Direct action pressure reducing valve

EN ASME/ANSI

For steam and gases.

Suitable for application in; ironing machines, laundries and dry cleaners', cooking vats, textile machinery, drying cylinders, autoclaves, steam ovens, distilleries, heat exchangers, the food industry, chemical laboratories, etc.

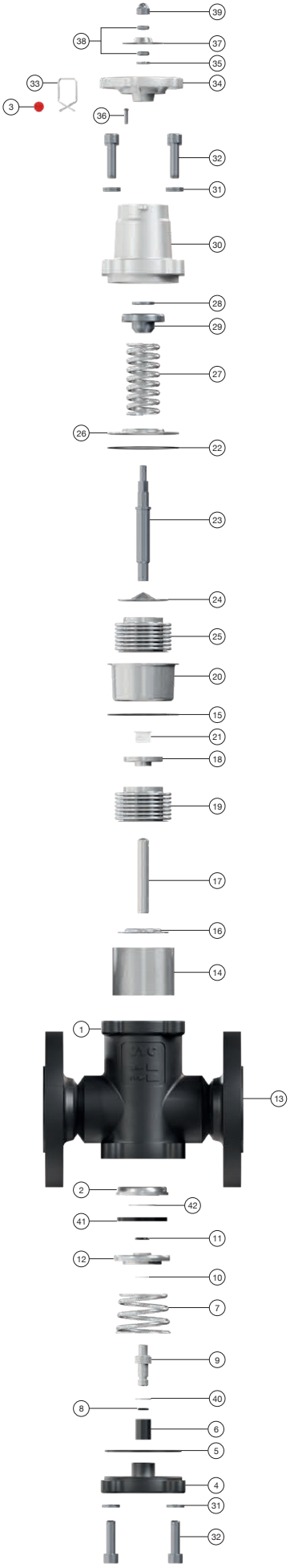
Specifications

— Materials carefully selected for resistance to wear, extreme temperatures and corrosion. They can be fully recycled, and use a single, non-metallic, asbestos-free joint.
— Simplicity of design, ensuring minimum maintenance requirements.
— Easy installation; may be assembled in any position, even upside down.
— Moderate weight and size.
— Interior design conceived for maximum capacity and performance for size.
— Easy to adjust. The valves are supplied unregulated, but with the corresponding spring, duly identified, for the required pressure reduction.
— Rating plate which identifies the regulation field.
— Three springs, easily interchangeable and identified by colour and code.
— Anchoring system immune to vibrations; may be sealed to prevent manipulation.
— Selft-centring lock, independent of axle, designed to guarantee absolue precision of regulation at the most demandig points.
— Protective filter for the locking surfaces.
— High degree of airtightness of the lock at zero consumption, exceeding the requirements of EN 12266-1.
— Stainless steel bellows welded to the plasma. Airtightness tested with helium, ensuring absolute reliability and long life.
— All valves undergo throrough testing.
— Each component is numbered, registered and inspected. If previously requested, the valve will be accompanied by certificates corresponding to materials, batch, tests and performance.

IMPORTANT
We recommend, if necessary, the use of thermal and acoustic insulation textile jackets Model 008.
Depending on demand:
— May be manufactured using other materials for specific working conditions (high temperatures, fluids, etc.).
— Other connections.
— Degreased and completely free of oils and greases.

