ULVAC

YO20-0938-DI-002-01

Dry Vacuum Pump
MS-Series
MS120, MS600, MS1200

Quick Manual

Introduction

This quick manual has been created for easily check of operation method and display contents. For proper use, make for sure to read in advance for detailed usage, precautions, safety and Warranty Terms with the instruction manual before.
Instruction manual can be downloaded from our website.
https://www.ulvac.co.jp/download/en/

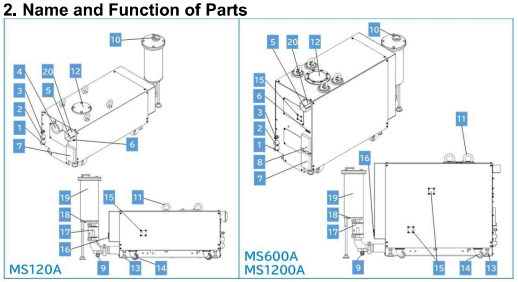
Packing box: Corrugated Recycles
Plastic bag: 4 LDPE

1. Unpacking and Quantity Check

As soon as the instrument arrives, unpack it and make sure that there is no damage during transportation and that the accessories are supplied and attached as specified.

Product name	Specifications	Q'ty	Remarks
Power connector	CE connector (DDK) /JL04V connector (JAE)	1	CE05-6A22-22SD-D-BSS /JL04V-6A22-22SE-EB-R
Waterproof cable clamp	CE connector (DDK) /JL04V connector (JAE)	1	CE3057-12A-1-D /JL04-2022CK(14)-R
Signal connector	D-sub 15pin	1	With a clamp hood
Quick Manual	Japanese & English	1	–
Power connector guard	–	1	–
Nuts (for purge gas)	1/4	1	VUW-6.35N
Front rings (for purge gas)	1/4	1	VUW-6.35S
Back rings (for purge gas)	1/4	1	VUW-6.35R
Dedicated silencer	For MS	1	Silencer + Check valve + Elbow piping assembly with drain valve
Outer ring	For KF40	1	MCK-2040-OU
Pressure resistant clamp	For KF40	1	PJ0494-NW40

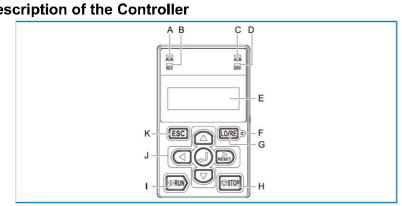
2. Name and Function of Parts



2-1. Name of Parts

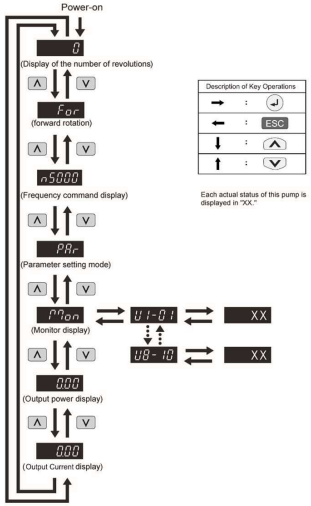
	Name	Function
1	Cooling water outlet	Connects the piping that discharges cooling water. (Rc3/8)
2	Cooling water Inlet	Connects the piping that supplies cooling water. (Rc3/8)
3	Purge gas inlet	Connects the piping that supplies purge gas.
4	Inlet port (horizontal)KF50	Connect the container and piping for pumping.(MS120 only)
5	Power connector	Connects the power cable.
6	Signal connector	Connects the signal line.
7	DRP Controller	Displays the status of DRP, such as start, stop, and alarm modes.
8	MBP Controller	Displays the status of MBP, such as start, stop, and alarm modes.
9	Drain valve	Valve for drain exhaust. (Rc3/8)
10	Exhaust outlet port: KF40	Connects the piping that discharges exhausted gas.
11	Eyebolt	Bolt to hoist the pump using a crane or other equipment.
12	Inlet port (vertical)	Connects the container and piping for pumping.
13	Adjuster	Height adjuster of this machine.
14	Caster	Swivel type wheels.
15	Lubricant inspection window	Viewport to check the oil color.
16	Ventilation inlet	Air ventilation intake port
17	Check valve	Valve to prevent a backflow from the exhaust side when the pump stops.
18	Drain port	Port for drain exhaust. (Rc3/8)
19	Silencer	Dedicated exhaust silencer.
20	Power connector guard	Used as a guard fot the power connector.

