

Water Safety Shut-Off Valve HON 790



PRODUCT INFORMATION

**Serving the Gas Industry
Worldwide**

Honeywell

Water Safety Shut-Off Valve HON 790

Applications, characteristics, technical data

Applications

- Installation in the hot water circuit of gas pre-heater systems for safeguarding of the boiler system

Characteristics

- Simple construction
- Activation with energy from the internal medium
- Low pressure loss
- Simple functional testing

TECHNICAL DATA	
Permissible pressure PS	160 bar, DN 200 = 250 bar
Permissible temperature	140 °C medium/environment
Nominal width	DN 25, DN 50, DN 80, DN 100, DN 150, DN 200
Type of connection	Installation takes place between the flanges according to – DIN EN 1092-1 -PN 10 to PN 40, without DN 200 or – ANSI B 16.5 (DIN EN 1759-1) – Class 300 RF, Class 600 RF, Class 900 RF/RTJ* and Class 1500 RF/RTJ* DN 200 – only Class 600 RF or higher
Materials	Main valve body Brass** only DN 200: Niro Internal parts Brass, Niro** Niro Seals FPM/FKM
Supplemental fixtures (options)	– Electrical remote indication of the valve position "CLOSE" – Electrical magnet release with application of current/current failure (solenoid valve parallel to the control device)
Function and strength	DIN EN 14382 – according to
Explosion protection	All mechanical components of this device are without inherent ignition sources. They are not subject to ATEX 95 (94/9/EC). All electronic accessories, on the other hand, meet ATEX requirements.
CE mark in accordance with PED	

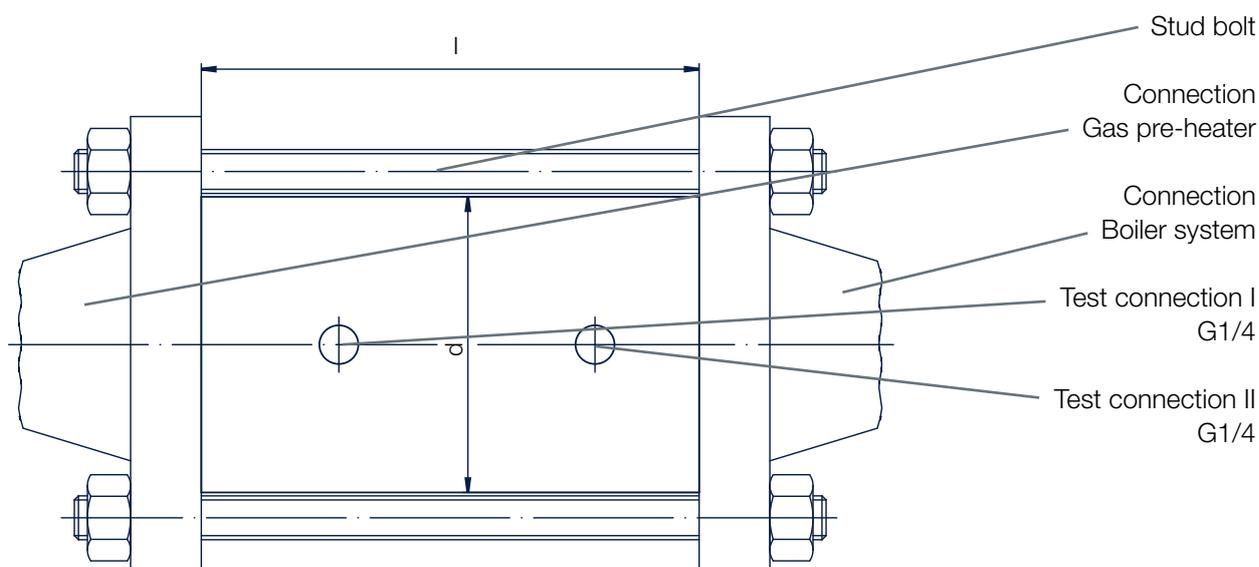
* Version RTJ on request

** other materials on request

SETTING RANGES OF SSV CONTROL DEVICES		
Control device Setpoint spring No.	SSV setting range W _d (bar)	Accuracy group AG
1	2.0 ... 2.5	5
2	2.5 ... 3.5	2.5
3	3.5 ... 16.0	2.5

