

BACHARACH[®]

The Measurable Difference

Vacuum Pump Models QV2 & QV5

Instruction 2002-0010

Operation & Maintenance

Rev. 2 – February 2006



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Introduction

Thank you for selecting Bacharach products for your refrigeration equipment needs. To ensure your safety, and for the safe operation of this equipment, please read, understand, and follow the information contained in this instruction manual.

The Model QV2 and QV5 are two-stage, rotary vane vacuum pumps designed to evacuate moisture and air from refrigeration systems (e.g., R-12, R-22, R-134a).

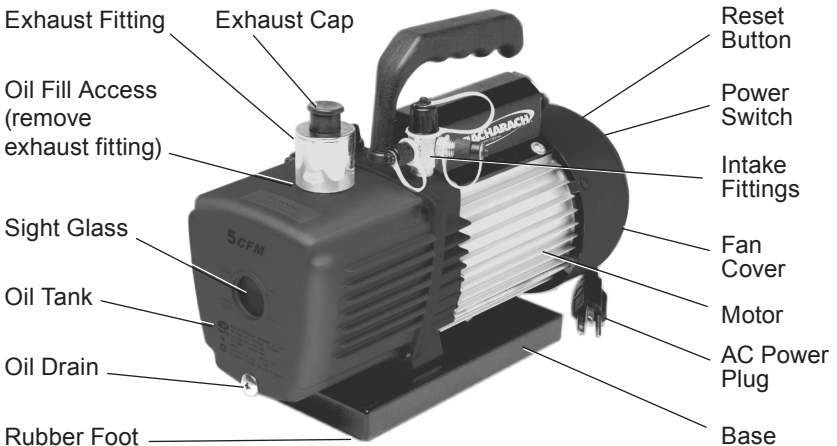
Features

- **Anti-oil-return** – A check valve prevents pump-oil from entering the evacuated system after the pump stops.
- **Environment protection** – A built-in filter eliminates oil mist, and an oil-gas separator removes oil contamination from the exhaust.
- **Aluminum alloy motor casing** – The motor casing is an aluminum alloy that has high rate of heat dissipation, which provides for continuous pump operation.
- **Two stage design** – The second stage of the two-stage design starts pumping at a lower pressure to pull a deeper ultimate vacuum.
- **High starting torque** – Designed for low temperature and low voltage operation, the pump will start in temperatures ≥ 40 °F (≥ 5 °C), at its rated input voltage of 110 VAC $\pm 10\%$.
- **Oil circulation design** – Offset rotary vanes work in conjunction with the vacuum pump oil to create high compression within the pumping chamber.

Technical Characteristics

Model	QV2	QV5
Part No.	2002-0001	2002-0005
Voltage	110V 60 Hz	110V 60 Hz
Free Air Displacement	1.7 CFM	5.3 CFM
Ultimate Vacuum	25 microns (0.03 mbar)	25 microns (0.03 mbar)
Motor	1/4 HP	1/2 HP
Intake Fitting	1/4", 3/8", 1/2" Flare	1/4", 3/8", 1/2" Flare
Motor Speed	1,720 rpm	3,450 rpm
Oil Capacity	11.8 fl. oz (350 ml)	15.2 fl. oz (450 ml)
Dimensions	14.1 x 6.8 x 11.4 in (358 x 172 x 290 mm)	14.1 x 7.1 x 11.8 in (358 x 180 x 300 mm)
Weight	21.6 lb (9.8 Kg)	26.5 lb (12 Kg)

Pump Components



Operation

Check the pump-oil level as viewed through the sight glass before each use. Add oil, as necessary, by first unscrewing the exhaust fitting and then adding oil through the oil fill access (use only high grade vacuum pump oil).

Remove intake fitting cap and connect pump to the system being evacuated using a hose with appropriate fittings. Keep the connection as short as possible, and ensure that all connections are sealed and not leaking. If desired, use a vacuum gauge manifold set to monitor the vacuum level.

Remove exhaust fitting cap; plug pump into an appropriate AC outlet; and then turn ON pump to begin the evacuation process.

After pumping is complete: turn OFF pump; disconnect power plug; remove connecting hose; and reinstall intake and exhaust caps.

Operating Precautions

Warnings:

- Do not evacuate combustible, explosive, or poisonous gases.
- Do not operate the vacuum pump in the rain.
- Do not pull out or insert power plug, or turn ON the pump in an explosive atmosphere.
- If using the pump in a confined area, connect a hose to the pump's exhaust fitting and route the hose to the outside.
- Power the pump from a grounded AC outlet. Consult a professional electrician to ensure proper grounding.
- Do not use a defective AC power plug or outlet.

