

ROBINAIR®

AN SPX BRAND



High Performance Vacuum Pump

Model 15120A/15121A

Operating Manual 2

Table of Contents

.....

Warnings	1
CoolTech® high performance vacuum pumps.....	1
Pump components.....	2
Before using your vacuum pump.....	2
15121A Wiring Instructions.....	3
To use the gas ballast feature.....	3
To shut down your pump after use	3
To maintain your high vacuum pump.....	3
Vacuum pump oil	3
Oil change procedure	3
Cleaning your pump	4
Motor lubrication	4
Troubleshooting guide	4
Failure to start.....	4
Oil leakage.....	4
Failure to pull a good vacuum	4
CoolTech® specifications	4
When you need help	4
Replacement parts	5
Warranty coverage	5

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 refrigerants. Contact with refrigerants may cause injury.



Incorrect use or connections may cause electrical shock hazards. Study and follow the instructions carefully, and take precautions to avoid electrical shock hazards. All associated devices are properly 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.

CoolTech® High Performance Vacuum Pumps

Congratulations on purchasing one of Robinair's top quality CoolTech® 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 CLOSE 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.

Lifetime filtration

The intake filter prevents foreign matter from entering the pumping chamber, and an exhaust filter separates oil vapor from the exhaust flow.

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

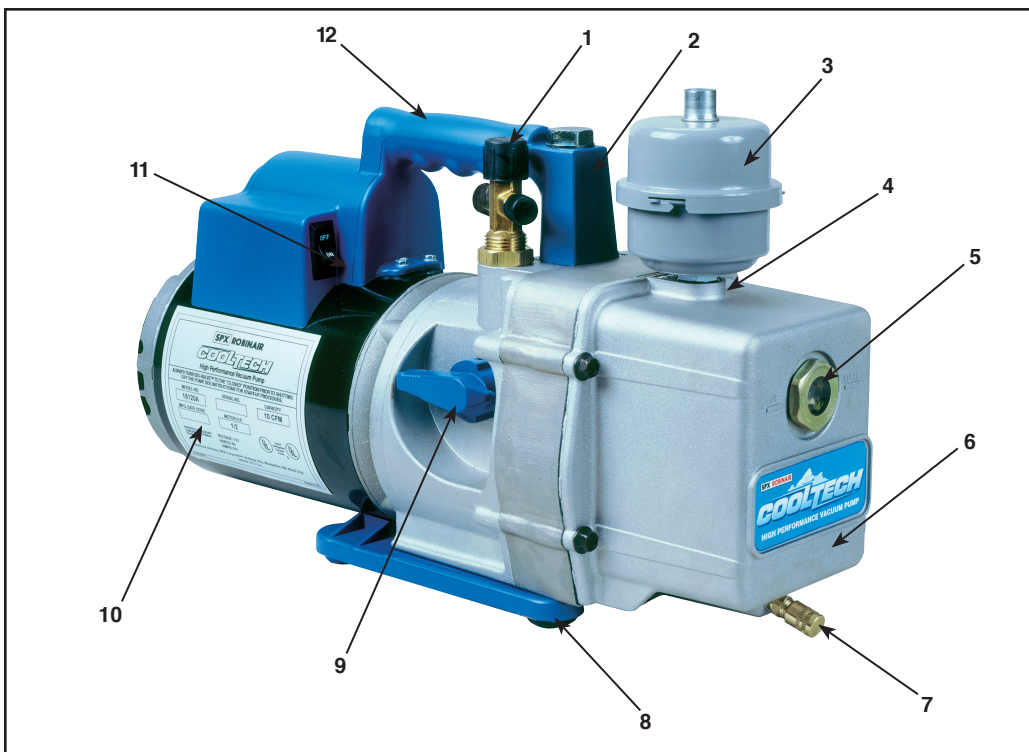
The one-piece, molded handle makes it easy to carry the pump to and from job sites, and the handle stays cool to the touch during operation.

Compact design

The pump measures approximately 42 cm (16½ in.) long, while aluminum housing and offset rotary vanes keep the pump weight low, making it easy to carry.

