Turbo Molecular Pump [UTM Series]

The UTM series is an all the blades type turbo molecular pump which carries a pivot bearing (lower side) and a magnetic bearing (upper side).
Mechanical contact at the time of a high velocity revolution is reduced by adoption of the pivot bearing.
Moreover, a low vibration and a high compression ratio are realized.

UTM-150

Features

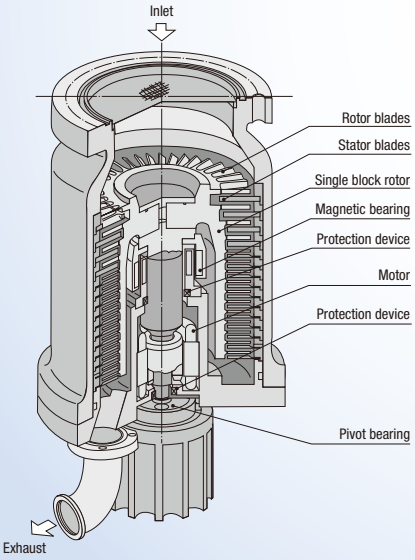
- Magnetic bearing was adopted as the upper part, pivot bearing was adopted as the lower part, and mechanical contact at the time of a high velocity revolution is eliminated.
  Thereby, bearing exchange and an oil change become unnecessary and realize extended life-span of bearing.
- Fine dynamic balance rotor and highly efficient bearing by design of original blades realize a high velocity revolution, and inlet performance (high compression ratio) of low molecular weight gas, such as H_2 and He.
- A pivot bearing and fluoride oil (oil whose saturated vapor pressure is chemically stable and is low) are adopted, and environment without the infinite oil near zero is realized.
  Achievement of clean, ultrahigh vacuum is possible.
- Adoption of a fine dynamic balance rotor and a highly efficient bearing realizes low noise and low vibration.

Applications

- Main pumping systems for analysis equipment, research-and-development equipment, and an experimental device.
- Main pumping system for low molecule gas, evacuation such as H_2 and He.
- Main pumping systems for analysis equipment and evaluation equipment, which are vibration sensitive.

Turbo Molecular Pump [UTM Series]

Dimensions

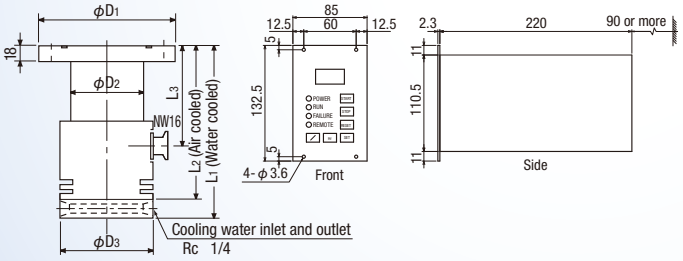


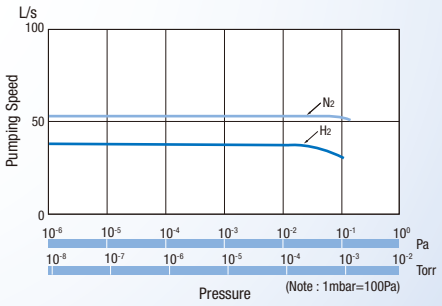
Unit: mm

Model	Inlet port	ϕD_1	ϕD_2	ϕD_3	L_1	L_2	L_3
UTM-50	VG65	145	79	100	186	166	110
	ICF114	114	76	100	186	166	110
UTM-150	VG100	185	130	110	230	210	157
	ICF152	152	130	110	230	210	157
UTM-300	VG100	185	168	140	266	246	205
	ICF152	152	168	140	266	246	205
UTM-500	VG235	235	224	159	308	288	235
	ICF203	203	224	159	313	293	240

