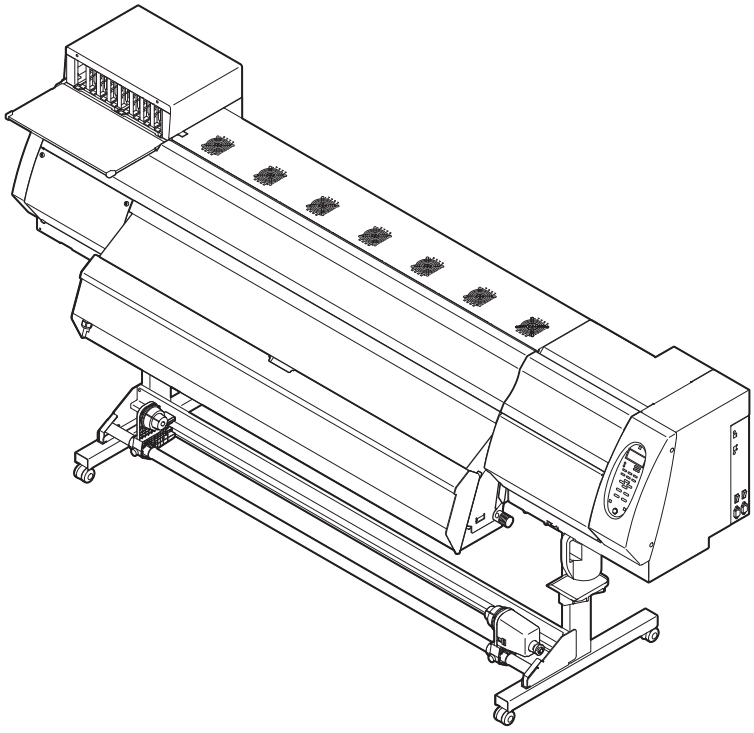
JV400-LX Series

JV400-130LX/160LX

SERVICE DOCUMENTS



MIMAKI ENGINEERING CO., LTD.
URL:http://eng.mimaki.co.jp/

D500708-22

Constitution of JV400 series Service Documents

■ This SERVICE DOCUMENTS contains the following documents.

SERVICE DOCUMENTS | ver 2.20 | Revised 2013.08.23

This document, for use by service engineers, describes the instructions and information necessary for the installation and maintenance work of the machine JV400 series (called the machine below). Perform installation and maintenance by consulting this document and the following related documents.

INSTALLATION CHECKLIST | ver 1.50 | Revised 2013.08.23

This "INSTALLATION CHECKLIST" includes important information and useful information about the installation of this machine including preparation before installation and user training after installation.
It also includes "Installation Report" to report the result of the installation or problems and trouble encountered during installation.

ACCESSORIES LIST | ver 2.10 | Revised 2013.08.23

This list shows the photos of the accessories contained in the package of the machine.
Before installation, check the accessories against the "ACCESSORIES LIST" to see that no accessory is missing. If any accessories are missing, circle the relevant photos in the list and attach the list to the "Installation Report".

INSTALLATION GUIDE | ver 2.10 | Revised 2013.08.23

This guide describes the information necessary for installation of this machine and the installation procedure.
Understand thoroughly the procedure and precautions described in "INSTALLATION GUIDE" and be sure to follow them to install the machine.

MAINTENANCE MANUAL | ver 2.20 | Revised 2013.08.30

This manual describes the information about the after-sale service of this machine.
"MAINTENANCE MANUAL" describes the operating principle of the machine, details of electrical parts, workflow of the service, adjustment and test items, assembly and disassembly procedure, troubleshooting, and operation flow. Understand the information and precautions described in this manual and follow them to perform maintenance work.

DAILY MAINTENANCE MANUAL | ver 2.10 | Revised 2013.08.23

This manual describes procedures to perform frequently or periodically in order to use this device for a long time while maintaining precision.

MECHANICAL DRAWING | ver 2.20 | Revised 2013

This parts list shows the names of parts of the machine, including the part numbers and exploded views.
The names of parts referred to in "INSTALLATION GUIDE" and "MAINTENANCE MANUAL" are the same as those shown in this list. Consult this list during the disassembly and assembly of the machine or for procurement of parts.

Change Tracking

Date	2013.08.23	Manual Ver.	2.2	Remark	
Status	Index	Rev.	Changes		
Revised	2.1.2	1.1	[Precautions in work] is changed.		
Revised	3.1.1	1.3	[Print mode] , [Ink supply] and [Ink capacity] is changed or added for 6 colors.		
Revised	3.1.3	1.2	[Storage temperature] is changed.		
Revised	4.1.5	1.2	OPE PARAMETER is added		

Date	2013.06.17	Manual Ver.	2.1	Remark	
Status	Index	Rev.	Changes		
Revised	3.1.1	1.2	[Ink supply] is changed.		
Revised	3.1.2	1.1	[Weight] is changed.		
Revised	4.2.1	1.1	Regularly replaced parts are changed.		
Revised	4.2.3	1.2	Regularly replaced parts are changed.		

Date	2013.05.10	Manual Ver.	2.0	Remark	
Status	Index	Rev.	Changes		
Revised	2.1.1-P1	1.1	Illustration is changed		
Revised	3.1.1	1.1	Print mode is changed Lc, Lm is deleted “Ink” “Ink supply” “Ink capacity” is changed		
Revised	3.1.3	1.1	Orange, Green is added		
Revised	4.1.1	1.1	Changed		
Revised	4.1.2	1.1	Changed		
Revised	4.1.3	1.1	Changed		
Revised	4.1.4	1.1	No.3 -> No.5 No.4 -> No.7 No.3, 4, 6, 8, 9, 10,. 11: Added		
Revised	4.1.5	1.1	OPE PARAMETER is added		
Added	4.1.6	1.0	Added		
Added	4.1.7	1.0	Added		
Added	4.1.8	1.0	Added		
Revised	4.2.2	1.1	Station’s illustration is changed		
Revised	4.2.3	1.1	Illustration is changed		
Revised	4.2.4	1.1	“Clamp lever”, “Cap slider”, “Wiper slider”: Illustration is changed		

Date	2012.01.27	Manual Ver.	1.00	Remark	
Status	Index	Rev.	Changes		
Released			New issued		

Table of Contents

About Service Documents

1.1 Constitution and Rules

A-1) Format of the Cover of "SERVICE DOCUMENTS"

■ **Details**

❶ Put the logo of "MIMAKI" at the upper right corner.
The cover is to be monochrome.

❷ Indicate the name of this machine.

❸ Indicate the model name (details).

❹ Put white characters "SERVICE DOCUMENTS" in a black background.

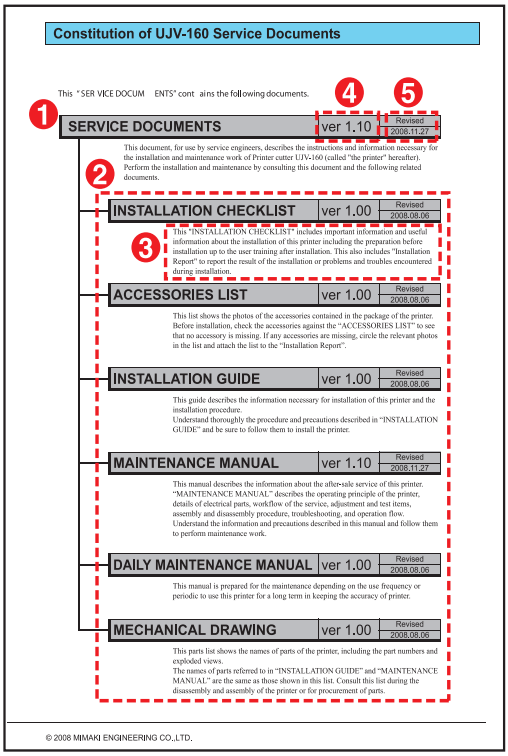
❺ Show an image (appearance) of this machine.

❻ Indicate the company name and URL of MIMAKI.

❼ Put the ledger number of the document.

* It is not required to replace this cover at the case of item revision or document version updated.

A-2) Constitution of "SERVICE DOCUMENTS"



■ **Details**

❶ Display the component tree of "SERVICE DOCUMENTS".

❷ The following documents are included in "SERVICE DOCUMENTS" when the machine is released in the market.

- ☐ INSTALLATION CHECKLIST
- ☐ ACCESSORIES LIST
- ☐ INSTALLATION GUIDE
- ☐ MAINTENANCE MANUAL
- ☐ DAILY MAINTENANCE MANUAL
- ☐ MECHANICAL DRAWING

Additions or changes are possible anytime.

❸ Describe the outline of each document.

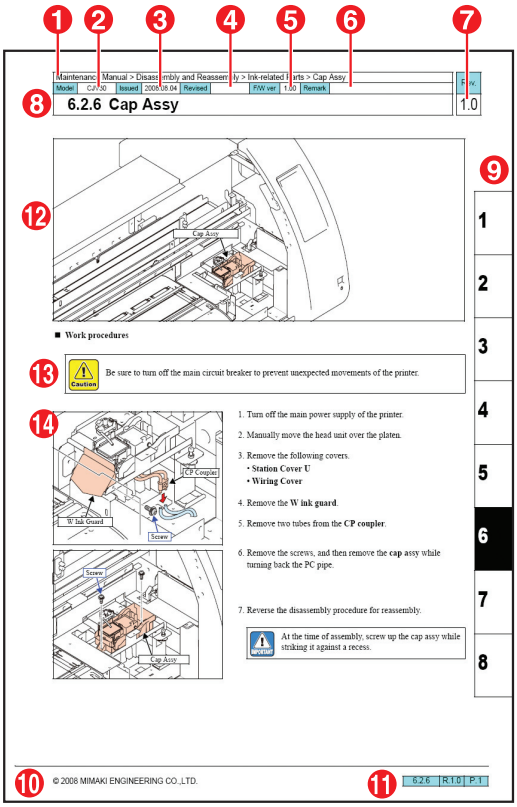
❹ Indicate the version of each document up to two decimals.

