

Direct action pressure reducing valve



Thread connection
Flange connection

Model 513
Model 514

For steam and gases. (For liquids, consult our technical department). 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.
- Self-centring lock, independent of axle, designed to guarantee absolute precision of regulation at the most demanding points.
- Protective filter for the locking surfaces.
- High degree of airtightness of the lock at zero consumption, exceeding the requirements of DIN-3230. Page 3.
- Stainless steel bellows welded to the plasma. Airtightness tested with helium, ensuring absolute reliability and long life.
- All valves undergo thorough 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.

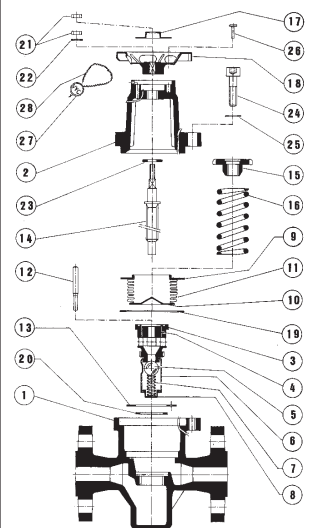


IMPORTANT

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.

Nº. PIECE	PIECE	MATERIAL		
		NODULAR IRON	CARBON STEEL	STAINLESS STEEL
1	Body	Nodular iron (DIN-0.7043 GGG-40.3)	Carbon steel (DIN-1.0619 GS-C 25)	Stainless steel (DIN-1.4408) (AISI-316)
2	Cover	Aluminium (DIN-3.2581.01 G-AISI12)	Aluminium (DIN-3.2581.01 G-AISI12)	Aluminium (DIN-3.2581.01 G-AISI12)
3	Seating	Stainless steel (DIN-1.4057) (AISI-431)	Stainless steel (DIN-1.4057) (AISI-431)	Stainless steel (DIN-1.4057) (AISI-431)
4	Guide	Graphite PTFE (Teflón)	Graphite PTFE (Teflón)	Graphite PTFE (Teflón)
5	Lock	Stainless steel (DIN-1.4034)	Stainless steel (DIN-1.4034)	Stainless steel (DIN-1.4034)
6	Filter	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
7	Auxiliary spring	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
8	Cap	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
9	Bellows ring	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
10	Bellows disc	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
11	Bellows	Stainless steel (DIN-1.4571) (AISI-316Ti)	Stainless steel (DIN-1.4571) (AISI-316Ti)	Stainless steel (DIN-1.4571) (AISI-316Ti)
12	Axle	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
13	Separator disc	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
14	Regulation screw	Carbon steel (DIN-1.1191 Ck-45)	Carbon steel (DIN-1.1191 Ck-45)	Carbon steel (DIN-1.1191 Ck-45)
15	Spring press	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)
16	Spring	Chrome-silicon steel (DIN-1.7102 54SiCr6)	Chrome-silicon steel (DIN-1.7102 54SiCr6)	Chrome-silicon steel (DIN-1.7102 54SiCr6)
17	Rating plate	Stainless steel (DIN-1.4301) (AISI-304)	Stainless steel (DIN-1.4301) (AISI-304)	Stainless steel (DIN-1.4301) (AISI-304)
18	Handwheel	Aluminium (DIN-3.2581.01 G-AISI12)	Aluminium (DIN-3.2581.01 G-AISI12)	Aluminium (DIN-3.2581.01 G-AISI12)
19	Body joint	Graphite	Graphite	Graphite
20	Seating joint	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)	Stainless steel (DIN-1.4404) (AISI-316L)
21	Nut	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)
22	Washer	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)
23	Washer	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)
24	Screw	Carbon steel (DIN-1.1191 Ck-45)	Carbon steel (DIN-1.1191 Ck-45)	Carbon steel (DIN-1.1191 Ck-45)
25	Washer	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)
26	Anchoring bolt	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)	Carbon steel (DIN-1.1141 Ck-15)
27	Seal	Lead	Lead	Lead
28	Sealing wire	Sealing wire	Sealing wire	Sealing wire
R		1/2" to 1"		
DN		15 to 25		
PN		25	40	40
OPERATING CONDITIONS	PRESSURE IN bar	17	17	17
	MAX. TEMP. IN °C	210	230	230
	MIN. TEMP. IN °C	-10	-10	-60