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Dimensions



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DIMENSIONS IN MM						
Pressure stage	Diameter d					
	DN 25	DN 50	DN 80	DN 100	DN 150	DN 200
PN 10	73	107	142	162	218	-
PN 16				168	224	
PN 25			178			
PN 40				190	263	
Class 300	**	140	165	205	285	356
Class 600			171	280	350	
Class 900			**	170	170	180
Class 1500*						
Installation length I						
PN 10 – Class 600	140	160	160	160	240	280
Class 900 Class 1500*	**	170	170	180	250	310

STUD BOLT FOR FLANGE CONNECTION		
Pressure stage	Stud bolt	Nuts
PN 10 to PN 40	DIN 2509	DIN EN ISO 4032
Class 300 to Class 1500*	ASTM A 193 sz. B7	ASTM A 194 sz. B7

*) PS = 160 bar, DN 25 – DN 150

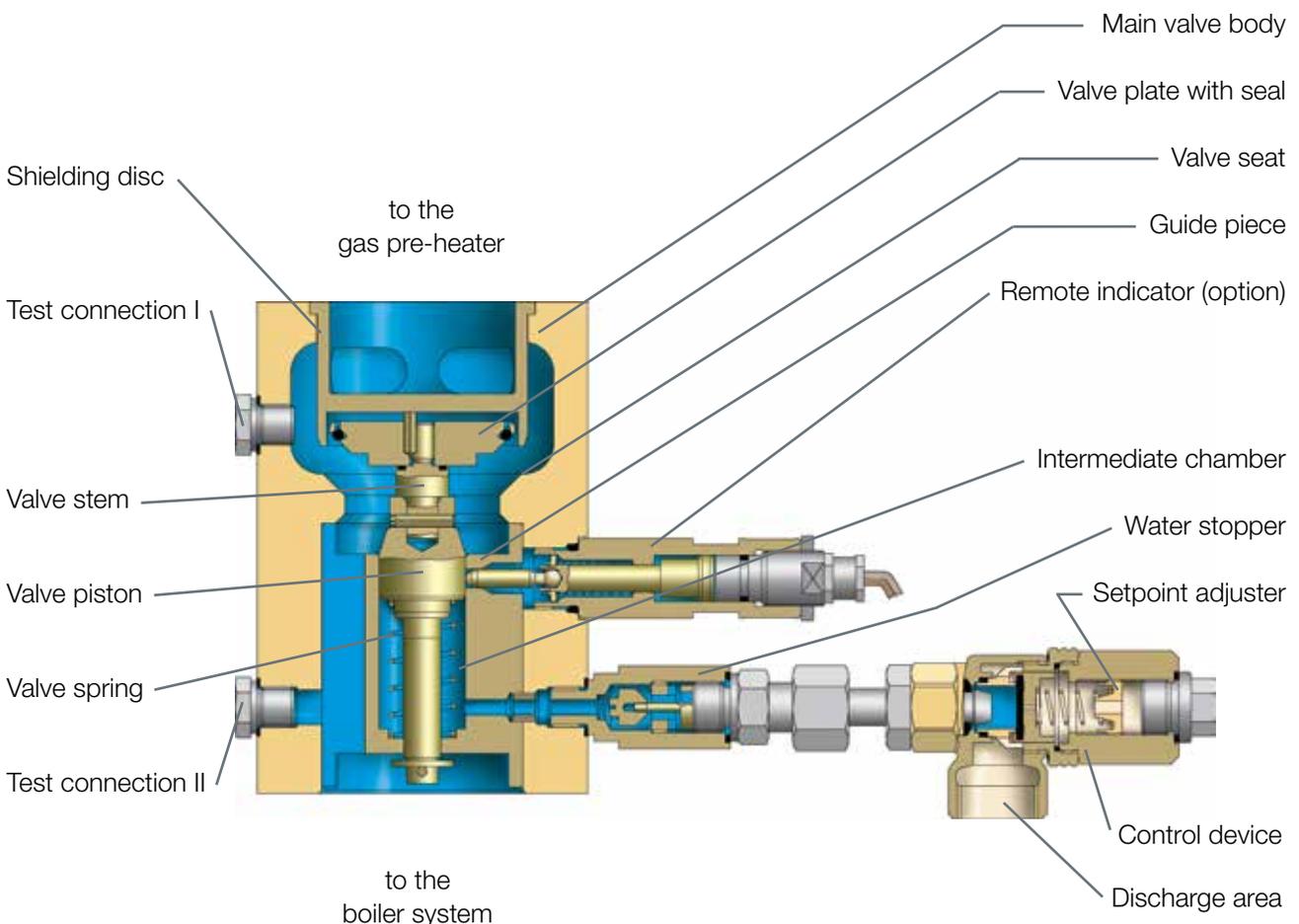
**) DN 25 in pressure stage > Class 600 on request