❺ Indicate the issued date of latest document version.

* Replace this page at the case of item revision or document version updated.

* The latest version of each document is administered and displayed in this page.

A-3) Format of Explanatory Page



■ Header

❶ Indicate the heading flow to the section1.00.

❷ Indicate the model name of machine.

❸ Indicate the date of issue of the section.

❹ Indicate the date of revision of the section.

❺ Indicate the oldest firmware version to which the section relates.

❻ Indicate additional information, such as the related serial number.

❼ Indicate the revision number of the section.

- For a minor change (correction of text or change of names of parts), raise the number at the first decimal place.
  Example: 1.0 → 1.1
- For a major change (change in specifications or modification to drawings), raise the number at the ones place.
  Example: 1.0 → 2.0

❽ Indicate the title of item with the item number.

■ Index

❾ Indicated the chapter number, as a reference at document retrieving.

■ Footer

❿ Indicate Copyright at the bottom left of the page. Indicate the year of the first release of the document.

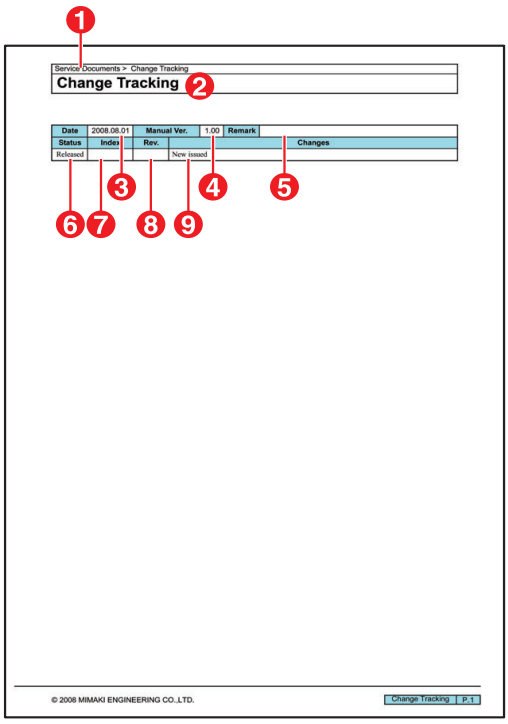
⓫ At the bottom right of page, indicate the item number, revision number and page number.

■ Description

The basic format of the explanation is as follows:

- Use the same font of the same size for the characters on the page excluding the header, footer and index.
- Use only black for the characters on the page excluding those for drawings, header, footer and index.
- Locate the general drawing for adjustments or disassembly and reassembly, if any, in the upper area of the page. (⓬)
- Locate the drawings in the left area and the text in the right area. (⓮)
- Do not use any drawings other than line drawings, except when photos are appropriate for, say, cables.
- Enclose each symbol such as “Warning”, “Caution”, “Important” or “Tips” and the explanatory text with a rectangular box. (⓭)
- Use “[ ]” and “->” when an operation function is to be shown in the text of this document.
  Example: [FUNCTION] -> [#ADJUST] -> [HEAD ADJUST] -> [SLANT ADJUST]
- Do not use any trademarks or trade names of other companies to name tools or parts.
  Example: INSULOK, LOCTITE
- In the explanatory text, use the same names of parts as those in “MECHANICAL DRAWING”, and use bold characters for them.
- Express the explanatory text as briefly as possible.
- Avoid a redundant description of the same information or procedure.

A-4) Format of Change Tracking



■ Details

❶ Indicate the heading flow to the section.

❷ Indicate the title of the section. For any document other than "SERVICE DOCUMENTS", indicate the name of the document in front of Change Tracking.
Example: Indicate "Change Tracking" for "SERVICE DOCUMENTS" or "Maintenance Manual Change Tracking" for "MAINTENANCE MANUAL".

❸ Enter the date of change in the "Date" field in the yyyy/mm/dd format.

❹ Enter the version of the revised document in the "Manual Ver." field.

❺ Enter additional information such as the related firmware version and the related serial number in the "Remark" field.

❻ Enter the change status in the "Status" field.

Released: A new version is issued when a major change, such as change in specifications, takes place.
Example: 1.00 → 2.00

Revised: The correction of the document takes place.
Example: Correction or addition of explanatory text and/or names of parts, or modification to and/or addition of drawings.

Erased: Descriptions of work or functions are deleted because of specification change or firmware upgrade.

Added: Descriptions of work or functions are newly added because of specification change or firmware upgrade.

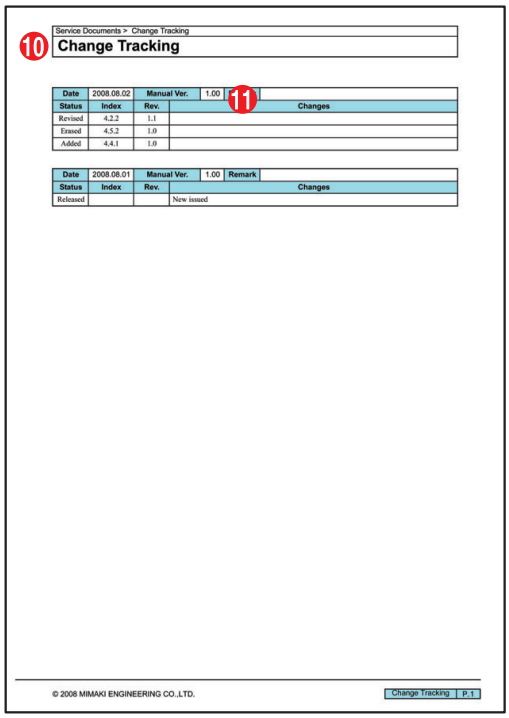
❼ Indicate the section number of the changed section in the "Index" field.

❽ Indicate the revision number of the changed section in the "Rev." field.

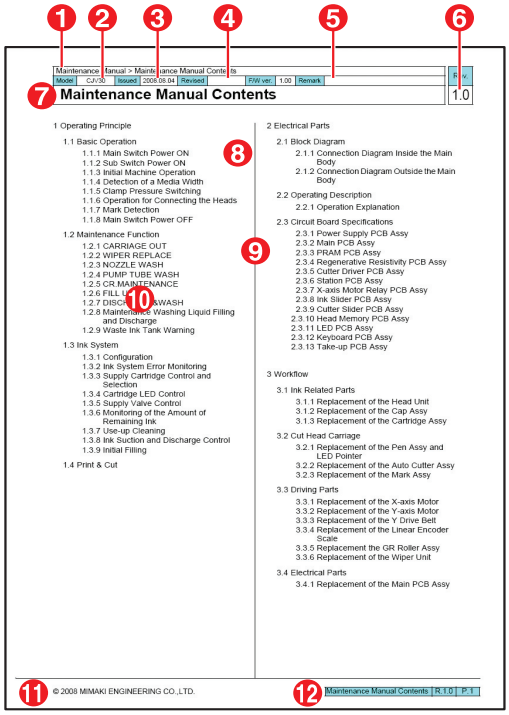
❾ Describe detailed information of the change, such as the location of change, reason and purpose, in the "Changes" field.

❿ Prepare an independent list for Change Tracking for every version of the document. Locate the Change Tracking list for the latest version at the top. (⓫)

* Replace this cover by each user at the case of item revision or document version updated.



A-5) Format of Contents



■ Header

❶ Indicate the flow of contents.

❷ Indicate the model name of machine.

❸ Indicate the date of issue of the contents.

❹ Indicate the date of revision of the contents.

❺ Indicate additional information, such as the related serial number.

❻ Indicate the revision number of the contents.

- For a minor change (correction of text or addition of sections), raise the number at the first decimal place.
  Example: 1.0 → 1.1
- For a major change (change in specifications), raise the number at the ones place. Example: 1.0 → 2.0

❼ Indicate the title of contents.

■ Description

❽ Indicate no page number. (The item number only.)

❾ Indicate the contents in two-column format.

❿ Use black characters of the same font and same size.

■ Footer

⓫ Indicate Copyright at the bottom left of the page. Indicate the year of the first release of the document.

⓬ At the bottom right of the page, indicate the section number, revision number and page number.

B-1) "INSTALLATION CHECKLIST"

■ Explanation of Cover

❶ Indicate the logo of "MIMAKI" at the upper right corner. The monochrome is only accepted for the cover.

❷ Indicate the name of this machine.

❸ Indicate the model name (details).

❹ Indicate "SERVICE DOCUMENTS".

❺ For the document name, use white letters on the black background.

❻ Indicate the company name and URL of MIMAKI.

❼ Put the ledger number of the document.

■ Constitution

The "INSTALLATION CHECKLIST" includes information useful and necessary for the installation of this machine.

☐ INSTALLATION CHECKLIST
This easy-to-use check list summarizes important information and useful information about the installation including preparation before installation and user training after installation.

☐ Installation Report
This report is prepared for submitting the result of installation or the report of problems and troubles encountered during the installation to "MIMAKI" simply.

* There is no need of replacing this cover even when the revision of sections is updated or a new version is issued.

B-2) "ACCESSORIES LIST"

■ Explanation of Cover

❶ Indicate the logo of "MIMAKI" at the upper right corner. The monochrome is only accepted for the cover.

❷ Indicate the name of this machine.

❸ Indicate the model name (details).

❹ Indicate "SERVICE DOCUMENTS".

❺ For the document name, use white letters on the black background.

❻ Indicate the company name and URL of MIMAKI.

❼ Put the ledger number of the document.

■ Constitution

● The "ACCESSORIES LIST" is a list of accessories contained with illustrations in the packing box.

● Check the accessories prior to the installation of this machine if there is any missing, referring to the "ACCESSORIES LIST". Make a check at the applicable check box on the list then attach it on the "INSTALLATION REPORT" at the case of missing.

* There is no need of replacing this cover even when the revision of sections is updated or a new version is issued.

