

# Oil Rotary Vacuum Pump [VS650A / VS750A]

The VS650A and VS750 are single stage oil rotary vane pumps. Design to provide low vibration and noise, the VS series eliminates the need for costly facility work. Both air cooled and water cooled models are available depending on customer installation requirements.



VS650A-A

## Features

- ▶ **High displacement single stage oil rotary vane pump:**  
Two models, 650m<sup>3</sup>/h and 750m<sup>3</sup>/h are available. Larger displacement can be obtained with combination of mechanical booster pump.
- ▶ **Low vibration:**  
Design to provide low vibration and noise, the VS series eliminates the need for costly facility work. The pump can be installed on an upper floor.
- ▶ **Easy maintenance:**  
Oil exchange cycle is longer due to a large oil tank (large oil capacity). Construction of oil tank is simple and easy to clean.
- ▶ **Integrated oil mist trap:**  
Oil mist trap is inside oil tank. Cartridge type filter is easily replaced.
- ▶ **Air cooled and water cooled models:**  
Air cooled and water cooled models are available depending on customer installation requirements. An oil cooler is used to reduce oil temperature increasing pump life.

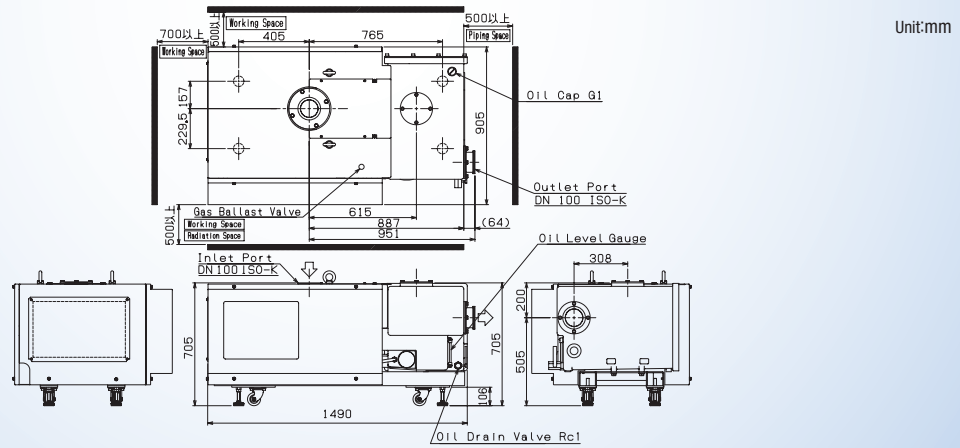
## Applications

- ▶ Evaporation, sputtering, ion plating
- ▶ Vacuum drying, freeze drying, vacuum degassing
- ▶ Leak test system
- ▶ Gas exchange, filling, vacuum insulating
- ▶ Heat treatment, melting furnace
- ▶ Other various kinds of vacuum systems

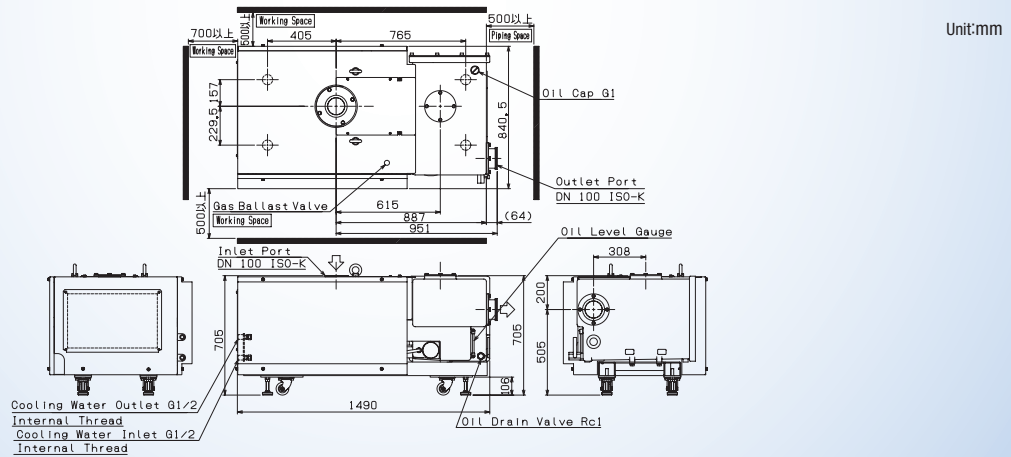
# Oil Rotary Vacuum Pump [VS650A / VS750A]

