



proval



Catalogue 2018

Reliable Flow Control Solutions



DORUK ENDÜSTRİ
Valve & Automation Systems



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Valve & Automation Systems



DORUK ENDUSTRI LTD is specialized in manufacturing high quality rotary actuators, actuator accessories and industrial valves under its registered brand name PROVAL in Dilovasi-Kocaeli, nearby Istanbul in Turkey.

PROVAL branded valves and actuators are engineered and designed by using the latest 3D CAD design software, machined in the latest technology horizontal & vertical CNC machining centres.

All valves and actuators are inspected with no exception for any kind of machining failures by using most appropriate testing tools in order to achieve customer satisfaction and supply compatible products to meet their severe service applications.

The goal of DORUK ENDUSTRI is to provide our customers with the good quality, high-performance, innovative design and cost-effective process control equipments.

DORUK ENDUSTRI is an ISO9001 and EAC certified company. Each PROVAL actuator is manufactured under strict quality management system.

PROVAL branded valves and actuators have been successfully exported to more than 80 countries worldwide



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V101 (Wafer) / V102 (Lug) Series Proval Soft Seat Butterfly Valves

Butterfly valves, since their invention in 1960's became one of the most demanded flow control elements in industrial and domestic flow control applications due to their light weight, low pressure loss, 100% leak free operation, easy and economic automation capabilities.

Beside the soft seat applications, development of PTFE seats and metal seats of double eccentric high performance valves today, butterfly valves are used from basic water applications to industrial applications and highly corrosive severe service applications

Butterfly valves have wide range of applications in water, sea water, steel, food, paper, chemical, petrochemical and all HVAC and general industrial flow process controls.

Superiorities of New Design Proval V101 Butterfly Valves

- Flow indication marked, ISO standard valve rotating shaft

- Easy removable, anti blow-out plate

- Tag plate with all valve material and useage data including valve Serial number

- Long neck for easy insulation

- PTFE / Bronzee bushing provides low torque and longer seat life by centering the disc and avoids leakage from stem due to non-centric rotation

- Integral o-ring system on seat avoid the leakage from stem

- 2 Pc shaft construction disc provides higher flow rates (kv) and lower pressure loss in pipeline.

- Special groove on body provides less torque figures in operation and improves the life cycle of seat

- O-ring to ensure 100% leak free operation

- Easy removable lower cap provides easy dismantling of the valve to replace any defected parts on maintenance

- According to ISO 5211 direct mount ISO pad

- Upper stem bushing

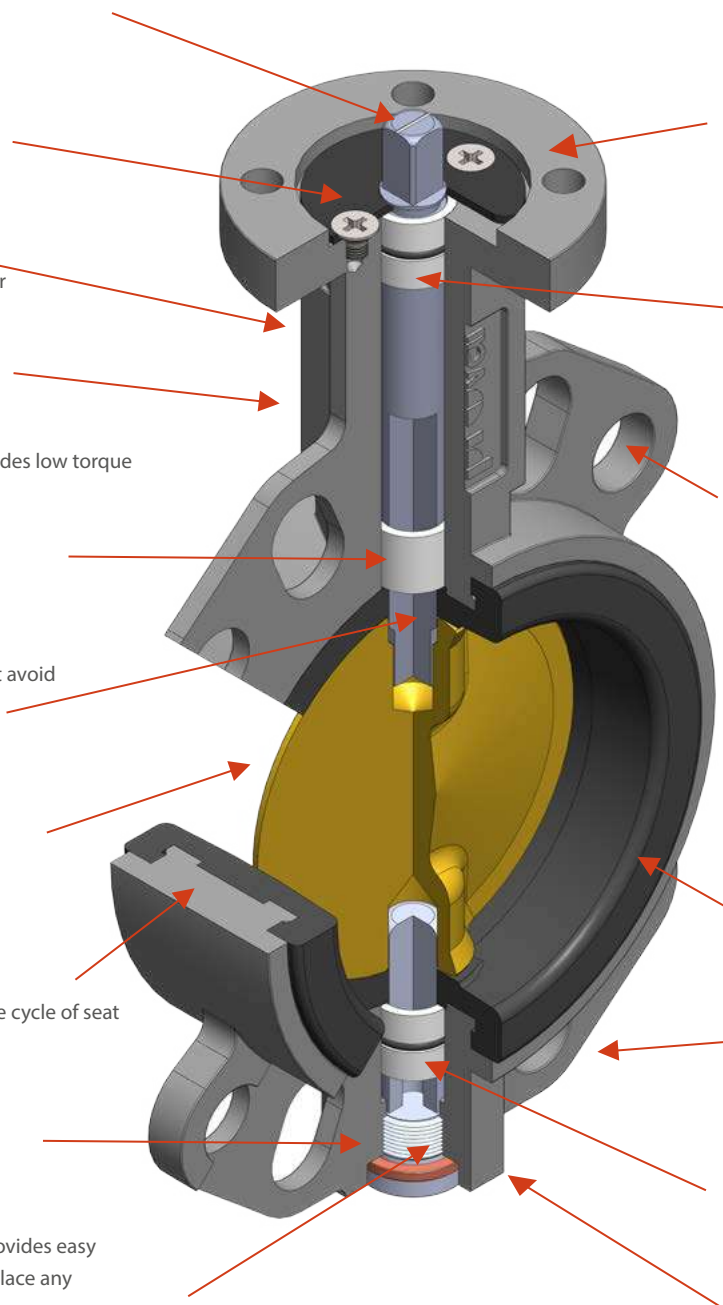
- EN1092 PN10, PN16 ANSI 125/150 and BS10 Table-D, Table-E suitable flange holes

- Wide range of seat solutions for all industrial applications

- 4 flange locating holes for easy alignment of valve during installation.

- PTFE / Bronzee bushing provides low torque and longer seat life by centering the disc and avoids leakage from stem due to non-centric rotation

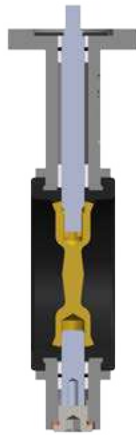
- Heat No for easy tracing and QC



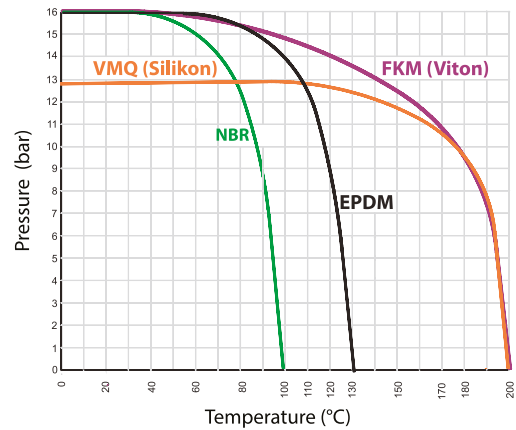
V101 (Wafer) / V102 (Lug) Series DN25-600 Butterfly Valves Material List

General Design and Manufacturing Standards

Design Standard	EN 558 Series 20 (DIN3202-K1)
	ISO5752 Series 20
	API609 Table 1
Flange Drilling	BS5155 Series 4
	EN1092 PN 6/10/16
Mounting Flange	ANSI B 16.5 Class 150
	ISO5211
Testing Standard	EN12266-1/2
	ISO5208, Category 3
	API 598 Table 5
	ANSI B16-104, Class VI
Pressure Rating	Max 16 bar
Differential Pressure	Δp 16 bar
Vacuum	Max 0.2 bar absolute pressure



Pressure - Temperature Diagram



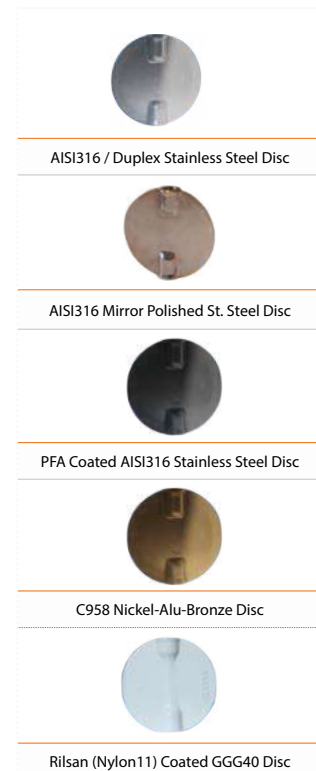
V101 / V102 / V103 Series Butterfly Valves Flow Coefficient Kv Values

Kv values given in the table below, show the volume of water in m³/h at room temperature that will pass through a given valve opening with a pressure drop of Δp 1 bar.

Butterfly Valves offer flow characteristics close to linear at angles of opening between 30° and 90°.

Recommended maximum velocity of flow for Butterfly Valves is 1.5 m/s.

DN	Disc Angle-Openness (%)								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	0,1	4,3	10	21	39	55	78	108	116
65	0,2	6,9	17	32	56	85	125	176	190
80	0,3	10	19	34	61	100	158	238	261
100	0,4	15	31	68	120	199	315	472	519
125	0,7	25	53	115	205	339	536	804	884
150	1,7	39	82	177	317	523	828	1243	1365
200	2,6	77	162	353	629	1039	1646	2468	2713
250	3,7	131	276	600	1070	1771	2802	4203	4619
300	4,3	202	428	927	1653	2735	4329	6494	7136
350	5,2	292	618	1339	2388	3951	6254	9380	10308
400	6,9	401	850	1842	3284	5434	8599	12899	14176
450	9,5	532	1126	2441	4349	7197	11390	17085	18774
500	12	684	1448	3138	5592	9253	14645	21967	24140
600	19	1057	2238	4848	8640	14296	22626	33939	37295
700	31	1568	3148	5740	8650	12930	19695	30186	42817
800	44	2064	4144	7557	11927	17830	27156	41621	59036
900	52	2613	5244	9563	15137	22564	34367	52674	74714
1000	73	3618	7262	13240	20897	31283	47648	73028	103583
1200	153	7598	15195	20020	43886	65695	100060	10146	217525





V101 Series Wafer Type DN25-300 Butterfly Valves

- Available in sizes from DN25 to DN300 .
- Tongue and groove design, field-replaceable resilient rubber seats for a wide variety of applications and media.
- Bidirectional bubble tight shut off at full rated pressure of 16 bar(g).
- Flange locating holes drilled to meet PN10/16, ANSI Class 150 and other world drilling standards.



Dimensions	Lever / Gearbox Dimensions	Part List

Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Body	Epoxy Coated GG25 Cast Iron	3	Seat	EPDM (-30° C ~ +130° C)	10	Lower Stem	AISI420 Stainless Steel
		Epoxy Coated GGG40 Ductile Iron			NBR (-20° C ~ +100° C)			AISI316 Stainless Steel
		A216 WCB			Silicon (-30° C ~ +200° C)			Carbon Steel
		AISI316 Stainless Steel			Viton (-15° C ~ +200° C)			Brass
2	Disc	AISI316 Stainless Steel	4/5/6/7/8	Bushing	Bronze / PTFE	13	Retainer Plate	Carbon Steel
		Rilsan Coated (Nylon11) GGG40 Ductile Iron	9	Upper Stem	AISI420 Stainless Steel	14	Screw	Stainless Steel
		Alu-Bronze			AISI316 Stainless Steel	15/16	O-Ring	NBR/Viton
		HALAR / ETFE Lined AISI316 Stainless Steel						
Super Duplex								

Dimensions (mm)

Size (DN)	A	B	C	ØD1	ØD2			ØD3 ISO5211	ØD4	4xØd	4xØd1	L	E	G	M	N	S	P	ØR	Net Unit Weight (Kg)		
					PN10	PN16	#150													Free Shaft	Lever Op.	Gearbox Op.
25	41	92	12	31,5	85	85	79,25	42	55	18	6	33	9	13	180	28	115	54	140	1,0	1,3	3,0
32/40	45	98	12	38	110	110	98,55	42	55	18	6	33	9	13	180	28	115	54	140	1,0	1,3	3,0
50	63	126	16	51,2	125	125	120,6	50	65	18	7	43	9	13	180	33	115	54	140	2,1	2,3	4,1
65	69	133	16	65,6	145	145	139,7	50	65	18	7	46	9	13	180	33	115	54	140	2,5	2,8	4,6
80	86	152	16	80	160	160	152,4	50	65	18	7	46	9	13	180	33	115	54	140	3,0	3,3	5,0
100	106	170	19	102,2	180	180	190,5	70	90	18	10	52	11	14	284	33	120	54	160	4,8	5,2	6,8
125	115	181	25	125,6	210	210	215,9	70	90	18	10	56	14	14	284	33	145	67	160	6,6	7,0	9,8
150	128	196	25	150,6	240	240	241,3	70	90	22	10	56	14	14	284	33	145	67	160	7,5	7,9	10,7
200	160	238	30	200,4	295	295	298,4	102	125	22	12	60	17	14	350	45	155	67	250	13,8	14,9	18,1
250	190	258	39	249	350	355	361,9	102	125	26	12	68	22	14	350	45	165	73	300	21,2	22,3	27,4
300	235	300	39	300	400	410	431,8	102	125	26	12	78	22	20	350	45	165	73	300	31,5	33,0	37,7

V101 Series Wafer Type DN350-600 Butterfly Valves

-Available in sizes from DN350 to DN600 .
 -Tongue and groove design,field-replaceable resilient rubber seats for a wide variety of applications and media.

-Bidirectional bubble tight shut off at full rated pressure of 16 bar(g).
 -Flange locating holes drilled to meet PN10/16,ANSI Class 150 and other world drilling standards.



Dimensions	Gearbox Dimensions	Part List

Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Body	Epoxy Coated GG25 Cast Iron	3	Seat	EPDM (-30° C ~ +130° C)	10	Lower Stem	AISI420 Stainless Steel
		Epoxy Coated GGG40 Ductile Iron			NBR (-20° C ~ +100° C)			AISI316 Stainless Steel
		A216 WCB			Silicon (-30° C ~ +200° C)			Carbon Steel
		AISI316 Stainless Steel			Viton (-15° C ~ +200° C)			Brass
2	Disc	AISI316 Stainless Steel	4/5/6/7/8	Bushing	Bronze / PTFE	13	Retainer Plate	Carbon Steel
		Rilsan Coated (Nylon11) GGG40 Ductile Iron	9	Upper Stem	AISI420 Stainless Steel	14	Screw	Stainless Steel
		Alu-Bronze			AISI316 Stainless Steel	15/16	O-Ring	NBR/Viton
		HALAR / ETFE Lined AISI316 Stainless Steel						
Super Duplex								

Standart construction material for valve body.

Dimensions(mm)

DN	A	B	H	E	G	L	P	S	ØR	ØD2			ØD4	ISO5211 (ØD3)	4-ØD1	nxØd			Net Unit Weight (kg)	
										PN10	PN16	#150				PN10	PN16	#150	Free Shaft	Gearbox Op.
350	260	310	40	27	22	78	96	210	104	460	470	476,3	150	125	4-14	16x20	16x24	12x1 1/8 UNC	42,5	55
400	315	340	40	27	23	102	104	240	300	515	525	539,8	175	140	4-18	16x24	16x27	16x1 1/8 UNC	53	72,2
450	330	375	40	36	25	114	108	240	400	565	585	577,9	175	140	4-18	20x24	20x27	16x1 1/4 UNC	88	111,5
500	348	425	40	36	27	127	108	240	400	620	650	635	175	140	4-18	20x24	20x30	20x1 1/4 UNC	98	121,5
600	438	505	50	46	27	154	122	270	400	725	770	749,3	210	165	4-23	20x27	20x33	20x1 3/8 UNC	138	182,5



V102 Series Lug Type DN50-300 Butterfly Valves

- Available in sizes from DN50 to DN300.
- Tongue and groove design, field-replaceable resilient rubber seats for a wide variety of applications and media.
- Bidirectional bubble tight shut off at full rated pressure of 16 bar(g).
- Drilled and tapped to meet PN10, PN16, ANSI Class 150 or other world drilling standards.



Dimensions	Lever / Gearbox Dimensions	Part List

Material List

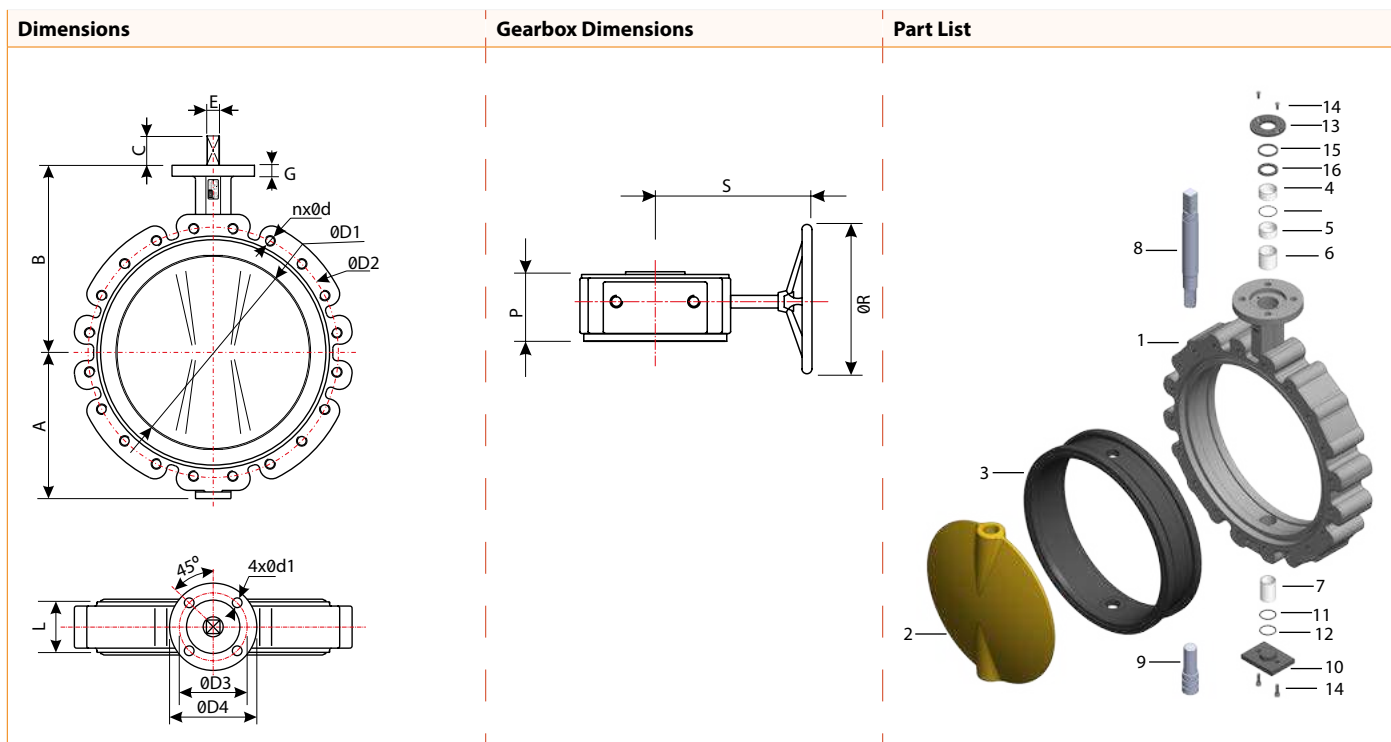
No	Part Name	Material	No	Part Name	Material	No	Part Name	Material	
1	Body	Epoxy Coated GG25 Cast Iron	3	Seat	EPDM (-30° C ~ +130° C)	10	Lower Stem	AISI420 Stainless Steel	
		Epoxy Coated GGG40 Ductile Iron			NBR (-20° C ~ +100° C)			AISI316 Stainless Steel	
		A216 WCB			Silicon (-30° C ~ +200° C)		11	Plug	Carbon Steel
		AISI316 Stainless Steel			Viton (-15° C ~ +200° C)		12	Sealing Ring	Brass
2	Disc	AISI316 Stainless Steel	4/5/6/7/8	Bushing	Bronze / PTFE	13			Retainer Plate
		Rilsan Coated (Nylon11) GGG40 Ductile Iron	9	Upper Stem	AISI420 Stainless Steel	14	Screw	Stainless Steel	
		Alu-Bronze			AISI316 Stainless Steel	15/16	O-Ring	NBR/Viton	
		HALAR / ETFE Lined AISI316 Stainless Steel							
		Super Duplex							

Dimensions (mm)

Size (DN)	0D1	0D2			ISO5211	0D4	nx0d			4x0d1	A	B	C	L	E	G	M	N	S	P	0R	Net Unit Weight (Kg)		
		PN10	PN16	#150			PN10	PN16	#150													Free Shaft	Lever Op.	Gearbox Op.
50	51,2	125	125	120,6	50	65	4x16	4x16	4x5/8"UNC	7	63	126	16	43	9	13	180	33	115	54	140	3,8	4,1	5,8
65	65,6	145	145	139,7	50	65	4x16	4x16	4x5/8"UNC	7	69	133	16	46	9	13	180	33	115	54	140	4,3	4,6	6,4
80	80	160	160	152,4	50	65	4x16	4x16	4x5/8"UNC	7	86	152	16	46	9	13	180	33	115	54	140	4,8	5,1	6,8
100	102,2	180	180	190,5	70	90	8x16	8x16	8x5/8"UNC	10	106	170	19	52	11	14	284	33	120	54	160	7,8	8,2	9,8
125	125,6	210	210	215,9	70	90	8x16	8x16	8x3/4"UNC	10	115	181	25	56	14	14	284	33	145	67	160	10,3	10,7	13,5
150	150,6	240	240	241,3	70	90	8x20	8x20	8x3/4"UNC	10	128	196	25	56	14	14	284	33	145	67	160	12,3	12,7	15,5
200	200,4	295	295	298,4	102	125	8x20	12x20	8x3/4"UNC	12	160	238	30	60	17	14	350	45	155	67	250	17,1	18,2	21,4
250	249	350	355	361,9	102	125	12x20	12x24	12x7/8"UNC	12	190	258	39	68	22	14	350	45	165	73	300	29,1	30,2	35,3
300	299,2	400	410	431,8	102	125	12x20	12x24	12x7/8"UNC	12	235	300	39	78	22	20	350	45	165	73	300	49,8	50,9	56,0

V102 Serissimi Lug Type DN350-600 Butterfly Valves

- Available in sizes from DN350 to DN600 .
- Tongue and groove design,field-replaceable resilient rubber seats for a wide variety of applications and media.
- Bidirectional bubble tight shut off at full rated pressure of 16 bar(g).
- Drilled and tapped to meet PN10/16,ANSI Class 150 and other world drilling standards.



Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Body	Epoxy Coated GG25 Cast Iron	3	Seat	EPDM (-30° C ~ +130° C)	9	Lower Stem	AISI420 Stainless Steel
		Epoxy Coated GGG40 Ductile Iron			NBR (-20° C ~ +100° C)			AISI316 Stainless Steel
		A216 WCB			Silicon (-30° C ~ +200° C)			Carbon Steel
		AISI316 Stainless Steel			Viton (-15° C ~ +200° C)			Brass
2	Disc	AISI316 Stainless Steel	4/5/6/7	Bushing	Bronze / PTFE	13	Retainer Plate	Carbon Steel
		Rilsan Coated (Nylon11) GGG40 Ductile Iron			AISI420 Stainless Steel			14
		Alu-Bronze	8	Upper Stem	AISI316 Stainless Steel	15/16	O-Ring	NBR/Viton
		HALAR / ETFE Lined AISI316 Stainless Steel						
		Super Duplex						

Dimensions(mm)

DN	A	B	C	E	G	L	P	S	ØR	ØD2			ØD4	ISO5211 (ØD3)	4xØd1	nxØd			Net Unit Weight (kg)	
										PN10	PN16	#150				PN10	PN16	#150	V102	Gearbox Op.
350	260	310	40	27	20	78	96	210	104	460	470	476,3	150	125	4x14	16x20	16x24	12x1 1/8 UNC	72	84,5
400	315	340	40	27	20	102	104	240	300	515	525	539,8	175	140	4x18	16x24	16x27	16x1 1/8 UNC	90	109,2
450	330	375	40	36	20	114	108	240	400	565	585	577,9	175	140	4x18	20x24	20x27	16x1 1/4 UNC	111	134,5
500	348	425	40	36	22	127	108	240	400	620	650	635	175	140	4x18	20x24	20x30	20x1 1/4 UNC	123	146,5
600	438	505	50	46	25	154	122	270	400	725	770	749,3	210	165	4x23	20x27	20x33	20x1 3/8 UNC	178	222,5



V101/V102 Series Butterfly Valves Torque Values (Nm)

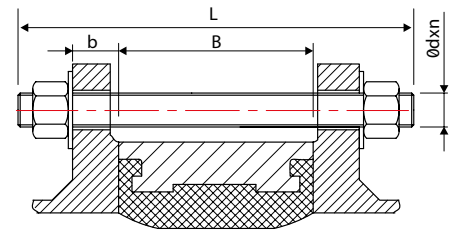
DN	Torque (Nm)		DN	Torque (Nm)	
	PN10	PN16		PN10	PN16
50	10	12	350	550	625
65	12	15	400	755	846
80	26	40	450	1012	1131
100	24	44	500	1350	1431
125	80	85	600	2111	2301
150	60	90	700	3272	3599
200	130	140	800	4308	4739
250	300	350	900	5257	5783
300	310	350	1000	8920	9819
			1200	12555	13811



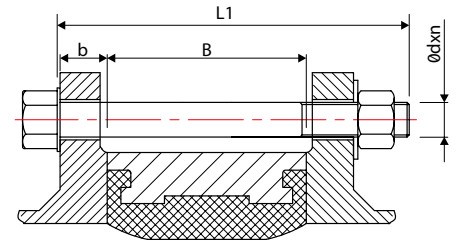
Pneumatically-Actuated Butterfly Valve with Silicon Seat

Wafer Type Butterfly Valves Flange Bolting Dimensions (mm)

Size (DN)	B	PN10					PN16					ANSI150				
		b	L	L1	d	n	b	L	L1	d	n	b	L	L1	d	n
25	28	16	100	80	M12	4	16	100	80	M12	4	15	110	90	1/2"13 UNC	4
32	33	16	110	90	M16	4	16	110	90	M16	4	16	110	90	1/2"13 UNC	4
40	33	16	130	90	M16	4	16	130	90	M16	4	18	120	100	1/2"13 UNC	4
50	43	18	130	110	M16	4	18	130	110	M16	4	19	140	110	5/8"11 UNC	4
65	46	18	140	110	M16	4	18	140	110	M16	4	22	140	120	5/8"11 UNC	4
80	52	20	150	120	M16	8	20	140	120	M16	8	24	160	130	5/8"11 UNC	4
100	56	20	150	120	M16	8	20	150	120	M16	8	24	160	130	5/8"11 UNC	8
125	56	22	160	130	M16	8	22	160	130	M16	8	25	170	140	3/4"10 UNC	8
150	56	22	160	130	M20	8	22	160	130	M20	8	25	170	140	3/4"10 UNC	8
200	60	24	170	140	M20	8	24	170	140	M20	12	29	190	160	3/4"10 UNC	8
250	68	26	180	154	M20	12	26	190	160	M24	12	30	200	170	7/8"9 UNC	12
300	78	26	200	170	M20	12	28	210	180	M24	12	32	220	190	7/8"9 UNC	12
350	78	26	200	170	M20	16	30	210	180	M24	16	35	240	200	1"8 UNC	12
400	102	26	230	200	M24	16	32	250	210	M24	16	37	240	220	1"8 UNC	16
450	114	28	250	210	M24	20	34	260	230	M27	20	40	290	250	1 1/8"7 UNC	16
500	127	28	260	230	M24	20	34	280	240	M30	20	43	310	270	1 1/8"7 UNC	20
600	154	28	300	260	M27	20	36	320	280	M33	20	48	360	310	1 1/4"7 UNC	20



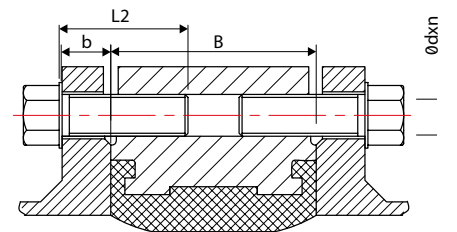
Installation using a stud bolt, two hexagonal nuts and washers



Installation using Cap screws and nuts

Lug Type Butterfly Valves Flange Bolting Dimensions (mm)

Size (DN)	B	PN10				PN16				ANSI150			
		b	L2	d	n	b	L2	d	n	b	L2	d	n
50	43	18	40	M16	4	18	40	M16	4	19	45	5/8"11 UNC	4
65	46	18	40	M16	4	18	40	M16	4	22	45	5/8"11 UNC	4
80	52	20	40	M16	8	20	40	M16	8	24	45	5/8"11 UNC	4
100	56	20	45	M16	8	20	45	M16	8	24	50	5/8"11 UNC	8
125	56	22	50	M16	8	22	50	M16	8	25	50	3/4"10 UNC	8
150	56	22	50	M20	8	22	50	M20	8	25	50	3/4"10 UNC	8
200	60	24	55	M20	8	24	55	M20	12	29	60	3/4"10 UNC	8
250	68	26	60	M20	12	26	60	M24	12	30	65	7/8"9 UNC	12
300	78	26	60	M20	12	28	65	M24	12	32	70	7/8"9 UNC	12
350	78	26	60	M20	16	30	65	M24	16	35	70	1"8 UNC	12
400	102	26	65	M24	16	32	70	M24	16	37	75	1"8 UNC	16
450	114	28	65	M24	20	34	70	M27	20	40	80	1 1/8"7 UNC	16
500	127	28	65	M24	20	34	70	M30	20	43	80	1 1/8"7 UNC	20
600	154	28	70	M27	20	36	75	M33	20	48	80	1 1/4"7 UNC	20



Installation using cap screws

V103 Series U-Section Short Flanged DN450 -1800 Wafer Butterfly Valve

- Available in sizes from DN450 to DN1800 .
- Tongue and groove design,field-replaceable resilient rubber seats for a wide variety of applications and media.
- Bidirectional bubble tight shut off at full rated pressure of 16 bar(g).
- Flange locating holes drilled to meet PN10/PN16 or ANSI Class 150 flanges.
- Face to face dimensions according to DIN EN 558-1 Basic Series 20.



Dimensions	Output Shaft / Gearbox Dimensions	Part List

Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material		
1	Body	Epoxy Coated GG25 Cast Iron	3	Seat	EPDM (-30° C ~ +130° C)	10	Lower Stem	AISI420 Stainless Steel		
		Epoxy Coated GGG40 Ductile Iron			NBR (-20° C ~ +100° C)			AISI316 Stainless Steel		
		AISI304 Stainless Steel			Silicon (-30° C ~ +200° C)			11	Plug	Carbon Steel
		AISI316 Stainless Steel			Viton (-15° C ~ +200° C)			12	Sealing Ring	Brass
2	Disc	AISI316 Stainless Steel	4/5/6/7/8	Bushing	Bronze / PTFE	13	Stopper	Carbon Steel		
		Rilsan Coated Nylon11 GGG40 Ductile Iron	9	Upper Stem	AISI420 Stainless Steel	14	Screw	Stainless Steel		
		Alu-Bronze			AISI316 Stainless Steel	15/16	O-Ring	NBR/Viton		
		ETFE Lined AISI316 Stainless Steel								

Dimensions(mm)

DN	A	B	C	E	G	L	ØD	ØD1	ØD2			P	S	ØR	T	R	ØK	ISO 5211	n2xØ2	nxM			n1-M1			Free Shot Net Unit Weight (kg)
									PN10	PN16	#150									PN10	PN16	#150	PN10	PN16	#150	
450	315	425	80	32	25	114	38	440,5	565	585	578	110	254	300	41	12	175	140	4x18	20x28	20x31	16x32	-	-	-	200
500	363	485	80	33	25	127	42	491	620	650	635	110	254	300	45	12	175	140	4x18	20x28	20x34	20x32	-	-	-	310
600	459	565	80	41,5	25	154	50	579	725	770	749,5	128	301	400	53,5	14	210	165	4x23	20x31	20x37	20x35	-	-	-	390
700	537	629	95	39,5	33	165	55	681,8	840	840	863,6	128	301	400	63	16	300	254	8x18	20x31	20x37	24x35	4xM27	4xM33	4x1-1/4"	460
800	601	666	95	43	33	190	55	772,2	950	950	977,9	157	355	400	63	16	300	254	8x18	20x34	20x41	24x41	4xM30	4xM36	4x1-1/2"	620
900	656	720	130	46,5	34	203	75	873,6	1050	1050	1085,9	157	355	400	84	20	300	254	8x18	24x34	24x41	28x41	4xM30	4xM36	4x1-1/2"	850
1000	720	800	130	50	38	216	85	976,3	1160	1170	1200,1	170	377,5	400	95	22	300	254	8x18	24x37	24x44	32x41	4xM33	4xM39	4x1-1/2"	900
1200	864	940,7	150	57	35	254	105	1185,2	1380	1390	1422,4	209	476	450	117	28	350	298	8x22	28x41	28x44	40x41	4xM36	4xM39	4x1-1/2"	1250
1400	1014	1009	150	46	45	279	120	1381	1590	-	1651	280	571	500	134	32	415	356	8x33	32x44	-	44x48	4xM39	-	4x1-3/4"	1546
1600	1070	1155	180	49	45	318	160	1581	1820	-	-	280	571	500	178	40	415	356	8x33	36x50	-	-	4xM45	-	-	3200
1800	1177,5	1177,5	200	52	54	457	180	1767,1	2020	-	-	303	665	500	200	45	475	406	8x39	40x50	-	-	4xM45	-	-	5900



V105 Series Double Flanged Short Pattern Butterfly Valves

- Available in sizes from DN50 to DN1200 .
- Rubber liner vulcanized integrally to the body ensuring reduced torque and a long lifetime. It extends along the valve faces, eliminating the use of flange gaskets.
- Bidirectional bubble tight shut off at full rated pressure of 16 bar(g).
- Suitable for installation between flanges according to PN10,PN16 or ANSI Class 150 .
- Face to face dimensions according to DIN EN 558-1 Basic Series 13(Short Pattern).



Dimensions	Output Shaft / Gearbox Dimensions	Part List

Material List

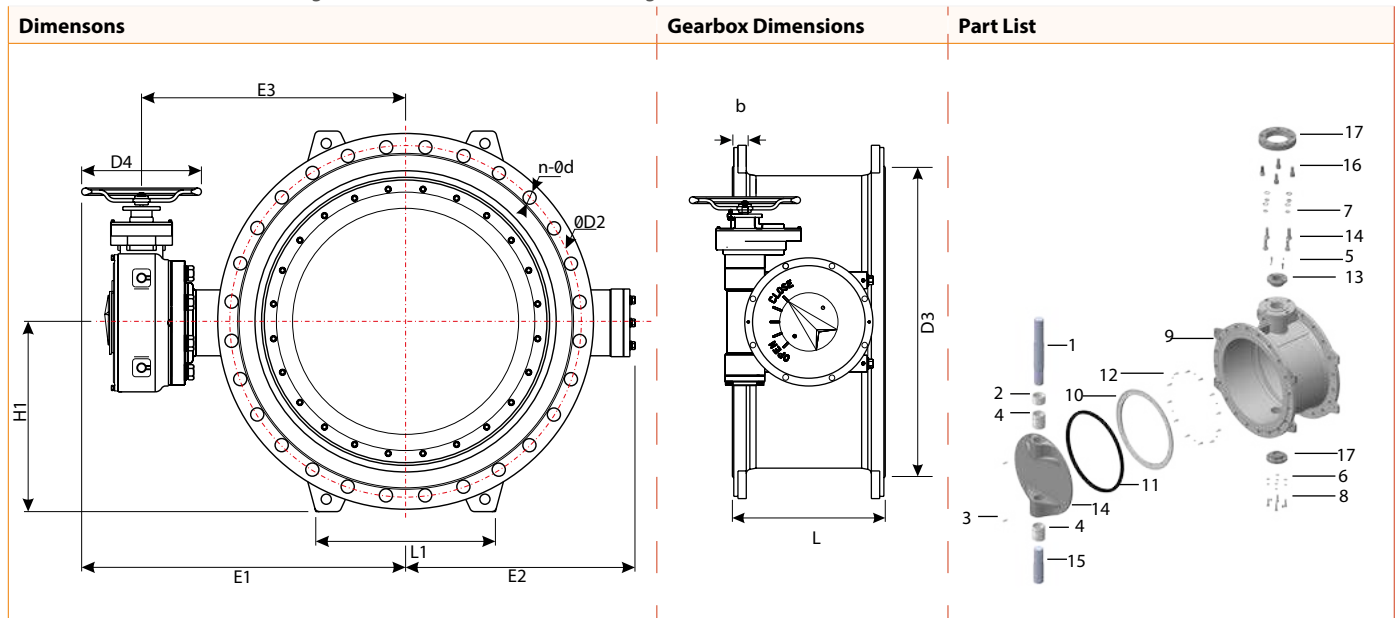
No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Body	Epoxy Coated GGG40 Ductile Iron	3	Seat	EPDM (-30° C ~ +130° C)	9	Lower Stem	AISI420 Stainless Steel
		A216 WCB			NBR (-20° C ~ +100° C)			AISI316 Stainless Steel
		AISI304 Stainless Steel			Silicon (-30° C ~ +200° C)			NBR
		AISI316 Stainless Steel			Viton (-15° C ~ +200° C)			Stainless Steel
2	Disc	AISI316 Stainless Steel	4/5/6/7	Bushing	Bronze / PTFE	12	Washer	Stainless Steel
		Rilsan Coated Nylon11 GGG40 Ductile Iron	8	Upper Stem	AISI420 Stainless Steel	13	Circlip	Stainless Steel
		Alu-Bronze			AISI316 Stainless Steel			
		ETFE Lined AISI316 Stainless Steel						

Dimensions(mm)

DN	A	B	C	H	ØD	E	G	ØD1	ØD2			ISO5211	ØD4	n-Ød (PN10)	n-Ød (PN16)	Ød1	L	S	P	R	ØR
									PN10	PN16	#150										
50	83	120	16	-	-	9	14	52.6	125	125	120,6	50	165	4-19	4-19	7	111				
65	93	130	16	-	-	9	14	64.3	145	145	139,7	50	185	4-19	4-19	7	115	174	64	150	150
80	100	145	16	-	-	9	14	78.8	160	160	152,4	50	200	8-19	8-19	7	117	174	64	150	150
100	114	155	19	-	-	11	14	104	180	180	190,5	70	220	8-19	8-19	10	130	174	64	150	150
125	125	170	25	-	-	14	14	123.3	210	210	215,9	70	250	8-19	8-19	10	143	174	64	150	150
150	143	190	25	-	-	14	14	155.7	240	240	241,3	70	285	8-23	8-23	10	143	174	64	150	150
200	170	205	30	-	-	17	15	202.4	295	295	298,4	102	340	8-23	12-23	12	155	174	64	300	150
250	198	235	39	-	-	22	15	250.4	350	355	361,9	102	395	12-23	12-28	12	168	300	80	300	300
300	223	280	39	-	-	22	18,5	301.5	400	410	431,8	102	445	12-23	12-28	12	182	300	80	300	300
350	270	310	40	-	-	27	20	333.3	460	470	476,2	102	505	16-23	16-31	12	194	300	82	300	300
400	300	340	40	-	-	27	20	389.6	515	525	539,7	140	565	16-28	16-31	18	221	225	82	150	300
450	340	375	40	-	-	36	20	440.5	565	585	577,8	140	615	20-28	20-31	18	227	229,5	110	150	300
500	355	430	40	-	-	36	22	491.6	620	650	635	140	670	20-28	20-34	18	234	254	110	150	300
600	410	500	50	-	-	46	25	592.5	725	770	749,3	165	780	20-31	20-37	22	272	254	110	300	300
700	478	560	-	95	55	-	33	695	840	840		254	895	24-31	24-37	18	299	301	128	300	300
800	529	620	-	95	55	-	33	794.7	950	950		254	1015	24-34	24-41	18	325	355	157	300	300
900	584	665	-	130	75	-	34	864.7	1050	1050		254	1115	28-34	28-41	18	337	355	157	150	300
1000	657	735	-	130	85	-	38	965	1160	1170		254	1230	28-37	28-44	18	417	377,5	170	150	300
1200	799	917	-	150	105	-	35	1160.6	1380	1390		298	1455	32-41	32-50	22	478	476	209	300	350

V106 Series Double Flanged Butterfly Valves - Double Eccentric

- Available in sizes from DN100 to DN2000 with a double eccentric disc, two pieces shaft.
- Designed in accordance with the requirements of BS EN 593.
- Face to Face dimensions are according to EN558-1 Basic Series 14.
- Suitable for installation between flanges according to PN10,PN16 or ANSI Class 150 .
- Ideally suited for use in pumping stations,water/wastewater treatment,potable water and general industrial applications.
- Face to face dimensions according to DIN EN 558-1 Basic Series 14 (Long Pattern).



Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Upper Stem	AISI420 Stainless Steel	7	Spring Washer	AISI304 Stainless Steel	13	Gland	GGG40/50 Ductile Iron
2	Spacer Bushing	GGG40 / 50 Ductile Iron	8	Hex Bolt	AISI304 Stainless Steel	14	Disc	GGG40/50 Ductile Iron AISI304 / 316 Stainless Steel
3	Pin	AISI420 Stainless Steel	9	Body	GGG40 / 50 Ductile Iron	15	Lower Stem	AISI420 Stainless Steel
4	Bushing	Bronze	10	Retaining Ring	Steel/St.Steel (Optional)	16	Hex Bolt	AISI304 Stainless Steel
5	Screw	AISI304 Stainless Steel	11	Sealing Ring	EPDM	17	Top Flange	GGG40 / 50 Ductile Iron
6	Spring Washer	AISI304 Stainless Steel	12	Fastener	Steel/St.Steel (Optional)			

Dimensions(mm)

Size (DN)	L	ØD2		D3	D4	L1	n-Ød		H1	E1		E2		E3	
		PN10	PN16				PN10	PN16		PN10	PN16	PN10	PN16		
100	190	180	180	156	180	150	8-19	8-19	117	284	284	133	133	194	194
125	200	210	210	184	180	160	8-19	8-19	130	305	305	155	155	215	215
150	210	240	240	211	180	180	8-23	8-23	147,5	315	315	164	164	225	225
200	230	295	295	266	240	196	8-23	12-23	175	392	392	198	198	272	272
250	250	350	355	319	320	240	12-23	12-28	207,5	413	488	219	230	293	328
300	270	400	410	370	320	275	12-23	12-28	235	511	511	254	254	351	351
350	290	460	470	429	400	290	16-23	16-31	265	536	607	279	295	376	407
400	310	515	525	480	400	320	16-28	16-31	295	632	637	320	334	432	437
450	330	565	585	548	400	360	20-28	20-31	325	662	688	359	368	462	488
500	350	620	650	609	400	395	20-28	20-34	362,5	713	730	393	400	513	530
600	390	725	770	720	400	470	20-31	20-37	425	780	748	450	480	580	548
700	430	840	840	794	400	480	24-31	24-37	460	798	840	530	563	598	640
800	470	950	950	901	400	560	24-34	24-41	517,5	891	898	614	623	691	698
900	510	1050	1050	1001	400	618	28-34	28-41	567,5	950	989	675	698	750	789
1000	550	1160	1170	1112	400	600	28-37	28-44	635,5	1039	1082	748	766	839	882
1200	630	1380	1390	1328	400	800	32-41	32-50	747,5	1181	1238	865	910,5	981	1038
1400	710	1590	1590	1530	400	920	36-44	36-50	847,5	1338	1464	1015	1063	1138	1253
1600	790	1820	1820	1750	400	1060	40-50	36-57 / 4-52	970	1463	1580	1161	1172	1263	1369
1800	870	2020	2020	1950	600	1170	44-50	36-57 / 8-53	1070	1712	1902	1324	1413	1501	1602
2000	950	2230	2230	2150	600	1290	48-50	48-62	1177,5	1817	1955	1437	1583	1606	1655



V107 Series Wafer / Lug Type Butterfly Valves - PN25 Rated

- Available in sizes from DN50 to DN600-Offered in Wafer and Lug configurations.
- Rubber liner vulcanized integrally to the body ensuring reduced torque and a long lifetime. It extends along the valve faces, eliminating the use of flange gaskets.
- Bidirectional bubble tight shut off at full rated pressure of 25 bar(g).
- Wafer type valves have body fitted with flange locating holes drilled to meet PN25 and ANSI Class 300 flanges.
- Lug type Valves have body fitted with tapped holes and suitable for mounting between PN25 or ANSI Class 300 Flanges.



Dimensions		Part List	
Wafer Type	Lug Type		

Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Body	GGG40 Ductile Iron	4	Bushing	Bronze	7	Bushing	Bronze
2	Disc	AISI304 / AISI316 / Alu-Bronze	5	Seat	EPDM / NBR	8	O-ring	NBR
3	Stem	AISI431	6	Bushing	Bronze	9	Screw	Stainless Steel

Dimensions(mm)

Size (DN)	A	B	C	L	D	Ød	n-Ød	E	G	N	M	P	S	ØR	ØD1	ØD2 Wafer Type			nxM Lug Type		Torque (Nm)
																PN16	PN25	CL300	PN16	PN25	
50	65	138	32	43	90	70	4-Ø10	11	14	32	210	64	174	150	52,90	125	125	127	4-16	4-M16	20
65	75	153	32	46	90	70	4-Ø10	11	14	32	210	64	174	150	67,5	145	145	149,2	4-16	8-M16	40
80	95	155	32	46	90	70	4-Ø10	11	14	32	210	64	174	150	82,2	160	160	168,3	4-16	8-M16	50
100	114	178	32	52	90	70	4-Ø10	14	14	32	265	64	174	150	105,5	180	190	200	8-16	8-M20	100
125	126	193	32	56	90	70	4-Ø10	17	14	32	265	64	174	150	124,2	210	220	235	8-16	8-M24	115
150	140	210	32	56	90	70	4-Ø10	17	14	32	265	64	174	150	157	240	250	269,9	8-20	8-M24	210
200	170	240	32	60	125	102	4-Ø12	22	15	80	300	80	300	300	203,5	295	310	330,2	12-20	12-M24	440
250	208	285	32	68	125	102	4-Ø12	22	15	80	300	80	300	300	251,9	355	370	387,4	12-24	12-M27	535
300	240	315	32	78	150	125	4-Ø14	27	18,5	82	300	82	300	300	302,8	410	430	450,8	12-24	16-M27	1125
350	300	350	65	78	175	140	4-Ø18	27	25						333	470	490		16-24	16-M30	
400	330	385	80	102	210	165	4-Ø23	27	30						390	525	550		16-27	16-M33	
450	360	410	80	114	276	216	4-Ø23	36	30						440	585	600		20-27	20-M33	
500	400	435	110	127	300	254	8-Ø18	46	30						492	650	660		20-30	20-M33	
600	455	505	110	154	300	254	8-Ø18	46	30						593	770	779		20-33	20-M36	

V108 Wafer / V109 Lug Type PTFE Lined Butterfly Valves

Proval V108 Series split body, PTFE lined butterfly valves, owing to their superior design being suitable for use in industrial process lines, allow manual and automated control of highly corrosive aqueous and gaseous chemicals.

*Available in sizes from DN50 to DN600 and offered in both wafer and lug style, two piece body configurations to facilitate site replacement and maintenance.

*Features dynamically - loaded belleville spring and V-ring stem seal technologies to provide enhanced protection in handling wide variety of corrosive and toxic chemicals.

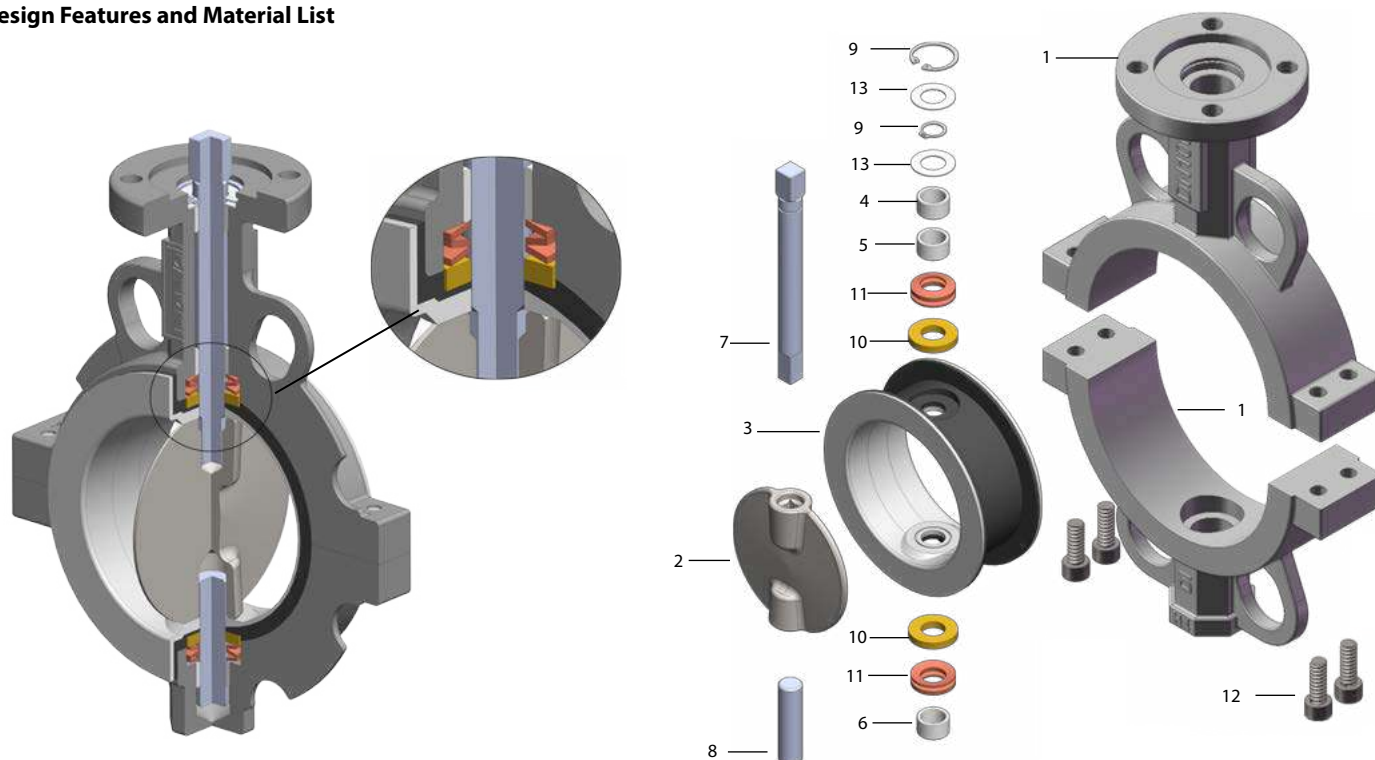
*Provides bi-directional tight shut-off at full rated pressure.

*Min PTFE Lining thickness of 3mm. to prevent exposure of any parts of the disc or the stem to the line media.

* Application Areas:

- Pharmaceutical
- Petrochemical
- Textile
- Food

Design Features and Material List



Material List

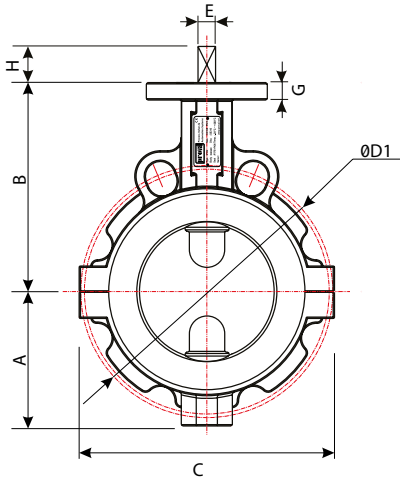
No	Part Name	Material
1	Body	Epoxy Coated GGG40 Ductile Iron
		A216 WCB
2	Disc	AISI316 Stainless Steel
		PTFE Lined Carbon Steel
3	Seat	PTFE + EPDM (-30° C ~ +150° C)
		PTFE + Viton (-30° C ~ +190° C)
4/5/6	Bushing	PTFE

No	Part Name	Material
7	Upper Stem	AISI316 Stainless Steel
8	Lower Stem	AISI316 Stainless Steel
9	Circlip	Stainless Steel
10	Thrust Washer	PTFE
11	Belleville Washer	Stainless Steel
12	Cap Screw	Stainless Steel
13	Stem Seal	Stainless Steel

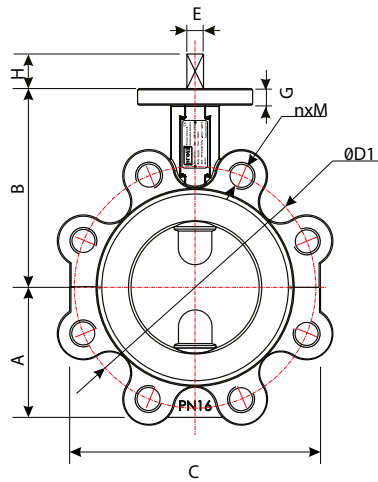


V108 Wafer / V109 Lug Type PTFE Lined Butterfly Valves

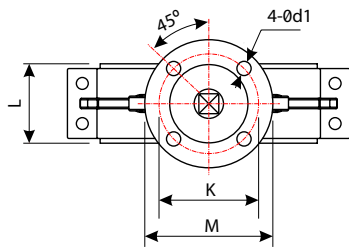
Dimensions (mm)



V108 Wafer Type



V109 Lug Type



Top Flange Acc. ISO5211



Wafer Type Butterfly Valve with AISI316 Disc



Wafer Type Butterfly Valve with PTFE Lined WCB Disc



Lug Type Butterfly Valve with AISI316 Disc

Dimensions (mm)

Size(DN)	PN10		PN16		4-Ød1	A	B	C	G	H	L	E	M	K
	ØD1	nxM	ØD1	nxM										
50	125	4x16	125	4x16	6,7	62	136	112	14	16	43	11	50	65
65	145	4x16	145	4x16	6,7	70	138	126	14	16	46	11	50	65
80	160	8x16	160	8x16	6,7	78	140	142	14	16	46	11	50	65
100	180	8x16	180	8x16	10,3	105	158	168	15	19	52	14	70	90
125	210	8x16	210	8x16	10,3	122	180	240	16	25	56	14	70	90
150	240	8x20	240	8x20	10,3	134	186	265	16	25	56	17	70	90
200	295	8x20	295	12x20	14,5	165	234	320	18	30	60	22	102	125
250	350	12x20	355	12x24	14,5	194	273	385	20	39	68	22	102	125
300	400	12x20	410	12x24	14,7	224	302	450	20	39	78	27	102	125
350	460	16x20	470	16x24	14,7	260	320	500	22	45	78	36	102	125
400	515	16x24	525	16x27	18	298	408	585	24	51	102	36	140	175
450	565	20x24	585	20x27	18	315	422	616	25	51	114	46	140	175
500	620	20x24	650	20x30	22	356	480	685	28	57	127	46	165	210
600	725	20x27	770	20x33	22	440	562	818	30	57	154	46	165	210

V108-V109 Series Butterfly Valves Flow Coefficient Kv (m³/h) and Operating Torque Values (Nm)

Size (DN)	Disc Mtrl.	Disc Angle- Openn ess									Torque (Nm)
		10°	20°	30°	40°	50°	60°	70°	80°	90°	
50	AISI316	0,8	4,3	11	23	43	57	86	114	124	35
	WCB+PTFE	0,1	3,9	10	21	39	52	78	104	112	
65	AISI316	0,8	6,2	19	36	62	86	133	190	199	40
	WCB+PTFE	0,2	5,6	17	33	56	78	121	173	181	
80	AISI316	1,7	9,5	21	38	67	109	171	262	285	55
	WCB+PTFE	0,3	8,6	19	35	60	99	156	238	259	
100	AISI316	2,6	16	34	71	128	219	333	495	570	85
	WCB+PTFE	0,4	14	31	65	117	199	303	449	519	
125	AISI316	3,5	26	57	123	220	366	589	875	952	130
	WCB+PTFE	0,7	24	52	112	200	333	536	796	865	
150	AISI316	4,3	38	90	191	339	570	904	1332	1427	160
	WCB+PTFE	1,6	35	82	173	308	519	822	1211	1297	
200	AISI316	6,9	81	179	381	680	1142	1808	2674	2854	350
	WCB+PTFE	2,6	73	163	346	618	1038	1643	2430	2595	
250	AISI316	8,6	142	296	650	1193	1884	3045	4596	4947	400
	WCB+PTFE	3,5	129	269	591	1085	1713	2768	4179	4498	
300	AISI316	14	218	442	952	1722	2854	4756	7136	7783	580
	WCB+PTFE	4,3	199	402	865	1566	2595	4325	6487	7076	
350	AISI316	15	285	666	1427	2622	4282	6851	9524	11004	1100
	WCB+PTFE	5,2	259	605	1297	2384	3892	6228	8658	10004	
400	AISI316	24	428	916	1999	3391	5899	9039	14129	15403	1330
	WCB+PTFE	6,9	389	833	1817	3083	5363	8218	12845	14002	
450	AISI316	40	523	1161	2207	3673	6243	10666	15699	20521	2300
	WCB+PTFE	13	476	1055	2006	3339	5675	9696	14272	18656	
500	AISI316	55	647	1579	2673	4181	6862	12322	18892	26261	2900
	WCB+PTFE	19	588	1436	2430	3802	6238	11202	17175	23874	
600	AISI316	103	1056	2398	4424	6642	17964	18887	27260	32998	3250
	WCB+PTFE	34	960	2179	4022	6038	16331	17170	24782	29998	



Lever Op. Butterfly Valve with AISI316
Body and Disc, PTFE Seat



Pneumatic Actuator Op. Butterfly
Valve with PTFE Seat



Electric Actuator Op. Butterfly
Valve with PTFE Seat



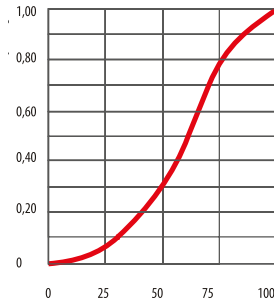
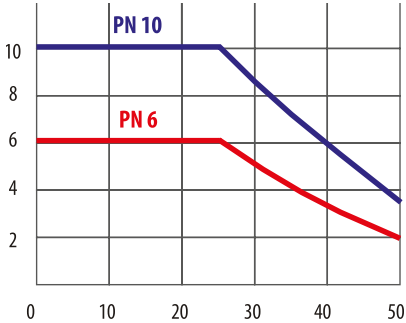
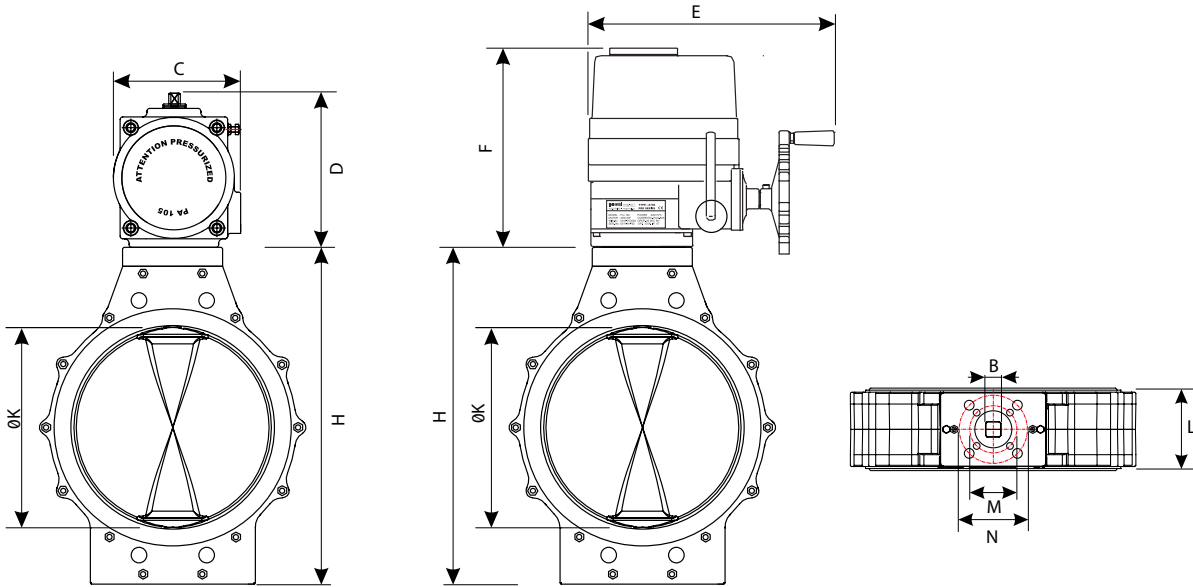
Gearbox Op. Butterfly Valve
with PTFE Seat



V115 Series U-PVC / PPRC Butterfly Valves

- Available in sizes from DN50 to 300.
- Designed to be sandwiched between flanges.
- Body and disc made of UV resistant powder added U-PVC / PPRC.
- Light Weight and highly resistant to a broad variety of chemicals and , abrasion.

