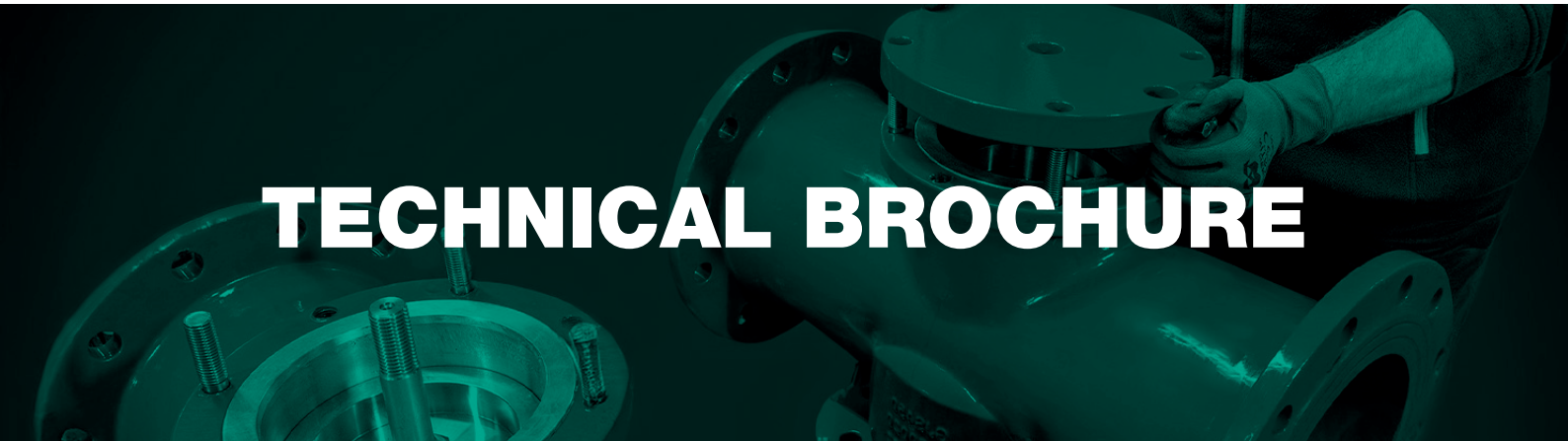
Pietro Fiorentini

W-VAL TH

Pressure reducing direct action valve



TECHNICAL BROCHURE

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W-VALV TH_technicalbrochure_ENG_revA

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Stainless steel pressure reducing direct action valve **W-VAL TH**

The **W-VAL TH** valve reduces and stabilises downstream pressure regardless of changes in flow rate and upstream pressure. It can be used with water, air and other fluids at pressures up to 64 bar.

Constructive features and advantages

- Self-cleaning piston, with innovative technology that improves running performance and reduces maintenance.
- Stainless steel mobile block obtained on a CNC lathe to avoid sliding friction and losses due to accurate machining.
- Entirely manufactured from stainless steel solid bars.
- Reduced risk of cavitation, even at high pressure differentials, thanks to special design and seals.

Main applications

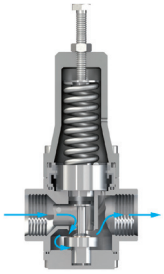
- Water distribution networks characterised by high pressures
- Buildings and civil installations where stainless steel is required or recommended
- Demineralised water and bottling plants
- Cooling systems and industrial plants
- Fuels and other fluids with the use of special gaskets

Operating principle

The W-VAL TH valve works by the movement of a piston that slides inside two stainless steel or bronze ring nuts of different diameters. These, firmly screwed to the body and fitted with lip seals, create an upstream and downstream pressure compensation chamber.

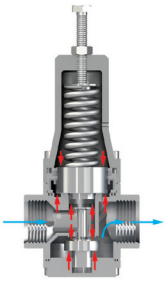
Normally open valve

In the absence of pressure or flow inside, the valve is normally open; the piston is pushed down by the force of the spring.



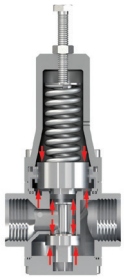
Fully open valve in operation

When the downstream pressure falls below the spring setting, the piston moves downwards and the valve moves to the fully open position.



Modulation valve

If the downstream pressure tends to rise above the set value, it pushes the plug upwards, reducing the passage. The result is the creation of a pressure drop such that the downstream pressure returns to the required value.



Closed valve (static conditions)

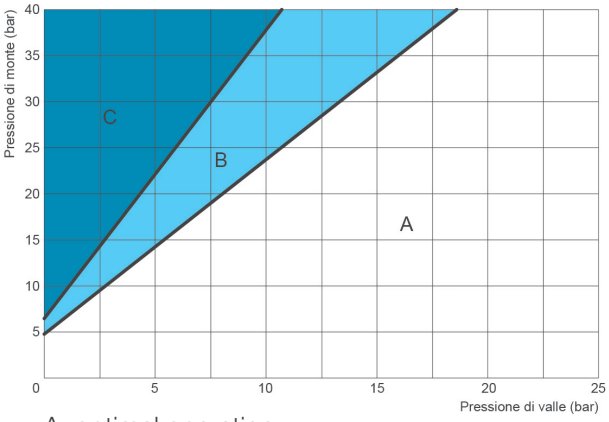
In the event that the downstream withdrawal is cancelled and the pressure rises above the spring setting, the valve moves to the fully closed position, maintaining the required downstream pressure. This also occurs under static conditions.