K _{vS} VALUE IN M ³ /H						
	DN 25	DN 50	DN 80	DN 100	DN 150	DN 200
Flow pipes	10	35	99	135	297	524
Return pipes	11	41	114	152	328	548

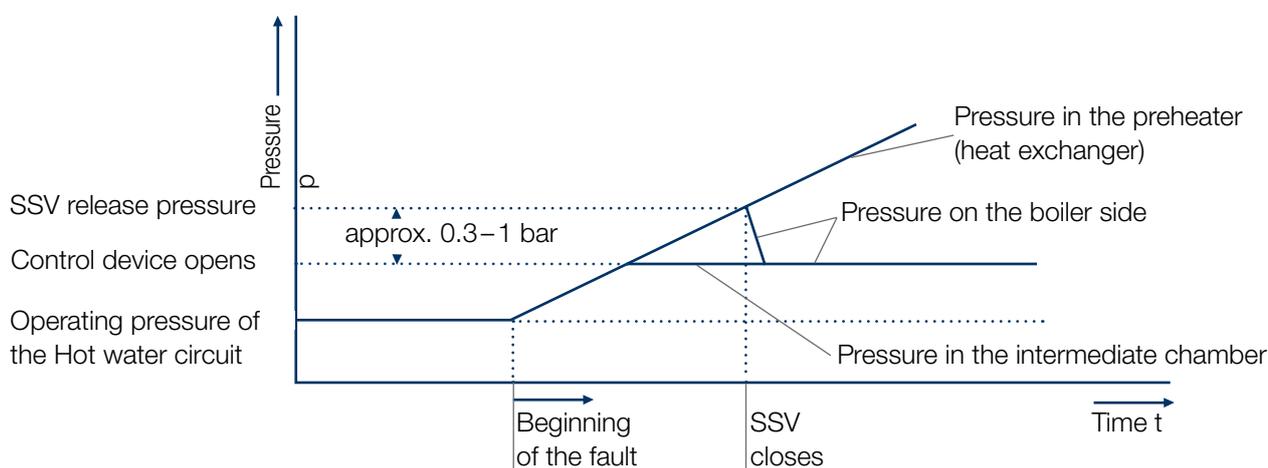
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Construction and mode of operation

The safety shut-off device (SSV) HON 790 is installed in the hot water circuit of gas pre-heaters (supply and return). The device is a link between the gas pre-heater (heat exchanger), which is designed for the maximum permissible inlet pressure of the gas and the boiler system measured for a low pressure. If a defect in the gas pre-heater (heat exchanger) causes an overflow of gas into the hot water circuit and thus a pressure increase, the SSV HON 790 blocks the boiler system from the inlet-pressure-proof heat exchanger when the adjusted release pressure is reached. In the process, it does not matter whether the pressure increase in the hot water circuit takes place very slowly or abruptly. The SSV HON 790 consists of the main valve and the control device. The valve body is designed without flanges and is clamped in place with stud bolts between the connection flange of the heat exchanger and the connection flange of the supply and/or return line leading to the boiler. The valve body has an axial opening, wherein the surface of the valve cross-section nearly corresponds to the surface of the nominal connection width. Test connections I and II, which lead to the spaces above and below the valve seat, are provided for connection of control manometers and for the conducting functional tests. In normal operation, all spaces of the safety shut-off device are subjected to the boiler pressure in the hot water circuit of the natural gas pre-heater. In the process, the valve plate is held in the open position by the valve spring. The valve plate is shielded from the flow forces of the circulating hot water by a shielding disc so that unintended closing is prevented. If the pressure in the hot water circuit rises due to a leak in the heat exchanger, the control device opens 0.3 bar to 1 bar before the adjusted release pressure is reached, and a small quantity of water is released. The limit pressure at which the control device opens depends on the nominal with and installation position of the SSV HON 790; refer to the 'Operating and maintenance manual, spare parts HON 790.20' for more specific details. The pressure in the intermediate chamber below the valve piston is maintained at a nearly constant level while the pressure in the remainder of the system above the valve piston continues to rise.

