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VIVOHOME VH409-RE

VIVOHOME 110V 1/4 HP 3.5 CFM Single Stage Rotary Vane Air Vacuum Pump Instruction Manual

Model: VH409-RE

Introduction

This manual provides essential information for the safe and efficient operation, maintenance, and troubleshooting of your VIVOHOME 110V 1/4 HP 3.5 CFM Single Stage Rotary Vane Air Vacuum Pump. Please read this manual thoroughly before initial use and keep it for future reference.
The VIVOHOME vacuum pump is designed for optimal performance in various applications, including AC system maintenance, vacuum drying, solvent degassing, and more. Its robust construction and user-friendly features ensure reliable and safe operation.

Safety Information

WARNING: To prevent explosion and serious injury, always follow these safety guidelines:

- Do not service air conditioning systems improperly.
- Always wear appropriate safety goggles and gloves.
- Ventilation is required for technicians opening refrigeration circuits.
- Dry location use only.
- Ensure the pump is placed on a stable, level surface during operation.
- Always disconnect power before performing any maintenance or adding oil.

CAUTION: Check oil level before use. Add oil between "MIN" and "MAX" for the optimal oil quantity.

Product Overview and Components



Figure 1: VIVOHOME 110V 1/4 HP 3.5 CFM Single Stage Rotary Vane Air Vacuum Pump.

Key Features:

- **Optimal Performance:** Powered by a 1/4 HP (180W) motor running at 1440 r/min, delivering a flow rate of 3.5 CFM and reaching an ultimate vacuum of 5 Pa in just 3 minutes. Integrated motor current protection safeguards against overload or phase loss.
- **Versatile Compatibility:** Compatible with R134a, R12, R22, R502, and can be used with R410a when paired with a 5/16-inch adapter (Not Included). Features both 1/4-inch SAE and 1/2-inch Acme intake fittings.
- **Durable Construction:** Crafted with a one-piece die-cast aluminum housing and a four-pole pure copper motor for longevity and reliability. Lightweight for portability.
- **Safe Operation:** Advanced motor current protection, 304 stainless steel coarse filter, and cotton layer filter at the exhaust port for clean operation and prolonged lifespan.
- **User-Friendly Design:** Ergonomic grip handle, intuitive ON/OFF switch, simple oil fill port with clear oil viewing window, and bottom oil drain valve. Low-noise operation (approx. 65 dB), built-in cooling fan, and non-slip base.

Internal Components:



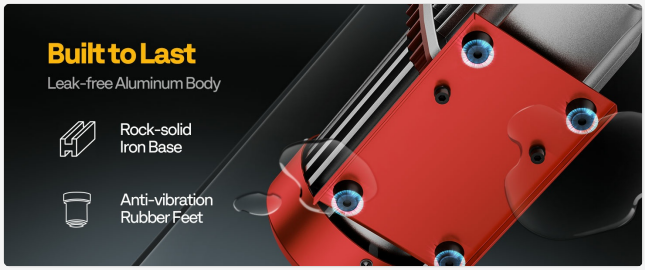

Figure 2: Internal components including the 4-pole pure copper motor and efficient heat dissipation features.

Setup

1. Initial Oil Filling:

The vacuum pump is shipped without oil. Before first use, you must add vacuum pump oil.

1. Unscrew the oil mist trap (blue cap) from the top of the pump.
2. Carefully pour the provided vacuum pump oil into the oil tank. Fill the oil to the middle of the sight glass level line, between the 'MIN' and 'MAX' marks.
3. Reattach the oil mist trap and ensure it is securely tightened.

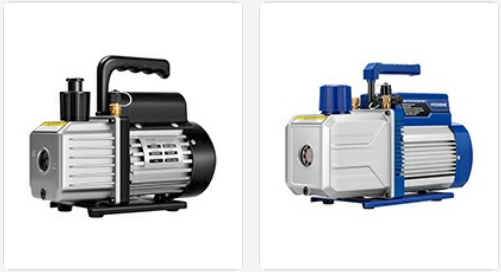

Figure 3: Oil filling port and bottom oil drainage for easy maintenance.

2. Connecting to System:

The pump features both 1/4-inch SAE and 1/2-inch Acme intake fittings for versatile connections.



