

INSTRUCTION MANUAL

MS VISCOSITY CONTROLLER

【Patented Products】

Model Number

- VG-10 Type Series
- VG-15 Type Series
- VG-20 Type Series
- VP-10 Type Series
- VA-15 Type Series
- VA-20 Type Series

- VG-10-P Type Series
- VG-15-P Type Series
- VG-20-P Type Series
- VA-10-P Type Series
- VA-15-P Type Series
- VA-20-P Type Series

【Please check Model Number and Serial Number inscribed on the label of our company name at the right side of Viscosity controller body.】

- ◆First of all please read and understand this manual book, then start the operation, also make the inspection and the maintenance.
- ◆Please do not operate by any persons who do not understand the details for this viscosity controller.

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[1] Introduction

- ★ This instruction manual is the guidebook which is written to use this equipment in safety.
- ★ First of all please read this manual book carefully and understand the points to notice, then start the operation, also make the inspection and the maintenance.
- ★ In case of operating Viscosity controller wrongly against this manual, it will cause serious damages.

[2] For Safety Operation

- ★ In order to use this equipment in safety, keep the following descriptions.

⚠Warning: In case you ignore the warning descriptions and operating this equipment wrongly,

It may cause serious damages for Viscosity controller, and accidents like serious injury or death.

⚠Caution: In case you ignore the warning descriptions and operating this equipment wrongly,

It may cause serious damages for Viscosity controller, and slightly injury accidents.

⚠ Warning

1. Do not operate the pump, before turning ON the Main switch. Unless the Main switch is turned ON, the lubricating oil is stopped feeding to the pump and it will cause serious damages in the pump.
2. Supply fresh air to viscosity controller free of moisture, dust and rust. If the air involving moisture, dust or etc. is feeded to Viscosity controller, it will cause serious damages in the pump and pneumatic equipments.
3. Insert plug of power code to outlet, after closing the door of box (viscosity controller) and supplying compressed air from air-compressor. When open the door of box for checking, turn main switch off and pull plug of power code out from outlet.

⚠ Caution

1. Maintain lubricating oil levels in the oil tank at the lowers right side of the unit periodically.
2. Keep inspecting whether air is mixed into the oil in lubricating pump, also into delivery and suction hoses, or not.
3. Close the door of Viscosity controller while operating.
4. Keep putting the lid on solvent tank, excepting while replenishing the tank with solvent.
5. Connect the earth clip or the earth terminal to ground.
6. Pull the plug from out-let in case of viscosity controller does not be operated for long time.
7. Don't touch the terminal while turning on electricity.
8. Don't modify and dismantle any systems.
9. Keep inspecting whether the pump and all of hoses have no liquid leakage.

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[4] PRINCIPLE FUNCTION

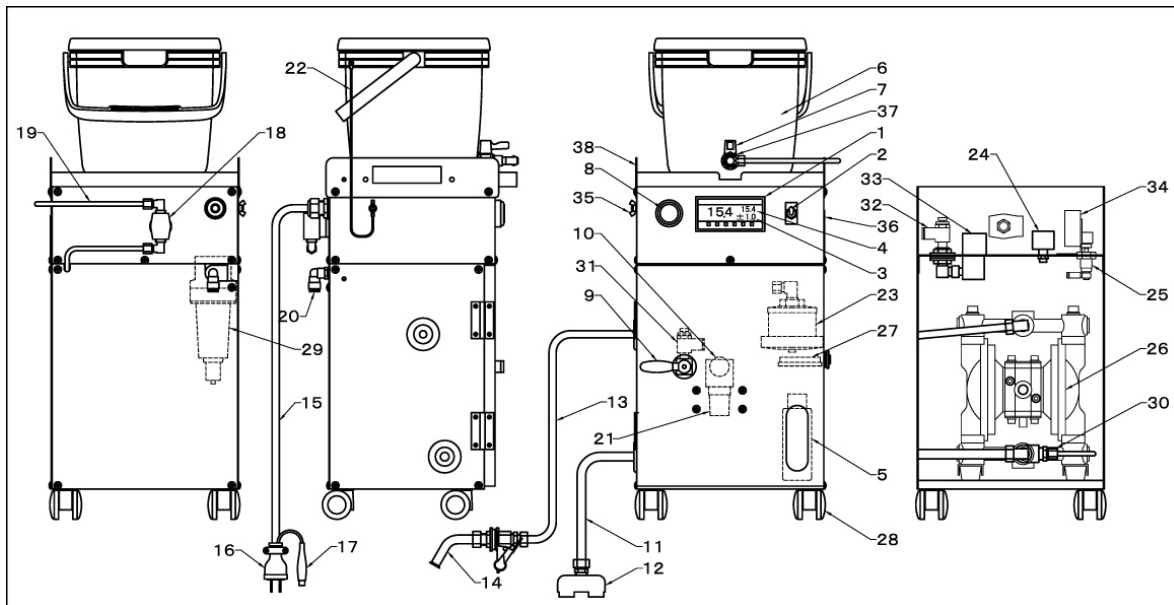
The system is controlled by sensing viscosity through loads placed on the diaphragm pump. The evaporation of solvent in the ink, makes the ink viscosity thick. As the ink thickens, the load on the pump also increased. Then the pump cycle is getting slow. As the ink thins, the load on the pump also decreases. Then the pump cycle is getting fast. Say for example that the system is operated and ink is circulating through the pump, and if your ideal viscosity is 13.6 seconds, you will setup 13.6 seconds as upper limit. Concurrently, the sensor at the pump air exhaust is detecting 113 pulses (per minute) and sending this information to the controller. The controller converts this information into viscosity and displays it at 13.6 seconds. Set the viscosity set point on the controller to 13.6 seconds. The controller will now automatically maintain this level of viscosity.

As time passes, viscosity will naturally increase to 13.7 seconds (Pulse is 111 times/min.). As soon as this happens, the controller will immediately feed solvent into the pump for one second – automatically. Viscosity will drop to around 13.4 seconds (117), but will return to the set point in a few seconds. The system automatically repeats this process to achieve and maintain a stable viscosity.

【 The figures in () are shown the times of pump's pulse in a minute, converting from pump's pulse to viscosity cup-seconds. 】

[5] NAME OF COMPONENTS

The following drawings explain Model No. VG-10 (standard specification)

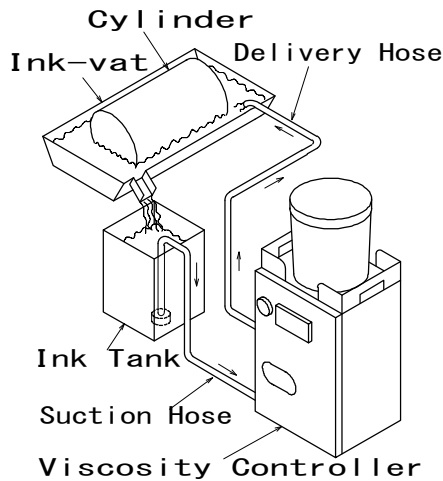


Number (No.)	Description	Number (No.)	Description
1	Viscosity display	20	Hose connection
2	Main switch	21	Air regulator (installed behind the door of body)
3	Alarm setting value	22	Earth line
4	Viscosity setting value	23	Exhaust cleaner
5	Oil Tank (inside body)	24	Digital pressure switch
6	Solvent tank	25	Lubrication pump
7	Solvent cock	26	Air Powered diaphragm pump
8	Buzzer	27	Water oil separator
9	Control switch	28	Caster
10	Pressure gauge	29	Air Filter (inside body)
11	Suction hose	30	Check Valve
12	Suction strainer	31	Speed controller
13	Delivery hose	32	Needle valve for air-purge
14	Delivery nozzle	33	Solenoid valve for air supply
15	Power code	34	Lubricating motor
16	Plug	35	Earth nut
17	Earth clip	36	Right side door
18	Solenoid valve for solvent supply	37	Solvent strainer
19	Solvent hose	38	Solvent tank gaide

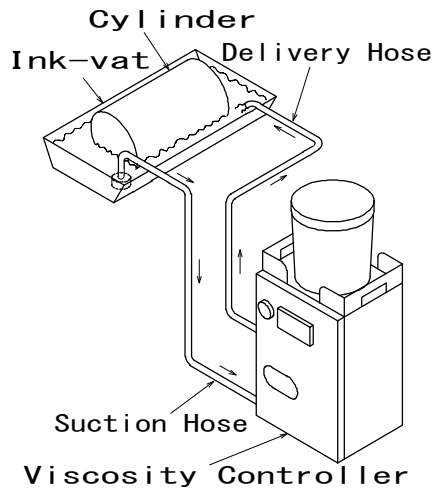
[6] EXAMPLES OF INSTALLATION

We are explaining how to install in case of using Inks by the following illustrations. But if you would like to use Adhesives, Coatings or Varnish, you can install in the same condition as inks.

