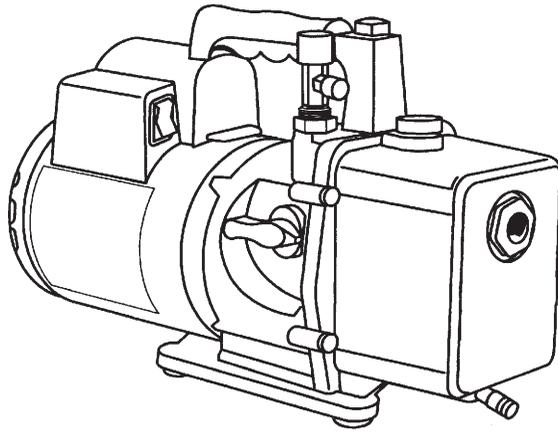


# **ROBINAIR®**

*Operating Manual*



**High Performance Vacuum Pump**

**Model 15434**

**For use with refrigerants  
R-12, R-22, R-500, R-502, or R-134a**



# Robinair High Performance Vacuum Pumps

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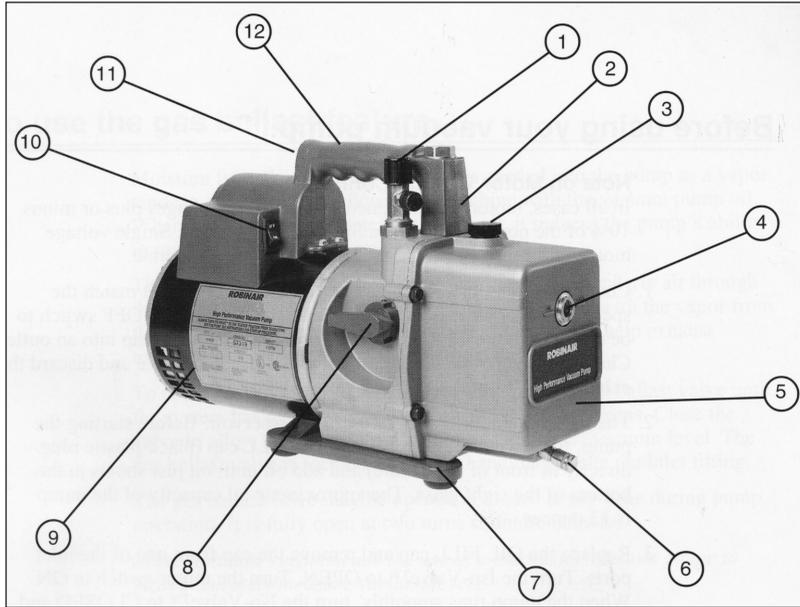
Congratulations on purchasing one of Robinair's top quality vacuum pumps. Your pump has been engineered specifically for air conditioning and refrigeration service, and is built with Robinair's proven offset rotary vane for fast, thorough evacuation.

You'll appreciate these key features...

- Iso-Valve™** Allows the pump to be shut off while still connected to the A/C-R system, which is handy for checking rate of rise. With the valve handle in the OPEN position, the pump is open to the system being evacuated. In the CLOSED position, the pump is isolated from the system.
- High Vacuum Rating** The two-stage, offset rotary vane design provides powerful, quiet, high vacuum capability and ensures moisture removal, while the high pumping capacity reduces evacuation time.
- Multiple Refrigerant Capability** The 15434 can be used for R-12, R-22, R-500, and R-502, as well as R-134a. The inlet "tee" has both 1/4" SAE external flare and 1/2" Acme fittings to accommodate hoses from either type of manifold.
- Directed Exhaust** Exhaust is expelled through the handle to direct it away from the service technician.
- Gas Ballast** A precise amount of atmospheric air is introduced into the pump, preventing condensation of moisture vapor and helping maintain the purity of the pump oil. By using the gas ballast, the pump operates more efficiently and pump life is extended.
- Sure-Grip Handle** The one-piece, molded handle makes it easy to carry the pump to and from job sites, and the handle stays cool to the touch during operation.
- Compact Design** The pump measures approximately 15" long, while aluminum housing and offset rotary vanes keep the pump weight low, making it easy to carry.

