NAVAC

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Smart Vacuum Pump
NP8DS
NP8DSV
User Manual



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

SAVE THIS MANUAL FOR FUTURE REFERENCE

MASTER SERIES

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

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NP8DSV The Next Generation Of Innovation In HVAC Vacuum Technology

Introducing NAVAC NP8DSV, an innovative vacuum pump featuring an easy-to-operate oil health test function. Designed with professional technicians in mind, the NP8DSV offers a powerful 8 CFM dual-stage performance and an impressive 15-micron ultimate pressure.

This advanced vacuum pump includes a built-in oil health test, enabling users to quickly assess oil condition with the press of a single button, optimizing oil changes and reducing waste. The pump seamlessly integrates with the NMV1S Bluetooth vacuum gauge, providing real-time vacuum readings directly on the pump and through the myNAVAC App.

User-friendly features such as automated decay testing, preset targets, and a built-in solenoid valve for vacuum preservation make this pump a "set it and forget it" solution. Reliable, efficient, and easy to use, the NP8DSV sets a new standard in HVAC tools, helping you save time, reduce costs, and deliver precise, effective evacuations every time.

Leading Technology, Superior Quality, Best Experience.
Empowering You to Work Smarter!

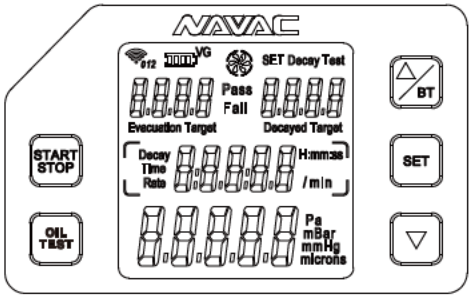
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COMPONENTS CONTROL INTERFACE

In order to make it easier for you to understand each component of the vacuum pump, we have provided a simple, straight forward diagram of the pump's drawing.



CONTROL INTERFACE



1. Start/Stop key : Press and hold for 2 seconds to force exit and return to standby mode.

2. Oil Test key : Enter the oil health detection interface and check the connection status of the vacuum gauge. Press the Start/Stop key to initiate the oil health check. If the vacuum gauge is not connected, press the Start/Stop key, and "NC" will flash. This indicates that the vacuum gauge needs to be connected.

3. Up key/Bluetooth Connection key : In setting mode, use this key to increase or decrease the value of the flashing numbers. In Bluetooth-enabled status, press and hold for more than 3 seconds to search for a Bluetooth connection.

4. Parameter Set key : Press and hold for 2 seconds to enter the parameter settings interface.

5. Down key : In settings mode, use this key to increase or decrease the value of the blinking digit.

6. Run Identifier : Rotation indicates that the vacuum pump is operating, while a stop in rotation indicates that the vacuum pump is paused

7. Vacuum gauge power display : No display means no connected vacuum gauge, Lowbattery-Alarm flashing! NG .

8. Bluetooth Connection Identifier : Not displayed when Bluetooth is turned off.

9. Flashing Indicates : that the device is entering standby mode, and parameter settings can be adjusted. Press to pause when the program runs. Then, press and hold for 2 seconds to force exit and return to standby mode.

10. Decay Test: Enter the pressure holding program.
11. SET: Parameter setting mode.
12. FAIL: Flashing light indicates that the pressure holding is has failed.
13. PASS: Flashing light indicates that the pressure holding is has passed. Evacuation
14. EvacuationTarget: Target vacuum level (the desired vacuum degree value to be achieved by the evacuation system).
15. Decayed Target: The maximum allowable vacuum level during pressure holding.
16. Time: Vacuum pumping running duration.
17. Decay Time: Pressure holding running duration.
18. Rate: Real-time leakage rate.
19. / Min: Leakage rate unit.
20. Min: Time unit.
21. Microns, Pa, mBar, mmHg: Vacuum units;

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AC MOTOR DRIVEN VACUUM PUMPS

Model	NP8DS	NP8DSV
Power	115V/60 Hz	115V/60 Hz
Flow Rate	8 CFM	8 CFM
Ultimate Vacuum	15 microns	15 microns
Pump Design	Dual-Stage, AC Motor	Dual-Stage, AC Motor
Motor Power	3/4 HP	3/4 HP
Oil Capacity	15 oz	15 oz
Dimensions	14"x5"x11.74"	14"x5"x11.74"
Weight	27.6 lbs	28 lbs
Inlet Port	1/4",3/8",1/2" Flare	1/4",3/8",1/2" Flare
Vacuum Gauge Accessory	No	Yes

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.

