

HELICAL OIL SEPARATOR-RESERVOIRS

The function of a Helical Oil Separator-Reservoir is to remove oil from the discharge gas and return it to the compressor. This helps maintain the compressor crankcase oil level and raises the efficiency of the system by preventing excessive oil circulation.

Applications

Helical oil separator-reservoirs can be used in a variety of applications. Common applications include multi-compressor racks. Helical oil separator-reservoirs are intended for High Pressure Oil Management Systems.

These products are designed for use with scroll and reciprocating type compressors. They are not recommended for screw or rotary vane compressors. The standard product range is designed for use with HFC refrigerants, along with their associated oils.

Please contact Henry Technologies for new or special applications.

How it works

Upon separator entry, refrigerant gas containing oil in aerosol form encounters the leading edge of the helical flighting. The gas/oil mixture is centrifugally forced along the spiral path of the helix causing heavier oil particles to spin to the perimeter, where impingement with a screen layer occurs.

The screen layer functions as both an oil stripping and draining medium. Separated oil flows downward along the boundary of the shell through a baffle and into an oil collection chamber at the bottom of the separator.

The specially engineered baffle isolates the oil chamber and eliminates oil re-entrainment by preventing turbulence. The virtually oil free refrigerant gas then exits through a screen fitting just below the lower edge of the helical flighting.

Oil separator-reservoirs do not have an oil float assembly. Instead, a dip tube is located in the oil chamber that feeds oil to the compressor, via a rotalock valve. With proper selection, an oil separation efficiency of up to 99% can be achieved.

Main Features

- Patented Henry Technologies Design#
- High oil separation efficiency - up to 99%
- Low pressure drop
- No blocked elements because of too much oil in the system
- No oil blow-out at start up from oil left in a coalescing element
- Integrated oil reservoir

US Patents 5113671, 5404730 & 5271245; Mexico 173552; Denmark, France, UK & Italy 0487959; Germany P69106849.6-08; Taiwan UM-74863; & other worldwide patents pending



