



گروه مشارکتی آرادمانی

Sales@aradmanigroup.com

Model 1216 - Safety and Relief valve

DESCRIPTION

Type	Safety and Relief valve
Connections	Threaded BSP/NPT
Rating	PN-40
Material	Stainless Steel 316L
Temperature range	-10 to +350°C
Cryogenic service until	-196°C

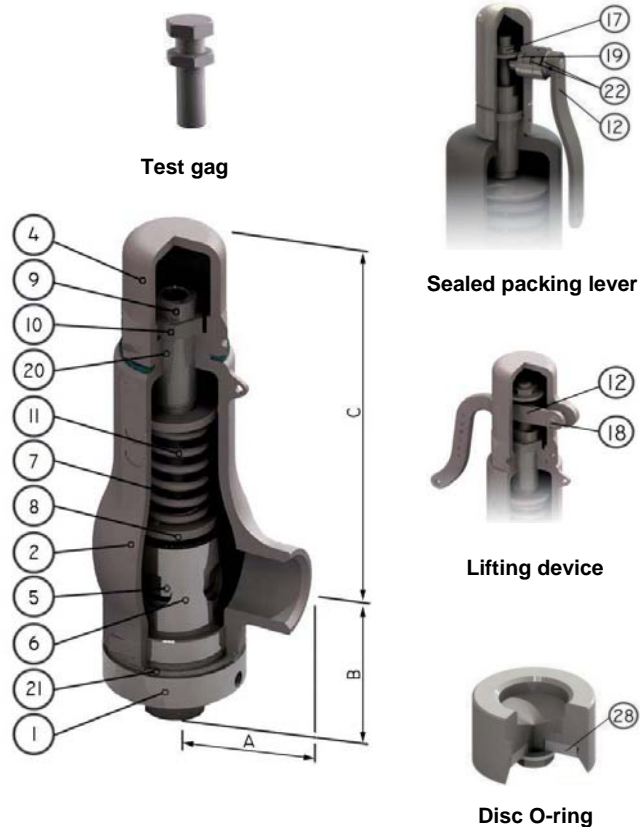
REQUIREMENTS

Calculation	EN-4126-1/7
Design	EN-12516-1, EN-4126-1/7 DIN 259 and ANSI B 2.1
Materials	EN
Inspection	EN-4126-1/7

CONSTRUCTION AND MATERIALS

Item	Description	Material	
		Standard	Cryogenic
1	Nozzle	A351 CF-3M	A351 CF-3M
2	Body	A351 CF-3M	A351 CF-3M
4	Cap	A351 CF-8	A351 CF-8
5 R	Disc	AISI-316L	AISI-316L
6	Guide	A351 CF-3M	A351 CF-3M
7	Spindle/Stem	AISI-316L	AISI-316L
8	Spring Button	AISI-303	AISI-303
9	Adjusting Screw	AISI-303	AISI-303
10	Lock Nut	AISI-303	AISI-303
11 R	Spring	AISI-302	17 / 7PH
12	Lever	A351 CF-8	A351 CF-8
17	Release nut	AISI-316	AISI-316
18 R	Lever axis	AISI-303	AISI-303
19	Packing lever axis	AISI-303	AISI-303
20 R	Gasket	PTFE/Graphite	PTFE/Graphite
21 R	Gasket	PTFE/Graphite	PTFE/Graphite
22 R	Gasket	Viton/Graphite	PTFE/Graphite
28 R	Soft seat	Viton/PTFE	Viton/PTFE

R Recommended Spare Parts



TECHNICAL INFORMATION

Applications	Steam, Gases, Vapors & Liquids
Min. Set pressure	0,2 Barg
Set pressure tolerance	± 3%
Overpressure	10%
Blowdown	Gases 10%, Liquids 20%
Discharge coefficients	Gases K=0,55
	Liquids K=0,48



DIMENSIONS

Inlet	Outlet	Orifice	Area (mm ²)	A (mm)	B (mm)	C (mm)	Weight (Kg)
1/2"	3/4"	13	133	45	57	155	2,2
1/2"	1"	13	133	45	57	155	2,2
3/4"	1"	14	154	45	57	155	2,2
1"	1"	16	201	45	60	155	2,2
1"	1 1/4"	16	201	45	61	155	2,3
1"	2"	22	380	62	87	234	4,5
1 1/4"	1 1/4"	18	254	45	62	155	2,4
1 1/2"	2"	28	616	62	89	234	4,6
2"	2"	32	804	62	93	234	5,1

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Model 1216B - Safety and Relief valve

DESCRIPTION

Type	Safety and Relief valve
Connections	RF-Threaded or RF-RF
Rating	PN 16, PN 40, 150#, 300#
Material	Stainless Steel 316L
Temperature range	-28 to +350°C

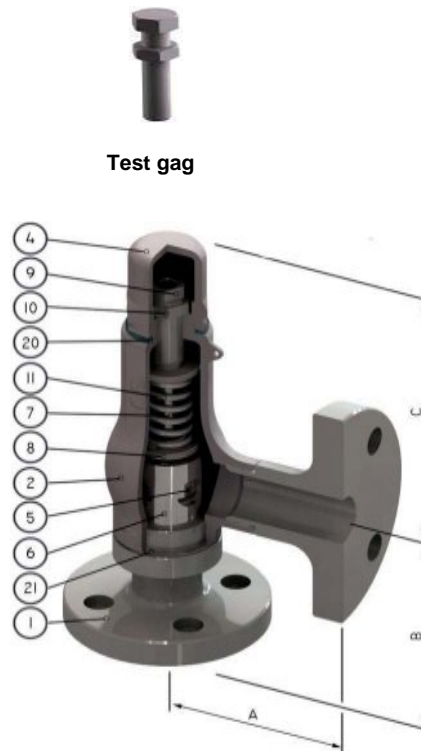
REQUIREMENTS

Calculation	EN-4126-1/7
Design	EN-12516-1, EN-4126-1/7 DIN 259 and ANSI B16.5
Materials	EN
Inspection	EN-4126-1/7

CONSTRUCTION AND MATERIALS

Item	Description	Material
1	Nozzle	A351 CF-3M
2	Body	A351 CF-3M
4	Cap	A351 CF-8
5 R	Disc	AISI-316L
6	Guide	A351 CF-3M
7	Spindle/Stem	AISI-316L
8	Spring Button	AISI-303
9	Adjusting Screw	AISI-303
10	Lock Nut	AISI-303
11 R	Spring	AISI-302
12	Lever	A351 CF-8
17	Release nut	AISI-316
18 R	Lever axis	AISI-303
19	Packing lever axis	AISI-303
20 R	Gasket	PTFE/Graphite
21 R	Gasket	PTFE/Graphite
22 R	Gasket	Viton/Graphite
28 R	Soft seat	Viton/PTFE

R Recommended Spare Parts



Test gag



Sealed packing lever



Lifting device



Disc O-ring

TECHNICAL INFORMATION

		Inlet	Outlet	Orifice	Area	A	A	B	C	Weight
		150#	150#	BSP		ANSI	THR			
		300#	RF	NPT	[mm]	[mm ²]	[mm]	[mm]	[mm]	[Kg]
Applications	Steam, Gases, Vap / Liq	1/2"	3/4"	1"	13	133	45	90	155	3
Min. Set pressure	0,2 Barg	1/2"	1"	1"	13	133	70	45	90	155
Set pressure tolerance	± 3%	1/2"	1"	1"	13	133	70	45	90	155
Overpressure	10%	3/4"	1"	1"	14	154	70	45	90	155
Blowdown	Gases 10%	1"	1"	1"	16	201	70	45	90	155
	Liquids 20%									
Discharge coefficients	Gases K=0,55	PN16	PN16	BSP						
	Liquids K=0,48	PN40		NPT						
		15		3/4"	13	133	45	90	155	3
		15	25	1"	13	133	70	45	90	155
		20	25	1"	14	154	70	45	90	155
		25	25	1"	16	201	70	45	90	155



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Model 1216C - Safety and Relief valve

DESCRIPTION

Type	Safety and Relief valve
Connections	Clamp / BSP
Rating	PN 10
Material	Stainless Steel 316L
Temperature range	-10 to +350°C

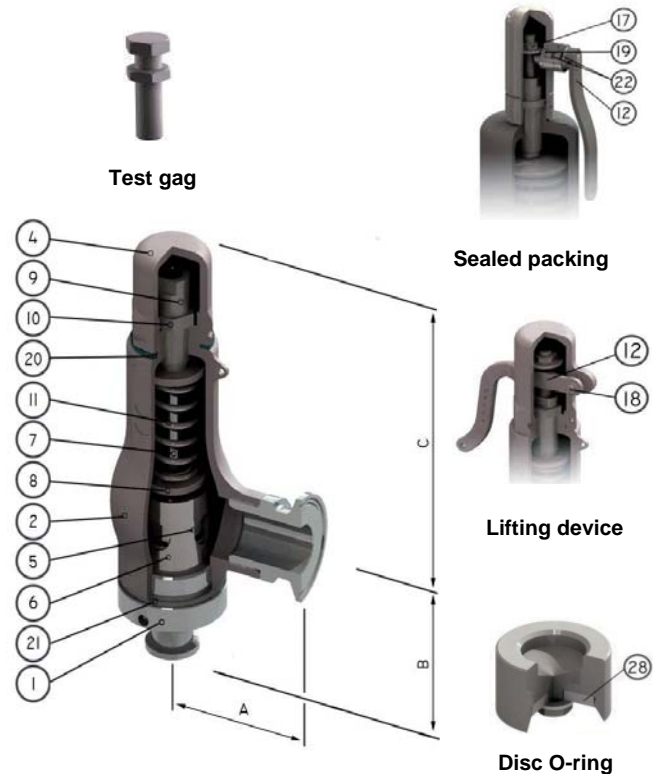
REQUIREMENTS

Calculation	EN-4126-1/7 / ISO-2852
Design	EN-12516-1, EN-4126-1/7 DIN 259 and ANSI B 2.1
Materials	EN
Inspection	EN-4126-1/7

CONSTRUCTION AND MATERIALS

Item	Description	Material
1	Nozzle	AISI-316L
2	Body	A351 CF-3M
4	Cap	A351 CF-8
5 R	Disc	AISI-316L
6	Guide	AISI-316L
7	Spindle/Stem	AISI-316L
8	Spring Button	AISI-303
9	Adjusting Screw	AISI-303
10	Lock Nut	AISI-303
11 R	Spring	AISI-302
12	Lever	A351 CF-8
17	Release nut	AISI-316
18 R	Lever axis	AISI-303
19	Packing lever axis	AISI-303
20 R	Gasket	PTFE/Graphite
21 R	Gasket	PTFE/Graphite
22 R	Gasket	Viton/Graphite
28 R	Soft seat	Viton/PTFE

R Recommended Spare Parts

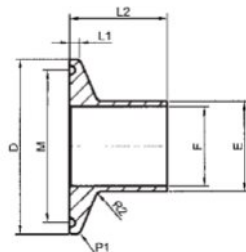


TECHNICAL INFORMATION

Applications	Steam, Gases, Vapors & Liquids
Min. Set pressure	0,2 Barg
Set pressure tolerance	± 3%
Overpressure	10%
Blowdown	Gases 10%, Liquids 20%
Discharge coefficients	Gases K=0,55 Liquids K=0,48

DIMENSIONS

Inlet	Outlet	Orifice Ø (mm)	Area (mm ²)	A (mm)	B (mm)	C (mm)	Weight (Kg)
15	25	9.5	71	73	65	155	2,4
20	25	15	176,6	73	65	155	2,4
25	25	18	254	73	67	155	2,8
40	40	32	804	90	98	234	8,2
15	1"	9.5	71	45	65	155	2
15	1"	15	176,4	45	65	155	2
18	1"	18	254	45	67	155	2,2
32	2"	32	804	62	98	234	8,2



CLAMP ISO 2852

	D	M	E	L1	L2
15	25	19	12,7	2,85	12,7
20	25	19	19	2,85	12,7
1" (25)	50,5	43,5	25,6	2,85	21,5
2" (50)	50,5	43,5	38,6	2,85	21,5

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Model 1216HP - Safety and Relief valve

DESCRIPTION

Type	Safety and Relief valve
Connections	Threaded BSP/NPT
Rating	PN-100/250/400 - PN-40
Material	Stainless Steel 316L
Temperature range	-10 to +300°C
Cryogenic service until	-196°C

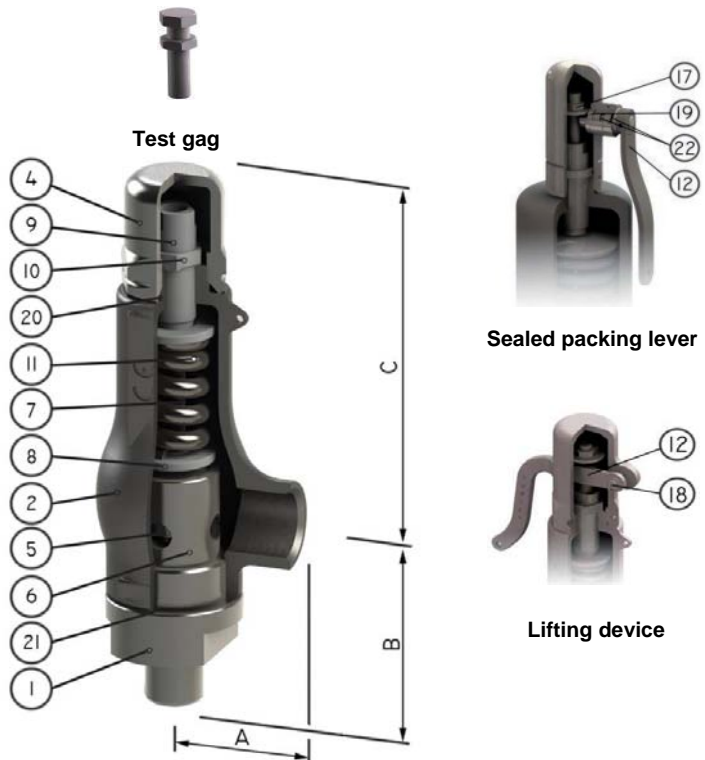
REQUIREMENTS

Calculation	EN-4126-1/7
Design	EN-12516-1, EN-4126-1/7 DIN 259 and ANSI B 2.1
Materials	EN
Inspection	EN-4126-1/7

CONSTRUCTION AND MATERIALS

Item	Description	Material	
		Standard	Cryogenic
1	Nozzle	AISI-316	AISI-316
2	Body	A351 CF-3M	A351 CF-3M
4	Cap	A351 CF-8	A351 CF-8
5 R	Disc	17 - 4 PH	17 - 4 PH
6	Guide	A351 CF-3M	A351 CF-3M
7	Spindle/Stem	AISI-316L	AISI-316L
8	Spring Button	AISI-303	AISI-303
9	Adjusting Screw	AISI-303	AISI-303
10	Lock Nut	AISI-303	AISI-303
11 R	Spring	Inconel X750	17 / 7PH
12	Lever	A351 CF-8	A351 CF-8
17	Release nut	AISI-316	AISI-316
18 R	Lever axis	AISI-303	AISI-303
19	Packing lever axis	AISI-303	AISI-303
20 R	Gasket	PTFE	PTFE
21 R	Gasket	PTFE + S.S.	AISI-304
22 R	Gasket	Viton	Metal

R Recommended Spare Parts



TECHNICAL INFORMATION

Applications	Steam, Gases, Vapors & Liquids
Min. Set pressure	0,2 Barg
Set pressure tolerance	± 3%
Overpressure	10%
Blowdown	Gases 10%, Liquids 20%
Discharge coefficients	Gases K=0,5 Liquids K=0,4

DIMENSIONS

Inlet	Outlet	Orifice	Area (mm ²)	A (mm)	B (mm)	C (mm)	Weight (Kg)
PN100	PN40						
1"	2"	16	201	62	100	235	5
1 1/4"	2"	18	254	62	100	235	5
1 1/2"	2"	20	314	62	100	235	6
2"	2"	22	380	62	100	235	6,3
PN250	PN40						
1/2"	3/4"	9	64	45	72	155	3
3/4"	3/4"	9	64	45	72	155	3
1"	1"	9	64	45	77	155	3
PN400	PN40						
1/2"	3/4"	6	28	45	72	155	3
3/4"	3/4"	6	28	45	72	155	3



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Model 1500HP - Safety and Relief valve

DESCRIPTION

Type	Safety and Relief valve
Connections	Threaded BSP/NPT
Materials	Stainless Steel 316L
Pressure range	1500psig to 20000psig
Temperature Range	0 to + 204°C

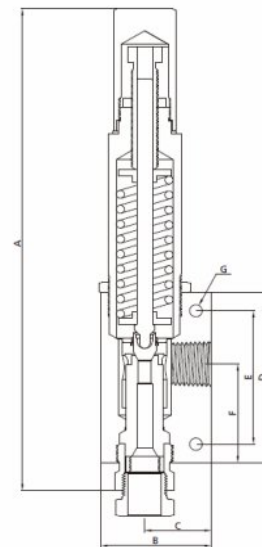
CONSTRUCTION AND MATERIALS

Item	Description	Material
1	Cap	316SS/A479
2	Adjusting Bolt	316SS/A479
3	Lock Nut	316SS/A479
4	Spring Cylinder	316SS/A479
5	Gasket	316SS/A479
6	Spring Washer	316SS/A479
7	Spring	17-7PH/AMS5678
8	Spindle	316SS/A479
9	Lock Nut	316SS/A479
10	Plug	PEEK
11	Plug Guide	316SS/A479
12	Seat	316SS/A479
13	Valve Body	316SS/A479
14	Seat Gland	316SS/A479
	Lubricant	Molybdenum Disulfide



DIMENSIONS

A	B	C	D	E	F	G
In. (mm)						
9.46 (240.4)	2.00 (50.8)	1.19 (30.2)	3.25 (82.6)	2.25 (57.1)	1.94 (49.3)	0.28 (7.1)



TECHNICAL DATA

Inlet		Outlet Connection Type	Orifice Size in. (mm)	Cv	Pressure Rating psig (bar) 100°F (38°C)		
TUBE OD in.	Connection Type				Minimum Set Pressure	Maximum Set pressure	Maximum Back Pressure
9/16	2FH9	FNS12	0.312 (7.92)	1.2	1500 (103)	5,000 (345)	500 (34.5)
9/16	2FH9	FNS12	0.25 (6.35)	0.8	5000 (103)	10,000 (690)	500 (34.5)
9/16	2FH9	FNS12	0.156 (3.96)	0.3	10,000 (690)	20,000 (1379)	500 (34.5)

FEATURES

- Soft seat relief valves
- Set pressure: 1500 to 20,00psog (103 to 1379 bar)
- Working temperature: 32°F to 400°F (0°C to 204°C).
- Liquid or gas service. Provide bubble tight shut-off of gas.
- Pressure settings are made at the factory and valves are tagged accordingly.

State the required set pressure with the order please.

- Lock wired secure cap to maintain set pressure.
- Easily exchangeable seat.
- Free assembly positions

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Model Z70 - Safety and Relief valve

DESCRIPTION

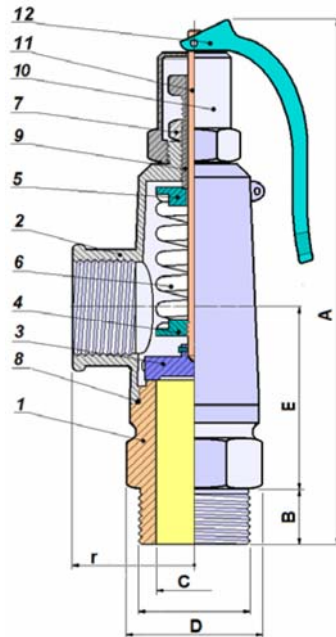
Type	Safety and Relief valve
Connections	Threaded BSP/NPT
Rating	PN-30
Material	Bronze RG 5 / RG 10 EN 1982 CC491K
Temperature range	-10 to +350°C

REQUIREMENTS

Calculation	EN-4126-1/7
Design	EN-12516-1, EN-4126-1/7 DIN 259 and ANSI B 2.1
Materials	EN 1503-1-2-3-4
Inspection	EN-4126-1/7

CONSTRUCTION AND MATERIALS

Item	Description	Material
1	Valve Base	Bronze RG5
2	Hood	Brass
3	Shutter	AISI-316L
4	Male Lower Spring Carrier	Brass
5	Female Upper Spring Carrier	Brass
6	Spring	Carbon steel / AISI 302
7	Attachment Nut	Brass
8	Watertight Seal	Rubber
9	Adjustment Screw	Brass
10	Cap	Brass
11	Lift axle	Brass
12	Lever	Brass



TECHNICAL INFORMATION

Applications	Steam, Gases, Vapors & Liquids
Min. Set pressure	0,2 Barg
Set pressure tolerance	± 3%
Overpressure	10%
Blowdown	Gases 10%, Liquids 20%
Discharge coefficients	Gases K=0,80
	Liquids K=0,60

DIMENSIONS

	Inlet	Outlet	Orifice	A	B	C	E	r	D	Weight
			Ø	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
	3/8"	3/8"	11	133,3	11	10	40	22	24	0,330
	1/2"	1/2"	14	156,7	12	14	48	26,5	26	0,530
	3/4"	3/4"	18	172,0	14	18	56,5	30,5	32	0,740
	1"	1"	22	210,5	16	22	73	37,5	40	1,360
	1 1/4"	1 1/4"	30	213,0	17	30	74	42,5	47	1,640
	1 1/2"	1 1/2"	35	223,0	18	35	77,5	47	57	2,000
	2"	2"	45	252,6	22	45	88,5	54,5	67	3,180
	2 1/2"	2 1/2"	65	324,5	24	75	118,5	78,5	85	6,070
	3"	3"	75	361,5	28	87,5	136	86	98	7,970



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Model 1400 – Safety and Relief Valve

DESCRIPTION

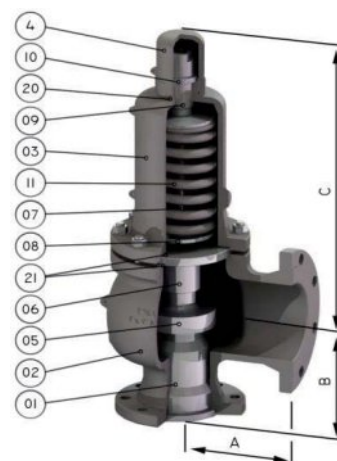
Type	Safety and Relief valve
Connections	Flanged EN 1092
Ends	RF / BW / SW
Material	Nodular Iron / Carbon Steel / Stainless Steel
Temperature range	-28 to +350°C

REQUIREMENTS

Calculation	EN-4126-1 / 7
Design	EN-12516-1, EN-4126-1 / 7
Materials	EN / ASTM
Inspection	EN-4126-1/7, API 527, MSS-SP-55
Tolerances	EN-4126-1, ASME UG-126

CONSTRUCTION AND MATERIALS

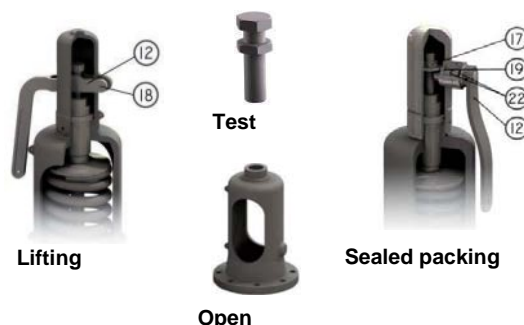
Item	Description	Sizes/ Rating / Material			
		15x25 & 20x25 PN16/25	25x40-250x350 PN16/25	15x25-400x500 PN40 15x25-65x100 PN63/100	15x25-400x500 PN16/25/40 15x25-65x100 PN63/100 SS.ST
		Carbon Steel	Nodular Iron	Carbon Steel	SS.ST
1	Nozzle	AISI-304	AISI-304	AISI-304	AISI-304
2	Body	C.S. 1.0619	EN-JS1030	C.S. 1.0619	SS. ST. 1.4409
3	Bonnet	C.S. 1.0619	EN-JS1030	C.S. 1.0619	SS. ST. 1.4409
4	Cap	A351 CF-8	A 351 CF-8	A351 CF-8	A351 CF-8
5 R	Disc	AISI-316L	AISI-316L	AISI-316L	AISI-316L
6	Guide	C.S., Zn	C.S., Zn	C.S. + 304SS	AISI-316L
7	Spindle/Stem	AISI-420	AISI-420	AISI-420	AISI-316L
8	Spring Button	C.S. & Zn	C.S. & Zn	C.S. & Zn	AISI-303
9	Adjusting Screw	AISI-303	AISI-303	AISI-303	AISI-303
10	Lock Nut	AISI-303	AISI-303	AISI-303	AISI-303
11 R	Spring	C.S.	C.S.	C.S.	AISI-302
12	Lever	A 351 CF-8	A 351 CF-8	A 351 CF-8	A 351 CF-8
17	Release nut	AISI-303	AISI-303	AISI-303	AISI-316
18 R	Lever axis	AISI-303	AISI-303	AISI-303	AISI-303
19	Packing lever axis	AISI-303	AISI-303	AISI-303	AISI-303
20 R	Gasket cap	NBR+MF/Graphite	NBR+MF/Graphite	NBR+MF/Graphite	PTFE/Graphite
21 R	Gasket bonnet	NBR+MF	NBR+MF	NBR+MF	PTFE
22 R	Gasket packed lever	Viton	Viton	Viton	Viton
27 R	Bellow	AIS-316 Ti	AIS-316 Ti	AIS-316 Ti	AIS-316 Ti
28 R	Soft seat	Viton/PTFE	Viton/PTFE	Viton/PTFE	Viton/PTFE



R Recommended spare parts

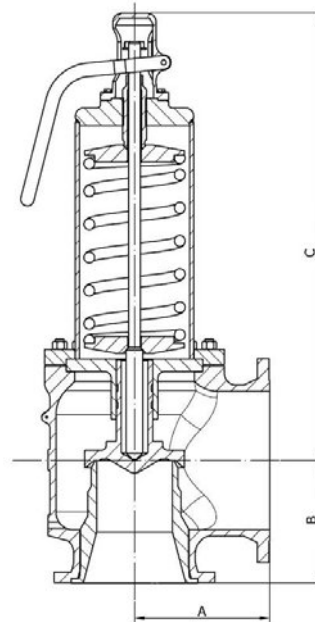
TECHNICAL INFORMATION

Applications	Steam, Gases, Vapors & Liquids
Min. Set pressure	0,2 Barg
Set pressure tolerance	± 3%
Seat	Metal-metal, PTFE, Viton, Nozzle SS.ST.+ Stellite
Overpressure	10% for Steam, Gas and Vapor 20% for fire exposure 25% for liquid on thermal relief
Blowdown	7%
Discharge coefficients	Gases K=0,64; Liquids K=0,5



DIMENSIONS

DN		Flanges / Rating		Orifice		Sizes			Weight
Inlet [mm]	Outlet [mm]	Inlet [Bar]	Outlet [Bar]	Ø [mm]	Area [mm ²]	A [mm]	B [mm]	C [mm]	[Kg]
15	25	16	16	13	133	95	95	275	7
15	25	25	16	13	133	95	95	275	7
15	25	40	16	13	133	95	95	275	7
15	25	63	16	13	133	95	95	275	9
15	25	100	16	13	133	95	95	275	9
20	25	16	16	13	133	95	95	275	7
20	25	25	16	13	133	95	95	275	7
20	25	40	16	13	133	95	95	275	7
20	25	63	16	13	133	95	95	275	9
20	25	100	16	13	133	95	95	275	9
25	40	16	16	23,8	445	100	105	275	14
25	40	25	16	23,8	445	100	105	275	14
25	40	40	16	23,8	445	100	105	275	16
25	50	63	16	20	314	115	105	305	25
25	50	100	16	16	201	115	105	305	30
32	50	16	16	29,5	683	110	115	325	12
32	50	25	16	29,5	683	110	115	325	12
32	50	40	16	29,5	683	110	115	325	12
32	50	63	16	23,8	445	110	115	325	18
32	50	100	16	20	314	110	115	325	25
40	65	16	16	36	1018	115	140	325	14
40	65	25	16	36	1018	115	140	325	14
40	65	40	16	36	1018	115	140	325	14
40	65	63	16	26	531	115	140	325	28
40	65	100	16	23,8	445	115	140	325	30
50	80	16	16	46	1662	120	150	400	25
50	80	25	16	46	1662	120	150	400	25
50	80	40	16	46	1662	120	150	400	25
50	80	63	16	32	804	120	150	400	32
50	80	100	16	32	804	120	150	400	35
65	100	16	16	60	2827	140	170	450	36
65	100	25	16	60	2827	140	170	450	36
65	100	40	16	60	2827	140	170	450	36
65	100	63	16	48	1810	140	170	450	62
65	100	100	16	39	1195	140	170	450	66
80	125	16	16	72	4072	160	195	450	58
80	125	25	16	72	4072	160	195	625	58
80	125	40	16	72	4072	160	195	625	58
100	150	16	16	90	6362	180	220	625	85
100	150	25	16	90	6362	180	220	663	85
100	150	40	16	90	6362	180	220	663	85
125	200	16	16	105	8659	200	250	663	140
125	200	25	16	105	8659	200	250	760	140
125	200	40	16	105	8659	200	250	760	140
150	250	16	16	125	12272	225	285	760	150
150	250	25	16	125	12272	225	285	760	150
150	200	40	16	125	12272	241	240	695	160
200	300	16	16	153	18385	300	290	795	200
200	250	40	16	153	18385	300	290	795	220
250	350	16	16	200	31415	406	305	1390	750
250	350	40	16	200	31415	406	305	1390	800
300	400	16	16	228	40828	406	359	1432	850
300	400	40	16	228	40828	406	359	1432	900
400	500	16	16	304	72950	533	432	1943	185
400	500	40	16	304	72950	533	432	1943	2100



Design for size > 200 mm.

OPTIONAL ACCESORIES

Specials springs



Carbon steel	120°C
Chrome vanadium	219°C
S.S. AISI 302	260°C
Inconel X-750	500°C

Lift indicator



Proximity switch and valve position indicator. inductive prox 3-wire switching type

Supply voltage 20 to 264 VAC, 50/60 Hz.

Enclosure ratings IEC 144 IP67, option Eex / ATEX.

Heating jacket



Areas of application are system to be protected from media tendency to crystallize.

Material: S.S. AISI-316L.

Nozzle ring / Blowdown ring



To help the control flow capacity.

Adjustable blowdown



Disclaimer

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Model 1415 – Safety and Relief Valve

DESCRIPTION

Type	Safety and Relief valve
Connections	Flanged ASME/ANSI B16.5
Rating	ANSI 150 / 300 / 600 / 900 / 1500 / 2500
Material	Carbon Steel A216 WCB / WCC Carbon Steel A217 WC6 / WC9 Stainless Steel A351 CF-3M / CF8 Duplex A182 F51
Temperature range	-28 to +400°C -96 to +400°C (SS.ST.)