Technical data

Pressure drop coefficient

The Kv coefficient represents the flow rate that produces a pressure drop of 1 bar in the fully open valve.

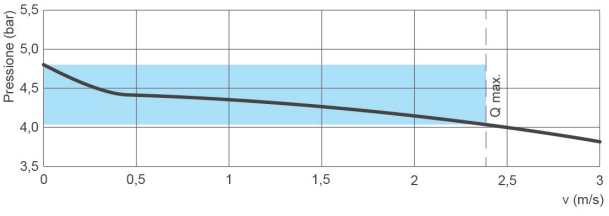
Inches	1/2”	1”	1”1/2	2”
Kv (m^3/h)/bar	2.9	7,2	10.8	21



A: optimal operation
B: incipient cavitation
C: harmful cavitation

Pressure drops chart

Ensure that the point corresponding to the operating condition of the valve appropriate to the required flow rate, identified by the values of the downstream pressure (in abscissa) and upstream pressure (in ordinate), falls in zone A in the graph. The graph refers to valves modulating with an opening percentage of 35-40%, at standard temperature and altitude below 300 m. Under operating conditions, the pressure reduction differential must not exceed 24 ba.



Valve sensitivity

The curve shown in the figure shows the indicative change in actual downstream pressure from the set value as the flow rate increases. The maximum speed and recommended working conditions are indicated (blue area).

Recommended flow rates

Thread (inches)	1/2”	1”	1” 1/2	2”
Min. flow rate (l/s)	0.02	0.05	0.11	0.30
Max. flow rate (l/s)	0,35	0.98	2.20	4,45
Emergency flow rate (l/s)	0,39	1.50	2,80	6,90

Spring calibration range

Thread (inches)	1/2”	1”	1” 1/2	2”
Spring pressure (bar)	1,5-10	1,5-10	1,5-7	1,5-6
	2-20	2-20	2-15	5-12

Operating conditions

Fluid	treated water
Maximum temperature	70°C
Maximum pressure	40/64 bar
Downstream pressure	calibration range 1.5 to 6 bar and 5 to 12 ba (higher values on request)

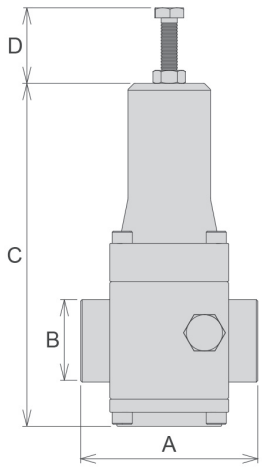
Standard

- Certification and testing according to EN 1074/5
- Flanges with drilling according to EN 1092-2
- RAL 5005 blue epoxy paint applied on fluid bed

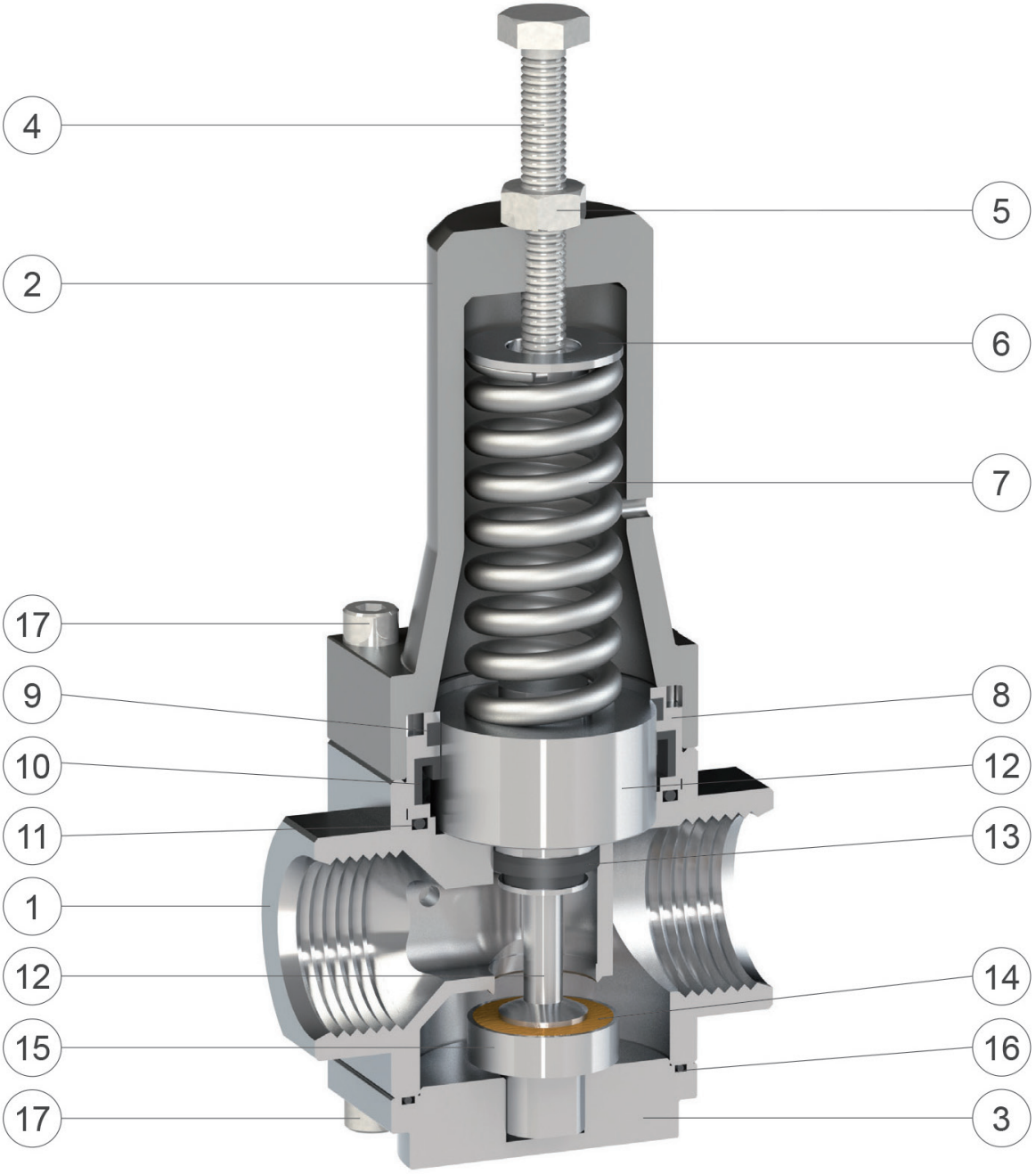
Modifications to flanges and painting on request.