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PREPARATION PRIOR TO USING VACUUM PUMP

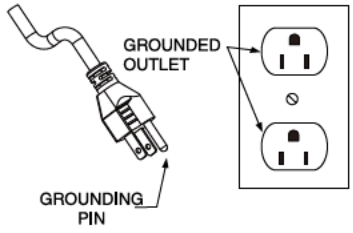
GROUNDING INSTRUCTIONS

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 can 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.

Please consult a qualified electrician or serviceman if the grounding instructions are unclear or if you have any doubts about 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 mist filter, fill the oil to the level 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: To prevent pump oil from spilling, please add oil slowly.



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Switch on the power and press the start button, 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 mist filter.

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 Except NP7DPF.

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.

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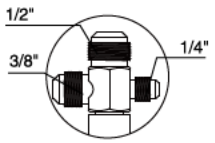
USE GUIDE

CAUTION-TO reduce the risk of electric shock, do not expose to rain. Store indoors.
The product should be placed leveled without any incline when it is working. If it has finished its job, please unplug it and keep the pump housing dustproof by covering a clean film plastic bag on it.

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. 14 Gauge extension cords under 25 feet can be used. Extension cords longer than 25' must use 12 Gauge extension cord

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.

CONNECTION



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 inlet port and the air exhaust cap tightly (except for 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 NAVAC NMV1S, to provide a comprehensive view of the sealed system's 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.
4. If any residual refrigerant comes in contact with the vacuum gauge sensor, the digital display may malfunction. Once the refrigerant has been evacuated, the sensor and display will automatically start working again.

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PUMP USAGE GUIDE

NO VACUUM GAUGE MODE

When no NMV1S intelligent vacuum gauge or Bluetooth is disconnected, after a period of time, the interface will automatically enter non-vacuum gauge mode.

1. The interface shows "0:00" flashing.
2. Press START/STOP start to run the vacuum pump; press START/STOP to pause.

Note: The vacuum pump operates in a mode that does not use a vacuum gauge. If you need to connect a vacuum gauge, first press START/STOP to pause the operation. Then long press the START/STOP key to force the vacuum pump to stop. To pair the vacuum gauge, long press and hold UP/BT for at least 3 seconds while Bluetooth is turned on. If the vacuum gauge has already been paired, it will automatically connect to the device as long as it is powered on.

BLUETOOTH PAIRING

1. Press and hold the Up key/Bluetooth connection key UP/BT for at least 3 seconds to pair the device with the vacuum gauge via Bluetooth. Keep the vacuum pump and vacuum gauge as close to each other as possible. The device interface will display "—" during the pairing process, which lasts for 30 seconds. After successful pairing, it will display 'Find'.
2. After successful pairing, the next vacuum pump on the electric opening opportunity will automatically search for the successful vacuum gauge of the previous pairing and pair, without the operation of step 1 above. The vacuum gauge shall be turned on and not connected by other equipment or APP。

BLUETOOTH ON/OFF

Press and hold SET to enter the settings interface. A press on SET will display "bt," and the selected parameter will flash. To access the Bluetooth function switch settings, briefly press the up or down key to select either "On" or "OFF." If you select On, the Bluetooth function will be activated, and the wireless icon will be displayed. If you select OFF, the Bluetooth function will be deactivated, and the Bluetooth connection identifier will not be displayed.

OIL HEALTH TEST

1. Remove the connector from the bottom of the base plate. Connect one end to the 1/4" air inlet connector and the other end to the vacuum gauge.
2. Power on the device and enter the normal operation interface. Connect the intelligent vacuum gauge.
3. Press and hold the Oil Test key OIL TEST to access the Oil Health Check function. The interface will display "100," "Evacuation Target," "Time," "1:00," "min," "microns," and the current vacuum value, with "OIL" flashing. If the vacuum pump is not connected to the vacuum gauge, "OIL" and "NC" flash. Press and hold START/STOP forces the exit and returns to the previous interface.
4. Press START/STOP to start the motor and wait for 1 minute for the timer to end. No oil change is needed if the current vacuum value is less than or equal to 100 microns. The buzzer will beep 3 times, the backlight panel will flash in sync, and the interface will display "PASS" while flashing. An oil change is necessary if the current vacuum value exceeds 100 microns. The buzzer will beep 12 times, the backlight panel will flash 3 times, and the interface will display "FAIL" while flashing. It will then switch to display "CHANGE" and "OIL" both of which will flash.