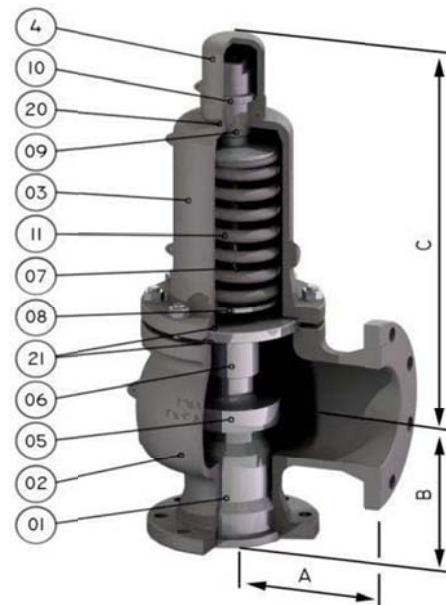
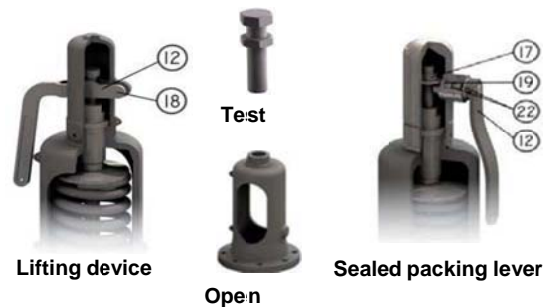
REQUIREMENTS

Calculation	API RP 520
Design / Size	API STD 526, ASME Section VIII
Materials	EN / ASTM / ASME
Inspection	EN-4126-1/7, API STD 527, MSS-SP-55
Tolerances	EN-4126-1, ASME UG-126

CONSTRUCTION AND MATERIALS

Item	Description	Material	
		Carbon Steel	Stainless Steel
1	Nozzle	AISI-316L	AISI-316L
2	Body	A216 WCB A217 WC6 A217WC9	A351 CF-3M A351 CF-8 DUPLEX A182 F51
3	Bonnet	A216 WCB A217 WC6 A217WC9	A351 CF-3M A351 CF-8 DUPLEX A182 F51
4	Cap	A351 CF-8	A351 CF-8
5 R	Disc	AISI-316L	AISI-316L
6	Guide	AISI-316L	AISI-316L
7	Spindle/Stem	AISI-316L	AISI-316L
8	Spring Button	Carbon Steel	AISI-303
9	Adjusting Screw	AISI-420	AISI-303
10	Lock Nut	AISI-303	AISI-303
11 R	Spring	Carbon Steel	AISI-302
12	Lever	A351 CF-8	A351 CF-8
17	Release nut	AISI-316L	AISI-316L
18 R	Lever axis	AISI-303	AISI-303
19	Packing lever axis	AISI-303	AISI-303
20 R	Gasket cap	NBR+MF/Graphite	PTFE/Graphite
21 R	Gasket bonnet	NBR+MF/Graphite	PTFE/Graphite
22 R	Gasket packed lever	Viton/Graphite	Viton/Graphite
27 R	Bellows	AISI-316 Ti	AISI-316 Ti
28 R	Soft seat	Viton / PTFE	Viton / PTFE

R Recommended spare parts
Optional



TECHNICAL INFORMATION

Applications	Steam, Gases, Vapors & Liquids
Min. Set pressure	0,2 Barg
Set pressure tolerance	± 3%
Seat	Metal-metal, PTFE, Viton, Nozzle St.St + Stellite
Overpressure	10% for Steam, Gas and Vapor 20% for fire exposure 25% for liquid on thermal relief
Blowdown	7%
Discharge coefficients	Gases K=0,975 Liquids K=0,64



Bellows

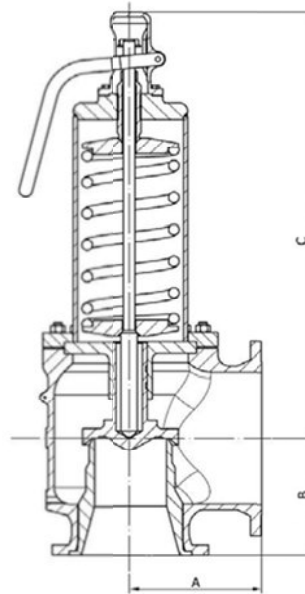


O-ring & Soft seat

DIMENSIONS

DN		Flanges / Rating		Orifice			Sizes			Weight
Inlet ["]	Outlet ["]	Inlet [#]	Outlet [#]	Letter	Ø [mm]	Area [mm ²]	A [mm]	B [mm]	C [mm]	[Kg]
1/2"	1"	150	150	D / E	9,6 / 13	71 / 133	95	95	275	8
3/4"	1"	150	150	D / E	9,6 / 13	71 / 133	95	95	275	8
1"	1"	150	150	D / E	9,6 / 13	71 / 133	95	95	275	8
1/2"	1"	300	150	D / E	9,6 / 13	71 / 133	95	95	275	9
3/4"	1"	300	150	D / E	9,6 / 13	71 / 133	95	95	275	9
1"	1"	300	150	D / E	9,6 / 13	71 / 133	95	95	275	9
1/2"	1"	600	150	D / E	9,6 / 13	71 / 133	115	100	275	18
3/4"	1"	600	150	D / E	9,6 / 13	71 / 133	115	100	275	18
1"	1"	600	150	D / E	9,6 / 13	71 / 133	115	100	275	18
1"	2"	150	150	D / E	9,6 / 13	71 / 133	114	105	305	14
1"	2"	300	150	D / E	9,6 / 13	71 / 133	114	105	305	16
1"	2"	600	150	D / E	9,6 / 13	71 / 133	114	105	305	18
1 1/2"	2"	900	300	D / E	9,6 / 13	71 / 133	140	105	315	19
1 1/2"	2"	1500	300	D / E	9,6 / 13	71 / 133	140	105	315	24
1 1/2"	3"	2500	300	D / E	9,6 / 13	71 / 133	178	140	325	30
1 1/2"	2"	150	150	F	16	201	121	124	315	17
1 1/2"	2"	300	150	F	16	201	121	124	315	17
1 1/2"	2"	600	150	F	16	201	152	124	315	20
1 1/2"	3"	900	300	F	16	201	165	124	315	22
1 1/2"	3"	1500	300	F	16	201	165	124	315	22
1 1/2"	3"	2500	300	F	16	201	178	140	325	30
1 1/2"	3"	150	150	G	21	346	121	124	400	25
1 1/2"	3"	300	150	G	21	346	121	124	400	25
1 1/2"	3"	600	150	G	21	346	152	124	400	28
1 1/2"	3"	900	300	G	21	346	165	124	430	28
2"	3"	1500	300	G	21	346	175	156	444	41
1 1/2"	3"	150	150	H	26	531	124	130	400	25
1 1/2"	3"	300	150	H	26	531	124	130	400	25
2"	3"	300	150	H	26	531	124	130	400	27
2"	3"	600	150	H	26	531	162	154	400	32
2"	3"	900	150	H	26	531	162	154	400	32
2"	3"	1500	300	H	26	531	162	154	430	35
2"	3"	150	150	J	32,5	830	124	137	400	27
2"	3"	300	150	J	32,5	830	124	137	400	27
3"	4"	300	150	J	32,5	830	181	184	570	56
3"	4"	600	150	J	32,5	830	181	184	570	62
3"	4"	900	150	J	32,5	830	181	184	570	62
3"	4"	1500	300	J	32,5	830	181	184	570	65
3"	4"	150	150	K	40	1195	162	156	570	56
3"	4"	300	150	K	40	1195	162	156	570	56
3"	4"	600	150	K	40	1195	181	184	570	62
3"	6"	900	150	K	40	1195	216	198	610	90
3"	6"	1500	300	K	40	1195	216	198	610	105
3"	4"	150	150	L	49	1866	165	156	570	56
4"	6"	300	150	L	49	1866	181	179	610	90
4"	6"	600	150	L	49	1866	203	179	610	90
4"	6"	900	150	L	49	1866	222	197	820	120
4"	6"	1500	150	L	49	1866	222	197	820	120
4"	6"	150	150	M	55	2376	184	178	610	88
4"	6"	300	150	M	55	2376	184	178	610	90
4"	6"	600	150	M	55	2376	203	178	610	110
4"	6"	900	150	M	55	2376	222	197	820	120

DN		Flanges / Rating		Orifice			Sizes			Weight
Inlet ["]	Outlet ["]	Inlet [#]	Outlet [#]	Letter	Ø [mm]	Area [mm ²]	A [mm]	B [mm]	C [mm]	[Kg]
4"	6"	150	150	N	60	2827	210	197	610	88
4"	6"	300	150	N	60	2827	210	197	610	90
4"	6"	600	150	N	60	2827	222	197	610	94
4"	6"	900	150	N	60	2827	222	197	820	120
4"	6"	150	150	P	73	4185	229	181	610	88
4"	6"	300	150	P	73	4185	229	181	610	90
4"	6"	600	150	P	73	4185	254	225	610	94
4"	6"	900	150	P	73	4185	254	225	610	120
6"	8"	150	150	Q	96	7238	241	240	659	159
6"	8"	300	150	Q	96	7238	241	240	659	160
6"	8"	600	150	Q	96	7238	241	240	659	190
6"	8"	150	150	R	115	10387	241	240	659	159
6"	8"	300	150	R	115	10387	241	240	659	160
6"	10"	600	150	R	115	10387	267	240	659	190
8"	10"	150	150	T	147	16972	279	276	795	190
8"	10"	300	150	T	147	16972	279	276	795	195
8"	10"	150	150	U	165	16972	279	276	795	190
8"	10"	300	150	U	165	16972	279	276	795	195
10"	14"	150	150	V	200	31415	200	305	1390	750
10"	14"	300	150	V	200	31415	200	305	1390	750
12"	16"	150	150	W	228	40828	228	359	1432	850
12"	16"	300	150	W	228	40828	228	359	1432	850
16"	20"	150	150	X	304	72950	304	432	1943	1850
16"	20"	300	150	X	304	72950	304	432	1943	1850



Design for size > 8"

OPTIONAL ACCESORIES

Specials springs



Carbon steel	120°C	
Chrome vanadium	219°C	
S.S. AISI 302	260°C	
Inconel X-750	500°C	

Lift indicator



Proximity switch and valve position indicator. inductive prox 3-wire switching type

Supply voltage 20 to 264 VAC, 50/60 Hz.

Enclosure ratings IEC 144 IP67, option Eex / ATEX.

Heating jacket



Areas of application are system to be protected from media tendency to crystallize.

Material: S.S. AISI-316L.

Nozzle ring / Blowdown ring



To help the control flow capacity.

Adjustable blowdown



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Model 1400 LP / 1415 LP – Low Pressure Safety / Relief Valve

DESCRIPTION

Type	Safety and Relief valve
Connections	Flanged ASME/ANSI B16.5
Rating	ANSI 150 / PN16
Material	Nodular EN-JS1030
	Stainless Steel 1.4409
	Carbon Steel A216 WCB
	Stainless Steel A351 CF-3M
Temperature range	-96 to +350°C

REQUIREMENTS

Calculation	API RP 520 / EN 4126
Design / Size	API STD 526, ASME Section VIII / EN 12516
Materials	EN / ASTM / ASME
Inspection	EN-4126-1/7, API STD 527, MSS-SP-55
Tolerances	EN-4126-1, ASME UG-126

CONSTRUCTION AND MATERIALS

Item	Description	Material			
		Nodular	Stainless Steel	Carbon Steel	Stainless Steel
1	Nozzle	AISI-316L	AISI-316L	AISI-316L	AISI-316L
2	Body	EN-JS1030	1.4409	A216 WCB	A351 CF-3M
3	Cover	Carbon Steel	AISI-304	Carbon Steel	AISI-304
5 R	Disc	AISI-316L	AISI-316L	AISI-316L	AISI-316L
6	Guide	AISI-304	AISI-316L	AISI-316L	AISI-316L
7	Shaft	AISI-316L	AISI-316L	AISI-316L	AISI-316L
21 R	Cover gasket	NBR + MF/Graphite	PTFE/Graphite	NBR + MF/Graphite	PTFE/Graphite
28 R	Soft seat	PTFE	PTFE	PTFE	PTFE
R	Recommended spare parts				
	<i>Optional</i>				



TECHNICAL INFORMATION

Applications	Steam, Gases, Vapors & Liquids
Set	From 5 to 200mbarg
Seat	Metal-metal, PTFE, Viton,
Overpressure	10% for Steam, Gas and Vapor
	20% for fire exposure
	25% for liquid on thermal relief
Blowdown	7%
Set pressure tolerance	±3%
Discharge coefficients	Gases K=0,975
	Liquids K=0,64

DIMENSIONS

DN		Flanges / Rating		Orifice			Sizes			Weight
Inlet ["]	Outlet ["]	Inlet [#]	Outlet [#]	Letter	Ø [mm]	Area [mm ²]	A [mm]	B [mm]	C [mm]	[Kg]
1"	2"	150	150	E	13	133	114	105	75	10
1 1/2"	2"	150	150	F	16	201	121	124	105	12
1 1/2"	3"	150	150	G	21	346	121	124	110	21
1 1/2"	3"	150	150	H	26	531	124	130	110	21
2"	3"	150	150	J	32,5	830	124	137	110	23
3"	4"	150	150	K	40	1195	162	156	175	48
3"	4"	150	150	L	49	1866	165	156	175	48
4"	6"	150	150	M	55	2376	184	178	180	72
4"	6"	150	150	N	60	2876	210	197	180	72
4"	6"	150	150	P	73	4185	229	181	180	72
6"	8"	150	150	Q	96	7238	241	240	200	102
6"	8"	150	150	R	115	10387	241	240	200	102
8"	10"	150	150	T	147	16972	279	276	225	135
10"	14"	150	150	V	200	31415	406	305	250	515
12"	16"	150	150	W	228	40828	406	359	375	600
16"	20"	150	150	X	304	72950	553	432	400	900

DN		Flanges / Rating		Orifice		Sizes			Weight
Inlet [mm]	Outlet [mm]	Inlet [Bar]	Outlet [bar]	Ø [mm]	Area [mm ²]	A [mm]	B [mm]	C [mm]	[Kg]
25	40	16	16	23,8	445	100	105	75	9
32	50	16	16	29,5	683	110	115	105	11
40	65	16	16	36	1018	115	140	105	11
50	80	16	16	46	1662	120	150	155	20
65	100	16	16	60	2827	140	170	165	30
80	125	16	16	72	4072	160	195	175	52
100	150	16	16	90	6362	180	220	175	75
125	200	16	16	105	8659	200	250	175	105
150	250	16	16	125	12272	225	285	200	120
200	300	16	16	153	18385	300	290	225	152
250	350	16	16	200	31415	406	305	250	515
300	400	16	16	228	40828	406	359	375	600
400	500	16	16	304	72950	533	432	400	900



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Accessories - Safety and Relief valve

Lifting device



Manual lifting device.
Steam service must have lifting device.

Test gag



To test pressure of the installation.
After testing test gag must be removed.
Test gag is possible for safety transport of the valve.

Lift indicator



Proximity switch and valve position indicator.
Inductive prox 3-wire switching type
Supply voltage 20 to 264 VAC, 50/60 Hz.
Enclosure ratings IEC 144 IP67
Option Eex / ATEX

Packing lever



Manual lifting device.
This system to ensure that the fluid do not escape to the atmosphere.

Nozzle ring/Blowdown ring



To help the control flow capacity.
Adjustable blowdown

Specials spring



Carbon steel	120° C
Chrome Vanadium	219° C
S.S. AISI.302	260° C
Inconel X-750	500° C

Bellows



To protect:
Constant back pressure
Variable back pressure
Material: S.S. AISI-316Ti
Max. Back pressure 40%

Trim in hastelloy



Nozzle and disc: Hastelloy C 276
(Nickel-molybdenum-tungsten alloy)
Excellent general corrosion resistance
Rest of valve: S.S. AISI-316L
Bursting disc

Stellite in the seat



In PN-63, PN-100
ANSI600, 900, 1500& 2500

Heating Jacket



Areas of application are system to be protected from media which are viscous and have tendency to crystallise.
Material: S.S. AISI-316L

Model 1216, 1400, 1415 ECTFE - Safety and Relief valve

Since 1990 Halar® ECTFE powder coating have been used successfully for corrosion protection of exhaust duct system. Halar® ECTFE, a copolymer of ethylene and chlorotrifluoroethylene, is a semi-crystalline melt processable partially fluorinated polymer. It is available in different grades that are specifically designed for electrostatic powder coating.

Halar® ECTFE is particularly suitable for use as a coating material in protection and anti-corrosion applications thanks to its unique combination of properties.

PROCESSING

ECTFE is available in different grades that are specifically designed for electrostatic powder coating, fluidized bed coating, or both.

MARKETS AND APPLICATIONS

Typical applications served by Halar® ECTFE including those in contact with highly corrosive or ultrapure chemicals such as strong inorganic bases and strong mineral and oxidizing acids including:

- Vessels
- Valves
- Reactors
- Semiconductor chemical storage tanks duct work
- piping system
- Centrifuges
- Agitators
- Exhaust hoods
- Filters
- Electroplating equipment
- High chemical resistance
- Ultrapure water and high purity chemicals
- Halar® ECTFE exhibits very low fluoride ion leach out
- Protective coating for aggressive environment and smooth corrosion protection
- Excellent resistance: Hydrofluoric Acid, Sulfuric Acid, Nitric Acid, Piranha, Hydrogen Peroxide, Ozone, Ammonium Hydroxide, All Alkaline Chemistries, All Etchants and Strippers.

KEY FEATURES

- Very good chemical and thermal resistance
- Optimum permeation resistance
- Outstanding flame resistance
- Very good surface characteristics
- Surface smoothness
- Purity

EXCELLENT COATING ADHESION

Halar® ECTFE coating provides excellent adhesion, as demonstrated by film rupture in peel test.

TYPICAL PROPERTIES

Typical properties		Halar®
Melting point	°C	220-227
Specific gravity		1,
Max. Continuous service temperature	°C	1
Oven process temperature	°C	250-280
Thermal expansion coefficient	10 ⁻⁵	8
Flexural modulus @ 22 °C	ASTM D790	1
Tensile modulus @ 22 °C	ASTM D638	1
Yield stress @ 22 °C	ASTM D638	3
Tensile strength at break	ASTM D638	4
Hardness Rockwell - Pencil	kV	R93-4B
Flammability		94 V-O
Oxygen index	%	6
Water absorption	%	<0,001
Low temperature embrit	°C	<-

DESIGN

100% ECTFE



Body: Nodular Iron
Carbon steel
Stainless steel

Trims in ECTFE



Body: Stainless steel



Disclaimer

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Model EFSChem relief valve



Features:

- Molded Noryl Top
- High Reliability / Low Cost
- Molded PTFE/EPDM Diaphragm
- Adjustable Relief Settings
- Optional Pressure Ratings
- 2 & 3 Port Configurations
- Ventable to Suction Line
- Robust, Machined Construction
- Tamper Resistant Adjustment Screw
- Wide Range of Materials
- ISO 9001 Certified

Operation:

EFS diaphragm pressure relief valves operate when the pressure in the chemical system exceeds the preset pressure of the valve. The diaphragm is held against the valve seat by an internal spring. When the preset pressure is exceeded the diaphragm is forced up and the chemical flows out the relief port, back to the chemical tank or to the suction side of the pump. The valves are pre-set at 3.5 bar (50 psi), however they are field adjustable from 1 - 10 bar (10-150 psi), [up to 25 bar (350psi)] via the adjustment screw. The relief valve should be set approximately 1 bar (15psi) higher than the system pressure. Installation should be made as close to the pump as possible, without any valves or accessories between the relief valve and the pump technical data.

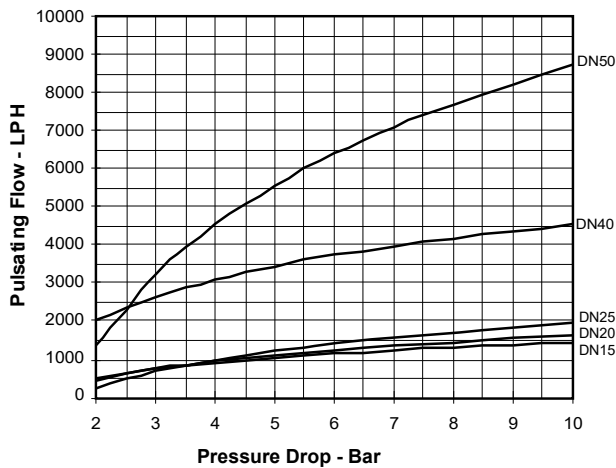
Check with pump manufacturer for proper selection

EFS G-Series diaphragm pressure relief valves are designed to protect chemical feed systems from over pressure damage caused by defective equipment or a blockage in the chemical feed line. Robust construction ensures reliability in the rigorous service of municipal and industrial applications. Wetted materials include: **PVC, CPVC, PP, PVDF, PTFE, Halar, 316 SS, A20 and Hastelloy C**. Available sizes: DN15 – DN 100

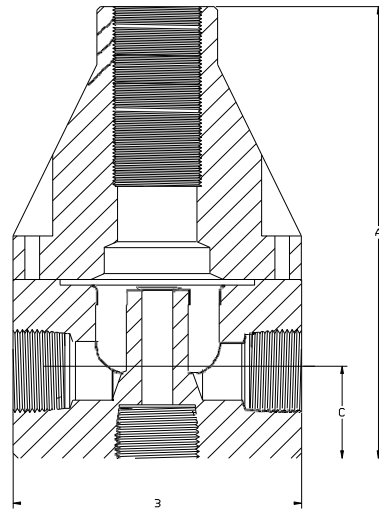
Model PRG Sizes: Metric or Imperial			DN15, 20, 25, 40, 50, 80, 100 or 1/2", 3/4", 1", 1.5", 2", 3", 4"		
Connections: Metric or Imperial			Standard Threaded, Socket, Union, & Flange		
Pressure Adjustment			Standard: 1–10 bar (10-150psi), Optional: 0–3.5 bar (0-50psi), 1–17 bar (10-250psi), 3.5 – 25 bar (50-350psi) <i>*NOTE: Size DN 40 (1.5") and larger valves; MAX RANGE 1 – 17 bar (10-250psi)</i>		
Flow Rates @ 10 bar			Shipping Weight: kgs (lbs)		
Sizes	Pulsating l/h (gph)	Continuous m ³ h (gpm)	Plastic	Metal / Plastic Top	Metal / Metal Top
1/2" DN 15	1135 (300)	4.77 (21)	1.4 (3.0)	2.5 (5.5)	3.0 (6.5)
3/4" DN 20	1135 (300)	4.77 (21)	1.4 (3.0)	2.5 (5.5)	3.0 (6.5)
1" DN 25	1890 (500)	5.9 (26)	1.6 (3.5)	2.7 (6.0)	3.2 (7.0)
1.5" DN 40 (2 port)	4542 (1200)	14.3 (63)	4.0 (9.0)	8.0 (18.5)	12.5 (26.0)
2" DN 50 only)	8892 (2350)	28.4 (120)	4.0 (9.0)	9.0 (20.0)	13.6 (30.0)
3" DN 80	19600 (5200)	61.2 (270)	12.7 (28.0)		
4" DN 100	19600 (5200)	61.2 (270)	13.6 (30.0)		
Max Temperature: °C (°F)			PVC: 60° (140°); CPVC & PP: 90° (195°); PTFE, PVDF, & Metal: 150°(300°), Peak 200° (390°)		
Max Operating Pressure @ 21° C (70°F)			Plastic/Noryl: 25 bar (375psi)		Max Operating Pressure @ 21° C (70°F)
Materials of Construction			This information is subjected to		
Diafragma			PTFE / EPDM, Optional: Viton, Hypalon, & PTFE / Viton		
Valve Top			Standard: Noryl (DN15 – DN50); PVC (DN80 – DN100) Optional: 316 SS		
Valve Body			PVC, CPVC, PP, PTFE, PVDF, Halar, 316 SS, A 20, Hast. C		

Technical Data:

Performance Curves: (3" & 4", DN 80 & 100 curves on request)



Dimensions:



Product Codes For Ordering Pressure Relief Valves:

PRG □ □ □ □ □
 PRG2 (2 Port) 1 2 3 4

- | | | | |
|------------------|---------------------|---------------------------------|-----------------------------|
| 1 = Size | 2 = Material | 3 = Spring
bar (psi) | 4 = Options |
| 050 – 1/2", DN15 | P - PVC | Blank 1-10 (10-150) | Blank - NPT & PTFE/EPDM |
| 075 – 3/4", DN20 | CP - CPVC | 1 - 0 – 3.5 (0-50) | V - Viton Diaphragm |
| 100 – 1", DN25 | PP - Polypro | 2 - 1 – 17 (10-250) | TV - PTFE/Viton Diaph. |
| 155 – 1.5", DN40 | T - PTFE | <i>For 3.5 - 25 (50-350)</i> | B - BSPT Threads |
| 200 – 2", DN50 | K - PVDF | <i>spring use option</i> | S - Socket Connection |
| 300 – 3", DN80 | H - Halar | <i>code "MSS"</i> | SD - Metric Socks |
| 400 – 4", DN100 | S - 316SSL | | F - Flange Connection |
| | A - Alloy 20 | | FD - Metric Flanged |
| | C - Hastelloy C | | U - Union Connection |
| | | | UD - Metric Union |
| | | | OSS - 316 SS Top |
| | | | MSS - 3.5-25bars (50-350ps) |
| | | | AR - Priming Valve |
| | | | 90 - 90° Configuration |

DIMENSIONS: PRG - Series				
All Materials (1.5" and larger are 2 port only, no bottom port)				
Size	A - cm (in.)	B - cm (in.)	C - cm (in.)	Orifice cm (in)
1/2", DN15	14.12 (5.560)	8.90 (3.500)	2.86 (1.125)	0.952 (0.375)
3/4", DN20	14.12 (5.560)	8.90 (3.500)	2.86 (1.125)	0.952 (0.375)
1", DN25	14.88 (5.860)	8.90 (3.500)	3.12 (1.250)	1.110 (0.437)
1.5", DN40	21.21 (8.350)	12.45 (4.90)	4.64 (1.825)	1.905 (0.750)
2", DN50	22.60 (8.900)	12.45 (4.90)	5.46 (2.150)	2.222 (0.875)
3", DN80*	29.85 (11.25)	38.01 (15.0)	7.62 (3.0)	3.810 (1.500)
4", DN100*	29.85 (11.25)	38.01 (15.0)	7.62 (3.0)	3.810 (1.500)

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Model EFSASIN-V – Silencer

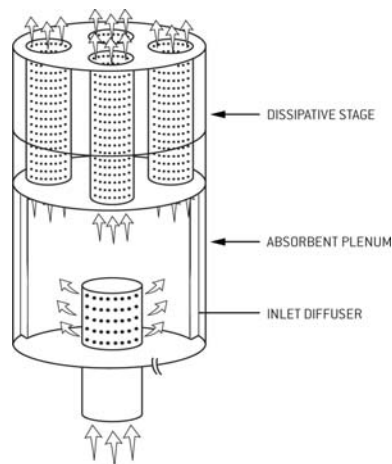


DEFINITION

Silencers for controlling the noise produced by the expansion of a gas or steam at elevated pressures in the moment of the atmosphere discharge.

APPLICATIONS

These silencers are used to reduce the noise generated by high velocity gas flow, such as steam vents, safety and relief valves, blowing systems and purge points.



SPECIFIC DESIGN

Each silencer is custom designed according to the noise attenuation required. Its dimensions are directly proportional to the desired noise reduction and the gas mass flow. Noise reduction depends on the silencer length while the diameter of the silencer depends on gas flow.

These silencers are designed for a maximum speed that minimizes noise and ensures structural integrity.

The silencers are structurally designed to withstand wind and snow loads. In relation to earthquakes, silencers are usually equipped with a lateral support system that allows design the support structure and anti-vibration systems.

The silencers have no moving parts and typically have a lower inlet nozzle for purging.

Each silencer is equipped with an inlet nozzle size to be compatible with existing or planned customer line. Each silencer is designed and built to withstand thermal shock and stresses produced at high pressure and high operation temperature.

Silencers can be easily adapted for special applications requiring a transversal inlet. This can greatly facilitate the installation of the silencer, eliminating the need for elbows in the piping system.

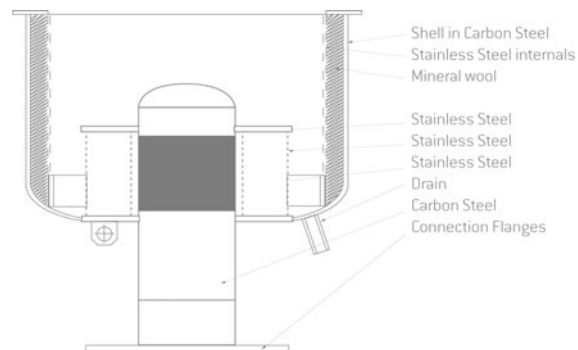
All vent silencers are individually designed, considering customer specifications (design conditions) and the operating conditions in order to ensure that the requirements of our customers are satisfied; hence we do not have Standardized tables of this type of silencers.

COMPONENTS

There are three main components of silencers:

- The inlet diffuser
- The absorbent plenum
- The dissipative stage: multi tube system, system of con- centric circles, or parallel baffles system.

The inlet diffuser reduces the noise generated and modifies the sound spectrum so that it can be better controlled in the absorptive stages of the silencer. This is obtained by dividing the flow into many small jets.



The diffuser also provides a back pressure on the valve for her optimal performance. This back pressure reduces the pressure drop across the valve which reduces the noise generated by the valve and reduces the speed downstream of the valve. This is practically the only component of the silencer that can be subjected to high pressures, so the design and selection of these component materials are very important to ensure the durability of the silencer.

Although the diffuser is designed in accordance with Section VIII, Division 1 of the ASME Code for a working pressure equal to the pressure valve is not a closed container and can not receive a stamp of ASME. Operation pressure is directly proportional to the mass flow through the diffuser. Therefore, it is important that all cases are individually dimensioned to operate in conditions of maximum operating pressure of the diffuser. Ordinarily, this condition occurs when the valve is fully open.

The absorbent plenum is an expansion chamber designed to smooth and homogenize the flow of gas prior to the reduction of acoustic energy to be obtained in the dissipative stage. Designs and manufactures these absorbent plenums to reduce the acoustic radiation through the outer shell of these silencers.

In the dissipative stage the fluid passes through a system of multitube, crowns, or absorbent baffles, achieving significant reductions in noise by viscous friction depending on the design and the depth of the silencer (higher length means greater silencer acoustic attenuation is achieved at high frequencies).

Furthermore, these silencers are designed and built to accommodate the thermal expansions which occur in cyclic operations.

BASIC MATERIALS

(A) The silencer shell and top caps are made of carbon steel. These parts are exposed to the weather.

(B) The bottom of the silencer is carbon steel, on which the diffuser inlet tube is inserted.

(C) Tubes / multi-perforated crowns: pipe, crowns or parallel baffles system which is constituted by multi-perforated stainless steel with thickness from 1mm.

(C1) These parts are well protected from erosion with a veil of fiber glass, or with stainless steel. (C2) The chamber is filled with mineral wool, fireproof and hydrophilic fibers, with a high sound absorption coefficient.

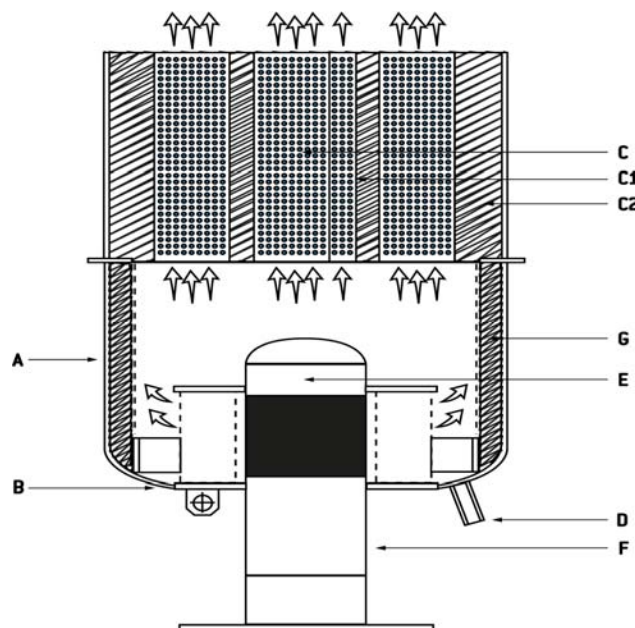
(D) Drain system in carbon steel.

(E) Acoustic diffuser, manufactured in combination of steel (carbon and stainless) of different thicknesses and compositions, depending on the design parameters of temperature and pressure.

(F) The inlet pipe is connected to the silencer through the diffuser and to the pipe by flanges, expansion joints or welded directly.

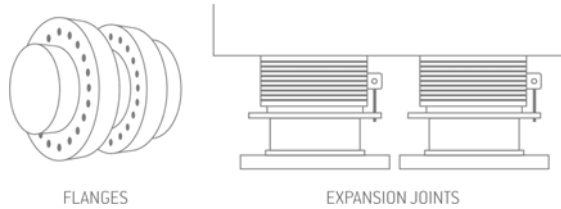
The silencer is finished in high temperature paintings (depending on the customer's requirements there are different types of protection for these silencers).

(G) Acoustic and thermal expansion protection of the acoustic plenum using multiperforated stainless steel and acoustic mineral wool.

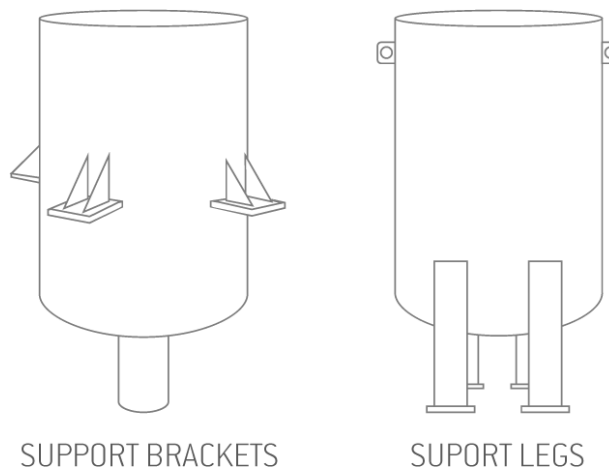


ACCESSORIES

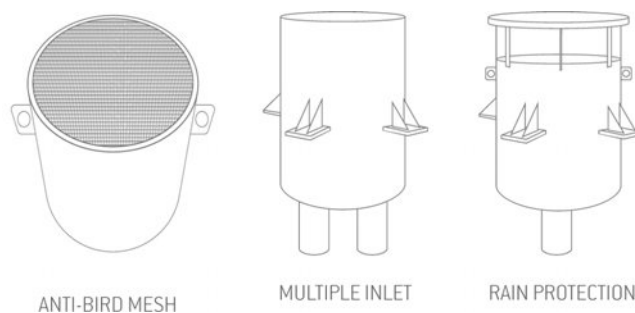
- Flanges: are welded to the silencer inlet pipe, these can be normalized according to ANSI B16.5, DIN, and SAE.
- Expansion joints: normally, provided upon request, these silencers have expansion joints (vertical and horizontal), which can be directly welded to the inlet tube or provided with flanges (the choice of the compensator will depend on the estimated tension for all piping where is located the silencer).



- Support: the silencers come equipped with a system of supports (brackets) as they will be supported in the structure.
- Support legs (upon request)



- Lifting Lugs: Usually these silencers are supplied with lifting lugs for easy handling in the installation.
- Anti-bird mesh
- Multiple inlet system
- Tagged: the silencers can be labeled with Stainless Steel identification plates (upon request)
- Rain protection
- Packing: silencers may need special packaging, provided upon request (phytosanitary, ...). If not requested, silencers are given in brackets to facilitate handling thereof, and an externally coated plastic film (To protect the silencers from dust and other agents, since silencers are manufactured to withstand adverse weather conditions).



CALCULATION PARAMETERS

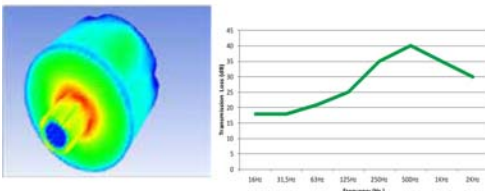
To optimize the design and manufacture of the vent silencers is indispensable to have the following information:

1. Design conditions:
 - a. Pressure
 - b. Temperature
 - c. Connection diameter (DN)
2. Operating conditions:
 - a. Fluid type
 - b. Volumetric flow rate (m³/h), or otherwise:
 - Mass flow (kg/s)
 - Molecular weight, density
 - Fluid velocity (m/s)
 - c. Operating temperature
 - d. Operating pressure in the silencer inlet
 - e. Atmospheric pressure of the installation area
3. Acoustic conditions
 - a. Sound pressure level required, and place for measurement
 - b. Installation height of silencer
 - c. Sound spectrum (if known)

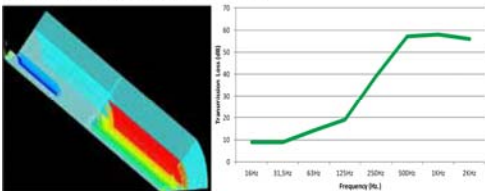
CALCULATION PARAMETERS

Some types, depending on the acoustic attenuation requirements, are showed below:

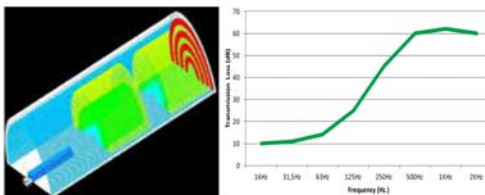
GLOBAL ATTENUATION > 25 dBA



GLOBAL ATTENUATION > 45 dBA



GLOBAL ATTENUATION > 55 dBA



Model B10 – Pressure relief valve



PRODUCT DESCRIPTION

Pressure relief valves are used on liquid storage tanks and other process vessels or systems to prevent structural damage due to excess internal pressure.

Storage tanks are pressurized when liquid is pumped in, compressing the existing vapor or when rising temperatures cause increased evaporation or expansion of existing vapor.

To prevent tank damage, vapor must be allowed into or out of the tank at specified pressure condition. The volume rate of venting depends upon the tank size, volatility of the tank contents, the pumping rates and the temperature.

