

Mechanical Booster Pump [PMB Series Ver. D]

By using together with dry vacuum pumps, oil rotary vacuum pumps or water-sealed vacuum pumps, mechanical booster pumps can increase pumping speed in the range between 10kPa to 0.1 Pa, where roughing pump pumping speed drops.

The PMB series Ver. D is a wide use mechanical booster pump with multiple voltage motor (high efficiency). It is possible to run with air-cooled depending on use condition. And surface treatment and atmospheric operation type are selectable as options.



PMB1200D

Features

- ▶ Possible to run with air-cooled depending on use condition.
Continuous operation under 200Pa. Pumping time to reach 200Pa needs to be within 10 minutes.
- ▶ Possible to select multiple voltage motor (either 200V class or multiple voltage)
Compatible with universal motor and optional explosion proof motor can be equipped. Compatible with high efficiency regulation (IE2/GB3/EPAAct).
- ▶ Excellent corrosion resistance surface treatment (Optional: T type)
High surface hardness and excellent corrosion resistance. The surfaces of all main parts have undergone anodic oxide coating to provide excellent corrosion resistance and surface rigidity. This can restrain scratch and corrosion inside of the pump.
- ▶ Atmospheric pressure start type effective for pumping time shortening (option: inverter)
Because the pump can start at the same time of roughing pump, pumping time can be shorter comparing with standard type.
- ▶ International standard for western market (Compliant with CE and cTUVus)

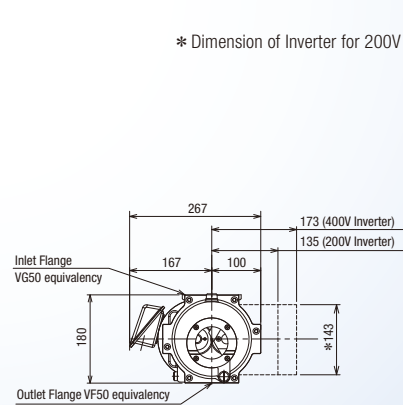
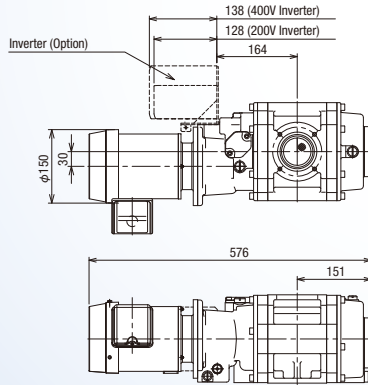
Applications

- ▶ Evaporation, sputtering, ion plating
- ▶ Vacuum dryer, freeze dryer, vacuum degassing
- ▶ Analytical instruments, leak test system
- ▶ Gas exchange, filling, vacuum insulating
- ▶ Heat treatment, melting furnace
- ▶ Other various kind of vacuum system

Mechanical Booster Pump [PMB Series Ver. D]

► Dimensions

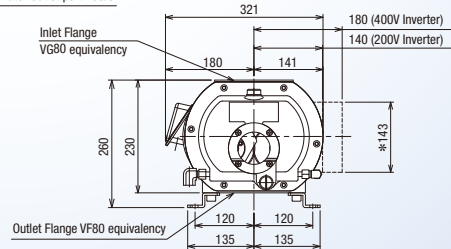
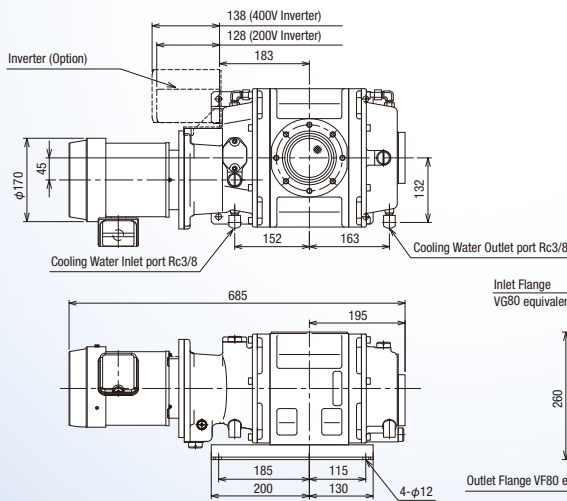
PMB100D



Unit: mm

* Dimension of Inverter for 200V and 400V class is same.