- Top Plate is drilled to fit ISO5211 and standardized to allow direct mounting of pneumatic and electric actuators.
- Mainly used in potable water, sea water and general industrial applications.
- Maximum Allowable Working Pressure 10 bar.



Pneumatically Actuated
U-PVC Butterfly Valve

Dimensions(mm)

Size (DN)	Size (D)	B	ISO 5211 Flange M/N	L	H	ØK	Elect. Act. Model	C	D	Elect. Act. Model	E	F	Torque (Nm)	Kv (m ³ /h)	Weight (Kg)
50	63	11	F05 / F07	42	211	65	52 DA	72	92	PRO 030	125	145	12	110	1
65	75	11	F05 / F07	42	211	65	52 DA	72	92	PRO 030	125	145	18	110	1
80	90	11	F05 / F07	42	235	80	63 DA	83	108	PRO 050	125	145	20	245	1.25
100	110	14	F05 / F07	48	258	100	75 DA	95	120	PRO 080	125	150	30	390	2
125	125-140	14	F05 / F07	60	290	125	75 DA	95	120	PRO 080	125	150	50	690	3
150	160	14	F07 / F10	68	331	150	83 DA	100	130	PRO 100	130	211	60	995	5
200	200-225	14	F07 / F10	82	403	200	92 DA	108	140	PRO 200	338	259	80	2100	9.25
250	250-280	22	F07 / F10	94	457	250	105 DA	122	153	PRO 300	338	259	160	3195	13.75
300	315	22	F07 / F10	106	512	300	125 DA	142	175	PRO 300	338	259	290	5100	21

V110 (Wafer) / V112 (Lug) Series High Performance Butterfly Valves

PROVAL V110 Series PTFE seated high performance valves are of double eccentric design and are widely used in chemical, petrochemical, power, steel plants and common industrial applications as well as Shipbuilding industries.

PROVAL V110 Series high performance valves are available from DN50 to DN1200 sizes in wafer, full lug and flanged construction. Double eccentric design ensures 100% leak free operation, longer life cycle on sealing and seat materials and provides lower operating torques and low-cost actuation even at higher pressure applications.

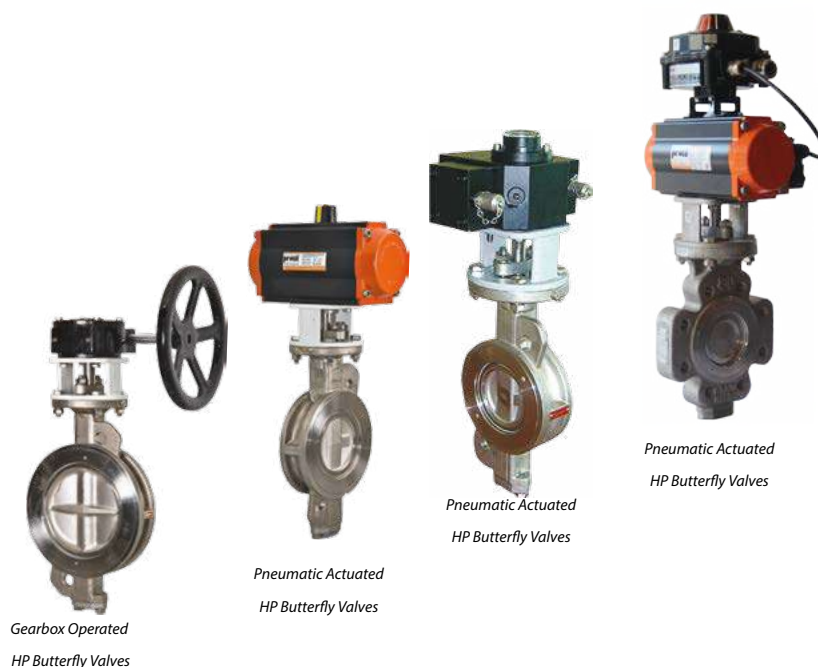


V110 Series valves can be supplied with hand levers and gear boxes as manual valves and with pneumatic, electric or hydraulic actuators

Proval V110 Series valves are Bureau Veritas design approved and can be inspected in accordance with 3.2.C for use in shipbuilding industry.

Applicable Standards

Design Standards	ISO5752
	API 609
Flange Standards	EN1092-1
	ANSI B 16.15 Class 150 / 300
Top Flange Standard	ISO 5211
Leakage Test Standard	EN 12266/1-2
	ISO 5208
	API 598
	ANSI B16-104 Class IV
Pressure Class	Max 40 Bar (PN)
	Max Class 300 (ANSI)
Fire-Safe Standard	API607



V110 Series High Performance Valves Kv Flow Coefficient Values (m3/h)

Size (DN)	Valve Opening Angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	0,9	9,4	23,1	34,1	51,2	70,8	90,4	113,4	119,4
65	0,9	9,4	23,1	34,1	51,2	70,8	90,4	113,4	119,4
80	1,7	17,1	42,6	62,3	93,8	131,4	170,6	213,2	221,8
100	3,4	27,3	68,2	102,4	153,5	213,2	272,9	341,2	358,3
125	5,9	46,9	119,4	170,6	255,9	366,8	469,2	580,1	614,2
150	9,4	76,8	196,2	290,1	435,1	605,6	776,2	972,4	1023,6
200	17,1	127,9	332,6	477,6	725,1	1015,1	1296,6	1620,7	1706
250	25,6	204,7	511,8	742,1	1117,4	1569,5	2013,1	2507,8	2644,3
300	34,1	307,1	784,8	1134,5	1706	2388,4	3070,8	3838,5	4051,8
350	46,9	383,8	963,9	1398,9	2132,5	2985,5	3838,5	4691,5	4990,1
400	63,9	554,4	1364,8	1961,9	2985,5	4179,7	5373,9	6696,1	7079,9
450	81,1	682,4	1706	2473,7	3753,2	5203,3	6738,7	8444,7	8871,2
500	106,6	853	2303,1	3326,7	5032,7	6994,6	8956,5	11089	11771,4
600	170,6	1450	3753,2	5373,9	8103,5	11344,9	14501	18168,9	19192,5

V110 Series Torque Values (Nm)

DN (mm)	PTFE Seat		PTFE + INCONEL		INCONEL	
	PN10	PN16	PN10	PN16	PN10	PN16
50	10	15	39	59	69	89
65	10	20	49	69	79	99
80	20	30	69	79	89	118
100	39	49	79	99	118	158
125	64	89	158	167	138	167
150	94	118	227	266	167	177
200	148	182	296	355	296	335
250	246	296	345	414	325	355
300	394	493	552	690	502	591
350	788	985	837	995	847	995
400	985	1182	1034	1212	1024	1251
450	1231	1478	1241	1428	1202	1507
500	1478	1724	1576	1970	1576	1970
600	3103	3743	1822	2463	1822	2463

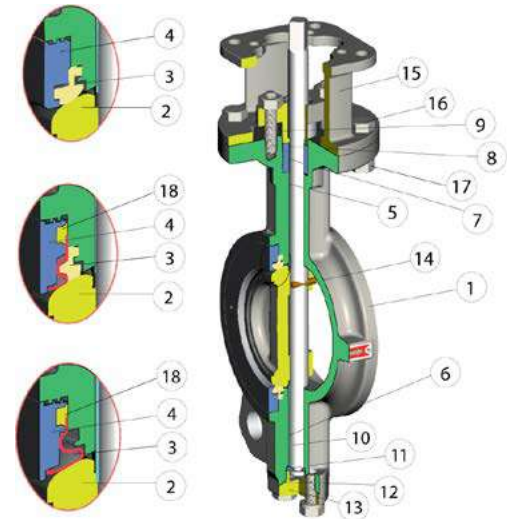


V110 Series Wafer / V112 Series Lug Type Double Eccentric High Performance Valves

PTFE Seat Valves: PTFE/RTFE Seat high performance valves can be used between -30°C to 210°C temperatures and available in PN16/25/40 bar pressure ranges.

PTFE/Metal Seat Valves: PTFE/RTFE Seat high performance valves can be used between -30°C to 210°C temperatures and available in PN16/25/40 bar pressure ranges. For over temperatures than 210°C PTFE melts out and than valves are becoming metal/metal seat type.

Metal/Metal Seat Valves: Metal/Metal seat valves are used in higher temperature applications over than 210°C, up to max 650°C temperature conditions and available in PN16/25/40 bar pressure ranges.



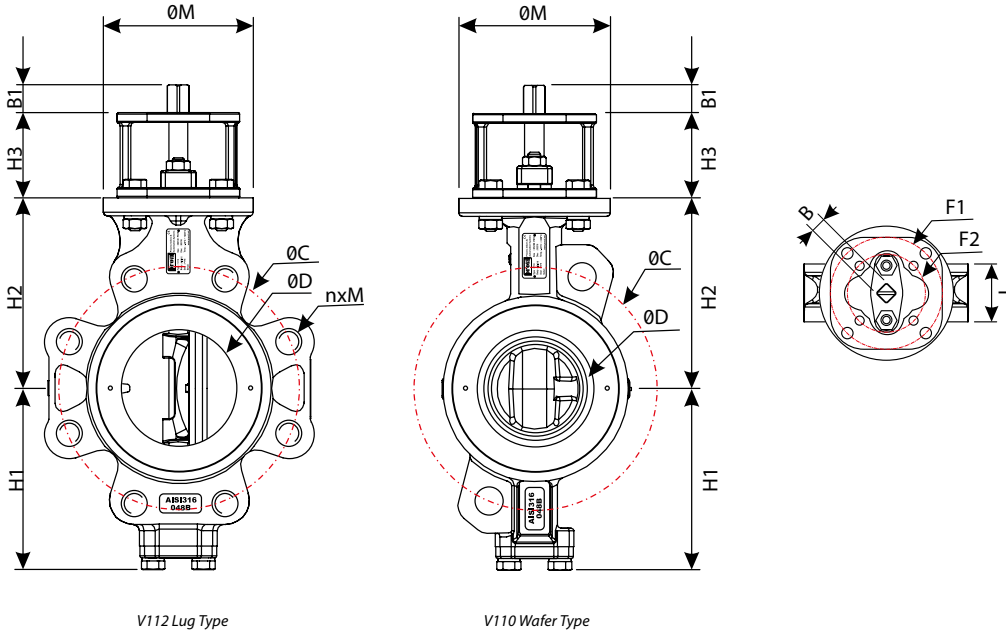
Material List

No	Part Name	V110 Standard PTFE Seat HP Butterfly Valves	V110 Fire-Safe Type HP Butterfly Valves	V110 Metal/Metal Seat HP Butterfly Valves
1	Body	A216 WCB Carbon Steel	A216 WCB Carbon Steel	A216 WCB Carbon Steel
		AISI304 Stainless Steel	AISI304 Stainless Steel	AISI304 Stainless Steel
		AISI316 Stainless Steel	AISI316 Stainless Steel	AISI316 Stainless Steel
		AISI317 Stainless Steel	AISI317 Stainless Steel	AISI317 Stainless Steel
2	Disc	AISI304 Stainless Steel	AISI304 Stainless Steel	AISI304 Stainless Steel
		AISI316 Stainless Steel	AISI316 Stainless Steel	AISI316 Stainless Steel
		AISI317 Stainless Steel	AISI317 Stainless Steel	AISI317 Stainless Steel
3	Seat	PTFE	AISI316 + PTFE	AISI316 Stainless Steel
		PTFE + %15 Glassfiber	AISI316 + PTFE + %15 Glassfiber	
		PTFE + %15 Graphite	AISI316 + PTFE + %15 Graphite	
4	Retainer	AISI316 Stainless Steel	AISI316 Stainless Steel	AISI316 Stainless Steel
5	Bushing	PTFE+AISI316	PTFE+AISI316	AISI316 Stainless Steel
6	Bushing	PTFE+AISI316	PTFE+AISI316	AISI316 Stainless Steel
7	Packing Ring	PTFE	Graphite	Graphite
		PTFE+%15 Glassfiber		
8	Stud	AISI304 Stainless Steel	AISI304 Stainless Steel	AISI304 Stainless Steel
9	Gland	AISI304 Stainless Steel	AISI304 Stainless Steel	AISI304 Stainless Steel
10	Stem	AISI316 Stainless Steel	AISI316 Stainless Steel	AISI316 Stainless Steel
11	Thrust Ring	AISI316 Stainless Steel	AISI316 Stainless Steel	AISI316 Stainless Steel
12	Seat	PTFE	Graphite	Graphite
13	Bottom Cap	A216 WCB Carbon Steel	A216 WCB Carbon Steel	A216 WCB Carbon Steel
		AISI304 Stainless Steel	AISI304 Stainless Steel	AISI304 Stainless Steel
		AISI316 Stainless Steel	AISI316 Stainless Steel	AISI316 Stainless Steel
		AISI317 Stainless Steel	AISI317 Stainless Steel	AISI317 Stainless Steel
14	Pin	AISI316 Stainless Steel	AISI316 Stainless Steel	AISI316 Stainless Steel
15	Yoke	A216 WCB Carbon Steel	A216 WCB Carbon Steel	A216 WCB Carbon Steel
		Stainless Steel	Stainless Steel	Stainless Steel
16	Bolt	Stainless Steel	Stainless Steel	Stainless Steel
17	Nut	Stainless Steel	Stainless Steel	Stainless Steel
18	Packing	-	Graphite	Graphite



V110 Series Gearbox Op. HP Wafer Type Butterfly Valve

V110 Series Wafer / V112 Series Lug Type Double Eccentric High Performance Valves



V112 Series Pneumatic Actuator Op. HP Lug
Type Butterfly Valve



V110 Series Electric Actuator Op. HP Wafer
Type Butterfly Valve

Dimensions(mm)

Size (DN)	L	H1	H2	H3	ØD	ØC			nxM			ISO5211 Top Flange			B	B1	Weight (kg)	
						PN10	PN16	#150	PN10	PN16	#150	F1	F2	ØM			Wafer	Lug
						50	43	99	118	60	37	125	125	120.7			4xM12	4xM12
65	46	110	125	60	63	145	145	139.7	4xM12	4xM12	4x1/2"	F07	F05	70	11	18	4,5	5,5
80	47	128	140	70	78	160	160	152.4	4xM12	4xM12	4x1/2"	F10	F07	102	14	23	7	8,5
100	53	150	157	70	95	180	180	190.5	4xM16	4xM16	4x1/2"	F10	F07	102	14	23	9	14
125	56	163	170	70	118	210	210	215.9	4xM16	4xM16	4x1/2"	F10	F07	102	17	23	12	18
150	56	176	185	70	143	240	240	241.3	4xM16	4xM16	4x5/8"	F10	F07	102	17	23	13,5	19,5
200	60	206	220	80	188	295	295	298.5	4xM16	4xM16	4x5/8"	F12	F10	125	19	28	22	31
250	68	238	260	80	236	350	355	362	8xM16	8xM16	4x5/8"	F12	F10	125	22	28	32	47
300	78	269	290	100	282	400	410	431.8	8xM16	8xM16	8x5/8"	F14	F12	160	27	37	48	67
350	78/92	306	326	100	322	460	470	476.3	8xM16	8xM16	8x3/4"	F14	F12	160	27	37	66	81
400	102	342	370	120	371	515	525	539.8	8xM20	8xM20	8x3/4"	F16	F14	195	36	47	107	143
450	114	370	395	120	418	565	585	577.9	8xM20	12xM20	8x3/4"	F16	F14	195	36	47	130	163
500	127	399	430	120	466	620	650	635	12xM20	12xM24	12x7/8"	F16	F14	195	46	56	163	230
600	154	455	490	150	570	725	770	749.3	12xM20	12xM24	12x7/8"	F25	F16	300	46	56	278	377

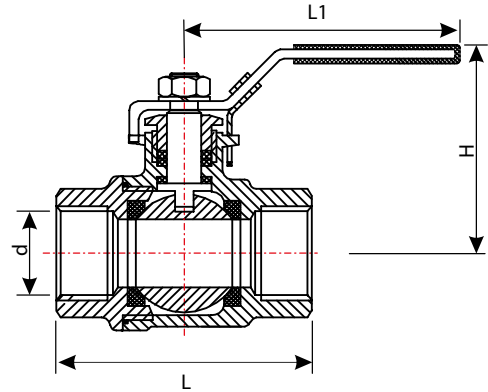
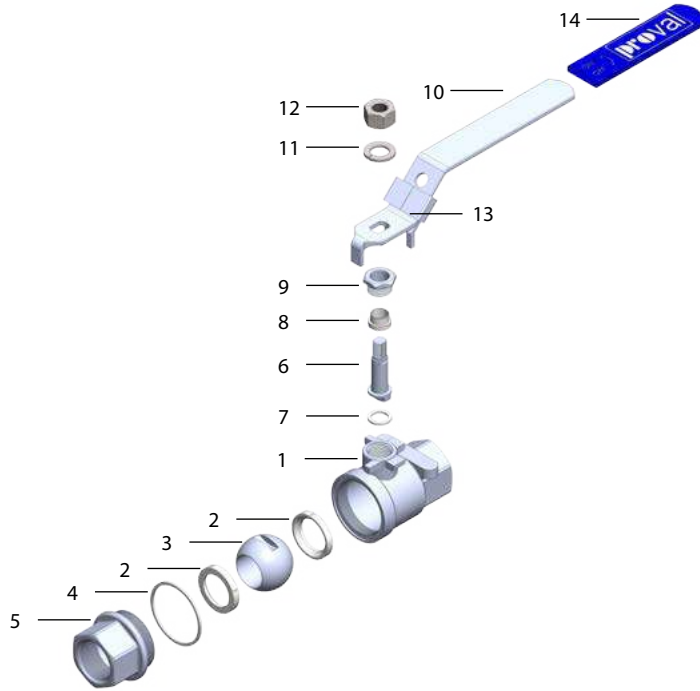


V201 Series 2-Piece Threaded Ball Valves

Available in sizes from DN8 to DN100 with BSP threaded end connections. Face to Face Dimensions are according to DIN3202-M3 and PN63 working pressure. Ideally suited to be used as a manual isolation valve in a wide range of process applications involving liquids, gases and steam.



