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Roland DG Corporation

Product Guide

VG-640/540



Version 1.9 November 24, 2021

Roland DG Corporation

Version	Date	Contents
1.0	March 4, 2016	First Edition
1.1	April 20, 2016	P7: Loadable media weight of VG-540 has been corrected. Packaging dimensions and its weight of VG-540 has been added. P9: Information on head rank has been added. P56, 75: Ink consumption amount for tube cleaning during initial ink filling and the time required for initial ink filling have been added. P62: Cleaning liquid consumption amount and the time required for the cleaning have been added.
1.2	June 6, 2016	P30, 63, 66, 70, 71, 76: Information on WH ink has been added. P56, 57, 58: Required time for ink filling has been changed. P60, 61: Information on damper cleaning has been added.
1.3	July 7, 2016	P21 ,22, 23, 24, 25, 26, 27: Printing speed of VG-540 has been added. P27, 32: Information on WH ink has been added. P42: Leveling of remaining ink for 4 color machine has been added. P63, 64, 65: Information on WH ink has been added.

Version	Date	Contents
1.4	August 10, 2016	P65: Manual cleaning added.
1.5	March 15, 2017	P56,75: Information about ink line cleaning at the time of initial ink filling added. P66: Information about ink consumption revised.
1.6	June 2, 2017	P9:Information on head rank added. P55,75: Information about ink line cleaning at the time of initial ink filling added. P57, 77: Number of cleaning liquid required changed. P50, 51, 52, 53, 54, 55: Inner parts added. P78: Consumable parts added.
1.7	June 30, 2017	P58: NOTE for FILL DAMPER added. P60, 61: Contents of damper cleaning changed.
1.8	September 4,2020	P17: Head alignment revised.
1.9	November 24,2021	P78: Estimated replacement time of scan motor has been added.

Contents

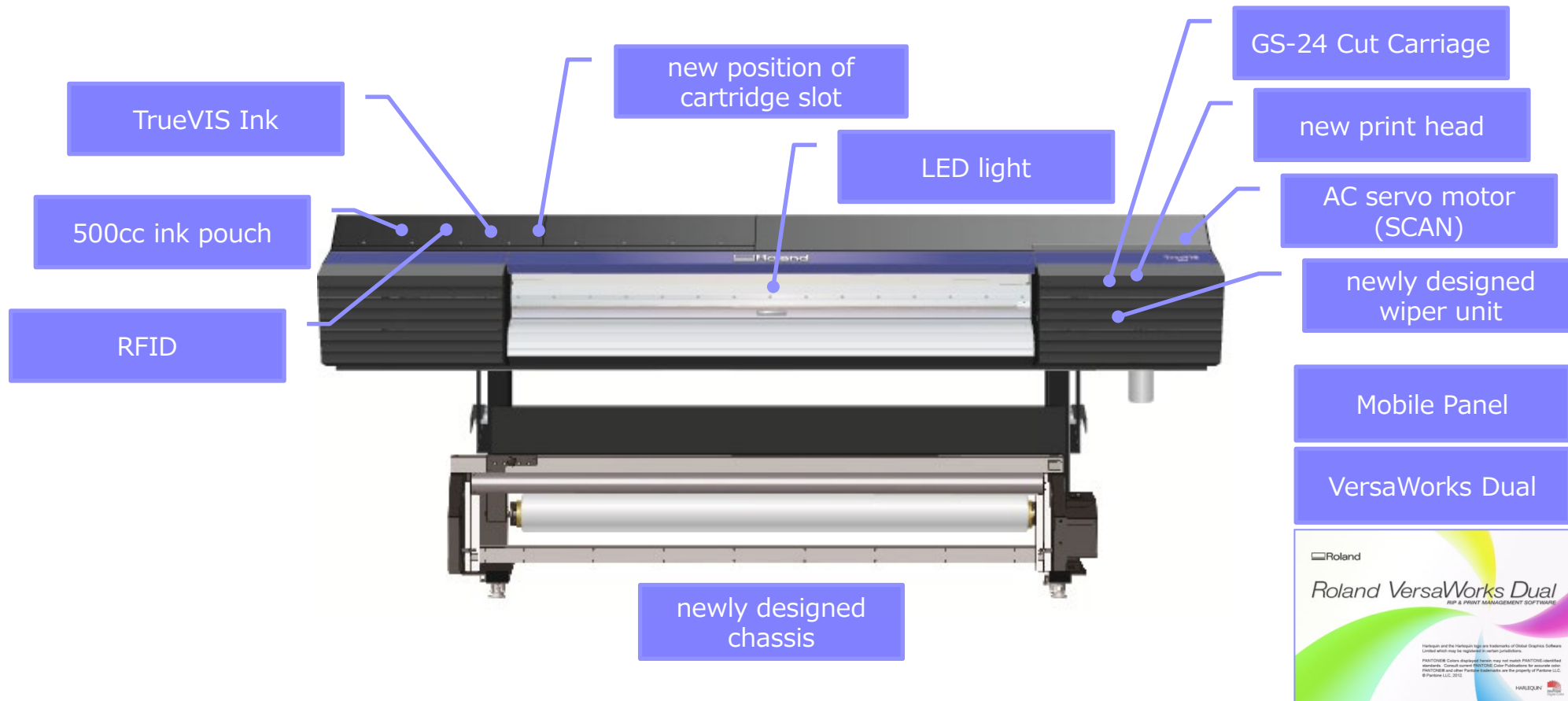
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| 2. Printing Theory | 10. Cleaning Function |
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| 6. Cutting Function | 14. Transport |
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1. Product Information

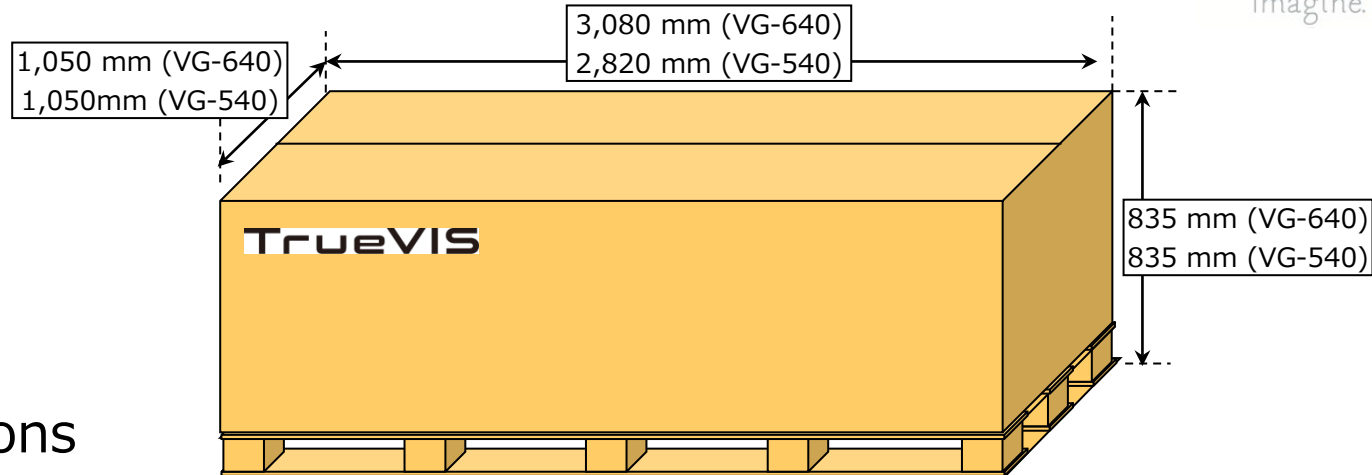
- VG-640/540
 - Series name: TrueVIS
 - ◆ 64/54 inch Print & Cut device
 - Newly designed print head
 - Ink cartridge
 - ◆ TrueVIS Ink
 - ◆ Ink pouch system
 - ◆ RFID (Radio Frequency Identification)
 - Ink type
 - ◆ CMYK (4 colors)
 - ◆ CMYKLcLmLk (7 colors)
 - ◆ CMYKLcLmLkWh (8 colors)
 - Bundled software
 - ◆ Roland VersaWorks Dual
 - Roland Mobile Panel
 - Option
 - ◆ TUC-2 TU2-64/54
 - ◆ DU2-64/54

- Features

VG-640 achieved high speed printing with high quality by the combination of new print head and new ink.



● Packaging



● Specifications

	VG-640	VG-540
Loadable Media Width	259 to 1,625 mm, Roll diameter no greater than 210 mm	210 to 1,371 mm, Roll diameter no greater than 210 mm
Printable Area	Max. 1,600 mm	Max. 1,346 mm
Media Weight	Max. 40 kg	Max. 30 kg Rev. 1.1
Dimensions with Stand	2,945 [W] x 745 [D] x 1,310 [H] mm	2,685 [W] x 745 [D] x 1,310 [H] mm
Weight with Stand	204 Kg	191 kg
Power requirements	AC 100 V $\pm$ 10%, 9.8 A, 50/60 Hz	AC 100 V $\pm$ 10%, 7.9 A, 50/60 Hz
Power consumption	7 colors: During operation 1,270 W, Sleep mode 40 W	7 colors: During Operation 1,030 W, Sleep mode 43 W
	4 colors: During operation 1,270 W, Sleep mode 75 W	4 colors: During Operation 1,030 W, Sleep mode 49 W
Packaging Dimensions and Its Weight	3,080 [W] x 1,050 [D] x 835 [H] mm 258.9 kg	2,820 [W] x 1,050 [D] x 835 [H] mm 239.5 kg Rev. 1.1

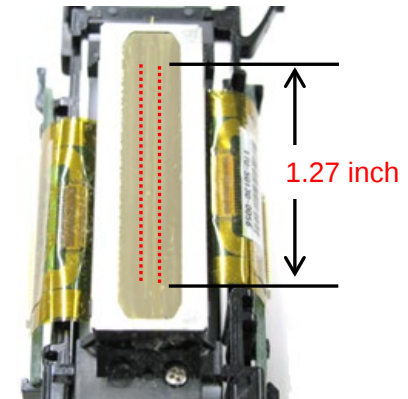
- Product specification comparison between VG series and VS-i series

	VersaCAMM VS-i Series	TrueVIS VG Series
Size	64/54/30 inch	64/54 inch
Ink type	ECO-SOL MAX2/MAX3	TrueVIS Ink
Ink package	Cartridge	Pouch
Ink configuration	C/M/Y/K/Lc/Lm/Lk/Wh/Mt	C/M/Y/K/Lc/Lm/Lk/Wh
Ink capacity	220 cc/440 cc/500 cc	500 cc
Number of print head	1	4 (newly designed)
Ink cartridge information	IC chip (Contact type)	RFID (Non contact type)
Cutting	Blade force Max: 350 gf Cut speed Max: 300 mm/s	Blade force Max: 500 gf Cut speed Max: 300 mm/s
Mobility control	—	Roland Mobile Panel
RIP	Roland VersaWorks (Adobe Engine)	Roland VersaWorks Dual (Harlequin Engine)

2. Printing Theory

- Print head

- ❑ Achieved high speed printing by high driving frequency
- ❑ Piezo ink-jet method
- ❑ 4 print heads per unit
- ❑ 2 nozzle lines per head
- ❑ 192nozzles per line
- ❑ Nozzle pitch: 150 dpi/line
- ❑ Print width: about1.27inch
- ❑ Head rank
 - ◆ Attached to the print head ribbon cable
 - ◆ 5 digits × 2 lines



Print heads have exactly the same head rank number "000034B34B".

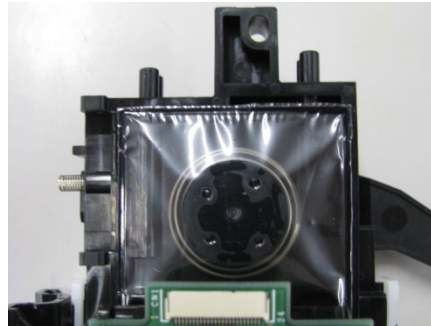
Rev. 1.1

Each print head has its own original head rank number.

Rev. 1.6

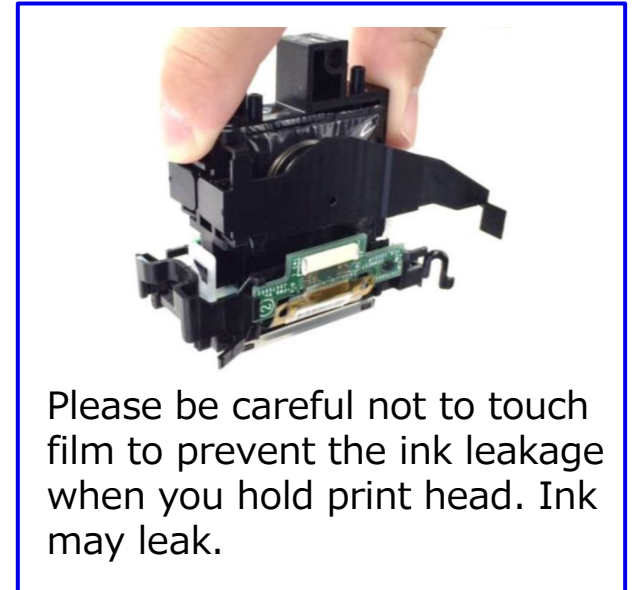
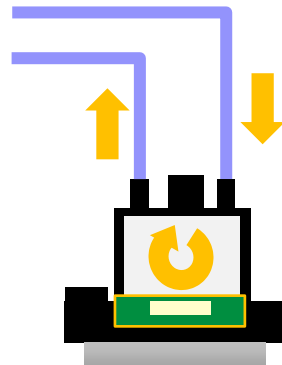
- Ink damper

- ❑ Newly designed
- ❑ 2 lines per damper
- ❑ No filter function
- ❑ No valve function

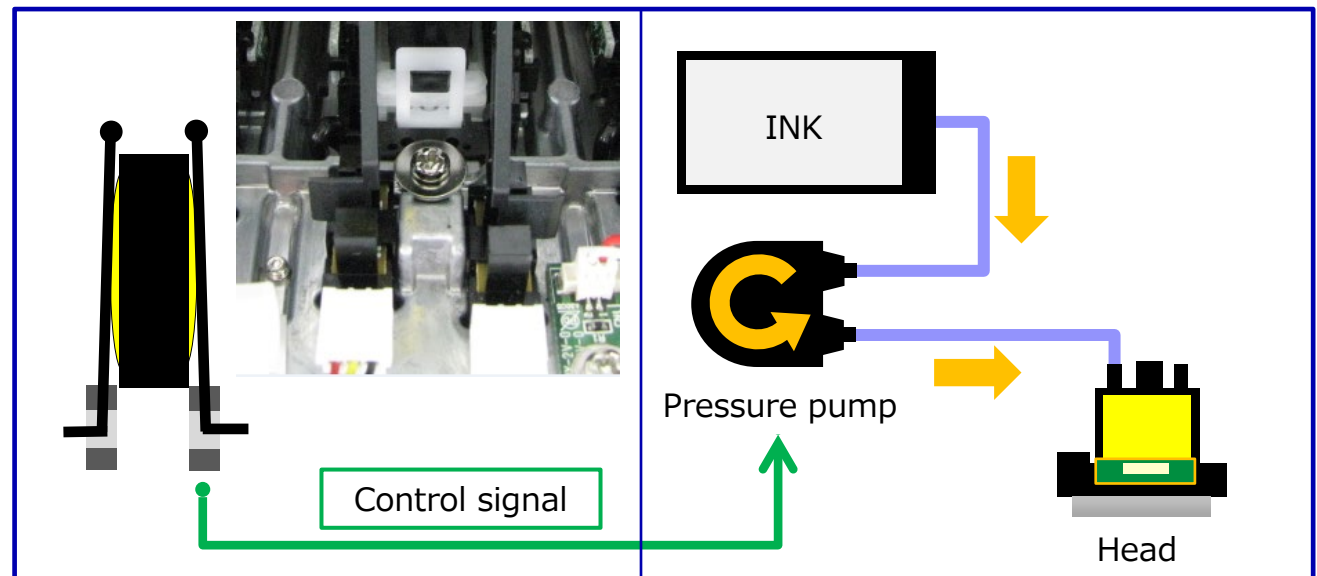
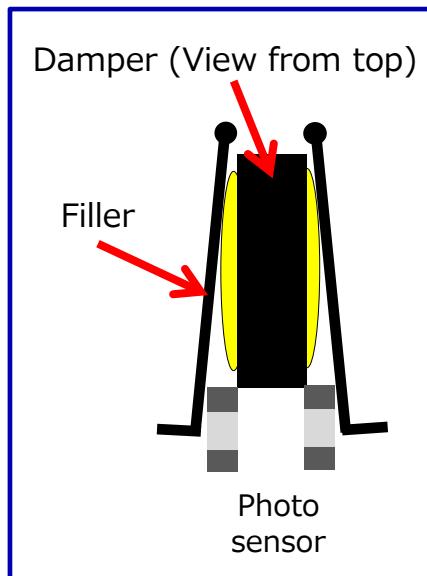
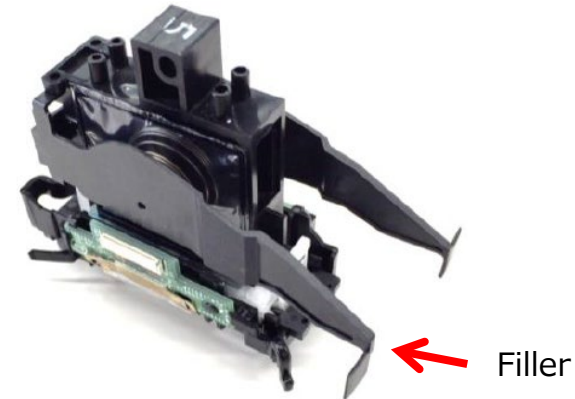


Damper and print head should be replaced at the same time.