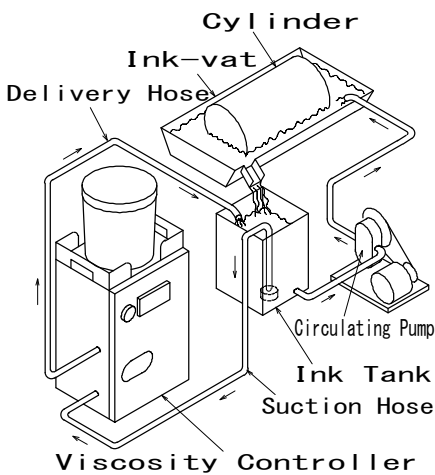
① Direct circulation



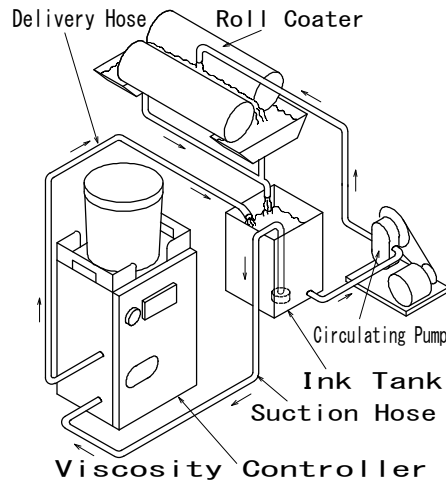
② Circulation through ink-tank



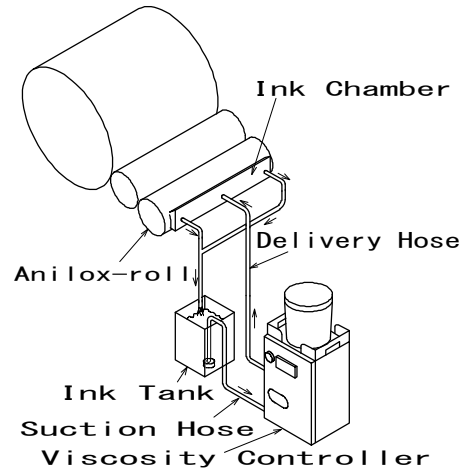
③ Circulation through ink-tank with using circulating pump



④ Circulation through ink-tank with circulating pump for Roll coater



⑤ Circulation through ink-tank for Ink chamber



[7] CONFIRMATION AFTER YOU RECEIVE THE VISCOSITY CONTROLLER

★ Confirm the following matters when you received the viscosity controller.

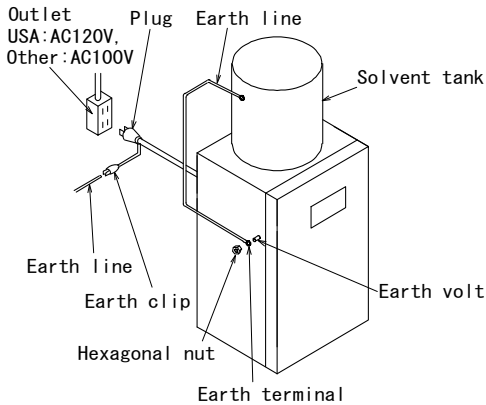
- ① Find Model Number and Serial Number inscribed on the label of our company name at the right side of viscosity controller body. And confirm whether this viscosity controller is correct which you ordered.
- ② Confirm whether this viscosity controller has any damages during the transportation.
- ③ Confirm whether this viscosity controller has any shortages of the components
- ④ Please contact us at once if you have any questions, obscurity and defectiveness of this viscosity controller.

☆ Keep the carton and packing materials as it is, which this viscosity controller is packed in.

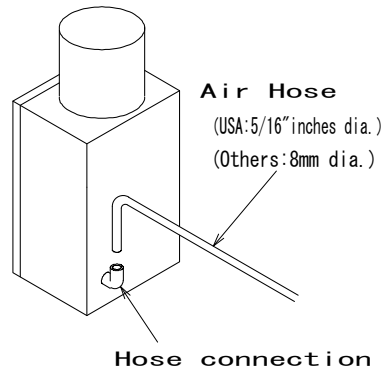
When this viscosity controller must be sent back to Meisei Corp. in case of repairing and maintenance, etc., this carton and packing materials are necessary to protect this device from some damages.

[8] HOW TO INSTALL

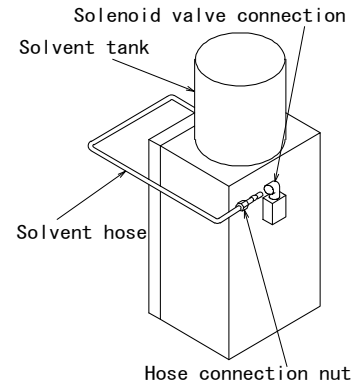
- ① Install the viscosity controller on stable and flat surface.
- ② Insert plug to outlet. in (AC 100V). Connect the earth clip to ground. (The device for USA has no Earth clip.)
The device for the working voltage AC200V to AC220V, has no plug at the edge of power code.
Please furnish the suitable plug by yourself. (Power code: Red and White. Earth line: Black) 【Fig.1】
- ③ Connect the earth line to the viscosity controller body.
- ④ Connect 8mm external diameter of air hose to air hose connection.
(In USA: 5/16" inches of air hose) 【Fig.2】
- ⑤ Connect the solvent hose from solvent tank to the solenoid valve, and tighten the hexagonal nut. Solvent tank, Solvent hose, Solenoid valve for solvent supply, Hexagonal nut 【Fig.3】



【Fig.1】



【Fig.2】



【Fig.3】

[9] HOW TO USE

- ① Supply fresh air to Viscosity controller free of moisture, dust and rust.
- ② Supply more than 0.5Mpa(5kg/cm²) of the compressed air.
- ③ Don't start operating the pump of Viscosity controller before turning ON the Main switch (up side).
- ④ Insert the plug to outlet firmly while Viscosity controller is operated.
Draw out the plug after turning OFF the Main switch, when Viscosity controller is not used for a long time.
- ⑤ Don't modify the set air pressure of the filter regulator. Also don't modify the air supply quantity for speed controller.
- ⑥ Don't modify the length and diameter of delivery hose and suction hose.
- ⑦ Don't operate Viscosity controller as the wire netting filter is detached from the suction strainer.
Don't modify the size of mesh for the wire netting filter.
- ⑧ Keep suction strainer away from inflow of ink-vat in ink-tank for the purpose of preventing suction strainer from sucking air bubbles.
- ⑨ Shut the lid of solvent tank tightly after replenishing the solvent tank with solvent.
- ⑩ Keep the solvent cock open fully while operating Viscosity controller.
- ⑪ Keep the door of main body close while operating Viscosity controller.
- ⑫ Diaphragm, spool assembly, ball-guide, valve-sheets, Teflon balls, O-rings and seals are consumption parts.
Replace for the new ones every 2 years. Or replace when they are worn down, swelled and torn, etc.
- ⑬ Diaphragm pump rarely stops by its structural reason while Viscosity controller is operated.
In case some troubles are caused by this stopping, please use together with another circulating pump.
- ⑭ When the operation is over, wash enough by the solvent in order to prevent ink from hardening and choking.
- ⑮ Inspect whether the hose connections for ink, solvent and air are tightened.

