



HANDBOOK
OIL CONTROL SYSTEMS

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 **Castel**[®]
Italian technology

CHAPTER 2 ■ OIL RESERVOIRS

FOR REFRIGERATION PLANTS THAT USE HCFC, HFC OR HFO REFRIGERANTS



APPLICATIONS

The oil reservoirs illustrated in this chapter are designed for installation on commercial refrigeration systems and on civil and industrial air conditioning plants that use the following refrigerant fluids:

- HCFC (R22)
- HFC (R134a, R404A, R407C, R410A, or R507)

belonging to Group 2, as defined in Article 13, Chapter 1, Point (b) of Directive 2014/68/EU, with reference to EC Regulation No. 1272/2008.

For specific applications with refrigerant fluids not listed above, please contact Castel Technical Department.

These reservoirs are used in “Low pressure oil control systems” and act as an oil supply. The amount of oil circulating in a refrigerating system varies depending on the operating conditions. The oil reservoir buffers these fluctuations, ensuring an additional oil flow rate.

CONSTRUCTION

Castel manufactures three oil reservoir models:

- 5740/2G: with a nominal volume of 2 US Gallons
- 5740/3G: with a nominal volume of 3 US Gallons
- 5740/4G: with a nominal volume of 4 US Gallons

The three models are supplied with:

- Two sight glasses with level indicator balls inside, to check the oil level in the reservoir. These sight glasses are already screwed on the vessel by the manufacturer.

- Two rotalock valves for connect oil fill and drain. These valves are not assembled on the reservoir by the manufacturer. Rather, they are supplied in the package, including suitable PTFE gaskets. In this way, the customer is free to choose the orientation for the assembly of the valves on the reservoir, based on its operational conditions.
- A 3/8” SAE Flare connection on the top header of the reservoir to allow the assembly of a calibrated pressure relief valve.

The calibrated pressure relief valve is not supplied with reservoir. If required to set a differential pressure between the oil reservoir and the compressor crankcase, the customer can select from two different valve models:

- 3150/X01 (with a differential pressure of 0,35 bar)
- 3150/X02 (with a differential pressure of 1,4 bar)
- 3150/X03 (with a differential pressure of 3 bar)

Note: When screwing the calibrated relief valve onto the 3/8” SAE connection, remember to insert the tapered copper gasket 7580/3 between reservoir and valve.

The reservoir is composed by two half bodies in carbon steel of adequate thickness. All threaded connections are manufactured by machining steel bar EN 10277-3 11S Mn Pb 37 + C.

The rotalock valves have two service connections, 1/4” SAE Flare. One of these can be excluded by back sealing the spindle. The two service ports have blind threaded unions. The valve body and stem are manufactured by machining steel bar EN 10277-3 11S Mn Pb 37 + C.

INSTALLATION

On new system start-up, oil must be added to the oil reservoir to the upper sight glass. During the first two working days of the refrigerating system, oil should be added to maintain a level between the two sight glasses. This procedure may require several top-ups, as the oil is partly adsorbed by the refrigerant and partly coats the lower portion of the piping when starting-up the system. Once the refrigerating system is fully operational, the oil level in the reservoir must be checked during each periodic maintenance inspection and the oil level should be topped up if it falls below the lower sight glass.