FEATURES

Pressure setting:

- 22mm H₂O to 10,000mm H₂O

Size:

- 2" through 12"

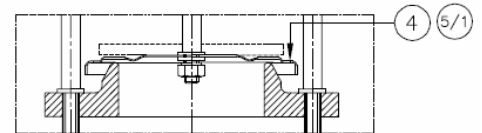
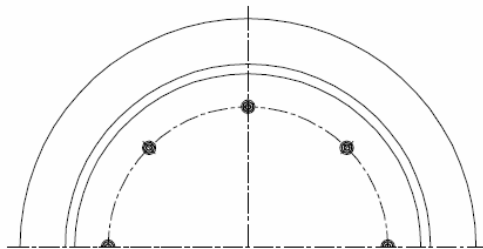
Available in

- Aluminum, Carbon Steel, Stainless Steel

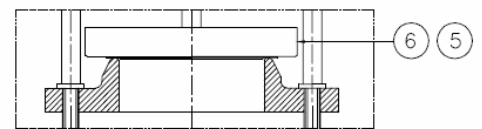
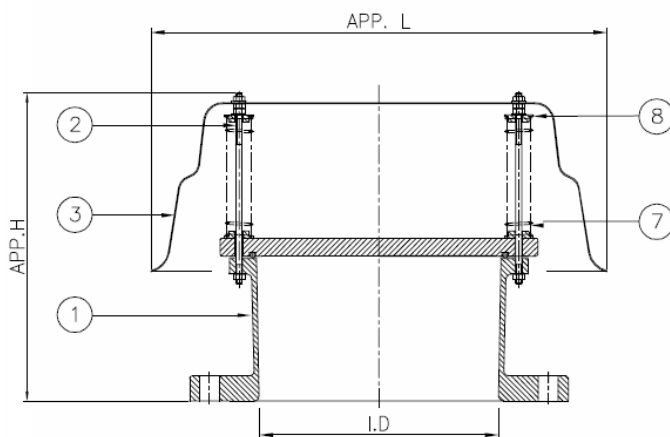
Other size and material to be consult by factory

MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
2	Guide bar	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
3	Hood	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
4	Press. Disc (1)	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
5	O-Ring	VITON	
5/1	Seal Diaphragm	TEFLON	
6	Press. Disc (2)	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
7	Spring	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
8	Spring fixed pad	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
-	Other mat'l (B/N)	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)



— PRESSURE SIDE
TEFLON SEAL TYPE



● PRESSURE SIDE
METAL SEAL TYPE

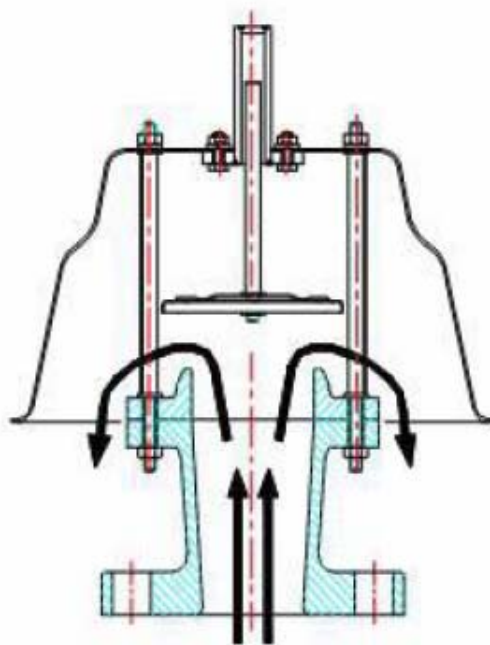
DESIGN AND FUNCTION

Tank protection equipment typically includes an operating valve which is designed to provide pressure relief under normal pump in thermal breathing conditions.

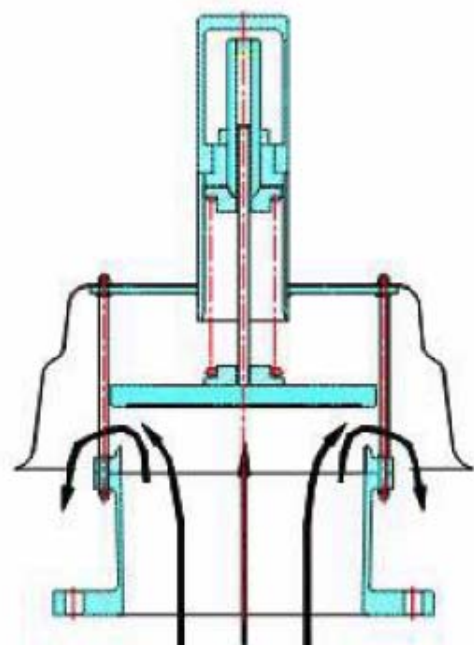
MODEL NO.	TYPE	SETTING PRESSURE RANGE
B10A	Weight loaded release to ATM	22-700 mmH2O
B10B	Spring loaded to ATM	Above 700 mmH2O

Pressure Relief:

: As the pressure in the storage tank increases. When the set pressure is reached, the pressure pallet lifts and relieves to atmosphere (or to a header if it a pipe away valve).



B10A



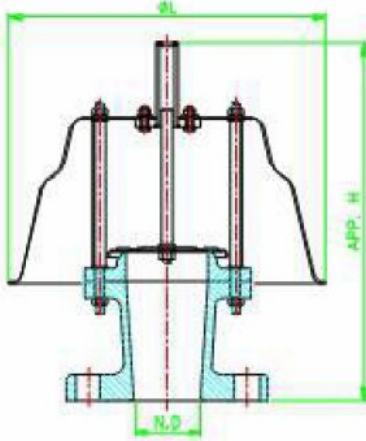
B10B

Model B10 of quick-opening type is designed for emergency relief of pressure above capacity that supplied by a standard operating valve used on tanks, piping and low-pressure vessels. It provides relief from excessive internal pressure that may cause tank damage.

Model B10 has self-draining housing body and drip rings to protect seating surfaces from condensation and freezing.

DIMENSIONS

MODEL B10A

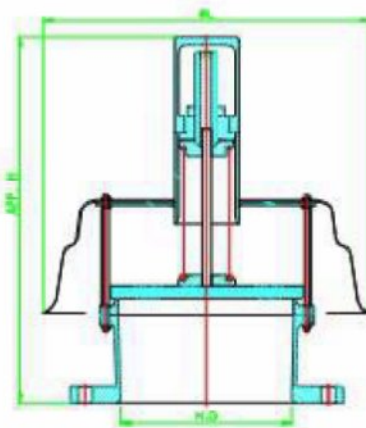


DIMENSION TABLE

UNIT : mm

	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
H	275	300	342	442	490	540	532
L	240	270	290	400	450	532	582

MODEL B10B



DIMENSION TABLE

UNIT : mm

	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
H	275	300	342	442	490	540	532
L	240	270	290	400	450	532	582

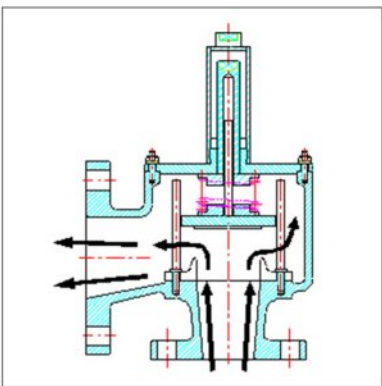
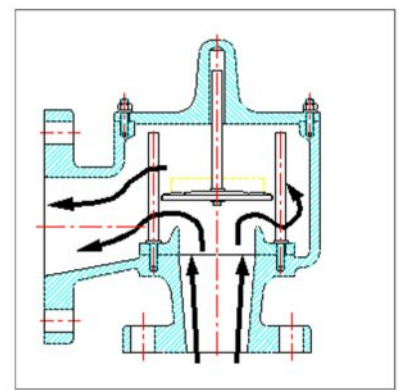
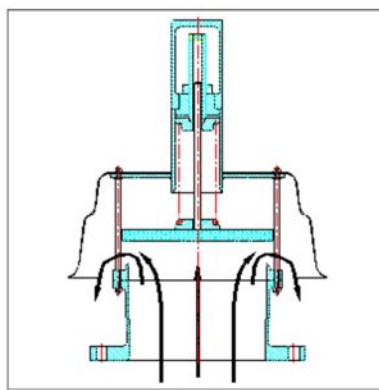
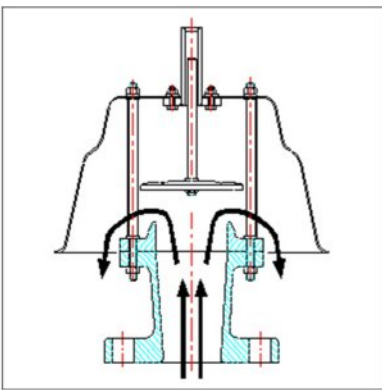
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Model EFSWB10

Pressure Relief

As the pressure in the storage tank increases. When the set pressure is reached, the pressure pallet lifts and relieves to atmosphere (or to a header if it a pipe away valve). Model EFSWB10, of quick-opening type is designed for emergency relief of pressure above capacity that supplied by a standard opening valve used on tanks, piping and low pressure vessels. It provides relief from excessive internal pressure that may cause tank damage. Model EFSWB10 has self- draining housing body and drip rings to protect seating surfaces from condensation and freezing. Model is for use where pressure relief is required and all relieving vapors must be piped away.



Inspection and Storage

The pressure relief valve is carefully packaged to prevent damage or contamination during shipping. Inspect all equipment when it is received: report any damage to the carrier immediately.

The valve should be protected during handling and storage.

Keep all the ports plugged to prevent intrusion of foreign materials. Before installation, inspect the unit for indications of physical damage or internal contamination. If these are observed, the valve must be disassembled, cleaned and repaired before installation.

Model B11 – Vacuum relief valve



PRODUCT DESCRIPTION

The vacuum valve is a protection device mounted on a nozzle opening on the top of a fixed roof atmospheric storage tank. Its primary purpose is to protect the tank against rupturing or imploding.

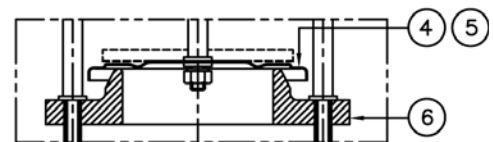
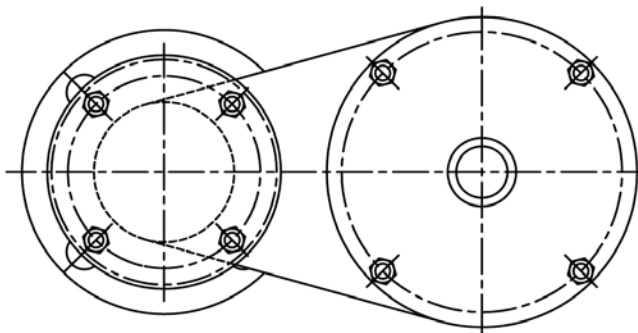
Without an opening or a controlled opening, a fixed roof atmospheric tank would rupture under increasing pressure caused by pumping liquid into the tank or as a result of vapor pressure changes caused by severe thermal changes. Imploding, or the collapsing of a tank, occurs during the pumping out procedure or thermal changes. As the liquid level lowers, the vapor space pressure is reduced to below atmospheric pressure. This vacuum condition must be alleviated through a controlled opening on the tank. In short, the tank needs to breathe in order to eliminate the possibility of rupturing or imploding. Because of its primary function, a vacuum valve is commonly referred to as a "breather valve".

PRODUCT BENEFITS

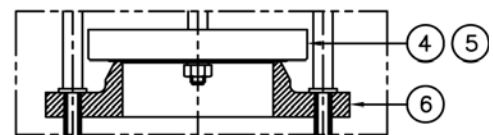
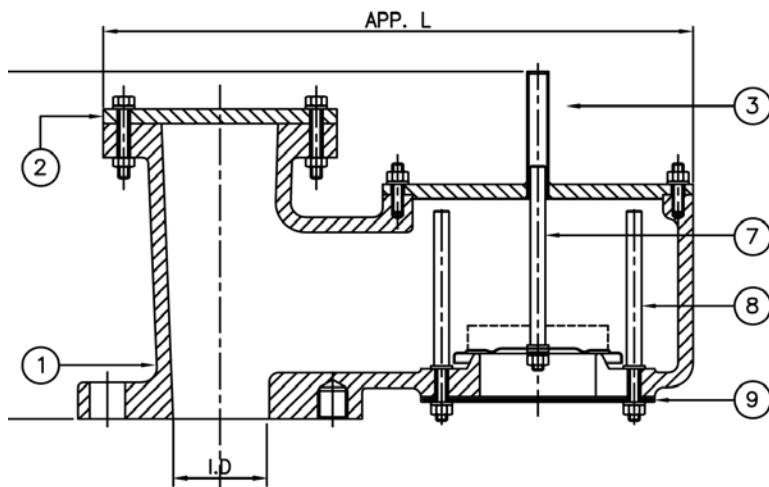
- Less need for special materials in corrosive and extreme temperature
- Unique floating diaphragm construction assures tight seal
- Peripheral and stem guided vacuum pallet assures reliable operation
- Pallet contributes to high flow
- Heavy duty construction, yet compact enough for easy handling

MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
2	Cover (1)	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
3	Cover (2)	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
4	Vacuum disc	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
5	Diaphragm	PTFE	
6	Seat	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
7	Stem	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
8	Guide bar	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
9	Screen mesh	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)



☉ VACUUM SIDE
TEFLON SEAL TYPE

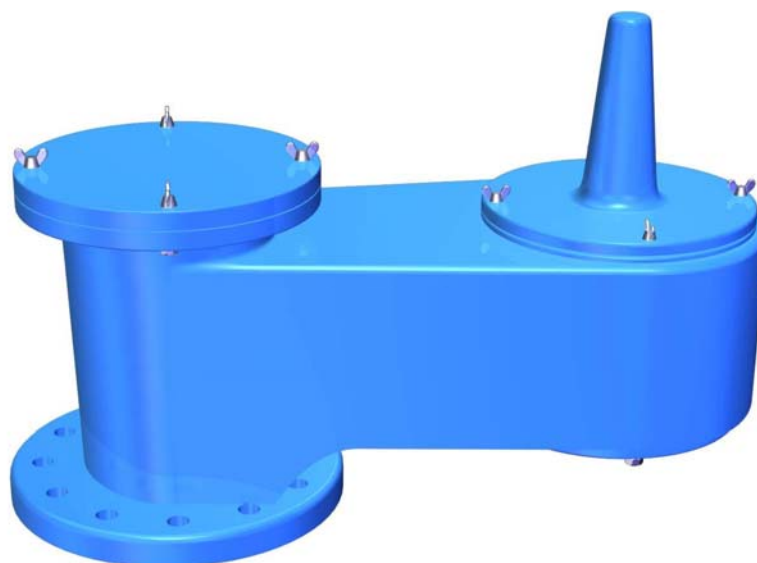


☉ VACUUM SIDE
METAL SEAL TYPE

Pressure settings [mmH ₂ O]	22 up to 8,400
--	----------------

DIMENSIONS

	2"	3"	4"	6"	8"	10"	12"
I.D [mm]	50	80	100	150	200	250	300
H [mm]	164	190	250	322	341	395	610
L [mm]	315	385	435	535	675	770	885



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Model B12 – Pressure / Vacuum relief valve



PRODUCT DESCRIPTION

The pressure / vacuum valve is a protection device mounted on a nozzle opening on the top of a fixed roof atmospheric storage tank. Its primary purpose is to protect the tank against rupturing or imploding.

Without an opening or a controlled opening, a fixed roof atmospheric tank would rupture under increasing pressure caused by pumping liquid into the tank or as a result of vapor pressure changes caused by severe thermal changes. Imploding, or the collapsing of a tank, occurs during the pumping out procedure or thermal changes. As the liquid level lowers, the vapor space pressure is reduced to below atmospheric pressure. This vacuum condition must be alleviated through a controlled opening on the tank. In short, the tank needs to breathe in order to eliminate the possibility of rupturing or imploding. Because of its primary function, a vacuum valve is commonly referred to as a “breather valve”.

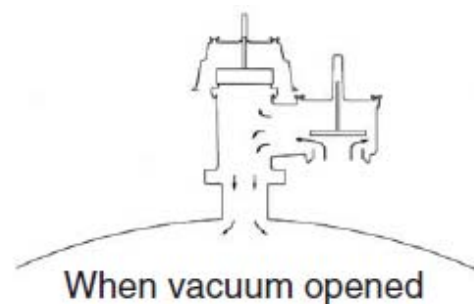
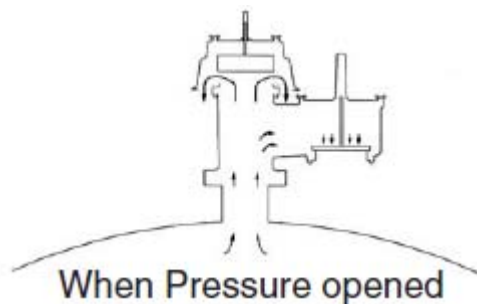
PRODUCT BENEFITS

- Less need for special materials in corrosive and extreme temperature
- Unique floating diaphragm construction assures tight seal
- Peripheral and stem guided vacuum pallet assures reliable operation
- Pallet contributes to high flow
- Heavy duty construction, yet compact enough for easy handling

HOW PRESSURE / VACUUM RELIEF VALVE OPERATE

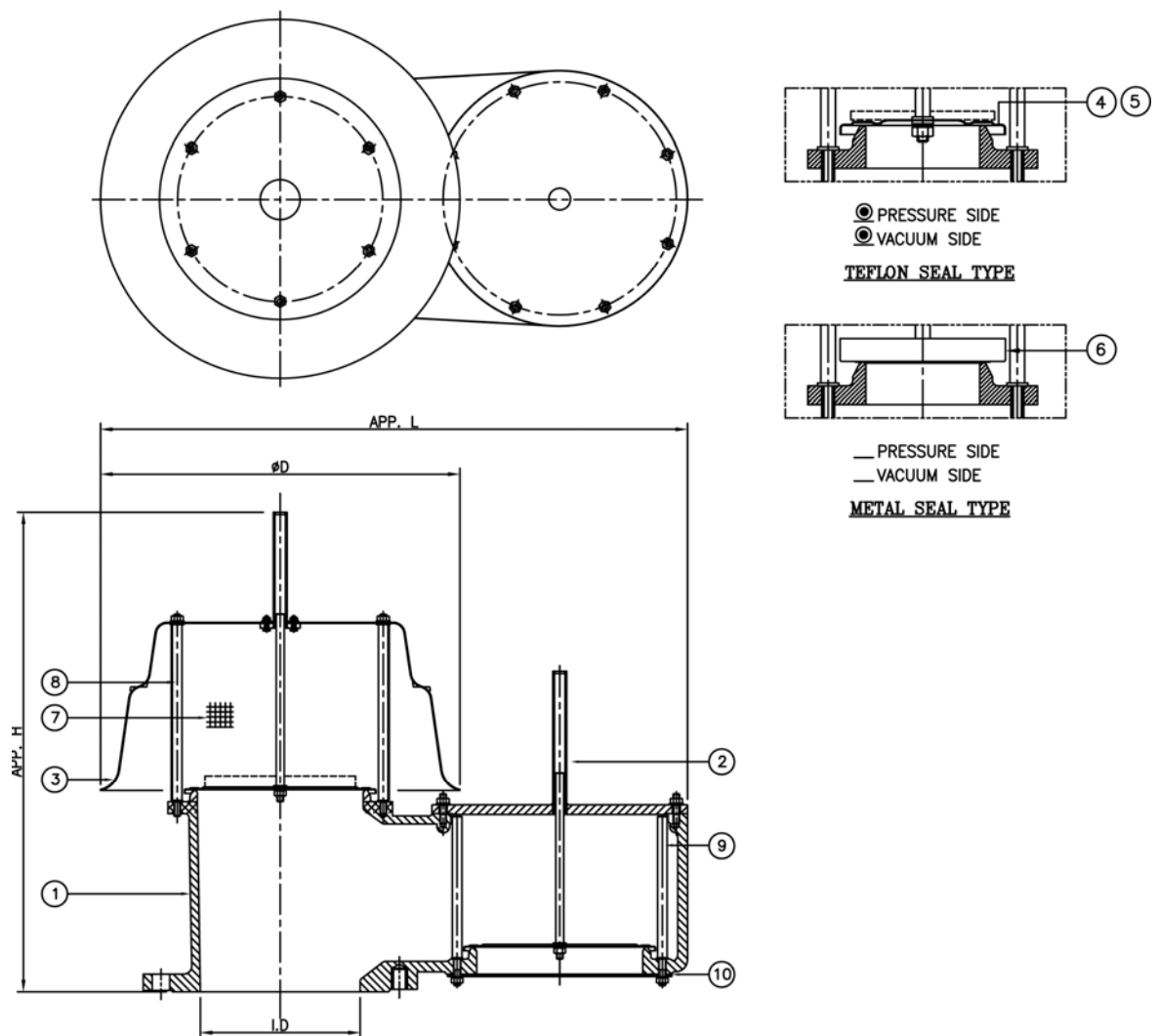
How does a pressure/vacuum valve operate? Most atmospheric tanks require a venting device that will allow large volumes of vapor to escape under relatively low pressures. Usually the allowable set pressure is in inches of water column pressure, both for positive and vacuum conditions. This is because most large storage tanks have a relatively low maximum allowable working pressure. These tanks are generally large volume welded vessels that are built to API650 standard.

In order to accommodate large volumes at low set pressures, these valves have ports that are greater in area than the inlet or nozzle connection. The low setting required necessitates weight loading the valve as opposed to spring loading. Because of the above, a pressure / vacuum valve requires approximately 100% over set pressure in order to reach full opening of the valve. However, when deciding on a set pressure the weight-loaded valve operation MAWP should be at least twice the required set pressure to obtain optimum flow. If the MAWP is less than 100% above the required set, the valve could be larger in size than normally required. The possibility of valve chatter and accelerated seat and diaphragm wear will exist if less than 20% over pressure is allowed. Simply stated, a pressure/vacuum valve is not exactly like a high pressure safety relief valve and should not be sized at 10% or 20% over pressure. When sizing a pressure/vacuum valve, consult the manufacturer flow curves and allow sufficient overset pressure.



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
2	Vacuum cover	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
3	Hood	S. S. (AISI 304)	S. S. (1.4308)
4	Disc1	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
5	Seal (diaphragm)	PTFE	
6	Disc2	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
7	Screen mesh	S. S. (AISI 304)	S. S. (1.4308)
8	Pre. guide bar	S. S. (AISI 304)	S. S. (1.4308)
9	Vac. guide bar	S. S. (AISI 304)	S. S. (1.4308)
10	Vacuum mesh	S. S. (AISI 304)	S. S. (1.4308)



Pressure settings [mmH₂O]	22 up to 10,000
Vacuum settings [mmH₂O]	22 up to 8,400

DIMENSIONS

	2"	3"	4"	6"	8"	10"	12"
I.D [mm]	50	80	100	150	200	250	300
H [mm]	314	425	485	637	640	746	828
L [mm]	370	445	492	636	758	869	991
D [mm]	240	270	290	400	450	532	582



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Model B15 – Pressure / Vacuum relief valve



PRODUCT DESCRIPTION

The pressure / vacuum valve is a protection device mounted on a nozzle opening on the top of a fixed roof atmospheric storage tank. Its primary purpose is to protect the tank against rupturing or imploding.

Without an opening or a controlled opening, a fixed roof atmospheric tank would rupture under increasing pressure caused by pumping liquid into the tank or as a result of vapor pressure changes caused by severe thermal changes. Imploding, or the collapsing of a tank, occurs during the pumping out procedure or thermal changes. As the liquid level lowers, the vapor space pressure is reduced to below atmospheric pressure. This vacuum condition must be alleviated through a controlled opening on the tank. In short, the tank needs to breathe in order to eliminate the possibility of rupturing or imploding. Because of its primary function, a vacuum valve is commonly referred to as a “breather valve”.

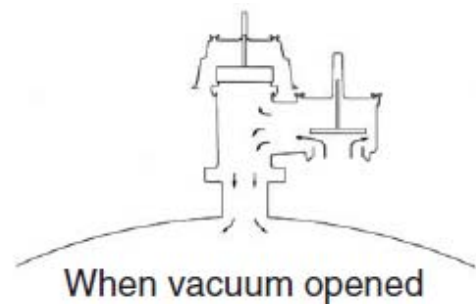
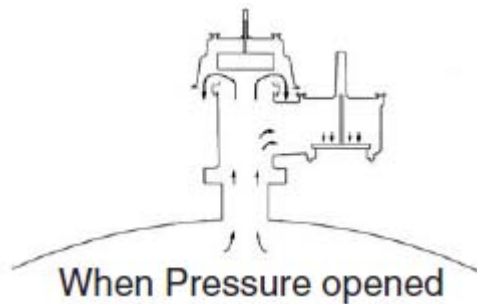
PRODUCT BENEFITS

- Less need for special materials in corrosive and extreme temperature
- Unique floating diaphragm construction assures tight seal
- Peripheral and stem guided vacuum pallet assures reliable operation
- Pallet contributes to high flow
- Heavy duty construction, yet compact enough for easy handling

HOW PRESSURE / VACUUM RELIEF VALVE OPERATE

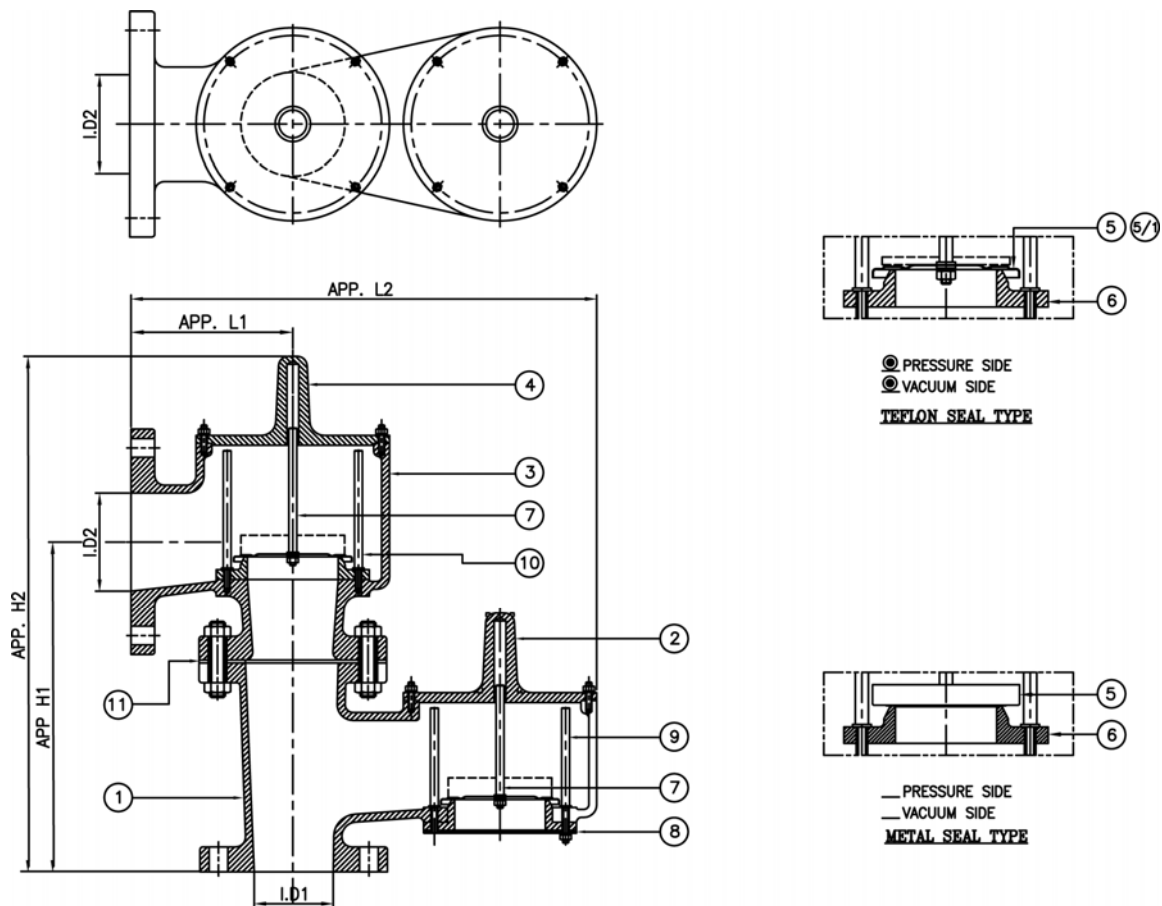
How does a pressure/vacuum valve operate? Most atmospheric tanks require a venting device that will allow large volumes of vapor to escape under relatively low pressures. Usually the allowable set pressure is in inches of water column pressure, both for positive and vacuum conditions. This is because most large storage tanks have a relatively low maximum allowable working pressure. These tanks are generally large volume welded vessels that are built to API650 standard.

In order to accommodate large volumes at low set pressures, these valves have ports that are greater in area than the inlet or nozzle connection. The low setting required necessitates weight loading the valve as opposed to spring loading. Because of the above, a pressure / vacuum valve requires approximately 100% over set pressure in order to reach full opening of the valve. However, when deciding on a set pressure the weight-loaded valve operation MAWP should be at least twice the required set pressure to obtain optimum flow. If the MAWP is less than 100% above the required set, the valve could be larger in size than normally required. The possibility of valve chatter and accelerated seat and diaphragm wear will exist if less than 20% over pressure is allowed. Simply stated, a pressure/vacuum valve is not exactly like a high pressure safety relief valve and should not be sized at 10% or 20% over pressure. When sizing a pressure/vacuum valve, consult the manufacturer flow curves and allow sufficient overset pressure.



MATERIALS

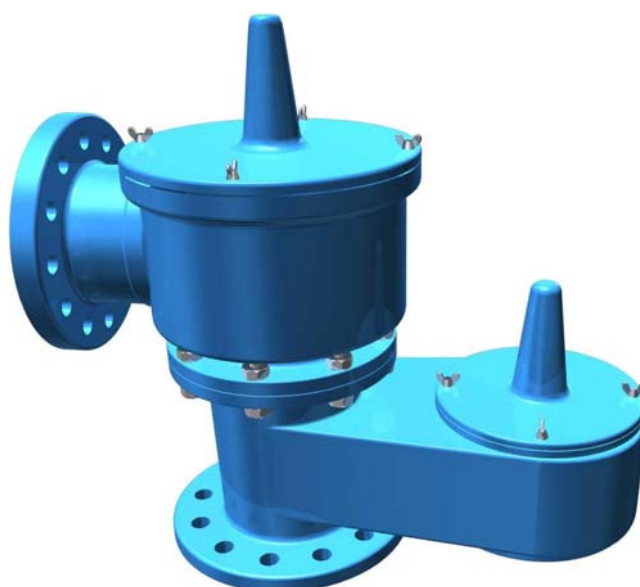
REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body(1)	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
2	Cover(1)	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
3	Body(2)	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
4	Cover(2)	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
5	Disc	S. S. (AISI 304)	S. S. (1.4308)
5/1	Diaphragm)	PTFE	
6	Seat	S. S. (AISI 304)	S. S. (1.4308)
7	P/V guide bar	S. S. (AISI 304)	S. S. (1.4308)
8	Vacuum mesh	S. S. (AISI 304)	S. S. (1.4308)
9	Guide bar (vac.)	S. S. (AISI 304)	S. S. (1.4308)
10	Guide bar (pre.)	S. S. (AISI 304)	S. S. (1.4308)
11	Gasket	Non-abs.	
-	Stud bolts/nuts	S. S. (AISI 304)	S. S. (1.4308)



Pressure settings [mmH₂O]	22 up to 10,000
Vacuum settings [mmH₂O]	22 up to 8,400

DIMENSIONS

	2"x3"	3"x4"	4"x6"	6"x8"	8"x10"	10"x12"	12"x14"
I.D1 [mm]	50	80	100	150	200	250	350
I.D2 [mm]	80	100	150	200	250	300	400
H1 [mm]	264	285	328	387	463	549	758
H2 [mm]	434	480	615	729	781	907	1159
H2 [mm]	150	160	217	238	253	298	330
H2 [mm]	400	472	535	665	785	330	1025



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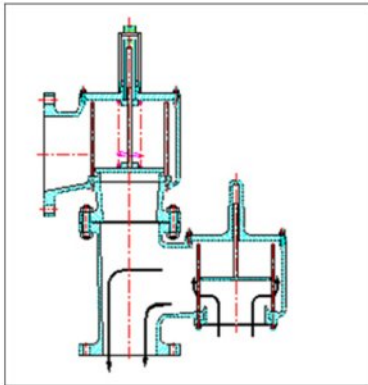
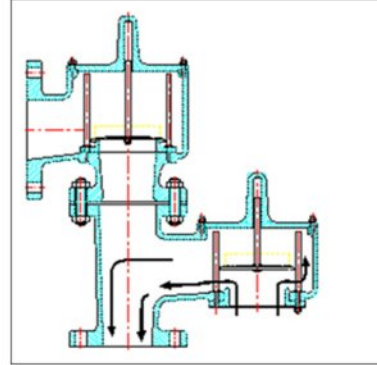
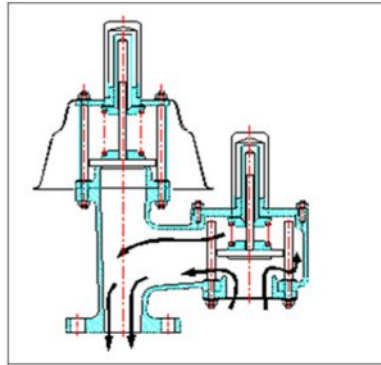
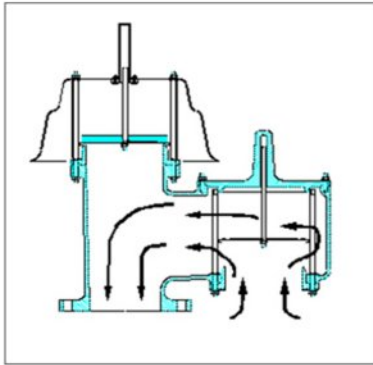
Model EFSWB15

Pressure Relief

As the pressure in the storage tank increases, the vacuum pallet is held shut. When the set pressure is reached, the pressure pallet lifts and relieves to atmosphere (or to a header if it a pipe away valve).

Vacuum Relief

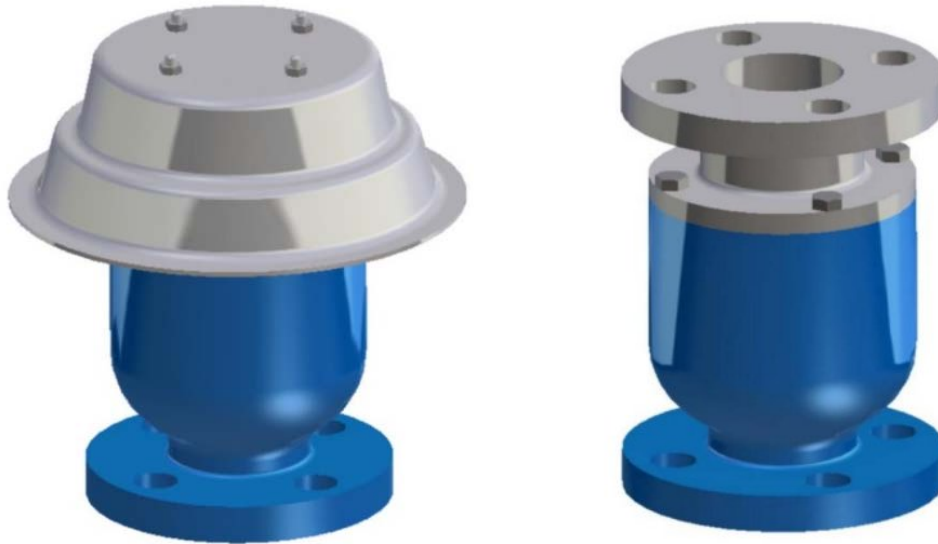
As a vacuum is drawn in the storage tank (for example, when fluid is being pumped out), the pressure pallet is held shut by atmospheric pressure. When the vacuum setting is reached, the pallet lifts and air is drawn in the storage tank from the atmosphere. Model WB12, WB15 is designed to protect the low-pressure tank from damage created by overpressure or excessive vacuum. Model WB12, WB15 has a self draining house and drip ring to protect the seating surfaces from condensation and freezing. The pressure and vacuum relief valve is installed on the storage tank roof. Also can this valve be mounted in conjunction with a WF21 flame arrester to protect against ignition of flammable vapors from external sources as well as to provide pressure vacuum relief. Model WB15 is used for pressure and vacuum relief where vapors must be piped away.