## ► Dimensions

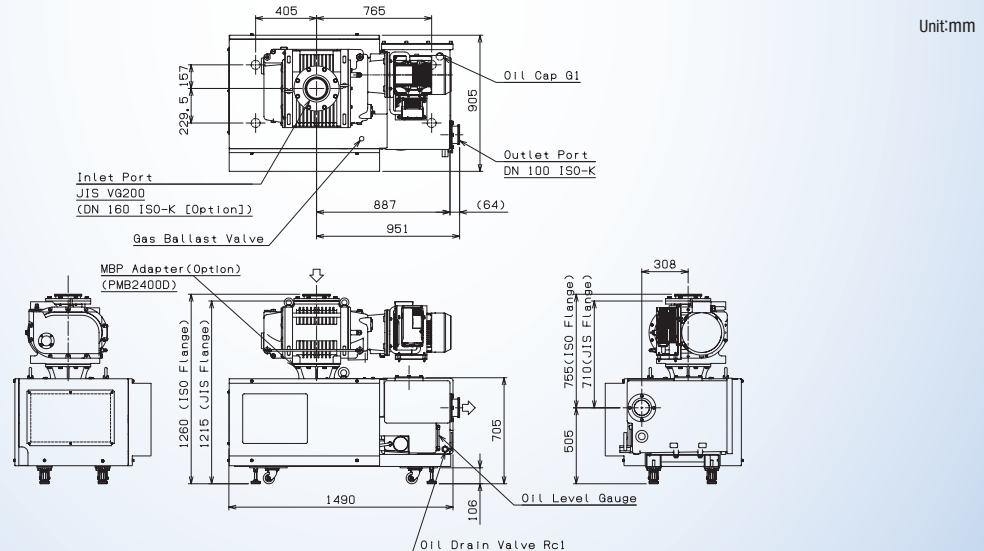
### VS650A-A / VS750A-A



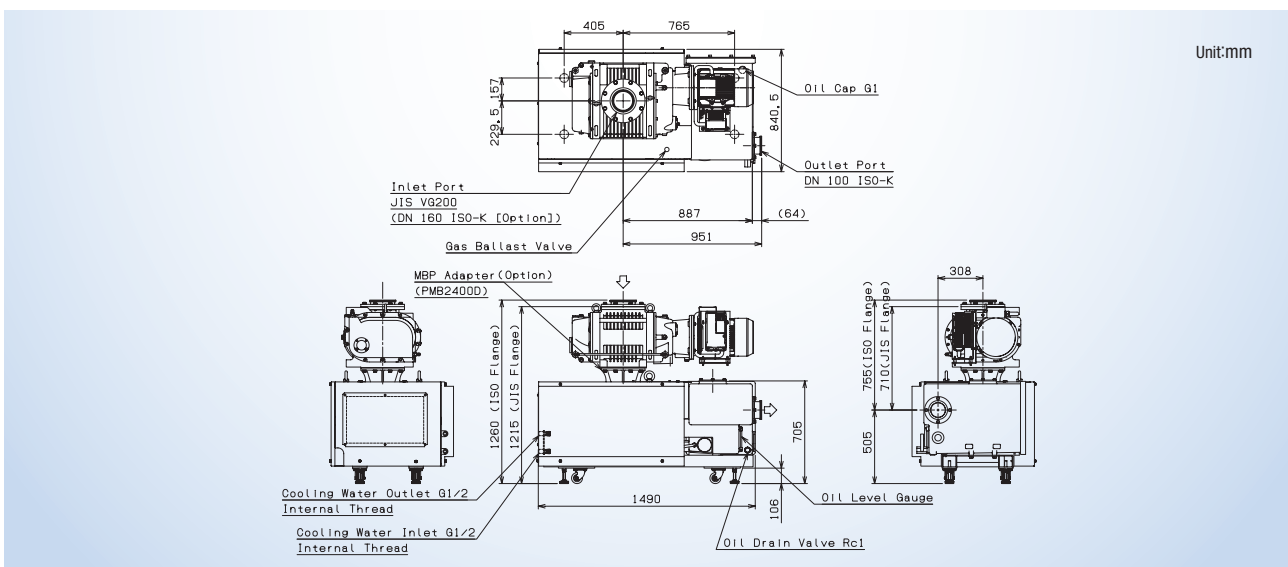
### VS650A-W / VS750A-W



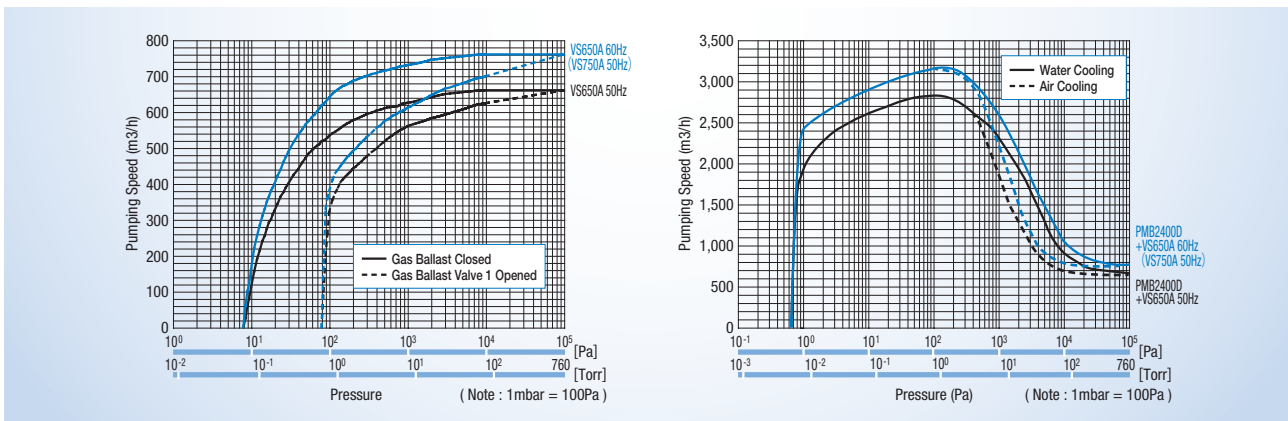
### PMB2400+VS650A-A / VS750A-A



PMB2400D+VS650A-W / VS750A-W



▶ Pumping Speed Curve



▶ Model Explanation

E.g. VS650A-W-02222-192211131

650m³/h (50Hz) [750m³/h (60Hz)] / totally enclosed external fan motor / multiple voltage / ISO-K flange  
Water cooling / 1 gas ballast valve (manual) / Japanese & English Instruction manual / Japanese Warning label

Model	Rev.	Naming	Pump head option	External option
VS650	A	W	0 2 2 2 2	1 9 2 2 1 1 1 3 1
			① ② ③ ④ ⑤	⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

<b>Model</b> 650 : 650m³/h (50Hz) 750 : 750m³/h (60Hz) 750 : 750m³/h (50Hz)*1
<b>Rev.</b> A : Current Rev.