N°. PIECE	PIECE	MATERIAL
		CARBON STEEL
1	Body	Carbon steel (EN-1.0619) (1)
2	Seat	Stainless steel (EN-1.4028)
3	Seal	Plastic seal
4	Bottom cover	Nodular iron (EN-5.3105)
5/15	Body gasket	Graphite
6	Guide bush	Graphite PTFE (Teflon)
7	Conical spring	Stainless steel (EN-1.4310)
8/11	O-ring	Fluoroelastomer (Viton)
9	Guide	Stainless steel (EN-1.4028)
10	Washer	PTFE (Teflon)
12	Shutter	Stainless steel (EN-1.4028)
13	Flange	Carbon steel (EN-1.0460)
14	Filter	Stainless steel (EN-1.4301)
16	Spindle disc	Stainless steel (EN-1.4404)
17	Spindle	Stainless steel (EN-1.4404)
18	Ring disc	Acero inoxidable (EN-1.4404)
19	Bellows	Stainless steel (EN-1.4571)
20	Bellows ring	Stainless steel (EN-1.4404)
21	Cap	PTFE (Teflon)
22	Cover gasket	Graphite
23	Regulating bolt	Carbon steel (EN-1.1191)
24	Bellows disc	Stainless steel (EN-1.4404)
25	Bellows	Stainless steel (EN-1.4571)
26	Bellows ring	Stainless steel (EN-1.4404)
27	Spring	Chrome-silicon steel (EN-10270-2-FDSiCr)
28	Washer	Carbon steel (EN-1.1141)
29	Spring nut	Carbon steel (EN-1.1141)
30	Cover	Aluminium (EN-AC-44200)
31	Washer	Carbon steel (EN-1.1141)
32	Bolt	Carbon steel (EN-1.1191)
33	Sealing wire	Sealing wire
34	Handwheel	Aluminium (EN-AC-44200)
35	Washer	Carbon steel (EN-1.1141)
36	Interlocking pin	Carbon steel (EN-1.1141)
37	Plate features	Stainless steel (EN-1.4301)
38	Nut	Carbon steel (EN-1.1141)
39	Decorative cap	Plastic
40	Washer	Stainless steel (EN-1.4301)
41	Seal	Fluorelastomer (Viton)
42	Sealing disc	Stainless steel (EN-1.4301)
DN		25 to 50 (EN, ANSI)
PN		16
SERVICE CONDITIONS	PRESSURE [bar]	10
	MAX. TEMP. [°C]	184
	MIN. TEMP. [°C]	-10

Isometric view



Exploded view

(1) DN-25 Nodular iron (EN-5.3105)

MODEL	614											
DN	25		32		40		50					
CONECCTIONS	I- Flanges PN-16 EN-1092-1 II- Flanges class 150lbs ASME/ANSI B.16.5											
	I	II	I	II	I	II	I	II				
H	57,5		57,5		57,5		57,5					
H1	171		171		171		171					
h	25		25		25		25					
L	160		180		200		230					
B	75		75		75		75					
D	115	110	140	115	150	125	165	150				
K	85	79,4	100	88,9	110	98,4	125	120,7				
l	14	15,9	18	15,9	18	15,9	18	19,1				
b	17,7	17,7	18	15,9	18	17,5	18	19,1				
DRILLS Nº	4		4		4		4					
WEIGHT [kg]	7,24		9,27		9,84		9,46					
SPRING REGULATING RANGE [bar] (REDUCED PRESSURE)	0,14 to 1.70	1,40 to 4,00	3,50 to 8,60	0,14 to 1.70	1,40 to 4,00	3,50 to 8,60	0,14 to 1.70	1,40 to 4,00	3,50 to 8,60	0,14 to 1.70	1,40 to 4,00	3,50 to 8,60
CODE — NODULAR IRON 2001-614	51061	510611	51062	510621	51063	510631						
CODE — CARBON STEEL 2001-614							51441	514411	51442	514421	51443	514431
							51241	512411	51242	512421	51243	512431
							52041	520411	52042	520421	52043	520431