DIN
DIN3202-M3
Face to Face



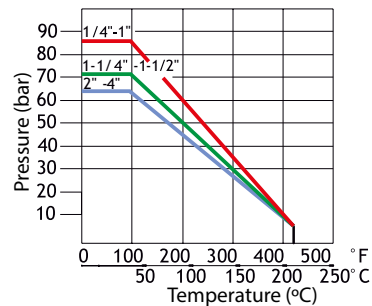
Material List

No	Part Name	Material	Qty	No	Part Name	Material	Qty	No	Part Name	Material	Qty
1	Body	AISI316	1	6	Stem	AISI316	1	11	Spring Washer	AISI304	1
2	Ball Seat	PTFE	2	7	Thrust Washer	PTFE	1	12	Handle Nut	AISI304	1
3	Ball	AISI316	1	8	V-Ring	PTFE	1	13	Locking Plate	AISI304	1
4	Body Seat	PTFE	1	9	Gland Nut	AISI304	1	14	Handle Sleeve	Vinyl	1
5	Cap	CF8M	1	10	Hand Lever	AISI304	1				

Dimensions(mm)

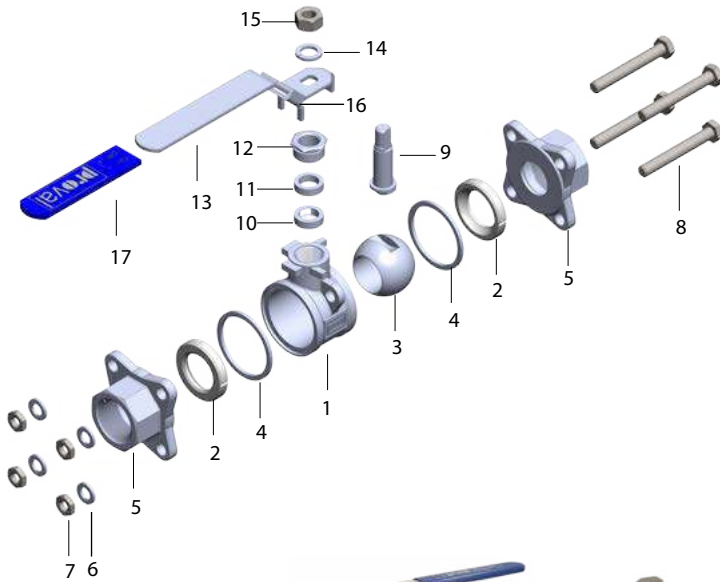
Size (DN)	d	L	H	L1	Kv (m ³ /h)	Net Unit Weight (kg)
1/4"	6	50	50	100	6	0,22
3/8"	10	60	50	100	16	0,30
1/2"	15	75	52	100	35	0,34
3/4"	20	80	57	115	46	0,52
1"	25	90	78	150	72	0,78
1-1/4"	32	110	88	150	105	1,23
1-1/2"	40	120	95	180	170	2,00
2"	50	140	100	180	275	2,98
2-1/2"	65	185	120	254	507	6,05
3"	80	205	130	254	905	9,90
4"	100	240	160	285	1414	16,60

Pressure-Temperature Diagram

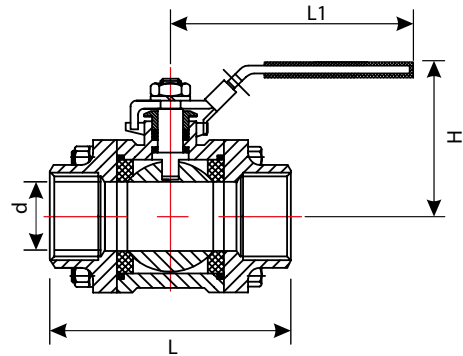


V202 Series 3-Piece Threaded Ball Valves

DIN
DIN3202-M3
Face to Face



PN63 Threaded Ball Valve with Lever



Butt Welded Ball Valve



Spring Return Lever

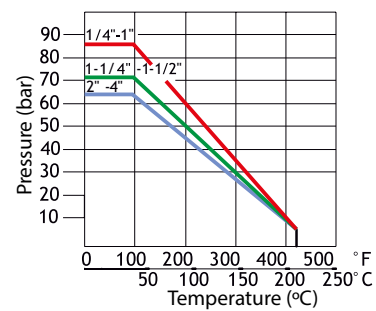
Material List

No	Part Name	Material	Qty	No	Part Name	Material	Qty	No	Part Name	Material	Qty
1	Body	AISI316	1	7	Stud Nut	AISI304	4 (Max 12)	13	Hand Lever	AISI304	1
2	Ball Seat	PTFE	2	8	Stud Bolt	AISI304	4 (Max 6)	14	Spring Washer	AISI304	1
3	Ball	AISI316	1	9	Stem	AISI316	1	15	Handle Nut	AISI304	1
4	Body Seal	PTFE	2	10	Thrust Washer	PTFE	1	16	Locking Plate	AISI304	1
5	Cap	AISI116	2	11	V-Ring	PTFE	1	17	Handle Sleeve	Plastic	1
6	Spring Washer	AISI304	4 (Max 12)	12	Gland Nut	AISI304	1				

Dimensions(mm)

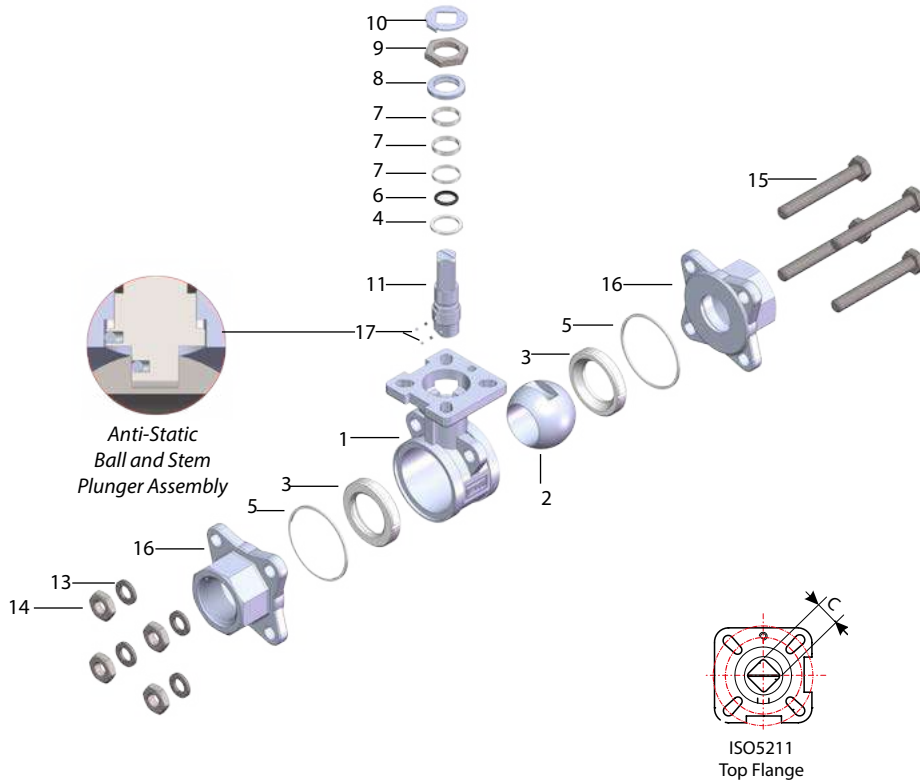
Size (DN)	d	L	H	L1	Kv (m ³ /h)	Net Unit Weight (kg)
1/4"	11	50	51	105	8,6	0,40
3/8"	12,5	60	51	105	16	0,42
1/2"	15	75	53	118	35	0,45
3/4"	20	80	60	118	46	0,73
1"	25	90	75	150	72	1,04
1-1/4"	32	110	80	150	105	1,65
1-1/2"	40	120	88	182	170	2,25
2"	50	140	95	182	275	3,15
2-1/2"	65	185	121	254	507	6,50
3"	80	205	135	254	905	9,60
4"	100	240	158	285	1414	16,40

Pressure-Temperature Diagram

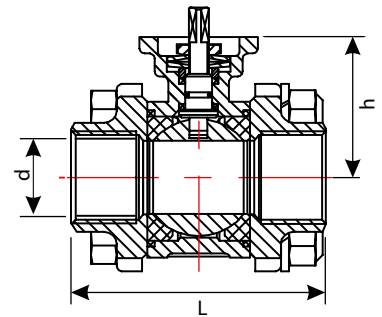




V203 Series 3-Piece, ISO5211 Direct Mount Ball Valves



PN63 Threaded Ball Valve with Top Flange



Material List

No	Part Name	Material	Qty	No	Part Name	Material	Qty	No	Part Name	Material	Qty
1	Body	AISI316	1	7	V-Ring	PTFE	1	13	Spring Washer	AISI304	4 (Max 12)
2	Ball	AISI316	1	8	Thrust Washer	AISI304	1	14	Stud Nut	AISI304	4 (Max 12)
3	Ball Seat	Glass Fiber Reinforced PTFE* Graphite Reinforced PTFE	2	9	Gland Nut	AISI304	1	15	Stud Bolt	AISI304	4 (Max 6)
4	Washer	PTFE	1	10	Locking Washer	AISI304	1	16	Cap	AISI316	2
5	Body Seal	PTFE	2	11	Stem	AISI316	1	17	Anti-Static Device	AISI316	2
6	Stem O-Ring	Viton	1	12	Belleville Washer	AISI301	2				

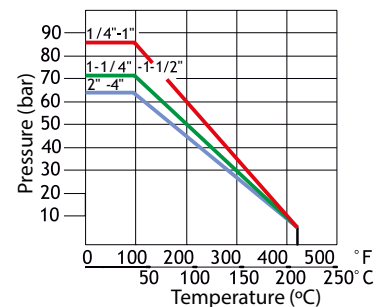
*Standard construction material for ball seats.

Dimensions(mm)

Size (DN)	d	L	h	C	ISO5211 Top Flange	Torque (N.m)	Kv (m ³ /h)	Net Unit Weight (kg)
1/4"	11	50	43	9	F03	4	8,6	0,46
3/8"	12,5	60	43	9	F03	4	16	0,48
1/2"	15	75	48	9	F03	5	35	0,51
3/4"	20	80	53	11	F04/F05	8	46	0,89
1"	25	90	58,5	11	F04/F05	10	72	1,27
1-1/4"	32	110	71	14	F05/F07	14	105	2,04
1-1/2"	40	120	76,5	14	F05/F07	18	170	3,00
2"	50	140	85	14	F05/F07	25	275	3,80
2-1/2"	65	185	100	17	F07/F10	48	507	7,80
3"	80	205	112,5	17	F07/F10	75	905	12,40
4"	100	240	125,5	17	F07/F10	110	1414	20,80

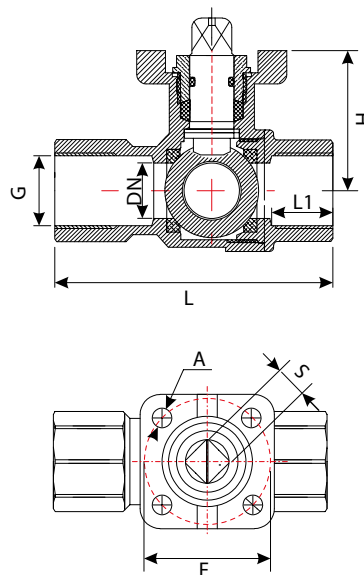
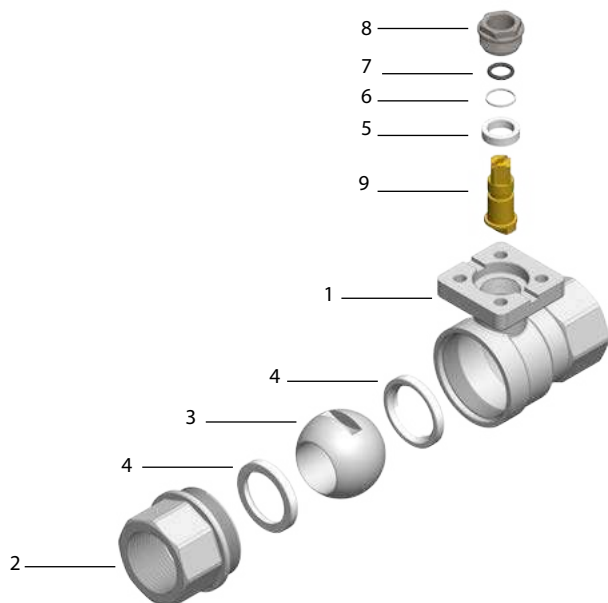


Pressure-Temperature Diagram



V204 Series ISO5211 Direct Mount Threaded Ball Valves

- Available in sizes ranging from DN15 to DN100 with a two piece body construction.
- Ideally suited to be used as actuated isolation valve in lines containing non-corrosive, smooth chemicals, gases, oils, water & wastewater.
- Built-in ISO5211 mounting pad facilitates direct mounting of actuators.
- Lower Seating / Unseating torques allow more affordable actuators.



Material List

No	Part Name	Material	Qty	No	Part Name	Material	Qty	No	Part Name	Material	Qty
1	Body	Nickel Plated Brass	1	4	Ball Seat	PTFE	2	7	O-Ring	NBR	1
2	Cap	Nickel Plated Brass	1	5	Packing	PTFE	1	8	Gland Nut	Brass	1
3	Ball	Nickel Plated Brass	1	6	Thrust Washer	EPDM	1	9	Stem	Brass	1

Dimensions(mm)

Size(DN)	15	20	25	32	40	50	65	80	100
PN	40	40	40	40	40	40	25	25	25
G	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-2/2"	3"	4"
L	75	80	90	112	127	142	161	185	215
L1	16,5	18,5	22	30	30	32	32	34	36
H	38	40	45	55	61	72,5	82,5	95	110
A	5,5	5,5	5,5	5,5	6,7	6,7	6,7	9	9
F	F03	F03	F03	F05	F05	F05	F07	F07	F07
S	9	9	9	11	11	14	14	14	17
Net Unit Weight (kg)	0,33	0,45	0,65	1,10	1,50	2,30	3,25	5,60	9,40



Pneumatically Actuated Brass
Threaded Ball Valve

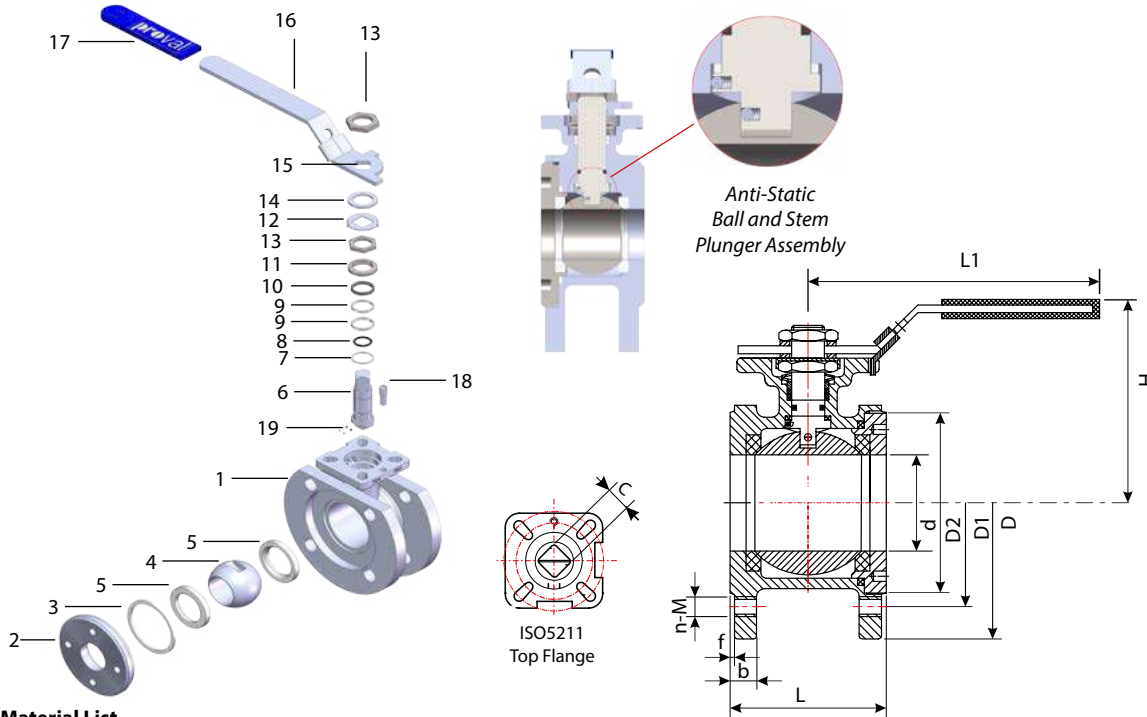


Electric Actuator Op. Brass
Threaded Ball Valve



V205 Series Wafer (Monoblock) Flanged Ball Valves

- Available in sizes ranging from DN15 to DN200 with a compact, light-weight, one-piece body construction eliminating the leak path inherent in a body joint.
- Built-in ISO5211 mounting pad facilitates direct mounting of pneumatic, electric and hydraulic actuators.
- Bureau Veritas approved.
- 3.2 certificate available on demand.
- Pressure Rating PN16 (DN15-50) / PN40 (DN65-200)



AISI316
Monoblock Ball
Valve



Heating Jacketed
AISI316 Monoblock
Ball Valve

Material List

No	Part Name	Material (AISI316)	Material (A216WCB)	Qty	No	Part Name	Material (AISI316)	Material (A216WCB)	Qty	No	Part Name	Material (AISI316)	Material (A216WCB)	Qty
1	Body	AISI316	WCB	1	8	Stem Seal	Viton	Viton	1	15	Locking Plate	AISI304	AISI304	1
2	Insert	AISI316	WCB	1	9	Packing	PTFE	PTFE	1	16	Handle	AISI304	AISI304	1
3	Body Seal	PTFE	PTFE	1	10	Gland	AISI304	AISI304	1	17	Handle Sleeve	Plastic	Plastic	1
4	Ball	AISI316	AISI316	1	11	Belleville Washer	AISI301	AISI301	2	18	Stop Pin	AISI304	AISI304	1
5	Ball Seat	Glass Fiber Reinforced PTFE Graphite Reinforced PTFE	PTFE	2	12	Locking Washer	AISI304	AISI304	1	19	Anti-Static Device	AISI316	AISI316	2
6	Stem	AISI316	AISI316	1	13	Gland Nut	AISI304	AISI304	2					
7	Thrust Washer	PTFE	PTFE	1	14	Washer	AISI304	AISI304	2					

Dimensions(mm)

Size (DN)	d	L	D	PN16		PN40		#150		b	f	H	L1	C	ISO5211 Top Flange	Torque (N.m)	Kv (m³/h)	Weight (Kg)
				D1	n-M	D1	n-M	D1	n-M									
15	15	36	95	65	4-M12	65	4-M12	60,3	4-1/2"UNC	12	2	70	115	9	F03	5	35	1,11
20	20	38	105	75	4-M12	75	4-M12	69,8	4-1/2"UNC	12	2	78	115	9	F03	8	46	1,48
25	25	50	115	85	4-M12	85	4-M12	79,4	4-1/2"UNC	12	2	90	160	11	F04/F05	10	72	1,95
32	32	53	140	100	4-M16	100	4-M16	88,9	4-1/2"UNC	14	2	100	160	11	F04/F05	14	105	3,10
40	40	65	150	110	4-M16	110	4-M16	98,4	4-1/2"UNC	15	3	105	200	14	F05/F07	18	170	4,18
50	50	78	165	125	4-M16	125	4-M16	120,6	4-5/8"UNC	16	3	125	200	14	F05/F07	25	275	5,37
65	65	98	185	145	4-M16	145	8-M16	139,7	4-5/8"UNC	16	3	140	155	17	F07/F10	48	507	8,18
80	76	118	200	160	8-M16	160	8-M16	152,4	4-5/8"UNC	18	3	145	255	17	F07/F10	75	905	11,92
100	94	140	220	180	8-M16	190	8-M20	190,5	8-5/8"UNC	18	3	175	300	17	F07/F10	110	1414	16,92
125	125	195	250	210	8-M16	220	8-M24	215,9	8-3/4"UNC	22	3	228	300	22	F10/F12	200	2520	27,5
150	150	225	285	240	8-M20	250	8-M24	241,3	8-3/4"UNC	22	3	246	300	22	F10/F12	300	3950	36,5
200	200	275	340	295	12-M20	320	12-M27	298,4	8-3/4"UNC	24	3	310	400	27	F12/F14	400	5705	68



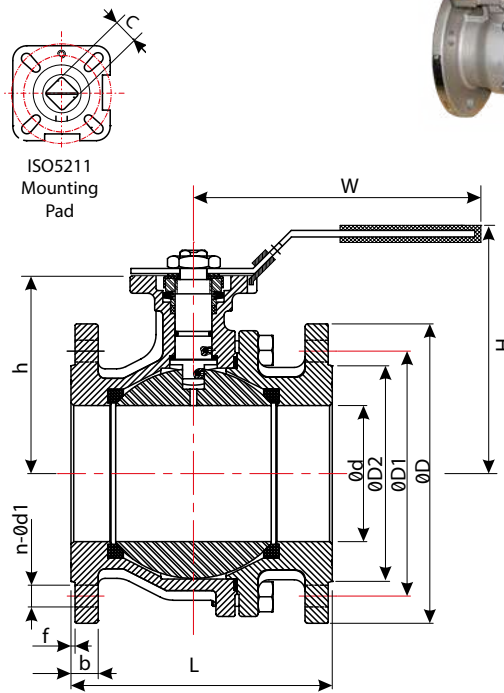
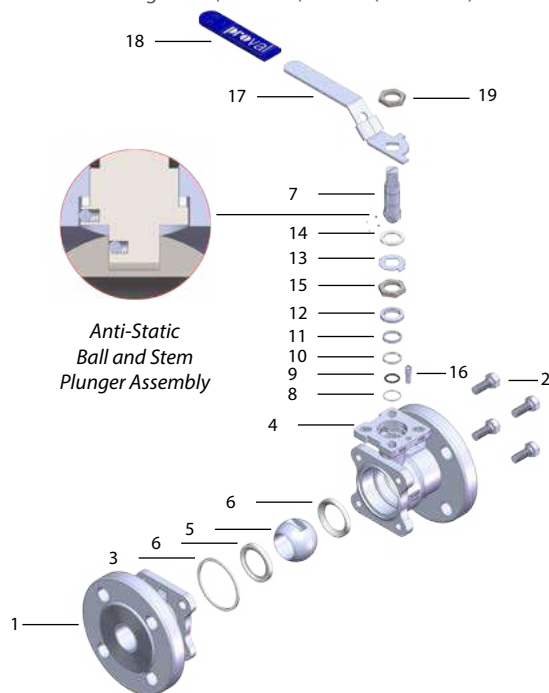
Lever Op. Flanged Ball Valve
with Limit Switch Box



