

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.

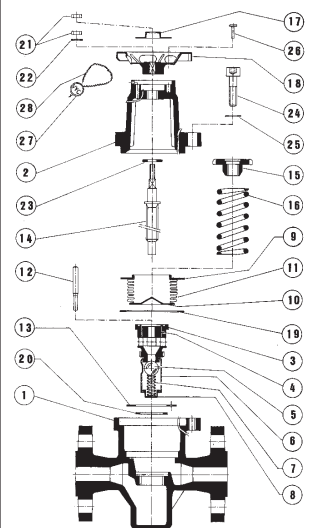


IMPORTANT

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 1973 (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-	513.80221	513.80241	513.80261	513.81021	513.81041	513.81061
		513.80222	513.80242	513.80262	513.81022	513.81042	513.81062
		513.80223	513.80243	513.80263	513.81023	513.81043	513.81063
	CARBON STEEL 2001-	513.83421	513.83441	513.83461	514.80221	514.80241	514.80261
		513.83422	513.83442	513.83462	514.80222	514.80242	514.80262
		513.83423	513.83443	513.83463	514.80223	514.80243	514.80263
	STAINLESS STEEL 2001-	513.88421	513.88441	513.88461	514.83421	514.83441	514.83461
		513.88422	513.88442	513.88462	514.83422	514.83442	514.83462
		513.88423	513.88443	513.88463	514.83423	514.83443	514.83463

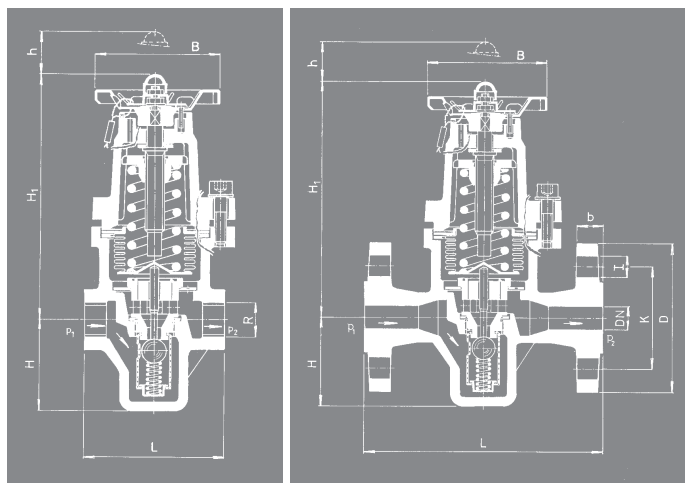


TABLE OF PRESSURES, FLOW COEFFICIENTS AND REGULATION FIELDS			
R	1/2"	3/4"	1"
DN	15	20	25
MAXIMUM INPUT PRESSURE IN bar (P ₁ MAX.)			
17			
MAXIMUM REDUCTION DIFFERENTIAL IN bar			
P ₁ : 10			
MINIMUM REDUCED PRESSURE IN bar (P ₂ MIN.)			
0,14			
FLOW COEFFICIENT Kvs m ³ /h ΔP = 1 bar			
1,50 2,50 3,00			
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			
INPUT P ₁	REDUCED P ₂	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.					
		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	12	15	15	18	21	27
	1	30	33	37	49	54	74
	1,5	42	54	52	67	73	101
4	2	50	67	64	82	89	123
	2,5	66	75	70	93	99	138
	0,4	19	25	24	30	32	43
5	1	38	49	45	61	69	89
	1,5	50	67	62	82	87	121
	2	62	82	77	100	108	150
6	2,5	70	91	87	114	122	172
	3	75	98	92	121	129	189
	0,5	42	57	52	69	79	98
7	2	68	90	85	113	120	168
	3	88	115	108	143	153	213
	4	96	125	120	155	168	232
8	0,6	46	60	57	74	82	108
	2	74	98	92	123	132	181
	3	98	126	120	159	171	236
9	4	110	142	136	180	192	265
	5	106	139	132	175	188	260
	0,7	50	67	63	84	89	119
10	2	81	106	102	133	142	194
	3	104	135	131	171	182	254
	4	118	154	148	194	206	288
11	6	114	150	142	188	201	278
	0,8	54	71	67	88	94	129
	2	87	113	108	141	152	213
12	3	112	146	138	181	196	272
	4	129	169	162	221	227	314
	6	138	180	173	253	245	338
13	0,9	48	67	63	82	92	125
	2	90	116	120	147	157	216
	3	116	151	145	189	204	280
14	4	136	177	170	221	239	333
	5	150	195	187	244	264	363
	7	155	199	194	250	275	374
15	1	58	77	73	95	105	142
	2	92	122	121	151	164	227
	3	120	158	150	196	214	293
16	4	142	186	178	233	250	347
	6	170	208	212	277	297	412
	8	178	229	220	286	307	426
17	1,1	66	88	82	108	121	160
	2	96	127	123	159	171	240
	3	130	170	162	212	227	316
18	4	158	205	195	255	276	380
	6	196	221	242	317	339	473
	8	214	278	266	347	374	518
19	8,6	218	284	271	355	383	530
	1,2	73	99	95	126	132	186
	2	108	135	128	167	178	249
20	3	138	177	170	221	240	332
	4	165	214	205	268	290	398
	6	206	268	255	332	360	492
21	8	230	300	285	374	404	578
	8,6	233	305	289	380	414	579
	1,3	85	111	106	140	148	208
22	2	110	141	134	175	187	260
	3	141	185	175	231	249	343
	4	170	224	213	278	298	412
23	6	217	283	281	350	382	527
	8	246	325	307	403	435	604
	8,6	251	356	314	412	445	615
24	1,5	92	117	113	148	161	220
	2	112	142	138	179	196	266
	3	144	187	177	236	252	348
25	4	172	229	208	285	308	420
	6	202	284	290	365	390	544
	8	222	336	318	419	448	626
26	8,6	240	343	355	428	459	639
	1,7	104	128	123	160	173	239
	2	116	145	141	183	196	270
27	3	147	191	181	241	258	355
	4	174	233	221	328	314	429
	6	206	300	296	373	404	556
28	8	229	349	340	434	469	650
	8,6	252	359	344	444	478	673