Inspection and Storage

The vacuum relief valve is carefully packaged to prevent damage or contamination during shipping. Inspect all equipment when it is received: report any damage to the carrier immediately. The valve should be protected during handling and storage. Keep all the ports plugged to prevent intrusion of foreign materials. Before installation, inspect the unit for indications of physical damage or internal contamination. If these are observed, the valve must be disassembled, cleaned and repaired before installation.

Model B17 – Air release valve



PRODUCT DESCRIPTION

The Float ball type AIR RELEASE VALVE was designed, manufactured and tested for allowing atmospheric air through the valve to rapidly displace draining liquid in the pipeline and prevent internal negative pressure damaging the arrangements potentially.

To prevent damage, vapor must be allowed into or out of the pipeline & at specified vacuum condition.

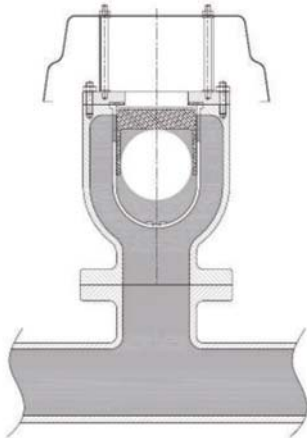
The volume rate of venting depends upon the pipe size, the pumping rates and the temperature. Refer to API Standard 2000 for the procedures to determine venting requirements.

WORKING

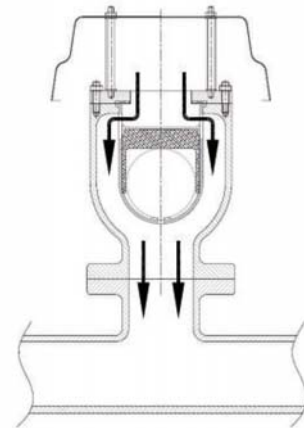
During filling, air that occupies the empty pipe must be evacuated ahead of the incoming liquid in a controlled and efficient manner so that surge and water hammer are minimized and liquid completely fills the pipe. During draining, whether planned or unexpected, air must be admitted into the system to replace the out flowing liquid to avoid excessive vacuum and possible pipeline damage.

Air release valve are designed to release accumulated air pockets from the system, while pressured pipelines. Air pockets increase energy consumption because pumping operation will be at higher water heads to overcome pressured air.

Air release valves are having function to protect high shock and surge pressure, water hammer and liquid overflow from fresh or sea water pipelines.



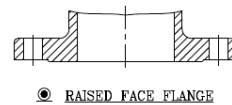
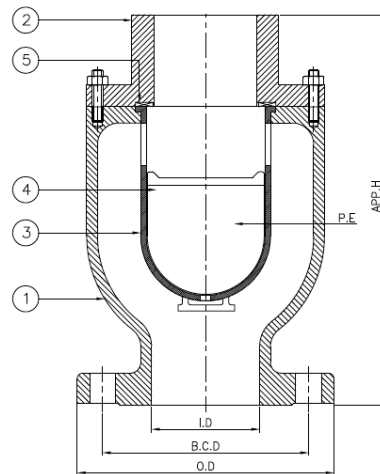
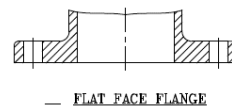
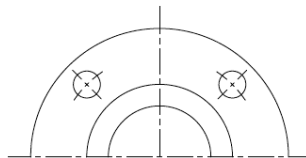
VALVE CLOSE



VALVE OPEN

MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S.S. (AISI 316)	S. S. (1.4408)
2	Cover	S.S. (AISI 316)	S. S. (1.4408)
3	Guide	S.S. (AISI 316)	S. S. (1.4408)
4	Float	S.S. (AISI 316)	S. S. (1.4408)
5	Gasket	Buna	
6	Other	S.S. (AISI 316)	S. S. (1.4408)



Pressure settings [mmH₂O]	22 up to 8,400
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DIMENSIONS

	1/2"	1"	1 1/2"	2"	3"	4"	6"	8"
I.D [mm]	15	25	40	50	80	100	150	200
BCD [mm]	60.5	79.2	98.5	120.5	152.5	190.5	241.5	298.5
O.D [mm]	89	108	127	152	190	229	279	343
N - Ød [mm]	4-16	4-16	4-16	4-19	4-19	8-19	8-22	8-22
H [mm]	215	215	320	320	320	440	510	590

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Model EFSWE30

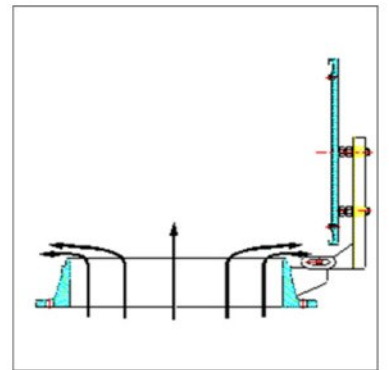
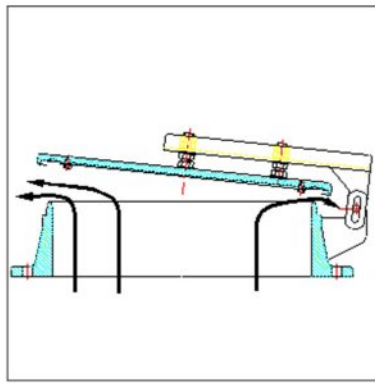
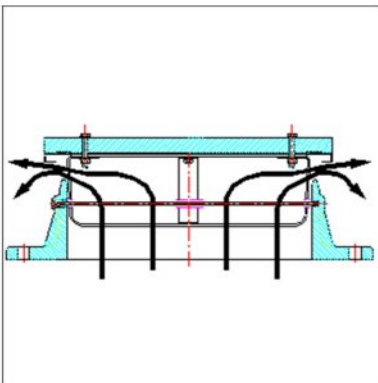
PRESSURE/VACUUM RELIEF VALVE SETTING

API 2521
Pressure/vacuum valves on atmospheric pressure fixed roof tanks are usually set at 1/2 oz. per square inch pressure or vacuum. Test data indicate that an increase of 1 oz. per square inch in the pressure set point over the usual 1/2oz. per square inch reduces breathing losses by approximately 7 percent. However, the test data indicate that each additional increase of 1 oz. per square inch in pressure set point reduces the breathing losses in progressively smaller increments.

API 2513
The pressure and vacuum setting of a breather valve are dictated by the structural characteristics of the tank and should be within safe operating limits. A certain amount of pressure and vacuum beyond this setting is necessary to overcome pressure drop in order to obtain required flow. Proper size and setting can best be determined by reference to API STD accordance with this publication. The pressure setting for pressure/vacuum valves to be installed on large tanks constructed in accordance with API 12:Specification for Large Welded Production Tanks(1957)usually is limited to 1/2 oz. because roof plates will start to shift when the pressure rises much above 1 oz.

Pressure Relief

As the pressure in the storage tank increases, when the set pressure is reached, the pressure pallet lifts and relieves to atmosphere.



Model F21 – In Line Flame Arrester



PRODUCT DESCRIPTION

Model F21, is bi-directional type and designed to be installed in “open vent pipes” from storage or processing tanks, bleed lines or other vapor conveying lines.

The flame arrester consists of a spiral wound and crimped bank element, is designed for easy maintenance. After removing tie rod bolts, it can be expanded by using the remaining jackscrews for element exchange.

FEATURES

Model F21, is bi-directional type and designed to be installed in “open vent pipes” from storage or processing tanks, bleed lines or other vapor conveying lines.

- Flame Element

- Proven Spiral wound, crimped ribbon design

- Size

- 2” through 16”

- Available in

- Aluminum, Carbon Steel, Stainless Steel

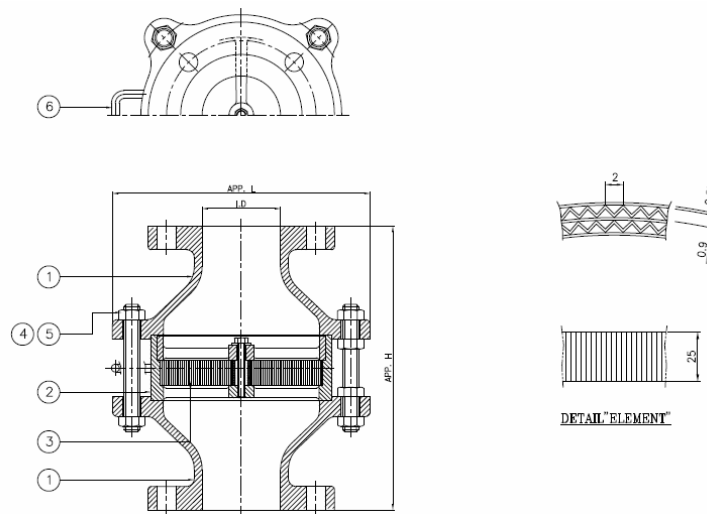
- Other size and material to be consult by factory.

WORKING

Model F21, is used to prevent propagation of an external flame source through the vent opening and into the tank. It should be installed at distances of more than 20 times length of arrester N.D away from the open end of pipe.

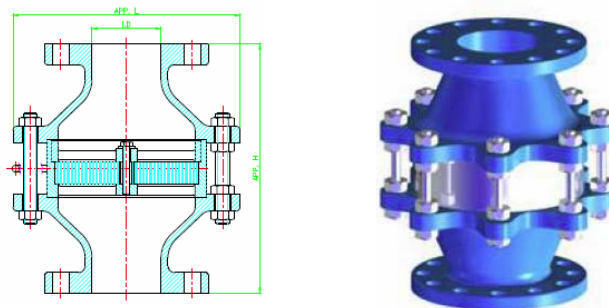
MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S. S. (AISI 304)	S. S. (1.4308)
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S. S. (1.4408)
2	Element Ring	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
3	Element	S.S. (AISI 316L)	S. S. (1.4436)
4	Stud Bolts	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
5	Hex. Nuts	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)
6	Lug for repair	S. S. (AISI 304)	S. S. (1.4308)
		S.S. (AISI 316)	S. S. (1.4408)



DIMENSIONS

	2"	3"	4"	6"	8"	10"	12"	14"	16"
I.D [mm]	50	80	100	150	200	250	300	350	400
H [mm]	280	290	325	365	397	463	520	620	750
L [mm]	225	263	310	400	479	575	663	663	980



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Model F22 – End of Line Flame Arrester



PRODUCT DESCRIPTION

Model F22 type is mounted on the end of a vent pipe from the tank. Vapors are allowed to escape into the atmosphere and air can be drawn into the tank through the flame element.

The flame arrester consists of a spiral wound and crimped bank element.

The flame arrester is installed where it is not necessary to conserve vapor losses but low flash point solvent liquid must be protected against fire and explosion from exterior ignition sources.

FEATURES

- Flame Element

- Proven Spiral wound, crimped ribbon design

- Size

- 2" through 12"

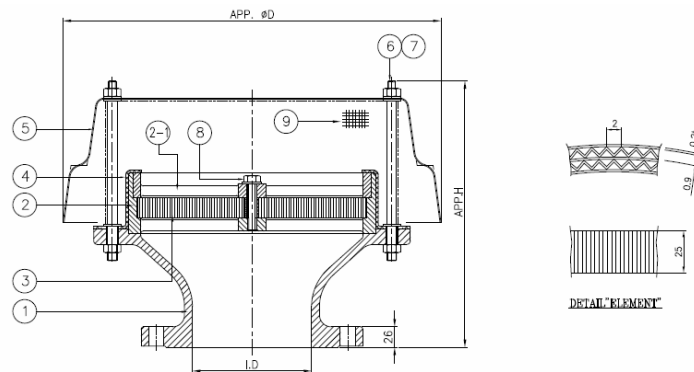
- Available in

- Aluminum, Carbon Steel, Stainless Steel.

- Other size and material to be consult by factory. size and material to be consult by factory.

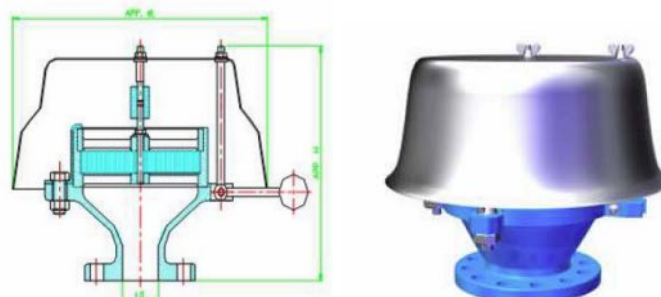
MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	B26-319	B26-319
		C.S. (A216WCB)	C.S. (1.6019)
		S.S. (AISI 316)	S.S. (1.4408)
2	Element Ring	S.S. (AISI 316)	S.S. (1.4408)
2-1	Element Ring Pad	S.S. (AISI 316)	S.S. (1.4408)
3	Element	S.S. (AISI 316L)	S.S. (1.4436)
4	Bracket	S.S. (AISI 304)	S.S. (1.4308)
5	Hood	S.S. (AISI 304)	S.S. (1.4308)
6	Hex B/N	S.S. (AISI 304)	S.S. (1.4308)
7	Plan Washer	S.S. (AISI 304)	S.S. (1.4308)
8	Stud B/N	S.S. (AISI 304)	S.S. (1.4308)
9	Mesh	S.S. (AISI 304)	S.S. (1.4308)



DIMENSIONS

	2"	3"	4"	6"	8"	10"	12"
I.D [mm]	50	80	100	150	200	250	300
H [mm]	280	280	295	340	360	440	440
L [mm]	240	350	395	476	584	675	759



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Rupture Disc - Model C

DESCRIPTION

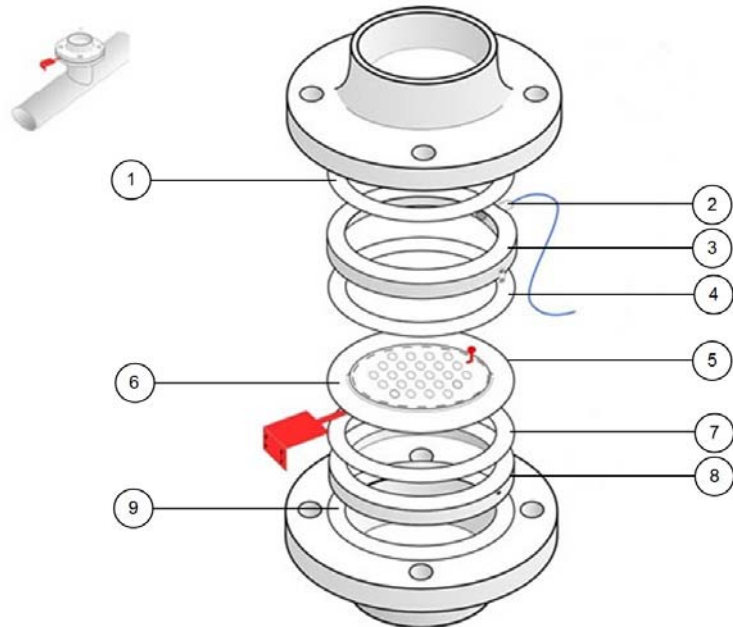
Type	Rupture disc type C	
Construction	Flat, laser marked, Non fragmenting	
Rating	PN-6 to PN-250	
Material	Stainless Steel / Aluminum Nickel / Monel / Inconel Hastelloy C276	
Temperature Range	- 80 to + 150°C	With internal PTFE foil
	- 80 to + 200°C	With internal PFA foil

REQUIREMENTS

Calculation	EN-4126-1/7
Design	SHC
Tolerances	DIN ISO 2768-m
Materials	EN / ASME

CONSTRUCTION AND MATERIALS

Item	Description	Material
1	Gasket	PTFE
2	Rupture Signal	Stainless Steel
3	Holder	Stainless Steel
4	Gasket	PTFE
5	Disc	Stainless Steel
6	Internal foil	PTFE/PFA
7	Gasket	PTFE
8	Holder	Stainless Steel
9	Gasket	PTFE



TECHNICAL INFORMATION

Applications:	Gas, vapor and liquids
Working pressure:	85%
Max. bursting pressure:	2500 bar
Operating ratio:	85 - 90% a 20°C
Applicable with safety valves	
Full vacuum resistance	
Unidirectional or bidirectional service	
Installation between flanges, between holders or with <i>Clamp</i> accessories	
ATEX certificate available	
PED certificate available	

BURSTING PRESSURE TOLERANCES

< 0,1 barg	+/-	20%
0,1 – 0,5 barg	+/-	15%
0,5 – 20 barg	+/-	10%
> 20 barg	+/-	5%

SETTINGS

INSTALLATION	BETWEEN FLANGES	BETWEEN HOLDERS	CLAMP
DIRECTION OF FLUID	UNIDIRECTIONAL / BIDIRECTIONAL	UNIDIRECTIONAL / BIDIRECTIONAL	UNIDIRECTIONAL / BIDIRECTIONAL
ELECTRICAL SIGNAL DETECTOR	NO	YES / NO	YES / NO



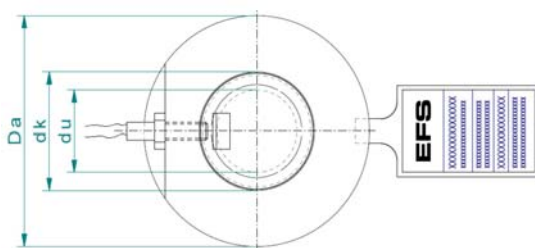
DIMENSIONS

DN [dk] [mm]	Da [mm]
25	70
40	82
50	90
65	94
80	124
100	140
125	180
150	202
200	260
250	312

BURSTING PRESSURES

Inox. @ 20°C		Nickel @ 20°C	
MIN.	MAX.	MIN.	MAX.
0,5	25	0,3	25
0,5	25	0,3	25
0,3	25	0,1	25
0,3	25	0,1	25
0,3	25	0,08	25
0,1	25	0,5	25
0,1	10	0,5	10
0,1	10	0,025	10
0,1	10	0,02	10
0,05	5	0,2	5

Up-to DN-800



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Rupture Disc - Model U

DESCRIPTION

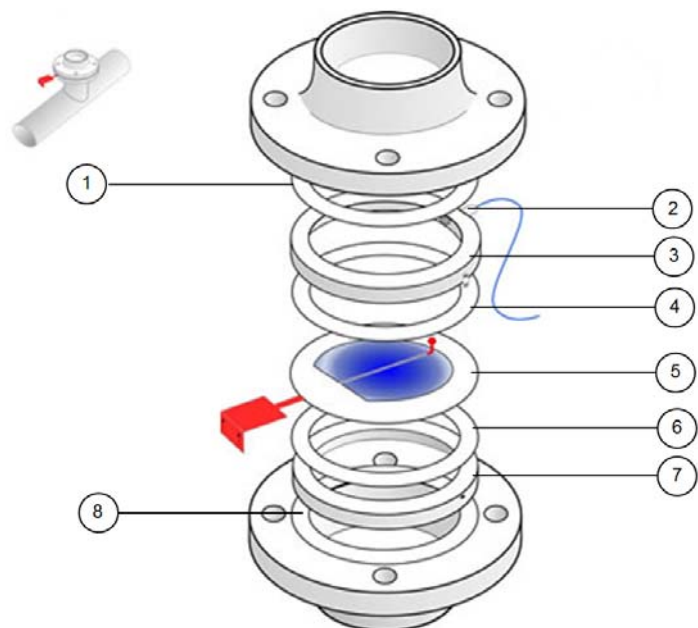
Type	Rupture disc type U	
Construction	Flat, laser marked, Non fragmenting	
Rating	PN-6 to PN-250	
Material	Stainless Steel / Aluminum Nickel / Monel / Inconel Hastelloy C276	
Temperature Range	- 196 to +400°C	Nickel
	- 196 to +480°C	SS316
	- 196 to +480°C	Hastelloy C276

REQUIREMENTS

Calculation	EN-4126-1/7
Design	SHC
Tolerances	DIN ISO 2768-m
Materials	EN / ASME

CONSTRUCTION AND MATERIALS

Item	Description	Material
1	Gasket	PTFE
2	Rupture Signal	Stainless Steel
3	Holder	Stainless Steel
4	Gasket	PTFE
5	Disc	Stainless Steel
6	Gasket	PTFE
7	Holder	Stainless Steel
8	Gasket	PTFE

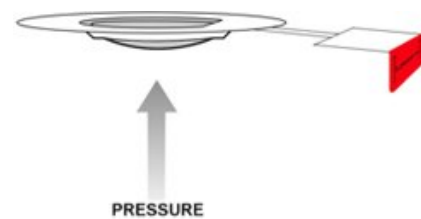


TECHNICAL INFORMATION

Applications:	Gas, vapor and liquids
Working pressure:	85%
Max. bursting pressure:	2500 bar
Operating ratio:	85 - 90% a 20°C
Full vacuum resistant	
Installation between holders or with clamp accessories	
ATEX certificate available	
PED certificate available	

BURSTING PRESSURE TOLERANCES

< 20 barg	+/- 10%
> 20 barg	+/- 5%



SETTINGS

INSTALLATION	BETWEEN HOLDERS	CLAMP
DIRECTION OF FLUID	UNIDIRECTIONAL	UNIDIRECTIONAL
ELECTRICAL SIGNAL DETECTOR	YES / NO	YES / NO



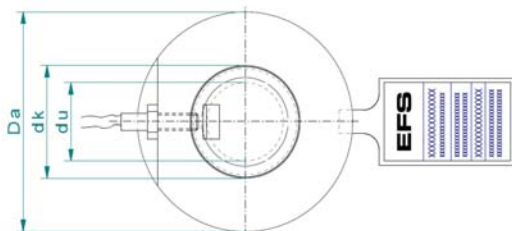
DIMENSIONS

DN [dk] [mm]	Da [mm]
25	70
40	82
50	90
65	94
80	124
100	140
125	180
150	202
200	260

BURSTING PRESSURES

Inox. @ 20°C		Nickel @ 20°C	
MIN.	MAX.	MIN.	MAX.
3	30	2,5	30
2,8	30	2,5	30
2	30	1	30
2	30	1	30
2	25	1	25
2	25	1	25
2	15	1	15
2	3	1	3
2	3	1	3

Up-to DN-800



Disclaimer

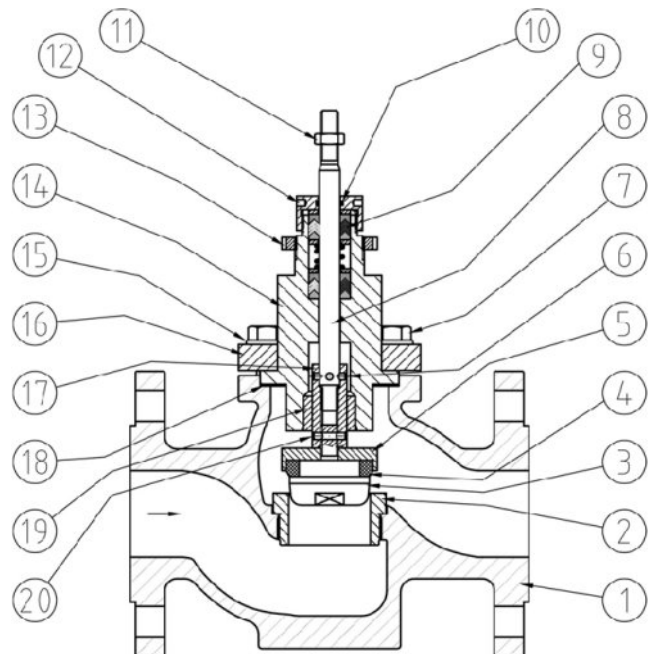
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Pneumatic Control Valve - Model C1

BASIC INFORMATION

Type	Globe body, top entry, single seated, two ways, direct or reverse action, multi spring pneumatic actuator. The modular concept of valve and a wide range of different trims available, allows a lot of combinations	Kv	3.5 – 115 [m ³ /h]
Operation	Pneumatic actuator provide modulating control or on/off service. Actuator can be changed to direct or reverse actuation on line quickly.	Cv	4.0 – 134 [gpm]
Model	C1	Temperature	-10 to 200 [°C] -14 to 392 [°F]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)	Inlet max. pressure	50 [barg] up to DN15 (1/2")
Ends	RF – RF, NPT, BSP	Outlet pressure	50 [barg]
Ratings	PN25 - PN40 (150# - 300#)		
Sizes	DN15 to DN100 [mm] (1/2" to 4")		
Suitable for	Liquids, compressed air, neutral gases and steam		

VALVE PARTS

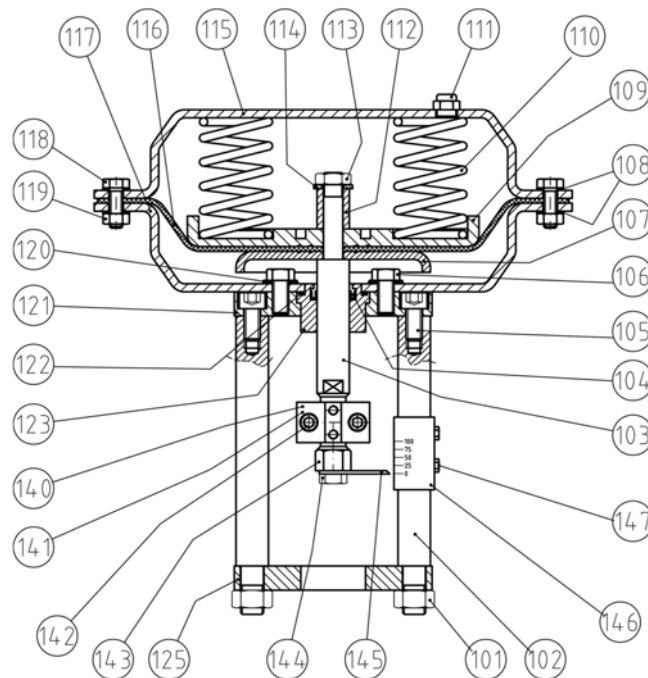


MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	Ductile iron (A536) Bronze (RG10) C. S. (A216WCB) S.S. (AISI 316)	Ductile iron (1693) Bronze (1705) C. S. (1.0619) S. S. (1.4408)
2	Seat	S. S. (AISI 316L)	S. S. (1.4404)
3	Guide	S. S. (AISI 316L)	S. S. (1.4404)
4	Seal	PTFE (D-792) + Graphite	PTFE (53749) + Graphite
5	Support seal	S. S. (AISI 316L)	S. S. (1.4404)
6	Block pin	S. S. (AISI 304)	S.S (1.4301)
7	Bolts	C.S. (AISI 1045)	C.S. (1.1191)
8	Stem	S. S. (AISI 316L)	S. S. (1.4404)
9	Packing group	(See stem sealing table)	
10	O-ring	FKM (D 1418)	FPM (1629)
11	Blocking nut	S. S. (AISI 304)	S.S (1.4301)
12	Packing cap nut	S. S. (AISI 316L)	S. S. (1.4404)
13	Clamping nut	C.S. (AISI 1045)	C.S. (1.1191)
14	Bonnet cover	(See bonnet table)	
15	Washer	S. S. (AISI 304)	S.S (1.4301)
16	Bonne cover	C.S. (AISI 1045)	C.S. (1.1191)
17	Plug stem	S. S. (AISI 316L)	S. S. (1.4404)
18	Gasket	Graphite	
19	Guide	S. S. (AISI 304)	S.S (1.4301)
20	Block pin	S. S. (AISI 304)	S.S (1.4301)

Recommended spare parts

ACTUATOR PARTS



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN
101	Body	C.S. (AISI 1045)	C.S. (1.1191)
102	Pillar	C.S. (AISI 1045)	C.S. (1.1191)
103	Pillar support	C.S. (AISI 1045)	C.S. (1.1191)
104	Gasket	NBR (D-1418)	NBR (1629)
105	Bolt	C.S. (AISI 1045)	C.S. (1.1191)
106	Bolt	C.S. (AISI 1045)	C.S. (1.1191)
107	Lower diaphragm plate	C.S. (AISI 1045)	C.S. (1.1191)
108	Washer	C.S. (AISI 1045)	C.S. (1.1191)
109	Spring guide plate	Aluminum	
110	Springs	Steel (SAE 9255)	Steel (1.5026)
111	Drain plug	Brass S.S. (AISI 316)	Brass S.S. (14408)
112	Guide	C.S. (AISI 1045)	C.S. (1.1191)
113	Nut	C.S. (AISI 1045)	C.S. (1.1191)
114	Washer	C.S. (AISI 1045)	C.S. (1.1191)
115	Upper actuator case	C.S. (AISI 1045)	C.S. (1.1191)
116	Diaphragm	EPDM (D-1418) + Reinforced fabric	EPDM (1629) + Reinforced fabric
117	Lower actuator case	C.S. ((A1011) painted in Epoxy)	C.S. ((1.0335) painted in Epoxy)
118	Screws	C.S. (AISI 1045)	C.S. (1.1191)
120	Guide	S. S. (AISI 304)	S.S (1.4301)
121	Block pin	S. S. (AISI 304)	S.S (1.4301)
122	O-ring	NBR (D-1418)	NBR (1629)
123	Actuator stem guide	Brass	
124	-	-	
125	Mounting support	C.S. (AISI 1045)	C.S. (1.1191)
140	Connector A	C.S. (AISI 1045)	C.S. (1.1191)
141	Connector B	C.S. (AISI 1045)	C.S. (1.1191)
142	Bolt (x2)	C.S. (AISI 1045)	C.S. (1.1191)
143	Connector stem	S.S. (AISI 316)	S. S. (1.4408)
144	Nut	S. S. (AISI 304)	S.S (1.4301)
145	Valve stem connector	C.S. (AISI 1045)	C.S. (1.1191)
146	Stroke indicator	S. S. (AISI 304)	S.S (1.4301)
147	Bolt	C.S. (AISI 1045)	C.S. (1.1191)

Recommended spare parts

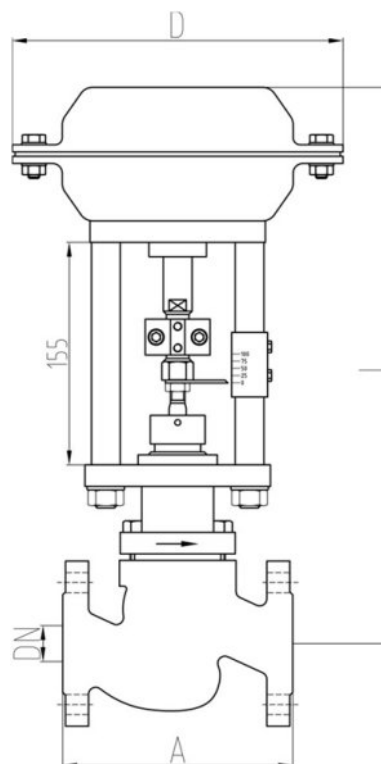
STANDARD CONFIGURATIONS VALVE

DN [mm]	15	20	25	32	40	50	65	80	100
Kv [m3/h]	3,5	5	9	13,5	22	32	57	82	115

NPS [inch]	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Cv [gpm]	4	5.8	10.4	15.6	25	37	66	95	134

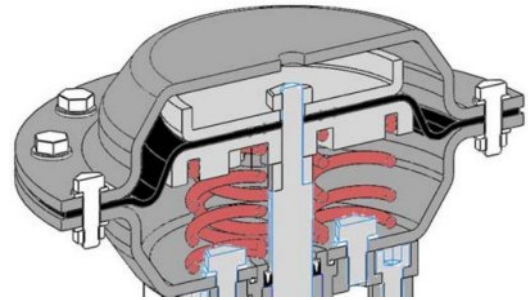
A [mm] EN	130	150	160	180	200	230	290	310	350
A [mm] ANSI 150	o	o	184	-	222	254	276	298.5	352.5
A [mm] ANSI 300	o	o	197	-	235	267	292	317.5	368
L (with AP295) [mm]	345	345	411	411	436	436	470	470	470
Stroke [mm]	20	20	20	20	20	20	30	30	30
Weight [Kg]	5	6	7	8	12	15	20	25	40

o available by request



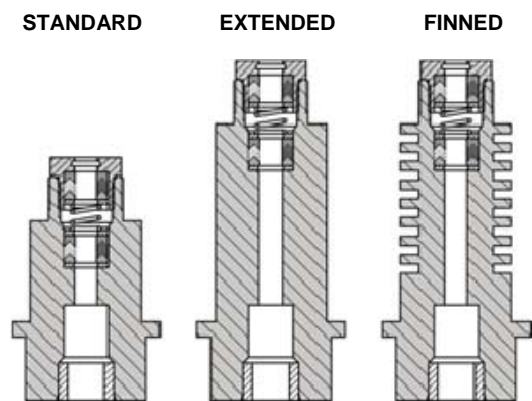
ACTUATOR DIMENSIONS AND WEIGHT

	AP230	AP295	AP350	AP430
D [mm]	230	295	350	430
Surface [cm ²]	150	300	450	700
Weight [Kg]	10	13	18	-



BONNET

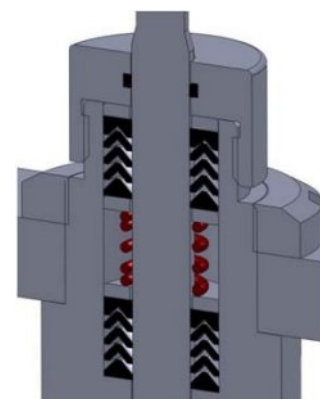
BONNET	WORKING TEMPERATURE	MATERIAL
Standard	-5 to + 200°C	Zinc plated steel (1.1191)
Finned	>+200°C	
Extended	<-5°C	Stainless steel Aisi 316 (1.4408)
Bellow seal	Consult us	



STEM SEALING

MATERIAL	PN	Material
PTFE + GR V-Rings (spring loaded)	50bar	Up to +200°C
PTFE V-Rings	50bar	Up to +150°C
Graphite rings	50bar	Up to +350°C
Bellow seal	25bar	Up to +3150°C

STANDARD DOUBLE PACKING



FLOW RATE COEFFICIENTS (K_v = Flow rate in m^3/h with 1 bar of differential pressure)