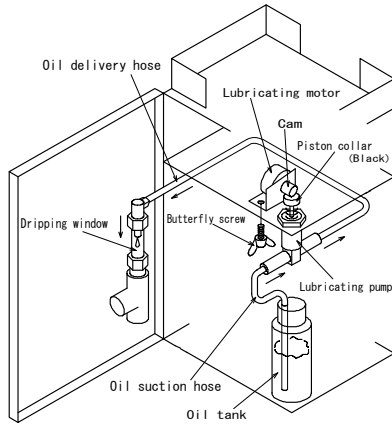
[1 O] USUAL INSPECTION BEFORE OPERATING

① (For Model type:

VG series, and VA series)

Maintain the lubrication oil level in the oil tank.

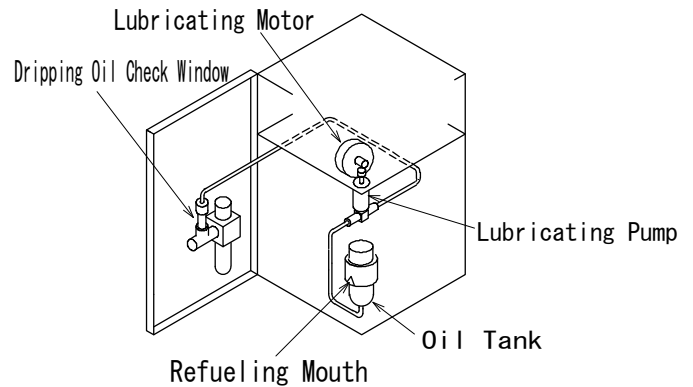
Replenish Meisei special blend “Meisei Super 1000” when the oil decreases.



(For Model type:

VS series, other special series)

Maintain the oil level by the below way of illustration.



- ② Inspect whether the moisture is mixed in oil tank.
- ③ Inspect whether air is mixed in delivery hose and suction hose of lubricating pump.
- ④ Inspect whether delivery hose and suction hose for ink are not kinked or crushed, also have no any holes.
- ⑤ Inspect whether the wire netting filter of suction strainer has no dusts, ink dregs or chokes.

Lubricating pump make a performance of lubricating when main electrical switch is turn “ON”, and when a certain setting time has passed.

But, when air bubble is found in the hose and lubricating pump, oil can not be transferred from oil tank to dripping window even if lubricating pump work.

When refill empty oil tank with oil, the following works require for priming oil for lubricating pump.

【How to prime oil】

- ① Turn main electrical switch “ OFF “, and turn control switch “ STOP ”.
- ② When oil is empty in oil tank, refill oil “ Super 1000 ” (special oil for viscosity controller).
- ③ Loosen butterfly screw (2pcs) and detach, and detach lubricating pump.
(Piston collar (black) becomes to free to move)
- ④ Push piston collar to the bottom by finger. and then piston collar begins to go back to up.
During piston collar going back to up, please keep your finger putting on piston collar with weak strength, for piston collar going back to up slowly.
The standard time for piston collar going back to up is 5 – 6 seconds.
If piston collar go back to up quickly, air bubble is primed, instead of oil.
Continue to do pumping by finger as above till you can confirm oil is dropping in dipping window.
- ⑤ Put cam of lubricating motor on piston collar, push piston collar down slowly and fixing by butterfly screw.
- ⑥ Turn control switch “ RAPID ” and then “ NORMAL ”, and turn electrical main switch “ ON ”.
Check if oil is dipping in dipping window during cam is rotating 1 round (about 65 seconds).
(If can not confirm oil dipping after 1 time of the above action, continue to do the same action – Turn electrical switch “ ON – OFF “. When turn electrical main switch on, cam is rotating.

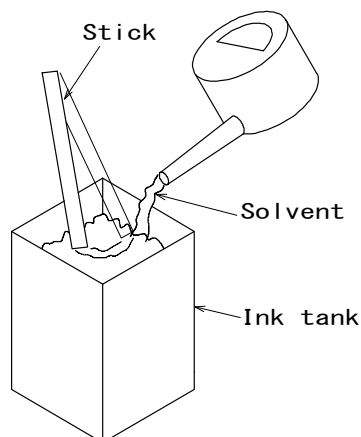
[1 1] HOW TO OPERATE

★The explanations of (1) to (5) are in common with all of specifications (models).

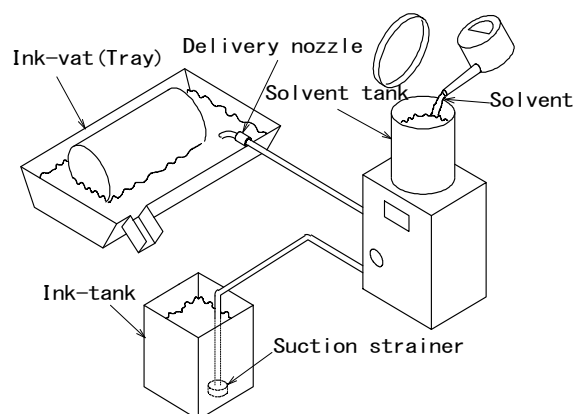
In case of the devices (GP-10, GP-15, GP-20, AP-1000E, AP-1500E, AP-2000E and G type series) that Viscosity present value is displayed in cup-seconds, please refer since (6) explanation on page 9.

Also in case of the devices (AP-100C, AP-150C and AP-200C series) that Viscosity present value is displayed by pulse times of the pump per a minute, please refer the explanations on page 10.

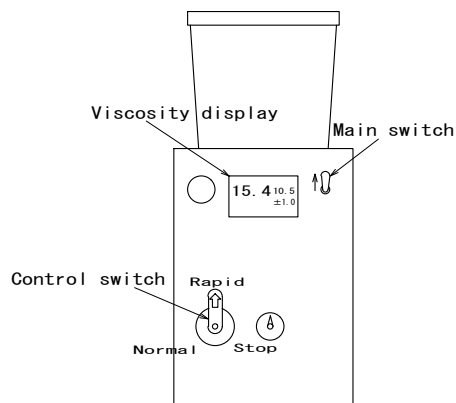
- (1) Make the ink viscosity as you desire.



- (2) Pour ink mixture into ink-vat and ink-tank. Pour the solvent into solvent tank. Place delivery hose into ink-vat. Place suction hose with strainer in ink-tank.



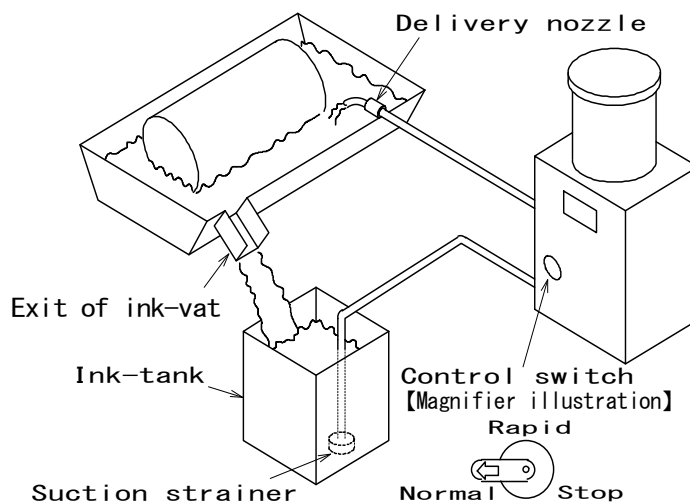
- (3) Turn the Main switch ON (up side). Turn the control switch to RAPID. Ink will begin to circulate.



(4) Approx. 5 minutes later, turn the control switch to NORMAL.

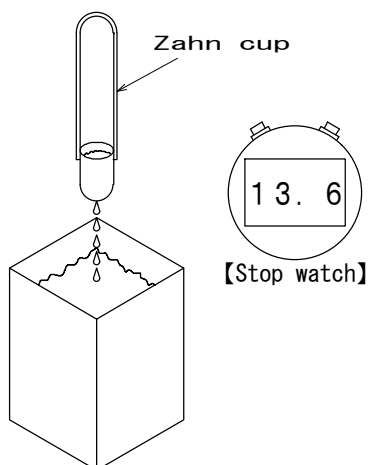
【Caution】 ① Keep delivery nozzle away from exit of ink-vat.

② Keep suction strainer in Ink-tank away from inflow of ink-vat.



(5) Check the ink viscosity by a Zahn cup again.

If proper viscosity is not attained, make adjustments as manually.