# Pump Components

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1. Intake Fitting (upper fitting is  $\frac{1}{2}$ " Acme, side fitting is  $\frac{1}{4}$ " SAE)
2. Gas Ballast Valve (located beside handle base)
3. Oil Fill Port
4. Sight Glass
5. Die-Cast Aluminum Housing
6. Oil Drain
7. Molded Polycarbonate Base
8. Iso-Valve™ — Isolates the pump from the system
9. Powerful, High Torque Motor
10. Power Switch
11. Through-The-Handle Exhaust
12. Sure-Grip Handle

**For use on A/C-R systems using CFCs, HCFCs, and HFCs in conjunction with mineral oil, ester oil, alkylbenzene oil and PAG oil as lubricants. Not for use with ammonia or lithium bromide systems. Not for use with flammable refrigerants.**



## WARNINGS



**Wear goggles when working with refrigerant. Contact with refrigerant may cause injury.**



**Incorrect use or connections may cause electrical shock hazards. Read and follow instructions carefully and take precautions to avoid electrical shock hazards. Verify all associated devices are correctly grounded before energizing circuits.**



**The normal operating temperature will cause certain external portions of the pump to be hot to the touch. Do not touch the pump housing or motor during operation.**



**Use separate manifolds and hoses for R-134a systems. Cross-contamination with other refrigerant types will cause severe damage to the A/C system and to service tools and equipment. Do not mix refrigerant types through a system or in the same container!**



**Avoid breathing refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose, and throat. To remove R-134a from the A/C system, use service equipment certified to meet the requirements of SAE J2210 (R-134a recycling equipment). If accidental system discharge occurs, ventilate the work area before resuming service.**



**HFC-134a service equipment or vehicle A/C systems should not be pressure tested or leak tested using compressed air. Some mixtures of air/HFC-134a have been shown to be combustible at elevated pressures. These mixtures are potentially dangerous and may result in fire or explosion causing injury or property damage.**

**Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.**

## Before using your vacuum pump...

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***Note on Motor Voltage Connections:***

*In all cases, motors are designed for operating voltages plus or minus 10% of the normal rating (see SPECIFICATIONS). Single voltage motors are supplied fully connected and ready to operate.*

1. Verify the voltage and frequency at the outlet match the specifications on the pump motor decal. Check the ON-OFF switch to be sure it is in the OFF position before you plug the pump into an outlet. Verify the gas ballast valve is closed. Remove and discard the exhaust plug from the end of the pump's handle.
2. The pump is shipped without oil in the reservoir. Before starting the pump, fill it with oil. Remove the OIL FILL cap (black plastic plug directly in front of the handle), and add oil until oil just shows in the bottom of the sight glass. Approximate oil capacity of pump: 13 ounces.
3. Replace the OIL FILL cap, and remove the cap from one of the inlet ports. Turn the Iso-Valve to OPEN. Turn the motor switch to ON. When the pump runs smoothly, turn the Iso-Valve to CLOSED and replace the cap on the inlet port. This may take from two to 30 seconds depending on the ambient temperature. After the pump runs for approximately one minute, check the sight glass for correct oil level — oil should be even with the sight glass OIL LEVEL line. Add oil if necessary.

***NOTE:*** *When the pump is running, the oil level should be even with the line on the sight glass. Underfilling will result in poor vacuum performance. Overfilling can result in oil blowing from the exhaust.*

The pump is now ready to evacuate air conditioning and refrigeration systems. Follow normal service procedures and the A/C-R manufacturer's instructions for connections to the system.