B-3) "INSTALLATION GUIDE"

■ **Explanation of Cover**

❶ Indicate the logo of "MIMAKI" at the upper right corner. The monochrome is only accepted for the cover.

❷ Indicate the name of this machine.

❸ Indicate the model name (details).

❹ Indicate "SERVICE DOCUMENTS".

❺ For the document name, use white letters on the black background.

❻ Indicate the company name and URL of MIMAKI.

❼ Put the ledger number of the document.

■ **Constitution**

The "INSTALLATION GUIDE" describes the information necessary for installation of this machine and the installation procedure.
At installing, understand the procedures and caution items of this manual thoroughly for the work.

* There is no need of replacing this cover even when the revision of sections is updated or a new version is issued.

B-4) "MAINTENANCE MANUAL"

■ **Explanation of Cover**

❶ Indicate the logo of "MIMAKI" at the upper right corner. The monochrome is only accepted for the cover.

❷ Indicate the name of this machine.

❸ Indicate the model name (details).

❹ Indicate "SERVICE DOCUMENTS".

❺ For the document name, use white letters on the black background.

❻ Indicate the company name and URL of MIMAKI.

❼ Put the ledger number of the document.

■ **Constitution**

This manual describes the information about the after-sale service of this machine. This manual describes the operating principle of the machine, details of electrical parts, working procedure of service, adjustment and test items, assembly and disassembly procedure, trouble-shooting, and operation flow.

* Understand the information and precautions described in this manual and follow them to perform maintenance work.

* There is no need of replacing this cover even when the revision of sections is updated or a new version is issued.

B-5) "DAILY MAINTENANCE MANUAL"

■ **Explanation of Cover**

❶ Indicate the logo of "MIMAKI" at the upper right corner. The monochrome is only accepted for the cover.

❷ Indicate the name of this machine.

❸ Indicate the model name (details).

❹ Indicate "SERVICE DOCUMENTS".

❺ For the document name, use white letters on the black background.

❻ Indicate the company name and URL of MIMAKI.

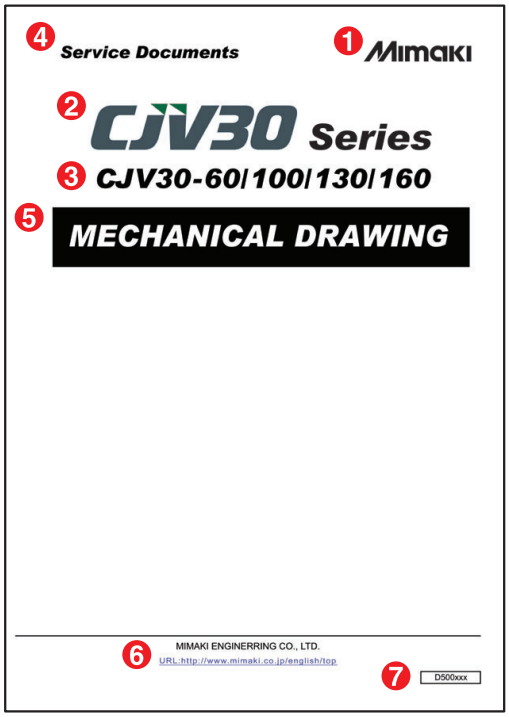
❼ Put the ledger number of the document.

■ **Constitution**

The "DAILY MAINTENANCE MANUAL" describes the procedure of daily maintenance to maintain this machine in good condition.

* After the maintenance work, make sure to perform the work according to the "DAILY MAINTENANCE MANUAL".
* There is no need of replacing this cover even when the revision of sections is updated or a new version is issued.

B-6) "MECHANICAL DRAWING"



■ **Explanation of Cover**

❶ Indicate the logo of "MIMAKI" at the upper right corner. The monochrome is only accepted for the cover.

❷ Indicate the name of this machine.

❸ Indicate the model name (details).

❹ Indicate "SERVICE DOCUMENTS".

❺ For the document name, use white letters on the black background.

❻ Indicate the company name and URL of MIMAKI.

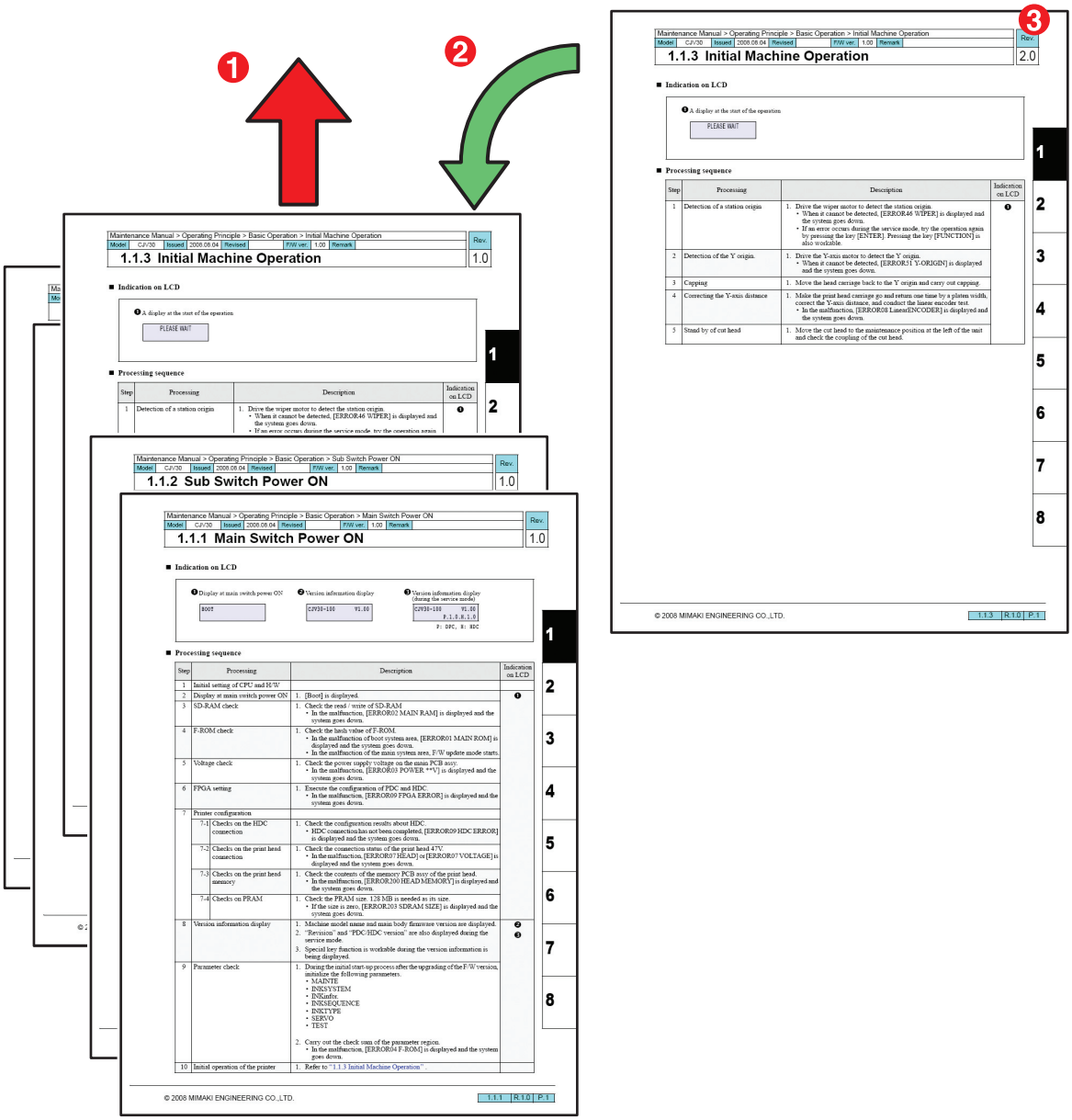
❼ Put the ledger number of the document.

■ **Constitution**

1. This document shows the names of parts of the machine, together with the part numbers and exploded views. The names of parts referred to in "INSTALLATION GUIDE" and "MAINTENANCE MANUAL" are the same as those shown in this document. Consult this document during the disassembly and assembly of the machine or for procurement of parts.

* There is no need of replacing this cover even when the revision of sections is updated or a new version is issued.

C-1) Replacement of Updated page



■ Description

❶ Confirm the page changed, and remove the page if not necessary.

❷ Insert the revision page added or revised.

❸ Confirm the revision number of the revision page inserted.

* It is also accepted to leave the previous page as a reference since it is administered by the revision number.

* For the details of change, confirm the “CHANGE TRACKING”.

About Service Documents

1.2 Symbol

■ Outline

The following symbols are used in this manual. Understand the symbols, and be sure to observe the instructions.