MODEL		513			514		
R	DN	1/2"	3/4"	1"	15	20	25
CONNECTIONS		Whitworth gas-tight cylindrical female ISO 228/1 1972 (DIN 253)			PN-25 DIN-2544 PN-40 DIN-2545		
H		57	57	57	57	57	57
H ₁		150	150	150	150	150	150
h		25	25	25	25	25	25
L		85	95	105	150	150	160
B		75	75	75	75	75	75
D		—	—	—	95	105	115
K		—	—	—	65	75	85
I		—	—	—	14	14	14
b		—	—	—	16	18	18
DRILLS N°.		—	—	—	4	4	4
WEIGHT IN (Kgs)	NODULAR IRON	1,98	2,05	2,29	3,60	3,65	4,73
	CARBON STEEL	2,08	2,15	2,44	3,85	3,95	5,05
	STAINLESS STEEL	2,13	2,25	2,55	3,95	4,08	5,20
SPRING REGULATING RANGE IN bar (REDUCED PRESSURE)		0,14 a 1,70	1,40 a 4,00	3,50 a 8,60	0,14 a 1,70	1,40 a 4,00	3,50 a 8,60
CODE	NODULAR IRON 2001-	513.80261	513.80262	513.80263	513.80264	513.80265	513.80266
		513.80241	513.80242	513.80243	513.80244	513.80245	513.80246
		513.80221	513.80222	513.80223	513.80224	513.80225	513.80226
		513.80201	513.80202	513.80203	513.80204	513.80205	513.80206
	CARBON STEEL 2001-	513.80261	513.80262	513.80263	513.80264	513.80265	513.80266
		513.80241	513.80242	513.80243	513.80244	513.80245	513.80246
		513.80221	513.80222	513.80223	513.80224	513.80225	513.80226
		513.80201	513.80202	513.80203	513.80204	513.80205	513.80206
	STAINLESS STEEL 2001-	513.80261	513.80262	513.80263	513.80264	513.80265	513.80266
		513.80241	513.80242	513.80243	513.80244	513.80245	513.80246
		513.80221	513.80222	513.80223	513.80224	513.80225	513.80226
		513.80201	513.80202	513.80203	513.80204	513.80205	513.80206

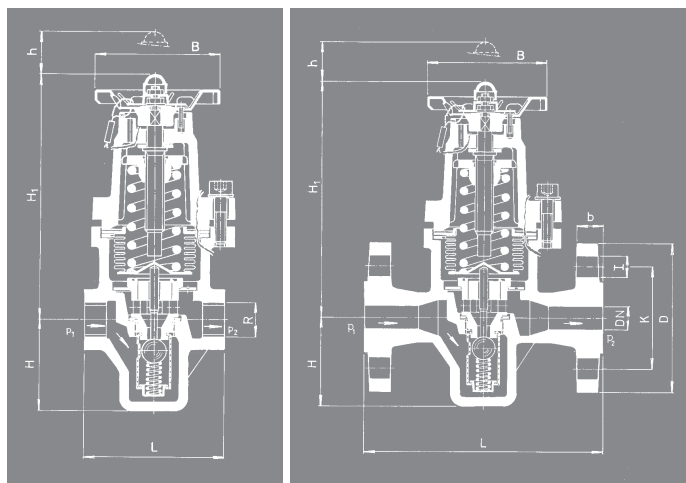
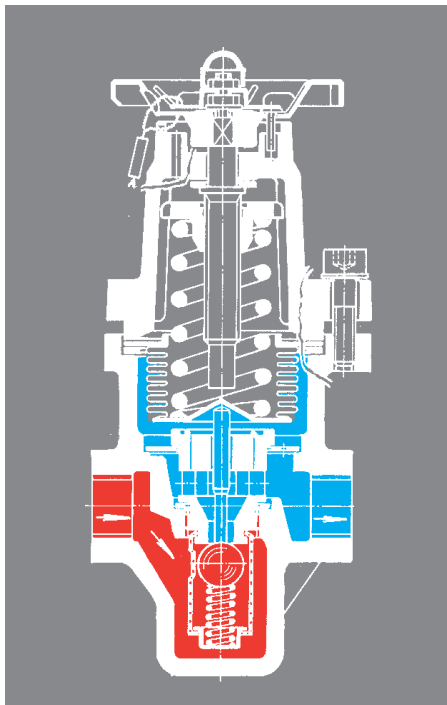


TABLE OF PRESSURES, FLOW COEFFICIENTS AND REGULATION FIELDS			
R	1/2"	3/4"	1"
DN	15	20	25
MAXIMUM INPUT PRESSURE IN bar (P ₁ MAX.)			
17			
MAXIMUM REDUCTION DIFFERENTIAL IN bar			
P ₁ : 10			
MINIMUM REDUCED PRESSURE IN bar (P ₂ MIN.)			
0,14			
FLOW COEFFICIENT Kvs m ³ /h ΔP = 1 bar			
1,50 2,50 3,00			
SPRING REGULATING RANGE IN 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