- ❑ Ink circulation in the damper (only Wh)



- Ink supply system to ink damper
 - Filler
 - ◆ Adjusts the amount of ink in damper
 - Pressure pump
 - ◆ Provides an ink to damper



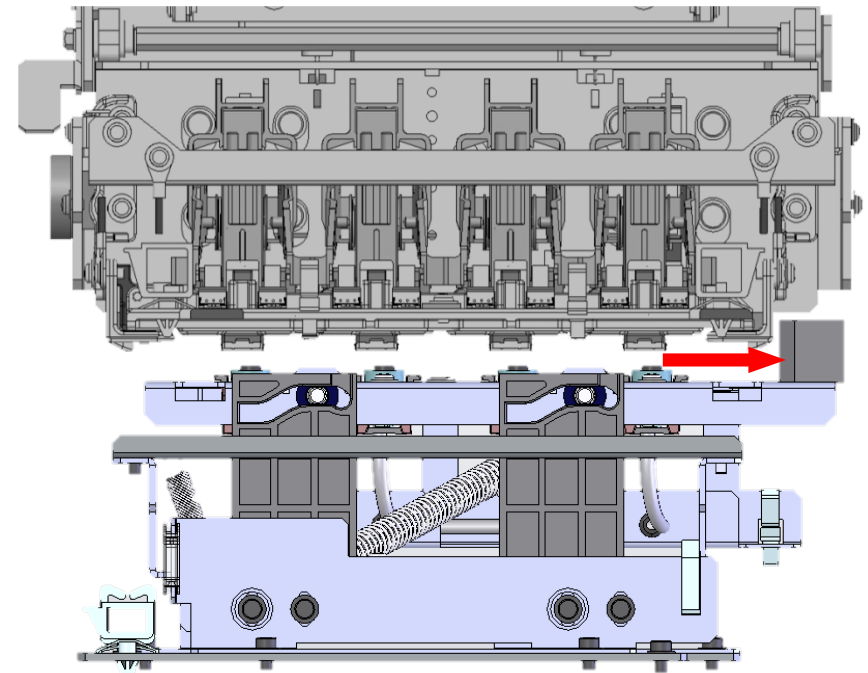
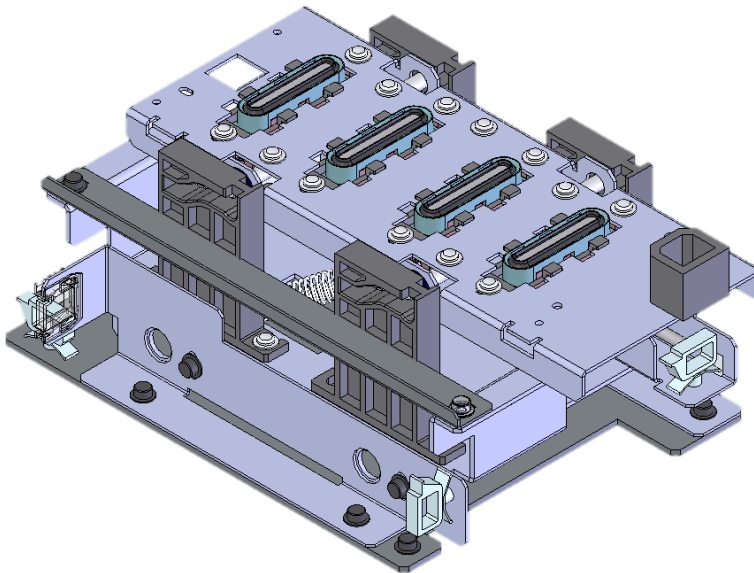
When the ink in damper decreases while printing, filler will touch photo sensor and pressure pump will provide an ink to damper.

- Capping unit

Capping unit caps the print head when print head carriage moves to the right side
(Same structure as VS series)

- Cap top

- ◆ Newly designed
- ◆ One piece per print head

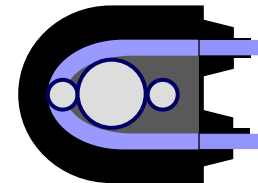


- Pump system

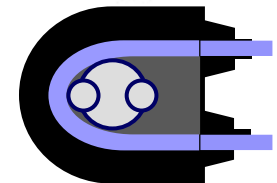
- Pressure pump

- ◆ Low speed movement just to deliver an ink to head
 - ◆ Pump and motor combined as one unit
 - ◆ Cost has been reduced from that of the previous parts.
 - ◆ Mechanism is same as current pump

Pump is closed while the machine is printing and during stand by.
Pump is opened when secondary power is off.



CLOSE



OPEN

- Ink circulation pump (and pressure pump)

- ◆ High speed movement for ink circulation
 - ◆ same as current one
 - ◆ Operates also as the pressure pump.



Ink circulation pump and cleaning pump are same design

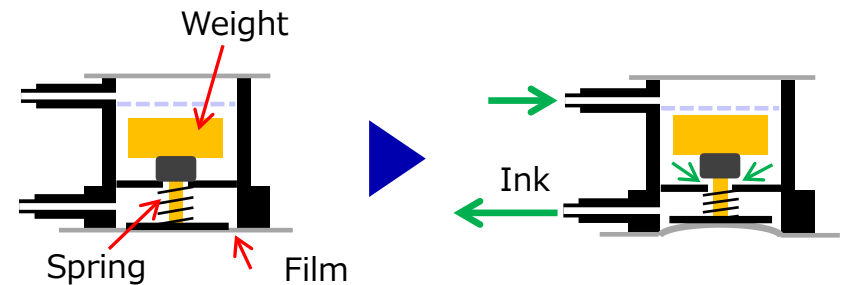
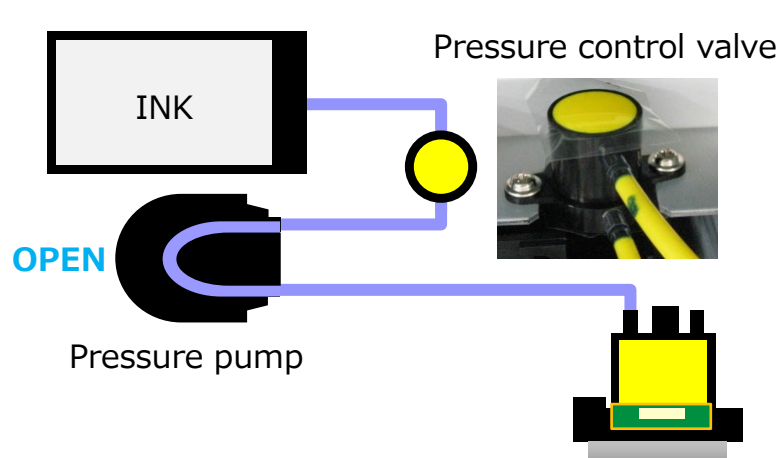
- Cleaning pump

- ◆ same as current one
 - ◆ For pump suction (e.g. cleaning)

- Pressure control valve

- Valve function

Pressure control valve prevents the ink pressure directly to damper when pressure pump is open since the ink is located higher than print head.



The valve closes by weight and spring when ink is not provided to head.

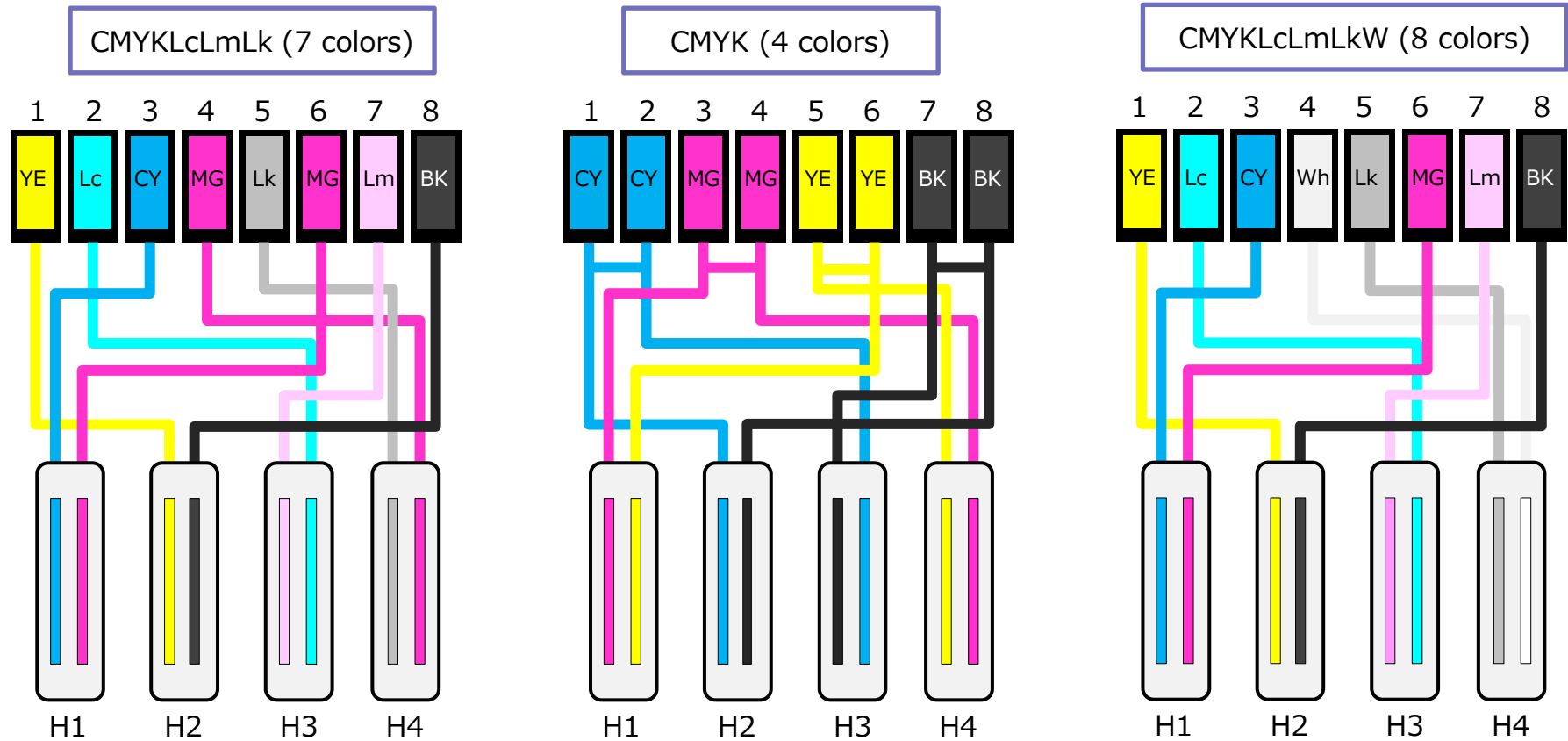
The valve opens when ink in the valve decreases because there is a negative pressure in the valve and the film will push the weight.

- Filter function

Removes foreign substances in the ink line.



- Ink line

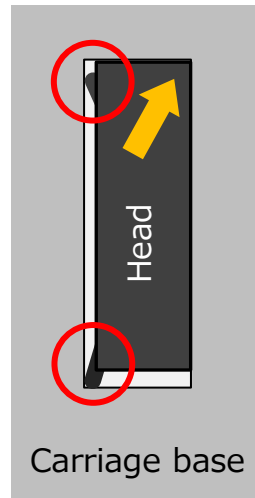
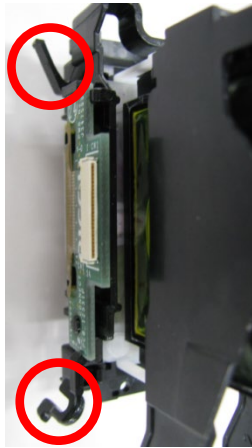


* Magenta on H4 is not used for printing.

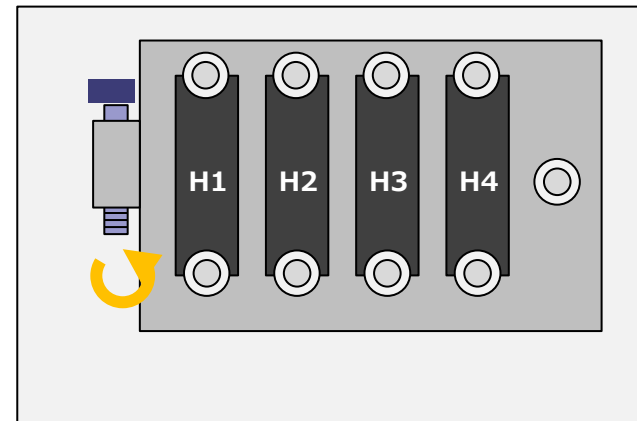
Mirror configuration

- Head alignment

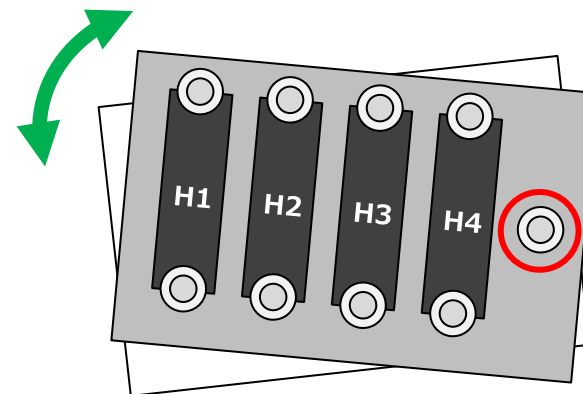
- BIAS adjustment only



Head position can be adjusted
by resin spring.

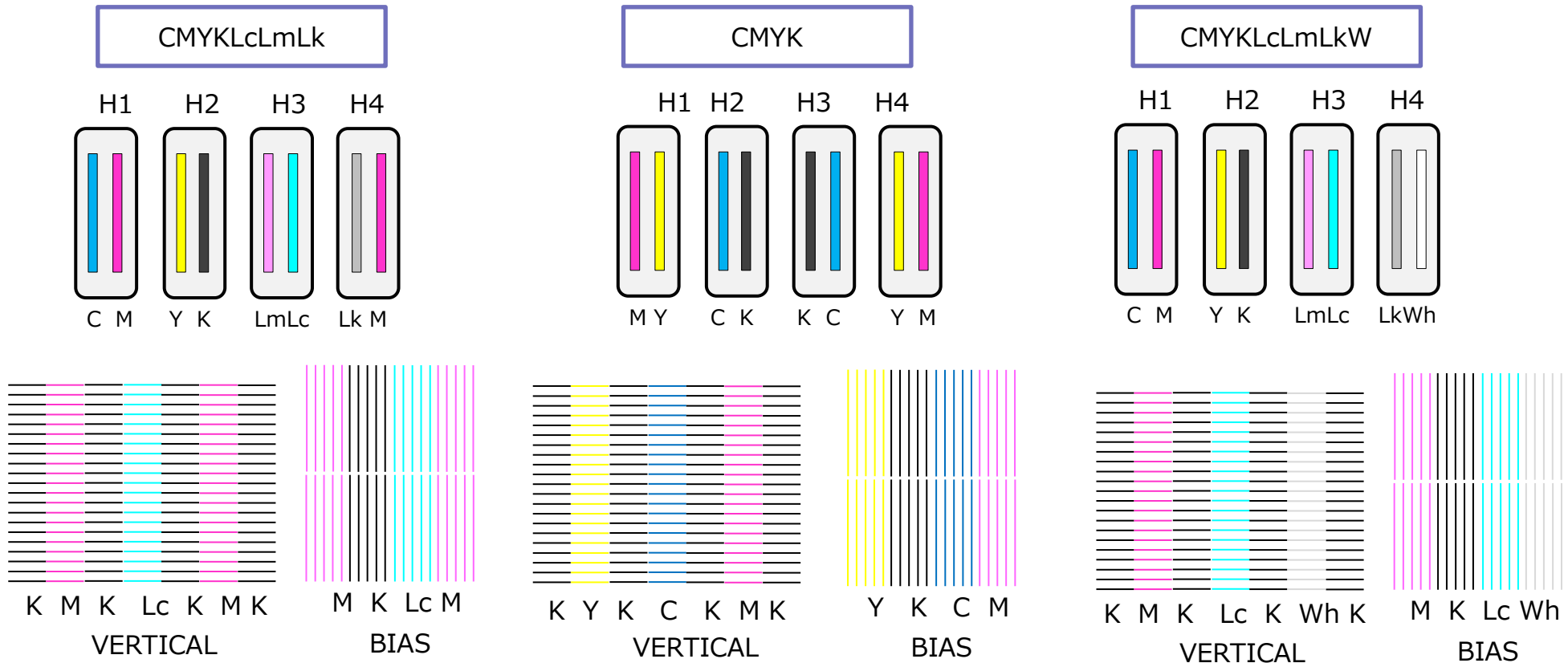


Vertical adjustment is not necessary
since vertical head position has an
accuracy towards carriage base.



Carriage base
rotation

- Head alignment (BIAS Pattern)



Rev. 1.8 Refer to the service notes for adjustment procedure.

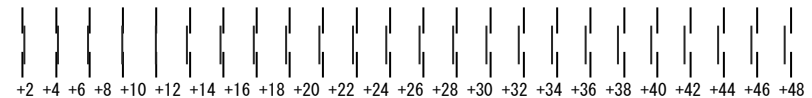
Misalignment tolerance is within **0.5 lines**.

