

Frick® Semi-Automated Oil Return for R-507 and Similar Refrigerants

A Simple Solution for Refrigeration System Oil Management

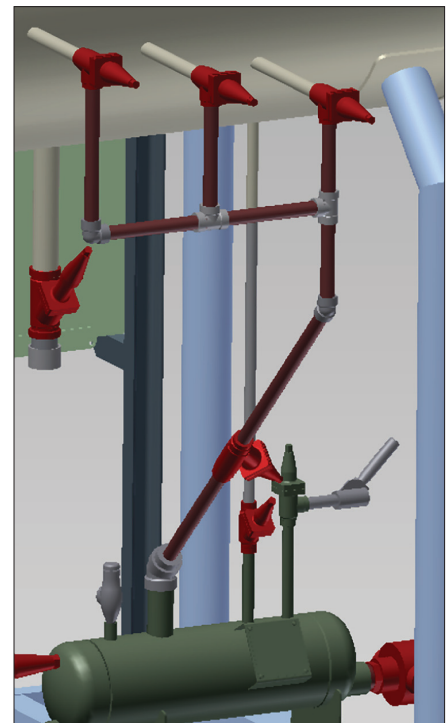


Components:

The Frick® liquid recirculator package offers a basic skimmer oil management kit for R-507 and similar refrigerants that includes: three skimmer ports, individual port isolation valves, an oil pot with immersion heater along with hand valves, and safety relief valve factory piped for manual oil handling.

The Quantum™ HD Screw Compressor Controller has an output that can be used to initiate oil return based on either time of day or compressor run time.

The semi-automated oil return upgrade to the basic skimmer kit will add positive opening solenoid valves on the oil supply and vapor return lines between the oil pot and the recirculator vessel. There is also a solenoid valve and companion check valve in the oil return line coming out of the oil pot. The Frick® recirculator starter panel is upgraded to include the control relay and output signals required to semi-automate the process.



Typical Manual Oil Skimmer System

Frick®

BY JOHNSON CONTROLS

How the Semi-Automated Oil Return System Works

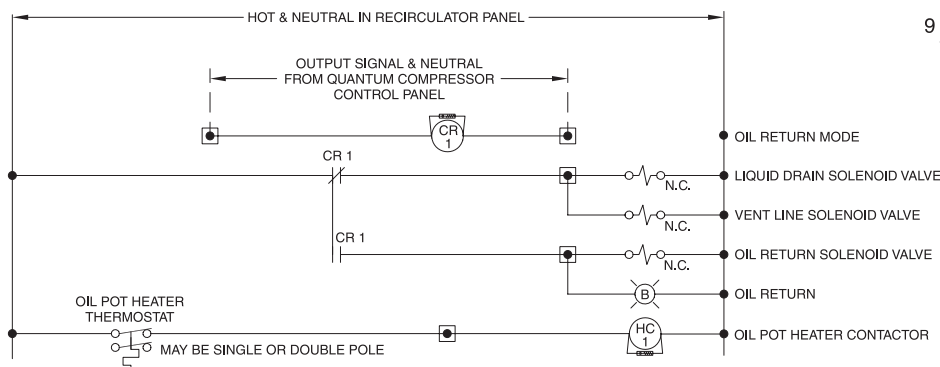
The Quantum™ HD Screw Compressor Controller is programmed and designed to output a 120V signal based on either time of day or compressor run hours.

The output signal from the Quantum™ HD activates a control relay (CR-1) inside the Frick® recirculator starter panel. Energizing CR-1 activates two contacts: removing power to the liquid drain and vapor return solenoid valves and closing a contact opening the oil return solenoid valve.

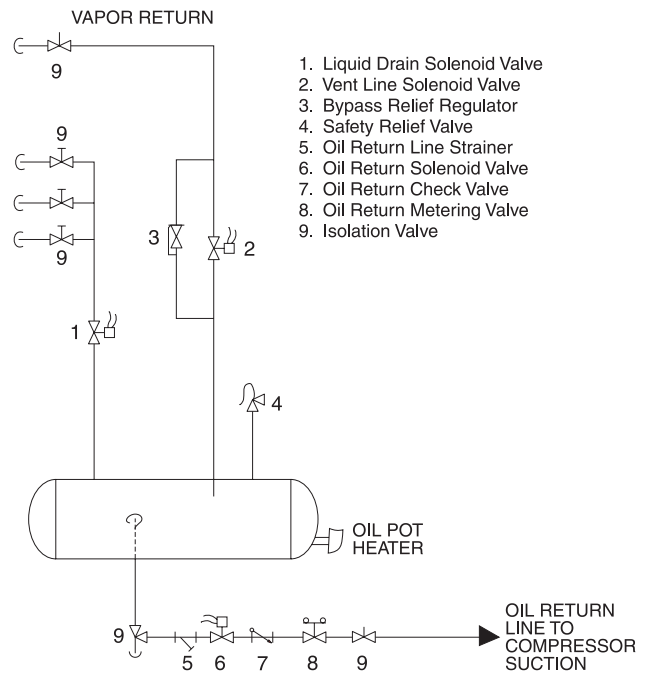
The oil pot immersion heater continues to vaporize refrigerant inside the oil pot based on an internal thermostat setting. However, this vapor now begins to build pressure inside the oil pot, which is used to push the oil through the oil return valve group to the intended recovery location. The metering valve is used to regulate the rate of oil return.

The duration of the oil return process is determined by a timer setting in the Quantum™ HD screw compressor controller.

Upon termination of the oil return signal, power is removed from the oil return solenoid valve and it closes; power is supplied to the oil drain and vapor return solenoids, which open. The oil pot is now back to normal collection mode.



Simple Controls Schematic



Simple Piping Schematic



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