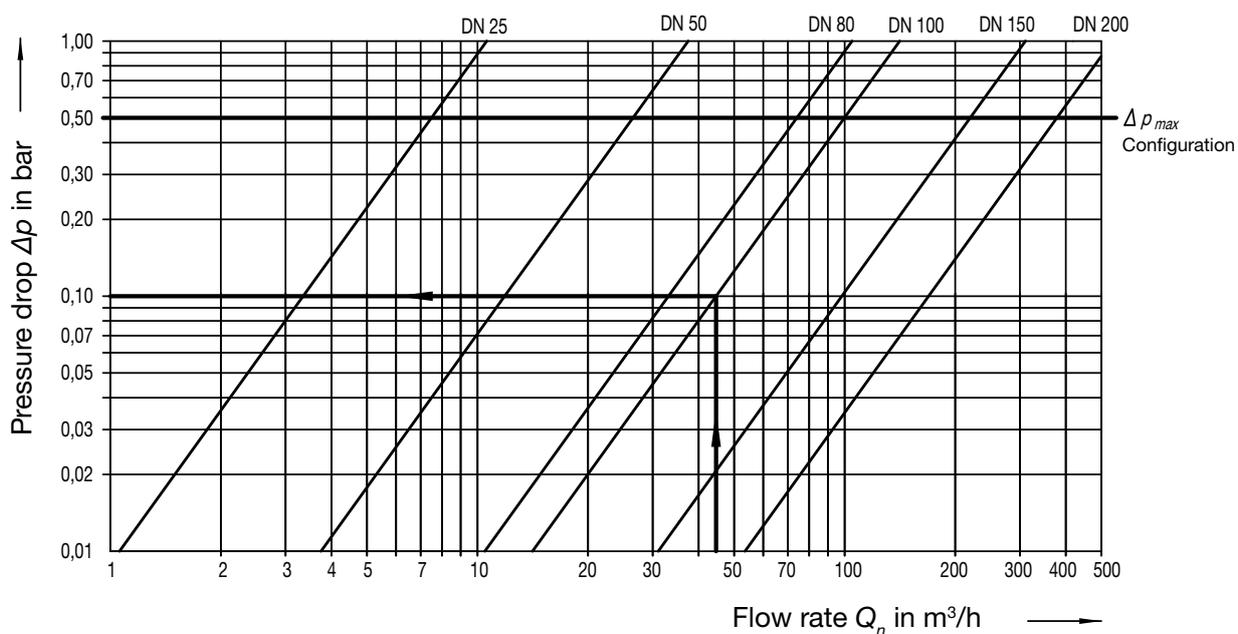


Once the force acting on the valve piston from the pressure difference between the upper side of the piston (pressure in the heat exchanger) and the intermediate chamber (pressure regulated by the control device) is greater than the pre-tension force of the valve spring, the SSV closes. The valve plate is then forms a seal on the valve seat and assures the pressure-tight blocking of the hot water circuit. The closed status of the valve plate is indicated electronically in the version with remote indication.



The safety shut-off device (SSV) then opens again if the pressure in the heat exchanger (above the valve plate) is brought to a value below the release pressure of the control device (SSV release pressure minus 0.3 to 1 bar). The remote indication is available in two different versions depending on the temperature in the hot water circuit; it cannot be retrofitted up to DN 200.

Pressure loss depending on the flow in the hot water circuit



Example: Nominal width DN 100, flow rate $Q = 45 \text{ m}^3/\text{h}$ → pressure loss $\Delta p = 0.1 \text{ bar}$

Observe: The pressure loss should not exceed 0.5 bar. The SSV is arranged in the supply and return. The pump should be designed to accommodate for 2 x the pressure loss.