● BI-DIR. DEFAULT/HORIZONTAL

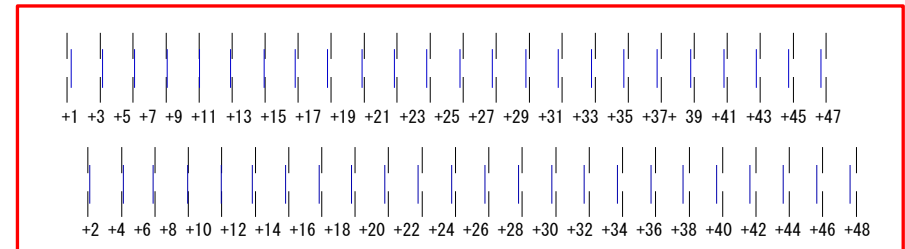
□ BI-DIR. DEFAULT

- ◆ Use two columns for one head
- ◆ Print No. 1 through No. 4

BI-DIR No. 1
H2



BI-DIR No. 1
H1

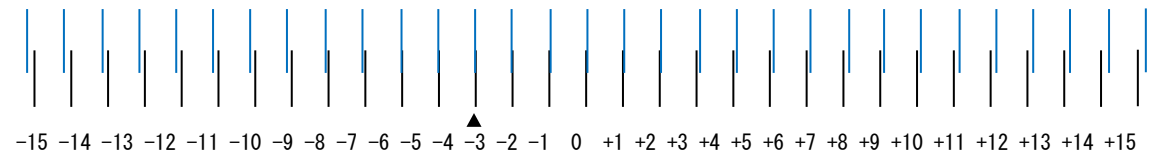


one head

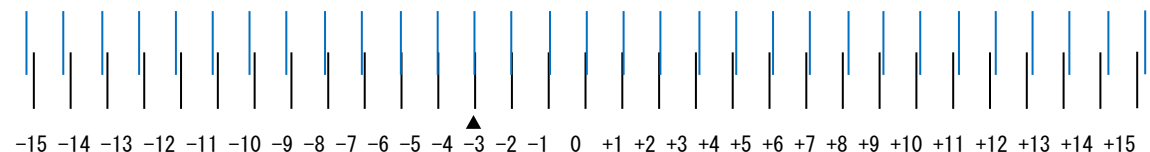
□ HORIZONTAL

- ◆ Print No. 1 through No. 2

Horizontal No. 1
H3

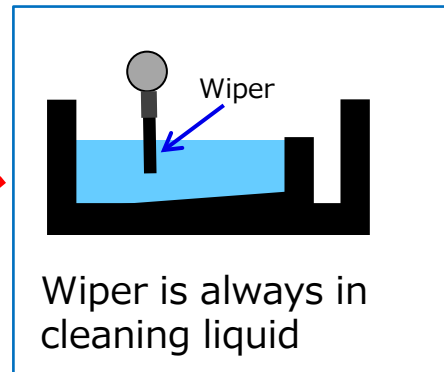
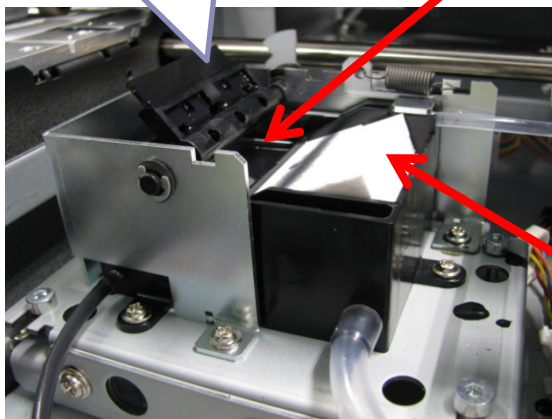


Horizontal No. 1
H1



- Wiper unit

- Wiper
 - ◆ Newly designed
 - ◆ No felt wiper
- Wiper is soaked into cleaning liquid
 - ◆ Cleaning cartridge is "TR-CL" (Inside contents is SL-CL.)

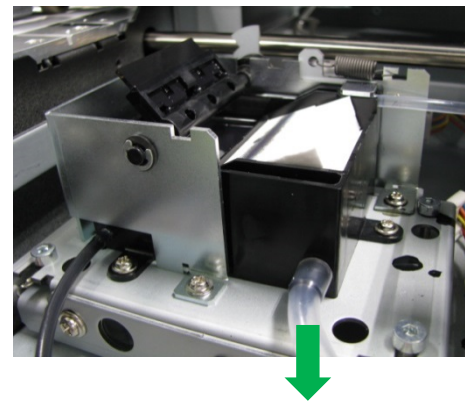
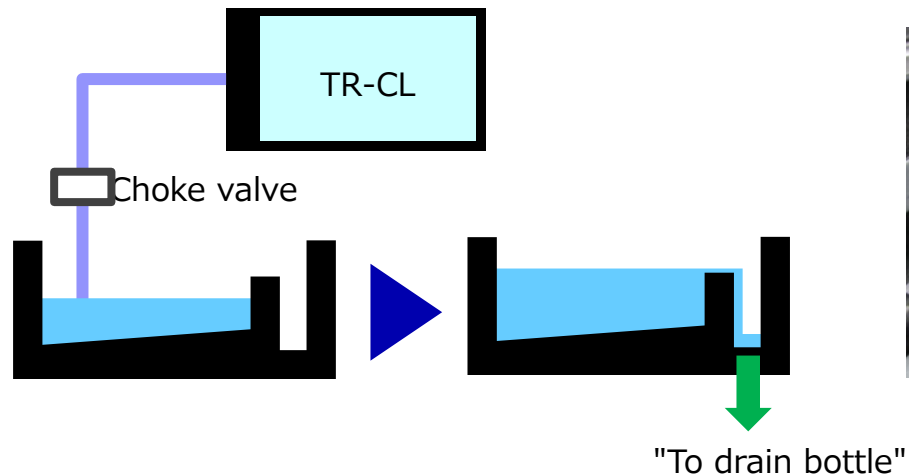


Insert the cleaning cartridge from right side of the machine.

- Wiper unit

- Cleaning liquid supply system

- ◆ The necessary amount is automatically provided depending on the usage.



1. The cleaning liquid will be provided to the tray when choke valve opens.
2. It will be automatically discharged when the amount of cleaning liquid in the tray exceeds the certain amount.

- Printing speed of 7C/8C Vinyl

							VG-640	VG-540
	Quality	Resolution [dpi]	Default Setting	Pass Counts	Direction	SCAN Speed [mm/s]	Print Speed [m2/h]	
Generic vinyl I	High Quality	900x900	✓	13p	Bi	1185	6.25	5.96
				16p	Bi	1185	5.22	4.96
	Standard	900x600	✓	10p	Bi	1185	8.31	7.86
				12p	Bi	1185	7.01	6.61
	High Speed	600x600		9p	Bi	1185	9.40	8.93
			✓	6p	Bi	889	11.42	10.95
Generic vinyl II	High Quality	900x900		5p	Bi	889	13.76	13.27
			✓	13p	Bi	592	3.61	3.51
	Standard	900x600		16p	Bi	592	3.02	2.91
			✓	10p	Bi	1185	8.31	7.86
	High Speed	600x600		12p	Bi	1185	7.01	6.61
			✓	9p	Bi	1185	9.40	8.95
				6p	Bi	889	11.42	10.95

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- Printing speed of 7C/8C Banner

							VG-640	VG-540
	Quality	Resolution [dpi]	Default Setting	Pass Counts	Direction	SCAN Speed [mm/s]	Print Speed [m2/h]	
Generic Banner I	High Quality	900x900		13p	Bi	1185	6.25	5.96
			✓	16p	Bi	1185	5.22	4.96
	Standard	900x600	✓	9p	Bi	1185	9.40	8.93
				10p	Bi	1185	8.31	7.86
				12p	Bi	1185	7.01	6.61
	High Speed	600x600	✓	6p	Bi	889	11.42	10.95
			5p	Bi	889	13.76	13.27	
Generic Banner II	High Quality	900x900		13p	Bi	1185	6.25	5.96
			✓	16p	Bi	1185	5.22	4.96
	Standard	900x600		9p	Bi	1185	9.40	8.93
			✓	10p	Bi	1185	8.31	7.86
				12p	Bi	1185	7.01	6.61
	High Speed	600x600	✓	6p	Bi	889	11.42	10.95
				5p	Bi	889	13.76	13.27

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- Printing speed of 7C/8C Other media

							VG-640	VG-540
	Quality	Resolution [dpi]	Default Setting	Pass Counts	Direction	SCAN Speed [mm/s]	Print Speed [m2/h] Rev.1.3	
Generic Paper	High Quality	900x900	✓	13p	Bi	592	3.61	3.51
				16p	Bi	592	3.02	2.92
	Standard	900x600	✓	10p	Bi	1185	8.31	7.86
				12p	Bi	1185	7.01	6.61
	High Speed	600x600	✓	9p	Bi	1185	9.40	8.95
				6p	Bi	889	11.42	10.95
Generic Backlit	High Quality	900x900	✓	13p	Bi	592	1.81	1.75
				16p	Bi	592	1.51	1.46
	Standard	900x600	✓	10p	Bi	1185	4.16	3.93
				12p	Bi	1185	3.51	3.31
Generic Heat Transfer Sheet	High Quality	900x900	✓	13p	Bi	1185	6.25	5.96
				16p	Bi	1185	5.22	4.96
	Standard	900x600	✓	10p	Bi	1185	8.31	7.86
				12p	Bi	1185	7.01	6.61
	High Speed	600x600	✓	9p	Bi	1185	9.42	8.93

- Printing speed of 4C Vinyl

							VG-640	VG-540
	Quality	Resolution [dpi]	Default Setting	Pass Counts	Direction	SCAN Speed [mm/s]	Print Speed [m2/h]	
Generic vinyl I	High Quality	900x900	✓	8p	Bi	1185	10.63	9.96
	Standard	900x600	✓	6p	Bi	1185	14.20	13.37
	High Speed	600x600		5p	Bi	1185	17.14	16.18
			✓	4p	Bi	889	17.50	16.62
Generic vinyl II	High Quality	900x900	✓	10p	Bi	592	4.91	4.72
	Standard	900x600	✓	8p	Bi	1185	10.63	9.96
	High Speed	600x600	✓	6p	Bi	1185	14.20	13.37
				5p	Bi	1185	17.14	16.18

Rev. 1.3

- Printing speed of 4C Banner

							VG-640	VG-540
	Quality	Resolution [dpi]	Default Setting	Pass Counts	Direction	SCAN Speed [mm/s]	Print Speed [m2/h]	
Generic Banner I	High Quality	900x900	✓	8p	Bi	1185	10.63	9.96
	Standard	900x600	✓	6p	Bi	1185	14.20	13.37
	High Speed	600x600	✓	4p	Bi	889	17.50	16.62
				3p	Bi	889	23.36	22.23
	Billboard	600x600	✓	2p	Bi	889	34.78	32.07
Generic Banner II	High Quality	900x900	✓	10p	Bi	1185	8.31	8.02
	Standard	900x600	✓	8p	Bi	1185	10.63	9.96
	High Speed	600x600	✓	6p	Bi	1185	14.20	13.37
				5p	Bi	1185	17.14	16.18

Rev. 1.3

- Printing speed of 4C Other media

							VG-640	VG-540
	Quality	Resolution [dpi]	Default Setting	Pass Counts	Direction	SCAN Speed [mm/s]	Print Speed [m2/h] Rev.1.3	
Generic Paper	High Quality	900x900	✓	10p	Bi	1185	8.31	8.02
	Standard	900x600	✓	8p	Bi	1185	10.63	9.96
	High Speed	600x600	✓	6p	Bi	1185	14.20	13.37
				5p	Bi	1185	17.14	16.18
Generic Backlit	High Quality	900x900	✓	10p	Bi	592	2.46	2.36
	Standard	900x600	✓	8p	Bi	1185	5.32	4.98
Generic Heat Transfer Sheet	High Quality	900x900	✓	8p	Bi	1185	10.63	9.96
	Standard	900x600	✓	6p	Bi	1185	14.20	13.37
	High Speed	600x600	✓	5p	Bi	1185	17.14	16.18

- Printing speed of 8C Clear film Rev. 1.3

							VG-640	VG-540
	Quality	Resolution [dpi]	Mode	Pass Counts	Direction	SCAN Speed [mm/s]	Print Speed [m ² /h]	
Generic Clear PET Film	High Quality	900x900	White	20p	Bi	847	3.07	2.93
			W→CMYKL c LmLk	20p	Bi	847	1.10	1.05
			CMYKL c LmLk→W	20p	Bi	847	0.99	0.94
	Standard	900x600	White	14p	Bi	960	4.90	4.66
			W→CMYKL c LmLk	12p	Bi	960	2.01	1.91
			CMYKL c LmLk→W	12p	Bi	960	1.81	1.74
Generic Clear Vinyl I/II	High Quality	900x900	White	20p	Bi	847	3.07	2.93
			W→CMYKLcLmLk	20p	Bi	847	1.10	1.05
			CMYKLcLmLk→W	20p	Bi	847	0.99	0.94
	Standard	900x600	White	14p	Bi	960	4.90	4.66
			W→CMYKLcLmLk	12p	Bi	960	2.01	1.91
			CMYKLcLmLk→W	12p	Bi	960	1.81	1.74

- Print speed comparison between VG-640 and VS-640i 7C/8C
Generic vinyl I

	Quality	Resolution (dpi)	Default Setting	Pass Counts	Direction	Print Speed [m2/h]
VG-640	High Quality	900x900	✓	13p	Bi	6.3
				16p	Bi	5.2
	Standard	900x600	✓	10p	Bi	8.3
				12p	Bi	7.0
	High Speed	600x600	✓	9p	Bi	9.4
				6p	Bi	11.4
				5p	Bi	13.8
VS-640i	High Quality	1440x720	✓	12	Bi	2.9
	Standard	720x720	✓	12	Bi	6.4
	High Speed	540x720	✓	10	Bi	8.9

- Print speed comparison between VG-640 and VS-640i 4C
Generic vinyl I

	Quality	Resolution (dpi)	Default Setting	Pass Counts	Direction	Print Speed [m2/h]
VG-640	High Quality	900x900	✓	8p	Bi	10.6
	Standard	900x600	✓	6p	Bi	14.2
	High Speed	600x600		5p	Bi	17.1
			✓	4p	Bi	17.5
VS-640i	High Quality	1440x720	✓	8p	Bi	4.4
	Standard	720x720	✓	6p	Bi	10.9
	High Speed	540x720	✓	5p	Bi	13.1

- Print speed comparison between VG-640 and VS-640i 8C Generic clear film Rev.1.2

	Quality	Resolution (dpi)	Mode	Pass Counts	Direction	Print Speed [m2/h]
VG-640	High Quality	900x900	White	20p	Bi	3.1
			W→CMYKLcLmLk	20p	Bi	1.1
			CMYKLcLmLk→W	20p	Bi	1.0
	Standard	900x600	White	14p	Bi	4.9
			W→CMYKLcLmLk	12p	Bi	2.0
			CMYKLcLmLk→W	12p	Bi	1.8
VS-640i	High Quality	720x1440	White	17p	Bi	2.4
		1440x720	W→CMYKL c LmLk	12p	Bi	0.9
			CMYKLcLmLk→W	12p	Bi	
	Standard	720x720	White	12p	Bi	3.4
			W→CMYKL c LmLk	12p	Bi	1.5
			CMYKLcLmLk→W	12p	Bi	

- Ink consumption

			Ink consumption [cc]	
Color	Media setting	Quality	ISO N5A	ISO N2A
7C 8C	Generic vinyl I	High Quality	7.69	14.59
		Standard	6.93	12.86
		High Speed	6.41	11.32
	Generic Banner I	High Quality	7.86	15.41
		Standard	6.76	12.88
		High Speed	6.56	12.23
4C	Generic vinyl I	High Quality	4.55	8.93
		Standard	4.54	9.13
		High Speed	3.86	7.33
	Generic Banner I	High Quality	4.31	8.47
		Standard	4.32	8.58
		High Speed	4.30	8.54
		Billboard	4.30	8.54



N5A



N2A

Conditions

RIP: Roland VersaWorks Dual

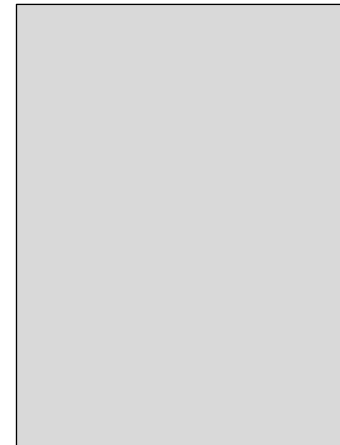
Data: ISO N5A, N2A

Size: A0(841 mm x 1189 mm)

Print setting: Pre-Press US

- Ink consumption Rev. 1.3

Color	Media setting	Quality	Ink consumption [cc]
8C	Generic Clear PET Film	High Quality	30.51
		Standard	20.79
	Generic Clear Vinyl I	High Quality	20.79
		Standard	20.79
	Generic Clear Vinyl II	High Quality	13.96
		Standard	13.96



Conditions

RIP: Roland VersaWorks Dual

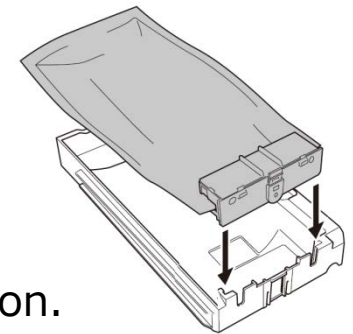
Data: Solid white

Size: 1m²

3. Ink

- Ink cartridge
 - Pouch type (only replace pouch)
 - Capacity: 500 cc
 - Model name: TR-CY/TR-MG/TR-YE/TR-BK/TR-LC/TR-LM/TR-LK/TR-WH
 - Characteristics
 - ◆ Achieved high quality having glossy effect
 - ◆ EU safety regulation certified (Flash point is above 70 °C)
 - ◆ Ink spec is equivalent to max 2 ink

Please refer to TrueVIS ink product guide for detailed information.



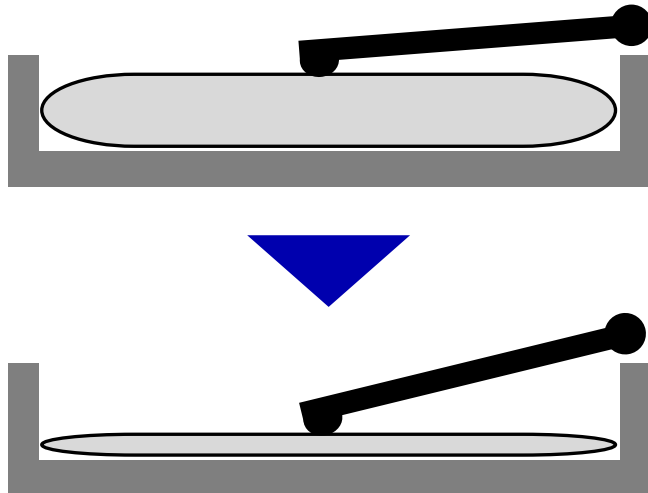
- RFID
 - ◆ Read/Write data of RF tag (Non-contact IC chip) by electric wave
 - Remaining ink amount
 - ◆ Non contact sensor has high reliability



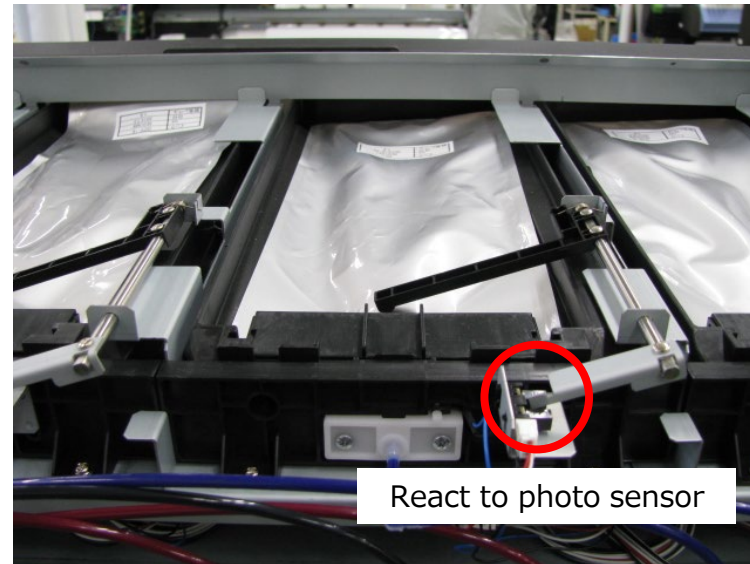
IC tag is not visible on production lot

- Ink cartridge

- Empty detection method



The sensor will detect when ink in the pouch becomes empty.

