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VACUUM PUMP
Operating Manual

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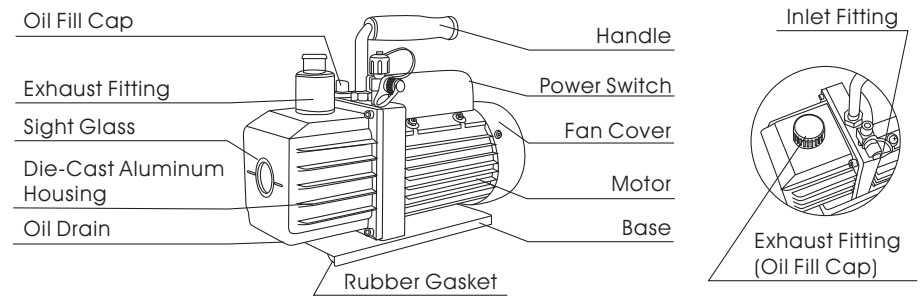
Ⅰ.Pump components



Ⅱ.Operating Manual

1.Before operating

All motors are designed for operating voltages plus or minus 10% of the normal rating. Single Voltage motors are supplied fully connected and ready to operate.

(a) Check the voltage and frequency at the outlet and ensure it matches the specifications on the pump motor metal plate. Ensure that the ON-OFF switch is in the OFF position before connecting the pump to a power source. Remove and discard the exhaust plug from the exhaust fitting.

(b) Fill the oil reservoir with oil before activate the pump. Remove the Oil Fill cap and add oil until oil shows at the bottom of the sight glass. Refer to technical data in manual for the correct oil capacity of pump.

(c) Place back the Oil Fill cap and remove the cap from the inlet fitting. Turn the motor switch to ON position. Place back the cap on the inlet fitting when the pump runs smoothly. This may take 2 to 30 seconds depending on the ambient temperature. After the pump operates for approximately one minute, check the sight glass for proper oil level, which should be aligned with the sight glass Oil Level line. Refill oil if necessary.

Note: The oil level should be aligned with the indicating line on the sight glass when the pump is running. Insufficient oil filled will result in poor vacuum performance. Excessive of oil can result in overflowing of oil from the exhaust fitting.

1.To shut off pump after use

To prolong pump life span and smooth start-up, these procedures to shut off pump should be followed.

(a) Turn off the manifold valve between the pump and the system.

(b) Remove the hose from the pump inlet.

(c) Cover the inlet port openings to prevent any contamination or foreign particles from entering the port.

Ⅲ.Maintenance

1.Vacuum pump oil:

The condition and type of oil used in any high performance vacuum pump are extremely important in determining the ultimate attainable vacuum. It is recommended to use the High Performance Vacuum Pump Oil, which is specifically blended to maintain maximum viscosity at normal running temperatures and to improve cold weather start up.

2.Oil Change Procedure

(a) Ensure the pump is warmed up.

(b) Remove the Oil Drain cap. Drain off contaminated oil into a container and dispose of it properly. Oil can be removed from the pump by opening the inlet and partially blocking the exhaust with a cloth while the pump is running. Do not operate the pump for more than 20 seconds using this method.

(c) When the drainage of oil is completed, tilt the pump forward to remove the residual oil.

(d) Place back the Oil Drain cap. Remove the Oil Fill cap and fill the oil reservoir with new vacuum pump oil until the oil level is seen at the bottom of the sight glass.

(e) Ensure that the inlet ports are covered before turn on the pump. Allow it to run for one minute to check the oil level. If the oil level is below the sight glass Oil Level line, fill oil slowly (with the pump running) until the oil reaches the sight glass Oil Level line. Place back the Oil Fill cap, ensure the inlet is covered and the oil drain cap is closed tightly.

(f) 1) If the oil is badly contaminated with sludge that forms during operation, you may need to remove the oil reservoir cover and wipe it.

2) The alternative method to deal with heavily contaminated oil is to force the oil from the pump reservoir. Leave the pump to run until it is warmed up. While the pump is still running, remove the oil drain cap and restrict the exhaust slightly. This will back-pressure the oil reservoir and purges the oil with contaminants. Turn off the pump when oil stops flowing.

3) Repeat this procedure as required until the contaminants are removed completely.

4) Replace the Oil Drain cap and refill the oil reservoir to the proper oil level with clean vacuum pump oil.

