

Instruction Sheet

PA-00376

October 2014

Oil Separators / A-W, A-F, A-WZ

Oil Separators / A-W, A-F, A-WZ

General Information

The function of an oil separator is to separate oil from the hot gas in the discharge line and return it to the compressor crankcase or to the oil reservoir in systems with multiple compressors.

Application

- Multiple compressor racks for supermarkets and air conditioning
- Systems with long refrigerant lines
- Systems with inherent oil return problems
- Ultra-low temperature systems
- For use with HCFCs, HFCs and their lubricants

Features

- Hermetic welded or accessible bolted flange construction.
- Solid copper connections
- Corrosion resistant paint

Specifications

- A-W, A-F Maximum working pressure: 450 psig
- A-WZ Maximum working pressure: 600 psig

Safety Instructions

- Read installation instructions thoroughly. Failure to comply can result in device failure, system damage or personal injury.
- It is intended to be installed by persons having the appropriate knowledge and skill. Before attempting to install, make sure pressure in system is brought to and remains at atmospheric pressure.
- Do not release any refrigerant into the atmosphere.
- Do not use any other fluid media without prior approval of Emerson Climate Technologies. Use of fluid not listed could result in change of hazard category of the product and consequently change of conformity assessment requirement for product in accordance with European pressure equipment directive 97123/EC or countries where applied.
- In a severely contaminated system, avoid breathing acid vapor and avoid contact with skin from contaminated refrigerant lubricants. Failure to do so could result in injury.
- The oil separator must be used only for the purpose it is designed for.

Mounting Location

The oil separator should be installed as close as possible to the compressor(s) in the main discharge line but after any installed muffler or vibration absorber.

Please make sure piping is adequately supported to prevent excessive vibration and stress on the connections.

Caution: Prevent the migration of liquid refrigerant back into the oil separator shell during off-cycles by one of the following recommendations:

- Install the oil separator in a location where it is higher than the condenser.
- If the oil separator is located slightly lower than the condenser, install the line from the oil separator to the condenser at higher level than the condenser and with a downward slope into the condenser inlet connection.
- In systems where the condenser is located higher than the oil separator, it is recommended to use a check valve at the outlet of oil separator.

Installation

Before proceeding with the installation, the oil separator must be charged with a certain amount of oil in order to actuate the float mechanism immediately after start-up. Use the same type of oil as in the compressor.

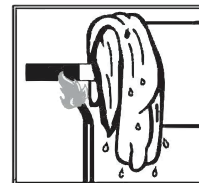
- 0.5 liter (17 oz.) initial oil charge for A-W, A-F, A-WZ 4 in. diameter models
- 0.6 liter (20 oz.) initial oil charge for A-W, A-F 6 in. diameter models.
- 0.74 liter (25 oz.) initial oil charge for A-WZ 6 in. diameter models.
- The oil must be charged through the outlet connection
- The oil separator shell must be mounted securely in a vertical position.

Warning

Protect the oil separator against vibration and gas pulsation generated by the compressor. Install a vibration absorber and muffler between the compressor and the oil separator.

- When brazing, direct the flame away from shell. Use wet rags or other suitable heat protection to prevent damage to the paint surfaces adjacent to the fittings.
- Use the correct temperature for brazing copper to copper as the fittings of the shell are solid copper. Do not exceed 675°C flame temperature.
- Purging dry nitrogen through the lines during brazing will prevent oxide scale (solid particles) from forming on the inside of the brazed joints. These particles can jam the float mechanism and clog the needle valve.

Caution: The oil separator F Type with a flange cap incorporates a gasket. Do not exceed 150°C around the flange. If so, the gasket can be damaged and it must be replaced. Keep the flange cap cool during brazing.



- The oil return line (minimum 3/8" or 10 mm) should be connected to the compressor crankcase or to the oil reservoir in the systems with multiple compressors.

- If the piping results in excessive stress to the joints of the oil separator, the pipes must be supported by suitable mounting bracket(s).

Leak Test

- After completion of installation, a pressure test must be carried out as follows:
 - According to EN378 for systems which must comply with European pressure equipment directive 971231EC.
 - To maximum working pressure of systems for others applications.

Warning

- 1) Failure to perform a leakage test could result in loss of refrigerant and personal injury.
- In case of leakage around the flange of the oil separator (flanged type), check the gasket and the tightness of bolts with 35 Nm torque. A spare gasket is supplied with each flanged type oil separator.
 - After leakage test, the unused spare gasket should be saved for future service.

Operation

- After leakage test, start system. The oil level in the compressor crankcase and in the oil reservoir must be observed after start-up, the first few hours of operation and a couple days later. The new refrigerant will mix with some oil. There may be a small portion of oil trapped in the system.

- The oil separator removes the excess oil, but this may not be returned to the compressor crankcase immediately. In normal operation, the oil return line to the compressor crankcase or to the oil reservoir will be alternately hot and cold. This is caused by opening and closing of the needle valve via lifting and lowering the float mechanism.
- In some outdoor installations, the oil separator may be subject to low ambient temperature conditions. In this case, it must be insulated to prevent the condensation of any refrigerant it passes. If condensed, the liquid refrigerant could be passed through the return line into the compressor crankcase, foaming the oil which could result in lubrication issues.
- Oil separators perform best when operating at or near the compressor discharge temperature. It is advisable to insulate the oil separator shell.

Warning

During operation of the system, the shells have a high surface temperature.

Service Tips

- Oil separator F Types are equipped with a flange and can be opened for cleaning. Always use a new gasket and tighten the bolts to 35 Nm. torque.
- The external surface of the shells are coated with epoxy paint for optimum protection against corrosion. The external surface of the shell should be checked as per EN-378 during routine inspection and service.