



HANDBOOK
OIL CONTROL SYSTEMS

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 **Castel**[®]
Italian technology

CHAPTER 6 ■ LIQUID INDICATORS

FOR REFRIGERATION PLANTS THAT USE HCFC, HFC OR HFO REFRIGERANTS



APPLICATIONS

The liquid indicators illustrated in this chapter provide control of the regular return of oil to the compressor crankcase. They 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.

Note: The indicator series 3680 are excluded from the scope of application of Directive 2014/68/EU as they are piping components.

CONSTRUCTION

Liquid indicators series 38 are manufactured in a total hermetic construction to avoid any possible oil leaks. The glass “lens”, with suitable gasket, is housed inside the brass body and is fixed in its seat with a reflanging operation.

The main parts of these indicators are made from the following materials:

- Hot forged brass EN 12420 – CW 617N for the body
- Copper tube EN 12735-1 – Cu-DHP for solder connections
- Glass for lens
- PTFE for outlet gaskets

The liquid indicators in series 3680 are manufactured with the glass “lens” directly melted onto a steel ring, with proper surface protection, screwed on to the indicator body. Inside the ring, which is supplied with a hydrogenated nitrile butadiene (HNBR) gasket, is a Nylon ball, kept in position in front of the spy glass by a metal mesh disk. The presence of the Nylon ball in the spy glass facilitates immediate reading of the oil level.

INSTALLATION

The brazing of indicators with solder connections in series 38 should be carried out with care, using a low melting point filler material. Avoid direct contact between the torch flame and the indicator body or glass, which could be damaged and compromise the proper functioning of the indicator.

For indicators in series 3680 the ring must be disassembled before brazing.

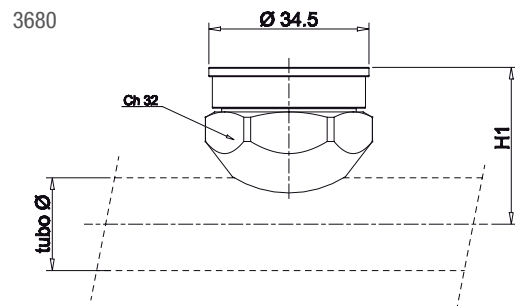
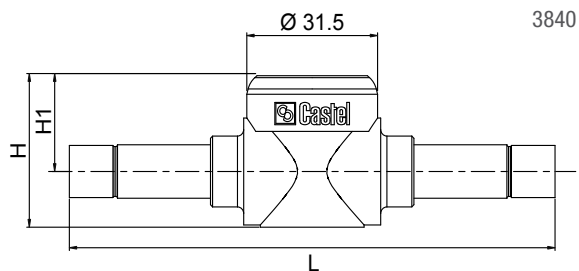
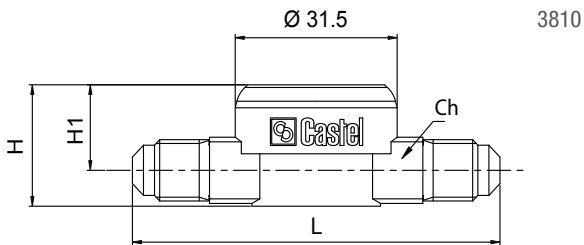
Note: the PS declared in Table 13 for indicators in series 3680, refers only to the body plus the ring (with its o-ring), which the customer must tighten to the torque indicated on the product instruction manual. The aforesaid declaration doesn't cover any possible leakage or malfunctions due to brazing the body on the copper pipe. The customer is totally responsible for the success of this operation.

TABLE 13: General characteristics of liquid indicators

Catalogue Number	Type	Connections					PS [bar]	TS [°C]		TA [°C]		Risk Category according to PED Recast						
		SAE Flare	ODS		for pipe			min.	max.	min.	max.							
			Ø [in.]	Ø [mm.]	Ø [in.]	Ø [mm]												
3810/22	male male	1/4"	-	-	-	-	45	- 30	+110	- 20	+50	Art. 3.3						
3810/33		3/8"	-	-														
3810/44		1/2"	-	-														
3840/2	brazing	-	1/4"	-	-	-												
3840/3		-	3/8"	-														
3840/M10		-	-	10														
3840/M12		-	-	12														
3840/4		-	1/2"	-														
3680/7	saddle type	-	-	-	7/8"	22							-	-	-	-	-	excluded
3680/9					1.1/8"	28												
3680/11					1.3/8"	35												

TABLE 14: Dimensions and weights

Catalogue Number	Dimensions [mm]				Weight [g]
	H	H1	L	Ch (pipe DIA)	
3810/22	22	16,5	71,5	12	110
3810/33	26,5	17,5	77,5	17	150
3810/44	30	18,5	81,5	22	196
3840/2	22	15,5	113	-	116
3840/3	34	21,5	117		185
3840/M10					
3840/M12					
3840/4					
3680/7	-	33	-	pipe 7/8"	90
3680/9		36		pipe 1.1/8"	
3680/11		39,5		pipe 1.3/8"	



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