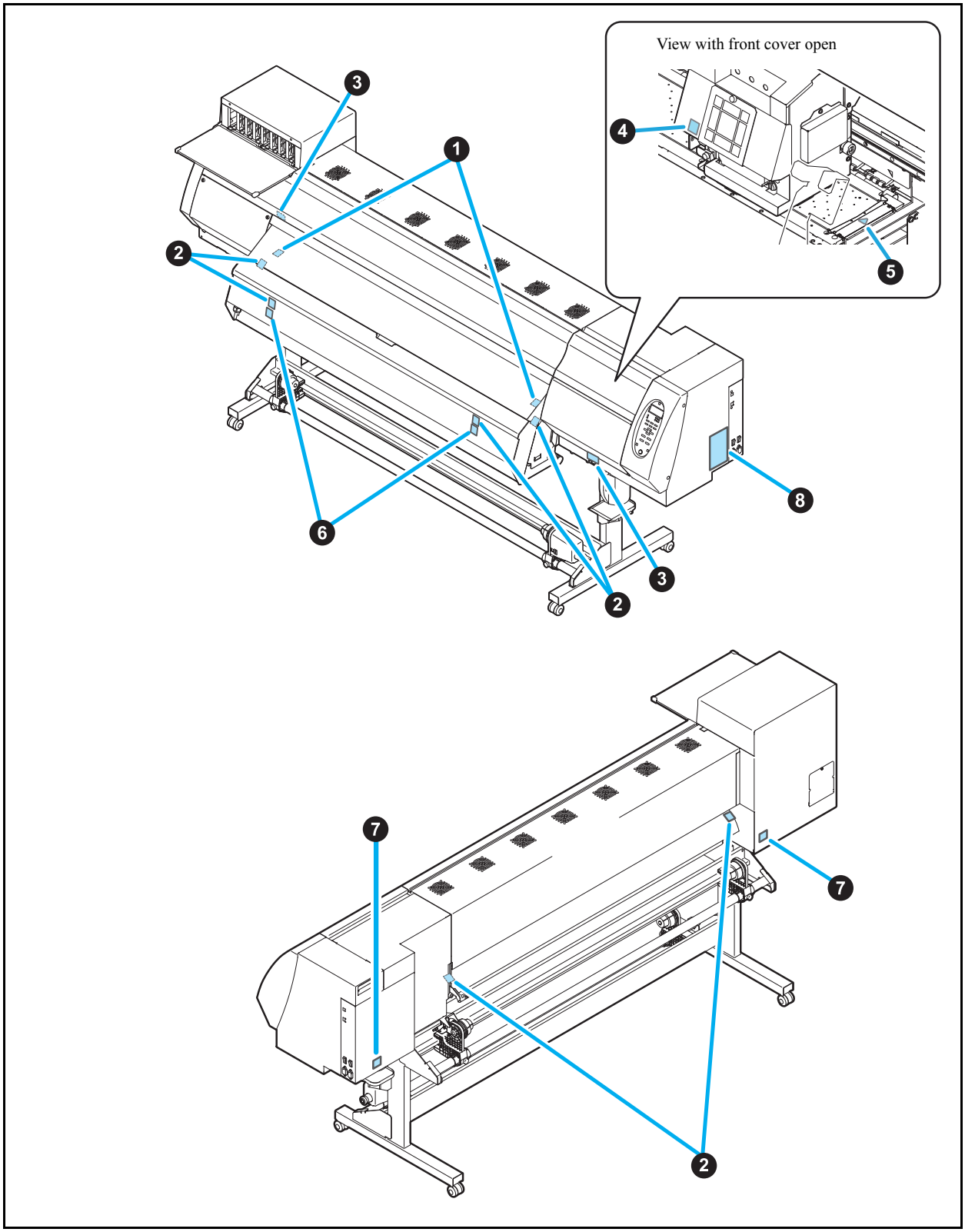
Symbol	Name	Description
	Warning	Failure to observe the instructions given with this symbol can result in death or serious injuries to personnel. Be sure to understand the instructions thoroughly and follow them to perform work.
	Caution	Failure to observe the instructions given with this symbol can result in injuries to personnel or damage to property.
	Important	Important notes on maintenance work are given with this symbol. Understand the instructions thoroughly, and perform maintenance work properly.
	Tips	Useful information for maintenance work is given with this symbol.
(1.1.1)	Reference Page	Related description is given on the page shown by this symbol. Be sure to refer to the specified page.

Service Outline

2.1.1 Warning Label

■ Label Position

The following figure shows the warning labels attached to this machine. Understand the symbols, and be sure to observe the instructions of the warning labels. If the warning labels are soiled and unreadable or peeling off during the preliminary checks, replace with new warning labels after confirming with the customer.



2.1.1 Warning Label

■ Label Description

❶	Order Number	Label Name	Label Description
	M907833	Head slider Caution Label	As the carriage moves, do not insert your hand.

❷	Order Number	Label Name	Label Description
	M903239	Caution Label (hot, small)	Attached to the media holder.

❸	Order Number	Label Name	Label Description
	M903330	Work Caution Label	Please wear the goggle and gloves at work.

❹	Order Number	Label Name	Label Description
	M903405	Cutter Caution Label	Be careful of the cutter blade.

❺	Order Number	Label Name	Label Description
	M906144	Heat Caution Label	Be careful of the heat.

❻	Order Number	Label Name	Label Description
	M908553	Heat Danger Label	Be careful of the heat.

❼	Order Number	Label Name	Label Description
	M907935	Dangerous voltage Label	Dangerous voltage attention

2.1.1 Warning Label

❽	Order Number	Label Name	Label Description
	M908546	Rated label	Rated label for JV400-130LX.

	Order Number	Label Name	Label Description
	M908545	Rated label	Rated label for JV400-160LX.

2.1.2 Maintenance Precaution

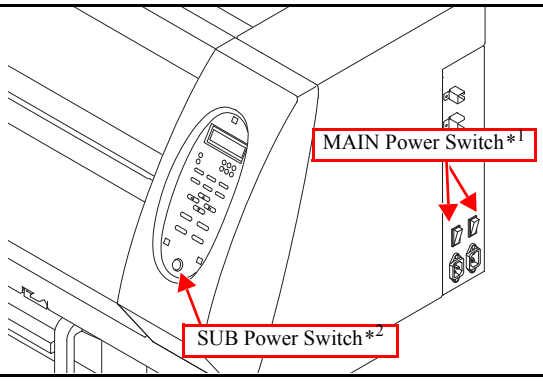
■ Before starting maintenance work, be sure to turn off the SUB power switch first and then MAIN power switch, unplug the power cable from the power inlet on the machine, and wait for more than 15 minutes.
Without waiting for an adequate period of time, the electricity in the circuits on PCBs will not be discharged completely. Under such conditions, components on PCBs may be damaged if any cable inside the machine is unplugged or plugged in. Also you may get electric shock if you touch a bare electrode.

■ To protect your eyes and hands from ink, be sure to wear goggles and gloves when cleaning the print head or replacing the pump assy or when there is a possibility that ink may scatter. Your hands can get rough and dry if they are stained with the ink.

■ Explosion can occur if the battery is replaced with a wrong type. Dispose of used batteries according to the manufacturer's instructions.

■ When removing or installing dampers, take great care not to permit ink leakage and not to stain any parts with ink. A drop of ink on FFCs or connectors may cause a short circuit or poor electrical contact, thus resulting in faulty ink ejection or damage to the head or PCBs.

■ Do not turn off the power during firmware upgrading. Doing so may disable restarting.



*1 The switch called the “MAIN Power Switch” in this document is called the “Main Power Switch” in the “Operation Manual”.

*2 The switch called the “SUB Power Switch” in this document is called the “Power Switch” in the “Operation Manual”.

■ Preliminary Checks

Before starting work, make sure that the following conditions are all met:

1. ☐ Understand thoroughly all the instructions given in “Warning for Use” in the Operation Manual before starting work.
2. ☐ The following conditions for the power supply system are all met:
   - ☐ The power supply voltage must be within the specification limits.
   - ☐ The machine must be grounded properly.
   - ☐ The power cable must be free from damage, broken wire, etc. Many cables must not be connected to one outlet.
   - ☐ The location must be such that the cable can be easily unplugged from the wall outlet in case smoke or flame has been risen from the electrical system.
3. ☐ Some trouble may be due to misoperation. Judge whether or not the error display and the error condition signify misoperation.

2.1.2 Maintenance Precaution

■ Precautions in Work

Take the following precautions during maintenance work:

1. ☐ Provide adequate space for the maintenance work.
2. ☐ When performing tests with the electrical box cover open, be careful not to receive an electric shock from any live part. Also take care not to drop screws or any other parts into the circuit box.
3. ☐ Take care to avoid insufficient insertion or skewed insertion of any connector or FFC.
4. ☐ Do not touch FFCs with your fingers. Doing so may cause contact failure.
5. ☐ The lever of each FFC connector breaks easily. Move it up or down gently when releasing or locking the connector.
6. ☐ Pay attention to the movement of the head if you are required to perform maintenance work with the power on. (Keep all parts of your body away from moving parts.)
7. ☐ Use jog keys to move the media (in the X direction) or the head (in the Y direction).
   The media or head can be moved by hand with the power turned off. In doing so, however, exercise care to move them slowly.
8. ☐ Do not tilt the machine if ink cartridges are filled with ink. Doing so can cause ink leakage.
   Follow the procedure described below before transporting the machine. Use the dedicated packaging materials to transport the machine.
   - ☐ Remove the ink from the tubes by following the procedure of [#ADJUST] -> [HEAD WASH].
   - ☐ Remove the maintenance solution from the tubes by opening the maintenance solution valve with following the procedure of [#TEST] -> [MAINT.CARTRIDGE].
   - ☐ Remove the waste ink tank.
   - ☐ Install the head stopper to fasten the head.

Service Outline

2.2.1 Tools

■ Tools

The table below shows the tools to be used in maintenance work. In the table, each adjustment item for parts requiring the relevant tool is marked with "O".