**CAUTION** Before connecting your vacuum pump to an A/C-R system, remove refrigerant from the system in an accepted manner using an approved recovery unit. Damage to the pump may occur if evacuation is started while the system is under high pressure.

## To use the gas ballast feature...

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Moisture from the A/C-R system that is carried into the pump as a vapor tends to condense into a liquid and combine with the vacuum pump oil. When moisture contaminates pump oil, it reduces the pump's ability to reach its ultimate deep vacuum level.

The gas ballast valve purges a small amount of atmospheric air through the exhaust chamber. This extra volume of air mixes with the vapor from the refrigerant system to prevent condensation and to help exhaust moisture in the form of vapor from the pump.

To use the gas ballast, start the pump and open the gas ballast valve until the system has reached approximately 1000–3000 microns. Close the valve to allow the pump to pull down to its ultimate vacuum level. The gas ballast valve is located beside the handle, opposite the inlet fitting.

The gas ballast valve may be opened or closed at any time during pump operation. It is fully open at two turns counterclockwise.

*NOTE: Robinair recommends the use of a thermistor vacuum gauge to most accurately measure vacuum levels.*

## To shut down your pump after use...

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To prolong pump life and promote easy starting, follow these procedures for shutdown:

1. Close the manifold valve between the pump and the system.
2. Turn the Iso-Valve to the CLOSED position.
3. Remove the hose from the pump inlet.
4. Turn the pump power switch to OFF. Return the Iso-Valve to the OPEN position for a few seconds to relieve any vacuum inside the pump.
5. Cap the inlet port to prevent any contamination or loose particles from entering the port.

# To maintain your high vacuum pump...

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For maximum performance, Robinair recommends changing vacuum pump oil after each use.

## **Vacuum Pump Oil**

The condition and type of oil used in any high vacuum pump are extremely important in determining the ultimate attainable vacuum. Robinair recommends the use of our Premium High Vacuum Pump Oil. This oil has been specifically blended to maintain maximum viscosity at normal running temperatures and to improve cold weather starts.

Robinair Premium High Vacuum Pump Oil is available in handy quart containers or in convenient gallon containers. Order by part number:

13203 — Quart (shipped 12 quarts per case)

13204 — Gallon (shipped 4 gallons per case)

## **Oil Change Procedure**

1. Verify the pump is warmed up.
2. Remove the OIL DRAIN cap. Drain contaminated oil into a suitable container and dispose of it according to regulations in your jurisdiction. Oil can be forced 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.
3. When the flow of oil has stopped, tilt the pump forward to drain residual oil.
4. Replace the OIL DRAIN cap. Remove the OIL FILL cap, and fill the reservoir with new vacuum pump oil until the oil just shows at the bottom of the sight glass. The approximate oil capacity of the pump is 13 ounces.

5. Verify the inlet ports are capped, and turn ON the pump. Allow it to run for one minute, then check the oil level. If the oil is below the sight glass OIL LEVEL line, add oil slowly (with the pump running) until the oil reaches the OIL LEVEL line. Replace the OIL FILL cap, making sure the inlet is capped and the drain cap is tight.
6. If the oil is severely contaminated with sludge that forms when water is allowed to collect in the oil, drain the oil from the pump and remove the six screws holding the reservoir cover. Lift the cover off the pump and wipe out the inside of the reservoir.

Repeat this procedure as required until the contamination is removed. Replace the OIL DRAIN cap, and refill the reservoir to the correct level with fresh pump oil (see Step 4).

### **To Clean The Pump**

Clean the pump with soap and water only. Do not use commercial cleaners that contain degreasing agents that can damage polycarbonates. The pump handle and base are made of Lexan<sup>®</sup>, one of the toughest polycarbonate plastics available. However, it is sensitive to degreasing agents.

*\*Lexan is a registered trademark of General Electric*

# Troubleshooting Guide

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This Robinair pump has been designed for dependable use and long life. If something should go wrong, however, the following guide will help you get the pump back into service as quickly as possible.