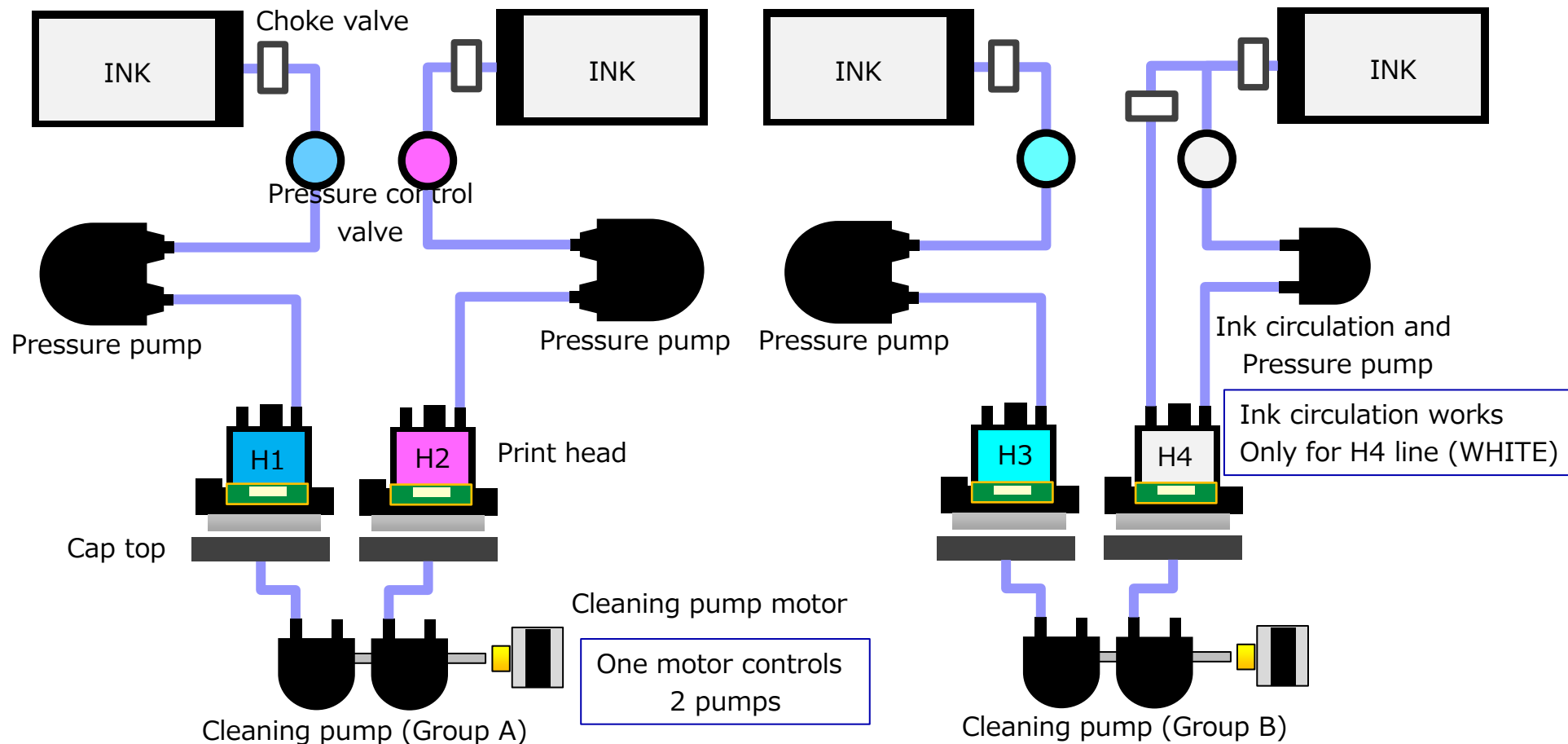


- Ventilation is required, and the recommended amount is same as MAX2 ink.

4. Ink Line

- Ink flow

□ Ink flow (There are two ink lines and two pressure pumps per head on actual VG-640)

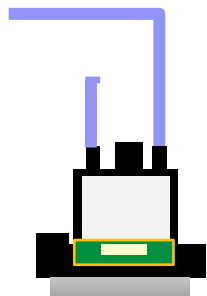


- Ink flow

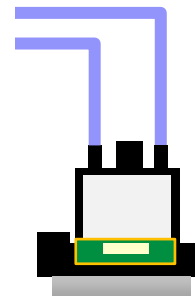
- Ink flow in damper

- ◆ One side of the tubes is disconnected for H1 to H3 Head.
 - ◆ All the tubes are connected for H4 Head since the damper is in a line of ink circulation.
 - Ink circulation in damper is only for 8 colors

H1 to H3



H4



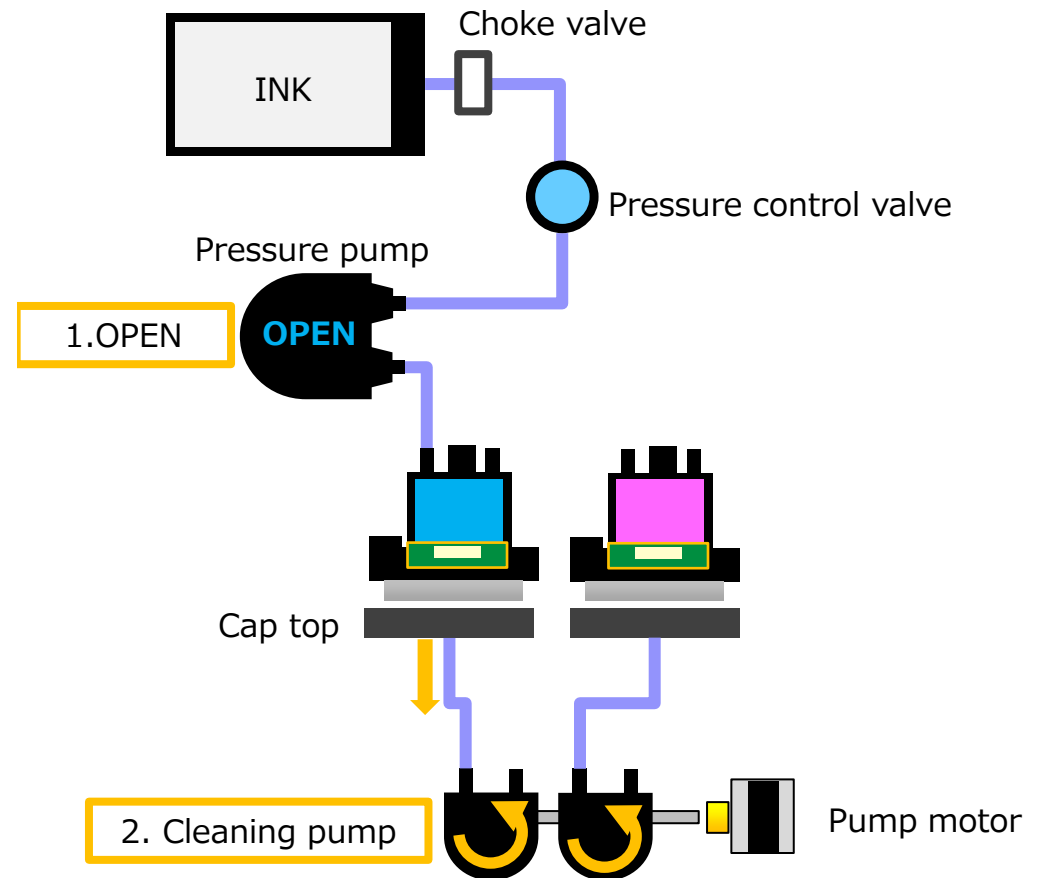
- Ink sequence 1

- Initial Ink fill/Ink discharge/Cleaning

Operation:

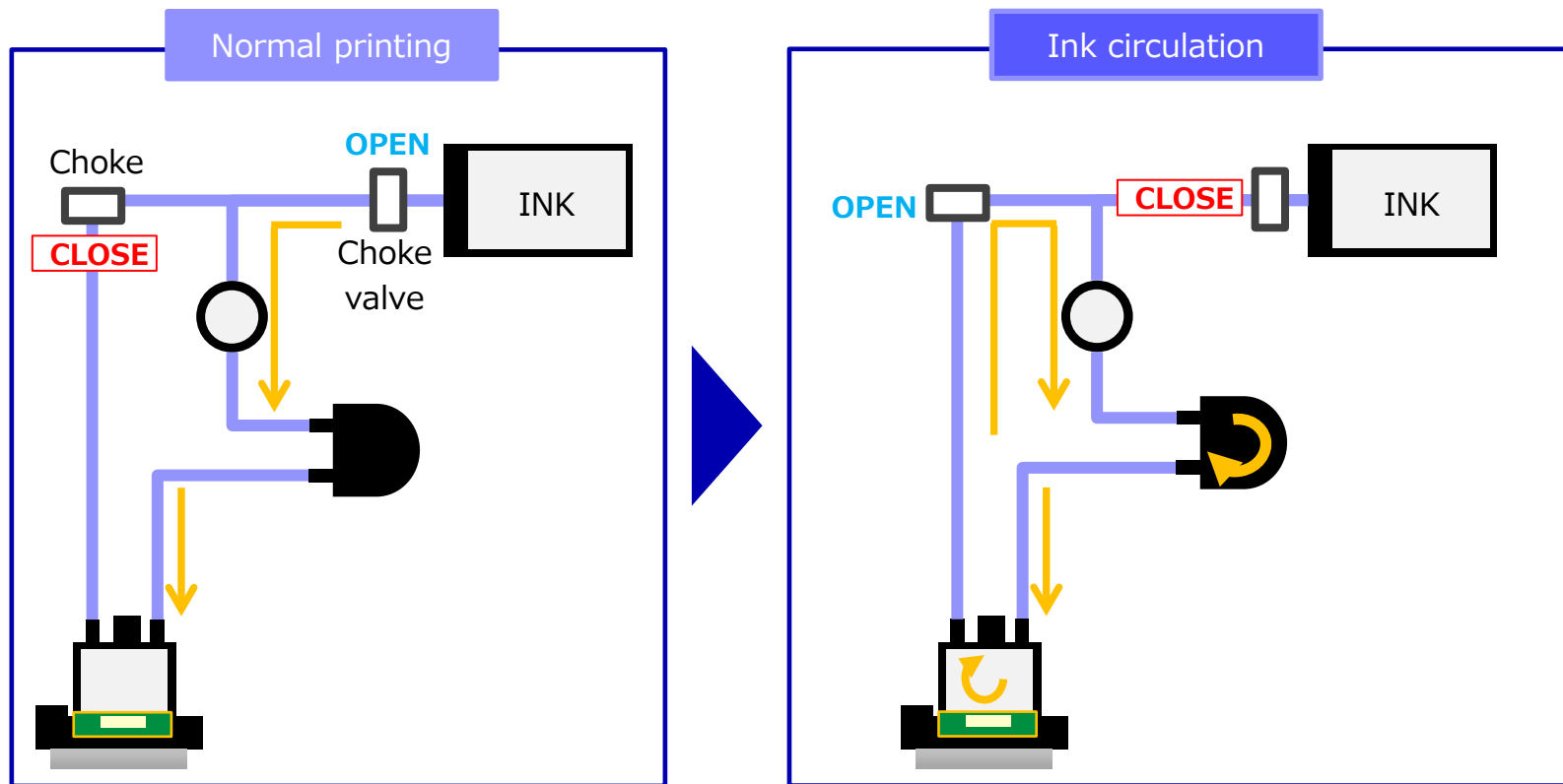
1. Pressure pump is open
2. Absorb ink by cleaning pump

For ink initial filling and cleaning,
etc.



- Ink sequence 2

- WH ink circulation (only H4 line)



Ink flow will be changed by opening/closing choke valve

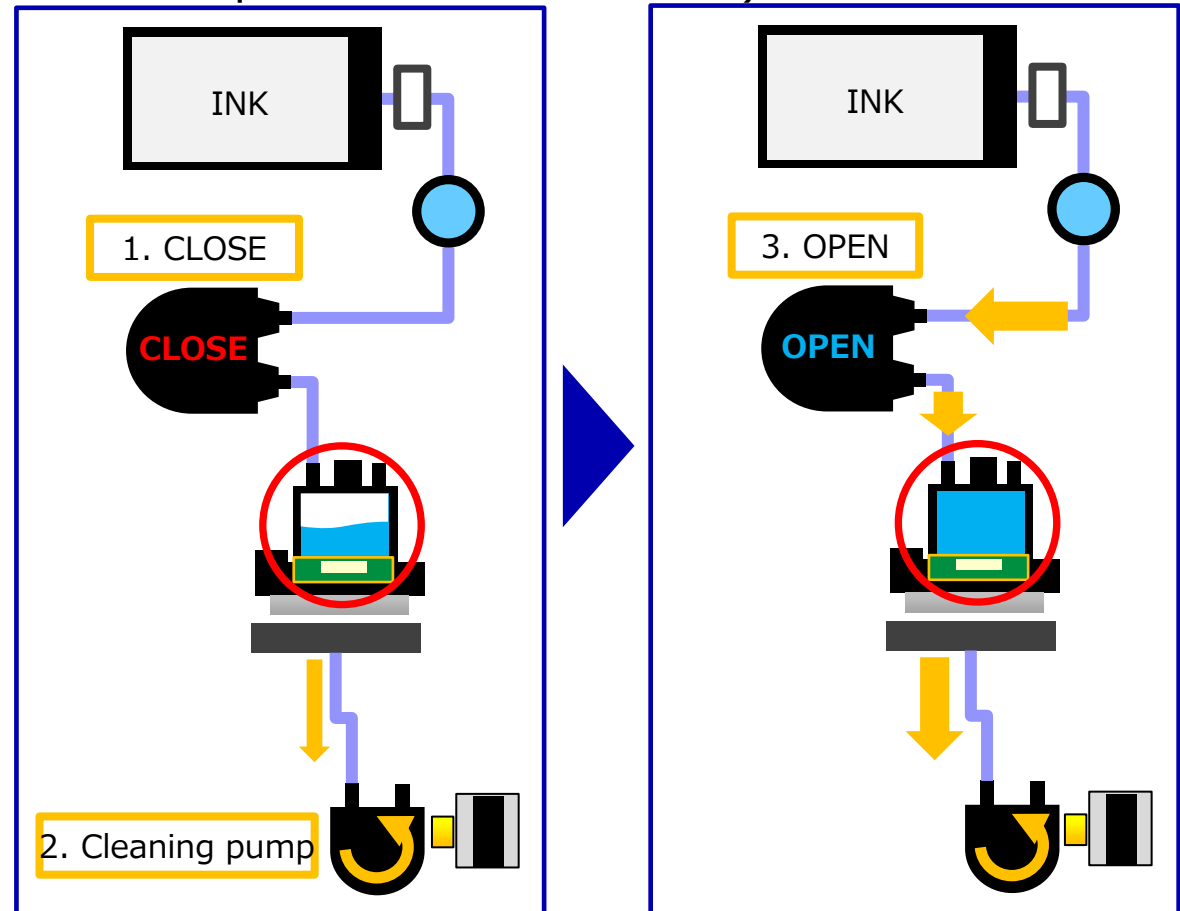
● Ink sequence 3

□ Fill ink to damper (part of the sequence of initial ink fill)

Operation:

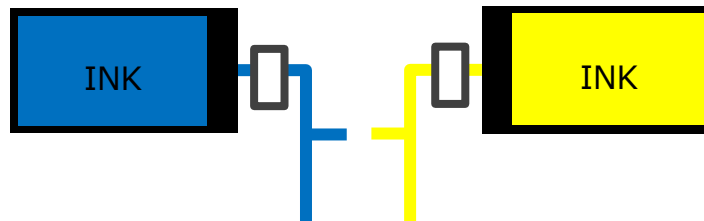
1. Close pressure pump
2. Suck the ink line and decompress it by cleaning pump
3. Damper will be filled with ink by opening pressure pump

This sequence is to be performed when the dampers are not filled with ink.
(e.g. [FILL DAMPER] after print head replacement)



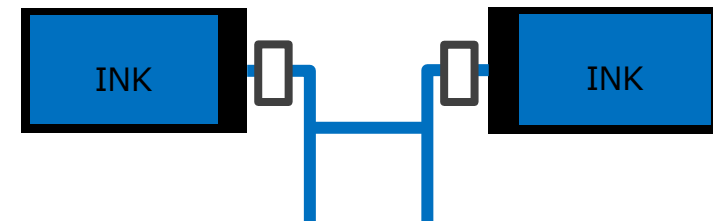
- 7/8, 4 colors configuration set up at installation

7/8 colors

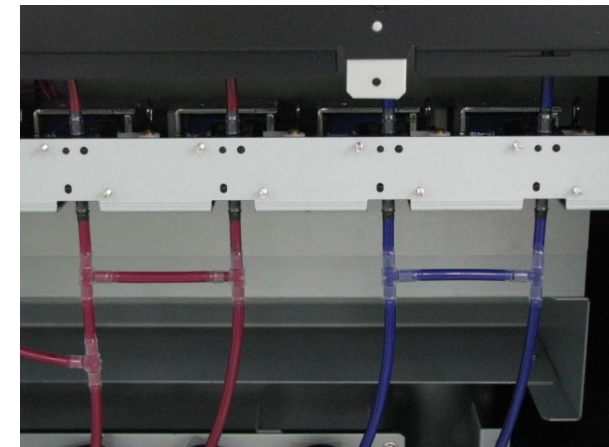
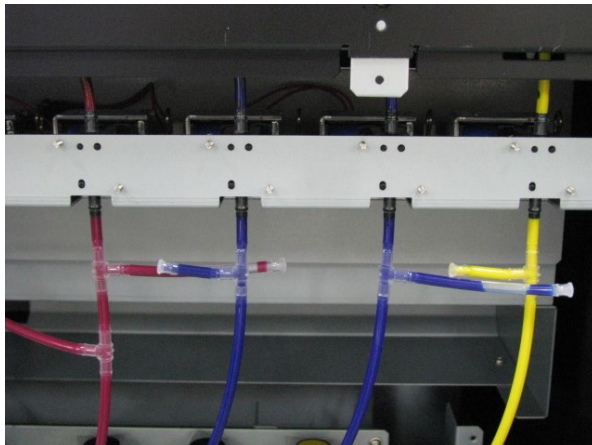


Ink tubes are not connected at production.