<b>Naming</b> equal option ⑨ A : Air cooling W : Water cooling
① Structure 0 : Standard
② Seal 2 : FKM
③ Oil 2 : Mineral oil(R-7)
④ Vane 2 : Resin
⑤ Exhaust valve vane 2 : Stainless

⑥ Motor kind 1 : Totally enclosed external fan motor 2 : Explosion-protection(indoor)*2*3 4 : Flame-proof (indoor)*2*3
⑦ Motor voltage 9 : Multiple voltage A : Other (specified voltage)
⑧ Inlet/Outlet flange 2 : ISO-K flange 4 : JIS flange
⑨ Cooling method 1 : Air cooling 2 : Water cooling

⑩ Gas ballast valve 1 : 1 gas ballast valve (Manual) 3 : 2 gas ballast valves (Manual)
⑪ Oil filter 1 : With oil filter
⑫ Back flow prevention valve 1 : With spring
⑬ Instruction manual 3 : Japanese & English
⑭ Warning label 1 : Japanese 2 : English 3 : Simplified Chinese 4 : Traditional Chinese 5 : Korean

\* 1 VS750A is only 50Hz. It is impossible to run at 60Hz.  
\* 2 Explosion-resistant is available with only motor. (Explosion-protection motor / Flame-proof motor) Not attached thermostat and electrical box in the case of selecting explosion-resistant motor.  
\* 3 Multiple voltage motor is not available with Explosion-resistant motor.