If disassembly of the pump is required, please check your warranty. The warranty may be voided by misuse or customer tampering that results in the pump being inoperable.

## **Failure To Start**

Check line voltage. Robinair pumps are designed to start at  $\pm 10\%$  line voltage (loaded) at 32° F. At extremes, however, switching between the start and run windings may occur. When starting the pump in cold temperatures, be sure the Iso-Valve and inlet port are open to free air.

## **Oil Leakage**

1. Verify the oil is not a residual accumulation from spillage, etc.
2. If leakage exists, the module cover gasket or the shaft seal may need replacing. Follow the instructions supplied with seal replacement kit, part number 15367. If leakage exists in the area of the oil drain plug, reseal the plug using a commercial pipe thread sealer.

## **Failure To Pull A Good Vacuum**

1. Verify the Iso-Valve on the pump is in the OPEN position and the gas ballast knob is tightly sealed.
2. Confirm the vacuum gauge and all connections are in good condition and leak-free. 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.
3. Confirm the pump oil is clean. A severely contaminated pump may require several oil flushes. See OIL CHANGE PROCEDURE.

**NOTE:** Use only high vacuum pump oil. Other oils will prevent pull-down to a deep vacuum.

4. Confirm the gas ballast knob is tightly closed.
5. Verify the oil is at the correct level. For maximum pump operation, the oil must be even with the OIL LEVEL line on the sight glass when the pump is running. See OIL CHANGE PROCEDURE. Do not overfill — operating temperatures will cause the oil to expand so it will appear at a higher level than when the pump is not running. To check the oil level, start the pump with the inlet capped. Check the oil level in the sight glass. Add oil if necessary.

### **When You Need Help**

If these procedures do not correct the problem, contact your nearest Robinair distributor. The distributor may recommend an additional replacement part (this manual contains a replacement parts list) or suggest you send your pump to the nearest authorized service center. Call Robinair's toll-free Technical Support Line for further information. You may also visit our website at [www.robinair.com](http://www.robinair.com) for technical support.



## **Warranty Coverage**

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Robinair vacuum pumps are warranted against defects in material and workmanship for one year of normal use from the date of purchase. See your distributor for warranty details.

### **Out of Warranty**

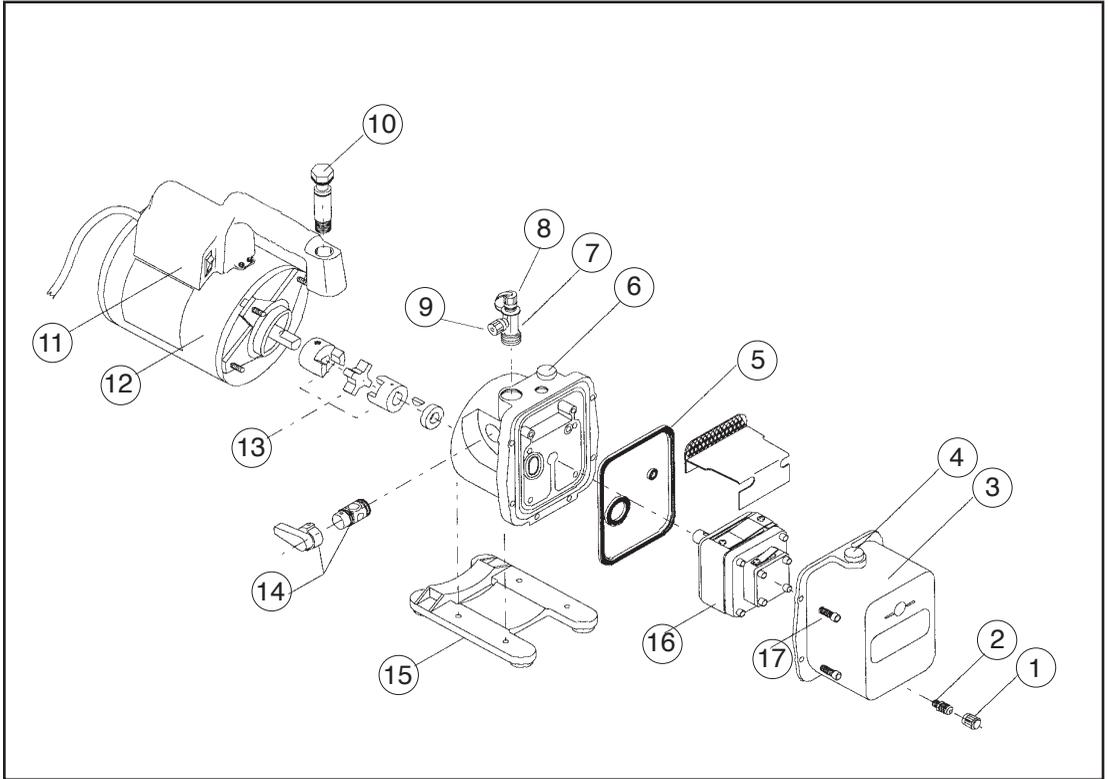
A pump which is no longer covered by the one-year warranty period and which fails to operate correctly should be returned to the distributor or an authorized Robinair Service Center with a complete, written explanation of the problem. Before returning an out-of-warranty pump, review all maintenance procedures to avoid an unnecessary return. Replacement parts are available for doing your own service.