Cautions:

- Do not evacuate gases that corrode metal or react chemically with the pump oil.
- If the air being evacuated contains dust or is above 175°F (80°C), then a filter or cooling device should be installed at the pump's intake.
- Do not operate the pump for more than 3 minutes with the intake open to the atmosphere.
- For proper cooling and air ventilation, keep the sides of the pump at least 1" (2 cm) away from walls, and allow 2" (5 cm) for the front and rear of the pump.
- Do not lay heavy objects on the power cord, or allow the power cord to become pinched.
- Operate the vacuum pump in a dry, well ventilated area.
- Do not operate the pump below an ambient temperature of 40°F (5°C).
- Do not use as a compression pump or transfer pump.
- Do not operate without clean vacuum pump oil.
- Do not block the exhaust fitting when the pump is operating.
- When pulling out the power plug, grip the plug rather than the cord.

Overload Protection

If the vacuum pump motor stops because of an over current condition, first turn OFF the pump and open its intake to the atmosphere. Press the Reset button located next to the Power switch, and try restarting the pump. If the overload condition persists, refer to *Troubleshooting – Difficult starting* on Page 7.

If the pump does not restart after pressing the Reset button, then the vacuum pump motor has probably overheated causing its thermal overload protector to open. Turn OFF the vacuum pump and allow the motor to cool for at least 10 minutes, after which time the thermal overload protector should automatically close.

Maintenance Precautions

Keep pump clean and avoid foreign matter from entering the pump.

Keep the vacuum pump oil at the correct level during normal operation as viewed through the sight glass — **do not run pump without oil.**

Replace the vacuum pump oil if the oil becomes dirty and looks turbid, or contains water or other volatile matter. Refer to *Replacing the Vacuum Pump Oil* on Page 8.

When storing the pump, install the intake and exhaust caps and place the pump in dry location.

Only qualified technicians should attempt to disassemble and repair the vacuum pump. Service performed by unauthorized personnel during the warranty period will void the pump's warranty. For warranty repair, please call Bacharach Service at 724-334-5000.

Troubleshooting

Problem	Probable Cause	Remedy
Pump does not produce desired vacuum	Oil level low	Add oil until level is correct as viewed through sight glass
	Oil emulsified or dirty	Replace with fresh high grade vacuum pump oil
	Oil inlet or oil flow is blocked	Clean oil inlet and filtering screen
	System leak	Check system being evacuated for leakage and repair
	Pump too small	Check the size of system being evacuated and choose proper pump
	Pump worn	Contact Bacharach Service
Oil leakage	Oil tank screws loose	Tighten oil tank screws
	Oil seal or tank gasket damaged	Contact Bacharach Service
Oil injection	Too much oil in tank	Drain oil until level is correct as viewed through sight glass
	Pump too small	Check the size of system being evacuated and choose proper pump
Difficult starting	Oil temperature too low	Open intake to atmosphere and intermittently start motor to heat pump oil
	Foreign matter in pump	Clean pump by replacing vacuum pump oil
	Motor defective	Contact Bacharach Service

Replacing the Vacuum Pump Oil

Using clean, fresh vacuum pump oil is a critical part of achieving the desired vacuum.

When replacing the vacuum pump oil, first thin down the oil by running the pump for 30 minutes with the intake closed.

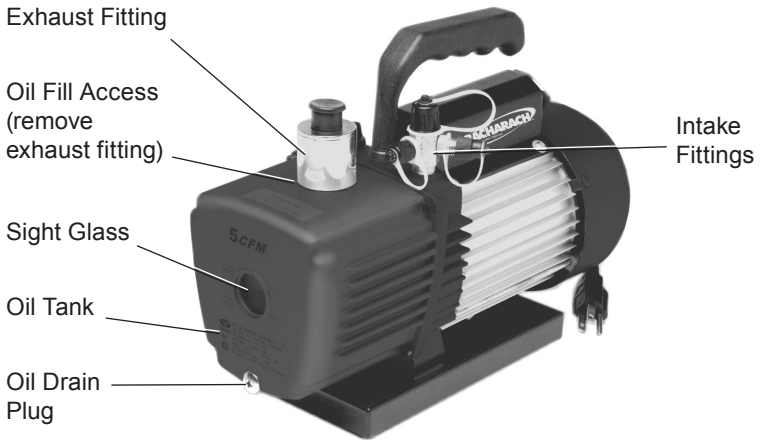
Stop the pump, remove the exhaust fitting, remove the oil drain plug and allow the oil to drain.

Note: *The exhaust fitting must be removed to allow the oil to drain due to a one-way valve located inside the fitting.*

Run pump for 1–2 minutes with intake open while adding a small amount of clean vacuum pump oil through the intake to flush out any residual oil in the pumping chamber. Repeat this process several times until the pump is clean.

Replace the oil drain plug, and then fill the oil tank through the oil fill access with fresh vacuum pump oil to the desired level as viewed through the sight glass.

After filling the oil tank, reinstall the exhaust fitting.





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