K_v	15	20	25	32	40	50	65	80	100
0.1 to 2	o	o	o	o	-	-	-	-	-
3.5	•	o	o	o	o	-	-	-	-
5	-	•	o	o	o	o	-	-	-
9	-	-	•	o	o	o	o	-	-
13.5	-	-	-	•	o	o	o	o	-
22	-	-	-	-	•	o	o	o	o
32	-	-	-	-	-	•	o	o	o
57	-	-	-	-	-	-	•	o	o
82	-	-	-	-	-	-	-	•	o
115	-	-	-	-	-	-	-	-	•

o available by request • Standard - Not available

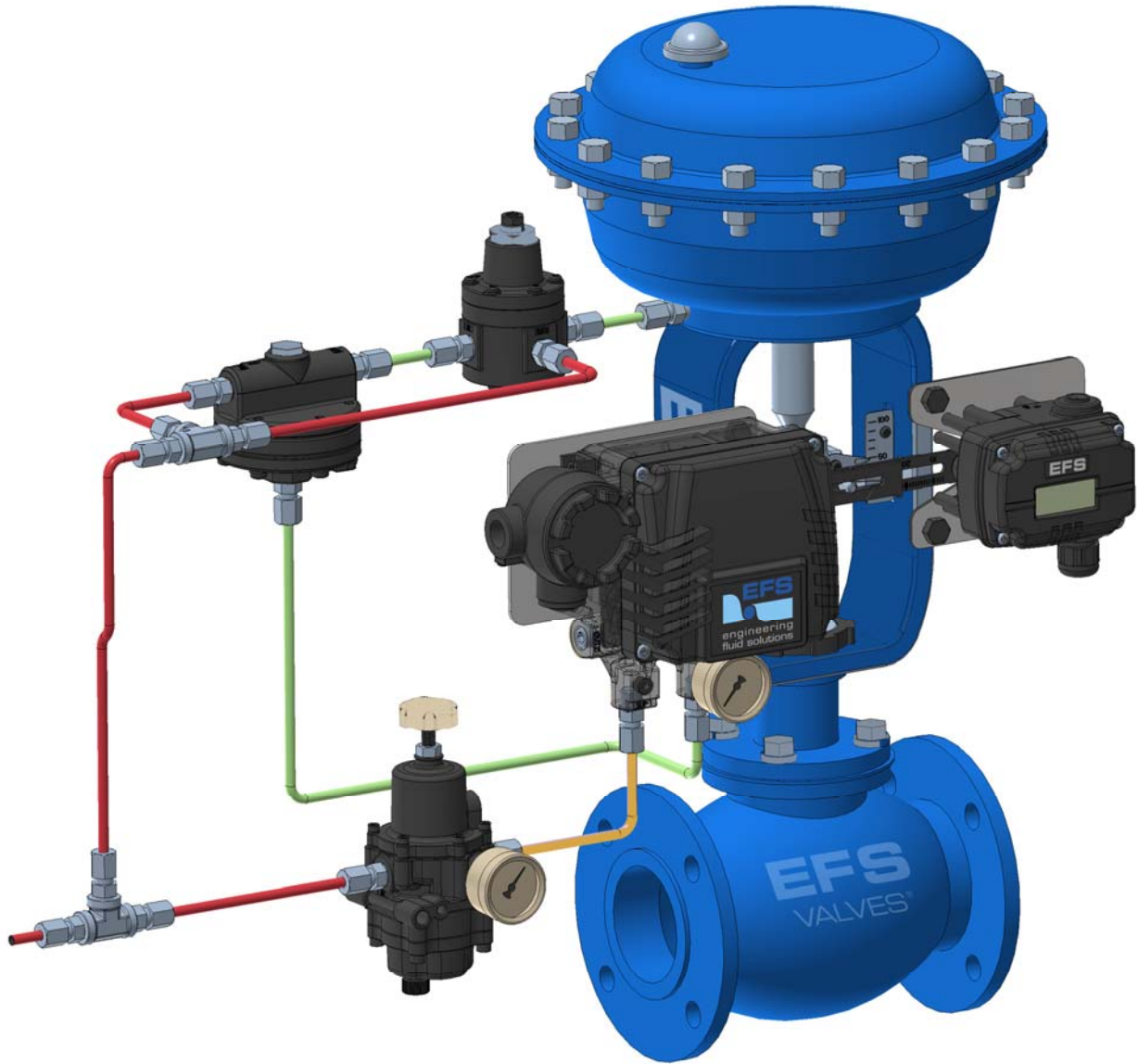
MAXIMUM ADMISSIBLE PRESSURE DROPS WHEN FLUID OPENS (bar)

ACTUATOR	SIGNAL	MINIMUM AIR SUPPLY	K_v								
			3.5 (DN15)	5 (DN20)	9 (DN25)	13.5 DN(32)	22 DN(50)	32 (DN50)	57 (DN65)	82 (DN80)	115 (DN100)
AP230	0.2+1.0	1.2	29	16	10	6	4	2.5	-	-	-
	0.4+1.2	1.4	50	33	21	13	8	5	-	-	-
	0.4+2.5	2.7	-	50	43	26	16	10	-	-	-

AP295	0.2+1.0	1.2	50	38	24	15	9	6	-	-	-
	0.4+1.2	1.4	50	50	32	20	12	8	-	-	-
	0.4+2.0	2.4	50	50	49	30	19	12	-	-	-
	1.0+4.0	4.2	50	50	50	50	36	23	-	-	-

AP350	0.2+1.0	1.2	50	47	30	18	11	7	4	3	1.5
	0.4+1.2	1.4	50	50	45	27	17	11	6.5	4	2.5
	0.4+2.0	2.7	50	50	50	27	23	15	9	6	3.5
	0.2+1.0	1.2	29	50	50	50	39	25	14	9	6

CONTROL VALVE ACCESSORIES



POSITIONER EFS-1200L MAIN FEATURES

- Type: Pneumatic positioner
 - Motion Type: Linear
 - Acting Type: Single / Double
 - Enclosure: IP66
-
- Simple zero and span adjustment
 - Auto / Manual Switch
 - No resonance between 5-200 Hz
 - RA vs DA action and 1/2 split range setting by simple adjustment

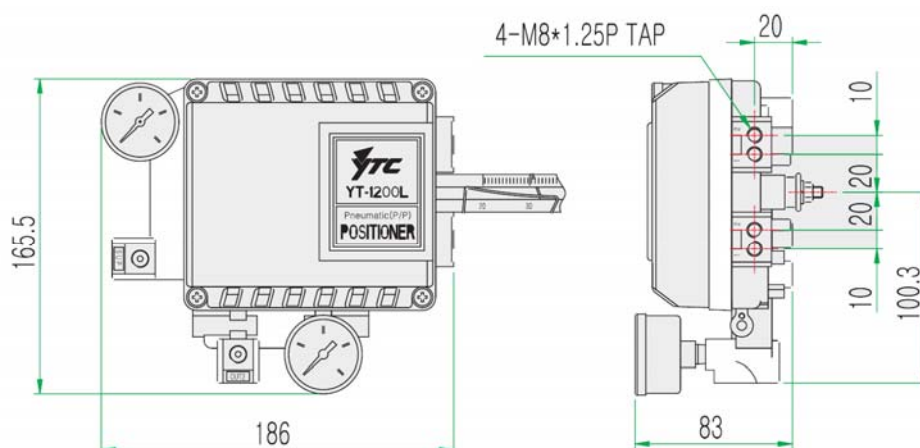


TECHNICAL SPECIFICATIONS

N°	Description	Features
1	Input Signal	4 – 20 mA DC
2	Supply Pressure	1.4 – 7 Kg/cm ² (0.14 - 0.7 MPa)
3	Stroke	10 - 150 mm / 0 - 90°
4	Impedance	Max. 460 Ohm / DC - 20mA
5	Air Connection	PT 1/4 / NPT 1/4
6	Gauge Connection	PT 1/8 / NPT 1/8
7	Conduit Entry	PF(G) 1/2 (Standard)
8	Ambient Temperature	Operating range: -30 ~ 85°C Explosion: -40~60°C(T5) / -40~40°C (T6)
9	Linearity	±0.5% F.S.
10	Hysteresis	±0.5% F.S.
11	Sensitivity	±0.2% F.S.
12	Air Consumption	Below 0.01 LPM (sup=1.4K)
13	Flow Capacity	60LPM
14	Output Characteristic	Linear, Quick Open. EQ%, User Set (16 point)
15	Material	Aluminum die-casting
16	Explosion Proof Type	Ex d IIC T6

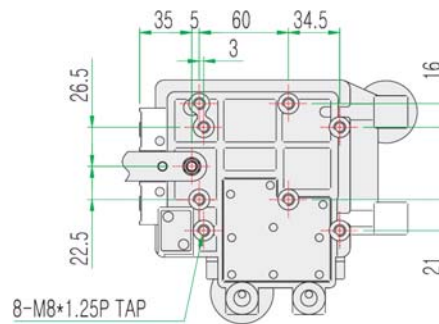
DIMENSIONS & WEIGHT

All dimensions are in [mm]



Weight	1.7 Kg (3.1lb.)
--------	-----------------

BOLTS POSITION TO ATTACH THE BRACKET:



POSITIONER EFS-1000L MAIN FEATURES

- Type: Electro-Pneumatic positioner
 - Motion Type: Linear
 - Acting Type: Single / Double
 - Enclosure: IP66
-
- Simple zero and span adjustment
 - Auto / Manual Switch
 - No resonance between 5-200 Hz
 - RA vs DA action and 1/2 split range setting by simple adjustment
 - Internal feedback signal is available as an option (weather proof only)



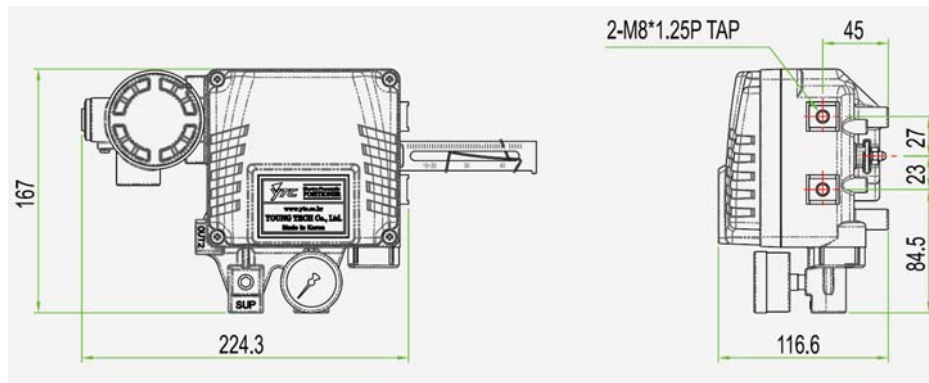
TECHNICAL SPECIFICATIONS

N°	Description	Features
1	Input Signal	4 – 20 mA DC
2	Impedance	250±15 Ohm
3	Supply Pressure	1.4 – 7 Kgf/cm ² (0.14 - 0.7 MPa)
4	Stroke	10 - 150 mm
6	Air Connection	PT 1/4 / NPT 1/4
7	Gauge Connection	PT 1/8 / NPT 1/8
8	Conduit Entry	PF(G) 1/2 (Standard), NPT 1/2 (Option) Ex dmb IIB T5 (KTL) Ex dmb IIC T5 (KTL)
9	Explosion Proof Type	Ex ia IIB T6 (KTL) Ex ia IIC T6 (NEPSI) Ex dmb IIC T5/T6 (NEPSI)
10	Ambient Temperature	Operating range: -20 ~ 70°C Explosion: -20 ~ 60°C
11	Linearity	±0.5% F.S.
12	Hysteresis	±0.5% F.S.
13	Sensitivity	±0.2% F.S.
14	Repeatability	0.3% F.S.
15	Flow Capacity	80 LPM
16	Air Consumption	2.5 LPM (sup=1.4MPa)
24	Material	Aluminum die-casting
25	Painting	Epoxy Polyester Powder Coating
26	Color	Black

* Tested under ambient temperature of 20°C, absolute pressure of 760 mmHg and humidity of 65%.

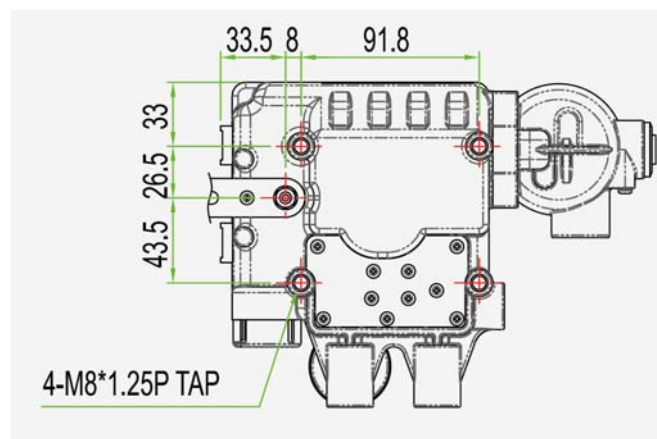
DIMENSIONS & WEIGHT

All dimensions are in [mm]



Weight	3.4 Kg (7.5 lb.)
--------	------------------

BOLTS POSITION TO ATTACH THE BRACKET:



POSITIONER EFS-2400L MAIN FEATURES

- Type: Electro-Pneumatic SMART positioner
- Motion Type: Linear
- Acting Type: Single / Double
- Enclosure: IP66

-
- Auto calibration
 - Auto / Manual Switch
 - PID control
 - Variable orifice
 - LCD display
 - 4 buttons for local control
 - HART communication

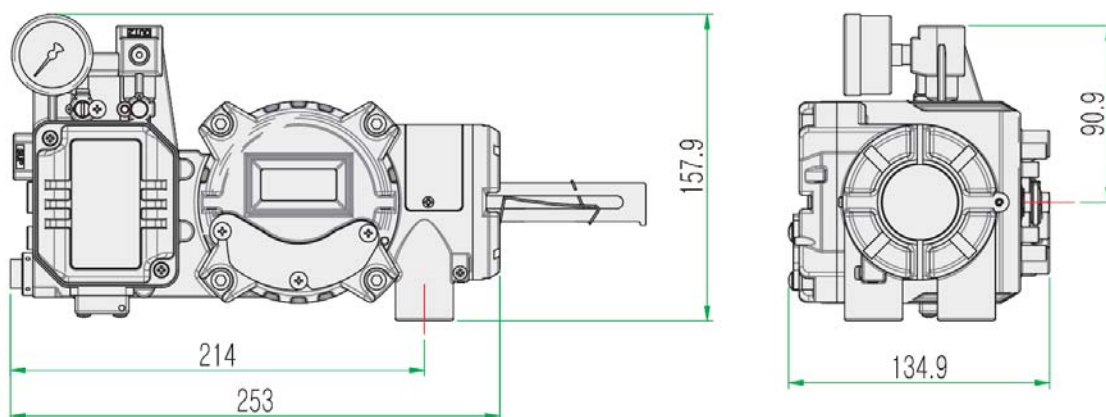


N°	Description	Features
1	Input Signal	4 – 20 mA DC
2	Minimum Current Signal	3.2 mA (Standard), 3.8 (Hart included)
3	Supply Pressure	1.4 – 7 Kg/cm ² (0.14 - 0.7 MPa)
4	Stroke	10 - 150 mm / 60 - 90°
5	Impedance	Max. 500 Ohm / DC - 20mA
6	Air Connection	PT 1/4 / NPT 1/4
7	Gauge Connection	PT 1/8 / NPT 1/8
8	Conduit Entry	PF(G) 1/2 (Standard), NPT 1/2 (Option)
9	Explosion Proof Type	Ex d IIB (+H ₂) T6 (-20 ~ 60°C)
10	Ambient Temperature	Operating range: -20 ~ 80°C
11	Linearity	±0.5% F.S.
12	Hysteresis	0.5% F.S.
13	Sensitivity	±0.2% F.S.
14	Repeatability	0.3% F.S.
15	Flow Capacity	70 LPM
16	Air Consumption	Below 2 LPM (sup.=1.4K), Below 3 LPM (sup.=7K)
17	LCD Temp. Condition	Storage: -30 ~ 85°C / Operating: -10~70°C
18	Output Characteristic	Linear, Quick Open. EQ%, User Set (16 point)
19	Vibrator Effect	6 G
20	Humidity	5 ~ 95% RH at 40°C
21	Communication (Option)	HART Communication (Non-DDL)
22	Feedback Signal (Option)	4 – 20mA (DC 10 – 30 V)
23	Limit Switch (Option)	DC-24V
24	Material	Aluminum die-casting
25	Painting	Epoxy Polyester Powder Coating
26	Color	Black

* Tested under ambient temperature of 20°C, absolute pressure of 760 mmHg and humidity of 65%.

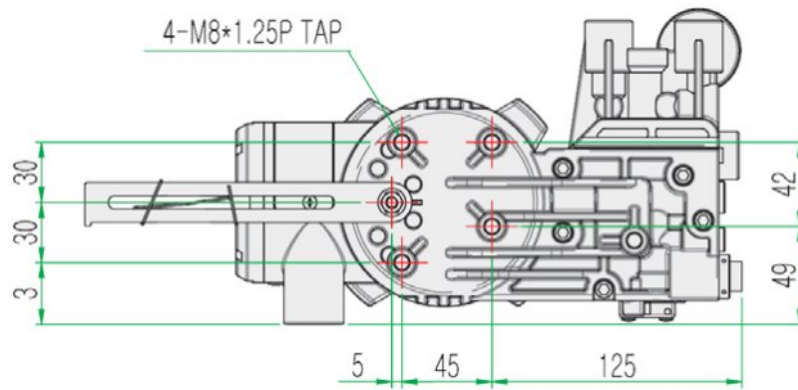
DIMENSIONS & WEIGHT

All dimensions are in [mm]



Weight	3.4 Kg (7.5 lb.)
--------	------------------

BOLTS POSITION TO ATTACH THE BRACKET:



ATEX approved

Disclaimer

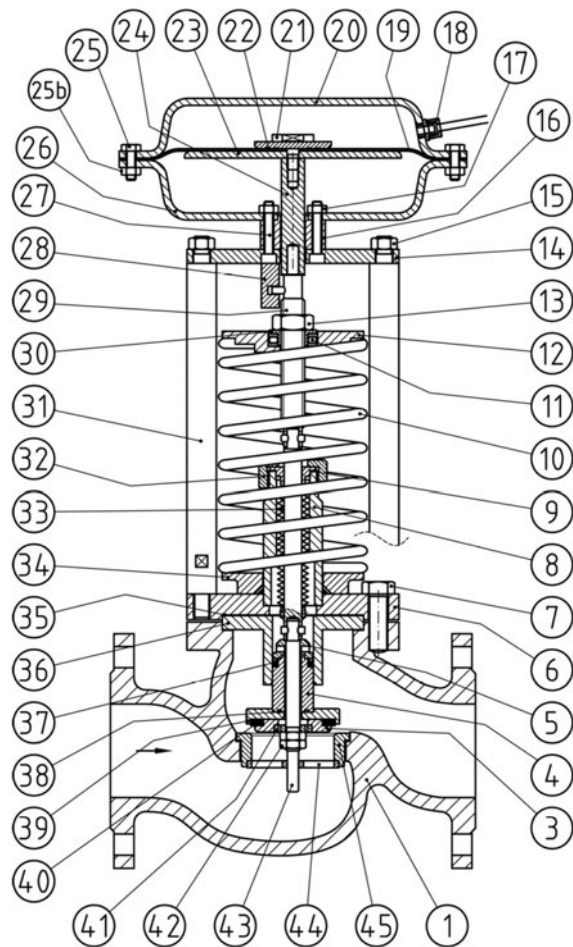
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Pressure Reducing Valve - Model M1

BASIC INFORMATION

Type	Self-operated pressure reducing valve with bellows	Kv	3,5 – 450 [m ³ /h]·[bar]
Operation	Valve closes when outlet pressure increases	Cv	4.0 – 520 [gpm]·[psi]
Model	M1	Temperature	-40 to 250 [°C]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)		-40 to 482 [°F]
Ends	RF – RF, NPT, BSP	Inlet max. pressure	40 [barg] up to DN50 (2")
Ratings	PN16 - PN40 (150# - 300#)	Outlet pressure	25 [barg] up to DN200 (8")
Sizes	DN15 to DN200 [mm] (1/2" to 8")		
Suitable for	Liquids, compressed air, neutral gases and steam		

PARTS



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	Ductile iron (A536) Bronze (RG10) C. S. (A216WCB) S.S. (AISI 316)	Ductile iron (GGG40.3) Bronze (1705) C. S. (1.0619) S. S. (1.4408)
3	Lower support seal	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
4	Guide stem	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
5	Washer guide stem	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
6	Cover	C.S. (AISI 1045) S.S. (AISI 304L) S.S. (AISI 316L)	C.S. (1.1191) S. S.(1.4307) S. S. (1.4404)
7	Screw	C.S. (F568M class 8.8) S. S. (AISI 304) S. S. (AISI 316)	C.S. (ISO 898-1 class 8.8) S.S (1.4301) S.S. (1.4401)
8	Bellow guide	S.S. (AISI 304) C.S. (AISI 1024) S.S. (AISI 316L) S.S. (AISI 304L)	S.S. (1.1191) C.S (1.0570) S.S. (1.4404) S.S. (14307)
9	O-ring	FKM (D 1418)	FKM (1629)
10	Springs	C.S. (SAE 9255)	C.S. (55Si7)
11	Ball bearing	C.S. (6440K)	C.S. (10Cr6)
12	Upper support springs	C.S. (AISI 1045)	C.S. (1.1191)
13	Adjusting nut	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
14	Support plate	C.S. (AISI 304)	C.S. (1.1191)
15	Nut M12	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
16	Support screws M8	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
17	Nut M8	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
18	Coupling	Aluminum	
19	Diaphragm	EPDM ((D-1418) [-40°C +125°C]) EPDM + PTFE ((D-1418 + D-792) [+125°C+250°C])	EPDM ((1629) [-40°C +125°C]) EPDM+ PTFE ((1620 + 53749) [+125°C+250°C])
20	Actuator casing (upper)	C.S. ((A1011) painted in epoxy) S.S (AISI 316)	C.S. ((1.0335) painted in epoxy) S.S. (1.4401)
21	Diaphragm screw	S.S. (AISI 304)	S.S. (1.4301)
22	O-ring	FKM (D 1418)	FKM (1629)
23	Diaphragm plate	C.S. (AISI 1045)	C.S. (1.1191)
24	Diaphragm stem	C.S. (AISI 1045)	C.S. (1.1191)
25	Hexagonal screw M8	S. S. (AISI 304)	S.S (1.4301)
25b	Hexagonal Nut M8	S. S. (AISI 304)	S.S (1.4301)
26	Actuator casing	C.S. ((A1011) painted in epoxy) S.S (AISI 316)	C.S. ((1.0335) painted in epoxy) S.S. (1.4401)
27	Allen screw	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
28	Anti-rotation system	C.S. (AISI 1045)	C.S. (1.1191)
29	Regulation stem	S. S. (AISI 304)	S.S (1.4301)
30	Guide ball bearing	S.S. (AISI 304L)	S.S. (14307)
31	Column	C.S. (AISI 1045)	C.S. (1.1191)
32	Nut bellow	C.S. (AISI 1045) S.S. (AISI 316L)	C.S. (1.1191) S.S. (1.4404)
33	Bellow	S.S. (AISI 316L)	S.S. (1.4404)
34	Lower support springs	C.S. (AISI 1045)	C.S. (1.1191)
35	Gasket	Graphite with metal	Graphite with metal
36	Guide	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)

37	Gasket	PTFE (D-792) NBR (D-1418) PEEK (D-792) EPDM (D-1418)	PTFE (53749) NBR (1629) PEEK (53479) EPDM (1629)
38	O-ring	FKM (D 1418)	FKM (1629)
39	Upper support seal	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (1.4307) S. S. (1.4404)
40	Seal	Graphite PFTE	
41	Guide stem	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
42	Nut	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
43	Stem seal	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
44	Guide stem	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
45	Seat	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)

STANDARD CONFIGURATIONS

DN [mm]	15	20	25	32	40	50	65	80	100	125	150	200
Kv [m ³ /h]·[bar]	3,5	5	9	13,5	22	32	57	82	115	190	240	450

NPS [inch]	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"
Cv [gpm]·[psi]	4	6	10	16	25	37	66	95	133	220	277	520

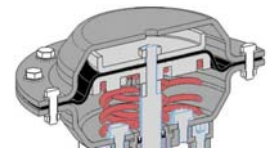
A [mm] EN	130	150	160	180	200	230	290	310	350	400	450	600
A [mm] ANSI 150	o	o	184	-	222	254	276	298.5	352.5	-	451	
A [mm] ANSI 300	o	o	197	-	235	267	292	317.5	368	-	-	
L [mm]	440	445	450	455	463	475	560	560	575	600	640	800
Weight [Kg]	20	22	24	28	32	35	52	57	68	85	105	210

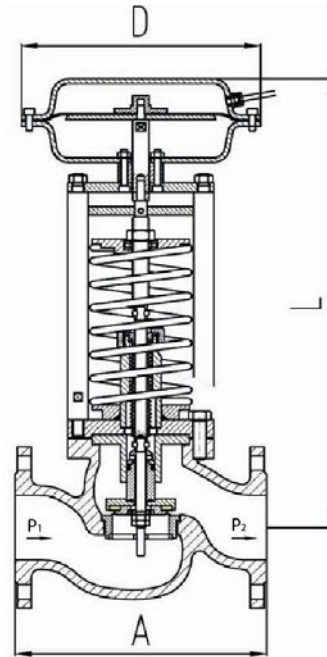
o available on request

IMPORTANT NOTE: Kv or CV reduced is available

ACTUATOR DIAMETER ACCORDING TO REQUIRED OUTLET PRESSURE: D [mm]

Outlet Range [barg]	DN15 DN20	DN25 DN32	DN40 DN50	DN65	DN80	DN100	DN125	DN150	DN200
0,1 – 1,5	295	295	295	295	350	350	-	-	-
1 – 3	255	255	255	295	295	295	350	350	350
2 – 5	230	230	230	255	255	255	295	295	295
4 – 8	195	195	195	230	230	230	255	255	255
7 – 16	175	175	175	195	195	195	230	230	230





CAGE ANTI CAVITATION (OPTIONAL)



MAIN DESIGN STANDARDS

STANDARD	DESCRIPTION
EN 558-1	Face-to-face dimensions flanges drilled acc. to EN 1092-1
EN 1092-1, 2	Flanges and their joints
ISA 75.03	Face-to-face dimensions flanges drilled acc. to ASME B16.5 or EN 558-2
ASME B16.5	Flanges and Flanged Ratings for Class 150, 300, etc.
EN 10226-1	Requirements for BSP thread
ANSI/ASME B1.20.1	National Pipe Thread Taper
EN 12516-1	Shell design strength - Tabulation method for steel valve shells
EN 60534-2-3	Industrial control valves - Flow capacity - Test procedure
EN 12266-1	Pressure tests, test procedures and acceptance criteria

OPERATION

The medium flows through the valve body in the direction indicated by the arrow. The position of the valve plug determines the flow rate across the area released between the plug and seat.

To control the pressure, the operating diaphragm is pretensioned by the positioning springs and the set point adjuster. As a result, the valve is opened by the force of the positioning springs in pressureless state ($p_1 = p_2$).

The downstream pressure p_2 to be controlled is tapped downstream of the valve and transmitted through the control line to the operating diaphragm where it is converted into a positioning force.

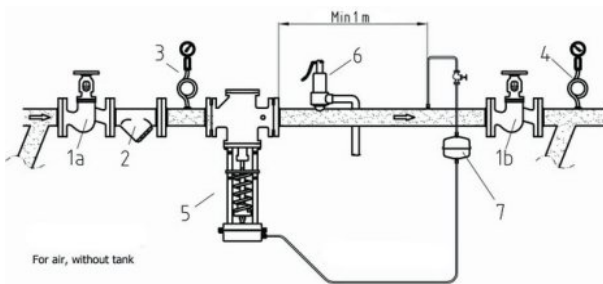
This force is used to move the valve plug depending on the force of the positioning springs. The spring force can be adjusted on the set point adjuster.

When the force resulting from the downstream pressure p_2 exceeds the adjusted pressure set point, the valve is closed proportionally to the change in pressure.

The fully balanced valve is equipped with a balancing bellows, the downstream pressure p_2 acts on the inside of the bellows and the upstream pressure p_1 acts on the outside of the bellows. As a result, the forces produced by the upstream and downstream pressures acting on the valve plug are balanced.

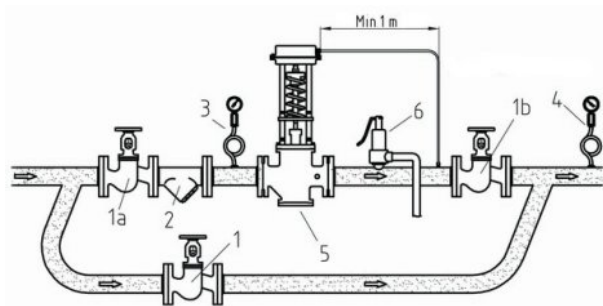
STANDARD INSTALLATIONS

When fluid temperature is above 0 °C

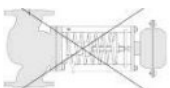


- | | |
|----|-----------------------|
| 1. | Check Valve |
| 2. | Filter |
| 3. | Inlet pressure gauge |
| 4. | Outlet pressure gauge |
| 5. | Reducing valve M1 |
| 6. | Safety valve |
| 7. | Tank |

Alternative assembling for liquids and neutral gases up to 80 °C



Don't assembly this way



Disclaimer

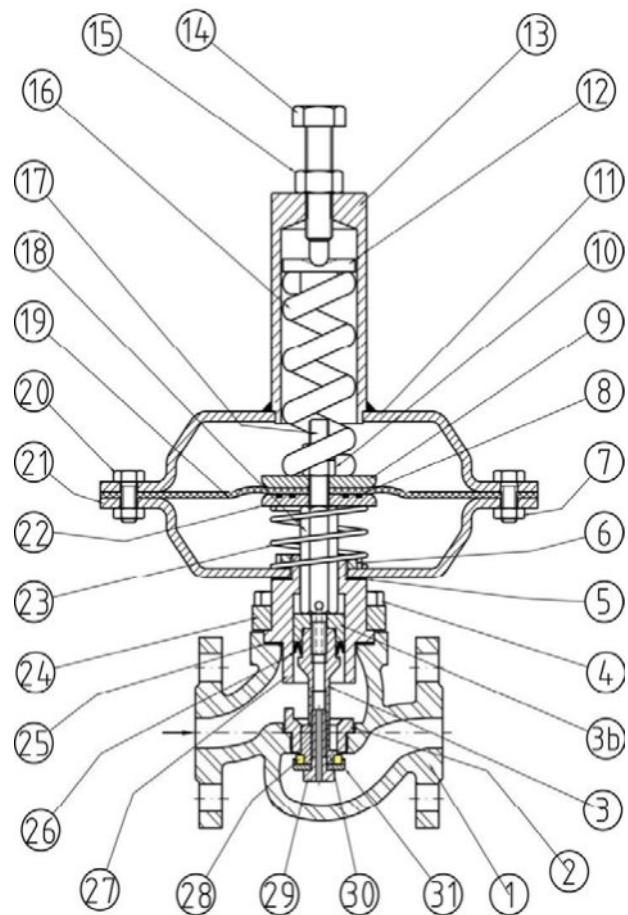
The information, specifications and technical data contained in this catalogue are subject to change without notice by the manufacturer. The user should verify all technical data and specifications prior to use. EFSVALVES does not warrant that the material and information contained herein is current or correct and assumes no responsibility for the use or misuse of any such material and information by the user.

Pressure Reducing Valve - Model M2

BASIC INFORMATION

Type	Self-operated pressure reducing valve		Suitable for	Liquids, air, neutral gases and steam	
Operation	Valve closes when outlet pressure increases		Kv	3,8 – 115	[m ³ /h]-[bar]
Model	M2		Cv	4.4 – 133	[gpm]-[psi]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)		Temperature	-20 to 180	[°C]
Ends	RF – RF, NPT, BSP			-4 to 356	[°F]
Ratings	PN16 - PN40	(150# - 300#)	Inlet max. pressure	16	[barg]
Sizes	DN15 to DN65 [mm]	(1/2" to 2 1/2")	Outlet pressure	0,02 - 8	[barg]

PARTS



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	Ductile iron (A536) Bronze (RG10) C. S. (A216WCB) S.S. (AISI 316)	Ductile iron (1693) Bronze (1705) C. S. (1.0619) S. S. (1.4408)
2	Seat	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
3	Stem	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
3b	Bushing Guide	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
4	Screw	S. S. (AISI 304)	S.S (1.4301)
5	Gasket	PTFE (D-792)	PTFE (53479)
6	Nut KM-6	C.S. (AISI 1045)	C.S. (1.1191)
7	Nut	S. S. (AISI 304)	S.S (1.4301)
8	O-ring	FKM (D 1418) NBR (D-1418)	FPM (1629) NBR (1629)
9	Support spring	C.S. (A1011)	C.S. (1.0335)
10	Nut	S. S. (AISI 304)	S.S (1.4301)
11	Upper Actuator	C.S. ((A1011) painted in epoxy)) S.S (AISI 316)	C.S. ((1.0335) painted in epoxy)) S.S. (1.4401)
12	Spring guide	C.S. (AISI 1045)	C.S. (1.1191)
13	Spring cover	C.S. ((AISI 1045) painted in epoxy))	C.S. (1.1191) painted in epoxy))
14	Regulation screw	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
15	Regulation nut	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
16	Regulation spring	C.S. (52SiCrNi5)	C.S. (1.7117)
17	Screw	S. S. (AISI 304)	S.S (1.4301)
18	Stem	S.S. (AISI 316L)	S.S. (1.4404)
19	Diaphragm	EPDM (D-1418) EPDM + PTFE (D-1418 + D-792)	EPDM ((1629) EPDM + PTFE (1620 + 53749)
20	M8 Screw	S. S. (AISI 304)	S.S (1.4301)
21	Lower actuator	C.S. ((A1011) painted in epoxy)) S.S (AISI 316)	C.S. ((1.0335) painted in epoxy)) S.S. (1.4401)
22	Lower support dia.	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
23	Support spring	S.S. (AISI 302)	S.S (1.43)
24	Cover	S.S. (AISI 1015)	S.S (1.1141)
25	Gasket	Graphite	
26	Gasket	Graphite PTFE S. S. (AISI 304)	Graphite PTFE S.S (1.4301)
27	Guide Stem	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
28	Seal	Graphite PTFE	
29	Seal screw	S. S. (AISI 304)	S.S (1.4301)
30	Guide seal	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
31	Support seal	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)

STANDARD CONFIGURATIONS

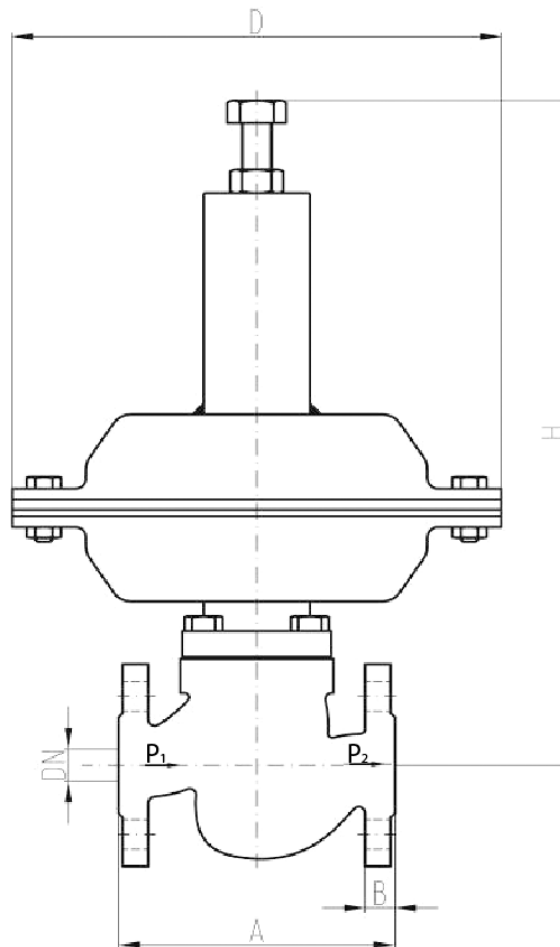
DN [mm]	15	20	25	32	40	50	65	80	100
Kv [m ³ /h]-[bar]	3,5	5	9	13,5	22	32	57	82	115

NPS [inch]	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Cv [gpm]-[psi]	4	6	10	16	25	37	66	95	133

A [mm] EN	130	150	160	180	200	230	290	310	350
A [mm] ANSI 150	o	o	184	-	222	254	276	298.5	352.5
A [mm] ANSI 300	o	o	197	-	235	267	292	317.5	368
H [mm]	315	315	325	325	360	360	390	390	423
Weight [Kg]	8	9	12	13	15	20	30	45	56

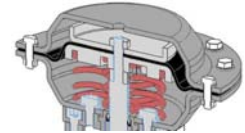
IMPORTANT NOTE: Kv or CV reduced is available

o available on request



ACTUATOR DIAMETER ACCORDING TO REQUIRED OUTLET PRESSURE: D [mm]

Outlet Range [barg]	15 (1/2")	20 (3/4")	25 (1")	32 (1 1/4")	40 (1 1/2")	50 (2")	65 (2 1/2")	80 (3")	100 (4")
0,02 – 0,04	350	350	350	o	o	o	o	o	o
0,03 – 0,1	295	295	295	350	350	350	350	o	o
0,08 – 0,3	295	295	295	295	295	295	295	o	o
0,2 – 1,2	230	230	230	230	230	230	230	o	o
0,8 – 3	195	195	195	195	195	195	195	o	o
2 – 8	175	175	175	175	175	175	175	o	o
5 - 20	o	o	o	o	o	o	o	o	o



o available on request

MAIN DESIGN STANDARDS

STANDARD	DESCRIPTION
EN 558-1	Face-to-face dimensions flanges drilled acc. to EN 1092-1
EN 1092-1, 2	Flanges and their joints
ISA 75.03	Face-to-face dimensions flanges drilled acc. to ASME B16.5 or EN 558-2
ASME B16.5	Flanges and Flanged Ratings for Class 150, 300, etc.
EN 10226-1	Requirements for BSP thread
ANSI/ASME B1.20.1	National Pipe Thread Taper
EN 12516-1	Shell design strength - Tabulation method for steel valve shells
EN 60534-2-3	Industrial control valves - Flow capacity - Test procedure
EN 12266-1	Pressure tests, test procedures and acceptance criteria

OPERATION

The medium flows through the valve as indicated by the arrow. The position of the valve plug and the area released between the plug and seat determine the flow rate.