4 colors



Connecting the tubes of the same color is necessary for 4 colors configuration.



Please refer to chapter 5 on service note for detailed procedure.

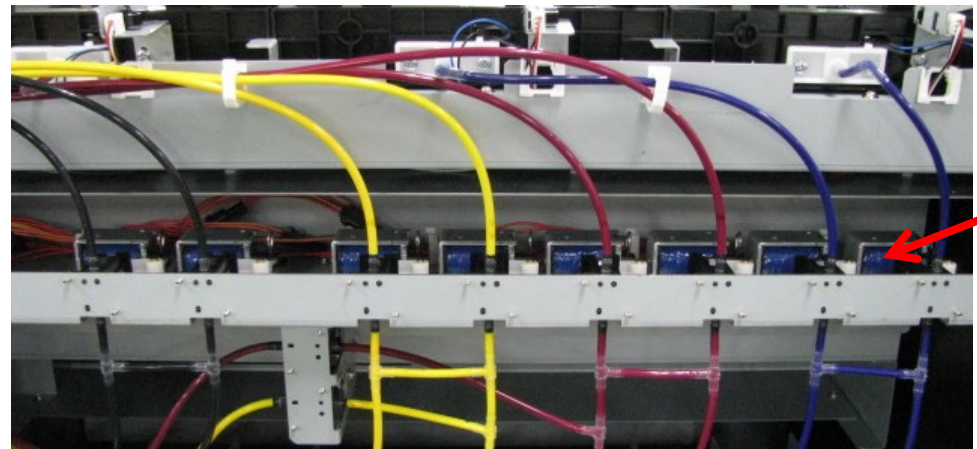
- 4 colors ink line switching

- Ink switch sequence (same mechanism as RF-640)

- ◆ The machine uses only one of the same color ink pouch which is controlled by choke valve.
 - ◆ The machine selects lesser remaining amount of ink pouch when secondary power is turned on.
 - ◆ When an ink pouch becomes empty, it automatically switches to substitute ink pouch.
 - ◆ The printer temporarily stops if both of the ink pouch becomes empty.



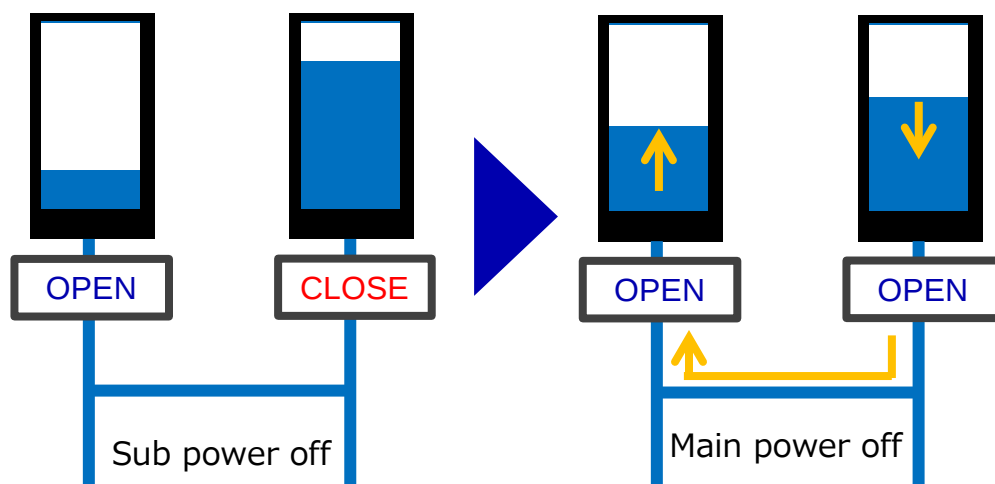
- Light up: in operation
- ⊗ Blink: ink is empty
- No light: stand-by (not in use)



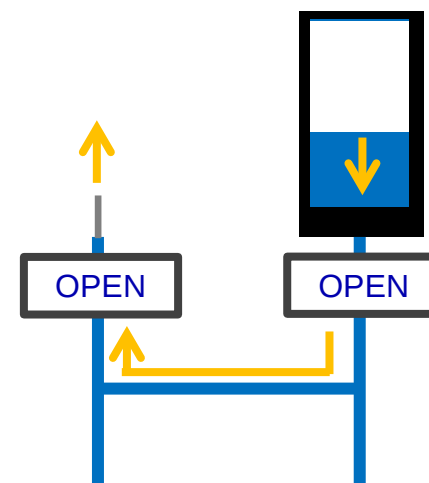
Choke valve

The choke valve is only used for switching ink line of 4 color mode.

- Leveling of remaining ink for 4 color machine Rev. 1.3



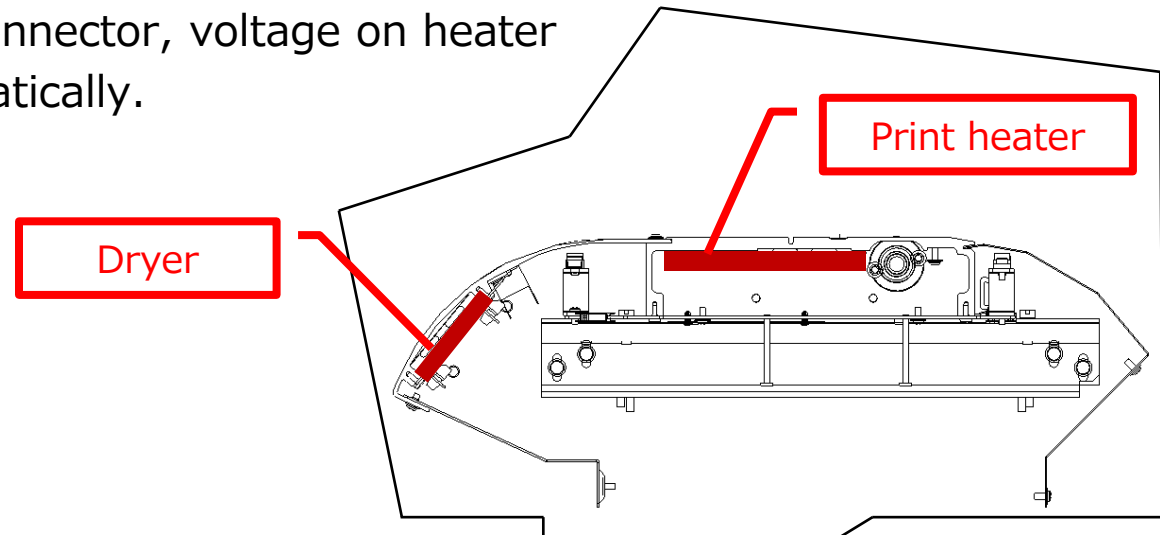
If main power switch is turned off, all choke valves open. The ink in the tray with more remaining ink moves to the other one. In this case, the actual remaining ink is different from RFID.

**Warning!**

If one ink tray is removed with the main power turned off, ink leaks from the needle.

5. Media Heating System

- Media heating system
 - Print heater
 - ◆ 30°C-45°C (default: 40°C)
 - Dryer
 - ◆ 30°C-50°C (default: 45°C)
 - Universal voltage support (100 V $\Leftrightarrow$ 220 V)
Without changing connector, voltage on heater is controlled automatically.

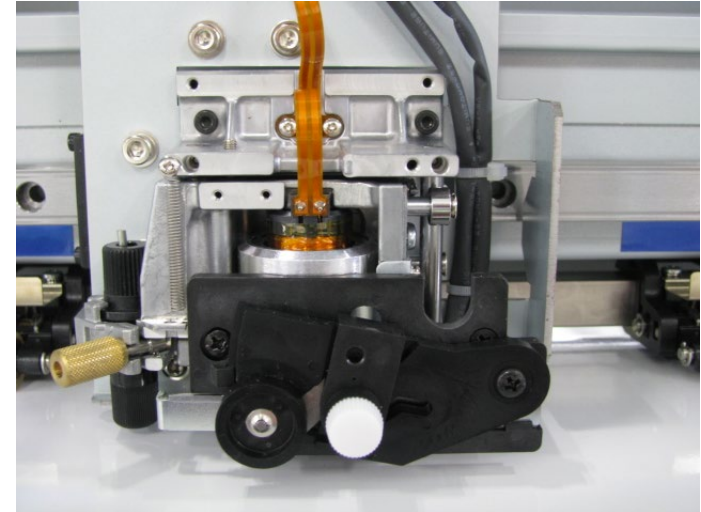


6. Cutting Function

- Cut Carriage/Cutter Holder

Same spec as GS-24 Cut Carriage

- ▣ Blade ZEC-U5032 (same as GS-24)
- ▣ Cutter Holder XD-CH3 (same as GS-24)
- ▣ Cutting down force Max 500 gf (GS-24: 350 gf)
- ▣ Cut Speed Max 300 mm/sec (GS-24: 500 mm/sec)

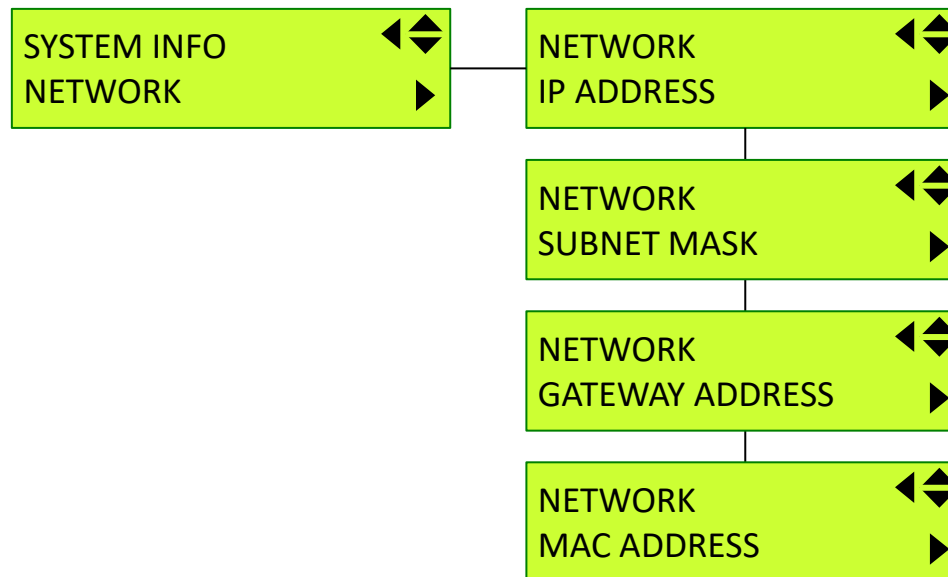


7. Interface

- Interface

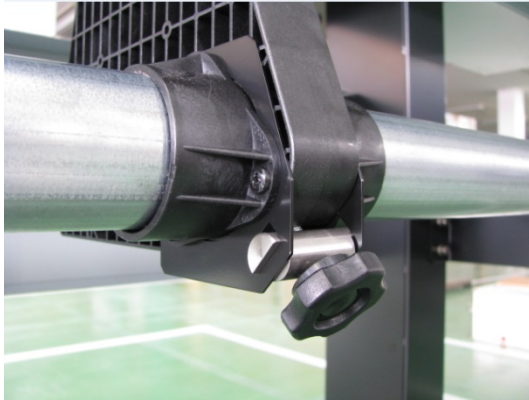
- Ethernet port

- ◆ Support Gigabit Ethernet
 - ◆ 100BaseT/1000BaseT Switch automatically
(Hub needs support 1000BaseT.)



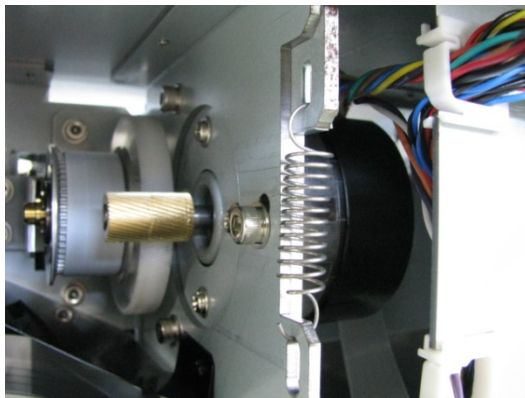
8. Other Features

- New screw for feeder



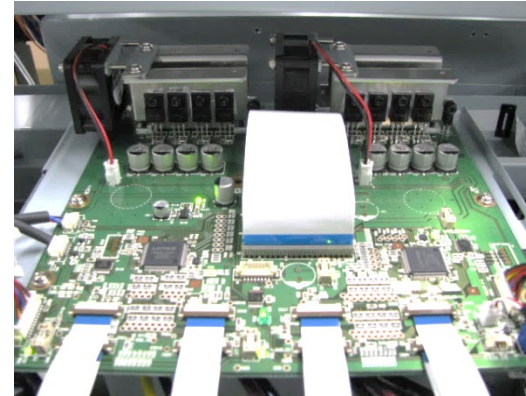
Same as EJ/XT

- SCAN motor



Adopted AC servo motor

- Print Carriage board

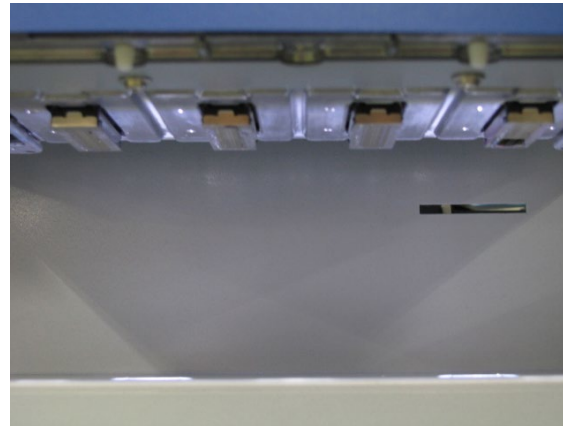


The size is bigger than previous one since the new print carriage board amplifies and optimizes the wave form near print head.

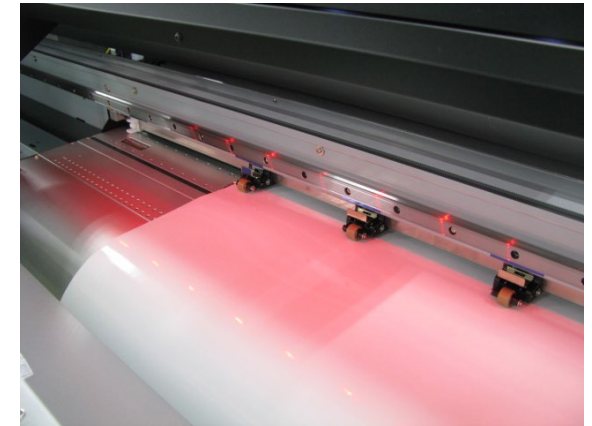
- LED light
 - ON/OFF under user menu



LED on top turns on while printing.

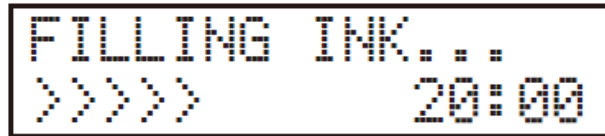


LED on bottom turns on during manual cleaning.



LED on top turns on RED when service call and motor error occur.

- Count remaining time



Count the remaining time of ink fill and cleaning

- Interlock SW

- ❑ Electrical power to the motor will be stopped when you open cover.
- ❑ You need to press [ENTER] key after closing the cover to recover from Interlock mode.

Interlock is active under service mode as well

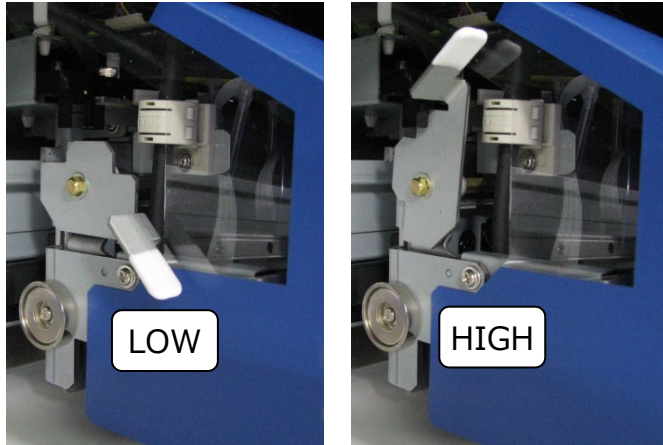
- Maintenance cover



Not necessary to completely remove the cover

- Head Height

- 1.7 mm/2.7 mm



- Sheet loading lever on both front/back of the machine



- Ink Slot Lamp



The lamp blinks when ink becomes empty

- Change of inner parts Rev. 1.6

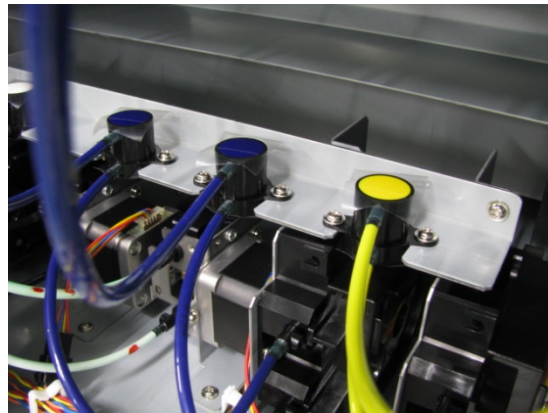
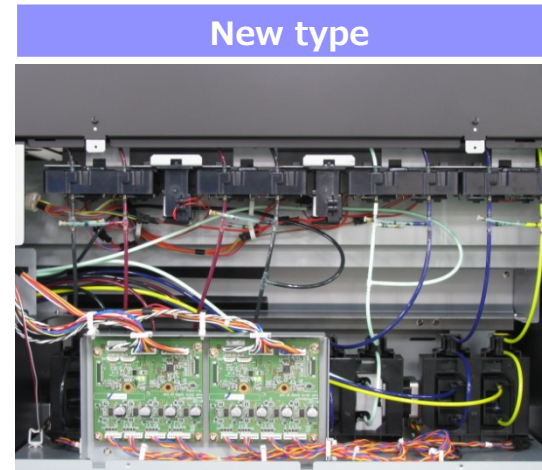
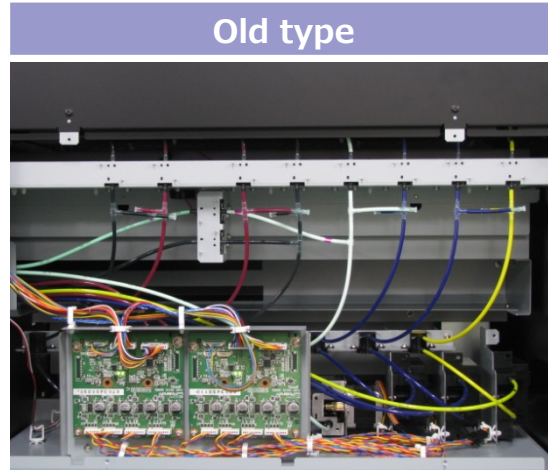
From the following serial numbers starting from **A** and **L**, the parts structure and the product name on the serial number label have been changed.