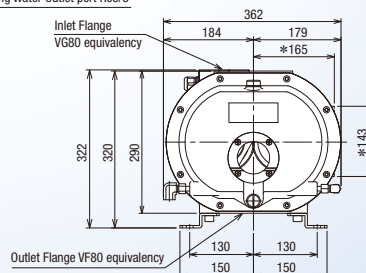
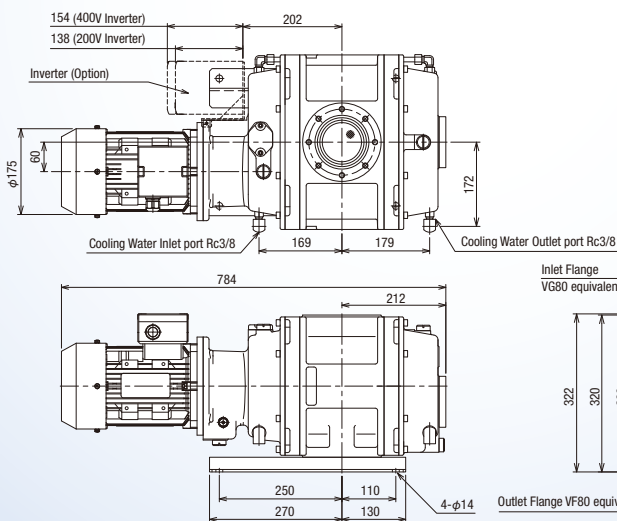
PMB300D



Unit: mm

* Dimension of Inverter for 200V and 400V class is same.

PMB600D



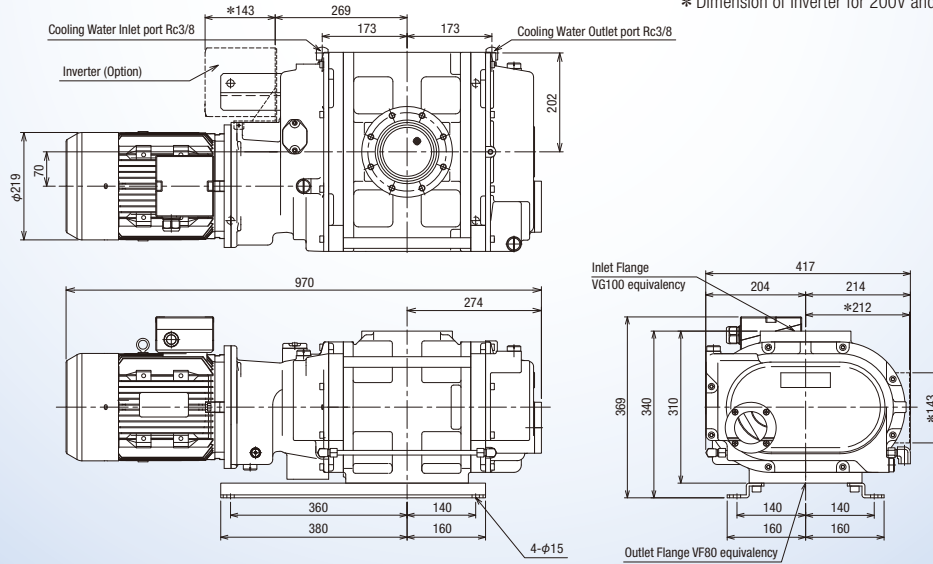
Unit: mm

* Dimension of Inverter for 200V and 400V class is same.

