

Making Your Job More Enjoyable

**Vacuum Pump
VRP-15DN**



VALUE Mechanical & Electrical Products CO., LTD

Add: No. 5, 3rd. Street, East Industrial Park, Wenling, Zhejiang, China

Tel: +86-576-86191959

Fax: +86-576-86191957

Email: value@worldvalue.cn

www.worldvalue.cn

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NAVTEK[™]
High-end Series

TABLE OF CONTENTS

INTRODUCTION AND TECHNICAL INFORMATION	01
DC INVERTER-DRIVEN VACUUM PUMP	01
APPLICATION	01
SPECIAL FEATURES	01
PREPARATION PRIOR TO USING VACUUM PUMP	02
SAFETY WARNINGS	02
USE GUIDE	03
MAINTENANCE	05
REQUIREMENT FOR WARRANTY COVERAGE	05
TROUBLESHOOTING	06
EXPLODED VIEW	07
REPAIR PARTS LIST	08
DIMENSION	09

Industrial Grade Design

INTRODUCTION AND TECHNICAL INFORMATION

In order to make it easier to understand the components of the vacuum pump, please see the picture below.



DC INVERTER-DRIVEN VACUUM PUMP

Model	VRP-15DN
Flow Rate	15 CFM 420 L/min
Ultimate Vacuum	5 micron
Motor Power	3/4 HP
Oil Capacity	880 ml
Dimensions	414x152x310 mm
Weight	14.5 kg
Inlet Port	KF25

APPLICATION

NAVTEK inverter drive dual-stage rotary vane vacuum pumps are used to remove air, moisture, and other non-condensables from sealed HVACR systems. The product is designed to be used for evacuation of HVACR repair and new installations of **Ammonia(NH₃)** Systems. It can also be used with refrigerants including CFC, HFC and HCFC, such as R-12, R-22, R-410A, R-404A, R-32, R-134A, R-1234yf, etc.

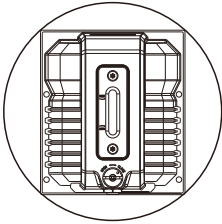
SPECIAL FEATURES

- Forced oil lubrication ensures vane sealing, cooling and high reliability.
- Large and easy to see oil-level window design help prevent oil supply shortage.
- Non-sparking design, suitable for R-32, R-1234yf refrigerants.

PREPARATION PRIOR TO USING VACUUM PUMP

1. Verify the power supply being used, to match the voltage on the nameplate.
2. Ensure that the pump is switched off prior to connecting to the power source.
3. Check for proper oil level, or change if needed.
4. Remove the oil fill cap, filling oil to the level in between the two oil sight glass lines, as shown in the drawing below. For specific pump oil volume, please see the technical specification table.

Note: In order to prevent pump oil from spilling out, please add oil slowly.



Switch on the power and the pump will begin to operate. After running for approximately one minute, check the oil level. If the oil level is too low, switch off the machine and add the required extra oil. Reinstall the oil fill cap.

Note: While the pump is operating, the oil level should be in between the two oil position lines. If the oil level is too low, it will reduce the performance and could damage the pump vanes. If the oil level is too high, it could cause oil to discharge through the pump exhaust.

SAFETY WARNINGS

WARNING: This machine should only be used for evacuation of refrigerant systems after refrigerant has been removed from the system and the system has been opened to atmosphere. This machine is not to be used as a transfer pump for liquids or any other media; doing so can damage the product.

Note: In order to avoid personal injury, please carefully read and follow the instructions in this user manual and the user guide of the pump.

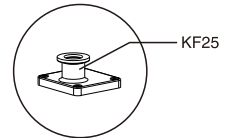
NAVTEK VACUUM PUMPS ARE NOT ALLOWED TO BE USED FOR A3 OR FLAMMABLE REFRIGERANTS.

1. NEVER CONNECT A VACUUM PUMP TO A PRESSURIZED SYSTEM. Always check to make sure that system and piping pressure is NOT ABOVE ATMOSPHERIC PRESSURE.
2. When handling refrigerants, please wear an eye-protection such as safety glasses or goggles.
3. Avoid direct physical contact with refrigerants, you will get burned.
4. When connecting the power source, all equipments must be grounded in order to prevent electrical hazards.
5. When the pump is in operation, the enclosure surfaces will be hot. Do not touch the oil box or the motor case. Allow adequate ventilation space for heat dissipation.
6. When using R-32, R-1234yf or other A2L refrigerants, use an explosion proof electrical outlet.
7. Keep pump dry and away from water, mud, and dirt at all times.