		FLOWS						
R	1/2"	3/4"		1"				
DN	15	20		25				
PRESSURE IN bar	I - Saturated steam in Kg/h. II - Air at 0°C and 1,013 bar in [Nm ³ /h]. For liquids, consult our technical department.							
	INPUT P ₁	REDUCED P ₂	I	II	I	II	I	II
2	0,2	6	8	7	9	10	14	
		1	26	35	32	39	42	58
		1,5	30	40	37	48	52	71
3	0,3	1	12	15	15	18	21	27
		1	30	33	37	49	54	74
		1,5	42	54	52	67	73	101
4	0,4	1	19	25	24	30	32	43
		1	38	49	45	61	69	89
		1,5	50	67	62	82	87	121
5	0,5	2	62	82	77	100	108	150
		2,5	70	91	87	114	122	172
		3	75	98	92	121	129	189
6	0,6	2	88	115	108	143	153	213
		3	96	125	120	155	168	232
		4	106	139	132	175	188	260
7	0,7	2	74	98	92	123	132	181
		3	98	126	120	159	171	236
		4	110	142	136	180	192	265
8	0,8	2	81	106	102	133	142	194
		3	104	135	131	171	182	254
		4	118	154	148	194	206	288
9	0,9	2	114	150	142	188	201	278
		3	129	169	162	221	227	314
		4	142	186	178	233	250	347
10	1,1	2	138	180	173	253	245	338
		3	148	196	188	268	275	374
		4	162	212	204	282	297	412
11	1,2	2	155	199	194	275	275	374
		3	178	229	220	307	307	426
		4	196	261	248	342	342	473
12	1,3	2	214	278	266	347	374	518
		3	233	305	289	380	404	579
		4	255	335	315	415	445	615
13	1,4	2	284	366	345	450	480	650
		3	305	395	370	490	520	710
		4	325	425	395	520	550	750
14	1,5	2	355	456	425	560	600	810
		3	375	485	450	590	630	850
		4	395	515	475	620	660	890
15	1,6	2	425	546	510	670	720	970
		3	445	575	535	710	760	1030
		4	465	605	560	750	800	1090
16	1,7	2	485	616	575	750	810	1100
		3	505	645	595	790	850	1160
		4	525	675	615	830	890	1220
17	1,8	2	545	706	645	840	910	1230
		3	565	735	665	880	950	1290
		4	585	765	685	920	990	1350



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.

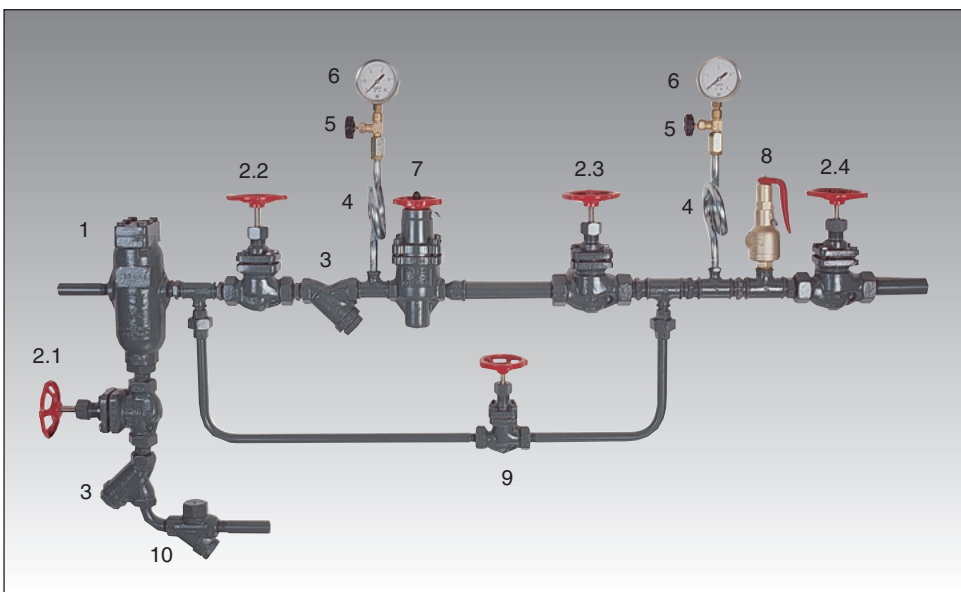
In working conditions with zero consumption, the valve remains closed and completely airtight when there is a slight increase in reduced pressure.

Installation

- Always 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 be supplied 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%.