PMB1200D

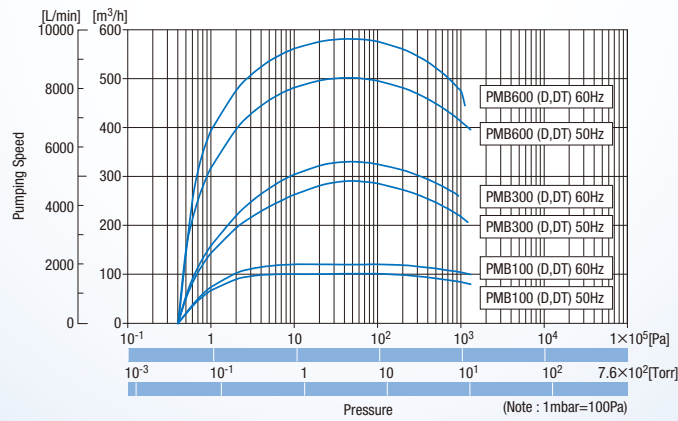
Unit: mm

* Dimension of Inverter for 200V and 400V class is same.



► Pumping Speed Curve

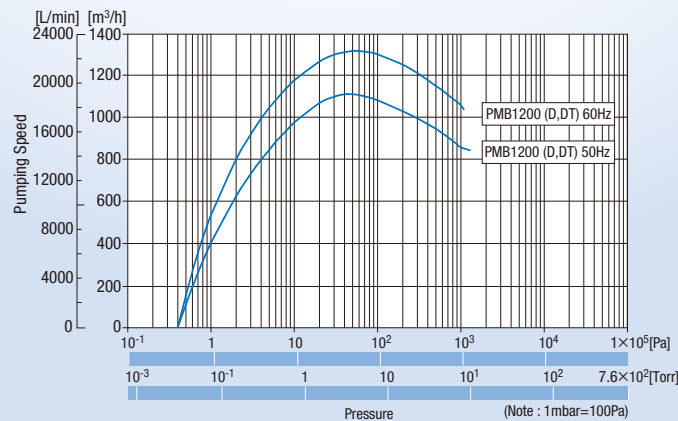
- PMB100D
- PMB300D
- PMB600D



Pumping Speed (JIS B 8316/1985)

Backing
 Vacuum pump: Standard
 Oil : ULVOIL R-4
 Gauge : Pirani
 Capacitance Manometer

- PMB1200D



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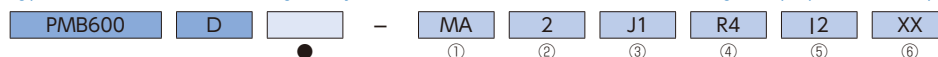
Specifications

Model *1		PMB100D (T)	PMB300D (T)	PMB600D (T)	PMB1200D (T)		
Designed pumping speed	50Hz	m ³ /h	95	280	500	1000	
		L/min	1580	4670	8330	16667	
		CFM	56	165	294	590	
	60Hz	m ³ /h	115	330	600	1200	
		L/min	1920	5500	10000	20000	
		CFM	68	194	353	706	
Maximum suction pressure	50Hz	Pa	9.3 × 10 ³	1.2 × 10 ³	1.3 × 10 ³		
		Torr	69	9	10		
		mbar	93	12	13		
	60Hz	Pa	6.2 × 10 ³	9.3 × 10 ²	1.1 × 10 ³		
		Torr	46	7	8.2		
		mbar	62	9.3	11		
Maximum allowable differential pressure	50Hz	Pa	8.0 × 10 ³	4.0 × 10 ³	7.3 × 10 ³		
		Torr	60	30	54.7		
		mbar	80	40	73		
	60Hz	Pa	5.6 × 10 ³	3.3 × 10 ³	6.0 × 10 ³		
		Torr	42	25	45		
		mbar	56	33	60		
Ultimate Pressure *2	Pa		4.0 × 10 ⁻¹		6.7 × 10 ⁻¹		
	Torr		3.0 × 10 ⁻³		5.0 × 10 ⁻³		
	mbar		4.0 × 10 ⁻³		6.7 × 10 ⁻³		
Allowable drive pressure	Pa		— 1.0 × 10 ⁵ (atmospheric pressure start type)				
	Torr		— 760 (atmospheric pressure start type)				
	mbar		— 10000 (atmospheric pressure start type)				
Motor *3	kW (poles)		0.4 (2)	0.75 (2)	2.2 (2)	3.7 (2)	
		HP (poles)		0.54 (2)	1.0 (2)	2.95 (2)	4.96 (2)
	200V class	50Hz			200V		
		60Hz			200V / 220V		
	Multiple voltage	50Hz			220V - 240V / 380V - 415V		
		60Hz			208V - 240V / 380V - 460V		
Oil *4			ULVOIL R-4				
Oil quantity	L	0.35	0.7	1.5	1.9		
Cooling method *5		Air cooled		Air cooled / Water cooled			
Cooling water	Primary side pressure	MPa	—	0.3	—		
		psi	—	43.5	—		
	Inlet/outlet differential pressure	MPa	—	—	0.01	—	
		psi	—	—	1.45	—	
	Volume	L/min	—	2	—	3	
	Temperature	°C	—	—	5 - 30	—	
°F		—	—	41 - 86	—		
Inlet port JIS-B-2290		VG50 / KF50 or ISO63F (optional)	VG80 / ISO80F or 100F (optional)	VG100 / ISO100F (optional)			
Outlet port JIS-B-2290		VF50 / KF50 or ISO64F (optional)	VF80 / ISO80F or 100F (optional)	VF100 / ISO100F (optional)			
External Dimensions W × D × H	mm	267 × 576 × 180	321 × 685 × 260	362 × 784 × 320	417 × 970 × 340		
Weight *6	kg	26	51	82	115		
Standard roughing pump *7		VD401	VD601	VD901	VS2401		
Certification *8			CE, cTUVus				
Optional		Surface treatment, adapter flange, explosion proof motor *9, atmospheric pressure start type (Inverter), lubrication oil, lubrication chamber evacuation					
Atmospheric pressure start type Inverter specification / voltage			12 / 200V - 240V (50Hz / 60Hz)				
			14 / 380V - 480V (50Hz / 60Hz)				