NOTICE: Airborne Noise Emissions

This equipment has been tested for airborne noise emission per the Council Directive for Machinery (89/392/EEC) Section 1.7.4 Instructions — Essential Health and Safety Requirements. Sound levels do not exceed 80dB(A) actual value.



Pump components

1. Intake Fitting
2. Gas Ballast Valve (located beside handle)
3. Exhaust Filter
4. Oil Fill Port
5. Sight Glass
6. Die-Cast Aluminum Housing
7. Oil Drain
8. Molded Polycarbonate Base
9. Iso-Valve™
(isolates the pump from the system)
10. High Torque Motor
11. Power Switch
12. Sure-Grip Handle

Before using the vacuum pump

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 specifications on the pump motor decal. Place the ON / OFF switch in the OFF position. Verify the gas ballast valve is closed.
2. **The pump is shipped without oil in the reservoir.** Remove and discard the plastic plug from the top of the oil reservoir. Before starting the pump, fill with oil until the oil just shows in the bottom of the sight glass. The approximate oil capacity of the pump is 488 milliliters (16½ ounces).

3. Thread in the exhaust filter (hand tight), and remove the cap from one of the inlet ports. Turn the Iso-Valve to OPEN. Turn the motor switch 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 ambient temperature. After the pump runs for approximately one minute, check the sight glass — oil should be even with the sight glass OIL LEVEL line. Add oil if necessary.

When the pump is running, the oil level should be even with the OIL LEVEL line. Underfilling will result in poor vacuum performance. Overfilling can result in oil blowing from the exhaust.

The vacuum 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 the vacuum pump to an A/C-R system, remove refrigerant from the system in an accepted manner. Damage to the pump may occur if evacuation is started while the system is under high pressure. Robinair recommends use of our Refrigerant Recovery and Recycling equipment.

15121A Wiring Instructions

The CoolTech vacuum pump features dual voltage ranges. Before operating the pump, read and follow these rewiring instructions (if necessary) to be certain your pump is wired for the appropriate voltage.

CAUTION: To prevent personal injury, unplug the unit before beginning service work. Incorrect use or connections can cause electrical shock. Only qualified personnel should perform service work.

The CoolTech vacuum pump is factory wired for a high voltage of 220 volts. To wire the switch for a low voltage range of 110 volts to 127 volts, follow these steps:

1. Disconnect unit from the AC power source.
2. Loosen the screws on the plate at the rear of the motor, and carefully move the plate aside to clear the opening.
3. Disconnect the leads, and reconnect for low voltage according to the following chart. (High voltage connections are also shown, in case you want to rewire at some time.)
4. Verify all connections are secure, and there are no short circuits. Verify the grounding connector is correctly connected.
5. Reinstall the plate on the rear of motor with the screws that were loosened in Step 2.
6. Use a continuity tester to check for short circuits before reconnecting the unit to the AC power source.

EMERSON MOTOR ELECTRICAL CONNECTION TABLE			
115V		220V	
WIRE	TERMINAL No.	WIRE	TERMINAL No.
WHITE	4	WHITE	3
BLACK	2	BLACK	3
RED	5	RED	5
BROWN	3	BROWN	6
LINE	1 & 4	LINE	1 & 4

To use the gas ballast feature

Moisture from the A/C-R system, 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.

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. The valve is located beside the handle, opposite the inlet fitting. When the system has reached approximately 1000–3000 microns, close the gas ballast valve to allow the pump to pull down to its ultimate vacuum level.

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 the pump

To help 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, then OPEN the Iso-Valve 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

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 convenient pint, quart, or gallon containers. Order by part number:

- 13201 — Pint (shipped 12 pints per case)
- 13203 — Quart (shipped 12 quarts per case)
- 13204 — Gallon (shipped 4 gallons per case)

Oil change procedure

1. Run the pump until warm.
2. Remove the OIL DRAIN cap. Drain contaminated oil into a suitable container and dispose according to local regulations.

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 exhaust filter, 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 488 milliliters (16½ ounces).
5. Verify the inlet ports are capped, then 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 exhaust filter (hand tight), making sure the inlet is capped and the drain cap is tight.
6. If the oil is badly contaminated with the sludge that forms when water is allowed to collect in the oil, you may need to remove the oil reservoir cover and wipe it out.

