PRO SERIES

NAVAC

Empowering you to work smarter

Vacuum Pump
NP5DP2
NP7DP2
User Manual

Failure to follow warnings could result in death or serious injury.

SAVE THIS MANUAL FOR FUTURE REFERENCE

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MADE IN PRC

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⚠ Warning:
Do not leave pump running unattended in a closed environment without adequate ventilation.

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INTRODUCTION AND TECHNICAL INFORMATION

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

AC MOTOR DRIVEN VACUUM PUMPS

Model	NP5DP2	NP7DP2
Power Supply	115V/60Hz	115V/60Hz
Flow Rate (CFM)	5 CFM	7 CFM
Ultimate Vacuum	15 Micron	15 Micron
Pump Design	Dual-Stage, AC Motor	Dual-Stage, AC Motor
Motor Power (HP)	3/4	3/4
Oil Capacity (oz)	17	15
Dimensions (in)	14"×5"×11.3"	14"×5"×11.3"
Weight (lbs)	24.3	26
Inlet Port	1/4", 3/8", 1/2" Flare	1/4", 3/8", 1/2" Flare

APPLICATION

NAVAC Dual-Stage Rotary Vane Vacuum Pumps are designed to remove air, moisture, and other non-condensable gases from sealed HVACR systems. The products can be used for evacuation of HVACR repair or new installations, specially designed for A2L refrigerants such as, R-32, 1234yf, R-600a, R-454B. It can also be used as other common refrigerants such as, R-12, R-22, R-410A, R-404A, R-134A, etc.

A2L Compatible

SPECIAL FEATURES

Integrated Pump Structure: Designed with high precision, allowing for deep ultimate vacuum levels.
Forced Oil Lubrication: Ensures proper vane sealing, enhanced cooling, and improved reliability.
Large, Easy-to-See Oil-Level Window: Helps prevent oil shortages by providing a clear view of the oil level.

PREPARATION PRIOR TO USING VACUUM PUMP

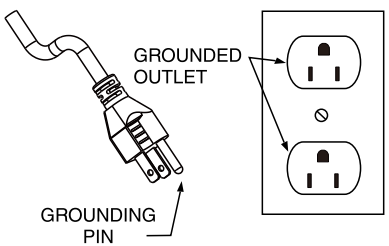
GROUNDING INSTRUCTIONS

This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing a path for the electric current to escape. This product is equipped with a cord that has a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING:

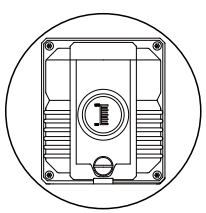
Improper installation of the grounding plug is able to result in a risk of electric shock. When repair or replacement of the cord or plug is required, do not connect the grounding wire to either flat blade terminal. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.

Check with a qualified electrician or serviceman when the grounding instructions are not completely understood, or when in doubt as to whether the product is properly grounded. Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.



1. Verify the power supply matches 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 refer to the technical specification table.

Note: In order to prevent pump oil from spilling, 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 amount of 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 performance and may 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: To avoid personal injury, please carefully read and follow the instructions in this user manual and the user guide of the pump.

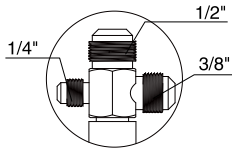
NAVAC VACUUM PUMPS ARE NOT ALLOWED TO BE USED FOR A3 OR FLAMMABLE REFRIGERANTS.

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, as it can cause burns.
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 become hot. Do not touch the oil box or the motor case. Allow adequate ventilation space for heat dissipation.
6. Not applicable for flammable refrigerants in A2 and A3 classes.
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 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

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. The recommended Extension Cord Size should be as Follows:
   - 50 feet or less – 12/3 UL Extension Cord
   - Over 50 feet – 10/3 UL Extension Cor

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.

1. When using the vacuum pump, remove the inlet protection cap from the desired (1/4", 3/8", or 1/2") connecting port, as shown in the diagram above, and connect the pump to the system or piping to be evacuated. Use the shortest hose possible for faster and more thorough evacuation.
2. Inspect the hose inlet connection, as well as all connecting hoses for proper seals. 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 (except for 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 NAVAC NMV1S, to provide 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. Ensure that both the vacuum pump and the oil are maintained at temperatures above 30°F.

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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 ensure 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. To maintain the optimum operation of the pump, we recommend that you use NAVAC 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 NAVAC oil not be available, reputable brands of special-purpose vacuum pump oil may be used.

Note: Should the pump oil become opaque, dirty, or contaminated with 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 risk damaging 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 remove any remaining oil from 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).