- *1 No surface treatment (standard model). Optional surface treatment (Alumite) is available (PMB***DT model).
 *2 Measured by Pirani vacuum gauge. It will be about 4.0 × 10⁻²Pa when measured by MacLeod vacuum gauge.
 *3 Either 200V class or multiple voltage motor is selectable. Multiple voltage motor is not available with explosion proof motor.
 *4 Synthetic (R-7000) or fluorine oil (J25F) is selectable as option.
 *5 PMB300: Water cooling is required when continuous running at 530Pa or more.
 PMB600D, 1200D: Cooling water is not required for operation below 200Pa and required for continuous operation at 200Pa or more.
 Water cooling is required if it takes more than 10 minutes to reach to air cooling operation pressure range (530/200Pa) from starting pressure.
 *6 Weight of D and DT model is same.
 *7 Performance of these pumps could change depending on roughing pump. Above data is based on standard roughing pump.
 *8 Complied with cTUVus recognition when water cooling operation (except PMB100D) is selected and optional inverter (atmospheric pressure operation) is not mounted from the factory.
 *9 Pressure proof explosion-resistant flange motor (D2G4) and increased safety explosion-resistant motor (EG3) indoor type are selectable as option.

Model explanation

E.g. PMB600D Without surface coating / Totally enclosed external fan motor / 200V class / JIS flange / Oil (R-4) / with Inverter (I2)



Pump head option

- Surface treatment
- None : Without (std)
- T : Surface treatment

External option

- ① Motor kind
 - MA : Totally enclosed external fan motor (std)
 - MD : Explosion-protection (indoor)
 - MF : Flame-proof (indoor)
- ② Motor voltage
 - 2 : 200V class (std)
 - 4 : Multiple
 - 9 : Other (specified voltage)
- ③ Inlet / outlet flange
 - J1 : JIS (std)
 - A1 : Inlet ISO (adapter)
 - A2 : Inlet / outlet ISO (adapter)
- ④ Oil
 - R4 : Mineral oil (R-4; std)
 - S7 : Synthetic oil (R-7000)
 - F1 : Fluorinated oil (J25F)
- ⑤ Inverter (Atmosphere start type)
 - XX : None (std)
 - I2 : 200V class
 - I4 : 400V class
- ⑥ Lubrication chamber evacuation
 - XX : None (std)
 - B1 : With port

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