8. Operating pump with intake fittings open to the atmosphere must not exceed 3 minutes.
9. Ambient temperature range for pump use is 30 to 104°F (-1 °C~40°C). The pump can be used in lower ambient conditions, if warmed up inside first and run for no more than 1 minute to warm the oil prior to system evacuation.
10. The pump requires 220V±10% power, and the power outlet must be grounded.
11. Prior to connecting the vacuum pump to an A/C-R system, please use proper methods to remove refrigerant from a pressurized system. Note that pumping refrigerants under high-pressure conditions will damage the pump, and refrigerant must be removed using a recovery machine designed for that purpose.

USE GUIDE

1. When using the vacuum pump, remove the inlet and outlet protection cap and connect the pump to the system or piping to be evacuated. Use shortest hoses possible for faster and more thorough evacuation.



2. Inspect the hose inlet connection, as well as all connecting hoses for proper seal. There must be no leakage or it will be impossible to draw the required deep vacuum level.
3. At the beginning of the evacuation process, open the GAS BALLAST, and once the vacuum gauge reaches 2000 microns, retighten to achieve desired vacuum level.
4. After evacuation is completed, shut down the pump and close the system access valves.
5. Turn off the power switch on the pump and disconnect power.
6. Remove the evacuation hoses.
7. Close the air entry cap and the air exhaust cap tightly (with the exception of models without air exhaust cap), to prevent dirt or particulates from entering the pump.

Note:

1. Always evacuate systems in conjunction with a micron vacuum gauge, such as the NAVTEK VMV-1, if using the standard inverter drive pump. Micron vacuum gauges precisely measure and display system evacuation during the entire process, giving you a comprehensive view of the sealed system internal evacuation condition.
2. Please pay attention to any changes in the oil level during pump operation. If the oil level falls below the center line, immediately add more vacuum pump oil to avoid damage to the pump.
3. Vacuum pump and oil must be above -1°C.

CAUTION: To reduce the risk of electric shock, do not expose to rain. Store indoors.

EXTENSION CORDS

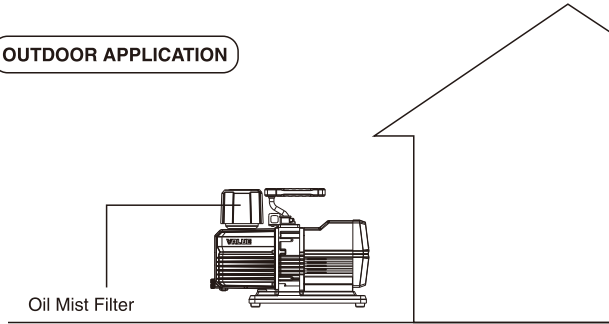
If an extension cord must be used, be sure it is:

1. A 3-wire extension cord that has a 3-blade grounding plug, and a 3-slot receptacle that will accept the plug on the product
2. In good condition
3. No longer than 50' (15.2m)
4. 16 gauge (AWG) or larger. (Wire size increases as gauge number decreases. 14 AWG and 12AWG may also be used. DO NOT USE 18 AWG)

NOTICE: Risk of Property Damage. The use of an undersized extension cord will cause voltage to drop resulting in power loss to the motor and overheating.

USE GUIDE

OUTDOOR APPLICATION

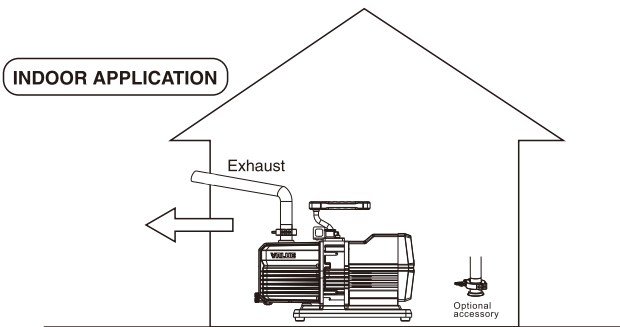


If you have a KF25 exhaust, you can use it to evacuate ammonia refrigerants

To use a KF25 exhaust:

1. Remove oil mist filter
2. Attach KF25 exhaust
3. Attach hoses

INDOOR APPLICATION



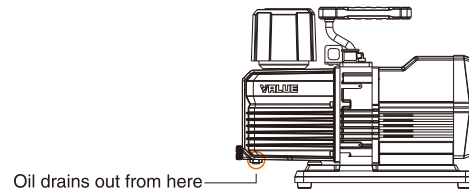
MAINTENANCE

1. Vacuum pump oil has three major functions: pump lubricant, pump cooling, and pump sealant. During the evacuation process, the pump oil will absorb moisture being pulled from the system, causing it to be less effective as a lubricant and pump vane seal, extending evacuation time and possibly allowing the pump to overheat. We recommend that the oil be changed just before evacuating each A/C-R system to insure the pump oil is in a clean condition as this is the key factor in determining if the pump can achieve the required vacuum levels. In order to maintain the optimum operation of the pump, we recommend that you use NAVTEK vacuum pump oil. This oil is made using a unique process and can maintain proper viscosity during normal operation and temperatures, and it's also helpful for cold starts. Should the NAVTEK oil not be available, reputable brands of special-purpose vacuum pump oil may be used.

