VACUUM PUMP

COOLTECH

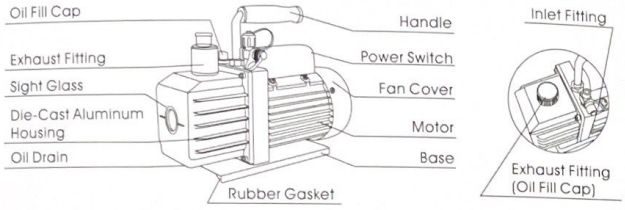
Air Conditioner Global Support

Operating Manual

CE

COOLTECH

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 show at the bottom sight glass. Refer to technical data in manual for the correct oil for pump.

(c) Place back the Oil Fill cap and remove the inlet fitting. Turn the motor switch to ON position. Place back the inlet fitting when the pump runs smoothly. This may take a few seconds on the ambient temperature. After the pump operates 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.

COOLTECH

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 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 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 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 purge the oil with contaminants. Turn off the pump when oil stop flowing.

3) Repeat this procedure as required until the contaminants is 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 should there be any malfunction occurs:

1.Failure To Start

Check the operating voltage. The pumps are designed to start at ±10% operating voltage (loaded) at 41°F. 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

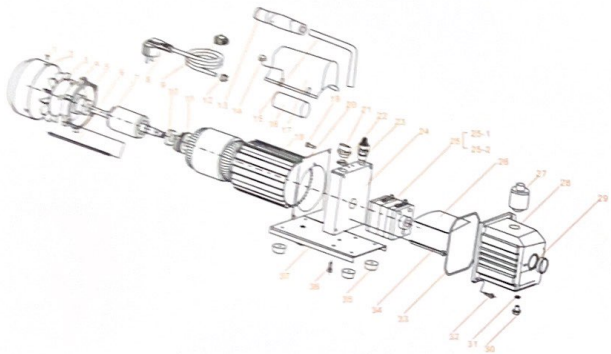
(a) Ensure the vacuum gauge and all connections are in good condition and leakfree. You can confirm leakage by monitoring the vacuum with a thermistor gauge while applying vacuum pump oil at connections or suspected leak points. The vacuum will improve briefly while the oil is sealing the leak.

(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.

COOLTECH

V. Technical Drawing



1	Cross screw	21	Oil fill port
2	Fan cover	22	Seal
3	Fan	23	Inlet fitting
4	Motor cover	24	Trestle
5	Bearing	25	Pump body 25-1 Rotary-vane; 25-2 Rotary-vane spring
6	Cross screw	26	Cap board
7	Motor rotor	27	Exhaust fitting
8	Power supply cords	28	Die cast aluminum housing
9	Power switch	29	Sight glass
10	Bearing	30	Oil cap
11	Centrifugal switch	31	Oil drain gasket
12	Insulating bushing	32	Screw
13	Handle slipcover	33	Housing gasket
14	Nut	34	Screw
15	Handle	35	Rubber foot
16	Capacitor	36	Screw
17	Junction box	37	Base
18	Motor hull		
19	Screw		
20	Trestle cover board		

COOLTECH

VI. Technical Drawing

Model		Single Stage Vacuum Pump											
		VE 115		VE 125		VE 135		VE 145		VE 160		VE 180	
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
Flow rate	CFM	1.8	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0
	L/min	51	57	70	84	100	113	128	142	170	198	226	254
Ultimate Vacuum	Pa	2		2		2		2		2		2	
	mbar	0.02		0.02		0.02		0.02		0.02		0.02	
Motor (Hp)		1/4		1/4		1/3		1/3		1/2		3/4	
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	
Oil Capacity (ml)		310		310		310		300		440		890	
Dimensions(mm)		285×124×230		285×124×230		315×124×240		315×124×240		335×138×250		400×145×270	
Net Weight(kg)		6.3		7.1		8.1		8.2		10.5		15.0	

Model		Dual Stage Vacuum Pump											
		VE 215		VE 225		VE 235		VE 245		VE 260		VE 280	VE 2100
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	2×10^{-1}		2×10^{-1}		2×10^{-1}		2×10^{-1}		2×10^{-1}		2×10^{-1}		2×10^{-1}	
	mbar	0.002		0.002		0.002		0.002		0.002		0.002		0.002	
M		15		15		15		15		15		15		15	
		1/4		1/3		1/3		1/2		3/4		1		1	
Intak		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		200		200		350		325		580		500		590	
Dimensions(mm)		308x124x224		318x124x234		335x138x250		338x138x224		395x145x257		395x145x257		395x145x257	
Net Weight(kg)		7.5		8.6		11.2		11.4		16.5		16.7		16.7	