- Area of influence of input pressure. (P₁)
- Area of influence of reduced pressure. (P₂)

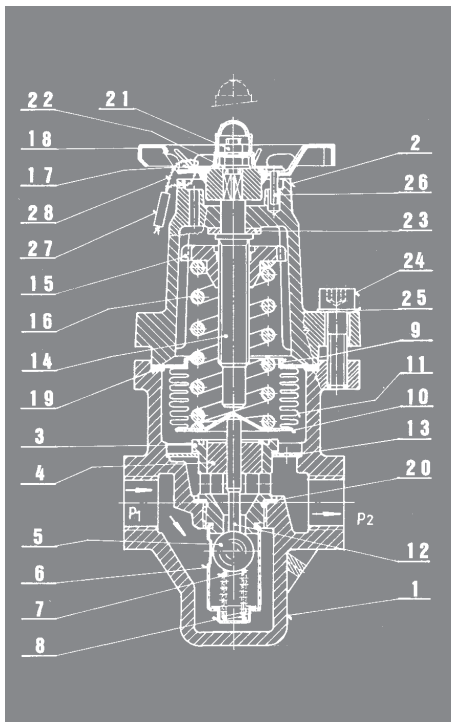
Example of installation for steam



- 1** Condensate separator.
- 2** Interruption valve.
- 3** Filter.
- 4** Syphon tube.
- 5** Pressure gauge cock.
- 6** Pressure gauge.
- 7** Pressure reducing valve.
- 8** Safety valve.
- 9** Interruption valve with adjusting cone.
- 10** Condensate purger.

IMPORTANT

- The distance between the pressure reducing valve **7** and the interruption valves **2.2** and **2.3** must be 8 ÷ 10 times the diameter of the tube.
- It is advisable to install the separator **1** and the condensate purger **10** using wet steam with dragging.
- We recommend that the reduction device be equipped with a by-pass and interruption valve with an adjusting cone **9**.

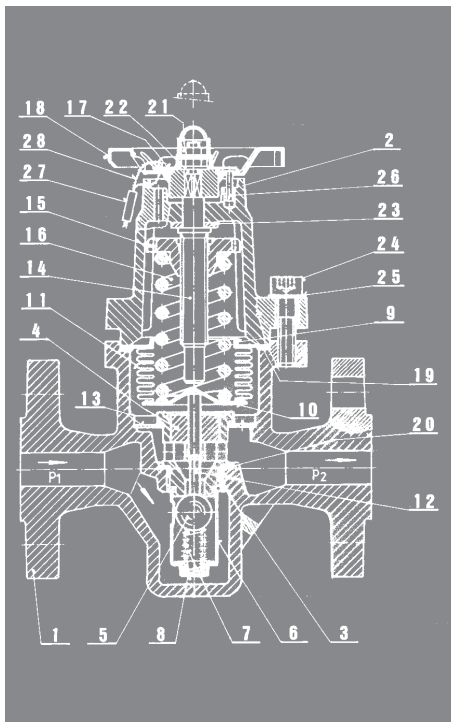


Start-up and adjustment of the reduced pressure

- 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 (17) to verify that the regulation field for the reduced pressure is appropriate and that the spring (16) corresponds to the same range.
- 3- Remove the nut (21), the rating plate (17) and the anchoring bolt (26).
- 4- With the input interruption valve fully open and the output interruption valve closed, turn the handwheel (18) 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 (26) and the rating (17) in place, and fix with the nut (21).
- 8- Seal the valve to prevent further adjustments, using the sealing wire (28) and the seal (27).
- 9- We recommend that the input pressure P_1 and the reduced pressure P_2 be recorded in the corresponding space of the rating plate (17).

Assembly and disassembly

- 1- Unseal the valve by cutting the wire (28).
- 2- Remove the nut (21), the rating plate (17) and the anchoring bolt (26).
- 3- Turn the handwheel (18) from right to left until you notice the spring (16) loosening.
- 4- Remove the screws (24) along with the washers (25).
- 5- Separate the cover (2) from the body (1), and you will have access to all the internal components. This enables simple maintenance and replacement of the spring (16), the bellows components (9) (10) (11) and the seating components (3) (4) (5) (6) (7) (8).
- 6- If the seating has been disassembled, replace the joint (20) with a new one. Put a new body joint in place (19).
- 7- Put the axle (12) in the guide hole (4) and check that it can move freely and is perpendicular to the bellows disc (10) when the bellows components (9) (10) (11) are put in place.
- 8- Select the spring (16) corresponding to the reduced pressure.
- 9- Put the cover (2) on the body (1) and the screws (24) with the washers (25), and screw them in.
- 10- Finally, proceed as described in "Start-up and adjustment of the reduced pressure".



Maintenance

Correct installation with interruption valves at the input and output points facilitates maintenance.

The filter (6) should be cleaned regularly.

When assembling the valve, replace the seating joint (20) and body joint (19) with new ones.

Informative brochure, without obligation and subject to our General Sales Conditions.

VYC industrial, sa

Founded in 1914

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