Name	Category	Remarks	Cover Assy	Frame Leg Assy	Clamp Assy	X-drive Assy	Y-drive Assy	Bear Assy	Ink Slider PCB	Station Assy	Cap Base Assy	Wiper Assy	Waste Ink Tank Assy	Print Head Unit	Electrical Device Assy	Platen Assy	Cartridge Assy	X-axis Motor Relay PCB	Washing Cartridge	Small Take-up Device Assy	Roll Assy	Drying Assy	Installation or change of location	Adjustment of the print head	Adjustment of the edge	Distance accuracy
Phillips Screwdriver Type 1	Tool	For M2		O												O						O				
Phillips Screwdriver Type 2	Tool	For M3 to M5 (L=260 or more)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O		
		For M3 to M5	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O		
Slotted Screwdriver	Tool	Long side 2.5mm	O		O					O				O			O									
Hexagon Wrench	Tool	1.5mm for M3 SSWP				O				O		O								O	O					
		2.0mm for M4 SSWP				O	O																			
		2.5mm for M3 cap bolts		O										O												
		3.0mm for M4 cap bolts		O	O																	O				
		4.0mm for M5 cap bolts		O																			O			
		5.0mm for M6 cap bolts																					O			
		6.0mm for M8 cap bolts																					O			
		10.0mm for M12 cap bolts		O																			O			
Spanner	Tool	Width across flats: 5mm																								
		Width across flats: 5.5mm M3																								
		Width across flats: 7mm M4		O																		O				
		Width across flats: 10mm					O																			
		Width across flats: 19mm																					O			
Snap Ring Plier	Tool																			O	O					
Loupe	Tool	x50 or x60												O										O		
Ink Line Airtight Tester	Jig	OPT-J0094															O									
Head Inside Washing Jig Set	Jig	OPT-J0136												O												
Auto Cutter Height Adjustment Jig	Jig																									
Head Height Adjustment Jig	Jig													O												
Bar Type Tension Gauge	Tool	500gf																								
Scale	Tool	150mm																							O	
		500mm																								O
Trimmer Adjustment Screwdriver	Tool																									
Long-nose Pliers	Tool		O		O					O																
Nippers	Tool									O	O															
Thickness Gauge	Tool																									
Grease	Expendable	MG-A1-GU			O																					
		LONGTERM-W2-GU			O																					
Cleaning Liquid for Water Based Ink	Expendable																									
Adhesive Agent	Expendable	Instantaneous adhesive																								
Waste Cloth	Expendable	For cleaning																								
Cotton Swab	Expendable																									
Gloves	Expendable	Gloves with oilproof and tolerance																								
Industrial Alcohol	Expendable	For degreasing and washing																								
Cable Tie	Expendable	L=150 or less (UL-approved product)																								
Acetate Fabric Tape	Expendable							O						O												
Drafting Tape	Expendable																									
Double-stick Tape	Expendable							O								O										
Tweezers	Tool																									
Cutter Knife	Tool																									
Tester	Tool																									
Goggles	Tool																									

Service Outline

2.3.1 Conversion List for the International System of Units

■ **Conversion list for the international system of units**

The following is a conversion table among the International System of Units, the Gravitational System of Units and the Inch-pound System of Units.

	International System of Units		Gravitational System of Units		Inch-pound System of Units	
	[N]	[cN]	[kgf]	[gf]	[ozf]	[lbf]
1[N]	1	100	0.102	101.97	3.60	0.225
1[cN]	0.01	1	0.001019716	1.02	0.03597	0.002248089
1[kgf]	9.81	980.67	1	1000	35.27	2.20
1[gf]	0.00980665	0.981	0.001	1	0.03527	0.002204623
1[ozf]	0.278	27.80	0.02835	28.35	1	0.0625
1[lbf]	4.45	444.82	0.45359237	453.59	16	1

Basic Specification

3.1.1 Main Unit Specification

■ Specifications

Item		Specification	
		JV400-130LX	JV400-160LX
Head		Drop-on-demand piezoelectric print heads (2 head)	
Print mode (Scan x Feed)	4-color set installed	900x900 : Bi/Uni 6/12/24pass 900x1200 : Bi/Uni 8/16/32pass 1200x900 : Bi/Uni 6/12/24pass 1200x1200 : Bi/Uni 8/16/32pass 600x900 : Bi/Uni 6/12/24pass (for only LX101 ink)	
	4-color+W set installed 6-color set installed 6-color+W set installed	900x900 : Bi/Uni 12/24/48pass 900x1200 : Bi/Uni 16/32/64pass 1200x900 : Bi/Uni 12/24/48pass 1200x1200 : Bi/Uni 16/32/64pass 600x900 : Bi/Uni 12/24/48pass (for only LX101 ink)	
Ink	Lx100	Y,M,C,K,W	
		4 colors (K,M,C,Y) 4 colors+W (K,M,C,Y,W)	
	Lx101	Y,M,C,K,Or,G,W	
		4 colors (K,M,C,Y) 6 colors (K,M,C,Y,Or,G) 6 colors+W (K,M,C,Y,Or,G,W) For W, Lx100 is used.	
Ink supply		Supplying from ink cartridges through tubes. Ink cartridge replacement type : For four colors, M and C at four colors + W: Supplying by Toggle switchover with 2 cartridges/color For Y, K and W at four colors + W, For six colors + W and For six colors: Supplying with 1 cartridges/color 600cc ink pack supply, 8 slot	
Ink capacity		At 4 colors: 600cc 2 cartridges for each color, 600cc/1 color At 4 colors+W: 600cc 1 cartridge for each color (M,C: 600cc 2 cartridges/color, W: 220cc 2 cartridges) At 6 colors: 600cc 1 cartridge for each color (M,C: 2 cartridges/color) At 6 colors+W: 600cc 1 cartridge for each color (W: 220cc 2 cartridges)	
Media that can be used		Thin coat paper/PET/Tarpaulin/Weatherproof PVC/Polyester cloth/Cotton	
Print margin	Roll	Left end and right end : 15 mm (Default) Front : 150.0 mm Rear : 0 mm	
	Cut sheet	Left end and right end : 15 mm (Default) Front : 150.0 mm Rear : 200 mm	
Distance accuracy	Absolute accuracy	Whichever the larger one of ± 0.3 mm or ± 0.3 % of the designated	
	Repeatability	Whichever the larger one of ± 0.2 mm or ± 0.1 % of the designated	
Squareness		± 0.5 mm / 1000 mm	
Media skew		5 mm or less / 10 m variable	
Print gap		L range : 1.8mm M range : 2.3mm H range : 2.8mm	
Media severing		Cutting of Y direction by the head cutter, Cutting accuracy (steps) : 1.0 mm or less.	
Interface	Mounted standard	USB 2.0	
Command		MRL- III	

3.1.2 Common Specifications for Main Unit

■ **Specifications**

No.	Item		Specification	
			JV400-130LX	JV400-160LX
1	Maximum printing width		1361mm	1610mm
2	Media specs	Maximum width	1371mm	1620mm
		Minimum width	210mm	
		Thickness	0.2 mm or less	
		Roll O. D.	ϕ 180mm or less	
		Roll weight	25kg or less	
		Paper sleeve I. D.	3 or 2 inches	
		Printing surface	Side facing outward	
		Take-up processing	The roll end is gently fixed to the core with weak-adhesive tape or weak glue for easy removal.	
3	Distance accuracy	Absolute accuracy	Whichever the larger one of ± 0.3 mm or ± 0.3 % of the designated	
		Repeatability	Whichever the larger one of ± 0.2 mm or ± 0.1 % of the designated	
4	Perpendicularity		± 0.5 mm / 1000 mm	
5	Media skew		5 mm or less / 10 m variable	
6	Media severing (severing cutter)		Cutting of Y direction by the head cutter, Cutting accuracy (steps) : 1.0 mm or less.	
7	Interface		USB 2.0	
8	Noise	Standby	Less than 58 dB (FAST-A, Front & Rear & Left & Right 1 m)	
		Continuous printing	Less than 65 dB	
		Discontinuous printing	Less than 75 dB	
9	Compliance with standards		VCCI-Class A, FCC-Class A, UL 60950, CE Marking (EMC,Low Voltage Directive,Machinery Directive), CB Report, RoHS	
10	Power supply and power consumption		AC100 - 120 ± 10% , AC220 - 240 ± 10% , 50/60Hz ± 1Hz , 15A or less	
11	Power consumption		2120 W x2 or less	
12	Ambient conditions	Service temperature range	20 °C to 30 °C	
		Relative humidity	35 to 65% Rh (No condensation)	
		Quality assurance temperature	20 °C to 25 °C	
		Temperature gradient	± 10 °C / h or less	
		Dust	Equivalent to normal office level	
13	Weight		198 kg	235 kg
14	Dimensions	W	2634mm	2879mm
		D	854mm	854mm
		H	1435 mm	1435 mm

3.1.3 Specifications for Ink

■ **Specifications**

No.	Item		Specification
			JV400
1	Supply		Ink pack / Ink cartridge(White ink)
2	Ink color		Black ink Cyan ink Magenta ink Yellow ink White ink Orange ink Green ink
3	Ink capacity		600cc / 220cc(White ink)
4	Available period		LX100/LX101 ink 1 year from the date of manufacture (at room temperature)
5	Storage temperature	Storage	0 to 25 °C (Daily mean temperature) * Keep the package sealed. * Keep the package in the dark cold place where is dried and well-ventilated.
		Transportation	-20 to 40 °C * Avoid passing a place where temperature is lower than -20 °C or higher than 40 °C.

IMPORTANT

- The warranty is not applicable if any of the ink cartridges was disassembled or refilled with ink. Do not use any ink cartridge disassembled once or refilled.
- The ink may freeze when it is left for a long time in a cold environment.
  - For the water-based ink, if the ink has frozen, it cannot be used any more by changing in quality. Be sure to keep the ink cartridge in the condition that the ink does not freeze.

Basic Specification

Basic Specification

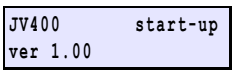
Basic Specification

Technical Information

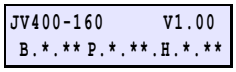
4.1.1 Service Mode and Specialized Key

■ Indication on LCD

In normal mode



In service mode



■ Outline

For troubleshooting or maintenance work, the machine needs to be operated in service mode.
The following describes the Specialized Key functions which start this machine in service-related mode.

■ Specialized Key Functions

After the start of the machine, press the specific key(s) on the operation panel while the version information is displayed. Then the machine will enter the corresponding one of the following service-related modes.