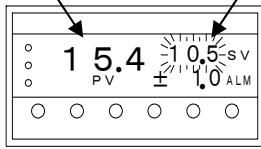


《The devices that Viscosity Present Value is displayed by the cup-seconds.》

★ Set up the ink viscosity in order to supply the solvent automatically.

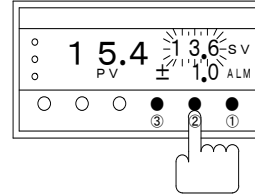
- (6) Turn the Main switch ON (up side). The **PV (Viscosity Present Value)** on the controller display will light, also the **SV (Viscosity Setting Value)** will start blinking.

Viscosity Present Value Viscosity Setting Value

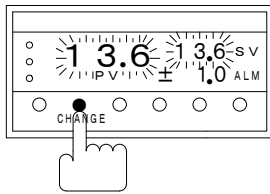


- (7) Set up the cup-seconds that were measured at (5) explanation on page 8 for the SV.

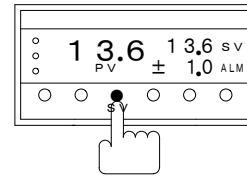
If, for example, the target viscosity in cup-seconds that you measured is 13.6, Enter 13.6 as the following process:
 Push ③ button to set up the value of 10's figure at 1
 Push ② button to set up the value of 1's figure at 3
 Push ① button to set up the value of 0.1's figure at 6



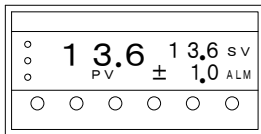
- (8) Push the CHANGE button. The PV display will change to 13.6 approx. 4 seconds later.



- (9) Push the SV button to set. The SV display will change from blinking to lighting.



- (10) Open the cock of the solvent tank fully.
 Setting up SV is complete.



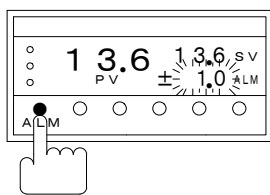
【Note】 As the ink viscosity thickens, the PV display will change (in our example:) from 13.6 to 13.7 sec.

Buzzer will sound, “beep beep beep” and solvent will automatically be added by the controller.

Viscosity	PV	SV	Buzzer sound	Solvent supply
True	13.6	13.6	Non	Non
Thick	13.7	13.6	beep beep	Solvent supply

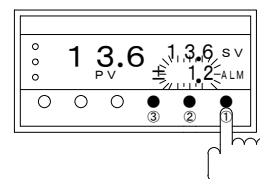
★ Set up the alarm that informs out of usual during the operation.

- (11) While the PV and SV displays are not blinking, press the ALM button.
 The ALM display on the controller will start blinking.

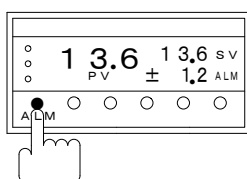


- (12) Set the total range to 2.4 seconds (+1.2sec. and - 1.2sec.),
 Enter 1.2 for the ALM as the following process:

Push ② button to set up the value of 1's figure at 1.
 Push ① button to set up the value of 0.1's figure at 2.



- (13) Push the ALM button again. The ALM display will change from blinking to lighting.



【Note】 ① When the PV exceeds the upper limit of 14.8 or falls below the lower limit of 12.4, the alarm will sound “beep-boop beep-boop”.

② Don't set too small range (for example: ±0.2), otherwise the alarm will sound often.

PV	Buzzer sound	Alarm judgement
0.0~12.3	beep-boop	Available
12.4~14.8	Non	Non
14.9~99.9	beep-boop	Available

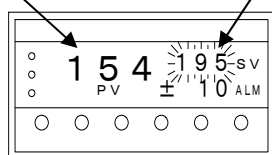
- (14) Then setting up ALM display is finished.

《The devices that Viscosity Present Value is displayed by the pump pulse times per a minute.》

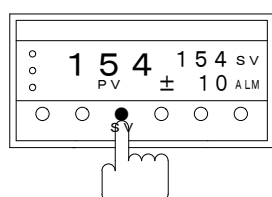
★ Set up the ink viscosity in order to supply the solvent automatically.

- (6) Turn the Main switch ON (up side). The **PV (Viscosity Present Value)** on the controller display will light, also the **SV (Viscosity Setting Value)** will start blinking.

Viscosity Present Value Viscosity Setting Value



- (8) Push the SV button to set. The SV display will change from blinking to lighting.

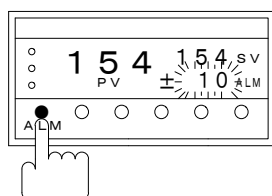


【Note】 As the ink viscosity thickens, the PV display will change (in our example:) from 154 to 153 pulses. Buzzer will sound “beep beep beep” when the PV display becomes smaller than the SV display, and solvent will automatically be added by the controller.

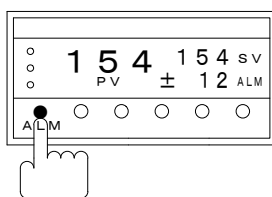
★ Set up the alarm that informs out of usual during the operation.

- (10) While the PV and SV displays are not blinking, press the ALM button.

The ALM display on the controller will start blinking.



- (12) Push the ALM button again to set. The ALM display will change from blinking to lighting.



- (13) Then setting up ALM display is finished.

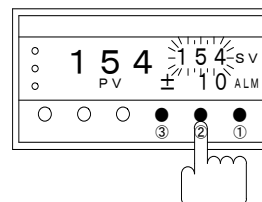
- (7) Set up the SV same value as the PV.

If the PV is 154 pulses per a minute, Enter 154 as the following process:

Push ③ button to set up the value of 100's figure at 1

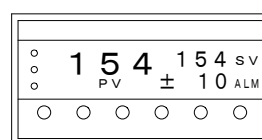
Push ② button to set up the value of 10's figure at 5

Push ① button to set up the value of 1's figure at 4



- (9) Open the cock of the solvent tank fully.

Setting up SV (viscosity setting value) is finished.

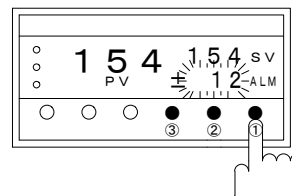


Viscosity	PV	SV	Buzzer sound	Solvent supply
True	154	154	Non	Non
Thick	153	154	beep beep	Solvent supply

- (11) Set the total range to 24 pulses per a minute (+12pulses and - 12 pulses), Enter 12 for the ALM as the following process:

Push ② button to set up the value of 10's figure at 1.

Push ① button to set up the value of 1's figure at 2.



【Note】 ① When the PV exceeds the upper limit of 166 pulses or falls below the lower limit of 142 pulses, the alarm will sound “beep-boop beep-boop”.

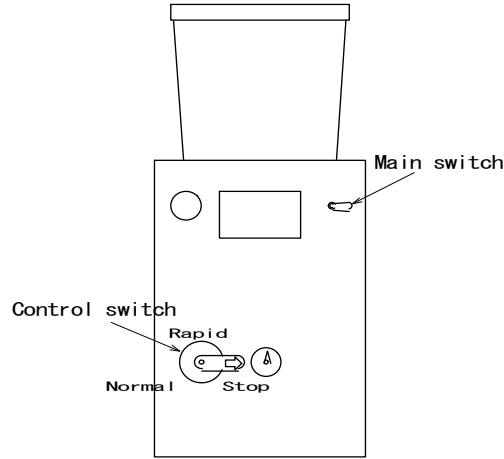
② Don't set too small range (for example: ±2), otherwise the alarm will sound often.