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
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		513.80223	513.80243	513.80263	513.81023	513.81043	513.81063

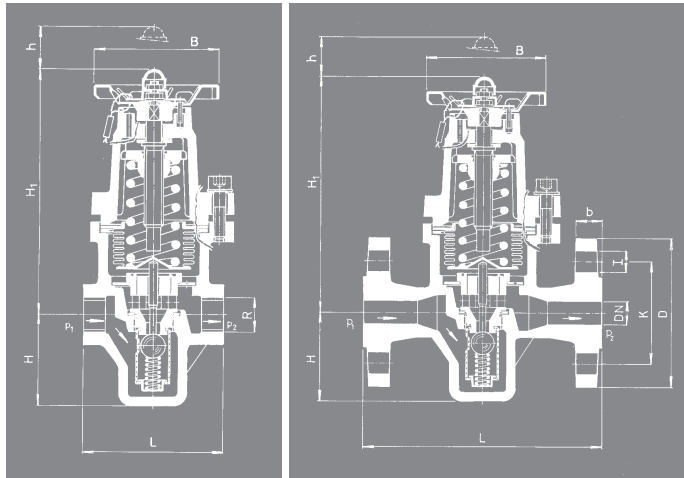
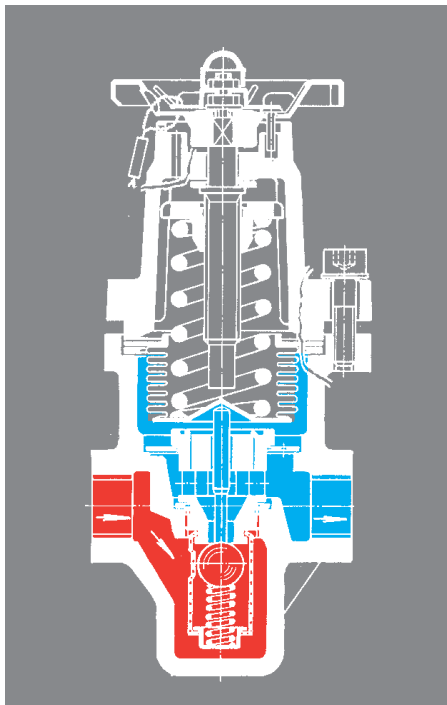


