OIL SEPARATORS

HENRY TECHNOLOGIES







Helical Oil Separators: The helical oil separator features a centrifugal flow path achieving approximately 99. x% efficiency of oil separation with low pressure drop. Testing by an independent laboratory found that only .006% oil by volume was being discharged into the system after leaving a helical oil separator.

How the Helical Oil Separator functions: 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 serves dual functions as an oil stripping and draining medium. Separated oil flows downward along the boundary of the shell through a baffle and into the oil collection area at the bottom of the separator. The specially engineered baffle isolates the oil collection area and eliminates oil reentraintment by preventing turbulence. Virtually oil-free refrigerant gas exits through a fitting just below the lower edge of the helical flighting. A float activated oil return valve allows the captured oil to return to the crankcase or oil reservoir, thereby completing the oil circuit. Our Patented Mechanical Design offers high oil separation efficiency, plus the following advantages not found in a Coalescing Oil Separator:

- Low pressure drop throughout the entire range of velocities found in a refrigeration system.
- No clogging elements because of too much oil in the system.
- No oil blow-out at start-up from oil left in a coalescing element.

Oil can be drained from the separator when necessary through a 1/8" NPT fitting at the bottom of the separator.

How the Conventional Oil Separator functions: Refrigerant gas from the compressor containing oil in aerosol form enters the separator and passes through the inlet baffling. As it passes through the inlet screen, the fine particles collide with one another and form heavier particles that impinge on the surface of the shell wall. The gas then passes through the outlet screen where there is a final separation. The oil free gas escapes through the outlet fitting and goes to the condenser. The separated oil drips to the bottom of the separator where a float operated needle valve returns the oil to the crankcase or oil reservoir in the same way as the Helical Oil Separator.

Selecting the size of an Oil Separator: Although Oil Separator catalogs show capacity in tons or horsepower, the actual tonnage or B.T.U. capacity of a system may vary widely from the horsepower size of the compressor. The selecting of an oil separator should be first done by comparing the system tonnage or load to the rated capacities of the oil separator using the charts provided. After the selection has been made, DCFM factors can fine tune the selection. Use the DCFM charts on the back page. The ultimate deciding factor should be the maximum DCFM with care taken to not select below 33% of the maximum rating. Understanding the total system capacity and percentage of full load run time can also be helpful in selecting the oil separator. In cases where the max. DCFM has been exceeded by only a minimal amount and the system has unloading characteristics, select the smaller oil separator.

Where and how to install an Oil Separator: Before the oil separator is installed an initial charge of oil should be added to it. This amount is held over the sump of the oil separator.

CAUTION: Oil Precharge is important. Failure to precharge separator sump may result in damage to the oil return float mechanism. Use the same type of oil that is in the compressor crankcase. The oil separator should be installed reasonably close to the compressor in the discharge line between the compressor and the condenser.

NOTE: To prevent refrigerant from condensing in the oil separator during the off cycle of the system, we recommend a check valve be installed between the condenser and oil separator outlet connection. Proper piping practices must also be followed. The oil separator must be mounted securely in a vertical position. A line must be run from the oil return fitting (3/8" flare) to the compressor crankcase (Fig. 1) or oil reservoir if an oil control system is being used.