PV	Buzzer sound	Alarm judgement
0~141	beep-boop	Available
142~166	Non	Non
167~999	beep-boop	Available

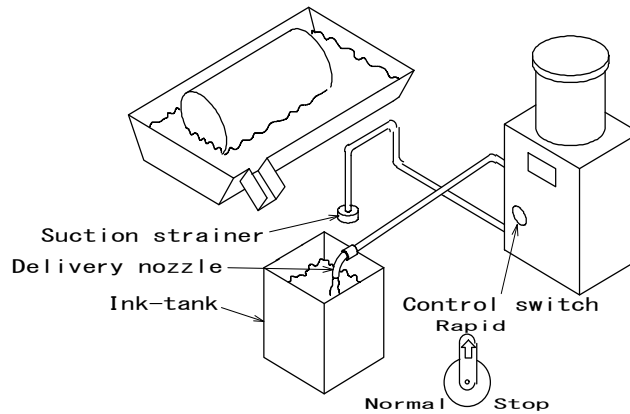
[1 2] HOW TO WASH

- ★ When the operation is over, wash enough by the solvent in order to prevent ink from hardening and choking in the pump, delivery hose, suction hose and solvent check valve.
- ☆ Solvent check valve is: for the purpose of preventing the backward flow of the ink into solvent tank.
- ☆ Solvent check valve is the red hose connection that is installed near by suction mouth of the pump in the box.

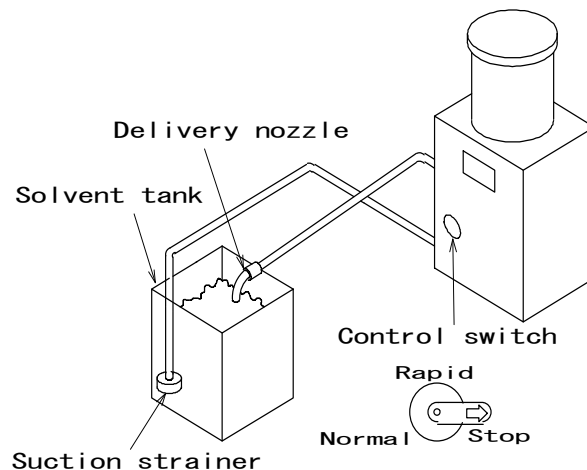
- (1) Turn the main switch to OFF.
Turn the control switch to STOP.



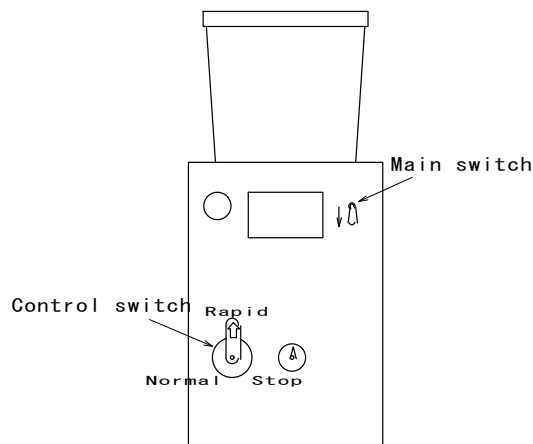
- (2) Move delivery nozzle from ink-vat to ink-tank. Take out suction strainer from Ink-tank. Turn the control switch to RAPID. Ink will empty out of the pump and both hoses. After approx. 10~15 seconds, set control switch to STOP.



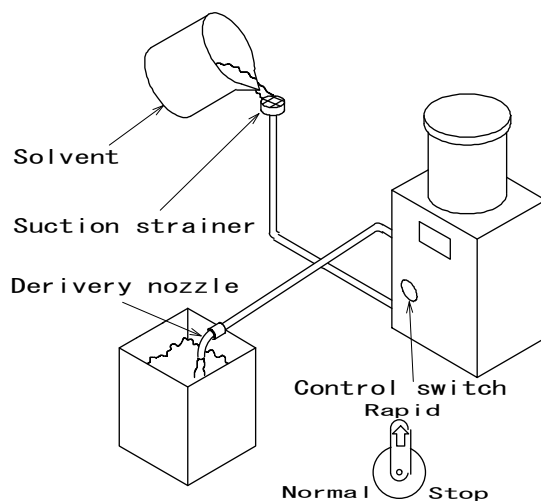
- (3) Put 2~4 liters (1/2~1 gal) of solvent into a separate tank. Put both the delivery nozzle and suction strainer into this tank.



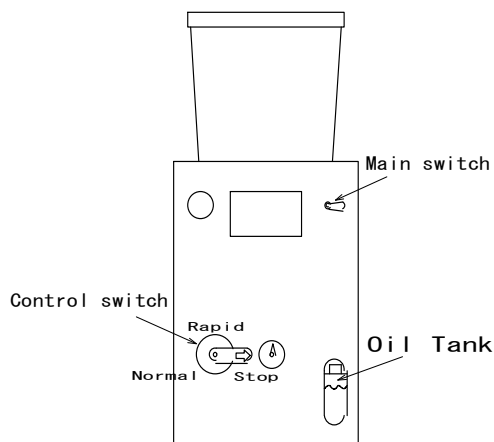
- (4) Turn the control switch to RAPID. While circulating the pump on to wash for 2~5 minutes, turn the Main switch to ON (down side) in order to wash check valve for 5 seconds.



- (5) Take out suction strainer to discharge solvent out. Then wipe off suction strainer with a solvent moistened towel. Pour 1~2 liters (1/4~1/2 gal) of solvent into the mouth of the suction strainer hose. Don't pour all at once. Pour a little at a time, to wash with air bubble.



- (6) After all solvent has exited from the delivery hose, turn the control switch to STOP. Washing device is complete.



[1 3] TROUBLE SHOOTING

★ When some troubles happens during the operation of viscosity controller, inspect and repair the out of usual parts after stopping the operation. In case you cannot find the parts in trouble or you cannot find how to deal with the troubles, please contact to us. Or please send back the device to us.

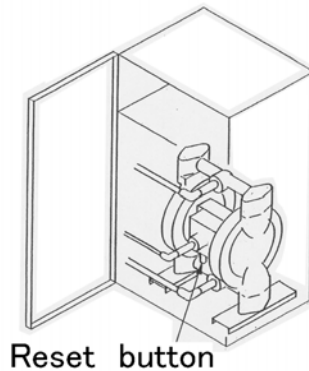
When you ask us, please check the Model number and Serial number inscribed on the label of our company name at the right side of Viscosity controller body.

Condition	Factor	Reconditioning
Pump doesn't work.	<ul style="list-style-type: none"> ① Spool stops at the neutral position. ② There are some chokes in: delivery nozzle or hose suction strainer or hose delivery mouth or suction mouth of the pump. ③ Air supply pressure is going down. ④ O-rings and seals in the pump are worn down ⑤ Diaphragm in the pump is torn. 	<ul style="list-style-type: none"> ① Turn the control switch "RAPID". And push the reset button. 【Please refer Chart 1 on page 14.】 ② Remove the chokes and clean the each part. ③ Modify proper air pressure from air compressor. ④ Replace new ones. ⑤ Replace new one.
Unstable number on the viscosity display. 0 (zero) is displayed.	<ul style="list-style-type: none"> ① Pump is sucking air ② Air supply pressure is unstable. ③ O-rings and seals in the pump are worn down. ④ Ball guide, Teflon balls, valve-sheets and spool in the pump are worn down. 	<ul style="list-style-type: none"> ① Tighten the nuts of hose connections firmly. Keep suction strainer away from inflow of ink- vat that air bubble appears. If suction hose has a hole, replace new one. ② Inspect whether air supply pressure is enough. ③ Replace new ones. ④ Replace new ones.
Ink viscosity is kept thickening. (Solvent is not supplied)	<ul style="list-style-type: none"> ① Solvent check valve is choked. ② Solvent strainer in solvent tank is choked. ③ Solenoid valve for supplying solvent is choked ④ The electric cord for solenoid valve is disconnected. ⑤ No solvent in the solvent tank. 	<ul style="list-style-type: none"> ① Clean solvent check valve. Or replace. 【Please refer Chart 2 on page 14.】 ② Replace the new filter in the solvent strainer. ③ Wash and overhaul the solenoid valve for supplying solvent. ④ Replace the new electric cord. ⑤ Replenish the tank with solvent.
Ink viscosity is kept thinning. (Solvent is kept leaking)	<ul style="list-style-type: none"> ① Pump pulse is not stable. ② Solenoid valve for supplying solvent cannot be shut firmly by dusts. 	<ul style="list-style-type: none"> ① Replace the new parts. ② Overhaul and wash solenoid valve for supplying solvent.
Disappearance of indication on viscosity display	<ul style="list-style-type: none"> ① Power cord is disconnected. ② The terminal is disconnected in power source plug. ③ The terminal of viscosity display is loose. ④ The voltage is under 90V (190V) 	<ul style="list-style-type: none"> ① Replace the new cord. ② Replace the new terminal. ③ Tighten the terminal firmly. ④ Supply proper voltage of 100V (190V).
Air leakage from the bottom of filter regulator	<ul style="list-style-type: none"> ① Drain cock cannot be shut firmly by dusts. 	<ul style="list-style-type: none"> ① Clean. Or replace the new part.
No lubricating oil	<ul style="list-style-type: none"> ① Air is mixed into delivery and suction hoses of lubricating pump. ② Lubricating pump is out of order. 	<ul style="list-style-type: none"> ① Take out air from hoses by manual. ② Replace the new lubricating pump kit.