UTM-50

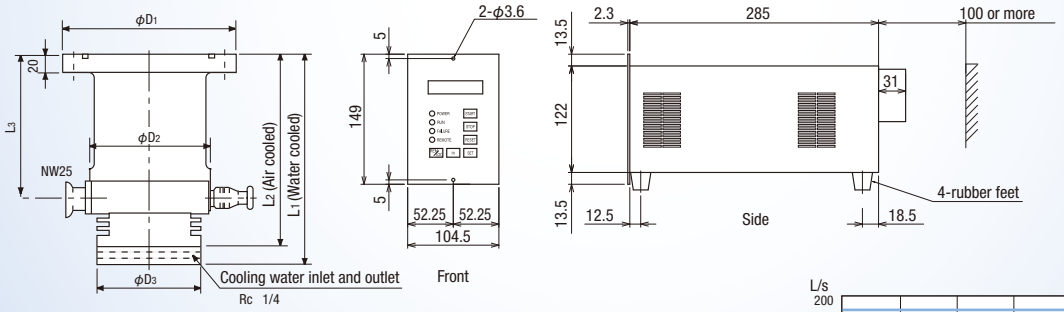
Unit: mm

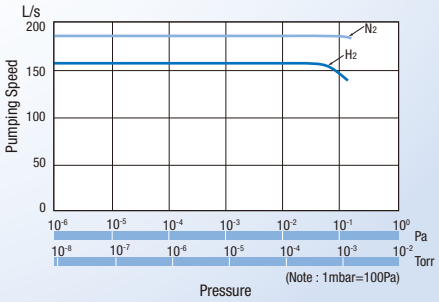




UTM-150

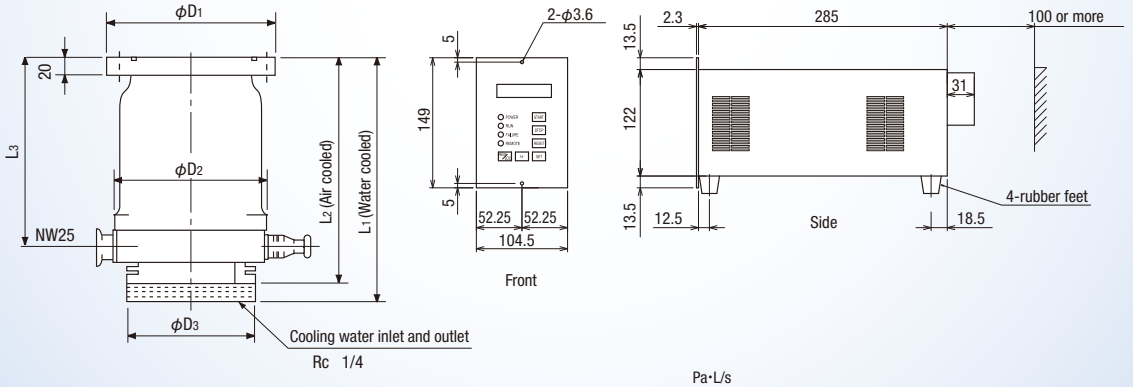
Unit: mm

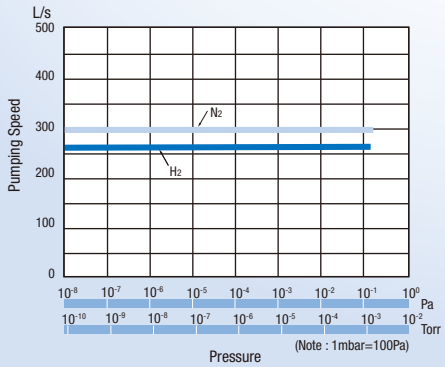


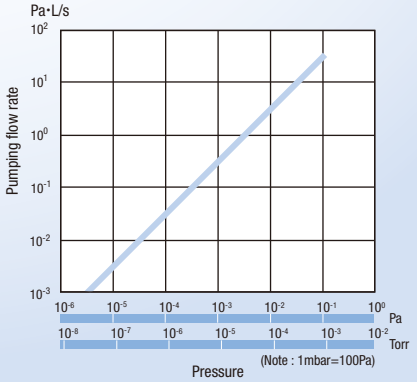


UTM-300

Unit: mm

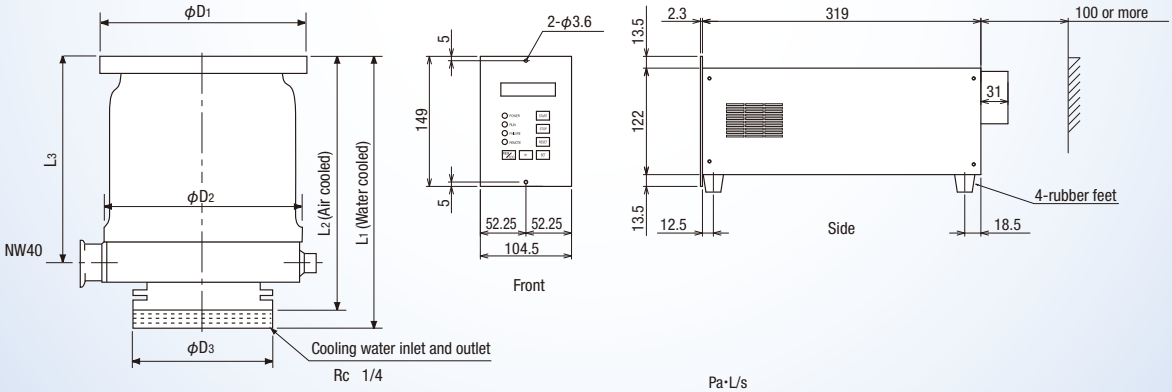


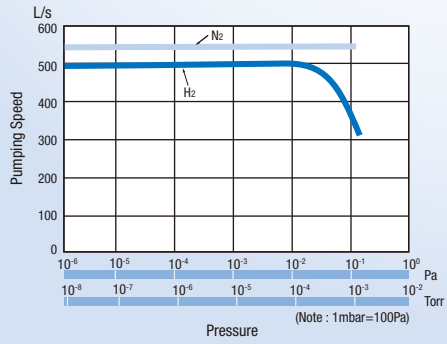


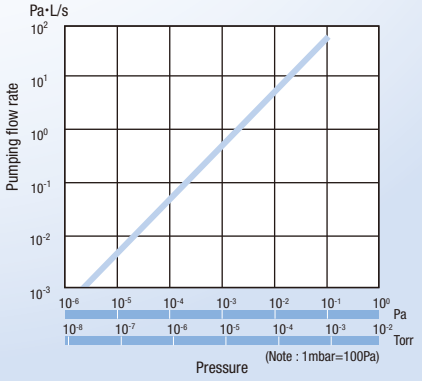


UTM-500

Unit: mm







Turbo Molecular Pump [UTM Series]

Specifications

Model				UTM-50		UTM-150		UTM-300		UTM-500	
Pump	Flange size	Inlet		VG65	ICF114	VG100	ICF152	VG100	ICF152	VG150	ICF203
		Outlet		NW16		NW25				NW40	
	Pumping speed *1 *2	L/sec	N_2	50		190		300		550	
			H_2	40		160		260		500	
	Ultimate pressure *1 *3	Pa		10^{-7}		10^{-8}					
		Torr		10^{-9}		10^{-10}					
		mbar		10^{-9}		10^{-10}					
	Max. compression rate *1 *3	N_2		$>10^8$							
		H_2		10^3		10^4				10^5	
	Max. pressure at inlet of N_2 (at Max. flow) *1 *4	Pa		0.13							
		Torr		9.7×10^{-4}							
		mbar		1.3×10^{-3}							
	Max. pressure at outlet of N_2 (at Max. flow) *1 *4	Pa		13							
		Torr		9.7×10^{-2}							
		mbar		1.3×10^{-1}							
	Rotational speed	rpm		90000		72000		54000		40200	
	Acceleration time/Deceleration time	min		Approx. 2/3		Approx. 3/4		Approx. 4/7		Approx. 8/8	
	Bearing	Upper side		Magnetic bearing							
		Lower side		Pivot bearing							
	Lubricating oil			Fluorine oil							
	Oil capacity	mL		Approx.10						Approx. 40	
	Rotor blade surface treatment			None							