	Serial number	Structure	Serial number label
VG-640	ZCK0100 or later	Old type	VG-640
	A DC0100 or later	New type	VG-640i
VG-540	ZCN0100 or later KCR0100 or later	Old type	VG-540
	L DA0100 or later	New type	VG-540i

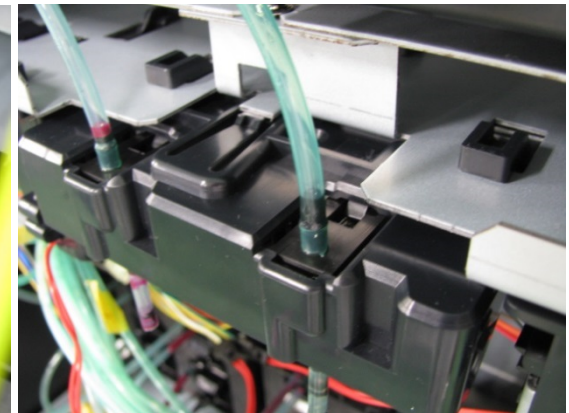
Parts structure has been changed. Please place an order after checking the compatibility of the service parts.

● Change of inner parts Rev. 1.6

▣ Pump unit

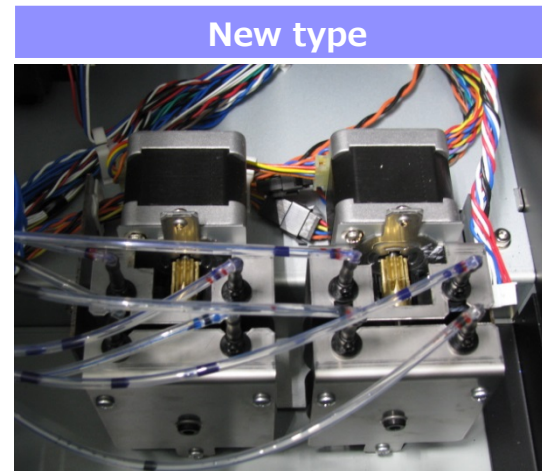
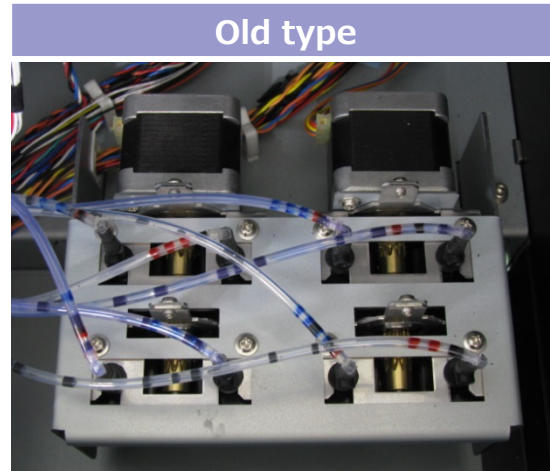


Change points
- Use resin base - Screws have been eliminated. (Parts such as the pressure control valve can be replaced without using a screwdriver.) - Tube routing has been changed. (No change in choke valves, pressure control valves or pumps)



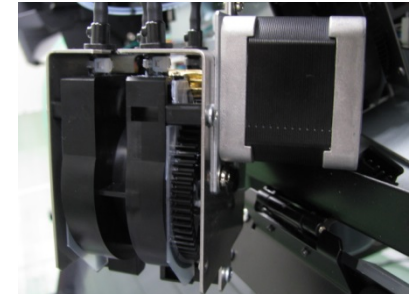
● Change of inner parts Rev. 1.6

▣ Cleaning pump

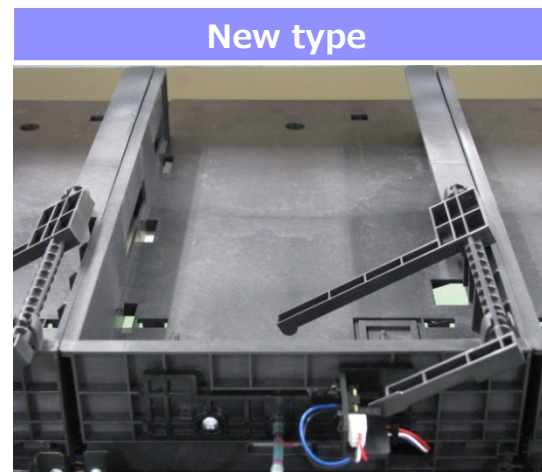
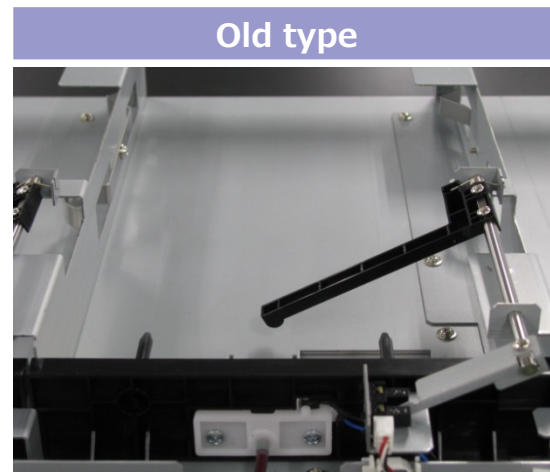


Change points

- Two pumps are assembled together.
- Not compatible with the old parts



▣ Ink slot

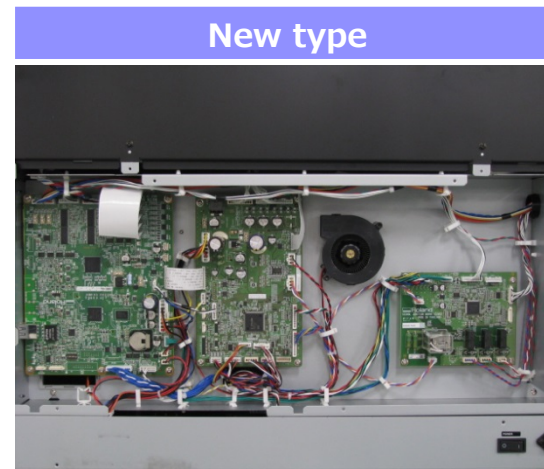
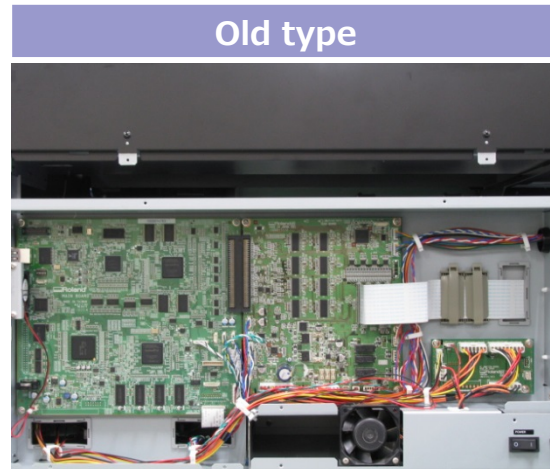


Change points

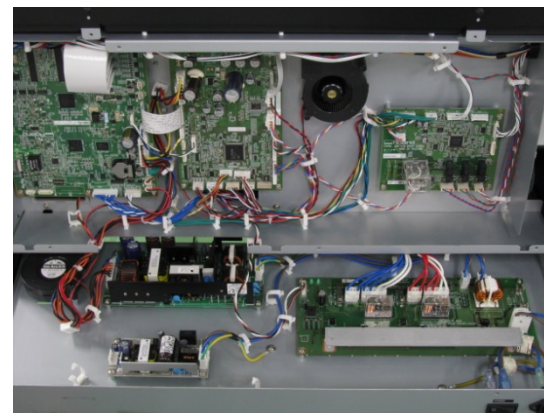
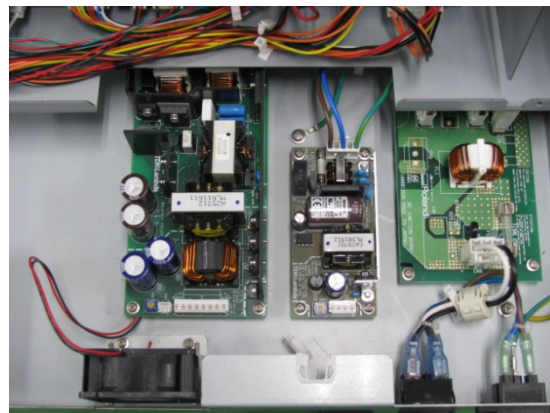
- Use resin base
- Use resin parts for ink empty detection mechanism
- Positioning accuracy of tray has been improved.

● Change of inner parts Rev. 1.6

▣ Control chassis



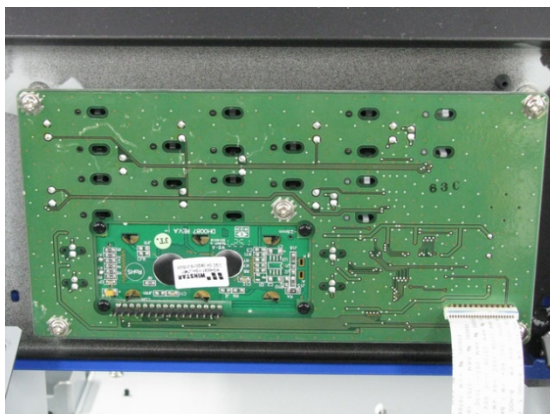
Change points
The following boards have been eliminated. • AC JUNCTION BOARD • DC JUNCTION BOARD • INTERLOCK RELAY • HEAD BOARD *Refer to the next page for the change of other boards.



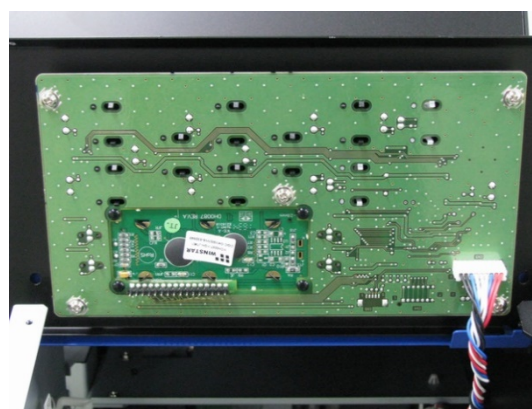
- Change of inner parts Rev. 1.6

- Panel

Old type

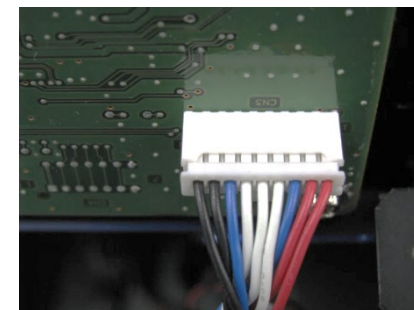


New type



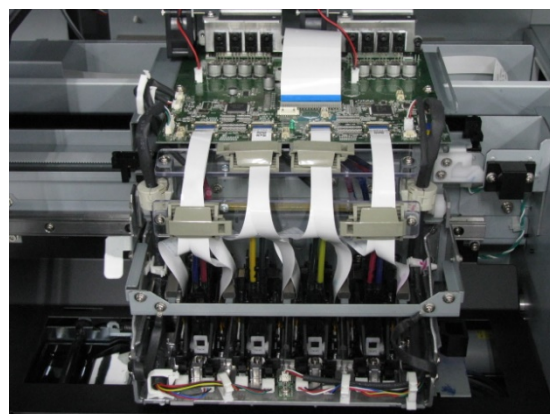
Change points

- Connecting part has been changed to the connector type.

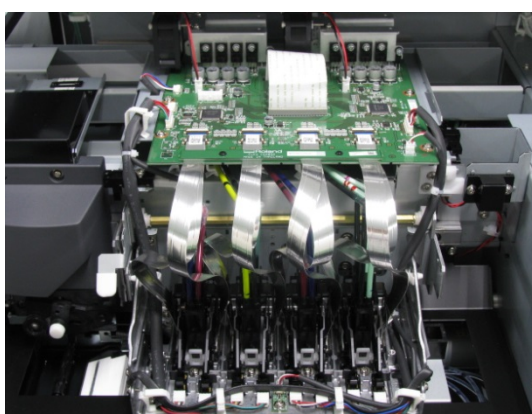


- Print carriage

Old type

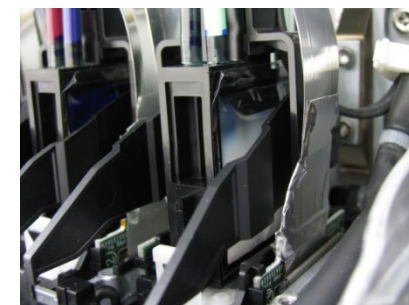


New type



Change points

- Use shielded type ribbon cable
- Ferrite core has been eliminated.



- Change of inner parts Rev. 1.6

- Compatibility of the board

Old type	Compatibility	New type
ASSY, MAIN BOARD VG-640	N/A	ASSY, MAIN BOARD CG2032
ASSY, FM3 SERVO BOARD VG-640_01	↔	ASSY, FM3 SERVO BOARD VG-540 T
ASSY, PRINT CARRIAGE BOARD VG-640_01	N/A	ASSY, PRINT CARRIAGE BOARD CG2032
ASSY, PANEL BOARD VG-640	N/A	ASSY, PANEL BOARD SG-540
ASSY, INKSYSTEM RFID BOARD VG-640_01	N/A	ASSY, INKSYSTEM RFID BOARD CG2032
ASSY, LINEAR ENCODER BOARD EJ-640	↔	ASSY, LINEAR ENCODER SG-540
ASSY, PUMP DRIVE BOARD 0.6A*4 VG-640	↔	ASSY, PUMP DRIVE BOARD 0.6A*4 SG-540
ASSY, PUMP DRIVE BOARD 0.6A*2 VG-640	↔	ASSY, PUMP DRIVE BOARD 0.6A*2 CG2032
ASSY, HEATER CONTROL BOARD EJ-640	N/A	ASSY, HEATER CONTROL BOARD CG2032
-	-	ASSY, SIGNAL JUNCTION BOARD CG2032
ASSY, CUT CARRIAGE VG-640	N/A	ASSY, CUT CARRIAGE CG2032
ASSY, CROP SENSOR VG-640	N/A	ASSY, CROP SENSOR CG2032
ASSY, GRIT ENCODER VG-640	N/A	ASSY, GRIT ENCODER CG2032
ASSY, EXT IF BOARD VG-640	N/A	ASSY, EXT IF BOARD CG2032

9. Special Pump Operations

● Pump movement

- Initial Ink Fill: It is the ink filling operation to be conducted the first time the machine is installed. Rev. 1.1 Rev. 1.2

	Model	Color	Ink consumption	TR-CL (for the wiper tray)	TR-CL (for tubes)	Waste ink amount	Time
Initial Ink Fill* ¹	VG-640	7/8 colors	576 cc	50 cc	450 cc	787 cc	90 min
		4 colors	668 cc	50 cc	540 cc	968 cc	102 min
	VG-540	7/8 colors	560 cc	50 cc	450 cc	788 cc	88 min
		4 colors	648 cc	50 cc	540 cc	958 cc	101 min
Initial Ink Fill VG-640: ZCV1001 or later Rev. 1.5 VG-540: KCY0547 or later Rev. 1.6	VG-640	7/8 colors	576 cc	50 cc	—	336 cc	30 min
		4 colors	668 cc	50 cc	—	428 cc	31 min
	VG-540	7/8 colors	560 cc	50 cc	—	327 cc	29 min
		4 colors	648 cc	50 cc	—	418 cc	31 min

*¹ The ink lines need to be cleaned at the time of initial ink filling.

The time shown above does not include the time required for insertion and removal of TR-CL cartridges.

* Ink and cleaning liquid consumption amount can be slightly different depending on the machine.

- Pump movement

□ FILL INK: It is the ink filling operation implemented in the service menu.

Rev. 1.2

	Model	Color	Ink consumption	TR-CL	Waste ink amount	Time
FILL INK (SERVICE MENU)	VG-640	7/8 colors	576 cc	-	336 cc	30 min
		4 colors	668 cc	-	428 cc	31 min
	VG-540	7/8 colors	560 cc	-	327 cc	29 min
		4 colors	648 cc	-	418 cc	31 min

* Ink and cleaning liquid consumption amount can be slightly different depending on the machine.

● Pump movement

- PUMP UP: Remove all the inks in the ink lines.
- FILL DAMPER: Fill the damper with ink after head replacement.

Rev. 1.7 Please confirm that the amount of remaining ink in an ink pouch is 50 cc or more before starting it. If the ink runs out during the operation, cleaning error occurs and it will be hard to get the machine to recover from the error.