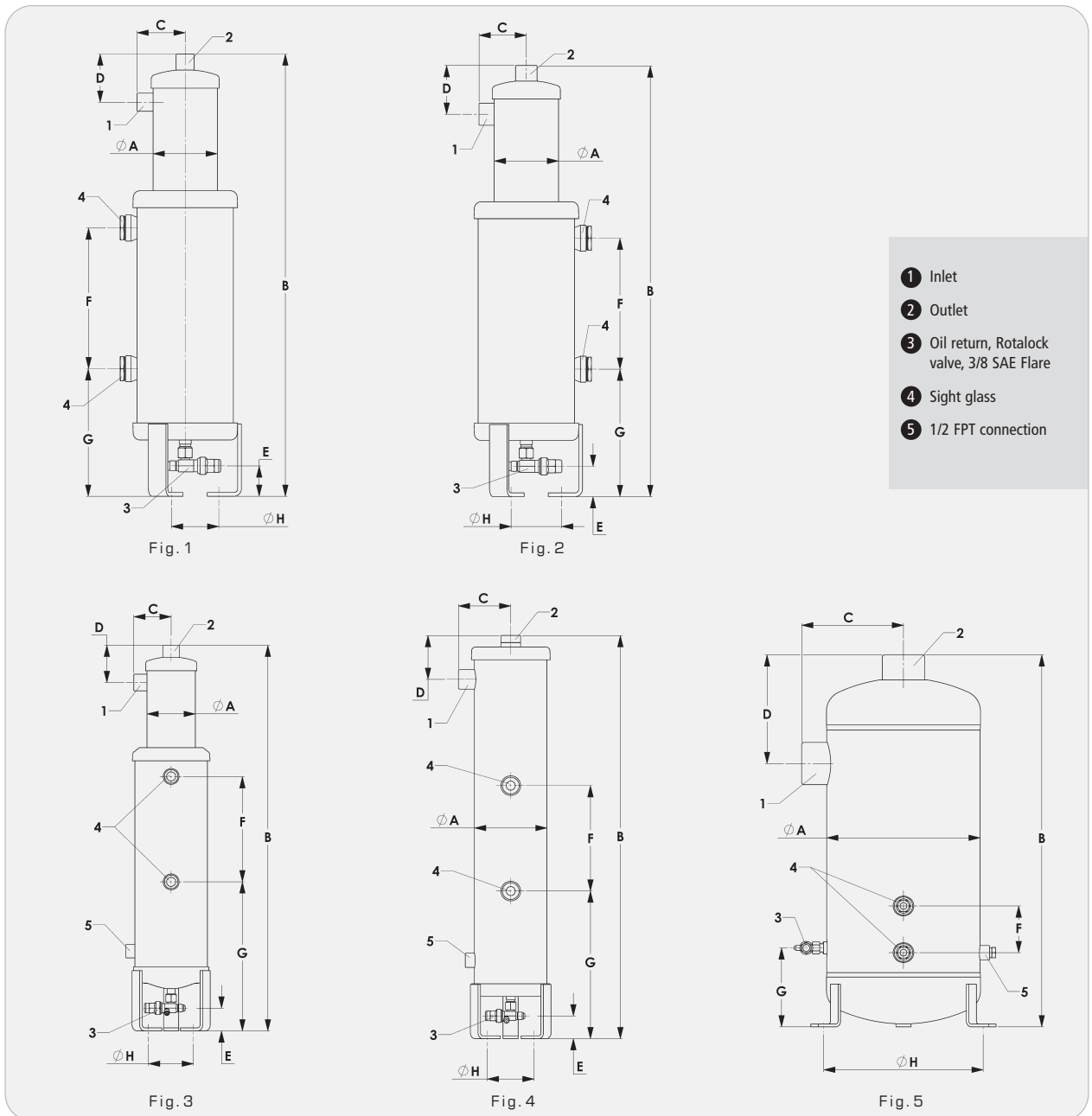
Technical Specification

Allowable operating pressure = 0 to 31 barg
Allowable operating temperature = -10°C to +130°C

Materials of Construction

The main components; shell, end caps and connections are made from carbon steel.

HELICAL OIL SEPARATOR-RESERVOIRS														
Part No	Conn Size (Inch)	Dimensions (mm)								Mounting details	Drawing reference	Oil Capacity (l)	Weight (kg)	CE Cat
		ØA	B	C	D	E	F	G	ØH					
S-5387-6L-CE	7/8 ODS	102 & 152	699	74	76	48	222	201	113	3 x Ø14mm slots	fig.1	5.7	11	CAT II
S-5388-6L-CE	1 1/8 ODS	102 & 152	682	75	78	48	207	201	113	3 x Ø14mm slots	fig.2	5.4	11	CAT II
S-5388-CE	1 1/8 ODS	102 & 152	813	75	78	48	222	311	108	3 x Ø14mm slots	fig.3	7.6	13	CAT II
S-5390-CE	1 3/8 ODS	152	850	108	91	48	222	311	113	3 x Ø14mm slots	fig.4	7.6	15	CAT II
S-5392-CE	1 5/8 ODS	152	900	108	98	48	222	311	113	3 x Ø14mm slots	fig.4	7.6	16	CAT II
S-5394-CE	2 1/8 ODS	152	902	114	105	48	222	311	113	3 x Ø14mm slots	fig.4	7.6	16.5	CAT II
S-5422-CE	2 1/8 ODS	219	699	148	164	N/A	127	149	283	3 x Ø14mm slots	fig.5	9.8	29	CAT II
S-5423-CE	2 5/8 ODS	273	790	183	201	N/A	161	173	337	3 x Ø14mm slots	fig.5	15	45	CAT III
S-5424-CE	3 1/8 ODS	324	784	215	229	N/A	99	166	388	3 x Ø14mm slots	fig.5	17	55	CAT III



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Performance data

This table provides a summary of the kW capacity of each separator for fixed evaporating and condensing temperatures. This table can be used as a quick reference guide. However, the Selection Guidelines are recommended for helical separator sizing.

Part No	Capacity in kW of refrigeration at nominal evaporator temperature						Maximum discharge volume (m ³ /hr)
	R404A/507		R22		R717		
	-40°C	5°C	-40°C	5°C	-40°C	5°C	
S-5387-6L-CE	23	30	N/A	N/A	N/A	N/A	10.2
S-5388-6L-CE & S-5388-CE	29.8	38.7	N/A	N/A	N/A	N/A	13.6
S-5390-CE	42.2	52.8	N/A	N/A	N/A	N/A	18.7
S-5392-CE	52.8	66.9	N/A	N/A	N/A	N/A	23.8
S-5394-CE	84.4	109	N/A	N/A	N/A	N/A	37.4
S-5422-CE	109	144	N/A	N/A	N/A	N/A	49.3
S-5423-CE	225	292	N/A	N/A	N/A	N/A	102
S-5424-CE	352	461	N/A	N/A	N/A	N/A	159.8

Notes:-
1. All data is for a 38°C condensing temperature, 18°C suction temperature and a connection size the same as the compressor discharge valve

Selection Guidelines

Refer to Helical Oil Separator Section for guidance. The same rules apply.

Installation – Main Issues

- Oil separator reservoirs are not 100% efficient, so installing this product should not be viewed as a replacement for oil traps, suction line accumulators or good oil return piping practices.
- Install the unit vertically and reasonably close to the compressor. Proper piping practice should be adopted to prevent excessive loads or vibration at the inlet and outlet connections. The separator must be properly supported at the mounting feet interface.
- A check valve should be located downstream of the outlet connection. This check valve is to prevent liquid refrigerant migrating from the condenser.