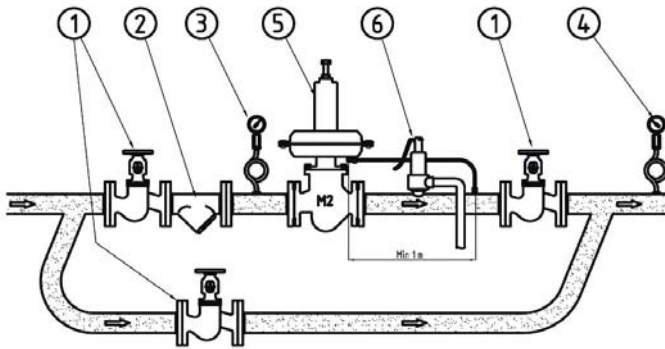
In the pressureless state (control line not connected and no pressure applied) the valve is opened by the force of the set point spring.

The downstream pressure P_2 to be controlled is tapped downstream of the valve and transmitted over the control line to the actuator where it is converted into a positioning force. This force is used to move the valve plug according to the force of the set point spring.

The spring force can be adjusted at the set point adjuster. When the force resulting from the downstream pressure P_2 rises above the adjusted set point, the valve closes proportionally to the change in pressure.

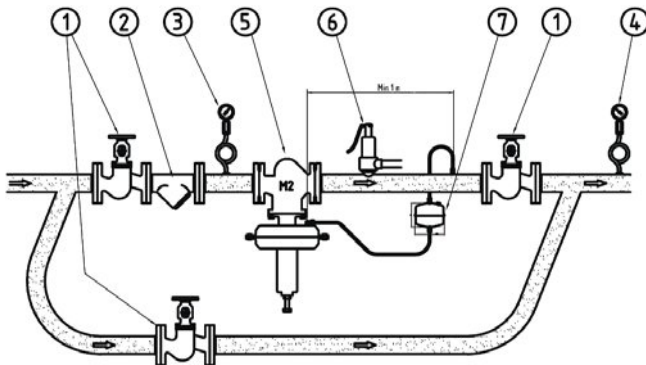
STANDARD INSTALLATIONS

Liquids and neutral gases drawing

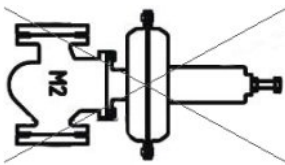


- 1. Check Valve
- 2. Filter
- 3. Inlet pressure gauge
- 4. Outlet pressure gauge
- 5. Reducing valve M2
- 6. Safety valve
- 7. Tank

Steam drawing



Don't assembly this way



ATEX approved

Disclaimer

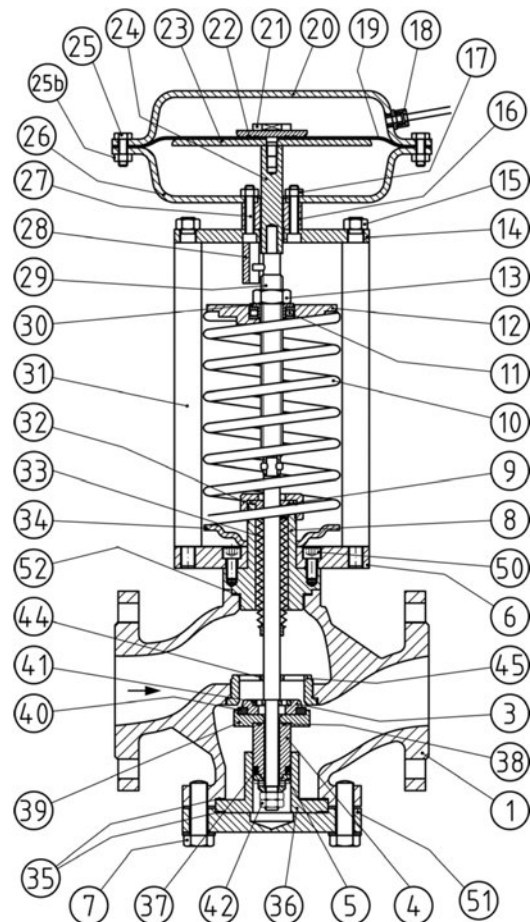
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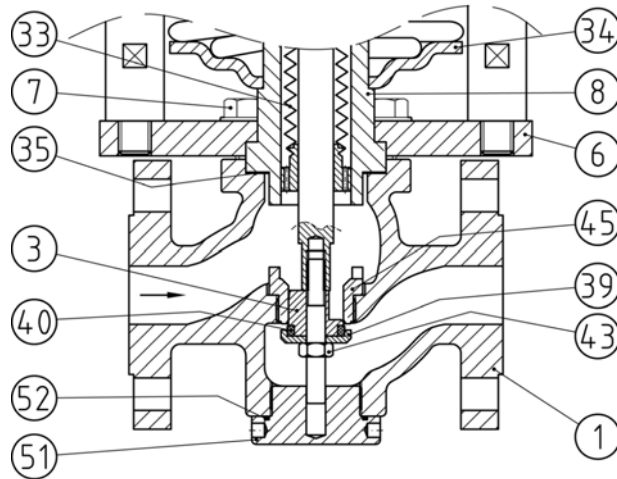
Pressure Reducing Valve - Model S1

BASIC INFORMATION

Type	Self-operated pressure reducing valve with bellows	Kv	3,5 – 450 [m ³ /h]·[bar]
Operation	Valve closes when outlet pressure increases	Cv	4.0 – 520 [gpm]·[psi]
Model	S1	Temperature	-40 to 250 [°C]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)		-40 to 482 [°F]
Ends	RF – RF, NPT, BSP	Inlet max. pressure	40 [barg] up to DN50 (2")
Ratings	PN25 - PN40 (150# - 300#)	Outlet pressure	25 [barg] up to DN200 (8")
Sizes	DN15 to DN200 [mm] (1/2" to 8")		
Suitable for	Liquids, compressed air, neutral gases and steam		

PARTS





MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	Ductile iron (A536) Bronze (RG10) C. S. (A216WCB) S.S. (AISI 316)	Ductile iron (GGG40.3) Bronze (1705) C. S. (1.0619) S. S. (1.4408)
3	Lower support seal	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
4	Guide stem	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
5	Washer guide stem	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
6	Cover	C.S. (AISI 1045) S.S. (AISI 304L) S.S. (AISI 316L)	C.S. (1.1191) S. S.(1.4307) S. S. (1.4404)
7	Screw	C.S. (F568M class 8.8) S. S. (AISI 304) S. S. (AISI 316)	C.S. (ISO 898-1 class 8.8) S.S (1.4301) S.S. (1.4401)
8	Bellow guide	S.S. (AISI 304) C.S. (AISI 1024) S.S. (AISI 316L) S.S. (AISI 304L)	S.S. (1.1191) C.S (1.0570) S.S. (1.4404) S.S. (14307)
9	O-ring	FKM (D 1418)	FPM (1629)
10	Springs	C.S. (SAE 9255)	C.S. (55Si7)
11	Ball bearing	C.S. (6440K)	C.S. (10Cr6)
12	Upper support springs	C.S. (AISI 1045)	C.S. (1.1191)
13	Adjusting nut	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
14	Support plate	C.S. (AISI 304)	C.S. (1.1191)
15	Nut M12	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
16	Support screws M8	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
17	Nut M8	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
18	Coupling	Brass	Brass
19	Diaphragm	EPDM ((D-1418) [-40°C +125°C]) EPDM + PTFE ((D-1418 + D-792) [+125°C+250°C])	EPDM ((1629) [-40°C +125°C]) EPDM+ PTFE ((1620 + 53749) [+125°C+250°C])
20	Actuator casing (upper)	C.S. ((A1011) painted in epoxy) S.S (ASI 316)	C.S. ((1.0335) painted in epoxy)) S.S. (1.4401)
21	Diaphragm screw	S.S. (AISI 304)	S.S. (1.4301)
22	O-ring	FKM (D 1418)	FPM (1629)
23	Diaphragm plate	C.S. (AISI 1045)	C.S. (1.1191)

24	Diaphragm stem	C.S. (AISI 1045)	C.S. (1.1191)
25	Hexagonal screw M8	S. S. (AISI 304)	S.S (1.4301)
25b	Hexagonal Nut M8	S. S. (AISI 304)	S.S (1.4301)
26	Actuator casing	C.S. ((A1011) painted in epoxy) S.S (ASI 316)	C.S. ((1.0335) painted in epoxy) S.S. (1.4401)
27	Allen screw	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
28	Anti-rotation system	C.S. (AISI 1045)	C.S. (1.1191)
29	Regulation stem	S. S. (AISI 304)	S.S (1.4301)
30	Guide ball bearing	S.S. (AISI 304L)	S.S. (14307)
31	Column	C.S. (AISI 1045)	C.S. (1.1191)
32	Nut bellow	C.S. (AISI 1045) S.S. (AISI 316L)	C.S. (1.1191) S.S. (1.4404)
33	Bellow	S.S. (AISI 316L)	S.S. (1.4404)
34	Lower support springs	C.S. (AISI 1045)	C.S. (1.1191)
35	Gasket	Graphite with metal	Graphite with metal
36	Guide	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
37	Gasket	PTFE (D-792) NBR (D-1418) PEEK (D-792) EPDM (D-1418)	PTFE (53749) NBR (1629) PEEK (53479) EPDM (1629)
38	O-ring	FKM (D 1418)	FPM (1629)
39	Upper support seal	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (1.4307) S. S. (1.4404)
40	Seal	Graphite PFTE	Graphite PFTE
41	Guide stem	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
42	Nut	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
43	Stem seal	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
44	Guide stem	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
45	Seat	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
50	Allen screw	C.S. (F568M class 8.8) S. S. (AISI 304)	C.S. (ISO 898-1 class 8.8) S.S (1.4301)
51	Cover	S. S. (AISI 304)	S.S (1.4301)
52	O-ring	PTFE (D-792)	PTFE (53749)

STANDARD CONFIGURATIONS

DN [mm]	15	20	25	32	40	50	65	80	100	125	150	200
Kv [m ³ /h]-[bar]	3,5	5	9	13,5	22	32	57	82	115	190	240	450

NPS [inch]	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"
Cv [gpm]-[psi]	4	6	10	16	25	37	66	95	133	220	277	520

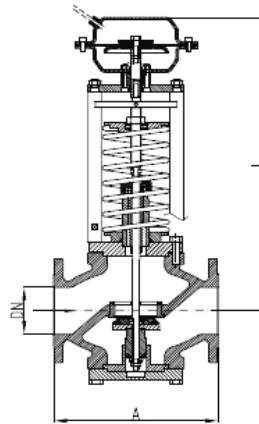
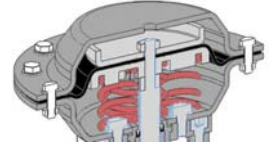
A [mm] EN	130	150	160	180	200	230	290	310	350	400	450	600
A [mm] ANSI 150	o	o	184	-	222	254	276	298.5	352.5	-	451	
A [mm] ANSI 300	o	o	197	-	235	267	292	317.5	368	-	-	
L [mm]	440	445	450	455	463	475	560	560	575	600	640	800
Weight [Kg]	20	22	24	28	32	35	52	57	68	85	105	210

o available on request

IMPORTANT NOTE: Kv or CV reduced is available

ACTUATOR DIAMETER ACCORDING TO REQUIRED OUTLET PRESSURE: D [mm]

Outlet Range [barg]	DN15 DN20	DN25 DN32	DN40 DN50	DN65	DN80	DN100	DN125	DN150	DN200
0,1 – 1,5	295	295	295	295	350	350	-	-	-
1 – 3	255	255	255	295	295	295	350	350	350
2 – 5	230	230	230	255	255	255	295	295	295
4 – 8	195	195	195	230	230	230	255	255	255
7 – 16	175	175	175	195	195	195	230	230	230



CAGE ANTI CAVITATION (OPTIONAL)



MAIN DESIGN STANDARDS

STANDARD	DESCRIPTION
EN 558-1	Face-to-face dimensions flanges drilled acc. to EN 1092-1
EN 1092-1, 2	Flanges and their joints
ISA 75.03	Face-to-face dimensions flanges drilled acc. to ASME B16.5 or EN 558-2
ASME B16.5	Flanges and Flanged Ratings for Class 150, 300, etc.
EN 10226-1	Requirements for BSP thread
ANSI/ASME B1.20.1	National Pipe Thread Taper
EN 12516-1	Shell design strength - Tabulation method for steel valve shells
EN 60534-2-3	Industrial control valves - Flow capacity - Test procedure
EN 12266-1	Pressure tests, test procedures and acceptance criteria

OPERATION

The medium flows through the valve body in the direction indicated by the arrow. The position of the valve plug determines the flow rate across the area released between the plug and seat.

To control the pressure, the operating diaphragm is pretensioned by the positioning springs and the set point adjuster. As a result, the valve is opened by the force of the positioning springs in pressureless state ($p_1 = p_2$).

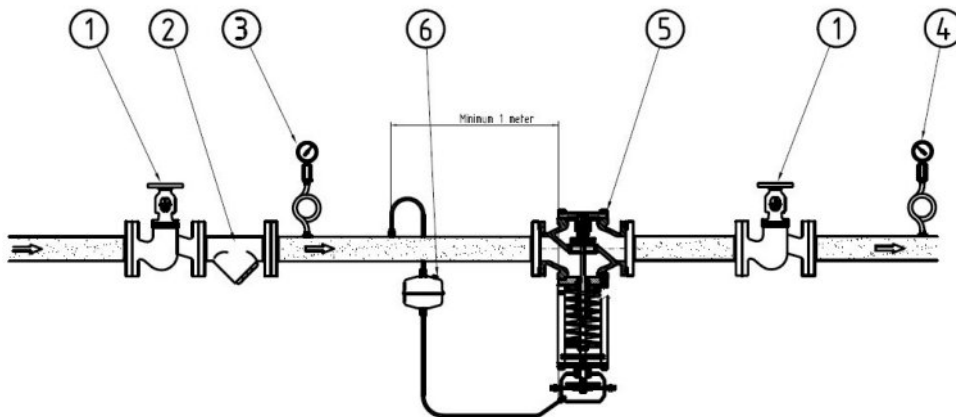
The downstream pressure p_2 to be controlled is tapped downstream of the valve and transmitted through the control line to the operating diaphragm where it is converted into a positioning force.

This force is used to move the valve plug depending on the force of the positioning springs. The spring force can be adjusted on the set point adjuster.

When the force resulting from the downstream pressure p_2 exceeds the adjusted pressure set point, the valve is closed proportionally to the change in pressure.

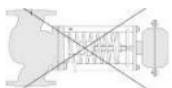
The fully balanced valve is equipped with a balancing bellows, the downstream pressure p_2 acts on the inside of the bellows and the upstream pressure p_1 acts on the outside of the bellows. As a result, the forces produced by the upstream and downstream pressures acting on the valve plug are balanced.

STANDARD INSTALLATIONS



- | | |
|----|-----------------------|
| 1. | Check Valve |
| 2. | Filter |
| 3. | Inlet pressure gauge |
| 4. | Outlet pressure gauge |
| 5. | Reducing valve M1 |
| 6. | Safety valve |
| 7. | Tank |

Don't assembly this way



Disclaimer

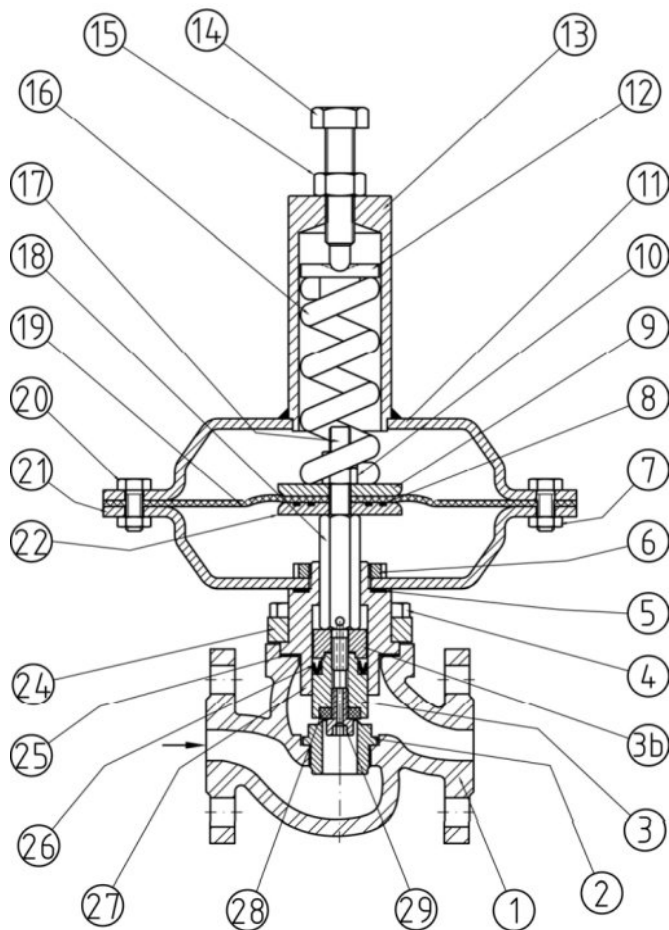
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Pressure Reducing Valve - Model S2

BASIC INFORMATION

Type	Self-operated pressure reducing valve by diaphragm	Kv	3,5 – 115 [m ³ /h]·[bar]
Operation	Valve closes when outlet pressure increases	Cv	4.0 – 135 [gpm]·[psi]
Model	S2	Temperature	-10 to 180 [°C]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)		14 to 356 [°F]
Ends	RF – RF, NPT, BSP	Inlet max. pressure	40 [barg] up to DN50 (2")
Ratings	PN25 - PN40 (150# - 300#)	Outlet pressure	25 [barg] up to DN100 (4")
Sizes	DN15 to DN100 [mm] (1/2" to 4")		
Suitable for	Liquids, compressed air, neutral gases and steam		

PARTS



REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	Ductile iron (A536) Bronze (RG10) C. S. (A216WCB) S.S. (AISI 316)	Ductile iron (GGG40.3) Bronze (1705) C. S. (1.0619) S. S. (1.4408)
2	Seat	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
3	Stem	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
3b	Bushing guide	S.S. (AISI 304L) S. S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
4	Screw	S. S. (AISI 304)	S.S (1.4301)
5	Gasket	PTFE (D-792)	PTFE (53749)
6	Nut KM-6	C.S. (AISI 1045)	C.S. (1.1191)
7	Nut	S. S. (AISI 304)	S.S (1.4301)
8	O-ring	NBR (D-1418) FKM (D-1418)	NBR (1629) FKM (1629)
9	Support spring	C.S. (A1011)	C.S. (1.0335)
10	Nut	S.S. (AISI 304)	S.S. (1.1191)
11	Upper actuator	C.S. ((A1011) painted in epoxy)) S.S (ASI 316)	C.S. ((1.0335) painted in epoxy)) S.S. (1.4401)
12	Spring guide	C.S. (AISI 1045)	C.S. (1.1191)
13	Spring cover	C.S. (AISI 1045) epoxy painted	C.S. (1.1191) epoxy painted
14	Regulation screw	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
15	Regulation nut	C.S. (F568M class 8.8)	C.S. (ISO 898-1 class 8.8)
16	Regulation spring	C.S. (52SiCrNi5)	C.S. (1.7117)
17	Screw	S.S. (AISI 304)	S.S. (1.4301)
18	Diaphragm screw	S.S. (AISI 316L)	S. S. (1.4404)
19	Diaphragm	EPDM (D-1418) EPDM (D-1418) +PTFE (D-792)	EPDM (1629) EPDM (1629) + PTFE (53749)
20	Hexagonal screw M8	S. S. (AISI 304)	S.S (1.4301)
21	Lower actuator	C.S. ((A1011) painted in epoxy)) S.S (ASI 316)	C.S. ((1.0335) painted in epoxy)) S.S. (1.4401)
22	Lower actuator dia.	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
24	Cover	S.S. (AISI 1015)	S.S (1.1141)
25	Gasket	Graphite	
26	Gasket	Graphite with metal	
27	Stem guide	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)
28	Seal	PTFE (D-792) NBR (D-1418) PEEK (D-792) EPDM (D-1418)	PTFE (53749) NBR (1629) PEEK (53479) EPDM (1629)
29	Seal screw	S.S. (AISI 304)	S.S. (1.4301)
31	Support seal washer	S.S. (AISI 304L) S.S. (AISI 316L)	S.S. (14307) S.S. (1.4404)

Recommended spare parts

STANDARD CONFIGURATIONS

DN [mm]	15	20	25	32	40	50	65	80	100
Kv [m ³ /h]-[bar]	3,5	5	9	13,5	22	32	57	82	115

NPS [inch]	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Cv [gpm]-[psi]	4	6	10	16	25	37	66	95	133

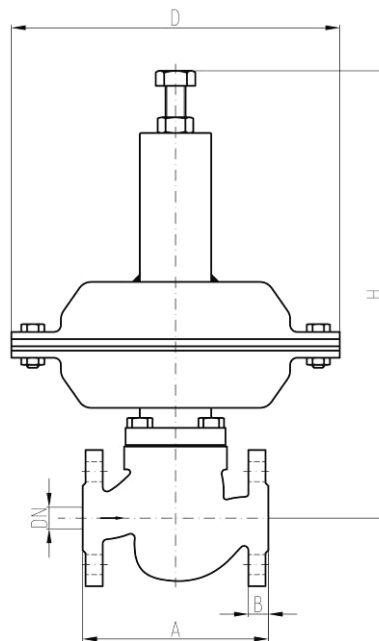
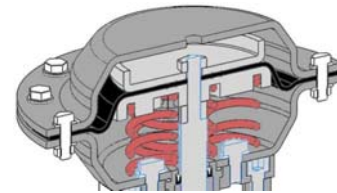
A [mm] EN	130	150	160	180	200	230	290	310	350
A [mm] ANSI 150	o	o	184	-	222	254	276	298.5	352.5
A [mm] ANSI 300	o	o	197	-	235	267	292	317.5	368
H [mm]	315	315	325	325	360	360	390	390	410
Weight [Kg]	8	9	12	13	15	20	30	42	55

o available on request

IMPORTANT NOTE: Kv or CV reduced is available

ACTUATOR DIAMETER ACCORDING TO REQUIRED OUTLET PRESSURE: D [mm]

Outlet Range [barg]	DN15 DN20	DN25 DN32	DN40 DN50	DN65	DN80	DN100
0.02 – 0.04	350	350	-	-	-	-
0.03 – 0.10	295	295	350	-	-	-
0.8 – 3	195	195	195	230	230	230
2 – 8	175	175	175	195	195	195
5 – 20	175	175	175	175	175	175



CAGE ANTI CAVITATION (OPTIONAL)



MAIN DESIGN STANDARDS

STANDARD	DESCRIPTION
EN 558-1	Face-to-face dimensions flanges drilled acc. to EN 1092-1
EN 1092-1, 2	Flanges and their joints
ISA 75.03	Face-to-face dimensions flanges drilled acc. to ASME B16.5 or EN 558-2
ASME B16.5	Flanges and Flanged Ratings for Class 150, 300, etc.
EN 10226-1	Requirements for BSP thread
ANSI/ASME B1.20.1	National Pipe Thread Taper
EN 12516-1	Shell design strength - Tabulation method for steel valve shells
EN 60534-2-3	Industrial control valves - Flow capacity - Test procedure
EN 12266-1	Pressure tests, test procedures and acceptance criteria

OPERATION

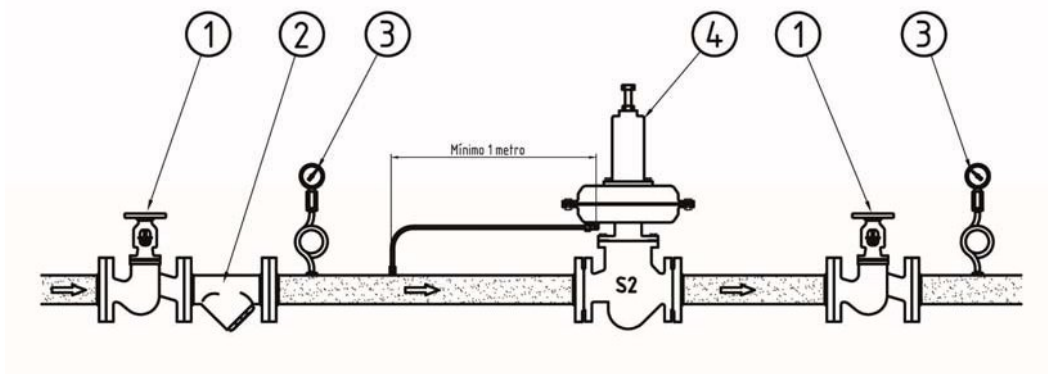
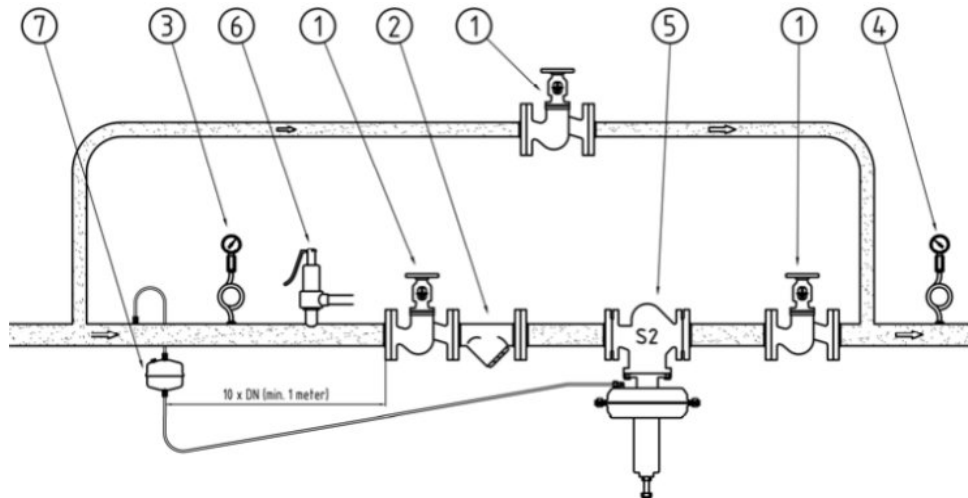
The excess pressure valves S2 model works with direct action principle.

The forces at the plug caused by the upstream and downstream pressures are eliminated by the balancing gasket. The plug is fully balanced.

When the force resulting from the upstream pressure p_1 (via external control line or internal) exceeds the spring force adjusted at the set point springs, the valve opens proportionally to the change in pressure.

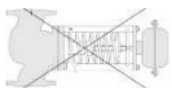
The spring force is adjustable at the set point bolt (item 14).