Figure 4: Air Inlet Port showing 1/2" ACME and 1/4" SAE connections with anti-backflow design.

For R410a units, a 5/16-inch adapter (not included) is required. Use a 1/4" male to 5/16" female adapter before proceeding.

Operating Instructions

Vacuuming an AC System (Automotive Example):

▶ **Watch video online**
VIVOHOME 3.5 CFM Vacuum Pump Set

Video 1: Detailed guide on using the VIVOHOME Vacuum Pump for automotive AC system servicing, including setup, vacuuming, and refrigerant charging.

1. **Connect Manifold Gauge:**
    - Hang the manifold gauge in a convenient location, such as under the hood.
    - Connect the three-color refrigerant hoses to the manifold gauge: blue to low-pressure port, yellow to refrigeration port, and red to high-pressure port.
    - Rotate the quick couplers counter-clockwise to close them.
    - Connect the blue and red quick couplers to the low-pressure and high-pressure ports of the automotive air conditioner, respectively.
    - Rotate the blue and red quick couplers clockwise to open them.
2. **Prepare Vacuum Pump:**
    - Unscrew the oil mist trap from the vacuum pump.
    - Add oil to the vacuum pump oil tank, ensuring the level is in the middle of the sight glass.
    - Reattach the oil mist trap and remove the dust cover from the exhaust port.
    - Connect the other end of the yellow hose from the manifold gauge to the air inlet port of the vacuum pump.
3. **Start Vacuuming:**
    - Open the red and blue knobs on the manifold gauge.
    - Switch on the vacuum pump.

- Continue vacuuming for 10-15 minutes until the low-pressure gauge reaches -1.

4. **Check for Leaks:**
    - Rotate clockwise to close the blue and red knobs of the gauge.
    - Disconnect the yellow hose from the vacuum pump to prevent backflow.
    - Switch off the vacuum pump.
    - Maintain pressure for 5-10 minutes, observing the low-pressure gauge. If the needle does not rise, it confirms no leaks in the air conditioning system.
5. **Add Refrigerant:**
    - Rotate the can tap counter-clockwise to release the pin.
    - Reconnect the refrigerant can to the can tap.
    - Connect the yellow hose to the can tap valve port.
    - Rotate the can tap clockwise to pierce the refrigerant can.
    - When there's little refrigerant left in the can, invert the can for better addition.
    - Unscrew the copper cap on the 3-way valve of the gauge and press the valve core to release air. Screw the copper cap back on.
    - Rotate the blue knob counter-clockwise to open the manifold gauge.
    - Turn on the air conditioner and switch to cooling mode.
    - Add refrigerant according to the amount specified on the air conditioner's nameplate.
    - Rotate the blue knob clockwise to close the gauge.
    - Rotate the blue and red quick couplers counter-clockwise to close and remove them, completing the refrigerant charging process.

Vacuuming an AC System (Residential/Split Unit Example):

▶ **Watch video online**

Video 2: Demonstration of using the VIVOHOME Vacuum Pump for residential AC system vacuuming and refrigerant charging, including recovery machine setup.

1. **Connect to AC Unit:**
    - Connect the blue hose to the low-pressure port of the air conditioner. For R410A units, the low-pressure port is 5/16" SAE; use a 1/4" male to 5/16" female adapter before proceeding (adapters included).
2. **Prepare Vacuum Pump:**
    - Unscrew the oil mist trap from the vacuum pump.
    - Add oil to the vacuum pump oil tank, ensuring the level is in the middle of the sight glass.
    - Reattach the oil mist trap and remove the dust cover.
    - Connect the other end of the yellow hose to the vacuum pump's air inlet port.
3. **Start Vacuuming:**
    - Open the blue knob of the manifold gauge.
    - Switch on the vacuum pump.
    - Continue vacuuming for 10-15 minutes until the low-pressure gauge reaches -1.
4. **Check for Leaks:**

- Rotate clockwise to close the blue knob of the gauge.
- Disconnect the yellow hose from the vacuum pump to prevent backflow.
- Switch off the vacuum pump.
- Maintain pressure for 5-10 minutes, observing the low-pressure gauge. If the needle does not rise, it confirms no leaks in the air conditioning system.