2-2. Description of the Controller



	Name	Function
A	RUN indicator lamp (RUN)	Lights up during operation of this machine. Refer to "Table 4: Display and Status of Indicator Lamp."
B	REV indicator lamp (REV)	Refer to "Table 4: Display and Status of Indicator Lamp."
C	ALM indicator lamp (ALM)	Lights up when an alarm is activated on this unit. Refer to "Table 4: Display and Status of Indicator Lamp."
D	DRV indicator lamp (DRV)	Refer to "Table 4: Display and Status of Indicator Lamp."
E	LED indicator lamp	Displays the number of revolutions and the current status.
F	LO/RE indicator lamp (LO/RE)	Lights up while the controller (LOCAL) is selected. Refer to "Table 4: Display and Status of Indicator Lamp."
G	LO/RE select key (LO/RE)	Switch using for changes of "Controller (LOCAL)" and "Remote control wiring (REMOTE)" operation.
H	STOP key (STOP)	Switch used for stops this machine.
I	RUN key (RUN)	Switch which runs this machine while LOCAL mode is selected.
J	Left key	Switch which moves the digit to the left in the controller operation mode.
	Up key / Down key	Switch which selects the status to monitor or proceed to the next item and data.
	Right key (RESET key)	Switch which moves the digit in the controller operation mode to the right. Functions as the alarm reset key in the event of an alarm.
	ENTER key	Switch which displays or accept the status to monitor. Used to move from one screen to the next screen.
K	ESC key (ESC)	Switch which returns to the previous status before pressing the ENTER key.

2-3. Transition of data display

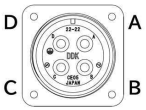


3. Environment requirements for installation and operation

Ambient temperature Inhaled gas temperature	5 to 40°C(The inhaled gas temperature is shown in terms of atmospheric pressure.)
Ambient humidity	95 %RH or less (No condensation)
Altitude	1,000m or less of altitude above sea level
Power supply	Overvoltage category II (IEC61010-1)
Others	Pollution Degree 2 or less (IEC61010-1)
	No corrosive and explosive gas.
	No dust
	The room must be ventilated.
	Do not stack this machine, position this machine sideways, or stand it up.
	Do not apply shock to this machine.
	Do not expose this machine to direct sunlight.
	Keep this machine away from heat sources.
	After moving to the installation location, adjust the four adjusters within the range of 0 to 10mm and install this machine in a horizontal position.
	Securely fix this machine in case of an earthquake.

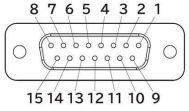
* After transporting this unit to the installation site, adjust the adjusters so that it is installed as horizontally as possible (Adjustment range is within +10mm). If necessary, adjust the adjusters while checking the level.

4. Pin assignment of power



Pin assignment	
Pin No.	Specifications
A	Phase L1/R
B	Phase L2/S
C	Phase L3/T
D	PE/GND

5. Pin assignment of remote control wiring



Pin assignment				
No.	I / O	Item	Specifi cations	
1	IN	Pump start	CLOSE : Operation	OPEN : Stop
2	IN	Alarm reset	CLOSE : Reset	
3	IN	External Error	CLOSE : Error	OPEN : Normal
4	IN	Spare	Unavailable to use	
5		N.C		
6	OUT	Startup check	CLOSE : Running	OPEN : Stopped
7		N.C		
8	OUT	Alarm	CLOSE : Normal	OPEN : Alarm
9	IN	IN COM		
10		N.C		
11		N.C		
12		N.C		
13	IN	External interlock	CLOSE : Normal	OPEN : Interlock
14	IN	External interlock common		
15	OUT	OUT COM		

* The fitting screw size of the connector is M2.6.
* When the pump is shipped, the signal connector pins from 13 to 14 are short-circuited. If it is not necessary to start/stop from a distance, use it with the signal connector plug attached.
* For the INPUT system, 24 VDC, 8 mA is applied on the pump side. Prepare a no-voltage contact. The pump side in the OUTPUT system is a no-voltage contact (Photo coupler output). Use a signal voltage of 5 to 48 VDC, 2 to 50 mA.