	Model	Color	Ink consumption	Waste ink amount	Time
PUMP UP (SERVICE MENU)	VG-640	7/8 colors	-	370 cc	53.5 min
		4 colors	-	370 cc	55 min
	VG-540	7/8 colors	-	351 cc	51.5 min
		4 colors	-	351 cc	53 min
FILL DAMPER (SERVICE MENU)	VG-640	7/8 colors	152 cc	102 cc	18.5 min
		4 colors	148 cc	101 cc	18.5 min
	VG-540	7/8 colors	152 cc	102 cc	18.5 min
		4 colors	148 cc	101 cc	18.5 min

* Ink and cleaning liquid consumption amount can be slightly different depending on the machine.

Rev. 1.2

● Pump movement

- HEAD WASH: Clean the whole ink lines by using the cleaning liquid.

Following numbers of TR-CL are required.

- 7/8 color mode: 8 pcs

Rev. 1.6 • 4 color mode: 2 pcs

	Model	Color	TR-CL	Waste ink amount	Time
HEAD WASH (SERVICE MENU)	VG-640	7/8 colors	422 cc	791 cc	102 min
		4 colors	540 cc	1047 cc	70 min
	VG-540	7/8 colors	422 cc	782 cc	100 min
		4 colors	540 cc	1028 cc	69 min

* Ink and cleaning liquid consumption amount can be slightly different depending on the machine.

10. Cleaning Function

- Cleaning function (User menu)

- Cleaning under cleaning menu

If missing dots or dot deflection problems occur, select and perform one of the three cleaning sequences listed below depending on the nozzle conditions.

- NORMAL
- MEDIUM
- POWERFUL

- Damper Cleaning Rev. 1.2

Rev. 1.7 ◆ This is displayed in the menu only in 8 color mode.

Rev. 1.7 ◆ Perform when white color is uneven.

Rev. 1.7 ◆ If the ink runs out during the operation, cleaning error occurs. It will be hard to get the machine to recover from the error, so please replace the ink cartridge with a new one.

◆ The machine flushes ink through the dampers by opening and closing the pressure pumps and mix the separated ink components.

- Super Cleaning

◆ Perform if missing dots are not resolved by powerful and manual cleaning.

◆ Perform when damper cleaning is not effective in solving uneven color problems.

Group A and B are selectable for all cleaning menu.

- Cleaning function

- Ink consumption of cleaning (A/B group together)

VG-640/540 8C/7C/4C (same on all models)	Ink Consumption	TR-CL	Time
Normal cleaning	5.6 cc	0.3 cc	3 min
Medium cleaning	12.8 cc	0.3 cc	3.5 min
Powerful cleaning	59.2 cc	0.3 cc	5 min

- Ink consumption of damper cleaning

VG-640/540 8C Rev. 1.7	Ink Consumption	TR-CL	Time
DAMPER CL. Rev. 1.2	24.8 cc Rev. 1.7	0 cc	10 min

- Ink consumption of super cleaning (A/B group together)

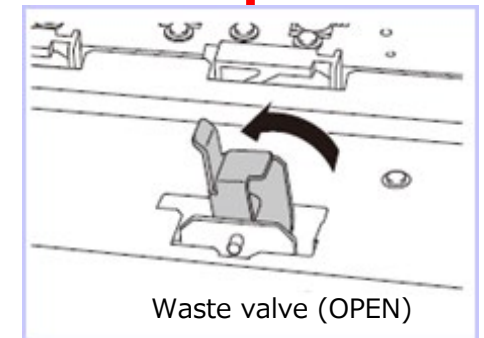
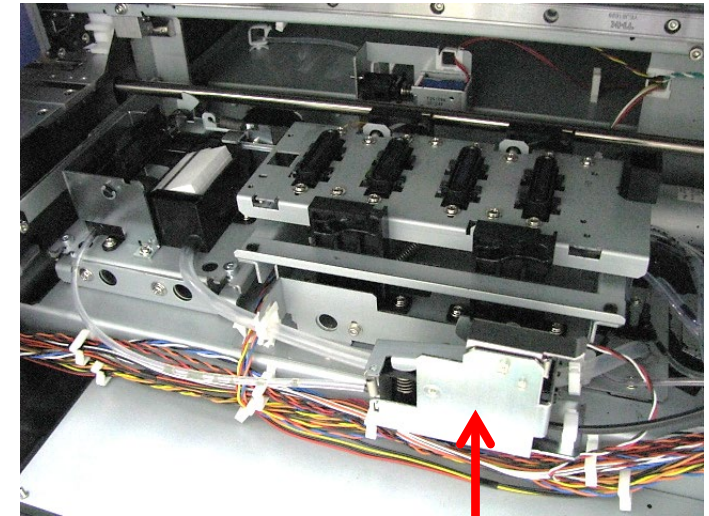
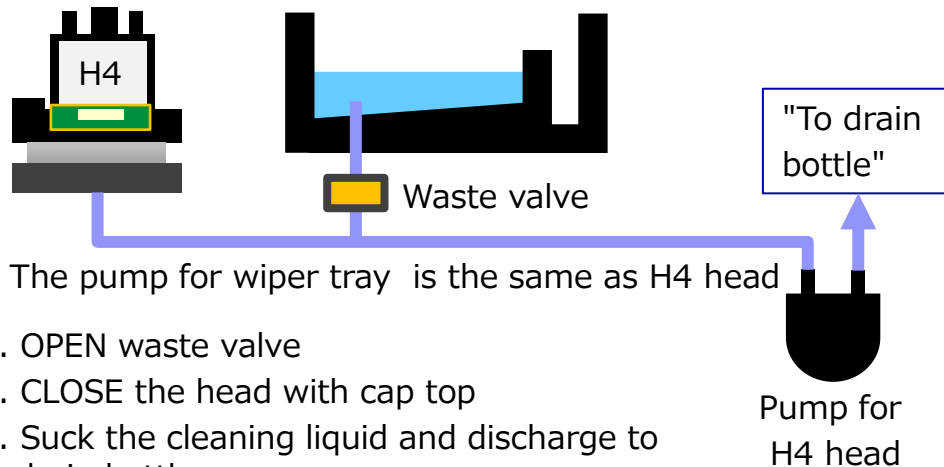
	Size	Color	Ink Consumption	TR-CL	Time
Super Cleaning	VG-640	7/8 colors	408 cc	0.3 cc	15 min
		4 colors	404 cc	0.3 cc	15 min
	VG-540	7/8 colors	392 cc	0.3 cc	14.5 min
		4 colors	388 cc	0.3 cc	14.5 min

* Ink and cleaning liquid consumption amount can be slightly different depending on the machine.

11. Maintenance

- Wiper tray cleaning

- User replacement of cleaning liquid is required.
- The replacement timing will be notified by the printer.



- Ink consumption amount: 22 cc (H3 ink lines)
- TR-CL consumption amount: 40 cc
- Time: 9 min
- Frequency: Approx. every 4 months (in the case you operate the machine 20 days a month)

* It may change depending on customer's usage condition.

Rev. 1.1

● Automatic maintenance of 8C Rev. 1.2

□ Periodic ink circulation

The ink circulation system circulates WH ink through the ink lines (including the dampers).

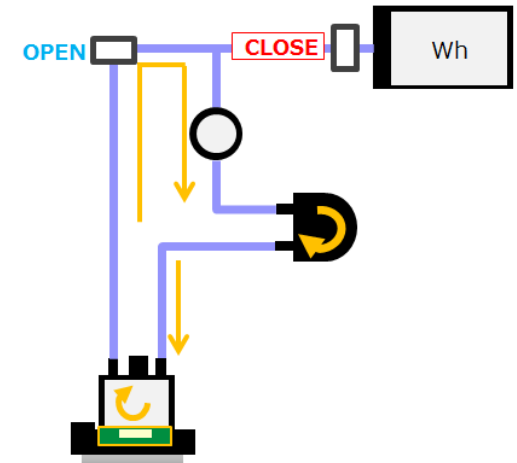
- ◆ This is to prevent WH ink pigments from settling out.
- ◆ Periodic ink circulation is performed every 6 hours.
- ◆ No WH ink is discharged by this operation.

□ Ink discharging operation when printing with WH ink

- ◆ When white data is sent to a machine, ink circulation and discharge of LcLmLkWh (Group B) are performed based on the condition described in the next page.

Rev. 1.3

- ◆ 2.0 cc of ink is discharged from each cartridge.
- ◆ Discharging time: Approx. 4 min
- ◆ Circulation time: Approx. 4 min
- ◆ Discharging and circulation at the same time: Max. 9 minutes



If you select [Mode] > [CMYK->White(v)] or [White(v)] in Roland VersaWorks Dual, the machine regards the data as the one that contains WH.

● Simulation for white print Rev. 1.3

□ Condition of actuating circulation and discharge

	Circulation + Discharge	Circulation only	Discharge only	None
Elapsed time since the last circulation (including periodic circulation)	6 hours or more	6 hours or more	Less than 6 hours	Less than 6 hours
Consumption of WH ink in the last 6 hours	Less than 2 cc	2 cc or more	Less than 2 cc	2 cc or more

□ Simulation

Simulation 1			
Time	Periodic	Wh print	Action before
AM8:00	Periodic-Circ.		
AM10:00		Wh print 1cc	Discharge only
PM1:00		Wh print 5cc	Discharge only
PM2:00	Periodic-Circ.		
PM8:00	Periodic-Circ.		
PM9:00		Wh print 10cc	Discharge only

Periodic circulation occurs every 6 hours, so circulation doesn't occur before white print.
More than 2 cc was consumed at the 2nd white print but more than 6 hours past. Therefore, discharge occurs at the 3rd white print.

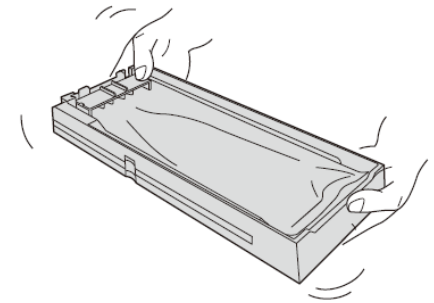
Simulation 2			
Time	Periodic	Wh print	Action before
AM8:00	Periodic-Circ.		
AM10:00		Wh print 10cc	Discharge only
PM1:00		Wh print 5cc	None
		Color print	
PM4:00	Periodic-Circ.		
PM5:00		Wh print 1cc	None
PM10:00	Periodic-Circ.		

Periodic circulation doesn't occur during printing. The circulation occur after the print.
Even discharge doesn't occur at the 2nd and 3rd white print because more than 2 cc of white ink were consumed in the last 6 hours.

- Churning white ink pouch Rev. 1.3

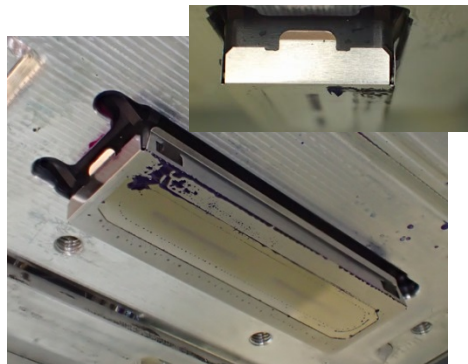
Shake the pouch tray of white ink pouch for 50 times (approx. 20 sec.) to avoid settlement of the ink, in the following cases.

- ◆ When you install a new ink.
- ◆ Before first white print of the day.
- ◆ Once a week even if white ink is rarely used.



- Manual cleaning Rev. 1.4

Perform manual cleaning once a week. TR ink dries faster than MAX2 ink.



After two weeks without manual cleaning

- Simulation of monthly ink consumption for the automatic maintenance (Ver.2.2 or later) Rev. 1.5

Rev. 1.2

	Ink consumption (cc/cartridge)	TR-CL (cc)	Waste ink amount (cc/unit)
VG-640/540 4C	42	35	199
VG-640/540 7C	21	35	199
VG-640/540 8C Printing with WH ink	21 (CMYK)	35	256
	28 (LcLmLk)		
	59 (Wh)		
VG-640/540 8C Printing without WH ink	21 (CMYK)	35	217
	21 (LcLmLk)		
	39 (Wh)		
VS-640i 4C (comparison)	9	-	68
VS-640i 8C (comparison)	20 (any colors except special colors)	-	252
	67 (Wh/MT)		

Condition:

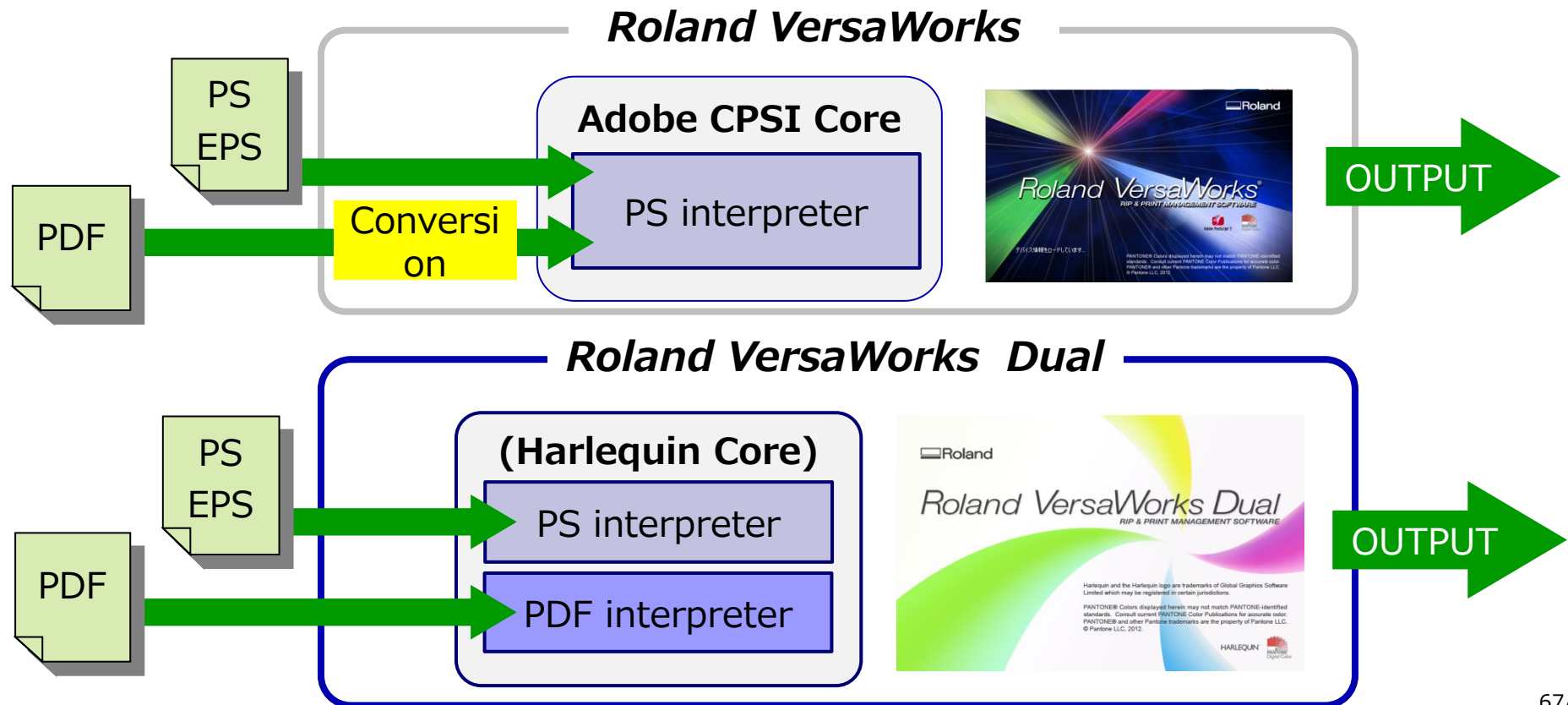
- Working day: Monday to Friday (22 days)

- Working Hour: 8 hours/day

* Actual ink consumption may change depending on customer's usage condition.

12. Software

- Roland VersaWorks Dual
 - User interface is same as current RVW
 - Engine is changed from Adobe
 - ◆ Harlequin from Global Graphics
 - What does “Dual” mean??



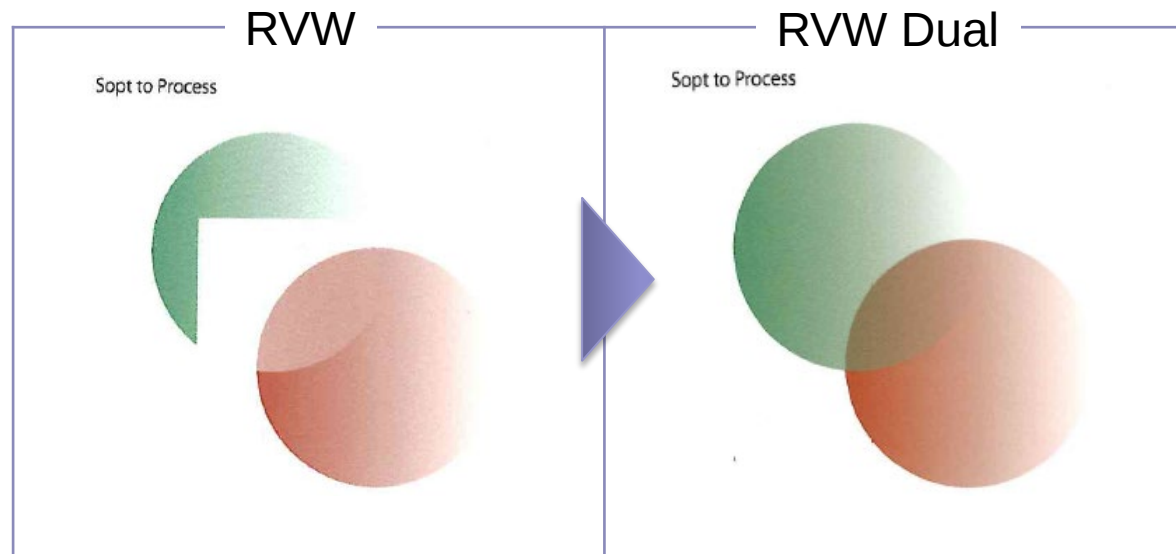
- Roland VersaWorks Dual

- Supported from Ver.1.31 (WH ink is supported from Ver.1.34.)

Rev. 1.2

- Improvement of PDF data making

- ◆ Transparency, Feather, and drop shadow designs will be printed as you created design



- Roland VersaWorks Dual

- Shorten the time to show preview screen and Ripping time

- The ripping time is equivalent to VersaWorks when you choose “ Error Diffusion” setting.
 - It may take to process large data or the data which contains gradation.