Pneumatically Actuated
Monoblock Ball Valve

V206 Series 2-Piece Short-Pattern Flanged Ball Valves

- Available in sizes ranging from DN15 to DN200 with a split body construction either in st. steel or carbon steel.
- Face to face dimensions conform to DIN3202-F4(DN15-100) / F5(DN125-200)
- Dual pattern ISO 52211 mounting pad facilitates direct mounting of actuators.
- Anti-static design
- Pressure Rating PN16 (DN15-50) / PN40 (DN65-200)



Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Body Cap	AISI316 / AISI304 / A216 WCB	8	Thrust Washer	PTFE	15	Gland Nut	AISI304
2	Cap Screw	AISI304	9	Stem Seal	Viton	16	Stop Pin	AISI304
3	Body Seal	PTFE	10	Packing	PTFE	17	Handle	AISI304 (15-100) / Galv.Pipe (125-200)
4	Body	AISI316 / AISI304 / A216 WCB	11	Packing Ring	AISI304	18	Handle Sleeve	Vinyl
5	Ball	AISI316 / AISI304	12	Belleville Washer	AISI301	19	Handle Nut	AISI304
6	Body Seat	Glass Fiber Reinforced PTFE Graphite Reinforced PTFE	13	Locking Washer	AISI304			
7	Stem	AISI316	14	Bushing	AISI304			

Dimensions(mm)

Size (DN)	d	L	ØD	PN16		PN40		#150		D2	f	H	W	C	ISO5211	h	Kv (m ³ /h)	Net Unit Weight (Kg)
				D1	n-Ød1	D1	n-Ød1	D1	n-Ød1									
15	15	115	95	65	4-14	65	4-14	60,3	4-15,75	45	2	82	117	9	F03/F04	48	35	2.08
20	20	120	105	75	4-14	75	4-14	69,8	4-15,75	58	2	87	117	9	F03/F04	53	46	2.8
25	25	125	115	85	4-14	85	4-14	79,4	4-15,75	68	2	90	164	11	F04/F05	58.5	72	3.73
32	32	130	140	100	4-18	100	4-18	88,9	4-15,75	78	2	100	164	11	F04/F05	71	105	5.18
40	40	140	150	110	4-18	110	4-18	98,4	4-15,75	88	3	116	203	14	F05/F07	76.5	170	6.38
50	50	150	165	125	4-18	125	4-18	120,6	4-19,05	102	3	125	203	14	F05/F07	85	275	8.78
65	65	170	185	145	4-18	145	8-18	139,7	4-19,05	122	3	154	255	17	F07/F10	100	507	12.70
80	80	180	200	160	8-18	160	8-18	152,4	4-19,05	138	3	164	255	17	F07/F10	112.5	905	16.00
100	100	190	220	180	8-18	190	8-22	190,5	8-19,05	158	3	180	302	17	F07/F10	125.5	1414	22.10
125	125	325	250	210	8-18	220	8-26	215,9	8-22,35	188	3	228	600	22	F10/F12	155	2520	50.2
150	150	350	285	240	8-22	250	8-26	241,3	8-22,35	212	3	246	600	22	F10/F12	172.5	3950	46.8
200	200	400	340	295	12-22	320	12-30	298,4	8-22,35	268	3	310	800	27	F12/F14	217	5705	81.4



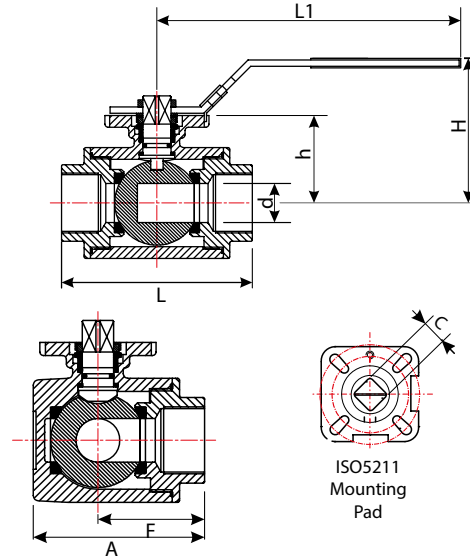
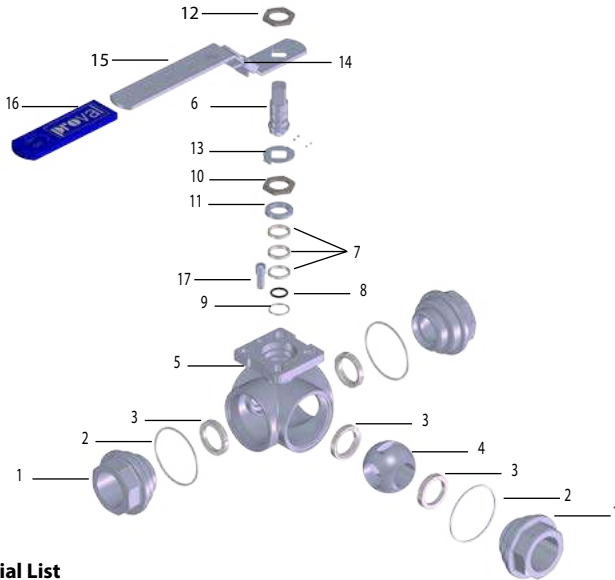


V207 L and V208 T Port, ISO5211 Direct Mount Threaded Ball Valves

- Available in sizes ranging from DN8 to DN100 with either "L"-V207 or "T"-V208 ported configurations.
- Dual Pattern ISO5211 pad allows direct mounting of pneumatic and electric actuators.
- Offer reliable and cost effective automated flow control solutions with an anti static design eliminating the possibility of static discharge.
- Pressure Rating PN63.



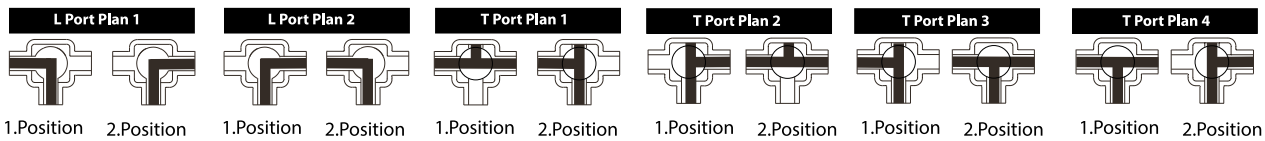
ISO5211 Mounting Pad



Material List

No	Part Name	Material	Qty	No	Part Name	Material	Qty	No	Part Name	Material	Qty
1	Cap	AISI316	3	7	V-Ring	PTFE	1	13	Locking Washer	AISI304	1
2	Body Seal	PTFE	3	8	Stem O-Ring	Viton	1	14	Locking Plate	AISI304	1
3	Ball Seat	Glass Fiber Reinforced PTFE Graphite Reinforced PTFE	4	9	Thrust Washer	PTFE	1	15	Handle	AISI116	1
4	Ball	AISI316	1	10	Gland Nut	AISI316	1	16	Handle Sleeve	Vinyl	1
5	Body	AISI316	2	11	Belleville Washer	AISI301	1	17	Stop Pin	AISI304	1
6	Stem	AISI316	1	12	Handle Nut	AISI304	1				

L / T Port Flow Plan Options



Dimensions(mm)

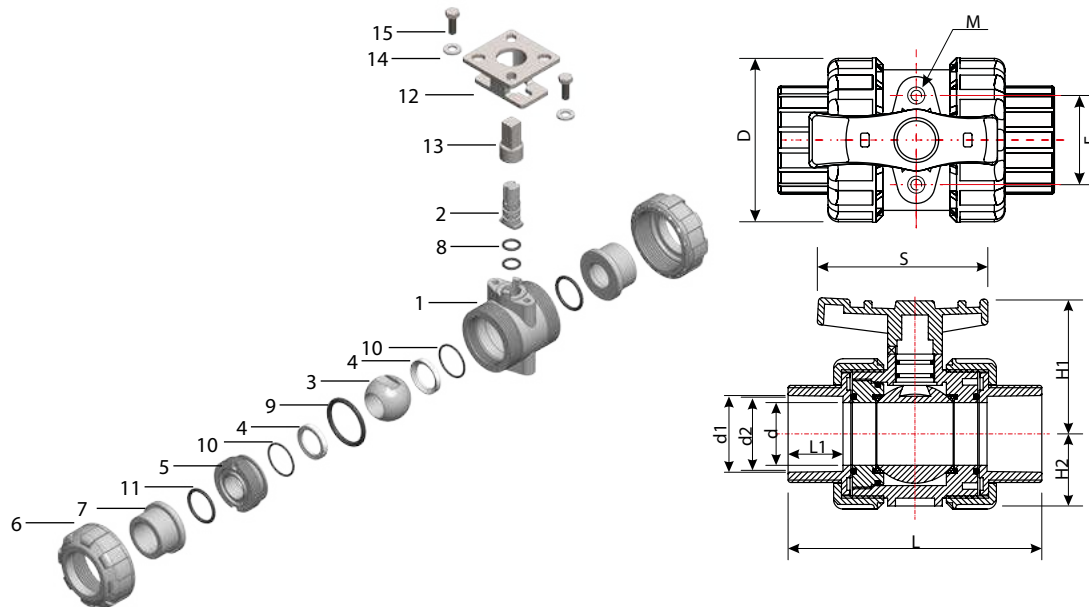
Size (DN)	d	L	H	h	L1	F	A	C	ISO5211 Top Flange	Torque (Nm)	Kv (m ³ /h)	Weight (Kg)
1/4"	9,5	75	66	43	130	37,5	57,5	9	F03/F04	8	2,29	0,70
3/8"	11	75	66	43	130	37,5	57,5	9	F03/F04	8	3,86	0,67
1/2"	12	75	66	48	130	37,5	57,5	9	F03/F04	8	4,75	0,73
3/4"	15	85	72	53	161	42,5	65,5	11	F04/F05	9	5,11	0,94
1"	20	100	77	58,5	161	50	79	11	F04/F05	15	11,8	1,38
1-1/4"	25	122	92	71	203	61	97	14	F05/F07	20	19,6	2,89
1-1/2"	32	131	96	76,5	203	65,5	106,5	14	F05/F07	30	33,2	3,60
2"	40	158	107	85	203	79	129	14	F05/F07	45	53,7	6,21
2-1/2"	49	178	185	100	254	89	145	17	F07/F10	50	92,5	8,72
3"	69	202	147	112,5	254	101	167	17	F07/F10	80	131	12,81
4"	75	246	169	125,5	310	123	205	17	F07/F10	110	202	21,60



Pneumatically Actuated
3 Way Ball Valve

V209 Series U-PVC / PPRC True Union Socket Ball Valves - Acid & Water Type

- Available in sizes ranging from DN15 to DN65 with a 3-piece body constructed of UPVC / PPRC and plain female ends for socket fusion joining.
- ISO 5211 compatible mounting bracket and drive coupling needed for pneumatic or electric actuator assembly available upon request.
- Molded lugs on the handle facilitates dismounting of seal carrier.
- Ideal for use in commercial and general industrial applications such as sewage and water treatment, chemicals, swimming pools.
- Max Allowable Operating Pressure 10 bar.
- O-Rings and seals shall be EPDM or FKM.



Pneumatically Actuated PVC Ball Valve



Electrically Actuated PVC Ball Valve

Material List

No	Part Name	Qty	Su Type	Asit Type	No	Part Name	Qty	Su Type	Asit Type	No	Part Name	Qty	Su Type	Asit Type
1	Body	1	UPVC / PPRC	UPVC / PPRC	6	Union Nut	2	UPVC / PPRC	UPVC / PPRC	11	Union Seal	2	EPDM	VITON
2	Stem	1	UPVC / PPRC	UPVC / PPRC	7	End Connector	2	UPVC / PPRC	UPVC / PPRC	12	Mounting Bracket	1	SS304	SS304
3	Ball	1	UPVC / PPRC	UPVC / PPRC	8	Stem O-Ring	2	EPDM	VITON	13	Stem Coupler	1	SS304	SS304
4	Seal Carrier	2	PTFE	PTFE	9	Body Seal	1	EPDM	VITON	14	Washer	2	SS304	SS304
5	Union Bush	1	UPVC / PPRC	UPVC / PPRC	10	Ball Seat O-Ring	2	EPDM	VITON	15	Bolt	2	SS304	SS304

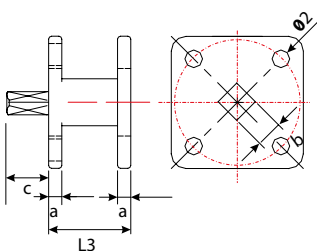
Dimensions(mm)

Size Inch/DN	d	d1	d2	D	L	L1	S	H1	H2	F	M
1/2" (15)	15	20,3	20,1	53	104	22,5	65,8	49	24,5	31	M6
3/4" (20)	20	25,3	25,1	61	115	26	78,6	60	29,5	33	M6
1" (25)	25	32,3	32,1	71	131	30	86,7	68	34	40	M6
1 1/4" (32)	32	40,3	40,1	83	147	32	97,4	76	38	52	M6
1 1/2" (40)	40	50,3	50,1	96	164	35	108,6	85	45	52	M8
2" (50)	50	63,3	63,1	116	210	40	132	97	55	70	M8
2 1/2" (65)	65	75,3	75,1	150	240	46	150	180	70	83	M8



PVC Ball Valve with ISO5211 Bracket

Bracket Dimensions



Size (Inch/DN)	b	ISO 5211	ø2	a	L3	Torque (Nm)
1/2" (15)	9	F04	6	4,5	28	15
3/4" (20)	9	F04	6	4,5	28	21
1" (25)	11	F04-F05	7	5	50	24
1 1/4" (32)	11	F04-F05	7	5	50	33
1 1/2" (40)	11	F05	8	6	50	40
2" (50)	11	F05	8	6	50	52
2 1/2" (65)	17	F07-F10	10-12	6	70	90

Note: Torque values given above are based on liquid media.



V210 Series V Type Segmented Ball Valves

PROVAL Ball Sector (Segment) valves are specially designed for control applications of various medium like liquids, Washersps and steam.

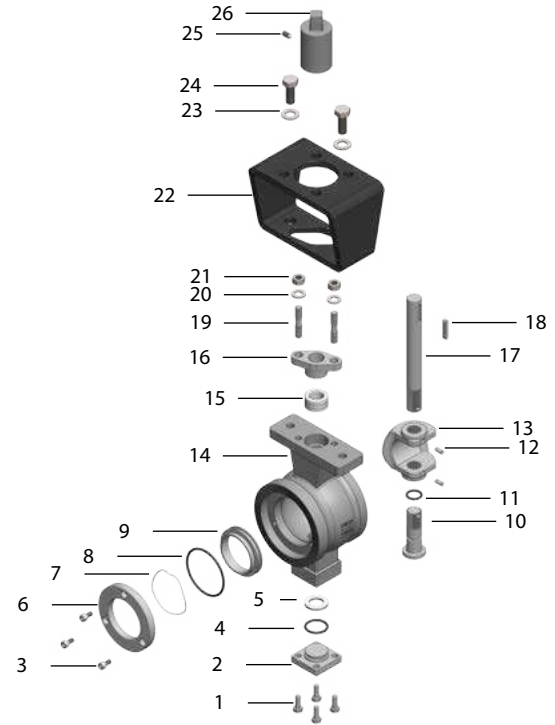
V210 Series valves are used for sticky and crystallizing mediums, because of cleaning function of metal seat for both control and on/off applications where standard PTFE seated valves does not last for long. If the medium Seatin solid particles, the geometry of metal seat and segment will warranty better function than standard valves.

Metal Seated valves meet the leakage performance of ANSI FCI 70-2 Class IV while PTFE seated vales provide zero leakage,tight shut-off to Class VI.

The wafer pattern segment valves are reduced bore type manufactured in stainless steel throughout with a hard chromed ball sector and Steelite or PTFE seat. The V-port gives an excellent control characteristic which is intermediate between linear and equal percentage.



Balls segmented with a various degrees of V angle are available, in order to achieve more precise control and desired flow characteristics.



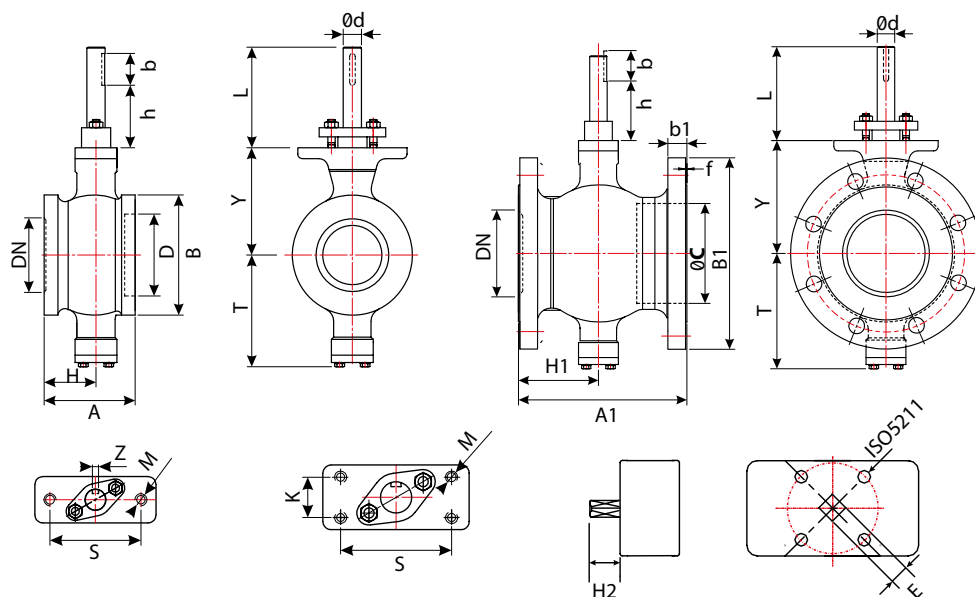
Material List

No	Part Name	Qty	Material
1	Cap Screw	4	AISI304
2	Plug	1	WCB / AISI304 / AISI316
3	Screw	3	AISI316
4	O-Ring	1	FKM (Viton)
5	Washer	1	PTFE
6	Plug	1	AISI316
7	Spring	1	AISI316
8	O-Ring	1	FKM (Viton)
9	Seat	1	AISI316+HCr
10	Lower Stem	1	X20Cr13 / AISI304 / AISI316
11	O-Ring	1	FKM (Viton)
12	Pin	2	AISI304 / AISI316
13	Ball	1	AISI304+HCr / AISI316+HCr
14	Body	1	WCB / AISI304 / AISI316
15	Bush	1	AISI304+PTFE / AISI316+PTFE
16	Gland	1	WCB / AISI304 / AISI316
17	Upper Stem	1	AISI304 / AISI316
18	Key	1	X20Cr13 / AISI304 / AISI316
19	Screw	1	AISI304 / AISI316
20	Washer	2	AISI304 / AISI316
21	Somun	2	AISI304 / AISI316
22	Yoke	1	Carbon Steel
23	Washer	2	AISI304 / AISI316
24	Screw	2	AISI304 / AISI316
25	Set screw	1	AISI304
26	Stem Coupler	1	WCB / AISI304 / AISI316



Pneumatically Actuated Segmented Ball Valve

V210 Series V-Notch Segmented Ball Valves

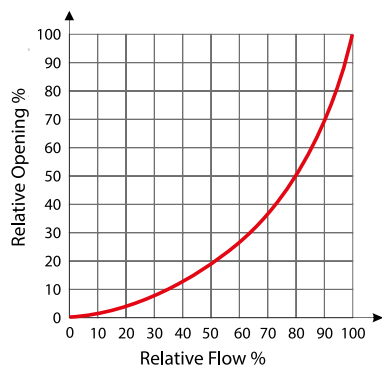


Pneumatically Actuated
Segmented Ball Valve

Dimensions(mm)