Ⅳ.Troubleshooting Guide

Following guide will help you to recover the functionality if any malfunction occurs:

1.Failure To Start

Check the operating voltage. The pumps are designed to start at ±10% operating voltage (loaded) at 41 ℉ . However, if exceeded the maximum voltage, switch malfunction may occur.

2. Oil Leakage

(a) Ensure the oil is not a spillage from vacuum pump, etc.

(b) If leakage exists, the housing gasket or the shaft seal may need to be replaced. If leakage exists in the area of the oil drain plug, you may need to reseal the plug using a commercial pipe thread sealer.

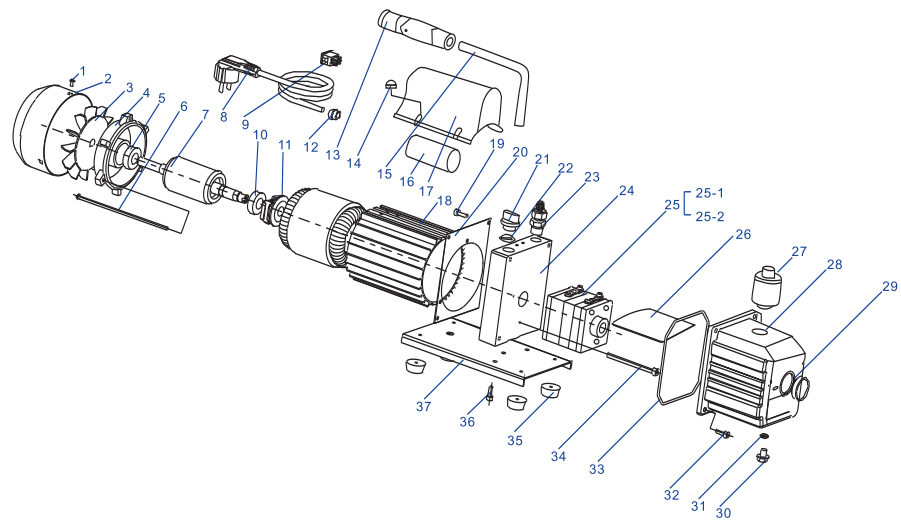
3.Failure To Attain A Good Vacuum

(a) Ensure the vacuum gauge and all connections are in good condition and leakfree. You can confirm leakage by monitoring the vacuum with a thermistor gauge while applying vacuum pump oil at connections or suspected leak points. The vacuum will improve briefly while the oil is sealing the leak.

(b) Ensure the pump oil is clean. A badly contaminated pump may require several oil flushes.

(c) Ensure the oil is at the proper level. For optimum pump operation, the oil must be even with the Oil Level line on the sight glass when the pump is running. Do not overfill as operating temperatures will cause the oil to expand, which will appear at a higher level than when the pump is not running. To check the oil level, start the pump with the inlet covered. Check the oil level in the sight glass. Add oil if necessary.

Ⅴ.Technical Drawing



1	Cross screw
2	Fan cover
3	Fan
4	Motor cover
5	Bearing
6	Cross screw
7	Motor rotor
8	Power supply cords
9	Power switch
10	Bearing
11	Centrifugal switch
12	Insulating bushing
13	Handle slipcover
14	Nut
15	Handle
16	Capacitor
17	Junction box
18	Motor hull
19	Screw
20	Trestle cover board

21	Oil fill port		
22	Seal		
23	Inlet fitting		
24	Trestle		
25	Pump body	25-1	Rotary-vane
		25-2	Rotary-vane spring
26	Cap board		
27	Exhaust fitting		
28	Die cast aluminum housing		
29	Sight glass		
30	Oil cap		
31	Oil drain gasket		
32	Screw		
33	Housing gasket		
34	Screw		
35	Rubber foot		
36	Screw		
37	Base		