	Baking temperature	˚C (˚F)		≦90 (194)							
	Cooling			Water cooled/Air cooled							
	Cooling water port			Rc1/4							
	Flow rate of cooling water	L/min		≧0.5							
	Pressure drop of cooling water between inlet and outlet	MPa (psi)		≧0.01 (≧1.5)							
	Weight	kg/lb		Approx. 3		Approx. 6		Approx. 10		Approx. 16	
	Recommended backing vacuum pump *5	m^3/h		3		6		12		18	
		L/min		50		100		200		300	
		CFM		1.8		3.5		7.0		10.6	
Power supply	Power consumption	kVA		0.34		0.59		0.56		0.89	
	Input voltage	ACV		100 to 240							
	Input frequency	Hz		50/60							
	Phase			Single							
	Motor drive system			VVVF							
	Output frequency	Hz		Approx.1500		Approx.1200		Approx.900		Approx. 670	
	Ambient temperature	˚C (˚F)		0 to 40 (32 to 104)							
	Weight	kg		Approx. 2.2		Approx. 3.9				Approx. 4.5	

Note: The values in the table are representative of actual measurement values and are not guaranteed.
∗1 These are values measured according to the JVIS005, or calculated values based on these measured values.
∗2 Without the Protecting metal net.
∗3 Range.
∗4 These are values measured under the condition of standard surface treatment, and measured with standard backing pump.
When continuous long term operation near the maxmum inlet port pressure will be maintained, please consult the manufacturer (JVIS005 standard item9).
∗5 Select a suitable, larger capacity pump depending on the gas flow rate.

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