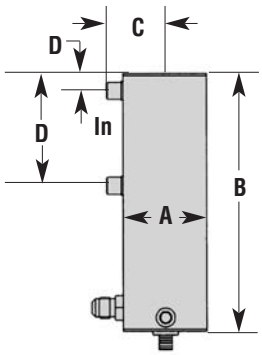
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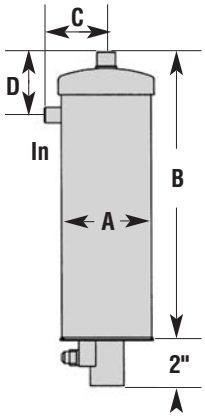
Cat. No.	Size Comm.	Dimensions In Inches					Nominal Capacity in Tons of Refrigeration at Evaporator Temperature						Nom. Discharge CFM	Pre-Charge Amount (oz.)
							R-134A		R-22		R-404A/R-507			
		A	B	C	D		-40°F	+40°F	-40°F	+40°F	-40°F	+40°F		
S-5180	¼" ODS	2.50	6.38	1.75	.44	2.12	.50	.75	.75	1.00	.75	1.00	.75	14
S-5181	⅜" ODS	2.50	7.50	1.75	.50	3.25	.75	1.00	1.00	1.50	1.00	1.50	1.00	14
S-5182	½" ODS	4	13	2.75	2.44		1.00	1.50	1.50	2.00	1.50	2.00	1.50	14
S-5185	⅝" ODS	4	15	2.75	2.50		3.00	4.00	4.50	5.50	4.00	5.50	4.00	14
S-5187	⅞" ODS	4	17	3	2.94		4.50	5.50	7.00	8.00	6.50	8.50	6.00	14
S-5188	1⅛" ODS	4	19	3	3.06		6.00	7.50	9.00	10.50	8.50	11.00	8.00	14
S-5190	1⅜" ODS	6	15	4.25	3.69		8.00	10.00	13.00	14.00	12.00	15.00	11.00	40
S-5192	1⅝" ODS	6	17	4.25	3.95		11.00	13.00	16.00	18.00	15.00	19.00	14.00	40
S-5194	2⅛" ODS	6	17	4.38	4.19		18.00	21.00	25.00	30.00	24.00	31.00	22.00	40
S-5290	1⅜" ODS	6	15	4.25	3.69		8.00	10.00	13.00	14.00	12.00	15.00	11.00	25
S-5292	1⅝" ODS	6	17	4.25	3.95		11.00	13.00	16.00	18.00	15.00	19.00	14.00	25
S-5294	2⅛" ODS	6	17	4.38	4.19		18.00	21.00	25.00	30.00	24.00	31.00	22.00	25
S-5202	2⅛" ODS	8	24	5.38	5.06		22.00	27.00	35.00	39.00	31.00	41.00	29.00	25
S-5203	2⅝" ODS	10	27	6.50	5.63		46.00	56.00	71.00	80.00	64.00	83.00	60.00	25
S-5204	3⅛" ODS	12	30	7.75	6.45		72.00	88.00	112.00	127.00	100.00	131.00	94.00	25

*FOR REPLACEMENT PARTS SEE PAGE XXX, FOR CAPACITY GRAPHS SEE PAGE XX

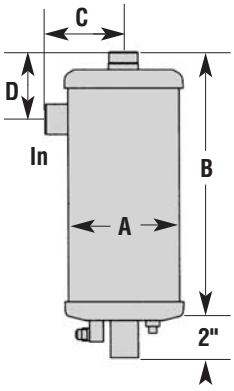
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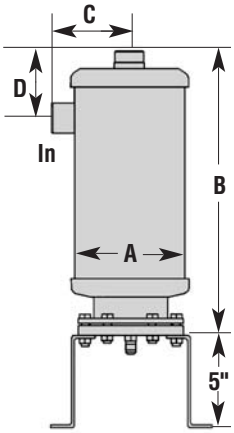
S-5180 S-5181



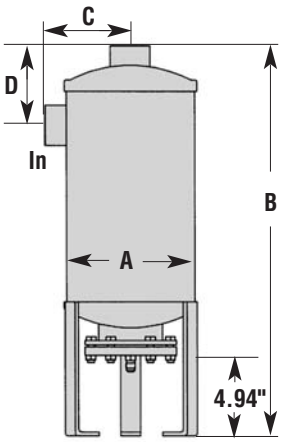
S-5182 thru S-5188



S-5190 S-5192



S-5290 S-5292



S-5202 S-5203 S-5204

U.S. patents #5,113,671 #5,404,730 #5,271,245; Mexico 173552; Denmark, France, Great Britain, Italy 0 487 959; Germany P69106849.6-08; Taiwan UM-74863; & other U.S. & foreign patents pending. Standard ⅜" flare oil return connection & ⅛" FPT oil drain; ⅜" O.D.S. oil return conn. available by ordering an "X" suffix (i.e. S-5292X). All the capacities shown are based on 100°F condensing. Minimum tonnage is 33% of rated capacity, oversizing is not acceptable. See next page for DCFM charts.

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The heart of any oil control systen is a high efficiency Helical Oil Separator. For parallel compressor systems application we recommend our S-5300 Series Helical Oil Separator/Reservoir combinations.