【Chart 1】 How to restart the pump

(For Model No. VG-10, VA-10 type)

☆Push up the reset button of the pump

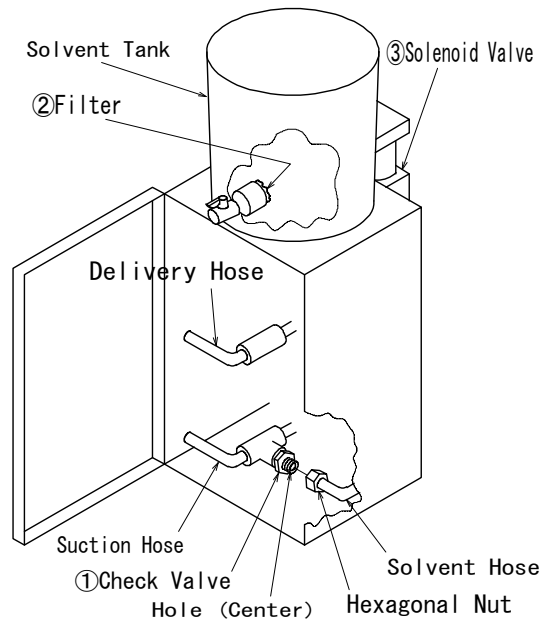


【Chart 2】 How to clean the solvent check valve

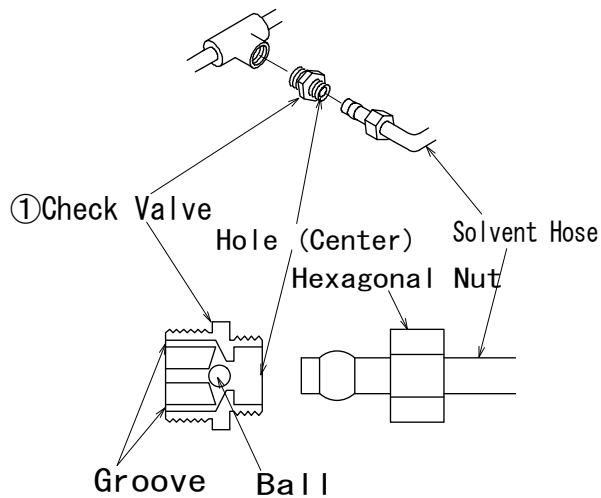
☆Detach the solvent check valve to loose the hexagonal nut of solvent hose.

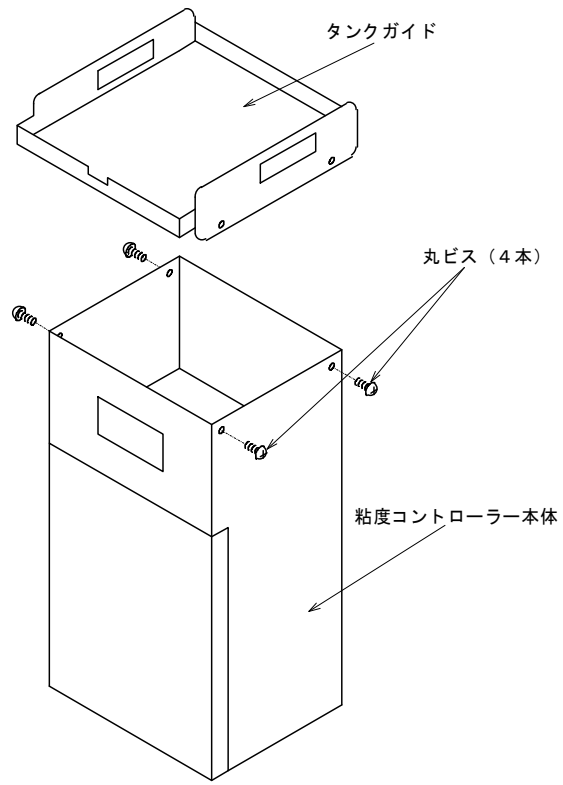
Insert the wire into the hole of check valve, and make the ball move. Clean the groove that solvent flows.

☆Clean up by solvent.



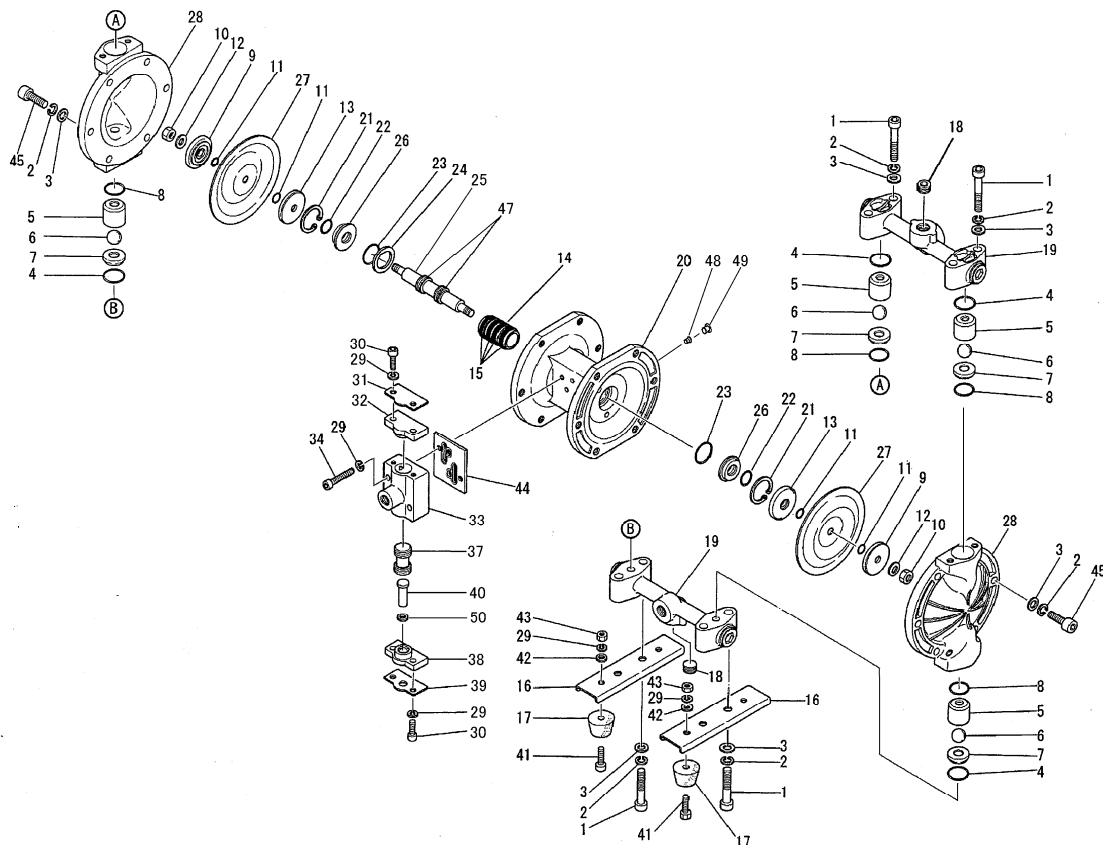
【Disassembly illustration for Check valve】