Note: Should the pump oil become opaque, dirty, or full of moisture, promptly change oil. This will greatly speed up evacuation, especially when there is a lot of moisture in system piping from having been left open to the atmosphere for an extended period of time.

Oil change procedure:

1. To ensure that the pump and oil are warm, run pump for approximately one minute prior to changing oil. Do not run longer than this, as it may be possible to damage the pump.
2. While the pump is running, open one inlet port and allow oil to drain out of the pump. After turning off pump, open the oil drain plug, and drain used oil into an appropriate vessel and dispose of properly.
3. As oil stops draining, tip the pump to drain any remaining oil in the bottom of the pump.
4. Close oil drain valve.
5. Remove oil fill cap, pour in new oil until the oil is at the proper level in the sight glass (the same procedure prior to using the pump above).



REQUIREMENTS FOR WARRANTY COVERAGE

Product warranty is provided for product quality problems for one year from date of sale. For warranty to be valid, the following conditions must be met:

1. Products issues due to manufacturing defects confirmed by qualified agents.
2. Products which have not been maintained or dismantled by unauthorized parties.
3. Products that have been used in accordance with the User Manual. All maintenance services shall be performed during the warranty period.

Statement: Other than repairing the product defective, the manufacturer of this product will not be liable for any other costs, such as time spent in fixing the issue, refrigerant consumption, refrigerant disposal costs, as well as unauthorized transportation and labor costs.