DN	A	A1	D	H	H1	B	B1	b1	f	ØC	T	Y	L	Ød	h	b	S	K	M	Z	ISO5211 Flange	E	H2	Kv (m ³ /h)	Net Unit Weight (kg)	
																									Wafer	Flanged
25	50	102	16	30	51	68	115	16	2	38	81	73	75	16	40	35	75	-	2-M10	5	F07	11	17	31	2,7	4
32	60	102	16	35	51	76	140	18	2	45	86	78	75	16	40	35	75	-	2-M10	5	F07	11	17	48	3	5,5
40	60	114	16	35	57	84	150	18	2	50	90	80	75	16	40	35	75	-	2-M10	5	F07	14	20	81	3,5	6
50	75	124	16	43	60	100	165	20	2	62	93	90	75	16	40	35	75	-	2-M10	5	F07	17	20	131	4,2	7,5
65	100	145	16	50	70	118	185	20	2	73	108	105	75	16	40	35	75	-	2-M10	5	F07	17	20	226	6	9,5
80	100	165	20	57	75	132	200	20	2	93	123	118	75	20	40	35	90	28	4-M10	6	F10	22	25	310	7,5	14
100	115	194	20	65	92	158	220	22	2	115	138	130	75	20	40	35	90	28	4-M10	6	F10	22	25	467	11	21,5
125	129	194	25	78	97	184	250	22	2	134	148	145	80	25	40	40	90	28	4-M10	8	F12	27	30	784	15	23
150	160	229	30	95	110	216	285	24	2	164	170	170	94	30	44	50	110	40	4-M12	8	F12	27	30	1232	25	37
200	200	243	30	120	120	268	340	24	2	206	200	201	94	30	44	50	110	40	4-M12	8	F14	36	40	1882	39	58
250	240	297	40	148	148	326	405	26	2	260	240	237	98	40	38	60	135	40	4-M16	12	F14	36	40	3055	64	85
300	-	338	40	-	190	-	460	28	2	316	286	282	98	40	-	60	135	40	4-M16	12	F14	36	40	4958	-	131
350	-	400	50	-	221	-	520	30	2	372	330	337	125	50	-	60	140	64	4-M16	14	F14	36	40	7132	-	199
400	-	400	60	-	220	-	580	32	2	420	367	372	172	60	-	80	170	80	4-M20	18	F16	46	50	9213	-	345
450	-	520	80	-	290	-	640	40	2	470	422	432	172	70	-	90	190	90	4-M24	20	F16	46	50	11140	-	510
500	-	600	80	-	320	-	715	44	2	516	490	498	180	80	-	100	190	90	4-M24	22	F16	46	50	14137	-	607

Flow Characteristics Curve



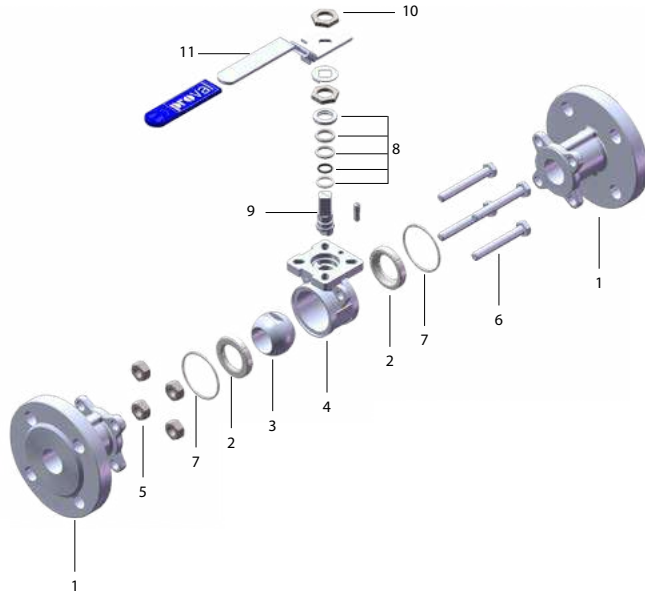
Flow Coefficient - Kv Values

Size (DN)	Kv Values (m ³ / hour)	Size (DN)	Kv Values (m ³ / hour)
25	31	150	1232
32	48	200	1882
40	81	250	3055
50	131	300	4958
65	227	350	7131
80	310	400	9213
100	467	450	11139
125	784	500	14137



V212 Series 3-Piece (F1) Flanged Ball Valves

V212 series ball valves consist of 3-piece body design according to DIN3202-F1 standard. The three piece body design of V212 Series offers many advantages, including installation flexibility, elimination of the need for two sets of flanges, and ease of in line and out of line servicing.



AISI304 / AISI316 Body
Standard Version



GG25 / GGG40.3 Body
Standard Version

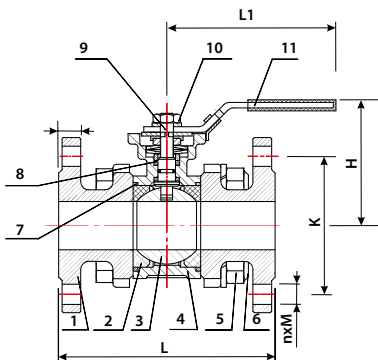


Natural Gas Valve
GGG40.3 Body

Material List

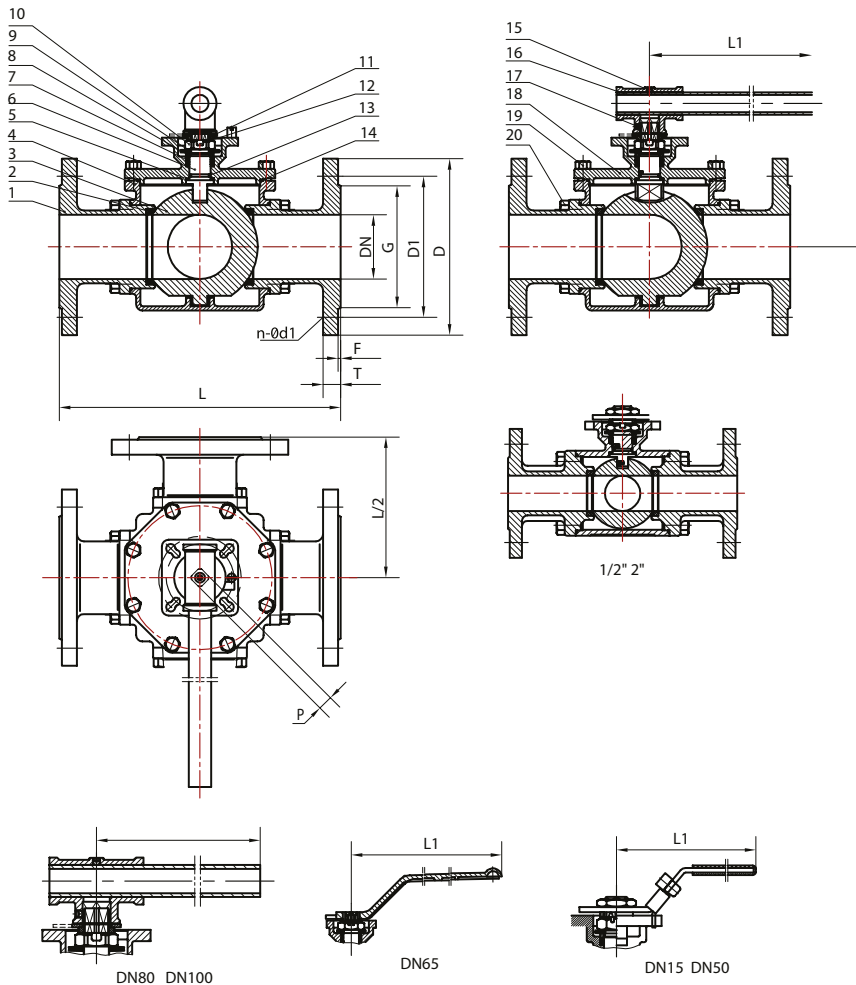
No	Part Name	AISI316 Body Standard Version	GGG40.3 Body Natural Gas Version	GG25/GGG40 Body Standard Version
1	Cap	AISI316	GGG40.3	GG25 / GGG40.3
2	Ball Seat	PTFE	PTFE	PTFE
3	Ball	AISI316	AISI304	AISI304
4	Body	AISI316	GGG40.3	GG25 / GGG40.3
5	Nut	AISI304	AISI304	AISI304
6	Bolt	AISI304	AISI304	AISI304
7	Seal	PTFE	PTFE	PTFE
8	Packing	PTFE	PTFE	PTFE
9	Stem	AISI316	AISI420	AISI420
10	Nut	AISI304	AISI304	AISI304
11	Kol	AISI304	WCB	WCB

Dimensions (mm)



DN	L	L1	b	H	K			n			M		
					PN16	PN25	PN40	PN16	PN25	PN40	PN16	PN25	PN40
15	130	135	16	85	65	65	65	4	4	4	M12	M12	M12
20	150	160	18	95	75	75	75	4	4	4	M12	M12	M12
25	160	160	18	100	85	85	85	4	4	4	M12	M12	M12
32	180	200	18	128	100	100	100	4	4	4	M16	M16	M16
40	200	200	18	135	110	110	110	4	4	4	M16	M16	M16
50	230	285	20	139	125	125	125	4	4	4	M16	M16	M16
65	290	285	22	150	145	145	145	4	8	8	M16	M16	M16
80	310	410	24	178	160	160	160	8	8	8	M16	M16	M16
100	350	410	24	192	180	190	190	8	8	8	M16	M20	M20
125	400	600	26	210	210	220	220	8	8	8	M16	M24	M24
150	450	700	28	230	240	250	250	8	8	8	M20	M24	M24
200	550	760	30	275	295	310	320	12	12	12	M20	M24	M27
250	650	1060	32	315	355	370	385	12	12	12	M24	M27	M30

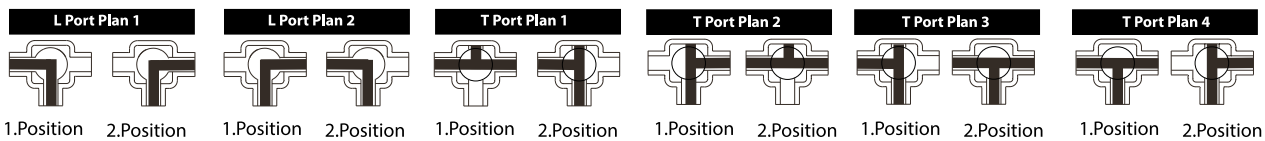
V217 (L) / V218 (T) Series 3 Way L/T Port Full Bore Ball Valves



Material List

No	Part Name	Material
1	Cap	AISI316
2	Seat	R-PTFE
3	Ball	AISI316
4	Body	AISI316
5	Gasket	PTFE
6	Stem	AISI316
7	Packing	PTFE
8	Packing Gland	AISI304
9	Disc Spring	AISI304
10	Stem Nut	AISI304
11	Thrust Washer	AISI201
12	O-Ring	Viton
13	Cap Gasket	PTFE
14	Screw Nail	ASTM A193-B8
15	Handle	AISI304
16	Screw Nail	ASTM A193-B8
17	Cap	AISI316
18	Hex Bolts	ASTM A193-B8
19	Hex Bolts	ASTM A193-B9
20	Hex Bolts	ASTM A193-B10

L / T Port Flow Plan Options



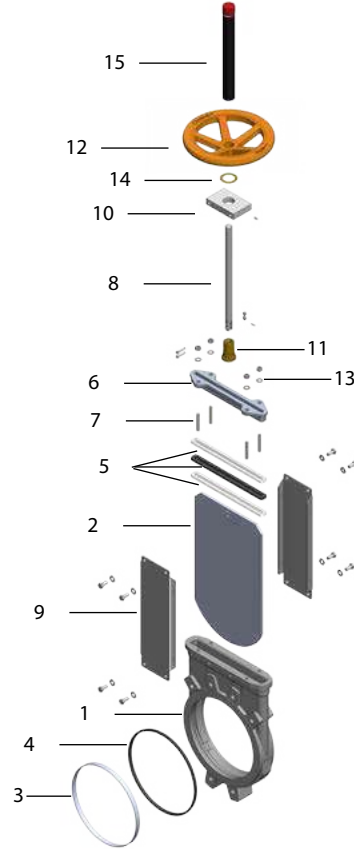
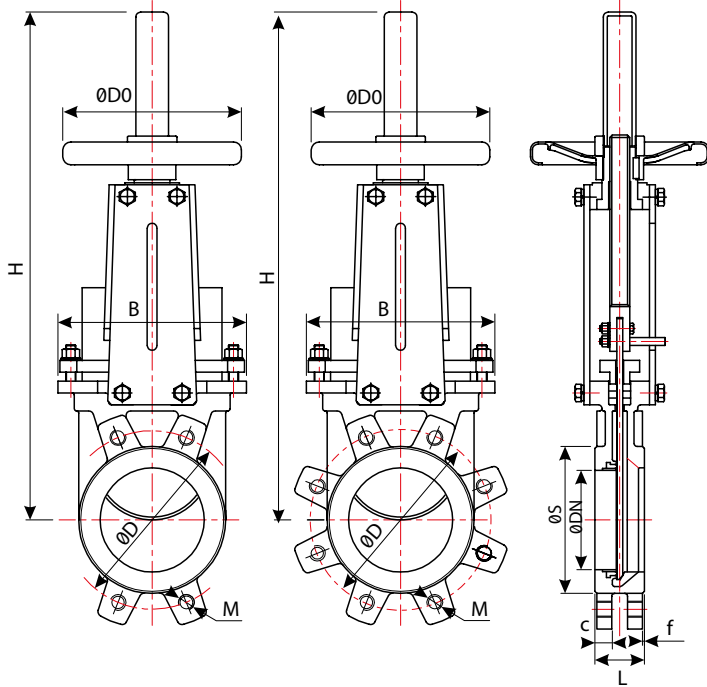
Dimensions(mm)

DN	D	PN16		PN40		#150		G	T	F	L	H	L1	P	ISO 5211	Torque Values (Nm)	Weight (Kg)
		D1	n-Ød1	D1	n-Ød1	D1	n-Ød1										
15	95	65	4-14	65	4-14	60,3	44-15,75	45	16	2	152	70	120	9	F03 / 04	9	3,4
20	105	75	4-14	75	4-14	69,8	44-15,75	58	18	2	167	82	160	11	F04 / 05	14	4,8
25	115	85	4-14	85	4-14	79,4	44-15,75	68	18	2	190	86	160	11	F04 / 05	16	5,9
32	140	100	4-18	100	4-18	88,9	44-15,75	78	18	2	208	104	185	14	F05 / 07	26	10,6
40	150	110	4-18	110	4-18	98,4	44-15,75	88	18	3	220	110	185	14	F05 / 07	32	12,6
50	165	125	4-18	125	4-18	120,6	44-19,05	102	20	3	254	133	250	17	F07 / 10	60	19,5
65	185	145	4-18	145	4-18	139,7	44-19,05	122	22	3	292	200	500	22	F10 / 12	92	28,2
80	200	160	8-18	160	8-18	152,4	44-19,05	138	24	3	305	216	500	22	F10 / 12	121	39,6
100	235	180	8-18	190	8-22	190,5	8-19,05	162	24	3	369	230	650	22	F10 / 12	180	63,8

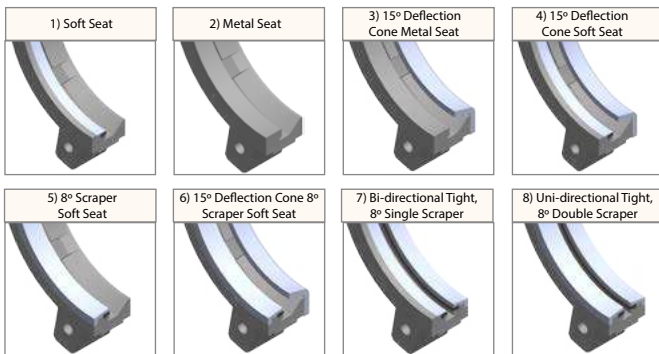


V301 (Wafer) / V302 (Lug) Type Manual Knife Gate Valves

- Available in sizes ranging from DN50 to DN600 with either Wafer or Lug body configurations.
- Ideally suited to be used in lines containing fibrous particles and liquids with suspended solids.
- Main Application Areas are Pulp&Paper Industry, Wastewater Treatment Plants and Under Silo.
- Bonnetted versions are available for vacuum and pneumatic conveying systems.



No	Part Name	Material
1	Body	GG25
		GGG40
		WCB
		SS304
		SS316
2	Gate	SS304
		SS316
3	Retaining Ring	304 / 316
4	Seat	EPDM
		Viton
		NBR
		Metal
5	Packing	PTFE+Silicon
6	Packing Gland	GGG40 / SS316
7	Setscrew	SS 304
8	Stem	SS420 / SS316
9	Yoke	ASTM A36
10	Steel Block	ASTM A105
11	Stem Nut	ASTM B62
12	Handwheel	ASTM A126
13	Nut	ASTM A193 B8
14	Washer	ASTM B62
15	Stem Cover	ASTM A36



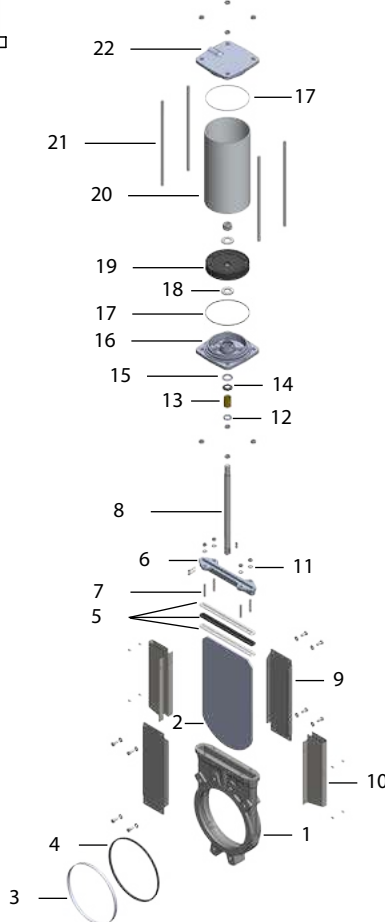
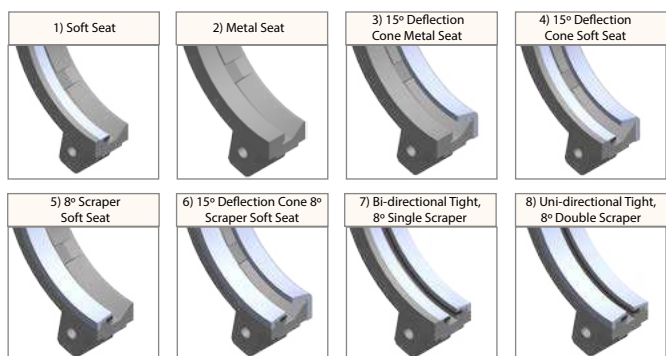
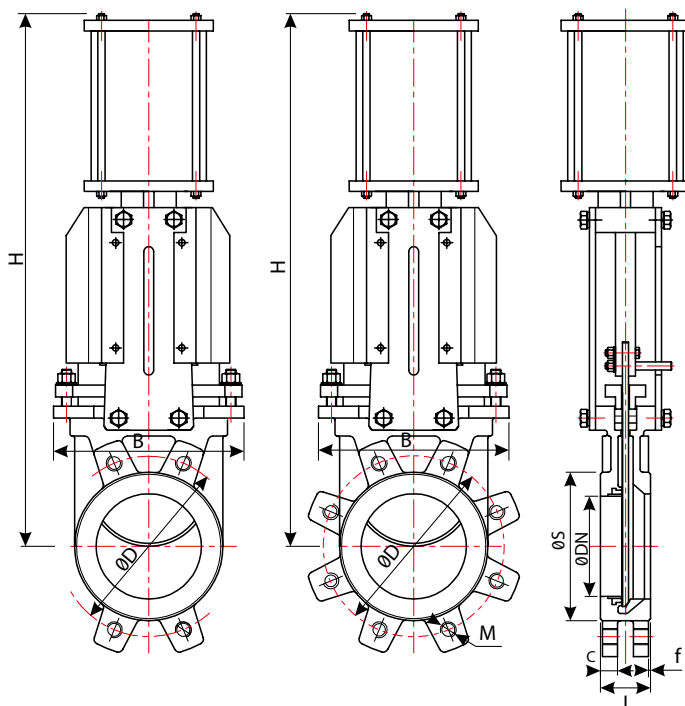
Dimensions(mm)

Size (DN)	L	ØD	ØS	C	f	B	H	ØDo	Max Operating Pressure	Wafer Type PN10			Lug Type PN10		Net Unit Weight (kg)	
										M	⊕	○	M	⊕	Wafer	Lug
50	40	125	95	16	2	136	375	180	10 bar	M16	4	-	M16	4	7,0	7,0
65	40	145	110	16	2	151	420	180	10 bar	M16	4	-	M16	4	8,0	8,0
80	50	160	127	17	2	170	450	200	10 bar	M16	4	4	M16	8	11,0	14,0
100	50	180	148	17	2	190	512	200	10 bar	M16	4	4	M16	8	12,0	14,0
125	50	210	174	17	2	212	570	220	10 bar	M16	4	4	M16	8	15,0	17,0
150	60	240	199	21	2	230	665	250	10 bar	M20	4	4	M20	8	21,0	24,0
200	60	295	250	21	2	286	825	300	8 bar	M20	4	4	M20	8	29,0	32,0
250	70	350	308	24	2	338	1000	350	6 bar	M20	8	4	M20	12	46,0	50,0
300	70	400	360	24	2	388	1155	350	6 bar	M20	8	4	M20	12	66,0	72,0
350	96	460	416	33	2	460	1310	400	5 bar	M20	12	4	M20	16	92,0	99,0
400	100	515	466	35	2	520	1475	500	5 bar	M24	12	4	M24	16	125,0	133,0
450	106	565	518	36	2	580	1660	500	3 bar	M24	16	4	M24	20	180,0	189,0
500	110	620	572	37	2	620	1860	600	3 bar	M24	16	4	M24	20	233,0	243,0
600	110	725	664	37	2	720	2150	700	3 bar	M27	16	4	M27	20	320,0	334,0

* Please contact sales department for valves in larger sizes or non-standard configurations.