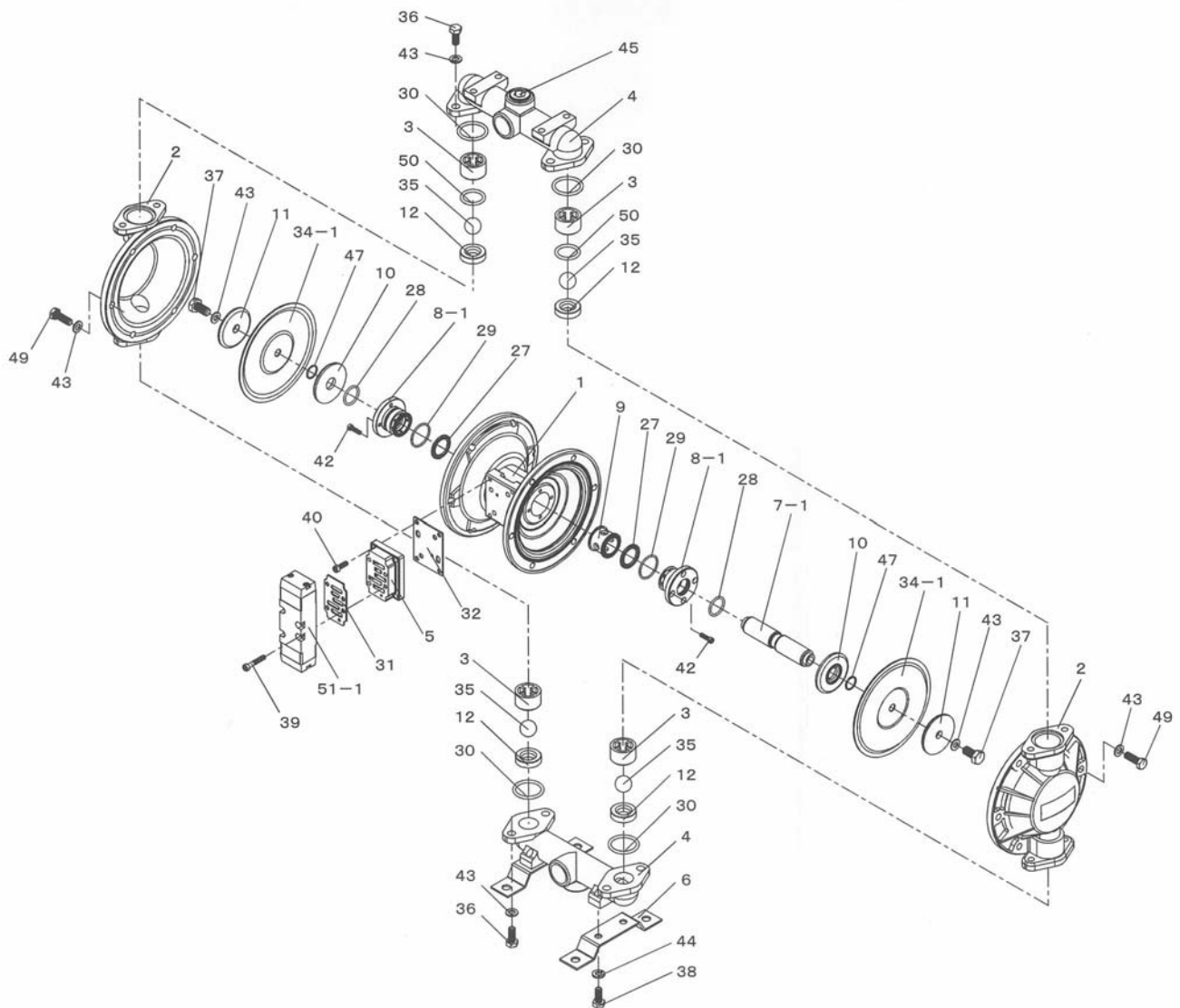
[14] Parts of Diaphragm Pump

(For Model No. VG-10, VA-10 type)



Ref No.	Parts No.	Description	Qty.	24	772651	Spasar	1
1	681295	Bolt	8	25	801785	Center rod assembly	1
2	681300	Spring washer	20	26	772619	Bush	2
3	631329	Washer	20	27	770933	Diaphragm	2
4	643018	O-ring	4	28	710572	Out chamber	2
5	771368	Ball guide	4	29	681855	Spring washer	6
6	300931	Ball	4	30	682943	Bolt	4
7	300913	Valve seat	4	31	710636	Protector	1
8	643017	O-ring	4	32	771356	Spool cover	1
9	708770	Center disk	2	33	710574	Spool case	1
10	681849	Nut	2	34	682918	Bolt	2
11	643005	O-ring	4	37	300404	Spool assembly	1
12	684916	washer	2	38	771357	Spool cover	1
13	709512	Center disk	2	39	710587	Protector	1
14	300688	Sleeve	1	40	300798	Reset button	1
15	684900	O-ring	4	41	621102	Bolt	4
16	710586	Base	2	42	631328	Washer	4
17	771123	Rubber foot	4	43	628010	Nut	4
18	682279	Plug	2	44	300358	Gasket	1
19	802559	Manifold kits	2	45	682944	Bolt	12
20	712952	Body	1	47	200312	Slipper seal	2
21	630807	Stop ring	2	48	200701	Stopper	1
22	640013	O-ring	2	49	200702	Stop cover	1
23	640131	O-ring	2	50	201004	O-ring	1

(For Model No. VG-15, VA-15 type, VG-20, VA-20 type)



No.	Name	Qty.	No.	Name	Qty.
1	Body	1	32	Seat gasket B	1
2	Cover	2	34-1	Diaphragm	2
3	Ball guide	4	35	Ball	4
4	Manifold	2	36	Bolt	8
5	Valve manifold	1	37	Bolt	2
6	Mount	2	38	Bolt	4
7-1	Center Rod	1	39	Bolt	4
8-1	Holder	2	40	Bolt	4
9	Spacer	1	42	Bolt	8
10	Disk A	2	43	Washer	22
11	Disk B	2	44	Spring washer	4
12	Valve sheet	4	45	Plug	2
27	T-seal	2	47	O-ring	2
28	O-ring	2	49	Bolt	12
29	O-ring	2	50	O-ring	2
30	O-ring	4	51-1	Air valve assembly	1
31	Seat gasket A	1			

[15] Specification

The common specification to all models	
External appearance	Stainless steel box that all of functions are unified in
Pump	Pneumatic diaphragm pump. / Material of pump body: Aluminum / Diaphragm material: Teflon
Viscosity display	Digital indication: Viscosity present value in red LED Viscosity setting value in green LED / ALM alarm setting value in green LED
System of detecting pump pulse	Digital pressure switch
Solenoid valve	Normal type
Buzzer	Solvent supply: "beep beep" sound. Alarm: "beep boop" sound.
Working voltage	AC100V (Option 200V ~ 440V)、40W
Countermeasure of explosion	Pressurized type of explosion-protected construction

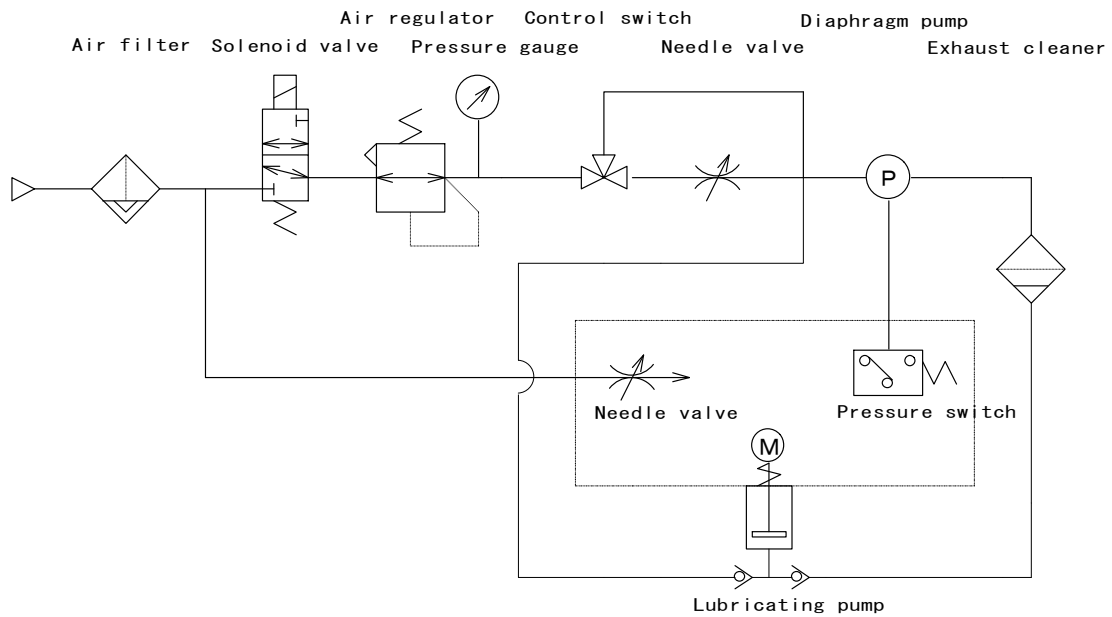
VG-10 Type	
Type	VG-10
Dimension: (W mm × L mm × H mm)	280 × 300 × 670
Weight	15kg
Air consumption	40L/min
Solvent Tank	Polyethylene 5L
Control range of viscosity	30~100CPS
Circulating quantity	3.9~1.8L/min
Regulated air pressure	0.3MPa(3.0kg/cm ²)
Suction hose size	External φ 12mm × Internal φ 8mm × Length2.5m
Delivery hose size	External φ 10mm × Internal φ 6.5mm × Length2.5m

