

HANDBOOK
REGULATOR VALVES

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 **Castel**[®]
Italian technology

LIQUID RECEIVER PRESSURE REGULATORS

FOR REFRIGERATION PLANTS THAT USE HCFC OR HFC REFRIGERANTS



APPLICATIONS

Regulator 3350 is used coupled with the regulator 3340, or alternately to the differential valve 3136W. Together, these valves form a regulating system that maintains constant condenser and receiver pressure in plants with heat recovery and air and water condensation. The regulators in series 3340 restrict the liquid flow from the condenser to the receiver, reducing the active condenser surface and raising the condensing pressure. The regulator 3350 by-passes hot gas from the compressor discharge to the receiver, raising the liquid pressure in the receiver.

All receiver pressure regulators 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, 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.

OPERATION

Receiver pressure regulators adjust the flow of the hot gas according to changes of liquid receiver pressure,

downstream stream of the regulator. When the receiver pressure is greater than the regulator calibration pressure, the shutter remains closed. As the receiver pressure drops below the regulator's calibration setting, the shutter begins to open and modulates in proportion to the variation in the receiver pressure. As the receiver pressure continues to drop, the shutter continues to open, until the stroke limit is reached and the regulator is open completely. Liquid receiver pressure regulators only modulate based on the outlet pressure change, pressure changes on the inlet side do not affect their opening as the valve is equipped with an equalizer bellow with an area equal to that of the valve seat

The factory pressure settings for regulators in series 3350 is 8 bar. This means that until the receiver pressure is less than 8 bar, the regulator remains closed. When it drops under 8 bar, the regulator begins to open. According to the characteristics of the refrigerating system it may be necessary to change the factory setting by adjusting the adjustment ring on the top of the regulator body. Turn this ring clockwise to increase the regulator's calibration pressure; turn it counter-clockwise to decrease the calibration pressure. Each turn of the ring corresponds to an increase/decrease of 2.3 bar in calibration pressure. The calibration range varies from 3 to 20 bar.

CONSTRUCTION

The main parts of regulators in series 3350 are manufactured with the following materials:

- Hot forged brass EN 12420 – CW 617N for the body
- Copper pipe EN 12735-1 – Cu-DHP for solder connections
- Austenitic stainless steel AISI 321 for the bellows
- Brass bar EN 12164 – CW 614N for the shutter
- Brass bar EN 12164 – CW 614N for regulator ring
- Spring steel DIN 17223/84 Class C/D for setting spring
- Chloroprene rubber (CR) for outlet seal gaskets

INSTALLATION

Condensing pressure regulators 3340 are assembled on the liquid line between the condenser and the liquid receiver. On the other hand, receiver pressure regulator 3350 is assembled in by-pass between the compressor discharge and the liquid receiver inlet.

CERTIFICATIONS

Receiver pressure regulators in series 3350 have been approved by the American certification authority Underwriters Laboratories Inc. These regulators are **UL Listed** certified for the USA with file SA33319, in compliance with American standard UL 207.