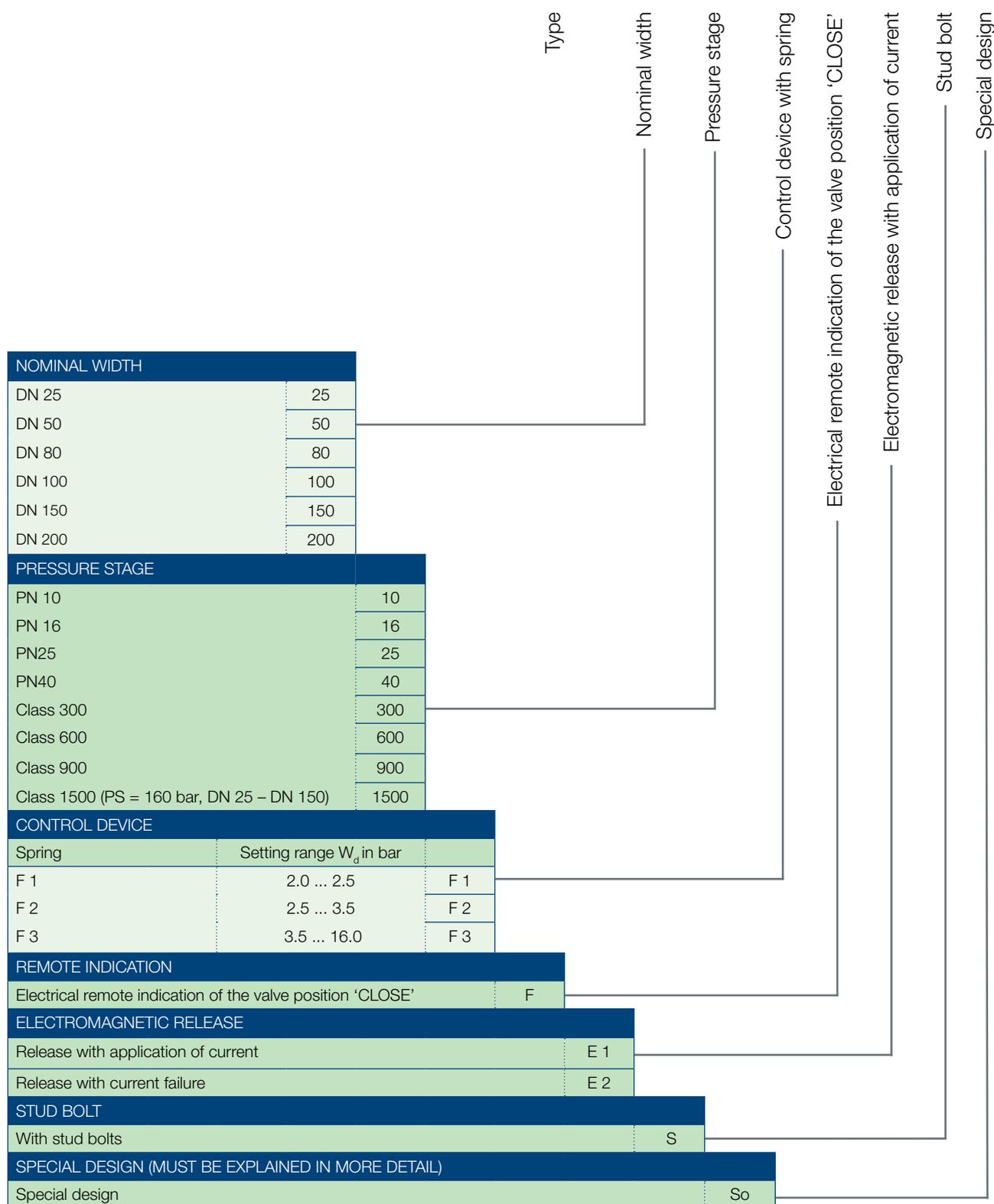
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Assembly, commissioning and maintenance

DVGW worksheets G495 and G499 must be observed. The 'Operating and maintenance instructions, spare parts HON 790.20' contain detailed information on installation, operation, maintenance and spare parts. Only vertical installation is permitted for devices with nominal widths DN 150 and DN 200; with other nominal widths there is no limitation with respect to the installation position. The control connections must be freely accessible for functional tests in the system and equipped with a shut-off valve. With devices with electrical remote indicator (position indicator), it must be ensured that the remote indicator does not point down. Bear in mind that remote transmission equipment must not be covered with insulation.

Example

HON 790a - 50 - 300 - F1 / F / E1 / S - So



Subject to technical changes.

For More Information

To learn more about Honeywell's
Advanced Gas Solutions, visit
www.honeywellprocess.com or contact
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