VG-15 Type	
Type	VG-15
Dimension (W mm × L mm × H mm)	280 × 300 × 720
Weight	16kg
Air consumption	90L/min.
Solvent Tank	Polyethylene 10L
Control range of viscosity	30~100CPS
Circulating quantity	8.9~3.2L/min
Regulated air pressure	0.3MPa(3.0kg/cm ²)
Suction hose size	External φ 16mm × Internal φ 11mm × Length2.5m
Delivery hose size	External φ 12mm × Internal φ 8mm × Length2.5m

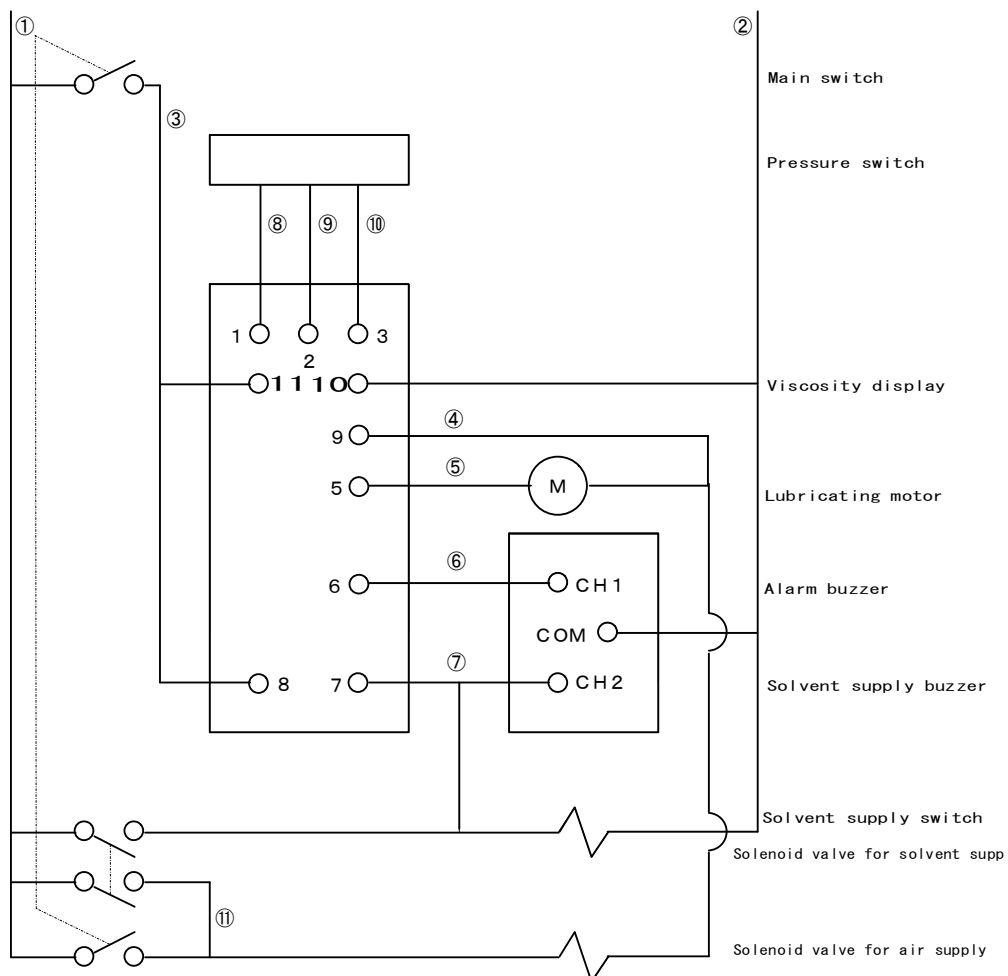
VG Type	
Type	VG-20
Dimension (W mm × L mm × H mm)	280 × 400 × 720
Weight	18kg
Air consumption	160L/min.
Solvent Tank	Polyethylene 10L
Control range of viscosity	30~100CPS
Circulating quantity	18.8~7.8L/min
Regulated air pressure	0.25MPa(2.5kg/cm ²)
Suction hose size	External φ 21mm × Internal φ 15mm × Length2.5m
Delivery hose size	External φ 16mm × Internal φ 11mm × Length2.5m

[Note] All of the above specification are just described for the models to be used Standard viscosity range.
 For other viscosity ranges (like L = Super low, M = Middle and H = High viscosity inks) are not described,
 Please ask us in case you would like to use the special specification viscosity ranges.

[16] Air Circuit



[17] Electric Circuit



[18] Warranty

This device is delivered after passing the strict examinations according to Meisei's regulation.

In case the trouble, abnormality or malfunction occurs within our warranty period (within 12 months after the date of our Invoice) in spite of this device has been operated normally according to Introduction manual and Notice on the label put on the main body, etc,

We will repair or replace the new device or new parts for defective ones at free of charge.

1. Warranty period: within 12 months after the date of our Invoice.
2. Warranty: In case the genuine parts that are installed in this device have any troubles and defects by our workmanship or manufacturing process within our warranty period and we recognize it, we will bear all of the expenses for repairing or replacing.
3. Exemption clauses:
The following matters do not cover this warranty even within warranty period.
 - (1) Malfunction caused by operating without lubricating oil. Malfunction by using different lubricating oil from Meisei special blend oil Meisei Super 1000.
 - (2) Malfunction caused by incursion of the moisture into the pumps.
 - (3) Malfunction caused by using the different parts from genuine parts that Meisei recommend.
 - (4) Malfunction caused by error to set up or operate.
 - (5) Malfunction caused by lack of maintenance.
 - (6) Malfunction caused by using the fluid that has the risk to corrosion, expansion or solution.
 - (7) In case this device is repaired by somebody, not by us.
 - (8) Malfunction caused by modify, replace or remodel by somebody, not by us
 - (9) Replacement of worn down or torn all of the consumption parts: Diaphragms, valve-sheets, Teflon balls, Spool valves, Rubber seals and O-rings, etc.
 - (10) Malfunction or damages caused by moving, transferring or dropping after you have received this device from us.
 - (11) Malfunction or damages caused by inevitable accidents of fire, earthquake, flood or any kinds of convulsions of nature.
 - (12) Malfunction caused by supplying the compressed air that is contained the impurities or moisture into diaphragm pump.
 - (13) Malfunction caused by operating the diaphragm pump by different kinds of gas or fluid from fresh compressed air.
 - (14) Malfunction caused by circulating the fluid that has the peculiarity of excessive abrasion through diaphragm pump.
4. Repairing parts
Each repairing part for this device will be kept available for 5 years after the production of this model is discontinued.
We would like you to understand and accept that we cannot guarantee to supply the repairing parts of the model that 5 years have passed since its production is discontinued.

[Note] Read this introduction manual well before the operation. And use correctly according to this introduction manual. Some specifications may be modified without any information in order to improve the performance of viscosity controllers.

Please contact the following numbers or address to ask the questions for this device.

MEISEIVC™

MEISEI CORPORATION

762-8 IMA AZA TATSUNO, KANI-CITY, GIFU-PREF., JAPAN 509-0246

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