VI.Technical Drawing

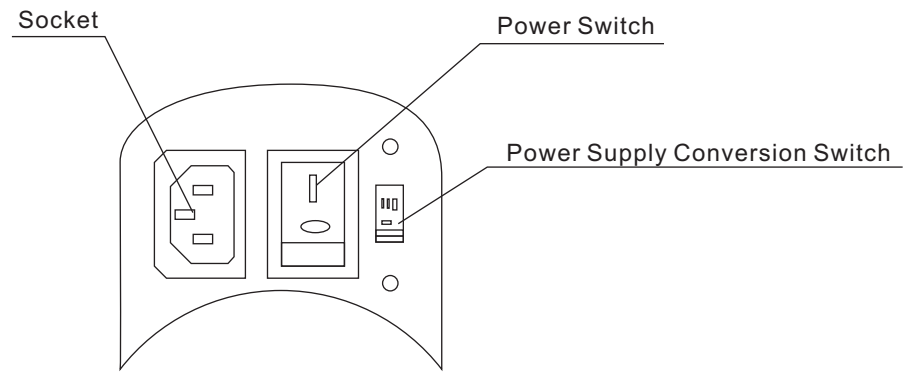
		Dual Stage Vacuum Pump							
Model		TT-VP2		TT-VP3		TT-VP4		TT-VP5	
Voltage		220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz
Flow rate	CFM	1.5	1.8	2.5	3.0	3.5	4.0	4.5	5.0
	L/min	42	50	70	84	100	114	128	142
Ultimate Vacuum	Pa	3×10^{-1}		3×10^{-1}		3×10^{-1}		3×10^{-1}	
	mbar	0.003		0.003		0.003		0.003	
	Microns	25		25		25		25	
Motor (Hp)		1/4		1/3		1/3		1/2	
Intake Fitting		1/4 " Flare		1/4 " Flare		1/4 " &3/8 " Flare		1/4 " &3/8 " Flare	
Oil Capacity (ml)		200		250		350		330	
Dimensions(mm)		308×124×230		315×124×240		335×138×250		335×138×250	
Net Weight(kg)		7.5		8.6		11.2		11.4	

		Dual Stage Vacuum Pump					
Model		TT-VP7		TT-VP9		TT-VP12	
Voltage		220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz
Flow rate	CFM	6.0	7.0	8.0	9.0	10	12
	L/min	170	198	226	254	283	340
Ultimate Vacuum	Pa	3×10^{-1}		3×10^{-1}		3×10^{-1}	
	mbar	0.003		0.003		0.003	
	Microns	25		25		25	
Motor (Hp)		3/4		1		1	
Intake Fitting		1/4 " &3/8 " Flare		1/4 " &3/8 " Flare		1/4 " &3/8 " Flare	
Oil Capacity (ml)		700		590		590	
Dimensions(mm)		400×145×270		400×145×270		400×145×270	
Net Weight(kg)		16.5		16.7		16.7	

VII.Dual Voltage & Dual Frequency Series

1. Outlook Structure

Use below outlook drawing for better understanding of " Dual Voltage & Dual Frequency " Series.



2. Technical Parameter

		Dual Voltage Vacuum Pump													
Model		TT-VP2D		TT-VP3D		TT-VP4D		TT-VP5D		TT-VP7D		TT-VP9D		TT-VP12D	
Voltage		220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz	220V ~50Hz	110V ~60Hz
Flow rate	CFM	1.5	1.8	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0	10	12
	L/min	42	50	70	84	100	114	128	142	170	198	226	254	283	340
Ultimate Vacuum	Pa	3×10^{-1}		3×10^{-1}		3×10^{-1}		3×10^{-1}		3×10^{-1}		3×10^{-1}		3×10^{-1}	
	mbar	0.003		0.003		0.003		0.003		0.003		0.003		0.003	
	Microns	25		25		25		25		25		25		25	
Motor (Hp)		1/4		1/3		1/3		1/2		3/4		1		1	
Intake Fitting		1/4"Flare		1/4"Flare		1/4 "&3/8 " Flare		1/4 "&3/8 " Flare		1/4 "&3/8 " Flare		1/4 "&3/8 " Flare		1/4 "&3/8 " Flare	
Oil Capacity (ml)		200		250		350		330		700		590		590	
Dimensions(mm)		308×124×230		315×124×240		335×138×250		335×138×250		400×145×270		400×145×270		400×145×270	
Net Weight(kg)		8.4		8.6		11.2		11.4		16.5		16.7		16.7	

Note:

1. This product operates in ambient temperature: 5℃~40℃

2. Power Supply of the products are 110-120V/60Hz

220-240V/50-60Hz

Check power supply parameter before using the vacuum pump and ensure the " Power Supply Conversion Switch " is set at the right place:110V or 220V.

3.This product is equipped with Thermal Protection function:

If the ambient temperature is too hot or the voltage is too high, the product may stop functioning. It is recommended not to switch off the power supply immediately.

If the product re-starts automatically after 3 minutes, it is recommended to cool the product by lowering the ambient temperature or power supply voltage to prolong the lifespan of the vacuum pump.