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).

Cleaning the pump

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

**Lexan is a registered trademark of General Electric*

Motor lubrication

After three years of normal service or one year of heavy-duty service, add electric motor oil or SAE 10 oil.

Troubleshooting guide

Your CoolTech 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 which results in the pump being inoperable.

Failure to start

Check the line voltage. Robinair pumps are designed to start at ±10% line voltage at 0°C (32°F). At extremes, however, switching between the start and run windings may occur.

Oil leakage

1. Confirm the oil is not a residual accumulation from spillage, etc.
2. The module cover gasket or shaft seal may need replacing. Follow instructions in Seal Replacement Kit No. 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. Confirm the Iso-Valve is OPEN.
2. Are the vacuum gauge and all connections in good condition and leak-free? Confirm leakage by monitoring vacuum with a thermistor gauge while applying vacuum pump oil at connections or suspected leak points. Vacuum will improve briefly while the oil is sealing the leak.
3. Is the pump oil clean? A badly contaminated pump may require several oil flushes. See *Oil Change Procedure*. *Note: Use only high vacuum pump oil such as Robinair's Premium High Vacuum Pump Oil. Other oils will prevent pull-down to a deep vacuum.*
4. Confirm the gas ballast knob is tightly closed.
5. Is the oil 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. Do not overfill. To check oil level, start the pump with the inlet capped. 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 parts list) or suggest you send your pump to the nearest authorized service center.

CoolTech® specifications

Model 15120A

Frequency Range	60 Hz
Voltage Range	115V
Free Air Displacement	283 l/m (10 cfm)
Stages	2
Motor Speed	1725 rpm
Factory Micron Rating	15 microns
Approximate Oil Capacity	488 ml (16½ oz.)
Weight	17.24 kg (38 lbs.)
Width	14.29 cm (5⅝")
Height	27.3 cm (10¾")
Length	41.9 cm (16½")
Intake	¼", ⅜", and ½" SAE MFL
Min. Starting Temp. (at 90% Voltage)	0°C (32°F)
Motor Size	½ HP, Capacitor Start
Operating Temp.	74°C (165°F)

CoolTech® specifications

Model 15121A

Frequency Range.....	50/60 Hz
Free Air Displacement.....	283 l/m (10 cfm)
	236 l/m @ 50 Hz
Stages.....	2
Motor Speed.....	1450/1725 rpm
Voltage Range.....	110V–127V / 220V
Factory Micron Rating.....	15 microns
Approximate Oil Capacity.....	488 ml (16½ oz.)
Weight.....	18.60 kg (41 lbs.)
Width.....	14.29 cm (5⅝")
Height.....	27.3 cm (10¾")
Length.....	44,5 cm (17½")
Intake.....	¼", ⅜", and ½" SAE MFL
Min. Starting Temp. (at 90% Voltage).....	0°C (32°F)
Motor Size.....	0,37 kw (½ HP) Capacitor Start
Operating Temp.....	74°C (165°F)

Note:

- Motors are internally protected (automatic reset).
- Operating temperatures are typical for normal operating conditions.

Replacement parts

Part	Figure	Part No.
Oil Drain Cap (6)	1	40572
Oil Drain Kit (includes Nos. 1, 2)		48116
Module Cover Kit (Nos. 1, 2, 3, 5, 18)		15139
Exhaust Filter	4	15147
Gas Ballast Knob and Seal	7	15371
Intake Fitting (includes Nos. 8, 9)		555124
Intake Caps ¼", ⅜", ½" SAE MFL	9	555133
Handle Bolt (includes o-ring)	11	15146
Handle, Power Cord, Switch Assy.	12	15366
15120A Motor and Handle Assy.	13	15136
15121A Motor and Handle Assy.	13	557127
Coupling	14	48103
Iso-Valve™ Assembly	15	15368
Base and Foot Assembly	16	15369
Pump Assembly (Nos. 1–9, 14–19)		15144
Seal Replacement Kit (not shown)		15367

Because of ongoing product improvements, we reserve the right to change design, specifications, or materials without notice.