STANDARD INSTALLATIONS



- | | |
|----|-----------------------|
| 1. | Check Valve |
| 2. | Filter |
| 3. | Inlet pressure gauge |
| 4. | Outlet pressure gauge |
| 5. | Reducing valve M1 |
| 6. | Safety valve |
| 7. | Tank |

Don't assembly this way



Disclaimer

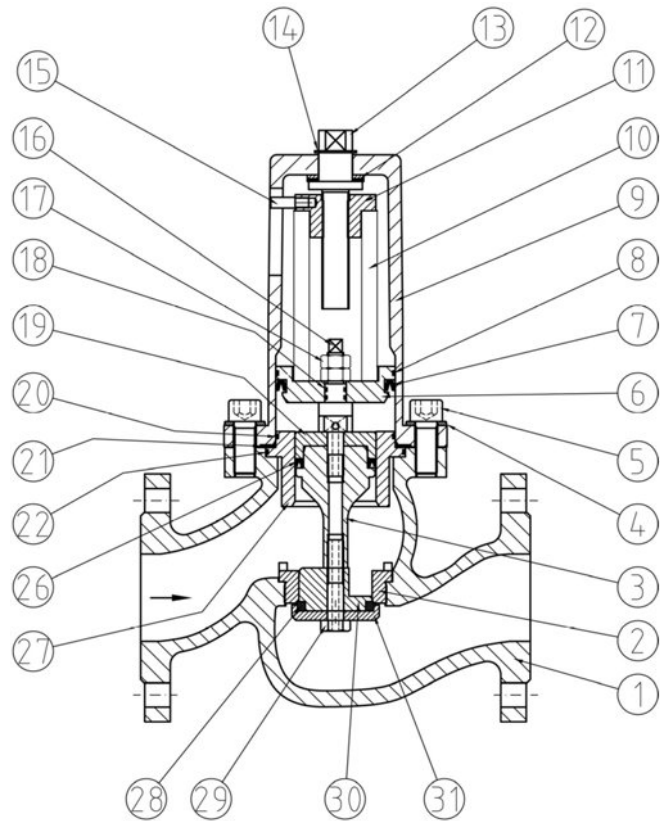
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Pressure Reducing Valve - Model VD

BASIC INFORMATION

Type	Self-operated pressure reducing valve with piston	Kv	3.5, 5, 13.5, 22, 32, 57, 82, 115 [m ³ /h]
Operation	Valve tends to maintain constant outlet pressure	Cv	4, 5.8, 10.4, 15.6, 25, 37, 66, 94.8 [gpm]
Model	VD	Temperature	-10 to 80° [°C] (200° On req.)
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)		14 to 176 [°F]
Ends	RF – RF, NPT, BSP	Inlet max. pressure	40 [barg]
Ratings	PN16, PN40 (150#, 300#)	Outlet pressure	1 - 16 [barg]
Sizes	DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100 (1/2", 3/4", 1", 1 1/2", 1 3/4", 2", 2 1/2", 3", 4")	Suitable for	Liquid, compressed air and non-hazardous gas

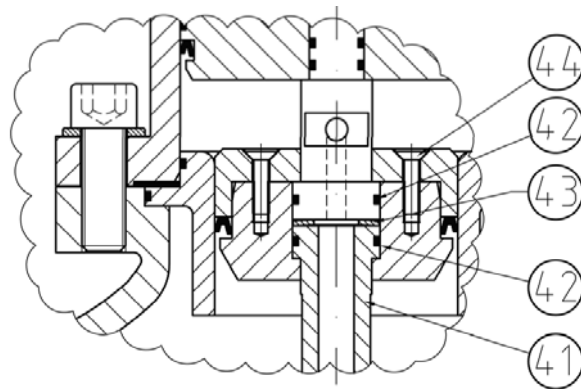
PARTS



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	Ductile iron (A536) Bronze (RG10) C. S. (A216WCC) S.S. (AISI 316)	Ductile iron (1693) Bronze (1705) C. S. (1.0619) S. S. (1.4408)
2	Seat	S.S. (AISI 304L)	S. S.(1.4307)
3	Stem	S.S. (AISI 304L)	S. S.(1.4307)
4	Washer	S.S. (AISI 304)	S.S. (1.1191)
5	Bolts	S.S. (AISI 304)	S.S. (1.1191)
6	Upper bushing	S.S. (AISI 304L)	S. S.(1.4307)
7	Gasket	NBR (D-1418)	NBR (1629)
8	O-ring	NBR (D-1418) FKM (200°C)	NBR (1629) FKM (200°C)
9	Spring cover	S. S. (A351 CF8M) S.S. (AISI 316)	S.S. (1.4408) S.S. (1.4401)
10	Spring	C.S. (AISI 1045)	C.S. (1.1191)
11	Regulation nut	C.S. (AISI 304)	C.S. (1.1191)
12	Ball bearing	Steel (A732)	Steel (1.3505)
13	Regulation stem	S.S. (AISI 304L)	S. S.(1.4307)
14	Safety reg. stem washer	S.S. (AISI 304)	S.S. (1.1191)
15	Block pin	S.S. (AISI 304)	S.S. (1.1191)
16	Bushing stem	S.S. (AISI 316L)	S.S. (1.4404)
17	Nut(s)	S.S. (AISI 304)	S.S. (1.1191)
18	O-ring	NBR (D-1418) FKM (200°C)	NBR (1629) FKM (200°C)
19	Lower bushing	S.S. (AISI 304L)	S. S.(1.4307)
20	O-ring	NBR (D-1418) FKM (200°C)	NBR (1629) FKM (200°C)
21	Flat gasket	PTFE (D-792)	PTFE (53749)
22	O-ring	NBR (D-1418) FKM (200°C)	NBR (1629) FKM (200°C)
26	Balanced gasket	NBR (D-1418) Graphite PTFE S.S. (AISI 304L)	NBR (1629) Graphite PTFE S. S.(1.4307)
27	Lower bushing guide	S.S. (AISI 304L)	S. S.(1.4307)
28	Seal	NBR (D-1418) Graphite PTFE	NBR (1629) Graphite PTFE
29	Screw	S.S. (AISI 304)	S.S. (1.1191)
30	Guide seal	S.S. (AISI 304L)	S. S.(1.4307)
31	Support seal	S.S. (AISI 304)	S.S. (1.1191)
41	Stem	S.S. (AISI 316L)	S.S. (1.4404)
42	O-ring	NBR (D-1418) FKM (200°C)	NBR (1629) FKM (200°C)
43	Washer spring	PTFE (D-792)	PTFE (53749)
44	Screw	S.S. (AISI 304)	S.S. (1.1191)

Recommended spare parts



DN 100mm scheme

STANDARD CONFIGURATIONS

DN [mm]	15	20	25	32	40	50	65	80	100
Kv [m3/h]	3.5	5	9	13.5	22	32	57	82	115

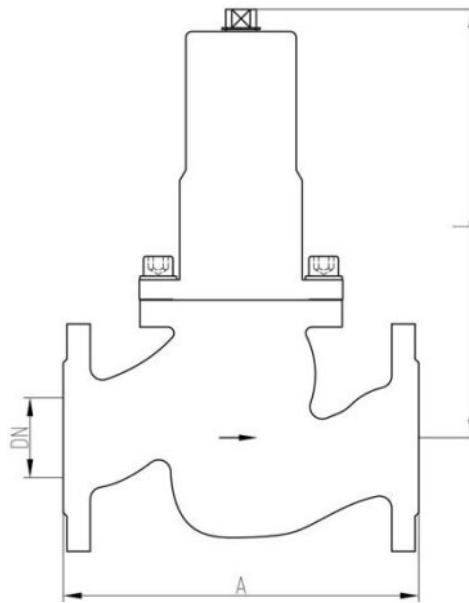
NPS [inch]	1/2"	3/4"	1"	1 1/2"	1 3/4"	2"	2 1/2"	3"	4"
Cv [gpm]	4	5.8	10.4	15.6	25	37	66	94.8	

DIN A [mm]	130	150	160	180	200	230	290	310	350
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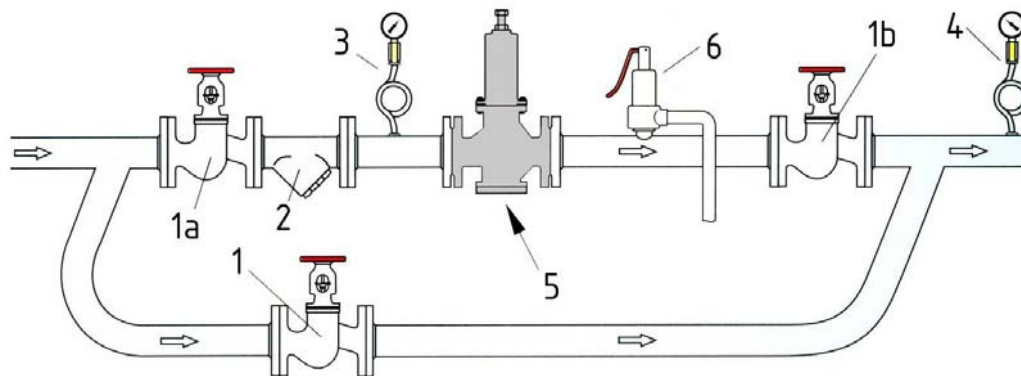
ANSI150 A [mm]	-	-	184	-	222	254	-	298.5	352.5
A [inches]	-	-	7.25"	-	8.75"	10"	-	11.75"	13.88"

ANSI300 A [mm]	-	-	197	-	235	267	-	317.5	368
A [inches]	-	-	7.76"	-	9.25"	10.51"	-	12.50"	14.49"

L [mm]	240	240	250	250	300	300	415		490
Weight [Kg]	18	20	22	25	28	32	48	52	60



STANDARD INSTALLATION



RECOMMENDED INSTALLATION

- 1. Check Valve
- 1a. Check Valve
- 1b. Check valve
- 2. Filter
- 3. Inlet pressure gauge
- 4. Outlet pressure gauge
- 5. Pressure reducing valve
- 6. Safety valve



ATEX approved

Disclaimer

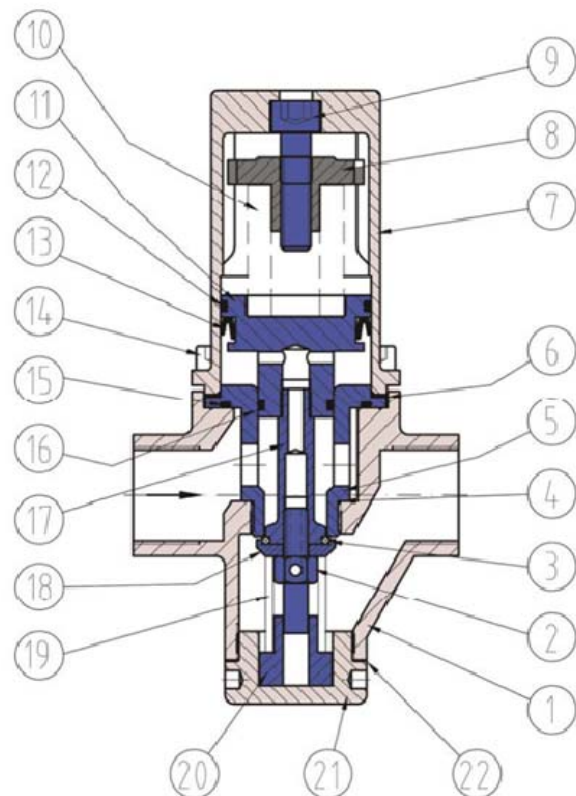
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Pressure Reducing Valve - Model PRV30

BASIC INFORMATION

Type	Self-operated pressure reducing valve with piston	Kv	2, 2.5 and 3.0 [m ³ /h]-[bar]
Operation	Valve tends to close when outlet pressure increases	Cv	2.3, 2.9 and 3.5 [gpm]-[psi]
Model	PRV30	Temperature	0 to 220° [°C] 32 to 428 [°F]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)	Inlet max. pressure	16 [barg]
Ends	RF – RF, NPT, BSP	Outlet pressure	0,2 - 9 [barg]
Ratings	PN16 (150#)	Suitable for	Liquids, compressed air, neutral gases and steam
Sizes	DN15, DN20 and DN25 (1/2", 3/4" and 1")		

PARTS



MATERIALS

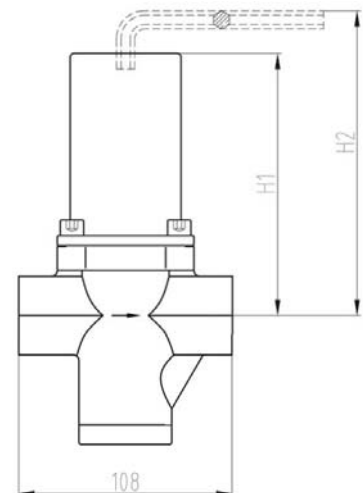
REF.	PART	MATERIAL	
		ANSI /ASTM	DIN / EN
1	Body	C. S. (A216WCC) S.S. (AISI 316)	C. S. (1.0619) S. S. (1.4408)
2	Seal screw	S.S. (AISI 316)	S. S. (1.4408)
3	Seal	NBR (D-1418)	NBR (1629)
4	Gasket	PTFE (D-792)	PTFE (53749)
5	Seat	S. S. (AISI 304)	S.S (1.4301)
6	Gasket	PTFE (D-792)	PTFE (53749)
7	Spring cover	S. S. (AISI 304)	S.S (1.4301)
8	Washer spring	C. S. (AISI 1025)	C.S (1.1158)
9	Regulation screw	S. S. (AISI 304)	S.S (1.4301)
10	Regulation spring	C.S. (52SiCrNi5)	C.S. (1.7117)
11	Piston	S. S. (AISI 304)	S.S (1.4301)
12	O-ring	NBR (D-1418)	NBR (1629)
13	Gasket	NBR (D-1418)	NBR (1629)
14	Screw (x4)	S. S. (AISI 304)	S.S (1.4301)
15	O-ring	NBR (D-1418)	NBR (1629)
16	O-ring	NBR (D-1418)	NBR (1629)
17	Stem	S. S. (AISI 304)	S.S (1.4301)
18	Guide steal	S. S. (AISI 304)	S.S (1.4301)
19	Seal spring	S.S. (AISI 302)	S.S (1.43)
20	Guide seal screw	S. S. (AISI 304)	S.S (1.4301)
21	Lower cover	S. S. (AISI 304)	S.S (1.4301)
22	Gasket	NBR (D-1418)	NBR (1629)

DIMENSIONS AND K_v

DN [mm]	15	20	25
NPS [inches]	½"	¾"	1"

K_v	2.0	2.5	3.0
C_v	2.3	2.9	3.5

A [mm]	108	108	108
H1 [mm]	135	135	135
H2 [mm] (H1 + ALLEN 8)	185	185	185
Weight [Kg.]	2,5	2,5	2,5

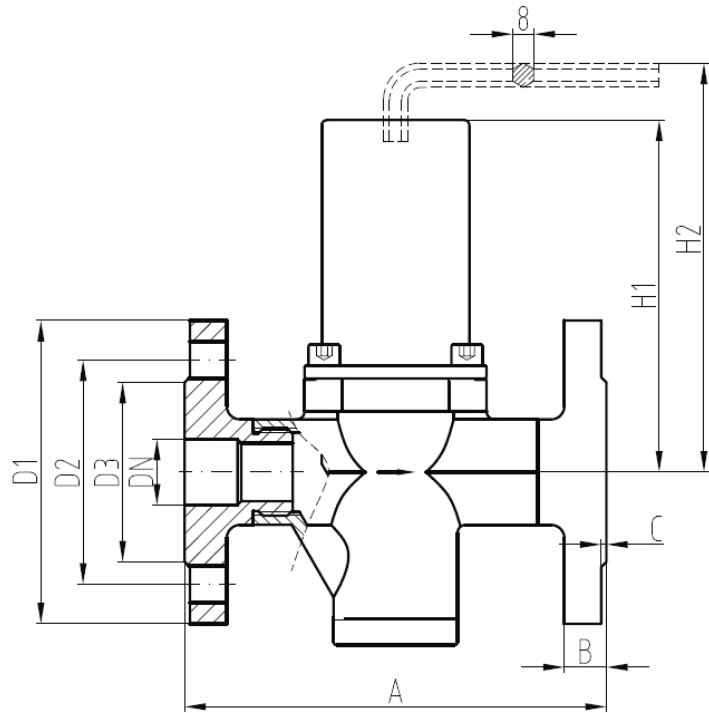


STANDARD CONFIGURATIONS

DN [mm]	15	20	25
Kv [m ³ /h]-[bar]	2,0	2,5	3,0

NPS [inch]	1/2"	3/4"	1"
Cv [gpm]-[psi]	2,5	3	3,5

A [mm] EN	140	150	160
A [mm] ANSI 150	140	150	160
H1 [mm]	135	135	135
H2 [mm]	185	185	185
D1 [mm] EN	95	105	115
D1 [mm] ANSI 150	89	98	108
D2 [mm] EN	65	75	85
D2 [mm] ANSI 150	60,5	70	79.5
D3 [mm] EN	45	58	68
D3 [mm] ANSI 150	35	43	51
B [mm] EN	16	16	16
B [mm] ANSI 150	12	12	12
C [mm]	2	2	2
N° Holes	4	4	4
Ø [mm] EN	14	14	14
Ø [mm] ANSI 150	16	16	16
Weight [Kg]	5	5	5



IMPORTANT NOTE: Kv or CV reduced is available

In red color, sizes out of standards



OPERATION

PRV concept is direct action. Inlet pressure comes into the valve and closes it **because of the sections difference**.

When we compress the spring (10) through the regulating screw (9), the stem-seal (11, 17 and 3) opens the valve and allows the regulation.

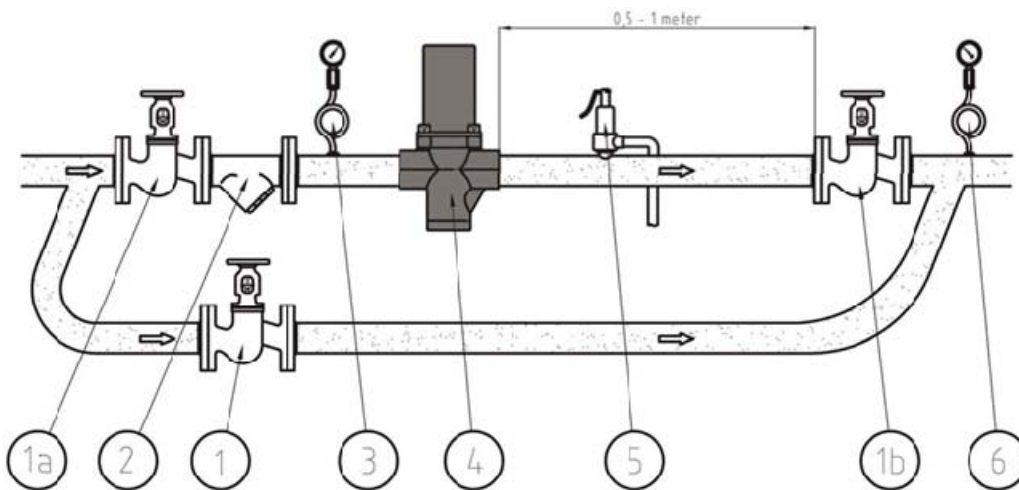
When any downstream valve is closed and flow=0, PRV will absorb the oscillations and keep the outlet pressure according to the regulation.

The valve closes when the downstream pressure exceeds the regulating set pressure.

It is recommended to leave a space (between 0,5 and 1 meter) until the c heck valve, for a better compensation.

To increase outlet pressure, the regulating screw (9) should be turned anticlockwise.

STANDARD INSTALLATIONS



- 1. Check Valve
- 1a. Check Valve
- 1b. Check Valve
- 2. Filter
- 3. Inlet pressure Manometer
- 4. Pressure reducing valve PRV
- 5. Safety valve
- 6. Outlet pressure Manometer



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Disclaimer

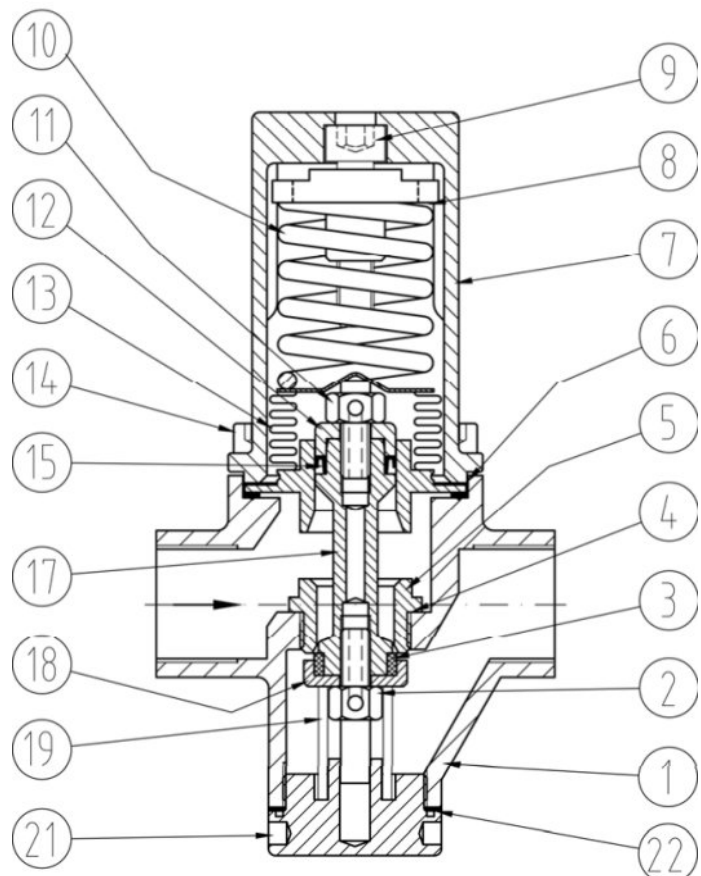
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Pressure Reducing Valve - Model PRV44

BASIC INFORMATION

Type	Self-operated pressure reducing valve with bellows	Kv	2, 2.5 and 3.0 [m ³ /h]-[bar]
Operation	Valve tends to close when outlet pressure increases	Cv	2.3, 2.9 and 3.5 [gpm]-[psi]
Model	PRV44	Temperature	-10 to 210° [°C] 14 to 410 [°F]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)	Inlet max. pressure	16 [barg]
Ends	RF – RF, NPT, BSP	Outlet pressure	0,2 - 8 [barg]
Ratings	PN16 (150#)	Suitable for	Steam, compressed air, water and neutral gases
Sizes	DN15, DN20 and DN25 (1/2", 3/4" and 1")		

PARTS



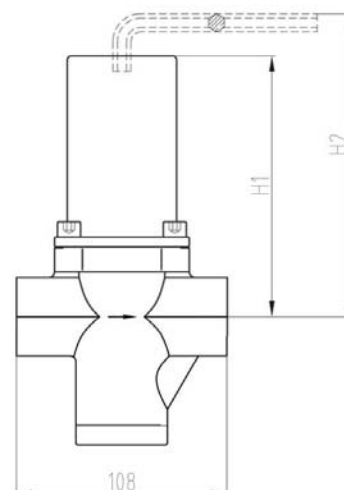
MATERIALS

REF.	PART	MATERIAL	
		ANSI /ASTM	DIN / EN
1	Body	S.S. (AISI 316)	S. S. (1.4408)
2	Seal screw	S.S. (AISI 316)	S. S. (1.4408)
3	Seal	Graphite PTFE	Graphite PTFE
4	Gasket	PTFE (D-792)	PTFE (53749)
5	Seat	S.S. (AISI 316L)	S.S. (1.4404)
6	Gasket (x2)	PTFE (D-792)	PTFE (53749)
7	Spring cover	S.S. (AISI 316L)	S.S. (1.4404)
8	Washer spring	C. S. (AISI 1025)	C.S (1.1158)
9	Regulation screw	S. S. (AISI 304)	S.S (1.4301)
10	Regulation spring	C.S. (52SiCrNi5)	C.S. (1.7117)
11	Bellow screw	S.S. (AISI 316L)	S.S. (1.4404)
12	Gasket cover	S.S. (AISI 316L)	S.S. (1.4404)
13	Bellow kit	S.S. (AISI 316L)	S.S. (1.4404)
14	Allen screw	S. S. (AISI 304)	S.S (1.4301)
15	Gasket	Graphite PTFE	Graphite PTFE
17	Stem	S.S. (AISI 316L)	S.S. (1.4404)
18	Guide steal	S.S. (AISI 316L)	S.S. (1.4404)
19	Seal spring	S.S. (AISI 302)	S.S (1.43)
21	Lower cover	S.S. (AISI 316L)	S.S. (1.4404)
22	Gasket	FKM (D 1418)	FPM (1629)

DIMENSIONS AND K_v

DN [mm]	15	20	25
NPS [inches]	½"	¾"	1"

K_v	2.0	2.5	3.0
C_v	2.3	2.9	3.5
A [mm]	108	108	108
H1 [mm]	135	135	135
H2 [mm] (H1 + ALLEN 8)	185	185	185
Weight [Kg.]	2.5	2.5	2.5

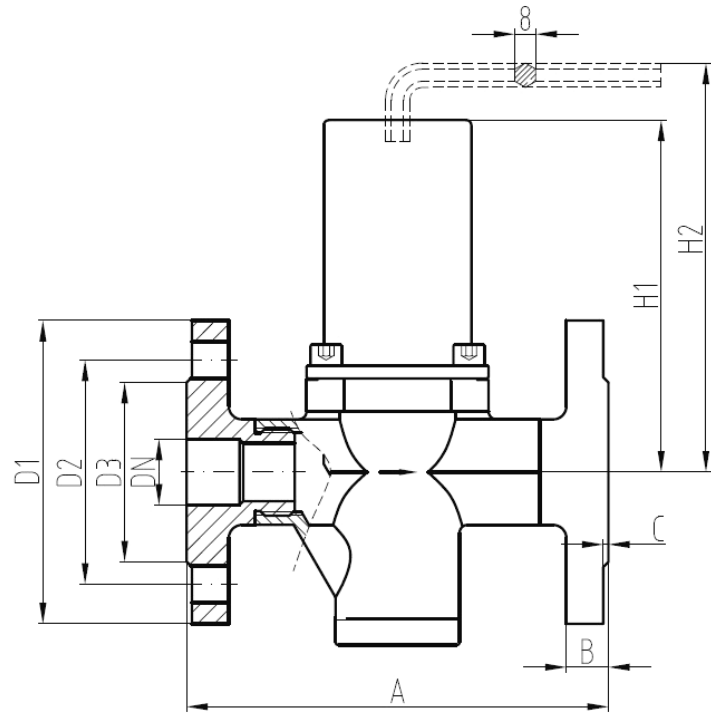


STANDARD CONFIGURATIONS

DN [mm]	15	20	25
Kv [m ³ /h]-[bar]	2,0	2,5	3,0

NPS [inch]	1/2"	3/4"	1"
Cv [gpm]-[psi]	2,5	3	3,5

A [mm] EN	140	150	160
A [mm] ANSI 150	140	150	160
H1 [mm]	135	135	135
H2 [mm]	185	185	185
D1 [mm] EN	95	105	115
D1 [mm] ANSI 150	89	98	108
D2 [mm] EN	65	75	85
D2 [mm] ANSI 150	60,5	70	79.5
D3 [mm] EN	45	58	68
D3 [mm] ANSI 150	35	43	51
B [mm] EN	16	16	16
B [mm] ANSI 150	12	12	12
C [mm]	2	2	2
N° Holes	4	4	4
Ø [mm] EN	14	14	14
Ø [mm] ANSI 150	16	16	16
Weight [Kg]	5	5	5



IMPORTANT NOTE: Kv or CV reduced is available

In red color, sizes out of standards



OPERATION

PRV concept is direct action. Inlet pressure comes into the valve and closes it **because of the sections difference**.

When we compress the spring (10) through the regulating screw (9), the stem-seal (11, 17 and 3) opens the valve and allows the regulation.

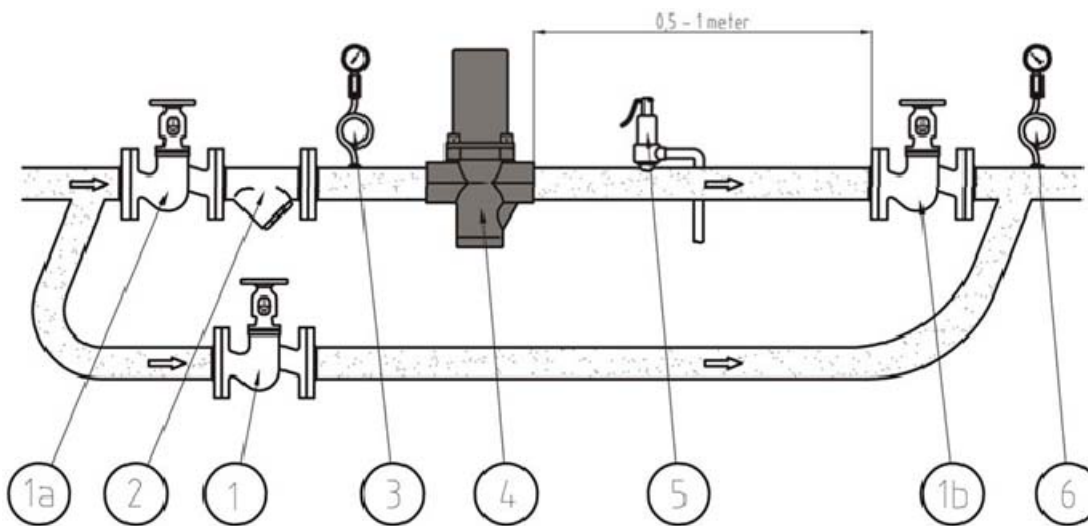
When any downstream valve is closed and flow=0, PRV will absorb the oscillations and keep the outlet pressure according to the regulation.

The valve closes when the downstream pressure exceeds the regulating set pressure.

It is recommended to leave a space (between 0,5 and 1 meter) until the c heck valve, for a better compensation.

To increase outlet pressure, the regulating screw (9) should be turned anticlockwise.

STANDARD INSTALLATIONS



- 1. Check Valve
- 1a. Check Valve
- 1b. Check Valve
- 2. Filter
- 3. Inlet pressure Manometer
- 4. Pressure reducing valve PRV
- 5. Safety valve
- 6. Outlet pressure Manometer



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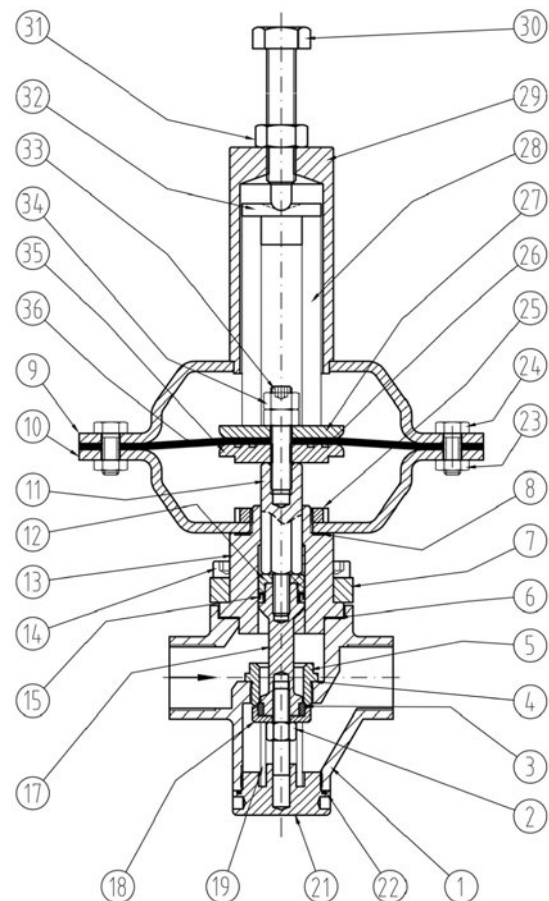
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Pressure Reducing Valve - Model PRV45

BASIC INFORMATION

Type	Self-operated pressure reducing valve with diaphragm	Kv	2, 2.5 and 3.0 [m ³ /h]-[bar]
Operation	Valve tends to close when outlet pressure increases	Cv	2.3, 2.9 and 3.5 [gpm]-[psi]
Model	PRV45	Temperature	-10 to 180° [°C] 14 to 356 [°F]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)	Inlet max. pressure	16 [barg]
Ends	RF – RF, NPT, BSP	Outlet pressure	0,01 - 8 [barg]
Ratings	PN16 (150#)	Suitable for	Steam, compressed air, water and neutral gases
Sizes	DN15, DN20 and DN25 (1/2", 3/4" and 1")		

PARTS



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S.S. (AISI 316) C.S. (A216WCB)	S. S. (1.4408) C.S. (1.0446)
2	Seal screw	S.S. (AISI 316L)	S.S. (1.4404)
3	Seal	Graphite PTFE	Graphite PTFE
4	Gasket	PTFE (D-792)	PTFE (53749)
5	Seat	S.S. (AISI 304L)	S. S.(1.4307)
6	Gasket	Graphite PTFE	Graphite PTFE
7	Valve cover		
8	Gasket	PTFE (D-792)	PTFE (53749)
9	Upper actuator		
10	Lower actuator		
11	Stem	S.S. (AISI 316L)	S.S. (1.4404)
12	Bushing guide	S.S. (AISI 304L)	S. S.(1.4307)
13	Guide stem	S.S. (AISI 304L)	S. S.(1.4307)
14	Allen screw	S. S. (AISI 304)	S.S (1.4301)
15	Gasket	Graphite PTFE	Graphite PTFE
17	Stem	S.S. (AISI 304L)	S. S.(1.4307)
18	Guide seal	S.S. (AISI 304L)	S. S.(1.4307)
19	Seal spring	S. S. (AISI 304)	S.S (1.4301)
21	Lower cover	S.S. (AISI 304L)	S. S.(1.4307)
22	Gasket	PTFE (D-792)	PTFE (53749)
23	Nut	S. S. (AISI 304)	S.S (1.4301)
24	M8 Screw	S. S. (AISI 304)	S.S (1.4301)
25	Nut KM-6	C.S. (AISI 1045)	C.S. (1.1191)
26	O-ring	PTFE (D-792) NBR (D-1418)	PTFE (53749) NBR (1629)
27	Support spring	C.S. (A1011)	C.S. (1.0335)
28	Regulation spring	C.S. (52SiCrNi5)	C.S. (1.7117)
29	Spring cover	C.S. (AISI 1045)	C.S. (1.1191)
30	Regulation screw	S.S. (AISI 304L)	S. S.(1.4307)
31	Regulation nut	S.S. (AISI 304L)	S. S.(1.4307)
32	Spring guide	C.S. (AISI 1045)	C.S. (1.1191)
33	Screw	S. S. (AISI 304)	S.S (1.4301)
34	Nut	S. S. (AISI 304)	S.S (1.4301)
35	Lower support dia.	S. S. (AISI 304)	S.S (1.4301)
36	Diaphragm	EPDM (D-1418) EPDM + PTFE (D-1418 + D-792)	EPDM ((1629) EPDM + PTFE (1620 + 53749)

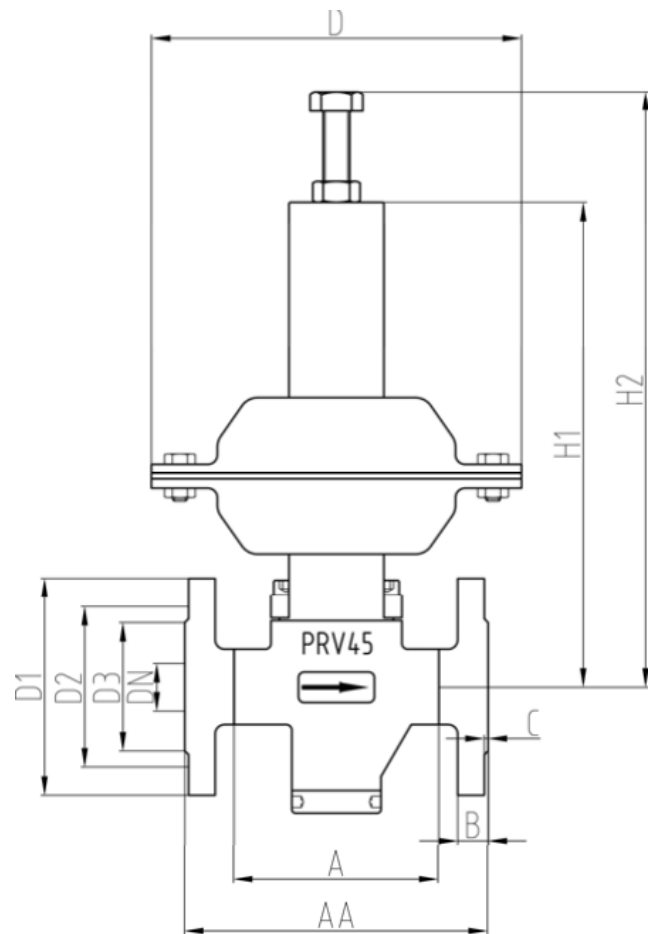
Recommended spare parts

STANDARD CONFIGURATIONS

DN [mm]	15	20	25
Kv [m3/h]-[bar]	2,0	2,5	3,5

NPS [inch]	1/2"	3/4"	1"
Cv [gpm]-[psi]	2,5	3	3,5

AA [mm] EN	140	150	160
AA [mm] ANSI 150	140	150	160
H1 [mm]	135	135	135
H2 [mm]	185	185	185
D1 [mm] EN	95	105	115
D1 [mm] ANSI 150	89	98	108
D2 [mm] EN	65	75	85
D2 [mm] ANSI 150	60,5	70	79.5
D3 [mm] EN	45	58	68
D3 [mm] ANSI 150	35	43	51
B [mm] EN	16	16	16
B [mm] ANSI 150	12	12	12
C [mm]	2	2	2
N° Holes	4	4	4
Ø [mm] EN	14	14	14
Ø [mm] ANSI 150	16	16	16
Weight [Kg]	8	8	8



IMPORTANT NOTE: Kv or CV reduced is available

In red color, sizes out of standards

THREADED BSP OR NPT (FEMALE)

DN [mm]	15	20	25
Kv [m3/h]-[bar]	2,0	2,5	3,5
Cv [gpm]-[psi]	2,5	3	3,5
A [mm]	108	108	108
Weight [Kg]	5	5	5

PRESSURE RANGE AND ACTUATOR SIZE

D [mm]	295	230	195	175
Pressure range [bar]	0,01 – 0,2	0, - 1	0,5 - 2	1 - 8
Section [cm²]	420	240	120	80

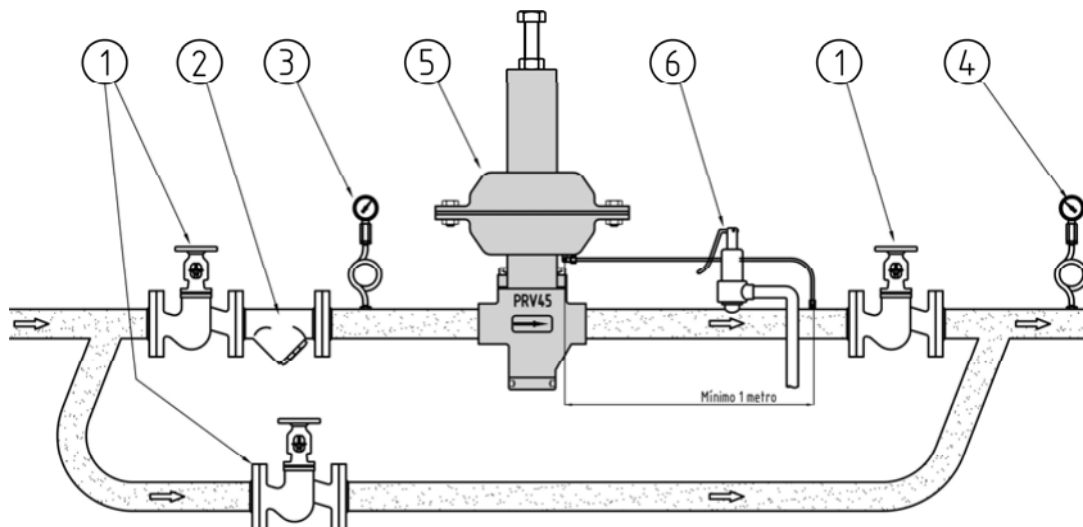
OPERATION

PRV45 valve should be installed in horizontal pipe and respecting the fluid flow direction must match the arrow on the valve body.