Dimensions and weights

Thread inches	A mm	B mm	C mm	D mm	Weight Kg
1/2”	53	--	108	25	1.0
1”	90	CH 41	170	45	2.1
1” 1/2	110	CH 55	205	50	2.8
2”	152	CH 70	290	60	6,9



Construction details



No.	Component	Standard material	Optional
1	Body	ac. AISI 303 (1" and 1" 1/2), AISI 304 (1/2" and 2")	AISI 316 stainless steel
2	Cap	nickel-plated aluminium S11	AISI 316 stainless steel
3	Guide cap	ac. AISI 303 (1" and 1" 1/2), AISI 304 (1/2" and 2")	AISI 316 stainless steel
4	Control screw	AISI 304 stainless steel	AISI 316 stainless steel
5	Locking nut	AISI 304 stainless steel	AISI 316 stainless steel
6	Spring plate	AISI 304 stainless steel	AISI 316 stainless steel
7	Spring	stainless steel AISI 302 (painted steel 52SiCrNi5 for 2")	
8	Upper bushing	AISI 304 stainless steel	AISI 316 stainless steel
9	Slide block	PTFE	
10	Upper lip seal	NBR	EPDM/Viton
11	O-ring	NBR	EPDM/Viton
12	Piston	AISI 303 stainless steel	AISI 316 stainless steel
13	Lower lip seal	NBR	EPDM/Viton
14	Flat gasket	polyurethane	
15	Plug plate	AISI 303 stainless steel	AISI 316 stainless steel
16	Guide cap O-ring	NBR	EPDM/Viton
17	HSHC screws	AISI 304 stainless steel	AISI 316 stainless steel

The table of materials and components is subject to change without notice.

Customer Centricity

Pietro Fiorentini is one of the main Italian international company with high focus on product and service quality.

The main strategy is to create a stable long-term oriented relationship, putting the customer's needs first. Lean management and thinking and customer centricity are used to improve and maintain the highest level of customer experience.

Support
One of Pietro Fiorentini's top priorities is to provide support to the client in all phases of project development, during installation, commissioning and operation. Pietro Fiorentini has developed a highly standardized intervention management system, which helps to facilitate the entire process and effectively archive all the interventions carried out, drawing on valuable information to improve the product and service. Many services are available remotely, avoiding long waiting times or expensive interventions.

Training
Pietro Fiorentini offers training services available for both experienced operators and new users. The training is composed of the theoretical and the practical parts, and is designed, selected and prepared according to the level of use and the customer's need.

Customer Relation Management (CRM)
The centrality of customer is one of the main missions and vision of Pietro Fiorentini. For this reason, Pietro Fiorentini has enhanced the customer relation management system. This enables us to track every opportunity and request from our customers into one single information point.

Sustainability

Here at Pietro Fiorentini, we believe in a world capable of improvement through technologies and solutions that can shape a more sustainable future. That is why respect for people, society and the environment form the cornerstones of our strategy.

Our commitment to the world of tomorrow

While in the past we limited ourselves to providing products, systems and services for the oil & gas sector, today we want to broaden our horizons and create technologies and solutions for a digital and sustainable world, with a particular focus on renewable energy projects to help make the most of our planet's resources and create a future in which the younger generations can grow and prosper.

The time has come to put the why we operate before the what and how we do it.

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