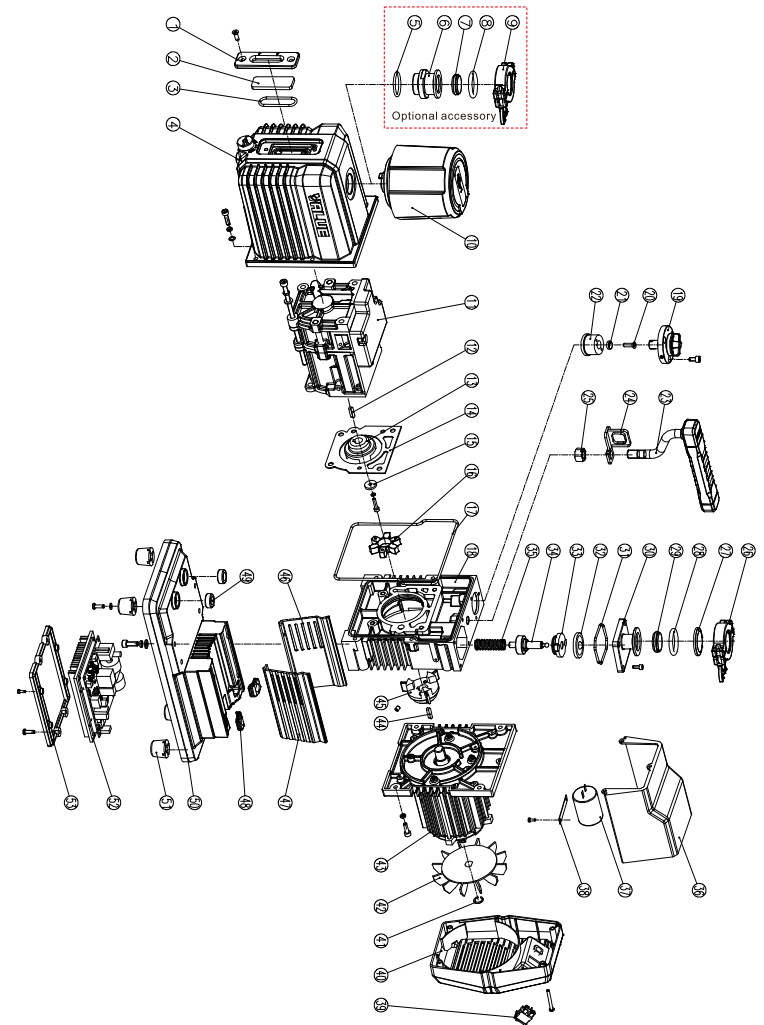
TROUBLESHOOTING

Malfunction	Possible Cause	Remedy
Low Vacuum	1. Secondary air inlet connection cap loose on the air inlet port.	Tighten the cap.
	2. Damaged rubber ring inside the secondary air inlet connection cap.	Replace the rubber ring.
	3. The volume of oil is insufficient.	Add oil to the center line of the oil display.
	4. Pump oil becomes opaque or absorbed too many impurities.	Replace with new oil.
	5. The pump's oil entry hole is clogged or the oil supply is insufficient.	Clean the oil entry hole, clean the oil filter.
	6. The pump connecting hoses, manifold or system has a leak.	Inspect the connecting hose gaskets and system, repair leaks.
	7. The pump selection is wrong.	Check the size of the container to be evacuated, recalculate and select an appropriate pump model.
	8. The pump has been used for too long, damage and wear to components caused increased gaps between parts.	Inspect and repair, or replace the pump.
Oil leak	1. Damaged oil seal. 2. Loose or damaged oil box connections.	Replace the oil seal. Tighten the connecting screws, replace O-rings.
Oil spray	1. Excessive oil volume. 2. Inlet port pressure is excessively high for a long period.	Remove oil until the oil position line is reached. Select an appropriate pump, increase the pumping speed.
Start-up problems	1. Oil temperature is too low.	Exposed the air entry hole to the external atmosphere, and remove the oil fume filtration device. Use a screwdriver to turn the engine axle in an anti-clockwise direction.
	2. Motor, power source or circuit board malfunctions.	Inspect and repair.
	3. Foreign objects entered the pump.	Inspect and remove.
	4. Voltage supply is excessively low or high.	Inspect the power source voltage.
	5. Overload trips.	After overload trip occurs, switch kept On. Remove the power plug, wait for approximately 30 seconds before inspecting and repairing.

Notes:

1. The pump is inverter driven and the motor has over-current / overload protection, please troubleshoot after overload resets.
2. If the above methods cannot resolve your problems, please contact your nearest distributor or take the pump to a repair center. We will do our best to provide you with a quick turnaround to keep you working.

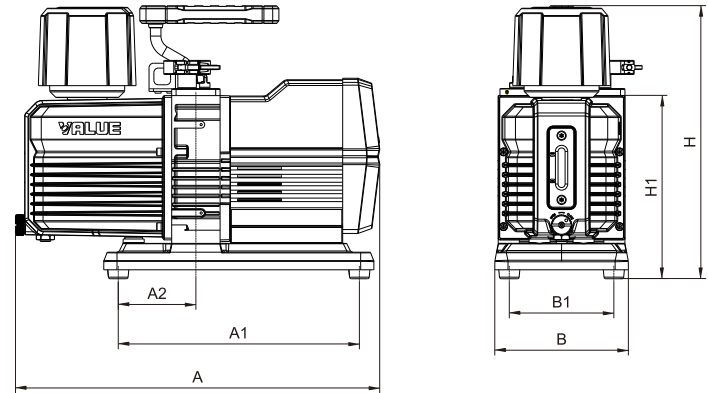
EXPLODED VIEW



REPAIR PARTS LIST

Ref No.	Part Name
1	Oil Lens Cover
2	Oil Lens
3	O-ring of Oil Lens
4	Oil Housing
5	Outlet Gasket
6	Outlet KF25
7	Center Ring
8	O-ring
9	Flange
10	Exhaust Filter and Noise Reducer
11	Pump Body
12	Flat Key
13	Coupling
14	Gasket
15	Gasket
16	Elastic Coupling
17	O-ring of Oil Housing
18	Trestle
19	Gas Ballast Assy
20	Screw
21	Pressure Plate
22	Valve Sleeve for Gas
23	Handle
24	Hook
25	Nut
26	Clamp
27	Flange
28	O-ring
29	Filter
30	Inlet KF25
31	O-ring of Inlet Port
32	Anti suckback valve plate
33	Anti suckback valve cap
34	Anti suckback piston assy
35	Anti suckback spring
36	Top Cover
37	Capacitor
38	Capacitor hook
39	Power Switch
40	Rear Cover Assy
41	Elastic Collar
42	Fan
43	DC Motor Assy
44	Flat Key
45	Coupling
46	Guard Board I
47	Guard Board II
48	Sheath
49	Rubber Gasket
50	Base Plate
51	Rubber Feet
52	Controller Assy
53	Cover Plate

DIMENSION



Unit: mm

Model	A	A1	A2	B	B1	H	H1
VRP-15DN	414	274	88	152	119	310	208

SAFETY WARNINGS

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