## Replacement Parts

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*Figure numbers refer to the graphic on the next page.*

<b>Part</b>	<b>Figure</b>	<b>Part No.</b>
Oil Drain Cap ( <i>brass; qty. 6</i> )	1	<b>40572</b>
Oil Drain ( <i>includes cap</i> )	2	<b>48116</b>
Cover Kit ( <i>includes items 1, 2, 4, 5, 16</i> )	3	<b>15337</b>
Oil Fill Cap ( <i>includes gas ballast valve #6</i> )	4	<b>15371</b>
Inlet “Tee” Fitting ( <i>includes caps</i> )	7	<b>15495</b>
Inlet Cap, 1/2" Acme ( <i>qty. 2</i> )	8	<b>15330</b>
Inlet Cap, 1/4" flare nylon ( <i>qty. 6</i> )	9	<b>41139</b>
Vent Bolt ( <i>includes o-rings</i> )	10	<b>15338</b>
Handle, Power Cord, Switch Assembly	11	<b>15366</b>
Motor	12	<b>15344</b>
Coupling	13	<b>48103</b>
Iso-Valve™ Assembly	14	<b>15368</b>
Base and Foot Assembly	15	<b>15369</b>
Module Assembly ( <i>includes items 1–9 &amp; 14</i> )	16	<b>15547</b>
Replacement Seal Kit ( <i>not shown</i> )	17	<b>15367</b>



## Pump Specifications

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Free Air Displacement	4 CFM
Stages	2
Motor Speed	1725 RPM
Voltage $\pm 10\%$	115V 60 HZ
Factory Micron Rating	15 microns
Approximate Oil Capacity	13 oz.
Weight	29 lbs.
Width	5 <sup>5</sup> / <sub>8</sub> in.
Height	9 <sup>3</sup> / <sub>4</sub> in.
Length	15 in.
Intake	1/2 in. Acme; 1/4 in. flare
Min. Starting Temperature (at 90% Voltage)	32° F
Motor Size	1/3 hp; capacitor start
Operating Temperature	155° F

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- Note:*
- 1. Motors are internally protected (automatic reset).*
  - 2. Operating temperatures are typical for normal operating conditions.*

# **ROBINAIR®**

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[www.robinair.com](http://www.robinair.com)

**Due to ongoing product improvements, Robinair reserves the right to change design, specifications, and materials without notice.**