5. **Add Refrigerant (using electronic scale):**

    - Connect the yellow hose to the liquid port (red high-pressure port) of the refrigerant cylinder.
    - Open the liquid port valve of the refrigerant cylinder.
    - Unscrew the copper cap on the main port connector of the manifold gauge and press the valve core to release air. Screw the copper cap back on.
    - Place the refrigerant cylinder on an electronic scale and zero the weight.
    - Rotate the blue knob counter-clockwise to open the manifold gauge.
    - Turn on the air conditioner and switch to cooling mode.
    - Monitor the electronic scale to ensure the refrigerant charge matches the amount listed on the air conditioner's nameplate.
    - Rotate the blue knob clockwise to close the manifold gauge.
    - Rotate the refrigerant cylinder valve clockwise to close it.
    - Quickly unscrew the blue connecting hose on the low-pressure side of the air conditioner's outdoor unit to complete the filling.

Maintenance

Oil Level and Quality:

Regularly check the oil level through the transparent oil window. The oil should be clear. If it appears milky or discolored, it indicates contamination and requires replacement.



Figure 5: Exhaust port and visible oil level marks (Max 310ml, Min 220ml).

Oil Change:

To drain old oil, open the bottom oil drain valve. Refill with new vacuum pump oil as per the initial setup instructions.

Oil Mist:

A light oil mist is normal during operation. Excessive oil mist from the air outlet may indicate:

- Overfilled oil reservoir.
- Contaminated or degraded oil.
- Vacuum leaks.
- Clogged or failing oil mist separator.
- Overloading or operating outside design parameters.



Figure 6: Explanation of normal oil vapor and reasons for excessive oil mist.

Troubleshooting

Problem	Possible Cause	Solution
Pump not starting	No power, motor overload, faulty switch.	Check power connection, allow motor to cool, inspect/replace switch.
Poor vacuum performance	Low oil level, contaminated oil, system leak, clogged filter.	Add/change oil, check system for leaks, clean/replace filters.
Excessive noise/vibration	Low oil, worn components, unstable surface.	Check oil level, inspect pump for damage, place on stable surface.
Oil leaking	Loose fittings, damaged seals, overfilled oil.	Tighten fittings, replace seals, drain excess oil.

Specifications

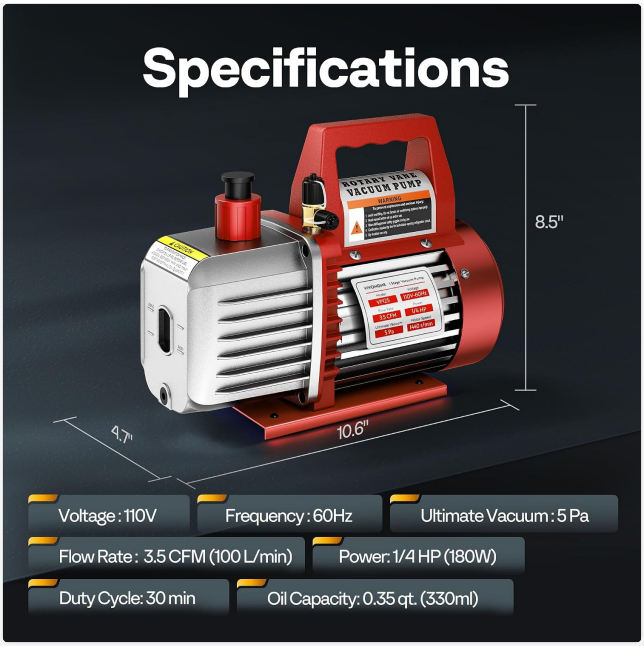

Figure 7: Visual representation of key product specifications.

Specification	Value
Brand	VIVOHOME
Model	VH409-RE
Color	Red
Material	Aluminum
Power Source	AC-powered
Item Weight	11.4 Pounds
Maximum Flow Rate	3.5 CFM (100 L/min)
Voltage	110 Volts
Motor Power	1/4 HP (180W)
Ultimate Vacuum	5 Pa
Motor Speed	1440 r/min
Product Dimensions	10.8 x 9 x 4.5 inches

Warranty and Support

For warranty information, technical support, or replacement parts, please contact VIVOHOME customer service through their official website or the retailer where the product was purchased.
Visit the VIVOHOME Store: VIVOHOME Official Store

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