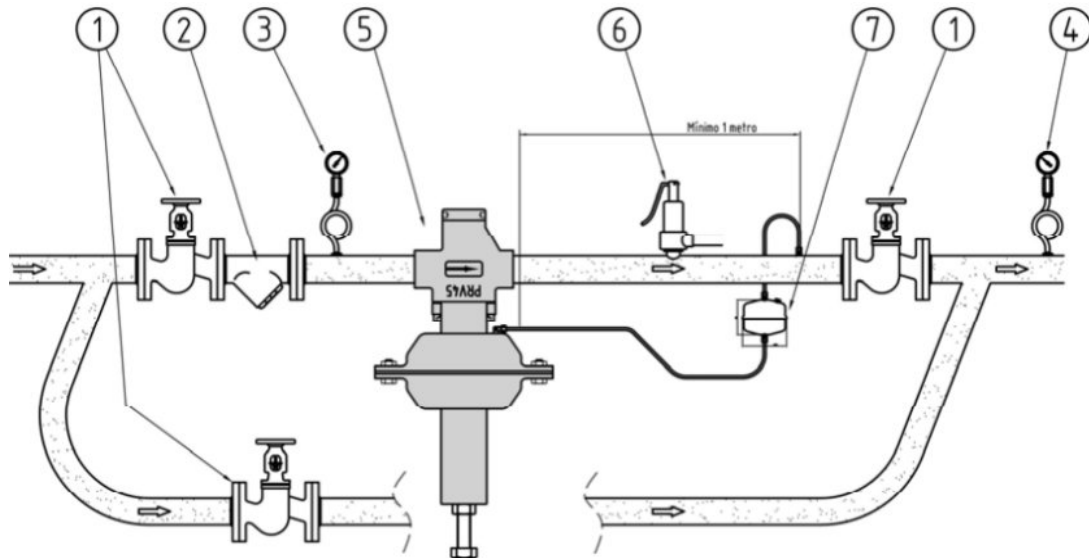
Steam installations, the actuator must be installed in low position. Condensate tank is essential when temperatures above 120°C to protect the diaphragm from overheating. The tank is always placed in the highest point of the pipe.

The strainer (item 2) must be installed upstream of the regulator to protect seal and diaphragm and avoid excessive maintenance. Remember to leave enough space to remove and clean it.

STANDARD INSTALLATIONS



TYPICAL INSTALLATION FOR LIQUIDS AND NEUTRAL GASES



TYPICAL INSTALLATION FOR STEAM (WITH CONDENSATING POT)

- 1. Check Valve
- 1a. Check Valve
- 1b. Check Valve
- 2. Filter
- 3. Inlet pressure gauge
- 4. Pressure reducing valve PRV
- 5. Safety valve
- 6. Outlet pressure gauge



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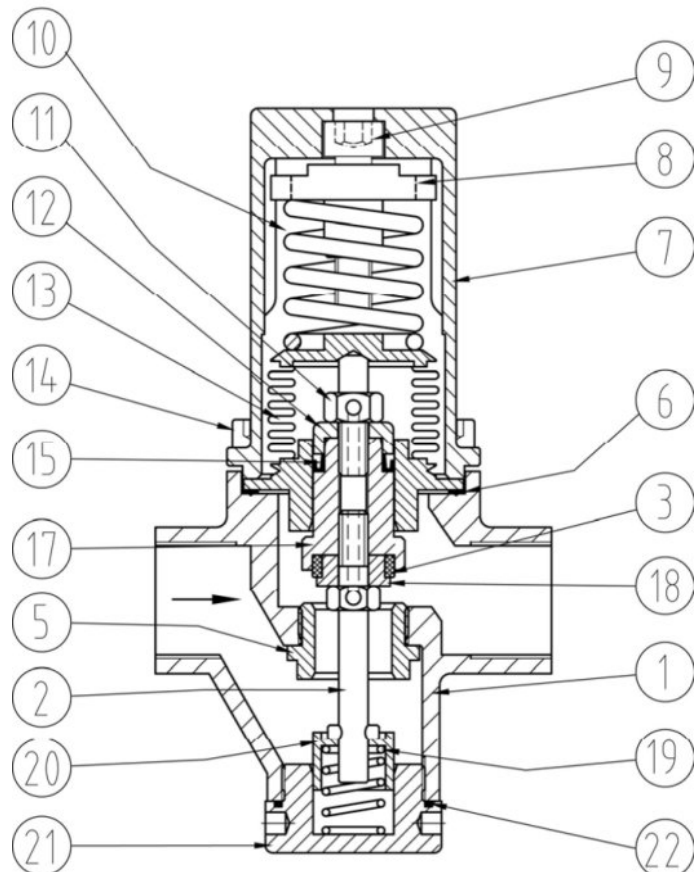
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Pressure Reducing Valve - Model PRV54

BASIC INFORMATION

Type	Self-operated pressure reducing valve with piston	Kv	2, 2.5 and 3.0 [m ³ /h]-[bar]
Operation	Valve tends to close when outlet pressure increases	Cv	2.3, 2.9 and 3.5 [gpm]-[psi]
Model	PRV45	Temperature	-10 to 180° [°C] 14 to 356 [°F]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)	Inlet max. pressure	16 [barg]
Ends	RF – RF, NPT, BSP	Outlet pressure	0,2- 8 [barg]
Ratings	PN16 (150#)	Suitable for	Steam, compressed air, water and neutral gases
Sizes	DN15, DN20 and DN25 (1/2", 3/4" and 1")		

PARTS



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S.S. (AISI 316L)	S. S. (1.4404)
2	Seal screw	S. S. (AISI 304)	S.S (1.4301)
3	Seal	Graphite PTFE	Graphite PTFE
4	Gasket	PTFE (D-792)	PTFE (53749)
5	Seat	S.S. (AISI 304L)	S. S.(1.4307)
6	Gasket	Graphite PTFE	Graphite PTFE
7	Spring cover	S.S. (AISI 316L)	S. S. (1.4404)
8	Washer spring	S.S. (AISI 1025)	S.S. (1.1158)
9	Regulation screw	S. S. (AISI 304)	S.S (1.4301)
10	Regulation spring	C.S. (52SiCrNi5)	C.S. (1.7117)
11	Bellow screw	S.S. (AISI 316L)	S.S. (1.4404)
12	Gasket cover	S.S. (AISI 316L)	S.S. (1.4404)
13	Bellow kit	S.S. (AISI 316L)	S.S. (1.4404)
14	Allen screw	S. S. (AISI 304)	S.S (1.4301)
15	Gasket	Graphite PTFE	Graphite PTFE
17	Stem	S.S. (AISI 316L)	S.S. (1.4404)
18	Guide seal	S.S. (AISI 316L)	S.S. (1.4404)
19	Seal spring	S.S. (AISI 302)	S.S (1.43)
20	Spring guide	S.S. (AISI 316L)	S.S. (1.4404)
21	Lower cover	S.S. (AISI 304L)	S. S.(1.4307)
22	Gasket	PTFE (D-792) NBR (D-1418)	PTFE (53749) NBR (1629)

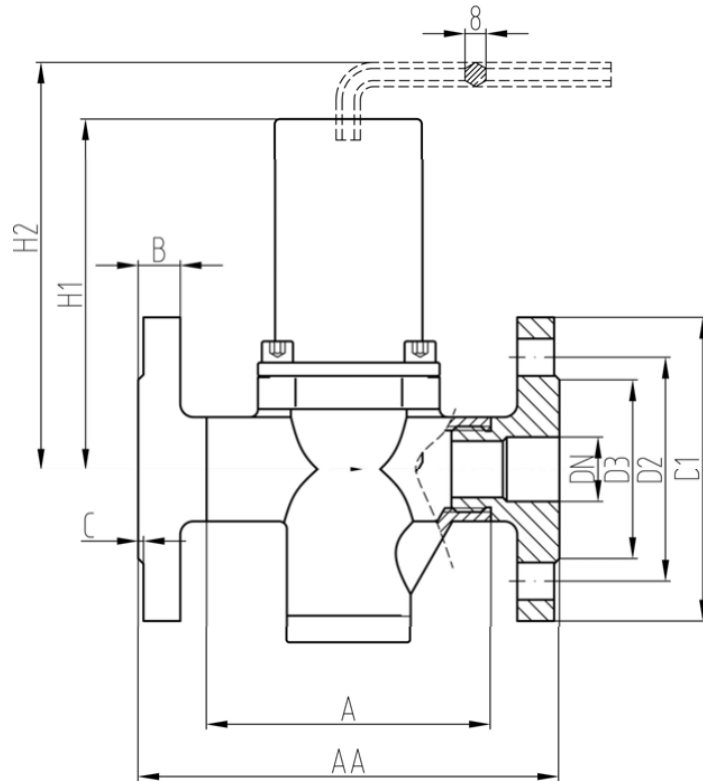
Special gasket for special fluid on demand

STANDARD CONFIGURATIONS

DN [mm]	15	20	25
Kv [m3/h]-[bar]	2.0	2.5	3.5

NPS [inch]	1/2"	3/4"	1"
Cv [gpm]-[psi]	2.5	3	3.5

AA [mm] EN	140	150	160
AA [mm] ANSI 150	140	150	160
H1 [mm]	135	135	135
H2 [mm]	185	185	185
D1 [mm] EN	95	105	115
D1 [mm] ANSI 150	89	98	108
D2 [mm] EN	65	75	85
D2 [mm] ANSI 150	60.5	70	79.5
D3 [mm] EN	45	58	68
D3 [mm] ANSI 150	35	43	51
B [mm] EN	16	16	16
B [mm] ANSI 150	12	12	12
C [mm]	2	2	2
N° Holes	4	4	4
Ø [mm] EN	14	14	14
Ø [mm] ANSI 150	16	16	16
Weight [Kg] EN	2.5	2.5	2.5
Weight [Kg] ANSI150	5	5	5

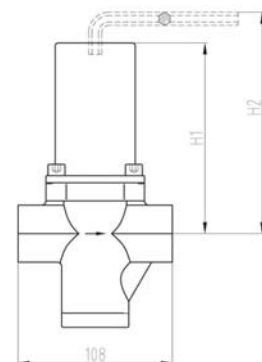


IMPORTANT NOTE: Kv or CV reduced is available

In red color, sizes out of standards

THREADED BSP OR NPT (FEMALE)

DN [mm]	15	20	25
Kv [m3/h]-[bar]	2,0	2,5	3,5
Cv [gpm]-[psi]	2,5	3	3,5
A [mm]	108	108	108
Weight [Kg]	2,5	2,5	2,5



Disclaimer

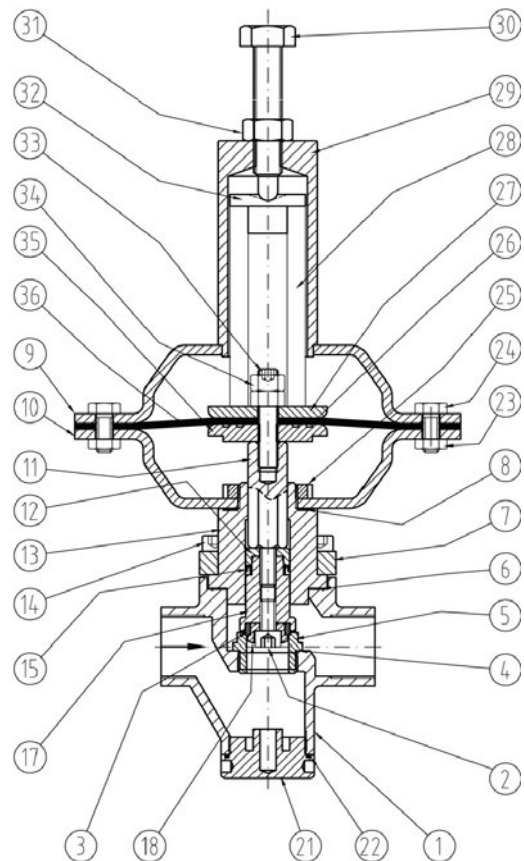
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Pressure Reducing Valve - Model PRV55

BASIC INFORMATION

Type	Self-operated pressure reducing valve with diaphragm	Kv	2, 2.5 and 3.0 [m ³ /h]-[bar]
Operation	Valve tends to close when outlet pressure increases	Cv	2.3, 2.9 and 3.5 [gpm]-[psi]
Model	PRV55	Temperature	-10 to 180° [°C] 14 to 356 [°F]
Connections	Flanged (DIN - ANSI) or Threaded (BSP - NPT)	Inlet max. pressure	16 [barg]
Ends	RF – RF, NPT, BSP	Outlet pressure	0,01- 8 [barg]
Ratings	PN16 (150#)	Suitable for	Steam, compressed air, water and neutral gases
Sizes	DN15, DN20 and DN25 (1/2", 3/4" and 1")		

PARTS



MATERIALS

REF.	PART	MATERIAL	
		ANSI / ASTM	DIN / EN
1	Body	S.S. (AISI 316L)	S. S. (1.4404)
2	Seal screw	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
3	Seal	Graphite PTFE	Graphite PTFE
4	Gasket	PTFE (D-792)	PTFE (53749)
5	Seat	S.S. (AISI 316L)	S. S. (1.4404)
6	Gasket	PTFE	PTFE
7	Valve cover	S.S. (AISI 1015)	S. S. (1.1141)
8	Gasket	PTFE (D-792)	PTFE (53749)
9	Upper actuator	C.S. ((A1011) painted in epoxy))	C.S. ((1.0335) painted in epoxy))
10	Lower actuator	C.S. ((A1011) painted in epoxy))	C.S. ((1.0335) painted in epoxy))
11	Stem	S.S. (AISI 316L)	S.S. (1.4404)
12	Bushing guide	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
13	Guide stem	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
14	Allen screw	S. S. (AISI 304)	S.S (1.4301)
15	Gasket	Graphite PTFE	Graphite PTFE
17	Stem and guide seal	S.S. (AISI 316L)	S.S. (1.4404)
18	Seal washer	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
21	Lower cover	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
22	Gasket	FKM (D 1418)	FKM (1629)
23	Nut	S. S. (AISI 304)	S.S (1.4301)
24	M8 screw	S. S. (AISI 304)	S.S (1.4301)
25	Nut KM-6	S. S. (AISI 304)	S.S (1.4301)
26	O-ring	NBR (D-1418) FKM (D 1418)	NBR (1629) FKM (1629)
27	Support spring	C.S. ((A1011) painted in epoxy))	C.S. ((1.0335) painted in epoxy))
28	Regulation spring	C.S. (52SiCrNi5)	C.S. (1.7117)
29	Spring cover	(S.S. (AISI 304) epoxy painted)	(S.S. (1.1191) epoxy painted)
30	Regulation screw	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
31	Regulation nut	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
32	Spring guide	S.S. (AISI 304)	S.S. (1.1191)
33	Screw	S. S. (AISI 304)	S.S (1.4301)
34	Nut	S. S. (AISI 304)	S.S (1.4301)
35	Lower support dia.	S.S. (AISI 304L) S.S. (AISI 316L)	S. S.(1.4307) S. S. (1.4404)
36	Diaphragm	EPDM (D-1418) EPDM + PTFE (D-1418 + D-792)	EPDM ((1629) EPDM + PTFE (1620 + 53749)

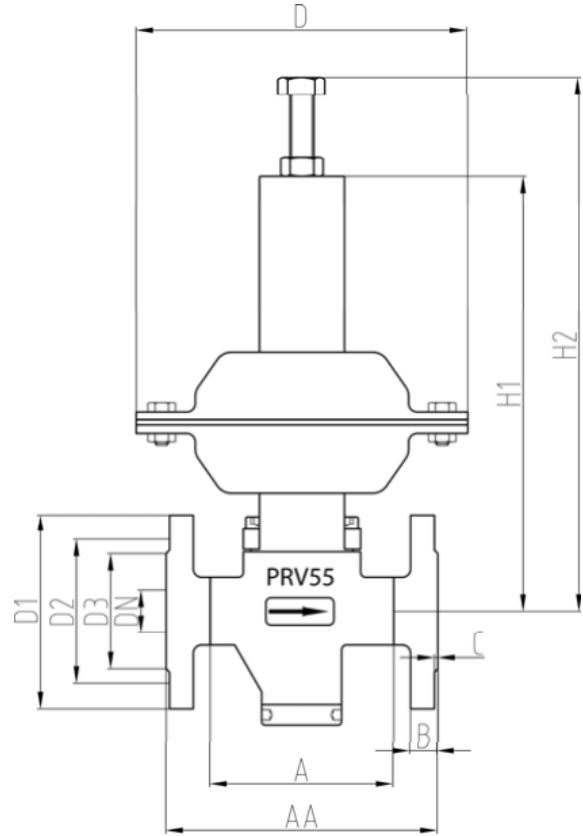
Recommended spare parts

STANDARD CONFIGURATIONS

DN [mm]	15	20	25
Kv [m3/h]-[bar]	2.0	2.5	3.0

NPS [inch]	1/2"	3/4"	1"
Cv [gpm]-[psi]	2.5	3	3.5

AA [mm] EN	140	150	160
AA [mm] ANSI 150	140	150	160
H1 [mm]	258	258	258
H2 [mm]	320	320	320
D1 [mm] EN	95	105	115
D1 [mm] ANSI 150	89	98	108
D2 [mm] EN	65	75	85
D2 [mm] ANSI 150	60.5	70	79.5
D3 [mm] EN	45	58	68
D3 [mm] ANSI 150	35	43	51
B [mm] EN	16	16	16
B [mm] ANSI 150	12	12	12
C [mm]	2	2	2
N° Holes	4	4	4
Ø [mm] EN	14	14	14
Ø [mm] ANSI 150	16	16	16
Weight [Kg] EN	2.5	2.5	2.5
Weight [Kg] ANSI150	5	5	5



IMPORTANT NOTE: Kv or CV reduced is available

In red color, sizes out of standards

THREADED BSP OR NPT (FEMALE)

DN [mm]	15	20	25
[m3/h]-[bar]	2.0	2.5	3.0
Cv [gpm]-[psi]	2.5	3.0	3.5
A [mm]	108	108	108
Weight [Kg]	2,5	2,5	2,5

OPERATION

PRV55 valve should be installed in horizontal pipe and respecting the fluid flow direction must match the arrow on the valve body.

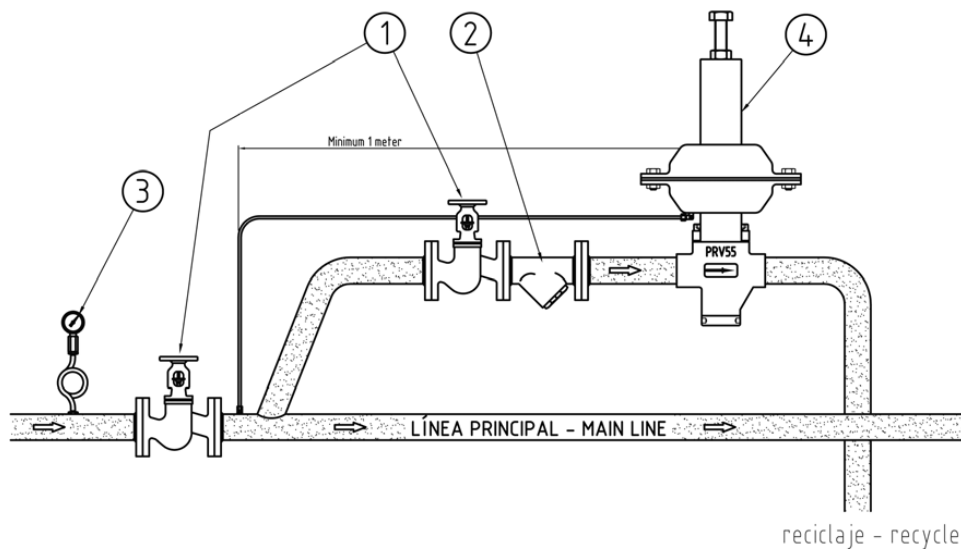
Steam installations, the actuator must be installed in low position. Condensating tank is essential when temperatures above 120°C to protect the diaphragm from overheating. The tank is always placed in the highest point of the pipe.

The strainer (item 2) must be installed upstream of the regulator to protect seal and diaphragm and avoid excessive maintenance. Remember to leave enough space to remove and clean it.

The distance between connection control line and valve would be, at least, 6xDN.

External control line it's necessary for liquids with temperatures above 125°C and steam, and recommended for liquids below 125°C. For gases isn't necessary because valve mounts the internal control line.

STANDARD INSTALLATIONS



TYPICAL INSTALLATION FOR LIQUIDS AND NEUTRAL GASES

1. Check Valve
- 1a. Check Valve
- 1b. Check Valve
2. Filter
3. Inlet pressure gauge
4. Pressure reducing valve PRV
5. Safety valve
6. Outlet pressure gauge



ATEX approved

Disclaimer

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BALANCED FLOAT VALVE – MODEL VFGJS

Balanced float valve are designed for their application in tanks with the function of automatic control of water levels

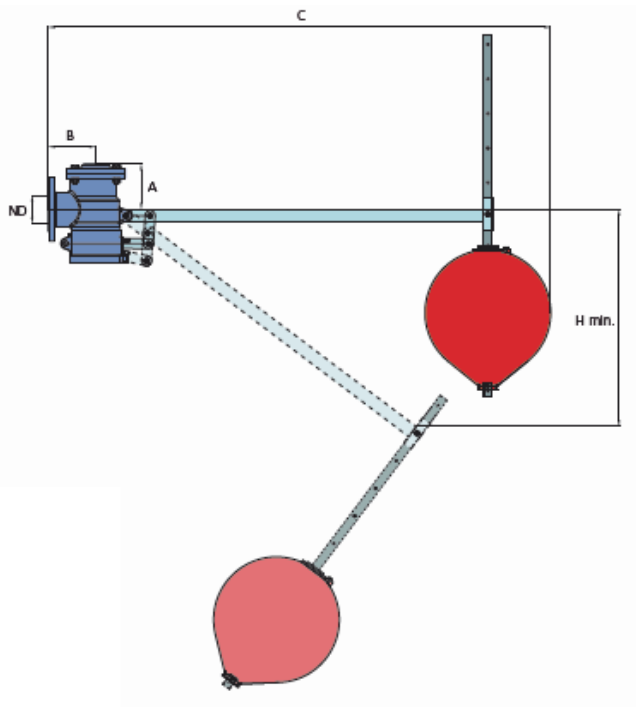
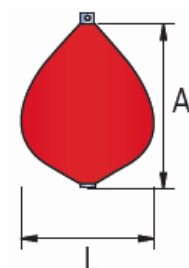


RANGE: from ND 50 to ND 250.
WORKING PRESSURE: 16 BAR.
FLANGES: DIN NP10 / 16.
COATING: EPOXY 200µmm

FEATURES

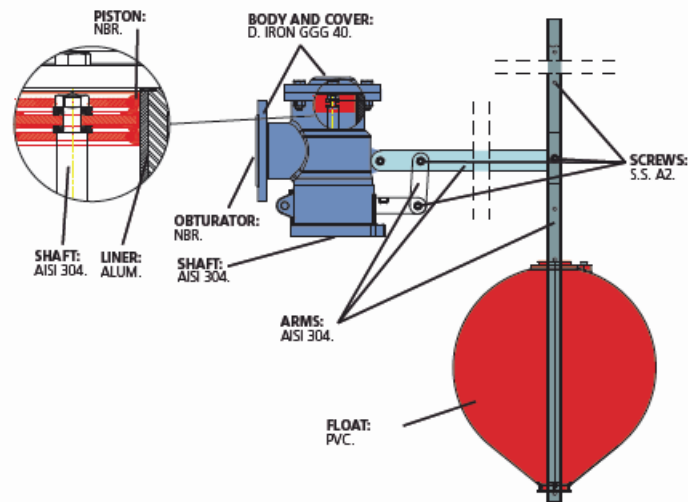
ND	B	C	A	Hmin	Kgs
50	136	1345	120	600	15
65	136	1345	120	600	16
80	150	1570	150	750	24
100	150	1570	150	750	24
125	184	2130	190	900	45
150	184	2130	190	900	46
200	273	2610	240	1000	105
250	273	2610	240	1000	110

ND	L	A
50	400	450
65	400	450
80	400	450
100	400	450
125	500	550
150	500	550
200	500	550
250	500	550



MATERIALS

PARTS	MATERIALS
Body and cover	Nodular Iron GGG 40.
Obturator	NBR
Shaft	SS.ST AISI 304
Liner	SS.ST AIXI 304
Float	PVC
Screws	SS.ST. A2
Piston	NBR
Liner	ALUMINIUM
Arms	AISI 304



GENERAL CHARACTERISTICS:

- PVC float guarantees a long life.
- The piston sealing system balance perfectly the pressure effect on the obturator ensuring an effective closure.
- Their dimensions allow optimizing the tank capacity.
- The valve control arms are made in stainless steel to avoid any corrosion.
- The arm and the float are provided disassembled. It is necessary to assemble them before mounting.
- Epoxy painted 200 µm RAL 5017.
- Float inflation pressure: 0,15 bar.
- Low head loss.
- Easy installation.
- Maintenance free.
- Long life and trouble free operation.
- Working temperature: between 0°C and 80°C

OPERATION

The automatic float valves VFGJS has the mission of regulating the water level of a tank or pond such that water intake is reduced gradually as the tank fills up till the inlet is completely closed when it reaches the desired level. Likewise, when the water level due to consumption low, allow the fluid inlet again.

CAPACITY (l/s)								
PRESSURE	SIZE							
	ND-50	ND-65	ND-80	ND-100	ND-125	ND-150	ND-200	ND-250
≤ 1 BAR	3,5	4	8	12	20	27	50	72
≤ 1 BAR	6	7	14	20	33	45	80	120

INSTALATION:

- Place float valve in the upper part of the tank.
- A good fixing, typically requires the placement of a bulkhead, of the same diameter as the valve, inserted in the vessel Wall.
- Ensure, piping is free of rocks, sand, dirt etc.. To do so, if necessary, install a filter for cleaning such a particles or dirt.
- For easier maintenance work is recommended to install an isolation valve.
- The valve is provided, for ease of transport and assembly, in three parts. Valve, float arm and float assembly. Assembles shown in fig. of this data sheet or service manual

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FLOAT VALVE – MODEL FV / FFV

MODEL FV

THREADED (BSP / NPT)



MODEL FFV

FLANGED (EN / ASA)



FEATURES

The valve and the buoy are designed and constructed in stainless steel. Balancing valve, "click" and soft seat to ensure perfect tightness seal, Full bore valve. Valve available with thread or flanged ends.

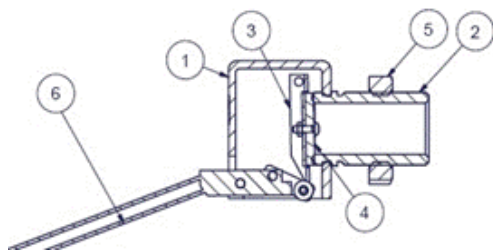
- Easy to assembly
- Maintenance free
- Design for effective fluid circulation
- Polished treated surface
- Full bore

DESCRIPTION / WORKING CONDITIONS

Type	Float valve
Connections	Thread BSP / NPT 3/8" up to 3"
	Flanges DIN/EN DN-80 and DN-100 - ASA B16.5 NPS 3" and 4"
Material	Stainless steel
Seal	Silicone / PTFE / fluorelastomer

Nominal pressure	10 bar
Temperature range	150°C
Max. working pressure	10 bar
Usual applications	Cooling tower Feeding tanks Pasteurizations

CONSTRUCTIONS AND MATERIALS



Ítem	Descripción	Material
1	Body	AISI-316
2	Sleeve	AISI-316
3	Handle	AISI-316
4	Seal	SILICONE/PTFE/Fluoroelastomer
5	Nut	AISI-316
6	Stem	AISI-316

FLANGE DIMENSIONS

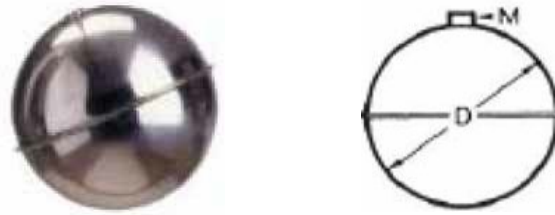
ND	D	K	d	n	b
80	200	160	18	8	20
100	200	180	18	8	20

- ASA Flanges dimensions please request



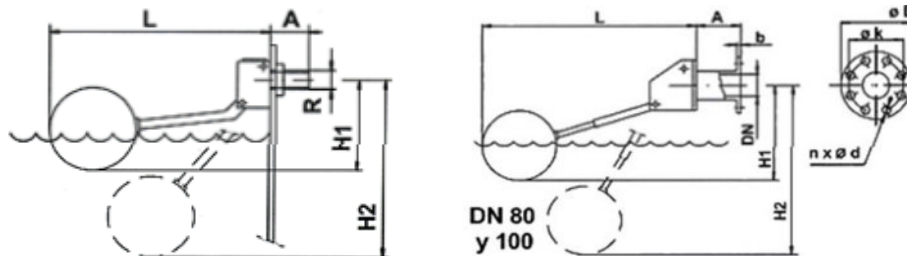
BUOYS

ND	METRIC
110	M-6
160	M-8 / M-10
200	M-10
300	M-12
400	M-12
70X160	M-8
200X80	M-8



DIMENSIONS

ND/NPS	A (mm)	L (mm)	H1 (mm)	H2 (mm)	Valve Mass(Kg)	Ø Esferic Buoy	Buoy Mass (Kg)
1/2"	35	410	127 / 180	375	0.3	110	0,15
3/4"	42	490	155 / 197	436	0.5	160	0,4
1"	45	585	174 / 220	521	0.5	160	0,4
1 1/4"	52	585	164 / 222	520	0.7	160	0,4
1 1/2"	60	710	253 / 318	651	2.7	200	0,9
2"	70	798	255 / 324	736	3.0	200	0,9
2 1/2"	80	1058	277 / 390	737	3.7	200	0,9
3"	170	1447	310 / 493	1248	15.8	300	2,8
80	170	1447	310 / 493	1248	19.8	300	2,8
100	170	1447	212 / 268	1244	20.6	300	2,8



FLOW (m³/h)

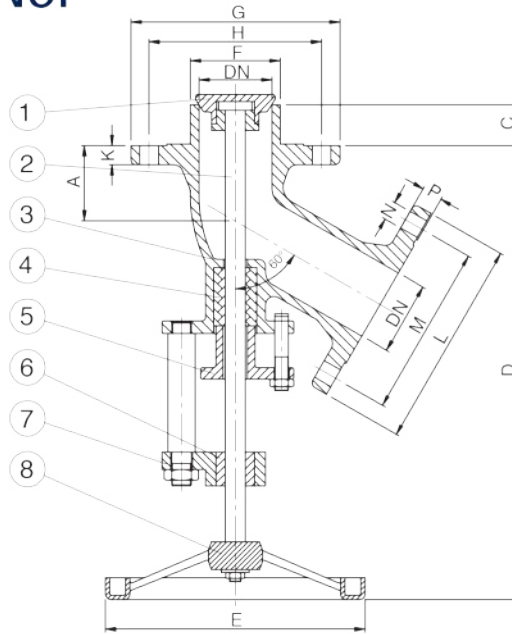
ND/NPS	PRESSURES (bar)							
	1	2	3	4	6	8	10	
1/2"	3	4	5	6	7	8	9	
3/4"	5	7	8	9	11	14	15	
1"	7	10	12	14	17	19	22	
1 1/4"	10	15	19	23	29	33	38	
1 1/2"	15	22	27	31	37	43	51	
2	23	34	41	47	57	67	75	
2 1/2"	25	35	43	49	60	71	79	
3"	56	79	97	111	136	158	173	

VALVULA DE FONDO

BOTTOM DRAIN VALVE

NORMAS DIN - ANSI

**Fig. VS
106**
**SERIE
PN-10/16**



- ESPECIAL PARA DEPOSITOS CON SALIDA EN EL FONDO.
- EL SISTEMA DE APERTURA ASCENDENTE ROMPE LA CAPA SEDIMENTADA O CRISTALIZADA QUE SE HAYA PODIDO FORMAR EN LA PARTE INFERIOR DEL DEPOSITO.
- SPECIAL TO BOTTOM OUTFLOW TANKS.
- THE RISING OPENING SYSTEM BREAKS THE SEDIMENT OR CRYSTALLIZED LAYER ON THE BOTTOM OF THE TANK

Nº	DENOMINACIÓN / PART	MATERIAL
1	CUERPO / BODY	INOX CF8M
2	CIERRE / DISC	INOX CF8M
3	HUSILLO / STEM	INOX 316
4	EMPAQUETADURA / GLANDPACKING	Graphite-PTFE
5	PRENSA / GLAND	INOX CF8M
6	TUERCA / NUT	BRONZE
7	PUENTE / YOKE	INOX CF8M
8	VOLANTE / HANDWHEEL	IRON 6625

Otros materiales / dimensiones consultar
Others materials / dimensions on request

VALVULA DE FONDO DE CUBA

- Apertura ascendente.
- Este modelo se puede fabricar con accionamiento manual por volante o con actuador neumático de doble o simple efecto.
- Bajo demanda se fabrica con recubrimiento de ebonita para el transporte de ácido clorhídrico.
- Pasos de 25 a 200 mm.

BOTTOM DRAIN VALVE

- Rising opening.
- This model can be made, with manual action by handwheel, or by double or simple effect pneumatic action.
- By request, it can be made also with ebonite coating, for the transport of hydrochloric acid.
- Sizes from 25 to 200 mm.

CUADRO DE DIMENSIONES - NORMAS DIN

DIMENSIONS PANEL

DN	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O*	P	Kg
25	35	100	40	200	120	49	150	110	18	4	15	115	85	15	4	14	6
32	40	100	45	200	120	52	165	125	18	4	17	140	100	18	4	15	7
40	40	120	45	220	160	55	165	125	18	4	17	150	110	18	4	15	8
50	50	140	50	260	160	70	185	145	18	4	17	165	125	18	4	17	11
65	55	140	50	320	200	89	200	160	18	4	18	185	145	18	4	17	15
80	60	150	55	375	200	100	220	180	18	8	18	200	160	18	4	18	21
100	60	180	55	400	250	124	250	210	18	8	20	220	180	18	4	18	26
125	60	200	60	450	250	149	285	240	18	8	22	250	210	18	4	18	38
150	95	200	60	450	320	174	315	270	18	8	22	250	210	18	4	18	59

* N° de agujeros / N° of holes