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OTA

1. Power on the device and enter the normal operating interface.
2. When the motor is stopped, select the upgraded firmware on the APP.
3. Program download stage: The interface displays "PUnP" and "LOAD," with values flashing from 0 to 100 to indicate the progress of the firmware download. If an error occurs during the download process, the buzzer will beep 12 times, the backlight panel will flash 3 times, and the interface will display "Fail" and flash. This indicates that the firmware download has failed. If the value reaches 100, the buzzer will beep 3 times, the backlight panel will flash in sync, and the interface will display "Pass" while flashing. This indicates that the firmware download is successful.
4. Program update stage: After a successful firmware download, the chip automatically resets and restarts, entering the BootLoader program. The version number is displayed first, followed by the message "UPDATE." The value flashes from 0 to 100, indicating the progress of the firmware update. If an error occurs during the update process, the buzzer will beep 12 times, the backlight panel will flash 3 times, and the interface will display "Fail" and flash. This indicates that the firmware update has failed. Conversely, if the value reaches 100, the buzzer will beep 3 times, the backlight panel will flash in sync, and the interface will display "Pass" and flash. This indicates a successful firmware update.
5. After a successful firmware update, the chip automatically resets and restarts, entering the APP program.

CHANGE OR CONFIRM SETTINGS

1. In standby mode with a vacuum gauge connected, ("[ ]" flashing), Or the waiting state without the vacuum gauge connection, Press and hold SET for 3 seconds to enter the settings interface.
2. Vacuum Unit Selection: (please use bold font, same as below) Press UP/BT or ▽ to select the desired unit. Press SET to lock in your selection and proceed to the next parameter setting.
3. Evacuation Target Selection (Evacuation Target): Press UP/BT or ▽ to select the numerical values. Press SET to lock in your selection and proceed to the next parameter setting.
4. Maximum Allowable Vacuum Level (Decayed Target): pressure holding (Decayed Target). Press UP/BT or ▽ to select numerical values, then press ▽ to lock in your selection and proceed to the next parameter setting.
5. Pressure Holding Time Selection (Decay Time): The first two parameters cannot be set to "OFF". the option will also be "OFF", and no further choices can be made.
6. Sound Settings (beep): Press UP/BT or ▽ to select whether to turn the sound on or off,then Press ▽ to lock in your selection and proceed to the next parameter setting.
7. Bluetooth On/Off (bt): Refer to Use guide-Bluetooth on / off.Then press SET to lock in your selection, exit the parameter settings, and return to the standby interface.

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EVACUATION

1: Ensure that the hose is securely connected without leakage, parameters are set; press the Start/Stop key to run the vacuum pump.

2. When the current vacuum level reaches the Decayed Target set point, the program will stop the operation of the vacuum pump and automatically enter the Decay Test interface. For the final results, please refer to the Equipment alarm prompts instructions below.

Note: When the Decayed Target is set to the "OFF", the vacuum pump will always run until the vacuum pump is stopped manually.

Equipment alarm prompts

1. Within the set pressure holding time, the equipment's vacuum value does not exceed the maximum allowable vacuum degree value (Decayed Target) set for holding duration. The pressure has been successfully maintained, and the interface displays "PASS," accompanied by sound and light prompts. Press any key to dismiss the prompt.
2. Within the set pressure holding time, the equipment's vacuum value has exceeded the maximum allowable vacuum degree value (Decayed Target) set for holding duration. Pressure holding has failed, and the interface displays "FAIL" accompanied by sound and light prompts. Press any key to dismiss the prompt.

myNAVAC App

The device's operation and display can be transmitted via Bluetooth to the App on your smartphone or tablet.

The App combines the power of your smart phone/tablet with the accurate measurements of your pump. The operation and display of the instruments are communicated via Bluetooth to the App on your smart phone or tablet. The App uses the measurements to create custom reports. Information and reports can be saved as files or sent by e-mail. It is compatible with both Apple iOS and Android.