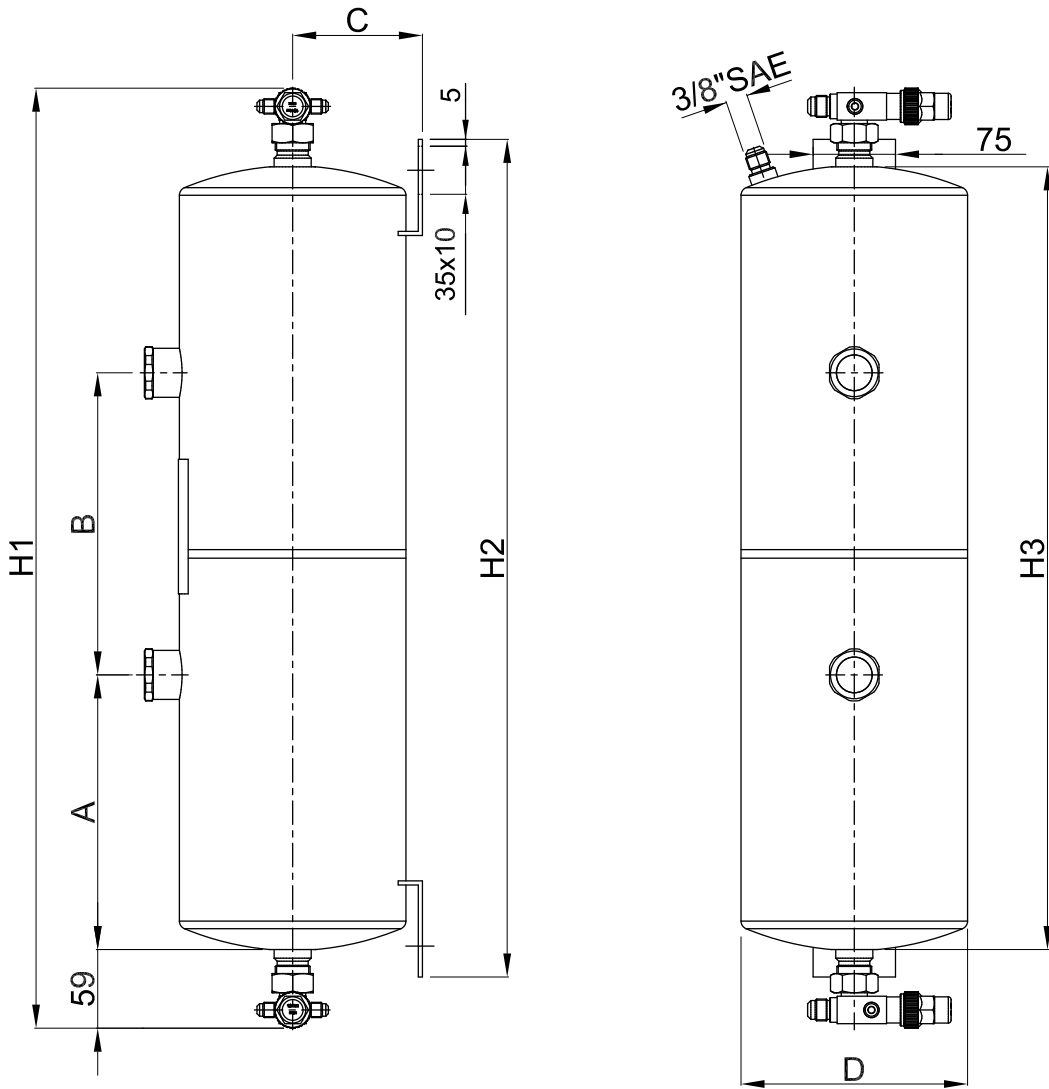
When adding or replacing an oil reservoir to an existing system, it should only be filled to the lower sight glass. Check the oil level during the first two days of operation of the plant. If the level falls below the lower sight glass, top up. If the level rises above the upper sight glass, drain the excess oil from the reservoir.

TABLE 4: General characteristics of oil reservoirs

Catalogue Number	Connections			Volume		TS [°C]		PS [bar]	Risk Category according to PED Recast
	Oil fill	Oil drain	Pressure vent valve	US Gallons	[l]	min.	max.		
5740/2G	1" UNS for 3/8" SAE Flare rotalock valve	1" UNS for 3/8" SAE Flare rotalock valve	3/8" SAE Flare	2	7	- 10	+100	33	Cat. II
5740/3G				3	10				
5740/4G				4	16				

TABLE 5: Dimensions and weights of oil reservoirs

Catalogue Number	Dimensions [mm]							Weight [g]
	A	B	C	Ø D	H ₁	H ₂	H ₃	
5740/2G	110	200	93	160	518	420	400	4656
5740/3G	110	250	103	180	568	470	450	6014
5740/4G	130	205	123	220	583	480	465	7842



5740/2G
5740/3G
5740/4G

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