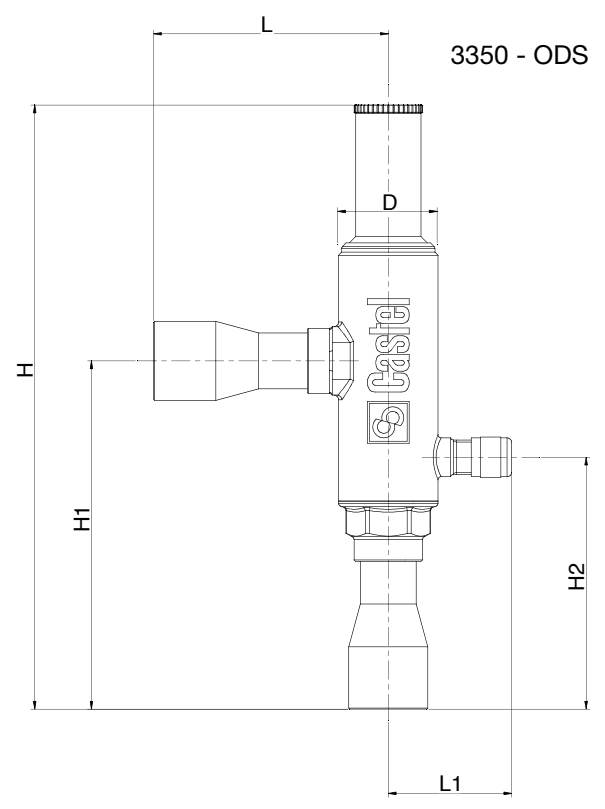
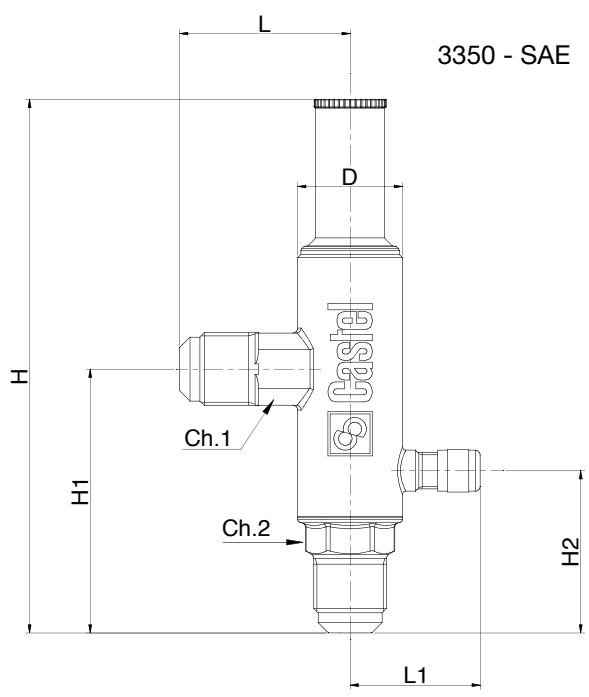
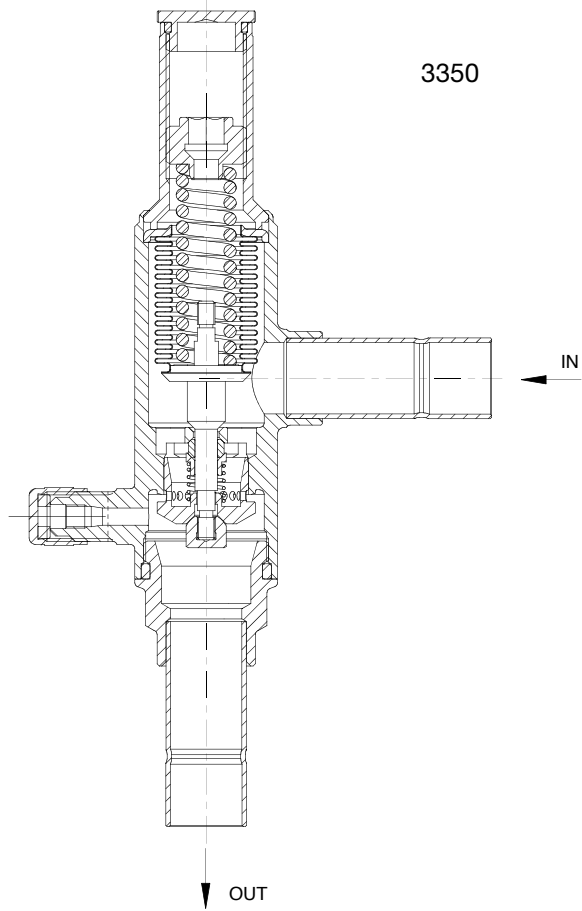


TABLE 35: General characteristics of receiver pressure regulators

Catalogue Number	Connections			Kv Factor [m³/h]	Regulating range [bar]		Factory setting [bar]	PS [bar]	TS [°C]		TA [°C]		Risk Category according to PED Recast
	SAE Flare	ODS			min.	max.			min.	max.	min.	max.	
		Ø [in.]	Ø [mm]										
3350/4	1/2"	–	–	1,80	3	20	8	28	– 40	+110	– 40	+50	Art. 43.3
3350/M12S	–	–	12										
3350/4S	–	1/2"	–										
3350/5	5/8"	–	–										
3350/5S	–	5/8"	16										
3350/7S	–	7/8"	22										

TABLE 36: Dimensions and weights of receiver pressure regulators

Catalogue Number	Dimensions [mm]								Weight [g]
	H	H ₁	H ₂	L	L ₁	D	Ch1	Ch2	
3350/4	159	76,5	45,5	48	37	32	22	24	4902
3350/M12S	183	100,5	69,5	64			-	-	506
3350/4S	183	100,5	69,5	64			-	-	506
3350/5	163	80,5	49,5	52			22	24	550
3350/5S	183	100,5	69,5	64			-	-	506
3350/7S	194	112	81	75,5			-	-	570

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