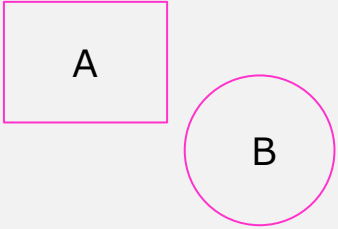
- New cut function

- ◆ Vector sorting

Automatically sort the cutting order efficiently

- ◆ Overwrap cut function

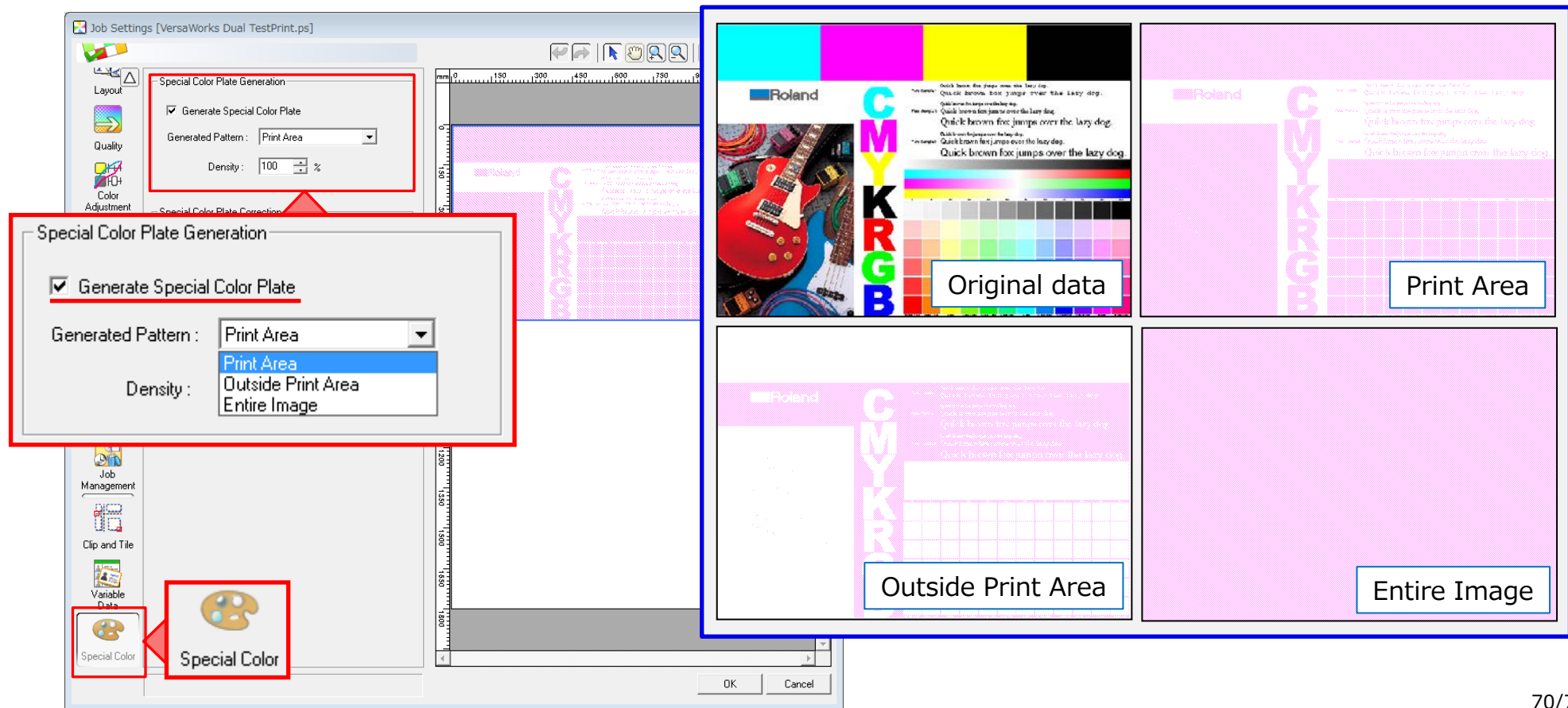
Cut the data multiple times without returning to origin

RIP	Overwrap cut	Data
RVW	Cut A → Cut B → Return to Origin → Cut A → Cut B	
RVW Dual	Cut A → Cut A → Cut B → Cut B	

- Roland VersaWorks Dual

- Rev. 1.2
 - Special color plate generation

Roland VersaWorks Dual automatically generates Special Color Plate if you select one of the modes that contain WH in the [Quality] > [Mode] menu.

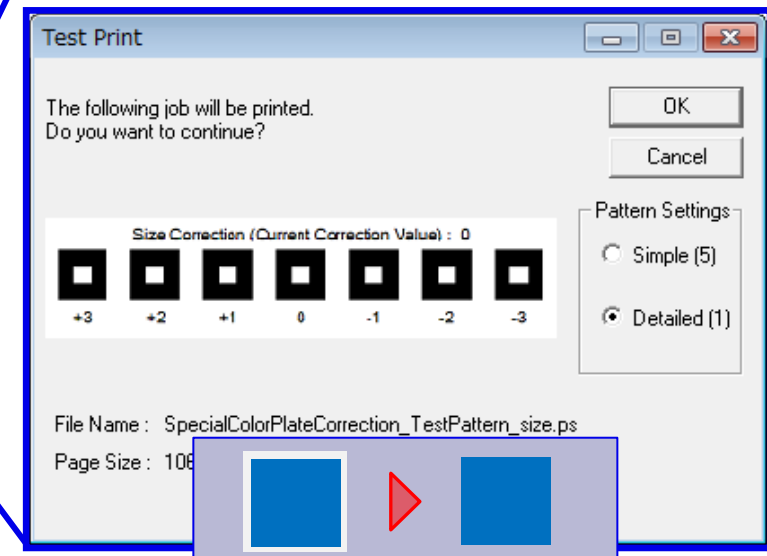
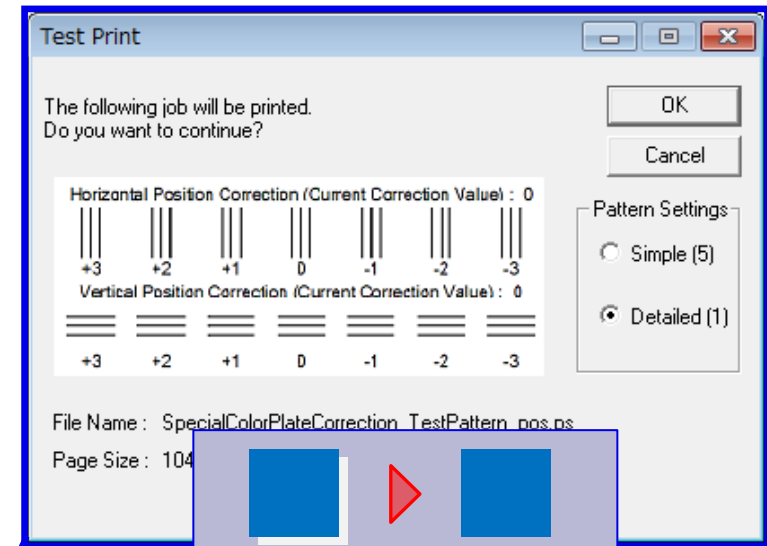
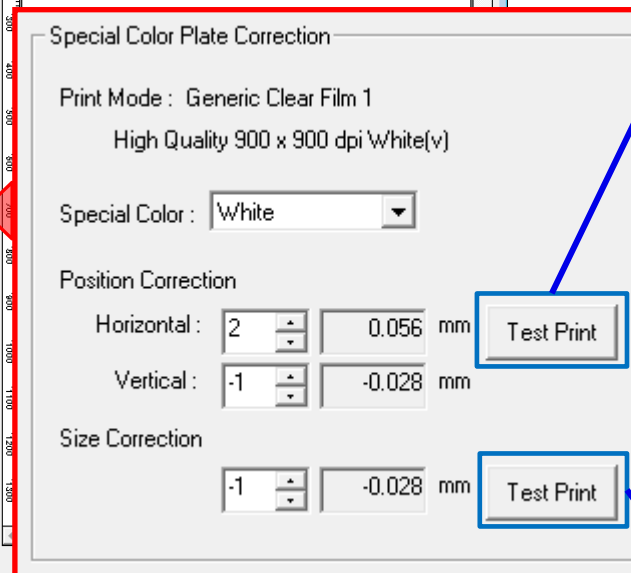
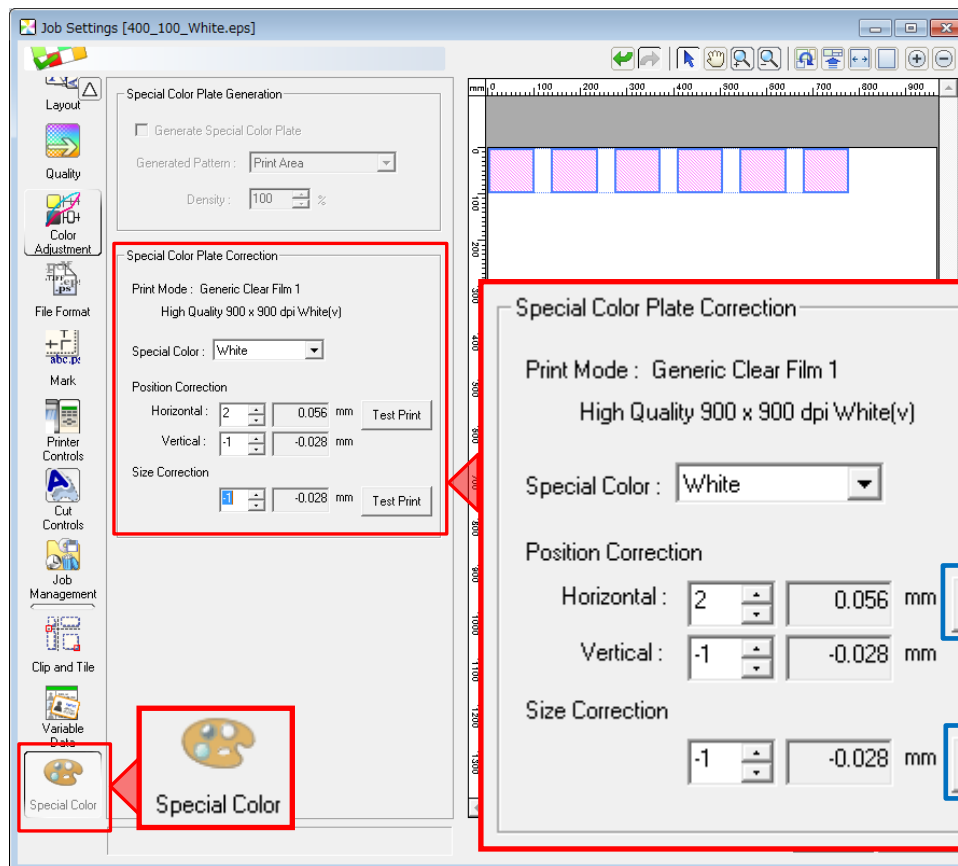


● Roland VersaWorks Dual

Rev. 1.2

□ Special color plate correction

This function is to correct the misalignment of original data and Special Color Plate by enlarging or reducing size of Special Color Plate and adjusting its position.



- Roland Mobile Panel

- Control the printer by iPhone/iPad/Android

- ◆ iOS 8.0 or later

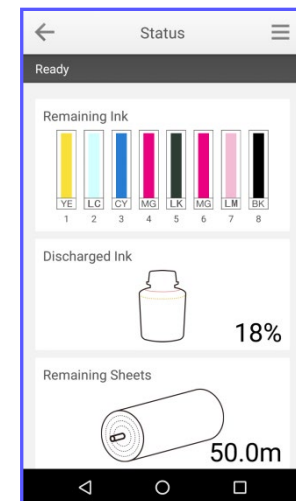
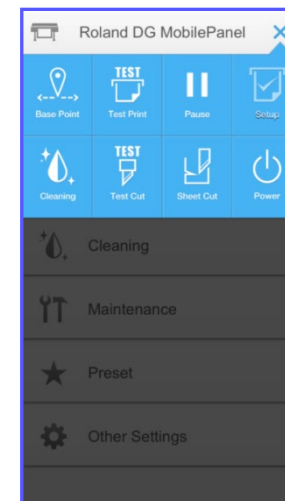
- ◆ Android 4.4 or later

- (May not work depending on OS Version or models)

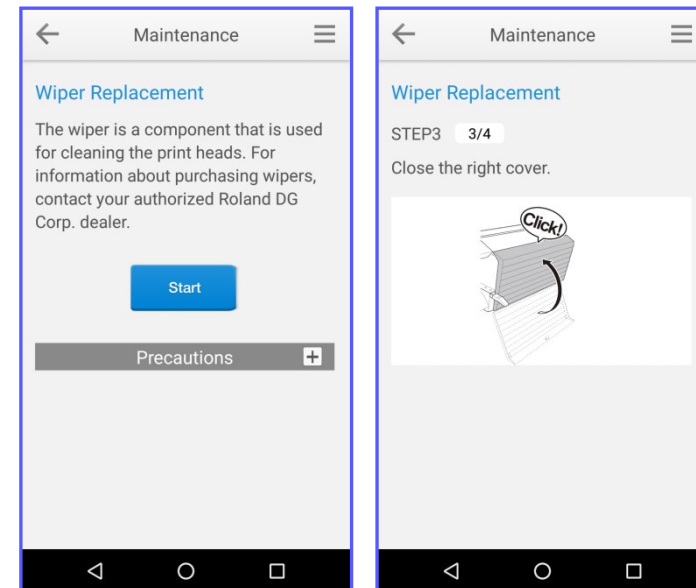
- Bluetooth connection

- ◆ Bluetooth 4.0LE

- You can visually understand printers information



- Roland Mobile Panel
 - ❑ Operate the contents of user menu
 - ❑ Step by step procedure for replacement of consumable parts



- Roland OnSupport

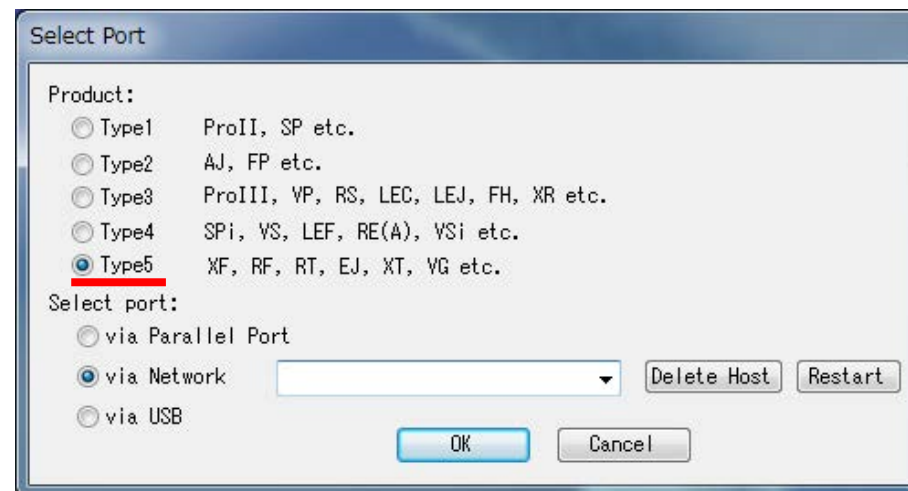
- Ver.2.6 or later



- Peck

- Ver. 7.00 or later

- Choose Type5



13. Installaion

● Installation

		Without ink line cleaning VG-640: ZCV1001 or later Rev. 1.5 VG-540: KCY0547 or later Rev. 1.6		Rev. 1.1 With ink line cleaning	
	Contents	Referential time	Accumulated time	Referential time	Accumulated time
1	Unpacking	20 min	20 min	20 min	20 min
2	Printer installation	30 min	50 min	30 min	50 min
3	Connecting the tubes of the same color * 4-color configuration set up	5 min	55 min	5 min	55 min
4	Initial ink filling * Applying the cleaning liquid to Cap Top is not necessary	30 min	85 min	120 min	175 min
5	Perform bi-directional adjustment using the media the user uses.	10 min	95 min	10 min	185 min
6	RIP software installation/Connection check	15 min	110 min	15 min	200 min
7	Explanation of how to use the machine	Depending on the user		Depending on the user	

Listed time is just a reference. Referential time may greatly depending on the installation environment.

14. Transport

- Transport of the machine

- Transfer the machine without ink removed

1. Ink circulation (8 color mode only) Rev. 1.2

Execute [MENU] > [SUB MENU] > [INK CONTROL] > [CIRCULATE INK].

([CIRCULATE INK] is supported from firmware Ver. 1.6.)

2. Remove the cleaning liquid in the wiper tray.

Execute USER MENU > SUB MENU > DRAIN TRAY

([DRAIN TRAY] will be supported from firmware Ver. 1.2)

3. Discard the waste fluid in waste bottle and attach the bottom plug. (attached to the machine at the installation)

4. Remove cutter holder.

5. Fix the print head by the retainer.

Important points:

Please complete the transfer within 24 hours, then turn on the power after transfer is completed.

- Transport of the machine

- Transfer the machine with ink removed

1. Remove the cleaning liquid in the wiper tray.

Execute USER MENU > SUB MENU > DRAIN TRAY

([DRAIN TRAY] will be supported from firmware Ver. 1.2)

2. Remove the cleaning tray and ink pouch tray.

3. Clean the ink line.

Execute SERVICE MENU > SUB MENU > HEAD WASH

Rev.1.6 *For 7/8 colors TR-CL x 8 pcs, and for 4 colors TR-CL x 2 pcs are necessary.

4. Discard the waste fluid in waste bottle and attach the bottom plug. (attached to the machine at the installation)

5. Remove the cutter holder.

6. Fix the print head by the retainer.

Important points:

Please complete the transfer within 2 days, then turn on the power after transfer is completed.

15. Consumables

- Longevity of the Consumables

Name	Expected Lifetime
Print head	6 billion times/nozzle
Rubber wiper	Wiping 3,000 times
Cap top	6 months
Rev. 1.9 Scan motor	3,000 hours or 12,800 km
Ink tube	3,000 hours
Rev. 1.6 Pinch roller	Replace it if the rubber part is worn out.
Rev. 1.6 Blade protector	Replace it if there are scratches on it.
Wiper pad	Wiping 1,000 times
Lithium battery	24 months

The numbers described here are subject to change according to the durability test result.