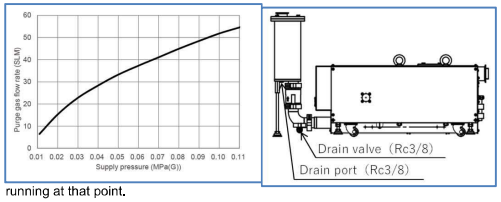
6. Purge gas and Drain

6-1. Purge gas

This machine has a purge gas introduction mechanism.
If the target gas contains condensable gas and moisture, liquid may collect in the final stage of the pump. Therefore, use purge gas to prevent the gas from liquefying and accumulating inside the pump body. In addition, for explosive/flammable/combustion-supporting gas, dilute it with purge gas to the extent that the danger is eliminated. Introduce purge gas to reduce the accumulation of corrosive/reactive products when pumping such a gases.
As the purge gas, introduce nitrogen or CDA (dew point: -60°C). Decide which one to use as the purge gas depending on the process.

6-2. Drain

This machine is equipped with a drain valve in the exhaust piping to prevent the liquid condensed on the exhaust side from accumulating inside the pump.
For positive liquid discharge of condensable gas connect a drain pipe to customers discharge connection area.
Periodically, discharge the remaining liquid manually or use other pump to discharge when this machine is stopped. If to discharge during the operation is under the vacuum, provide a structure that prevents backflow. It may have a flow back if this machine is running at that point.



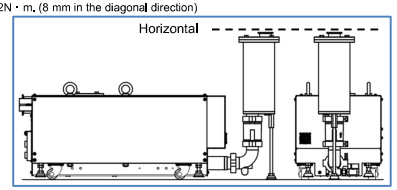
7. Operation

7-1. Pre-operation check

Before starting operation of this pump, reconfirm the following.

1. Make sure that the cooling water pipe, power connector, and signal connector are connected.
2. Open the cooling water valve and check that there is no cooling water leakage.
3. When supplying purge gas, connect the purge gas pipe and then supply purge gas. Check that there is no leakage of purge gas.
4. Supply power to the primary side.

- Remove the storage flange.
  When connecting the pipe, remove the storage flange and also the desiccants.
- For MS120A, blank either the vertical or horizontal exhaust port.
  MS120A has two inlet ports: horizontal and vertical. Be sure to attach a flange to the unused inlet port.
- Be sure to supply the required amount of cooling water.
  - Cooling water amount: at least 4.0 L/min.
  - Cooling water in/out pressure difference: 0.1 to 0.3 MPaG (gauge reading)
  - Cooling water temperature: 10 to 30˚C
- Attach the dedicated silencer to this unit with the pressure-resitant clamp / outer ring.
  Adjust the adjuster and install it as horizontally as possible. If necessary, adjust the adjusters while checking the level.The recommended tightening torque of the long nuts for the pressure-resistant clamp is 2N・m. (8 mm in the diagonal direction)



- Warm up for approx. 30 minutes (recommended) after startup.
  In order to make full use of the pump performance of this machine, it is recommended to warm up for approx. 30 minutes after startup.
- Avoid any operations that place a heavy load when starting the pump.
  If it takes longer to reach the steady rotation speed from the start, the inverter protection circuit works to stop as an alarm. Apply loads after reaching the steady rotation speed.

7-2. How to switch between LOCAL (manual) and REMOTE (remote)

Entering operation commands from the DRP controller is called LOCAL.
Entering operation commands from a sequence of higher-level devices via remote control wiring is called REMOTE.

1. Turn on the power.
   The initial screen appears
2. Press (LO/RE) on the DRP controller.

LOCAL/REMOTE switches.
The LO/RE lamp goes off during the "REMOTE" operation and lights up during the "LOCAL" operation.
Furthermore, when the power is cut off, it returns to the initial state (REMOTE).
However, if the power is restored in a few seconds, the state before the cutoff is maintained.
* Do not be selected "LOCAL" mode on MBP controller.

7-3. How to Start/Stop

7-3-1. LOCAL operation

Use with the included signal connector plugs attached.

■ How to start

- Press (RUN) on the DRP controller.

The unit starts and the RUN lamp on the controller lights up.

■ How to stop

- Press (STOP) on the DRP controller.

This unit stops and the RUN lamp on the controller goes off.

7-3-2. REMOTE operation

Use with the included signal connector plugs wired separately.

■ How to start

- Enter the start signal from the host side.

This unit starts.

■ How to stop

- Cut off the start signal from the host side.

This unit stops.

*Keep supplying cooling water and purge gas (CDA) for a certain period of time after the pump is stopped.

ULVAC SHOWCASE

You can download the instruction manual from here.

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