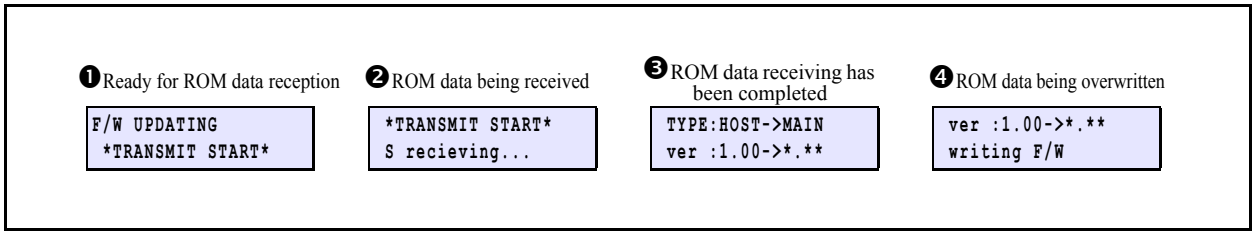
Service-related mode	How to enter	Remarks
F/W Update	(While version information is displayed) Press [REMOTE]	• Receives FirmwareROM data from the host PC via USB2.0 I/F, and updates the firmware of the main PCB. • Available only when the machine is started by turning on the main power. • After firmware update, restart the machine by turning the main power.
Parameter UP/DOWNLOAD (LOG UPLOAD)	(While version information is displayed) Press [▲]+[▼]	• Uploads the parameters and log data from the machine to the host PC via USB2.0 I/F. • Downloads the parameters and log data from the host PC to the machine via USEB2.0 I/F.
System Parameter input	(While version information is displayed) Press [ENTER]+[END]	• Start the machine in [SYSTEM PARAM.] input mode of [#PARAMETER]. • When the machine cannot start because of a parameter hash error or the like, the parameters can be initialized in this mode. • When the machine cannot be operated because of a system down error or the like, input the system parameter HASH 0 → 1 or 2 in this mode. Then the machine can be started for the purpose of checking for problem.
	(While version information is displayed) Press [◀]+[▶]	
Service mode	(While version information is displayed) Press [REMOTE]+[FUNCTION]	Active until the power to the machine is turned off.
	System parameter SUPPORT 0 → 2 (3: English version)	Active until the value of the system parameter No. 122 SUPPORT is changed to 0.
When installing the device-specific F/W into new product maintenance PCB (common PCB)	(While version information is displayed) Press [TEST]	Install the device-specific F/W into new product maintenance PCB (common PCB).

■ Service Mode

For maintenance work, start the machine in service mode. Then you can use the functions that are not available in normal mode. As for those functions, the "#" mark is added at the head of the function name.

4.1.2 F/W Update

■ Indication on LCD



■ Outline

Using FW Version Upgrade function of FW Update Tool III, perform version upgrade of JV400 series.
For FW Update Tool III, refer to “FW Update Tool III User’s Manual”.

■ Update procedure

Do not turn OFF the power supply during the program is being written into the memory.
Once overwriting fails, the main PCB must be replaced with a new one for recovery.

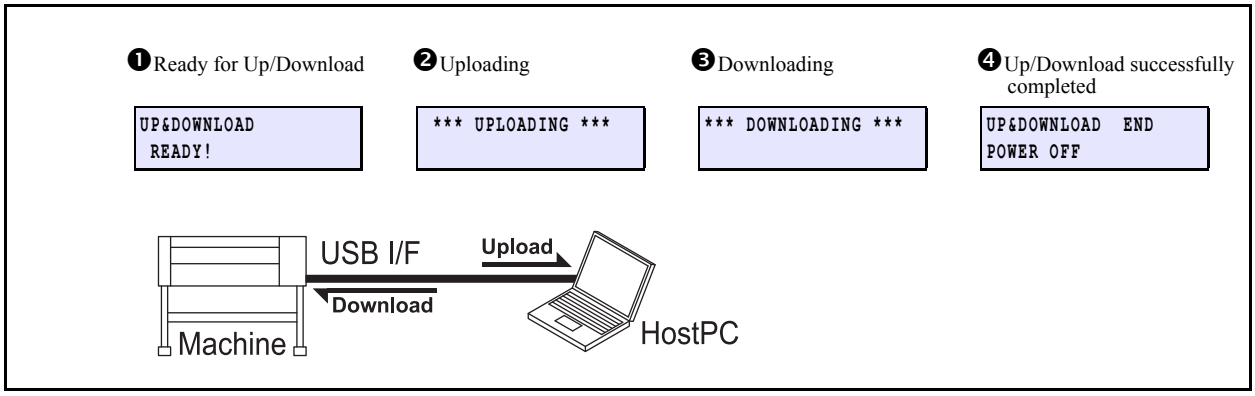
F/W update can be canceled by turning off the main power in the stage where the indication on the LCD is as shown at ❶.

☐ Normal version upgrade of F/W

Step	Operation	Description	Indication on LCD
1	Sub power ON+[REMOTE]	Machine starts in F/W update mode ☐ When replacing maintenance PCB, perform this first. The main circuit board described below is the common parts for several models. When such board is delivered, written firmware is not for specified model, but the common to each model. Part codes: E000011 Main PCB ASSY LCD indication after the startup: EplMb Start-up Ver.x.xx For the common F/W, the JV400 series F/W can be updated with Sub power ON + [TEST/CLN].	
		Ready for ROM data reception	❶
2	Version up file transmission	Using Version Upgrade function of FW Update Tool III, send the version up file.	
		Data being received	❷
		Data receiving has been completed. Press the [ENTER] key	❸
		The program is written into the memory.	❹
3	Sub power OFF	Update work completed	

4.1.3 Parameter Up/Download

■ Indication on LCD



■ Upload procedure (machine → host PC)

Step	Operation	Description	Indication on LCD
1	Sub power ON+[▲]+[▼]	Machine starts in Parameter Up/Download mode.	
		Ready for Up/Download	❶
2	Parameter upload	Uploads parameter data to the host PC.[a]	
		Uploading	❷
		Up/Download completed	❹
3	Sub power OFF	Parameter upload completed	

a.How to upload the LOG file:
LOG files can be uploaded by uploading the files on the "LCD ❶" screen with the [ENTER] key on the main unit operation panel pressed.

■ Download procedure (machine ← host PC)

Step	Operation	Description	Indication on LCD
1	Sub power ON+[▲]+[▼]	Machine starts in Parameter Up/Download mode.	
		Ready for Up/Download	❶
2	Parameter download	Downloads parameter data to the host PC.	
		Downloading	❸
		Up/Download completed	❹
3	Sub power OFF	Parameter download completed	

IMPORTANT

Even parameter data that does not match the firmware version can be downloaded (for firmware version 1.50 and later).
In this case, only parameters with matching names will be downloaded.
And, the following error will be displayed.

4.1.4 Parameter Function

■ Outline

With the PARAMETER function, you can check and set parameters on the machine. (Available in service mode)

> **Caution**
> Be sure to upload parameters before changing them.
> There is a possibility that input errors may make recovery impossible.

■ Parameter function items

No.	Item	Description	Change
1	SYSTEM PARAMETER	A group of parameters as a storage of adjusted values for each machine (printing)	Partially permitted
2	MAINTENANCE PARAMETER	A group of parameters for firmware debugging and assessment in the development stage	Partially permitted
3	SERVO PARAMETER	A group of parameters for XY motor control.	Disapprove
4	FEED PARAMETER	A group of parameters for feed control.	Disapprove
5	HEAD PARAMETER	A group of parameters to save the dot position correction and the head voltage (correction value)	Permitted
6	OPE PARAMETER	A group of parameters for operation control.	Disapprove
7	INK PARAMETER1	A group of parameters as a storage of the operation status of the machine	Partially permitted
8	INK PARAMETER2	Parameters for control of function related to ink system.	Disapprove
9	DEBUG PARAMETER	Parameters for evaluation of debug in development	Disapprove
10	SCAN PARAMETER	A group of parameters for scan control.	Disapprove
11	NOZZLE RECOVERY PARAMETER	Parameters to save nozzle numbers registered at nozzle recovery	Disapprove

4.1.5 Important Parameter

■ Outline

This section shows the parameters necessary in repair and verification work.

■ Important parameters

☐ SYSTEM PARAMETER

No.	Display	Initial Value	Adjusted Value	Description	Unit	Input Range
007	FLSposY	0		Flushing Y position adjustment	0.1mm	-200~200
008	CapPosY	0		Capping Y position adjustment	0.1mm	-200~200
009	WipPosY	0		Wiping Y position adjustment	0.1mm	-200~200
032	INK SET	0		Ink set 0: 4, 1: 6, 2: 6+W 3: 4+W	codes	0~255
109	AirVacY	0		Air vacuum Y position adjustment	Pulses	-200~200
117	MECASIZ	2		Mecha size 0: 107, 1: 130, 2: 160, 3: 180, 4: 260, 5: 320	codes	0~5
119	MODEL	0		Model 0: Lx, 4: SUV	codes	0~7
122	SUPPORT	0		Adjustment functionality expansion 2: Adjustment functionality expansion 3: Adjustment functionality expansion + English	codes	0~3
123	INKsup	0		Ink supply system 0,1: Sub-tank, 2: Dumper	codes	0~3
124	INITIAL	0		Initialization 1: All parameters 10: Updates parameter of C/IO PCB with the backup data of main PCB (Use at C/IO replacement.) 21: Parameter saved in C/IO PCB (F/W Ver.2.20 and later) 31: Parameter saved in main PCB (F/W Ver.2.20 and later)	codes	0~255

☐ INK PARAMETER1

No.	Display	Initial Value	Adjusted Value	Description	Unit	Input Range
000	INKSET	0x0000		Initial filling performing flag: Bit allocation ^0=Head 1 ~ ^7=8		0~255

☐ HEAD PARAMETER

Drop position adjusting value has been saved.

For details, refer to the parameter list.

☐ OPE PARAMETER

No.	Display	Initial Value	Adjusted Value	Description	Unit	Input Range
81	6ColSel			0: MOCGYYKK 1: MOCGYMKC	codes	0-1
97	DFeed	9		9: Drying feed when the heater is OFF: No Return feed: Yes 25: Drying feed when the heater is OFF: No Return feed: No 41: Drying feed when the heater is OFF: Yes Return feed: Yes 57: Drying feed when the heater is OFF: Yes Return feed: No	codes	-32768~32767

4.1.6 F/W update procedure after the replacement of the main circuit board

■ Outline

This section shows the procedure for F/W updating after the replacement of the main circuit board.