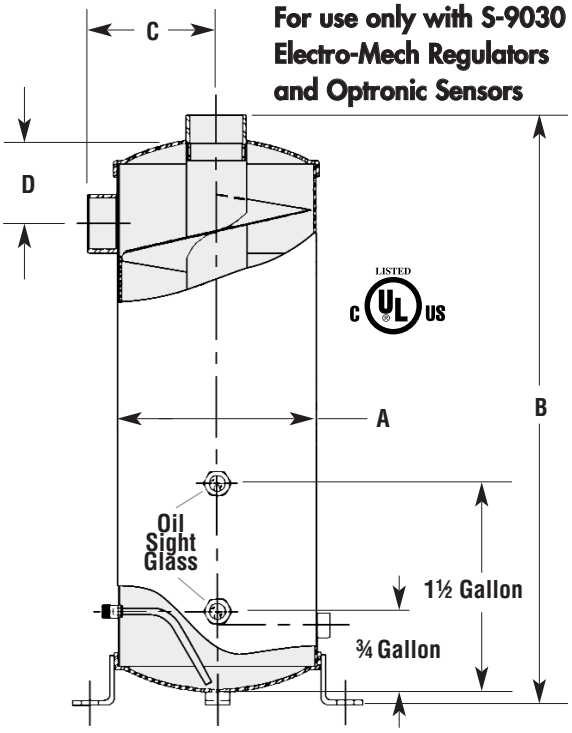
HOW IT WORKS

The Helical Oil Separator features a centrifugal flow path achieving approximately 99% efficiency of oil separation with low pressure drop. Testing by an independent laboratory found that only .006% oil by volume was being discharged into the system after leaving a helical oil separator. Virtually oil-free refrigerant gas exists through a fitting just below the lower edge of the helical flighting.

The captured oil is retained in the oil reservoir in the lower portion of the oil separator. Install the Roto Loc Valve Cat. No. **2-030-130** (which is provided) to the Roto Loc Spud on the bottom of the Oil Separator/Reservoir. Connect the ⅜" return line from the valve directly to the Electro-Mech Regulators.

This valve is the distribution valve to the OIL LEVEL REGULATORS (open position). To add or remove oil from the OIL RESERVOIR, close the valve and use the ¼" flare connection on the side of the valve. Open the valve after service.

Oil Level Regulators are activated by the lowering of the oil level in the compressor crankcase. The oil is fed from the Oil Reservoir to the Electro-Mechanical Oil Regulator and into the crankcase until the set oil level is attained.



Cat. No.	Size Comm.	Dimensions (Inches) A	B	C	D	Max. Capacity in Tons of Refrigeration at Evaporator Temperature (Nominal) R-134A -40°F	R-134A +40°F	R-22 -40°F	R-22 +40°F	R-404A/R-507 -40°F	R-404A/R-507 +40°F	Max. Discharge CFM	Oil Capacity (Gal.)
S-5390	1⅜ ODS	6	33.50	4.25	3.69	10.00	13.00	14.00	12.00	15.00	15.00	11.00	2
S-5392	1⅝ ODS	6	33.50	4.25	3.95	13.00	16.00	18.00	15.00	19.00	19.00	14.00	2
S-5394	2⅛ ODS	6	33.50	4.38	4.19	21.00	25.00	30.00	24.00	31.00	31.00	22.00	2
S-5302	2⅛ ODS	8	25.50	5.38	5.06	27.00	35.00	39.00	31.00	41.00	41.00	29.00	2
S-5303	2⅝ ODS	10	30	6.50	5.63	46.00	56.00	80.00	64.00	83.00	83.00	60.00	2
S-5304	3⅛ ODS	12	30	7.75	6.45	72.00	88.00	127.00	100.00	131.00	131.00	94.00	2

U.S. patents #5,113,671 #5,404,730 #5,271,245; Mexico 173552; Denmark, France, Great Britain, Italy 0 487 959; Germany P69106849.6-08; Taiwan UM-74863; & other U.S. & foreign patents pending. Standard ⅜" flare oil return connection & ½" FPT low oil return connection & ½" FPT low level alarm connection. **All the capacities shown are based on 100°F condensing. Minimum tonnage is 33% of rated capacity, oversizing is not acceptable. See following page for DCFM charts.**