	Carton Lower (Stand)	715208200	1	
67	Packing Set (Stand)	715207200	2	
68	Assembly Manual (Stand)	715360900	1	
69	Screw Unit	715090010	1	
70	Printer Steady (Stand)	715353700	1	
71	Edge Bush	715353800	1	
72	Stabilizer	715358900	4	
73	Stabilizer Box	715355700	1	
74	Pipe Cap	714160600	4	
S-14	M3-8 Hexagonal Stop Bolt	955217610	4	
S-15	No2-10 Spring Washer		4	
S-16	No2-10 Flat Washer		4	

9. REVISION HISTORY

No	Revision History	Revision page	Date
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
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Iruma Factory of PLUS Vision Corp. is certified to ISO 9001.
Certificate No. 12 100 17398 TMS



Otowa Head Office and PLUSLAND of PLUS Corporation, and Iruma Office/Iruma Factory of PLUS Vision Corp. are certified to ISO 14001.
Certificate No. NQE-9809008A

*PLUS Vision Corp. is certified to ISO 14001 as a member of the PLUS group.