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DN	15	20	25
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MAXIMUM REDUCTION DIFFERENTIAL IN bar			
P ₁ : 10			
MINIMUM REDUCED PRESSURE IN bar (P ₂ MIN.)			
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FLOW COEFFICIENT Kvs m ³ /h ΔP = 1 bar			
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		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					
INPUT P ₁	REDUCED P ₂	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.							
		I	II	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	12	15	15	18	21	27		
	1	30	33	37	49	54	74		
	1,5	42	54	52	67	73	101		
4	2	50	67	64	82	89	123		
	2,5	66	75	70	93	99	138		
	0,4	19	25	24	30	32	43		
5	1	38	49	45	61	69	89		
	1,5	50	67	62	82	87	121		
	2	62	82	77	100	108	150		
6	2,5	70	91	87	114	122	172		
	3	75	98	92	121	129	189		
	0,5	42	57	52	69	79	98		
7	2	68	90	85	113	120	168		
	3	88	115	108	143	153	213		
	4	96	125	120	155	168	232		
8	0,6	46	60	57	74	82	108		
	2	74	98	92	123	132	181		
	3	98	126	120	159	171	236		
9	4	110	142	136	180	192	265		
	5	106	139	132	175	188	260		
	0,7	50	67	63	84	89	119		
10	2	81	106	102	133	142	194		
	3	104	135	131	171	182	254		
	4	118	154	148	194	206	288		
11	6	114	150	142	188	201	278		
	0,8	54	71	67	88	94	129		
	2	87	113	108	141	152	213		
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	4	129	169	162	221	227	314		
	6	138	180	173	253	245	338		
13	0,9	48	67	63	82	92	125		
	2	90	116	120	147	157	216		
	3	116	151	145	189	204	280		
14	4	136	177	170	221	239	333		
	5	150	195	187	244	264	363		
	7	155	199	194	250	275	374		
15	1	58	77	73	95	105	142		
	2	92	122	121	151	164	227		
	3	120	158	150	196	214	293		
16	4	142	186	178	233	250	347		
	6	170	208	212	277	297	412		
	8	178	229	220	286	307	426		
17	1,1	66	88	82	108	121	160		
	2	96	127	123	159	171	240		
	3	130	170	162	212	227	316		
18	4	158	205	195	255	276	380		
	6	196	221	242	317	339	473		
	8	214	278	266	347	374	518		
19	8,6	218	284	271	355	383	530		
	1,2	73	99	95	126	132	186		
	2	108	135	128	167	178	249		
20	3	138	177	170	221	240	332		
	4	165	214	205	268	290	398		
	6	206	268	255	332	360	492		
21	8	230	300	285	374	404	578		
	8,6	233	305	289	380	414	579		
	1,3	85	111	106	140	148	208		
22	2	110	141	134	175	187	260		
	3	141	185	175	231	249	343		
	4	170	224	213	278	298	412		
23	6	217	283	281	350	382	527		
	8	246	325	307	403	435	604		
	8,6	251	356	314	412	445	615		
24	1,5	92	117	113	148	161	220		
	2	112	142	138	179	196	266		
	3	144	187	177	236	252	348		
25	4	172	229	208	285	308	420		
	6	202	284	290	365	390	544		
	8	222	336	318	419	448	626		
26	8,6	240	343	355	428	459	639		
	1,7	104	128	123	160	173	239		
	2	116	145	141	183	196	270		
27	3	147	191	181	241	258	355		
	4	174	233	221	328	314	429		
	6	206	300	296	373	404	556		
28	8	229	349	340	434	469	650		
	8,6	252	359	344	444	478	673		



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.

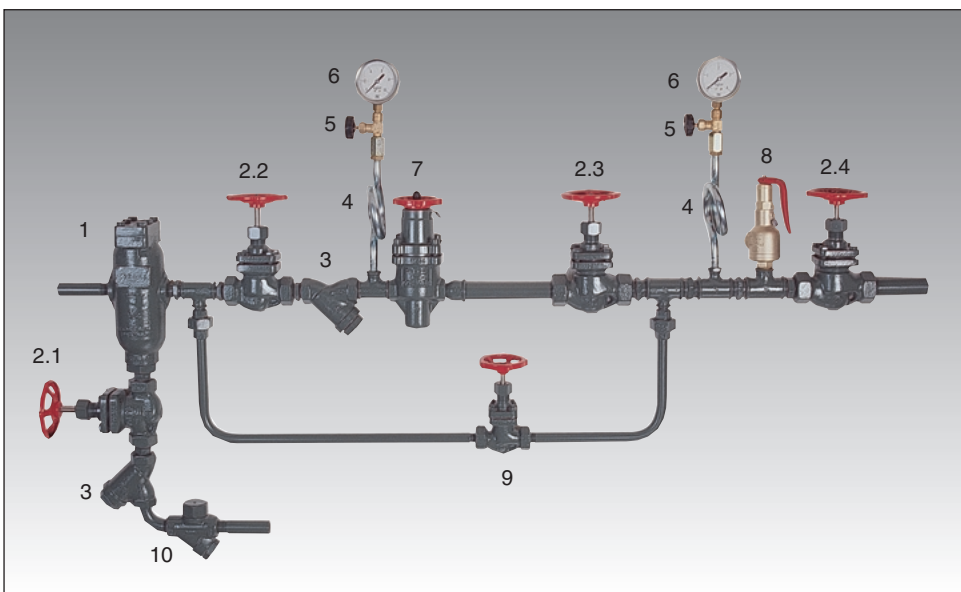
In working conditions with zero consumption, the valve remains closed and completely airtight when there is a slight increase in reduced pressure.

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**.