■ Update procedure

Step	Operation	Description
1	Parameter upload	Refer to "4.1.3 Parameter Up/Download"
2	Replace the main PCB	Replace the main PCB
3	Power ON	Turn the power ON
4	F/W update	Update F/M to the same version of F/W when uploading the parameter. Refer to "4.1.2 F/W Update" IMPORTANT ● If version upgrade of Epl Mb F/W (common F/W) is required, start the machine while pressing the [TEST] key, and then perform version upgrade. (As Epl Mb F/W (common PCB) is installed in the main PCB for maintenance, start with the [TEST] key, and perform version upgrade.) ● When you start the machine with Epl Mb F/W installed in while pressing the [REMOTE] key, the machine will be in the unexpected status other than the specification. Therefore, be sure to start the machine while pressing the [TEST] key.
5	Initial the SYSTEM PARAMETER	Input system parameter INITIAL= "1" for initializing all parameters.[a]
6	Parameter download	Download the parameter that is uploaded on the above step "1". Refer to "4.1.3 Parameter Up/Download"

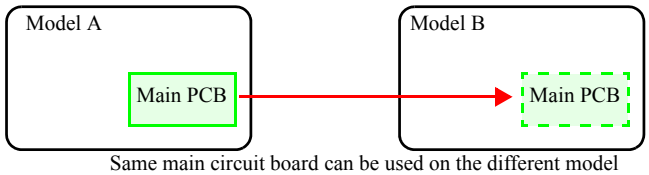
a.Make sure all parameters are initialized

4.1.7 F/W update procedure between different models

■ Outline

This section shows the procedure for F/W updating between different models.

When the PCB for maintenance is not prepared, if the same circuit board is attached on the other model, such main PCB can be used as the substitute.



Same main circuit board can be used on the different model

■ Procedure for removing the main PCB from the model A

Step	Operation	Description
1	Parameter upload	Refer to "4.1.3 Parameter Up/Download"
2	Update F/W to common firmware	While pressing the [REMOTE] key, turn ON the power supply. Update F/W to "Epl Mb common firmware"[a] **IMPORTANT** Make sure updating F/W to the common ones before removing the main circuit board. When the circuit board is removed from the different model, hardware and mechanical configurations may differ and it leads to the damage of the printer. Additionally, the hardware error may occur and the mode cannot be shifted to the update mode.
3	Replace the main PCB	Replace the main PCB

a.Firmware for EPL main circuit board for maintenance parts (MP-E000011)

Refer to " 4.1.6 F/W update procedure after the replacement of the main circuit board" for how to replace the model A with the model B.

4.1.8 Important Parameter

■ Outline

This section shows the parameter update procedure after the replacement of Central IO board.

■ Update procedure

Step	Operation	Description
1	Parameter upload	Refer to "4.1.3 Parameter Up/Download"
2	Replace the Central-IO PCB	Replace the Central-IO PCB
3	Startup the printer in System Parameter Input Mode	How to start in System Parameter Input Mode: Turn on the sub power switch and then press [END]+[ENTER] keys while the version number is displayed. IMPORTANT When the printer is started in other modes, turn off the main power switch once. Then start up the printer in System Parameter Input Mode. **When the printer is started up without System Parameter Input Mode :** Do not turn off the printer by SUB power switch on the operation panel. In addition, do not change the parameter. Because the back up data on the main circuit board is rewritten and therefore the data will not be restored the same as before the replacement. **If the printer is turned off by the SUB power switch:** Input the system parameter INITIAL= "2" and initialize all parameters then download the parameter that is uploaded on the above "Step 1". If the above procedure is taken, skip the "Step 4" described below.
4	Change the system parameter	Input the system parameter INTIAL= "10" Transfer the data value on the main circuit board to the parameter of Central-IO PCB.

Technical Information

4.2.1 Periodic Check Items

■ Outline

This section shows the periodical maintenance work items recommended to keep the machine in good condition.

■ Periodic Check Items

Item	Sub Item	Remarks	See
Checking the machine condition	☐ 1 Upload of parameters		4.2.2
	☐ 2 Update of firmware	Old Ver.: New Ver.:	
	☐ 3 Checking the result of user's care		
	☐ a Area around the heads		
	☐ b Station		
	☐ c Media holder, platen, etc.		
	☐ 4 Head condition	Test drawing:	
	☐	Head adjustment: ☐ Inclination ☐ Ink drop position	
Regularly replaced parts	☐ 1 Pump Assy	Qty. 10	4.2.3
	☐ 2 Cap Assy	Qty. 1	
	☐ 3 Constant pressure damper for maintenance Assy	Qty. 4	
	☐ 4 Filter	Qty. 8 a, When white ink is used Replaced by service engineer : x6 Replaced by user : x2 b, When white ink is not used Replaced by service engineer : x8	
Greasing	☐ 1 Clamp Lever		4.2.4
	☐ 2 Clamp Cams		
	☐ 3 Cap Slider		
	☐ 4 Wiper Slider		
Checking	☐ 1 Sensor test		4.2.5
	☐ 2 Operation test		
	☐ 3 Linear encoder test		
	☐ 4 Replace counter		
	☐ a Hours of machine use	Value: [h]	
	☐ b Drawing area	Value: [m^2]	
	☐ c Drawing length	Value: [m]	
	☐ d Scan count	Value: [times]	
	☐ 5 Upload of parameters		
	☐ 6 Checking online drawing		

4.2.2 Checking the Machine Condition

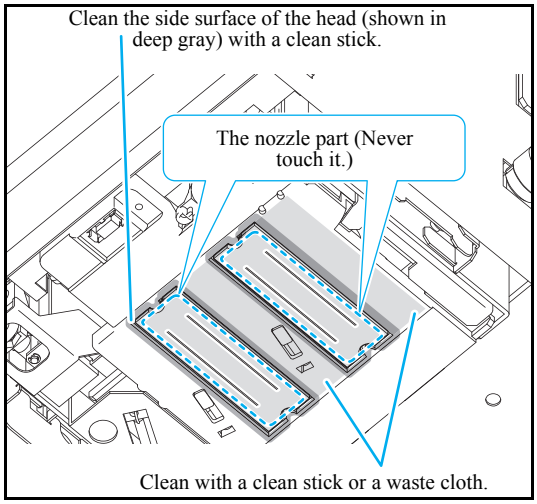
■ Outline

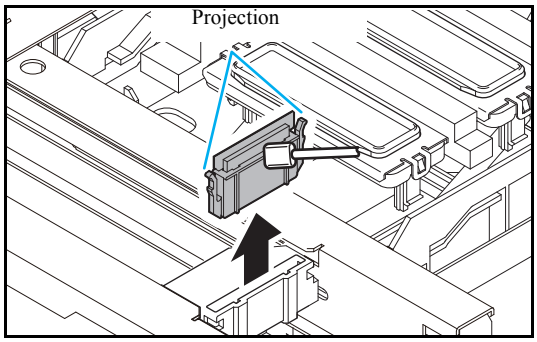
This section shows the work items for understanding the machine condition at the beginning of work and solving the current problems.

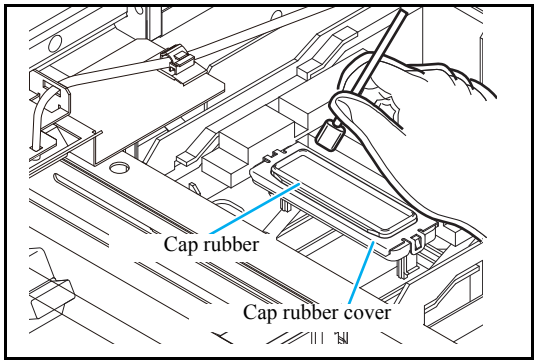
■ Work items

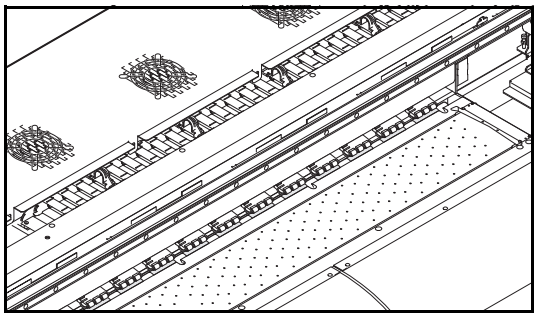
Caution

For cleaning the sensors and covers, do not use any organic solvent, such as alcohol or Solvent Washing Liquid.
An organic solvent can liquefy resin and paint, thus causing a machine failure or flaw in appearance.









1. Upload the parameters to store the parameters of the machine.
2. When the firmware of the machine is not the latest version, update the firmware.
3. Check the result of user's maintenance with attention paid to the following points:

☐ Area around the heads

Check for ink sticking or dust accumulation. If necessary, tell the user the cleaning method which uses Maintenance liquid LX kit or Clean Stick.

☐ Station

Check the areas around the caps and wipers for ink sticking or dust accumulation. If necessary, tell the user the cleaning method which uses Maintenance liquid LX kit or Clean Stick.