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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. 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 to 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

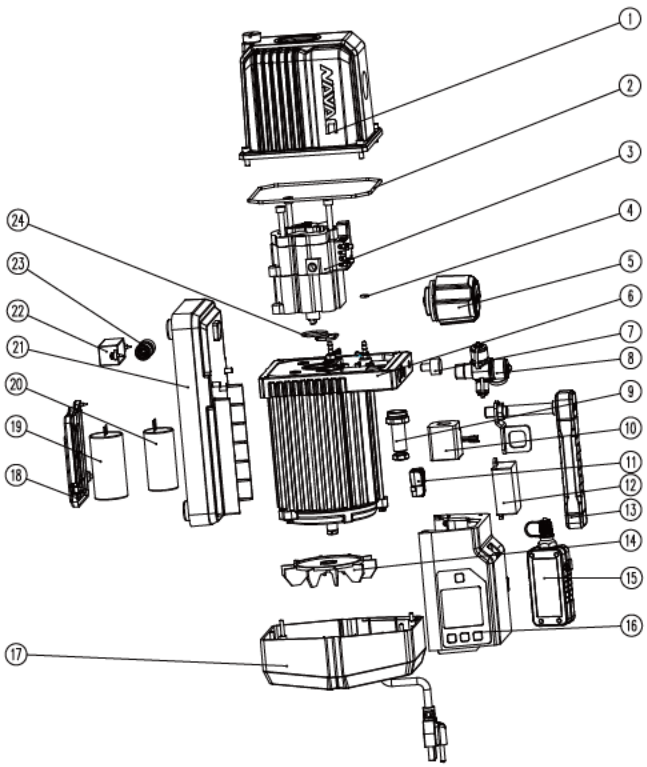
Product warranty is provided for quality-related issues for one year from date of sale. For warranty to be valid, the following conditions must be met:

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.

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EXPLODED VIEW



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REPAIR PARTS LIST

Ref No.	Description
1	Oil Housing Assy
2	O-ring
3	Pump Body
4	O-ring
5	Oil mist filter
6	Motor Assy
7	Gas Ballast Valve
8	Inlet Port
9	Iron Core Assy
10	Solenoid Valve Body
11	Splitter
12	Electronic Starter
13	Handle
14	Fan Blade
15	Vacuum Gauge (Not sold with NP8DS)
16	Digital Display Controller Assy
17	Back Cover Assy
18	Capacitor Box Cover
19	Running Capacitor
20	Starting Capacitor
21	Base Plate
22	Connector Cover
23	Connector
24	O-ring

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TROUBLESHOOTING

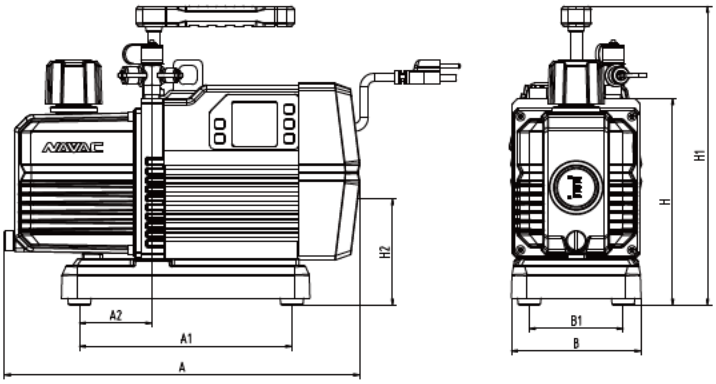
Malfunction	Possible Cause	Remedy
Low Vacuum	1. Secondary air inlet connection cap loose on the air inlet port.	Tighten the cap.
	2. Damaged rubber ring inside the secondary air inlet connection cap.	Replace the rubber ring.
	3. The volume of oil is insufficient.	Add oil to the center line of the oil 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.
Vacuum gauge Bluetooth cannot connect	1. Vacuum pump Bluetooth is not on	Turn on the vacuum gauge
	2. The vacuum gauge is not turned on	Inspect and repair.
	3. The vacuum gauge is too far away from the vacuum pump	Both keep the closest distance

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	H2
NP8DS	14	8.3	2.8	5	3.7	8.1	11.74	4.17
NP8DSV	14	8.3	2.8	5	3.7	8.1	11.74	4.17

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