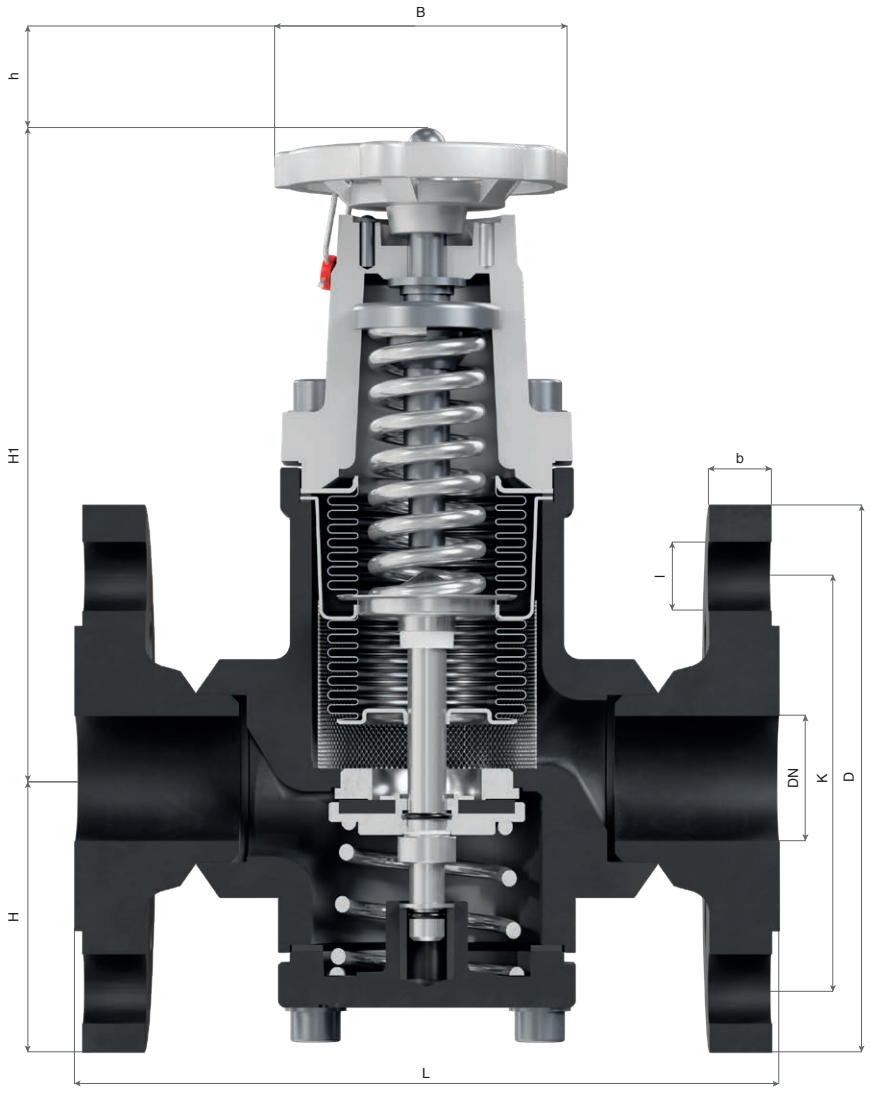
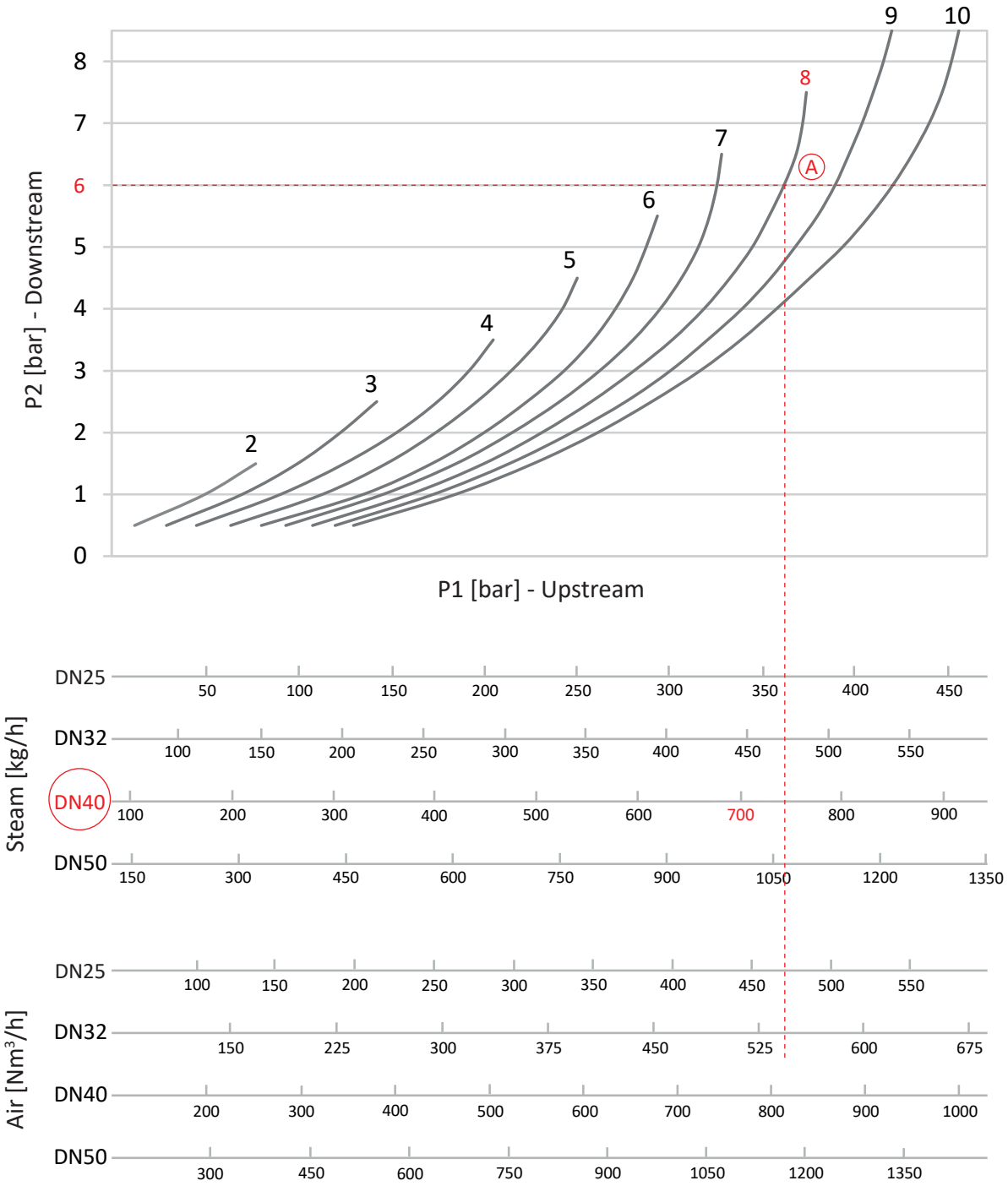


