

Turbo Molecular Pump Unit YTP Series

The YTP series provides high vacuum pumping units consisting of a ULVAC turbo-molecular pump (UTM series), oil-sealed rotary vacuum pump, fore valve, Pirani vacuum gauge, and a control system. Pumping from atmospheric pressure to the high vacuum range is possible using this unit alone. The series includes 4 models with pumping speeds of 50, 190, 300, and 550 L/s.*1

Automatic and manual operation models are available.

* 1: The 550 L/s (YTP-500) is a custom-made model.

Applications

- Vacuum pumping unit for various analytical equipment
- Roughing vacuum pump for accelerators and beam lines
- Vacuum pumping unit for experimental equipment.



YTP-150SA

Features

- Pumping from atmospheric pressure to high vacuum is possible with a single unit.
This is a high vacuum pumping unit combining a turbo-molecular pump (UTM series) with an oil-sealed rotary vacuum pump. With this single unit pumping from atmospheric pressure to the high vacuum range is possible.
- Clean vacuum is easily obtained.
- An AC100 V power supply is the only utility required.
- Complete power outage countermeasures
When a power outage occurs the fore valve automatically closes and the inside of the oil-sealed rotary vacuum pump is vented. When power is returned the unit does not resume pumping. In addition, there is no need to vent the turbo-molecular pump.
- Various models are available
Automatic models (YTP-SA series) and manual models (YTP-M series) are available with 4 pumping speeds.*1
In addition, the CF flange or JIS VG flange can be selected for the suction port.
- Pumping to the ultra-high vacuum region is possible.
Pumping to the ultra-high vacuum range is possible when an optional turbo-molecular pump bake jacket is attached and bake-out is executed. (Sufficient bakeout on the equipment side is also required.)
- Excellent ultra-high vacuum capabilities
The H₂ pumping speed of the ULVAC turbo-molecular pump (UTM series) is greatly increased through optimization of the turbine fins (H₂ is the primary remaining gas in ultra-high vacuums).
- Easy transport with lockable casters.
- Easy operation

With YTP-SA series units, each unit starts operating and pumps to the high vacuum range with a single push of the start/stop button. Operations are stopped by pressing the same button.

- Safety design with various interlocks
YTP-SA series units contain various interlocks. When a problem occurs the unit is safely stopped automatically and no load remains on any unit.
- External control is possible
YTP-SA series units can be started and stopped by dry contact points from outside. In addition, dry contact points can be output from YTP-SA units in order to convey various information including completion of start operations, completion of stop operations, and various alarms.
- Venting is not required after stopping turbo-molecular pump operation.
Since the saturation vapor pressure of the fluorine oil used in the turbo-molecular pump is on the order of 10⁻¹¹ Pa (at 20 °C), the vacuum is oil-free.
- Oil and bearing replacements are unnecessary.
Troublesome oil and bearing replacements are unnecessary with ULVAC turbo-molecular pumps due to the use of a high performance bearing. The operation cost is therefore also held to a minimum.
- Roughing evacuation can be checked.
With a Pirani vacuum gauge included as standard equipment, the pressure during roughing evacuation can be checked.

Specifications

Item	Model ¹	YTP-50	YTP-150	YTP-300	YTP-500 ⁶		
Turbo-molecular pump	Ultimate pressure ^{2,3}	Pa	at the level of 10 ⁻⁷		at the level of 10 ⁻⁸		
	Maximum compression ratio ³	N ₂	at the level of 10 ⁻⁸ or more				
		H ₂	at the level of 10 ³	at the level of 10 ⁴		at the level of 10 ⁵	
	Pumping speed ^{3,7}	L/s	N ₂	50	190	300	550
			H ₂	40	160	260	500
	Maximum suction port pressure ⁴	Pa	0.13				
	Maximum exhaust port pressure ⁴		13				
	Startup/stop time	min	2 / 3	3 / 4	4 / 7	8 / 8	
	Bearing method		Upper: Permanent magnet bearing / Lower: Pivot bearing				
	Lubricating oil		Flourine oil				
	Oil capacity	cc	Approx. 10			Approx. 40	
	Main unit baking temperature		90 °C or less				
Main unit weight	kg	Approx. 3	Approx. 6	Approx. 10	Approx. 16		
Model		UTM-50	UTM-150	UTM-300	UTM-500		
Oil sealed rotary vacuum pump	Ultimate pressure	Pa	6.7 x 10 ⁻²				
	Pumping speed (L/min)	50 Hz	50	100	200		
		60 Hz	60	120	240		
	Oil capacity	cc	430	850	900		
	Oil type		SMR-100				
Model		GVD-050A	GVD-100A	GVD-200A			
Suction port flange	CF	114	152	203			
	JIS/VG ⁶	65	100	150			
Exhaust port size		Rc 3/3 (PT 3/4)	Rc1 (PT1)				
Voltage		Single phase AC100 V (50/60 Hz)					
Power capacity	kVA	1.3	1.8	1.8	2.1		
Power consumption during stable operation	kVA	0.7	1.0	1.2			
TMP back pressure and rough pressure monitoring		Pirani vacuum gauge (10 ⁻¹ -2.7 x 10 ³ Pa)					
Control output ⁵		Complete startup / stop complete / ALARM /external vacuum gauge ON /OFF signals					
Control input ⁵		REMOTE / LOCAL · START / STOP · pumping condition input signals					
Surrounding temperature	°C	10-30					
External dimensions W x D x H ⁸	mm	CF	400 x 580 x 430	400 x 600 x 420	450 x 650 x 440	450 x 750 x 543	
		JIS/VG ⁶	400 x 580 x 430	400 x 600 x 420	450 x 650 x 440	450 x 750 x 538	
Weight	kg	YTP-SA	55	72	86	99	
		YTP-M	54	71	85	98	

* 1 Common to YTP-M-SA (type I, II, and III) units

* 2 Value after bakeout of TMP unit

* 3 Values obtained directly by measurement using JVIS 005 standards or based on measurements using JVIS 005 standards.

* 4 Measurement values for pumping under the designated cooling conditions using N₂ gas or gas with lower molecular weight. When continuous long-term

operation near the maximum suction port pressure/exhaust port pressure will be executed, consult with the maker.

* 5 YTP-SA series only

* 6 Made to order

* 7 Pumping speeds obtained with no protective metal net installed.

* 8 W=Width, D=Depth, H=Height

External Dimension Diagram