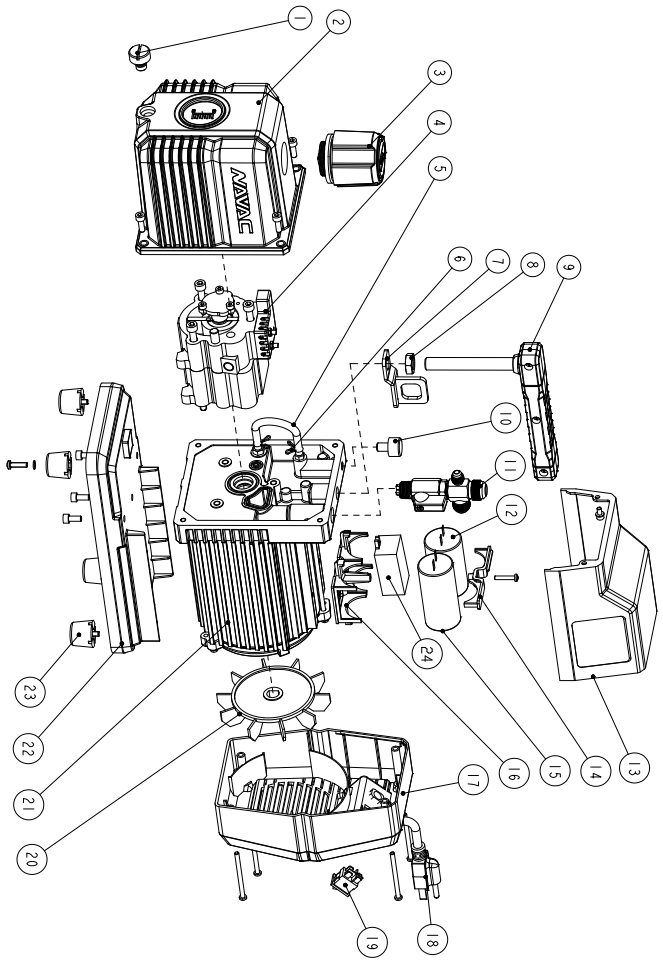
REQUIREMENTS FOR WARRANTY COVERAGE

Product warranty is provided for quality-related issues 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 defective product, 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.

EXPLODED VIEW



REPAIR PARTS LIST

Ref No.	Part Name
1	Oil Drain
2	Oil Housing
3	Exhaust Filter and Noise Reducer
4	Pump Body
5	Rubber Tube
6	Jump Ring
7	Hook
8	Nut
9	Handle
10	Gas Ballast
11	Inlet Port
12	Running Capacitor
13	Top Cover
14	Plate
15	Start Capacitor
16	Pedestal
17	Rear Cover
18	Power Cord
19	Switch
20	Fan Blade
21	Motor
22	Plate
23	Rubber Feet
24	Electronic Starter

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.	Replace the oil seal.
	2. Loose or damaged oil box connections.	Tighten the connecting screws, replace O-rings.
Oil spray	1. Excessive oil volume.	Remove oil until the oil position line is reached.
	2. Inlet port pressure is excessively high for a long period.	Select an appropriate pump, increase the pumping speed.
Start-up problems	1. Oil temperature is too low.	Place the vacuum pump in an over 77°F ambient environment for an hour, or replace in the 77°F oil.
	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.	Afterr overload trip occurs, turn off the switch. Romove the power plug. Examine and solve the issue.

Notes:

1. The pump 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.

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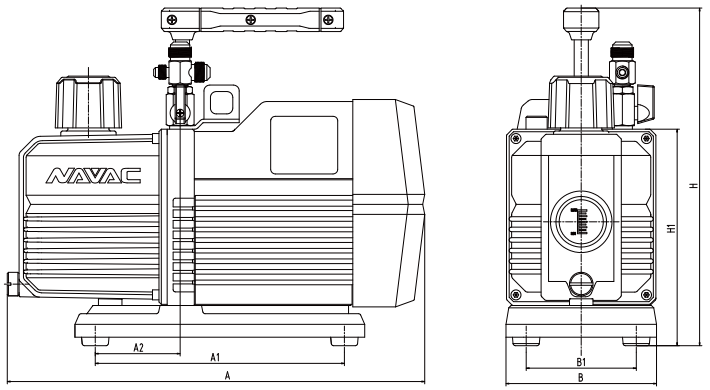
DIMENSION



Unit: inch

Model	A	A1	A2	B	B1	H	H1
NP5DP2	14	8.3	2.8	5	3.7	11.3	7.2
NP7DP2	14	8.3	2.8	5	3.7	11.3	7.2