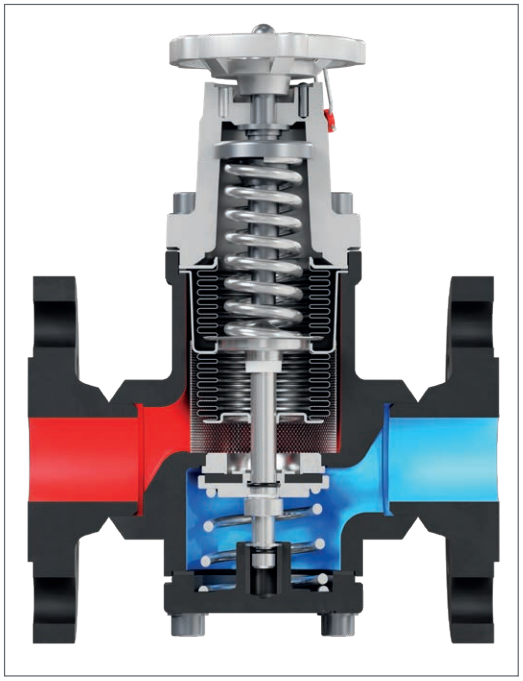
TABLE OF PRESSURES, FLOW COEFFICIENTS AND REGULATION FIELDS					
DN			25	32	40	50
MAXIMUM INPUT PRESSURE [bar] (P1 MAX.)			10			
MAXIMUM REDUCTION DIFFERENTIAL [bar]			P1:10			
MINIMUM REDUCED PRESSURE [bar] (P2 MIN.)			0,14			
FLOW COEFFICIENT Kvs m3/h ΔP = 1 bar			9,3	11,1	15,7	16,2
SPRING REGULATING RANGE [bar] (REDUCED PRESSURE)	0,14 to 1,70	CODE	56494			
		IDENTIFICATION COLOUR	White			
	1,40 to 4,00	CODE	56495			
		IDENTIFICATION COLOUR	Pink			
	3,50 to 8,60	CODE	56496			
		IDENTIFICATION COLOUR	Red			

Steam Sizing Example:

1- Identify the downstream pressure (e.g., 6 bar) and draw a horizontal line until it intersects the upstream pressure curve (e.g., 8 bar). Mark this point (e.g., A).
2- From point (e.g., A), draw a vertical line to the bottom of the sheet.
3- Identify which valve size meets the required flow capacity (e.g., 700 kg/h).
4- The selected valve is DN40.

*For sizing with air, proceed exactly the same way. For other gases or temperatures above 20 °C, contact VYC industrial.