# Oil Rotary Vacuum Pump [VS650A / VS750A]

Model		Specifications				Specifications (With MBP)					
		VS650A-A	VS650A-W	VS750A-A	VS750A-W	PMB2400D + VS650A-A	PMB2400D + VS650A-W	PMB2400D + VS750A-A	PMB2400D + VS750A-W		
Max. pumping speed	50Hz	m³/h	650		750		2500		3100		
		L/min	10833		12500		41667		51667		
		cfm	383		441		1471		1825		
	60Hz	m³/h	750		n/a		3100		n/a		
		L/min	12500		n/a		51667		n/a		
		cfm	441		n/a		1825		n/a		
Ultimate pressure *1	GP close	Pa	8				0.8				
		Torr	6.0.E-02				6.0.E-03				
		mbar	8.0.E-02				8.0.E-03				
	GP1 open	Pa	50				5				
		Torr	3.8.E-01				3.8.E-02				
	GP1-2 open	mbar	5.0.E-01				5.0.E-02				
Pa		60				6					
	Torr	4.5.E-01				4.5.E-02					
	mbar	6.0.E-01				6.0.E-02					
Max. water vapor tolerance *2	GP1 open	50Hz	Pa	4500	2500	5500	2500	1200	750	1600	700
			Torr	33.8	18.8	41.4	18.8	9.0	5.6	12.0	5.3
			mbar	45	25	55	25	12	7.5	16	7
		60Hz	Pa	5500	2500	n/a		1600	700	n/a	
			Torr	41.4	18.8	n/a		12.0	5.3	n/a	
			mbar	55	25	n/a		16	7	n/a	
	GP2 open	50Hz	Pa	6000	3800	7500	4000	2500	1200	2800	1200
			Torr	45.1	28.6	56.4	30.1	18.8	9.0	21.1	9.0
			mbar	60	38	75	40	25	12	28	12
		60Hz	Pa	7500	4000	n/a		2800	1200	n/a	
			Torr	56.4	30.1	n/a		21.1	9.0	n/a	
			mbar	75	40	n/a		28	12	n/a	
Max. water vapor capacity *2	GP1 open	50Hz	kg/h	17	11	24	13	16	10	24	11
		60Hz	kg/h	24	13	n/a		24	11	n/a	
	GP2 open	50Hz	kg/h	26	15	34	19	26	15	34	19
		60Hz	kg/h	34	19	n/a		34	19	n/a	
	Motor *3	Type	Totally enclosed external fan 3 phase AC motor				Totally enclosed external fan 3 phase AC motor				
		kw (poles)	22 (4)				MBP : 7.5 (2) + RP : 22 (4)				
HP (poles)		29.5 (2)				MBP : 10.1 (2) + RP : 29.5 (4)					
Power consumption *6		50Hz	8		11		9		12		
		60Hz	11		n/a		12		n/a		
Voltage		50Hz	200 ~ 240/380 ~ 415		200 ~ 240/380 ~ 415		200 ~ 240/380 ~ 415		200 ~ 240/380 ~ 415		
	60Hz	200 ~ 240/380 ~ 460		n/a		200 ~ 240/380 ~ 460		n/a			
Oil *4	ULVOIL R-7				MBP : ULVOIL R-4 + RP : ULVOIL R-7						
Oil capacity	L	23 ~ 27	25 ~ 30	23 ~ 27	25 ~ 30	MBP : 3.0 ~ 4.0 RP : 23 ~ 27	MBP : 3.6 ~ 4.0 RP : 25 ~ 30	MBP : 3.0 ~ 4.0 RP : 23 ~ 27	MBP : 3.6 ~ 4.0 RP : 25 ~ 30		
Cooling method		Air cooled	Water cooled	Air cooled	Water cooled	Air cooled *7	Water cooled	Air cooled *7	Water cooled		
Cooling water	Primary side pressure	MPa	—	≧ 0.5	—	≧ 0.5	—	≧ 0.5	—	≧ 0.5	
		psi	—	≧ 72.5	—	≧ 72.5	—	≧ 72.5	—	≧ 72.5	
	Inlet/outlet differential pressure	MPa	—	≧ 0.1	—	≧ 0.1	—	0.1	—	0.1	
		psi	—	≧ 14.5	—	≧ 14.5	—	14.5	—	14.5	
	Capacity	L/min	—	≧ 3.0	—	≧ 3.0	—	≧ 3.0	—	≧ 3.0	
Temperature	°C	—	5 ~ 30	—	5 ~ 30	—	5 ~ 30	—	5 ~ 30		
	F	—	41 ~ 86	—	41 ~ 86	—	41 ~ 86	—	41 ~ 86		
Inlet	DN 100 ISO-K				VG200 / DN 160 ISO-K (option)						
Outlet	DN 100 ISO-K				DN 100 ISO-K						
Weight	kg	806	800	802	796	1076	1070	1072	1066		
External dimensions W×D×H	mm	1490×905×705	1490×841×705	1490×905×705	1490×841×705	1490×905×1260	1490×841×1260	1490×905×1260	1490×841×1260		
Applicable standard	CE / cTUVus				CE / cTUVus						
Standard accessories	Oil for one pump, 1 set of instruction manual				Oil for one pump, 1 set of instruction manual						
Options	explosion-protection motor, flame-proof motor, specified voltage motor, JIS flange *5, gas ballast valve 2 (manual)				[For MBP] explosion-protection motor, flame-proof motor, specified voltage motor, ISO flange, Atmospheric pressure start type (Inverter) MBP adapter						

\*1 Measured with a Pirani vacuum gauge. (Approx. 0.8Pa when measured with a McLeod vacuum gauge.)

\*2 Water vapor tolerance and capacity are measured under following cooling water capacity. Cooling water temperature at inlet port is 26°C (78.8F).

	VS650A-W	VS750A-W
GP1 open	50Hz	3 L/min.
	60Hz	5 L/min.
GP1-2 open	50Hz	3 L/min.
	60Hz	5 L/min.

\*3 Increased safety explosion-resistant motor and pressure proof explosion-resistant flange motor are available as option. However, multiple voltage cannot be selected.

\*4 Other oil types are available, upon request.

\*5 Size to connect pipe changes when JIS flange is selected for inlet/outlet port.

\*6 At ultimate pressure

\*7 Only with inverter. At 400-50000Pa, the pumping speed specification of air cooled is reduced than that of the water cooled.

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