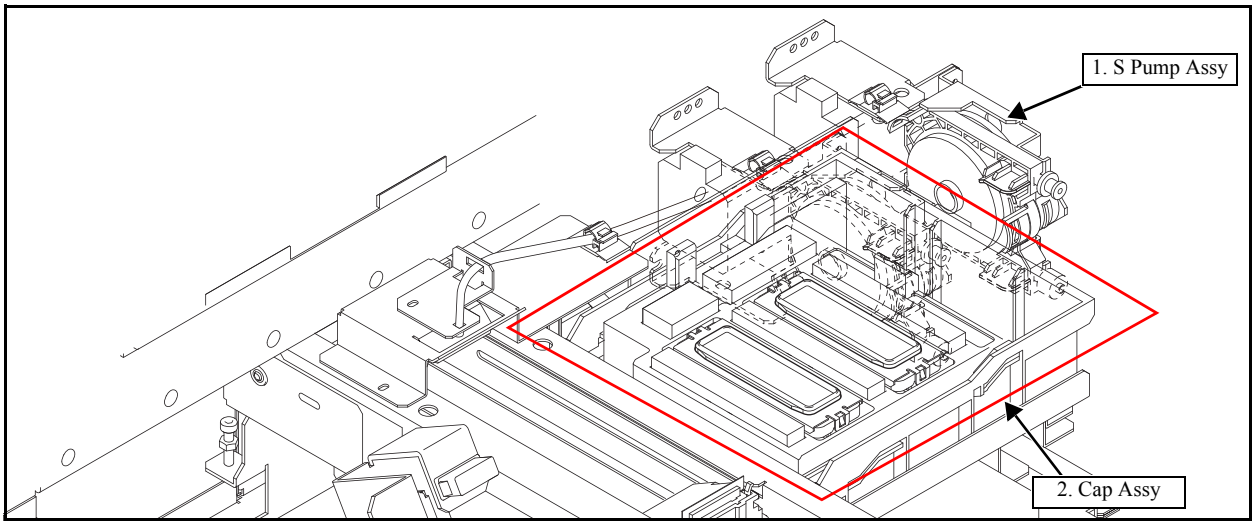
☐ Media holder, platen, etc.

Check the following parts for paper dust accumulation or ink sticking. If necessary, tell the user the cleaning method which uses natural detergent, waste cloth, or Clean Stick.

- Media Holder
- Platen
- PF Roller
- Media sensor (Two locations: back right and center)
- Cover
- Waste Ink Tank (volume of empty space)

4. Execute test drawing and check the head condition (for nozzle clogging or jet deviation).
Perform slant adjustment and/or drop position adjustment, if necessary.

4.2.3 Regularly Replaced Parts

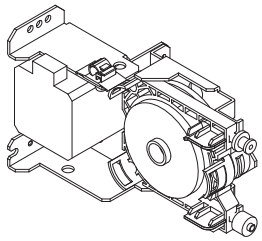
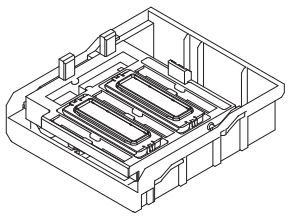
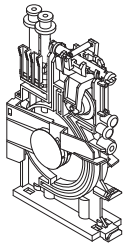


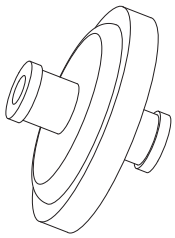
■ Outline

Check the Regularly Replaced Parts with attention paid to the following points:

- Is there a possibility that trouble may occur in ink suction or wiper replacement work because user maintenance is inadequate and thus the machine is badly stained?
- Is the rubber of the cap head deformed?
- Can the stain, such as ink sticking, be removed completely?
- Are there any parts worn significantly?

■ Regularly replaced parts

No.		No.		No.	
1	S Pump Assy	2	Cap Assy	3	Constant pressure damper for maintenance Assy
					

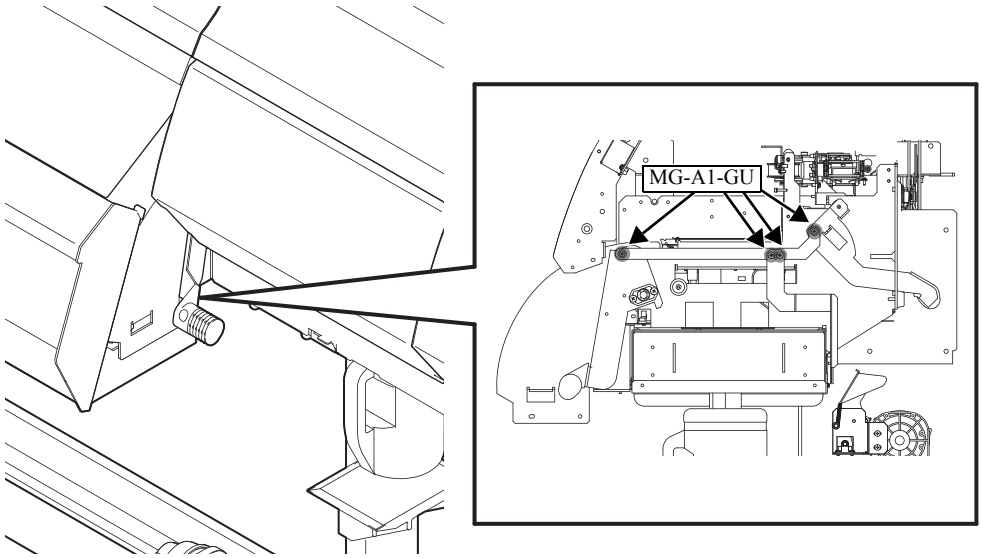
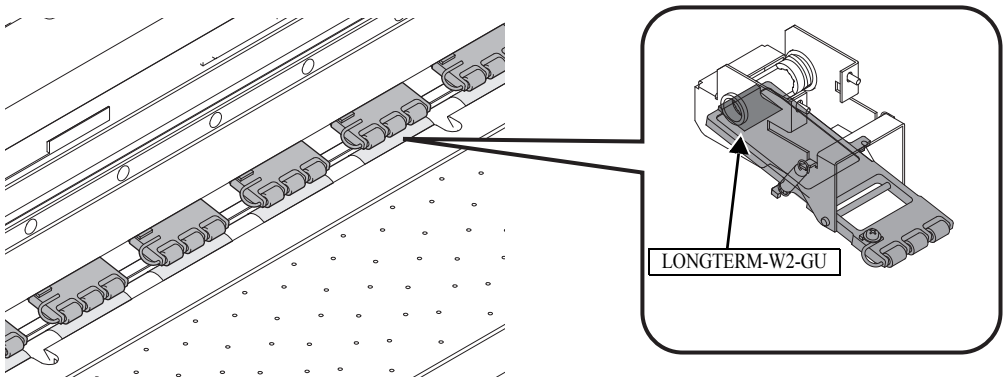
No.	
4	Filter
	

4.2.4 Greasing

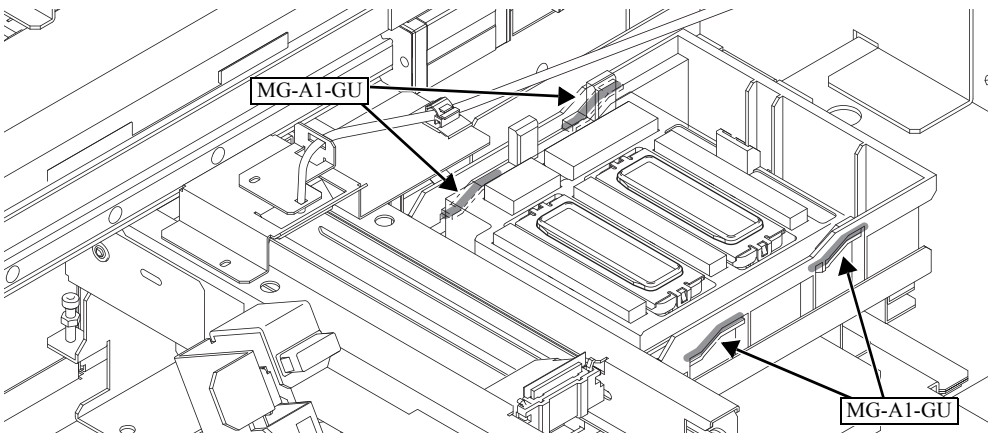
■ Outline

This section shows the parts to be greased periodically to suppress abrasion or abnormal sound during machine operation.

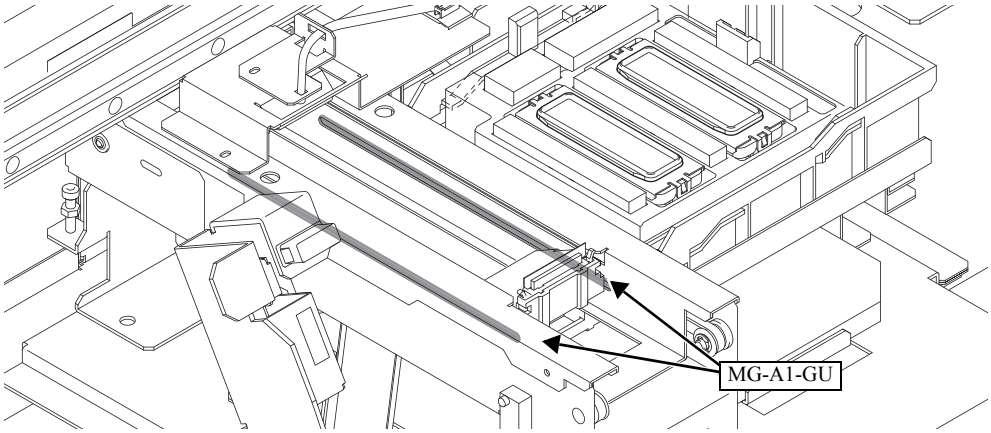
■ Parts to be greased

Clamp lever Grease: MG-A1-GU	
Clamp cams Grease: LONGTERM-W2-GU	

Apply the grease to all the cams.

Clamp lever Grease: MG-A1-GU	

4.2.4 Greasing

Wiper slider Grease: MG-A1-GU	

4.2.5 Checking

■ Outline

For the various sensors, fans, motors, etc., this section shows the work items for checking the use to date and inspections.

■ Checking items

No.	Item	Description
1	Sensor test	Perform all items defined in Sensor Check and make sure that there is no problem.
2	Operating test	Perform all items defined in Operating Test and make sure that there is no problem.
3	Linear encoder test	Perform linear encoder test and make sure that there is no problem.
4	Checking the REPLACE COUNTER	Check the REPLACE COUNTER and note down the following records. a. Hours of machine use b. Drawing area c. Drawing length d. Scan count
5	Upload of parameters	Once adjusted values or settings are changed, upload the parameters again.
6	Checking online drawing	Finally, perform test drawing and online drawing and make sure that there is no problem.

Technical Information

Technical Information

D500708-22-23082013

KF
FW: 2.5