Area of influence of input pressure. (P1)

Area of influence of reduced pressure. (P2)

Operation

The operation of the reducing valve is based on the principle of direct action. The force exerted by the spring displaces the axle and maintains the locking ball open. The fluid exerts an opposite force on the hood as it passes, which tends to reduce the section of passage of the fluid through the seating. The action of the spring and reaction of the pressure on the bellows balance each other, and the reduced pressure is maintained constant.
The fluctuations in consumption affect the reduced pressure. The bellows detects these variations via the balance hole, provoking a change in the passage of fluid as a function of the established reduced pressure.
In working conditions with zero consumption, the valve remains closed and completely airtight when there is a slight increase in reduced pressure.

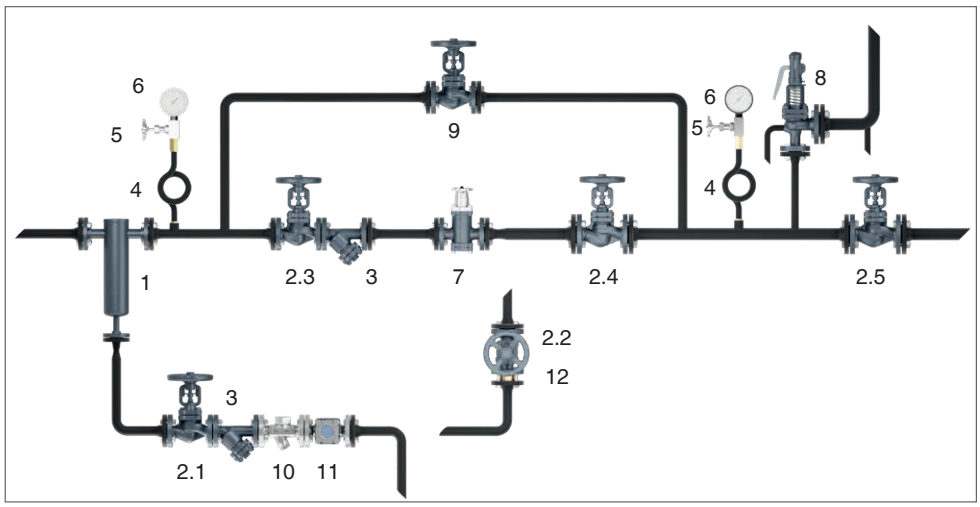
Installation

— Allways install the valve in a section of horizontal tubing, as close as possible to the point of consumption.
— The valve may be assembled in any position, even upside-down.
— Verify that the fluid flows in the direction indicated by the arrow on the body of the valve.
— The input and output tubes must be of the correct size and properly supported, to avoid any fall in pressure or tension.
— The output tubing should ideally have a greater diameter than the input tubing, to avoid excessive velocity of flow of the liquid.
— In accordance with the requirements of “Regulations for pressure devices ITC-MIE-AP 2 5.8”, the pressure reduction facilities in steam circuits will besupplied with:

1- A pressure gauge with syphon tube and three end cock, in accordance with article 11 of the MIE-AP 1 instructions, “Boilers”, located before and after the reduction valve.

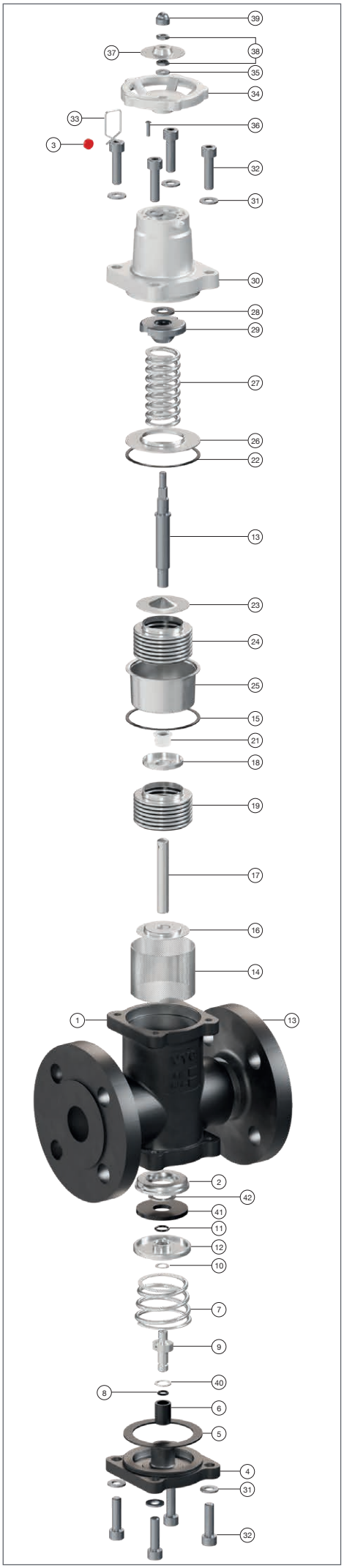
2- A safety valve following the reduction valve, capable of evacuating the maximum flow of steam, which permits flow at the level regulated and adjusted to the maximum reduced pressure of service plus a maximum of 10%.

Example of steam installation



1 - Condensate separator
2 - Shut-off valve
3 - Filter
4 - Siphon tube
5 - Pressure gauge tap
6 - Pressure gauge
7 - Pressure reducing valve
8 - Safety valve
9 - Shut-off valve with regulating cone
10 - Steam trap
11 - Sight glass
12 - Disc check valve

IMPORTANT
– The distance between the pressure reducing valve 7 and the shut-off valves 2.3 and 2.4 must be 8 ÷ 10 times the pipe diameter.
– The installation of separator 1 and steam trap 10 is recommended for wet steam with carry-over.
– It is recommended to equip the reducing unit with a by-pass and a shut-off valve with a regulating cone 9 .
– We recommend, if applicable, the use of textile thermal and acoustic insulation jackets Model 008.



Start-up and adjustment of the reduced pressure

1 - Before start-up, the tubes and the inside of the valve itself should be cleaned, eliminating any residues or impurities, particularly from the locking surfaces.
2 - Check the rating plate (37) to verify that the regulation field for the reduced pressure is appropriate and that the spring (27) corresponds to the same range.
3 - Remove the nut (38), the rating plate (37) and the anchoring bolt (36).
4 - With the input interruption valve fully open and the output interruption valve closed, turn the handwheel (34) gradually from left to right to increase the reduced pressure, or from right to left to decrease it, until the required reduced pressure is obtained at zero consumption.
5 - Slowly open the output interruption valve.
6 - Readjust the required reduced pressure in consumption conditions.
7 - Put the anchoring bolt (36) and the rating (37) in place, and fix with the nut (38).
8 - Seal the valve to prevent further adjustments, using the sealing wire (33) and the seal (3).
9 - We recommend that the input pressure P1 and the reduced pressure P2 be recorded in the corresponding space of the rating plate (37).

Disassembly and assembly

1 - Unseal the valve by cutting the thread (33).
2 - Remove the nut (38), type plate (37) and locking pin (36)
3 - Turn the handwheel (34) from right to left until you feel the spring relax (27)
4 - Unscrew the bolts (32) and remove them together with the washers (31).
5 - Detach the cover (30) from the body (1) and you will gain access to some internal components. This facilitates easy maintenance or replacement of the spring (27), and the bellows (24) (25) (26).
6 - Remove the bellows (16), (17), (18), (19) and (20). This allows us to clean the filter (14).
7 - Turn the valve and unscrew the bolts (32) and remove them.
8 - Detach the cover (4) from the body (1) and you will gain access to some internal components. This allows us to easily maintain or replace the spring (7), components (12), (9), (41), (6) and the seat (2).
9 - If the valve has been disassembled, replace the seals (22), (15) and (5) with new ones.
10 - Insert the guide (9) and the spring (7) with the plug (12) and fix it with the cover (4) and the guide bush (6)
11 - Place the cover (4) on the body (1) and screw in the bolts (32) after placing the washers (31).
12 - Fit the filter (14) and thread the bellows (16), (17), (18), (19) and (20).
13 - Insert the regulating bolt (23) and the bellows (24), (25) and (26)
14 - Select the appropriate spring (27) according to the reduced pressure.
15 - Place the cover (30) on the body (1), place the bolts (32) together with the washers (31) and screw them in.
16 - Finally, proceed according to the section “Commissioning and adjustment of the reduced pressure”.

Maintenance

A correct installation with inlet and outlet stop valves facilitates maintenance.
The filter (14) should be cleaned periodically.
When accessing the valve assembly, replace the seals (22), (15) and (5) with new ones.

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