V301 (Wafer) / V302 (Lug) Pneumatic Actuated Knife Gate Valves



No	Part Name	Material
1	Body	GG25
		GGG40
		WCB
		SS304
		SS316
2	Gate	SS304
3	Retaining Ring	304 / 316
4	Seat	EPDM
		Viton
		NBR
		Metal
5	Packing	PTFE+Silicon
6	Packing Gland	GGG40 / SS316
7	Set screw	SS304
8	Stem	SS420 / SS316
9	Yoke	ASTM A36
10	Support Plate	SS 304
11	Gland Nut	ASTM A194 8
12	Scraper	Nitril
13	Bushing	Nylon
14	O-Ring	NBR
15	Circlip	Steel
16	Lower Cover	Aluminum
17	O-Ring	NBR
18	Washer	Steel
19	Piston	S 275
20	Cylinder Body	Aluminum
21	Stud	Steel
22	Upper Cover	Aluminum

Dimensions(mm)

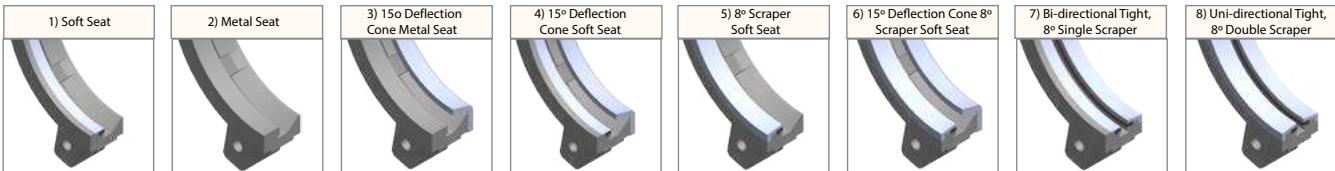
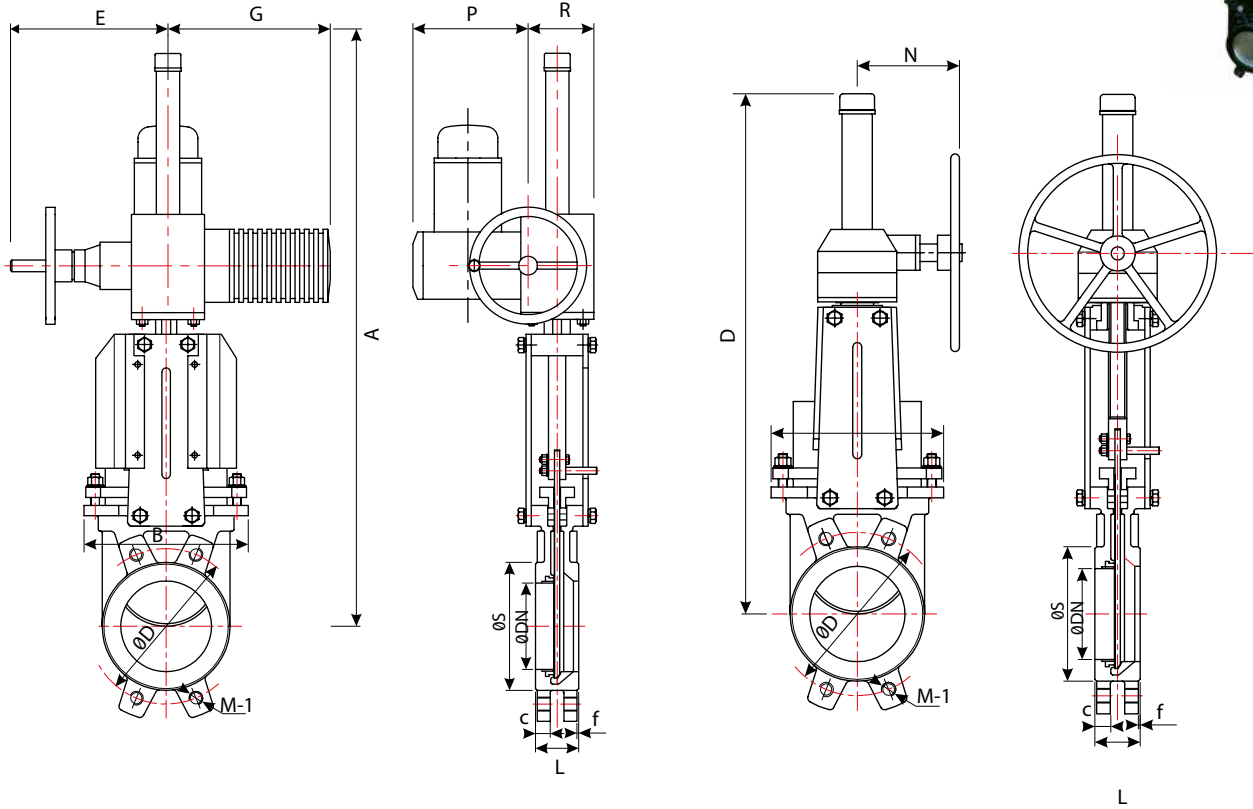
Size (DN)	L	ØD	ØS	C	f	B	H	Max Operating Pressure	Supply Port (B.S.P)	Wafer PN10			Lug PN10		Net Unit Weight (kg)	
										M	⊕	○	M	⊕	Wafer	Lug
50	40	125	95	16	2	136	430	10 bar	1/4"	M16	4	-	M16	4	7,0	7,0
65	40	145	110	16	2	151	460	10 bar	1/4"	M16	4	-	M16	4	9,0	9,0
80	50	160	127	17	2	170	510	10 bar	1/4"	M16	4	4	M16	8	12,0	13,0
100	50	180	148	17	2	190	570	10 bar	1/4"	M16	4	4	M16	8	14,0	16,0
125	50	210	174	17	2	212	660	10 bar	1/4"	M16	4	4	M16	8	22,0	24,0
150	60	240	199	21	2	230	720	10 bar	1/4"	M20	4	4	M20	8	25,0	28,0
200	60	295	250	21	2	286	890	8 bar	1/4"	M20	4	4	M20	8	38,0	41,0
250	70	350	308	24	2	338	1120	6 bar	3/8"	M20	8	4	M20	12	65,0	69,0
300	70	400	360	24	2	388	1230	6 bar	3/8"	M20	8	4	M20	12	77,0	83,0
350	96	460	416	33	2	460	1370	5 bar	3/8"	M20	12	4	M20	16	125,0	132,0
400	100	515	466	35	2	520	1570	5 bar	3/8"	M24	12	4	M24	16	165,0	173,0
450	106	565	518	36	2	580	1720	3 bar	1/2"	M24	16	4	M24	20	235,0	244,0
500	110	620	572	37	2	620	1850	3 bar	1/2"	M24	16	4	M24	20	306,0	316,0
600	110	725	664	37	2	720	2150	3 bar	1/2"	M27	16	4	M27	20	494	508,0





V301 (Wafer) / V302 (Lug) Type Electric Actuated and Gearbox Operated Knife Gate Valves

- Available in sizes ranging from DN50 to DN600 with either Wafer or Lug body configurations.
- Ideally suited to be used in lines containing fibrous particles and liquids with suspended solids.
- Main Application Areas are Pulp&Paper Industry, Wastewater Treatment Plants and Under Silo.
- Bonnetted versions are available for vacuum and pneumatic conveying systems.



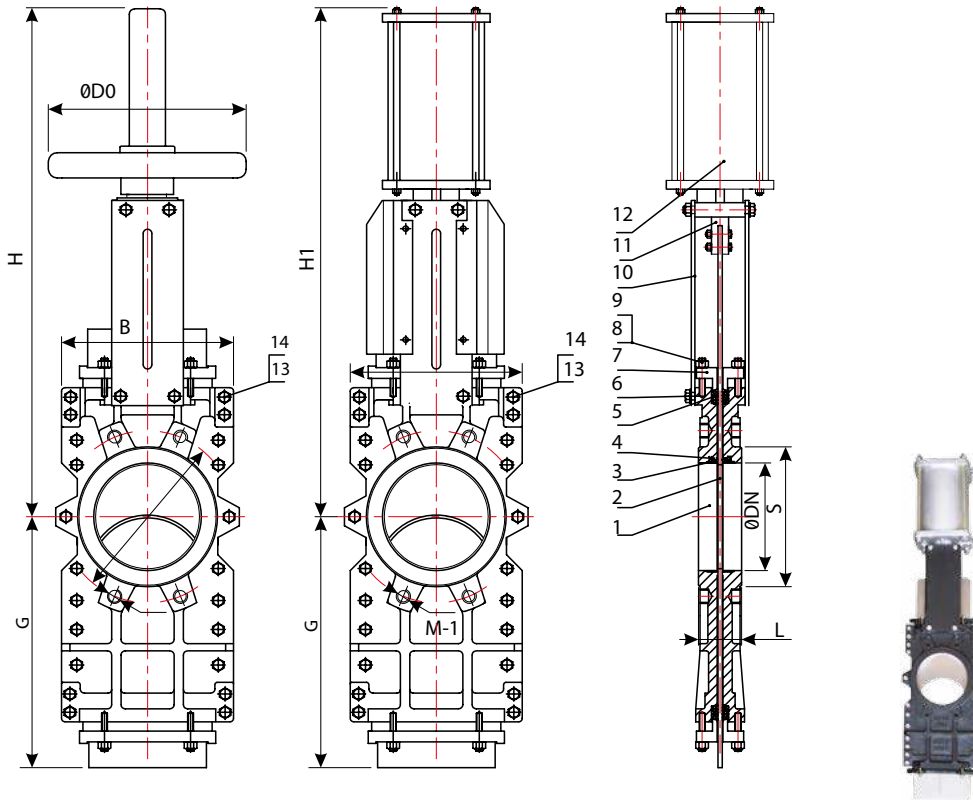
Dimensions(mm)

Size (DN)	L	ØD	ØS	C	f	B	A	D	E	G	P	R	N	Max Operating Pressure	Wafer Type PN10			Lug Type PN10	
															M	☐	○	M	☐
50	40	125	95	16	2	136	587	947	234	265	197	102	320	10 bar	M16	4	-	M16	4
65	40	145	110	16	2	151	614	947	234	265	197	102	320	10 bar	M16	4	-	M16	4
80	50	160	127	17	2	170	640	947	234	265	197	102	320	10 bar	M16	4	4	M16	8
100	50	180	148	17	2	190	680	947	234	265	197	102	320	10 bar	M16	4	4	M16	8
125	50	210	174	17	2	212	713	947	234	265	197	102	320	10 bar	M16	4	4	M16	8
150	60	240	199	21	2	230	765	947	234	265	197	102	320	10 bar	M20	4	4	M20	8
200	60	295	250	21	2	286	880	947	234	265	197	102	320	8 bar	M20	4	4	M20	8
250	70	350	308	24	2	338	981	1048	234	265	197	102	320	6 bar	M20	8	4	M20	12
300	70	400	360	24	2	388	1141	1148	234	265	197	102	320	6 bar	M20	8	4	M20	12
350	96	460	416	33	2	460	1374	1390	256	282	197	115	320	5 bar	M20	12	4	M20	16
400	100	515	466	35	2	520	1550	1495	256	282	197	115	320	5 bar	M24	12	4	M24	16
450	106	565	518	36	2	580	1847	1783	325	385	222	153	320	3 bar	M24	16	4	M24	20
500	110	620	572	37	2	620	1959	1890	325	385	222	153	320	3 bar	M24	16	4	M24	20
600	110	725	664	37	2	720	2165	2095	325	385	222	153	320	3 bar	M27	16	4	M27	20

* Please contact sales department for valves in larger sizes or non-standard configurations



V303 Series Straight-Through Knife Gate Valves

- Available in sizes ranging from DN50 to DN600 with a split body configuration providing bi-directional bubble tight shut-off at full rated pressure.
- Ideally suited to be used particularly in pneumatic conveying of high viscosity paper pulp and media containing abrasive powders.



No	Part Name	Material
1	Body	GG25
		GGG40
		WCB
		SS304
		SS316
2	Gate	SS304
		SS316
3	Retaining Ring	304/316
4	Seat	EPDM
		Viton
		NBR
		Metal
5	Packing	PTFE+Silicon
6	Cap Screw	SS304
7	Packing Gland	GGG40
8	Set Screw	SS304
9	Gland Nut	SS304
10	Support Plate	ASTM A36
11	Stem	SS304
12	Pneumatic Cylinder	Aluminum
13	Cap Screw	SS304
14	Nut	SS304

Dimensions(mm)

Size (DN)	L	ØD	ØD0	S	G	B	H	H1	Max Operating Pressure	Supply Port (B.S.P)	Wafer Type PN10			Net Unit Weight (kg)	
											M			Manuel	Pneumatic
50	40	125	180	95	225	136	470	560	10 bar	1/4"	M16	4	-	12,0	14,0
65	40	145	180	110	265	151	525	600	10 bar	1/4"	M16	4	-	14,0	16,0
80	50	160	200	127	310	170	565	660	10 bar	1/4"	M16	4	4	16,0	18,0
100	50	180	200	148	370	190	640	740	10 bar	1/4"	M16	4	4	20,0	23,0
125	50	210	220	174	430	212	715	860	10 bar	1/4"	M16	4	4	29,0	34,0
150	60	240	250	199	495	230	830	950	10 bar	1/4"	M20	4	4	35,0	41,0
200	60	295	300	250	630	286	1030	1150	8 bar	1/4"	M20	4	4	62,0	73,0
250	70	350	350	308	770	338	1250	1320	6 bar	3/8"	M20	8	4	89,0	105,0
300	70	400	350	360	895	388	1450	1550	6 bar	3/8"	M20	8	4	110,0	128,0
350	96	460	400	416	1050	460	1640	1720	5 bar	3/8"	M20	12	4	174,0	210,0
400	100	515	500	466	1185	520	1850	1960	5 bar	3/8"	M24	12	4	266,0	310,0
450	106	565	500	518	1320	580	2075	2150	3 bar	1/2"	M24	16	4	326,0	380,0
500	110	620	600	572	1455	620	2325	2300	3 bar	1/2"	M24	16	4	372,0	450,0
600	110	725	700	664	1720	720	2690	2700	3 bar	1/2"	M27	16	4	445,0	640,0



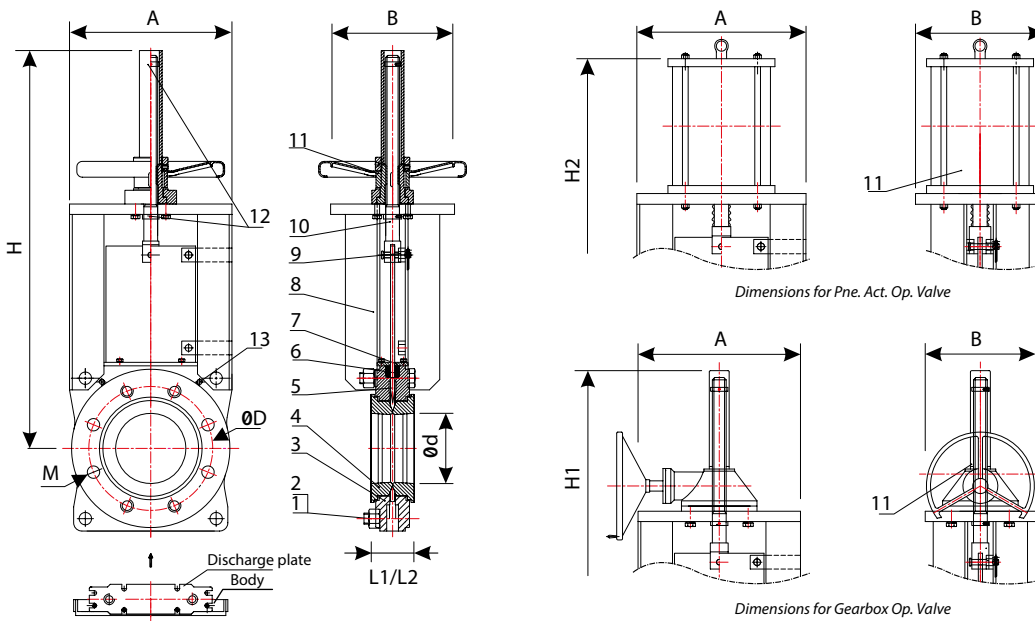
V305 Series Slurry Knife Gate Valves

V305 series slurry knife gate valves are designed specifically for heavy duty conditions in the mining industry. 2 steel ring reinforced elastomer ring insulates the inner part of the valve from the fluid, this provides bidirectional sealing for particle-containing fluid transfer and prevents the abrasion. The knife comes out of the elastomer ring in the full open position of the valve and prevents the contact with the fluid. The fluid can be drained from the discharge line which is located under the valve against the possibility of the fluid moving behind the elastomer rings and solidification during opening-closing or the surface can be washed or cleaned with pressurized air. V305 series valves can be operated with pneumatic, electric or hydraulic actuator or gearbox.



Applications,

- Mining Plants
- Metallurgy and Casting Industries
- Power Plant
- Chemistry Industry
- Paper Pulp Plants



Material List

No	Part Name	Material
1	Bolt	ASTM A193 B8
2	Nut	ASTM A194 8
3	Body	GGG40
		WCB
		AISI316
4	Elastomer seat	NR
		EPDM
		NBR
		Viton
5	Gate	AISI316
6	Packing Gland	Packing Gland
		EPDM
7	Packing Gland	AISI 1045
8	Support Plate	AISI1035
9	Pin	ASTM A276 410
10	Stem	ASTM A82 F304
11	Operator	Handwheel
		Gearbox
		Pne. Actuator
		Elc. Actuator
12	Limit stop	AISI 1045
13	Lubricating whole	AISI 1035+Ni

Dimensions(mm)

Size (DN)	Ød	L1	L2	A	B	H	H1	H2	ØD	Max Working Pressure	Wafer PN10 Flange			Wafer #150 Flange		
											M			M		
50	51	57,5	54	160	106	350		415	125	10 bar	M16	4	-	5/8"	4	-
65	64	57,5	54	160	106	410		475	145	10 bar	M16	4	-	5/8"	4	-
80	76	62	57	200	140	496		523	160	10 bar	M16	4	4	5/8"	4	-
100	102	62	58	236	140	578		596	180	10 bar	M16	4	4	5/8"	4	4
125	127	65	59	250	180	639		680	210	10 bar	M16	4	4	3/4"	4	4
150	154	70	65	284	180	787		761	240	10 bar	M20	4	4	3/4"	4	4
200	204	83	77	345	220	883		895	295	10 bar	M20	4	4	3/4"	4	4
250	254	84	78	420	280		1057	1062	350	10 bar	M20	8	4	7/8"	8	4
300	296	89	83	483	335		1265	1291	400	10 bar	M20	8	4	7/8"	8	4
350	344	91	84	430	430		1388	1426	460	10 bar	M20	12	4	1"	8	4
400	400	100	92	430	430		1613	1620	515	10 bar	M24	12	4	1"	12	4
450	450	106	103	500	500		1824	1826	565	6 bar	M24	16	4	1-1/8"	12	4
500	492	131	121	500	500		1933	1939	620	6 bar	M24	16	4	1-1/8"	16	4
600	592	132	121	500	500		2184	2222	725	6 bar	M27	16	4	1-1/4"	16	4
700	685	190	181	500	500			2420	840	4 bar	M27	20	4	1-1/4"	24	4
800	780	218	206	500	500			2650	950	4 bar	M30	20	4	1-1/2"	24	4

L1 : Min. distance between the flanges for mounting. L2 : Mounted valve face to face length.



Pneumatically Actuated Slurry Knife Gate Valve

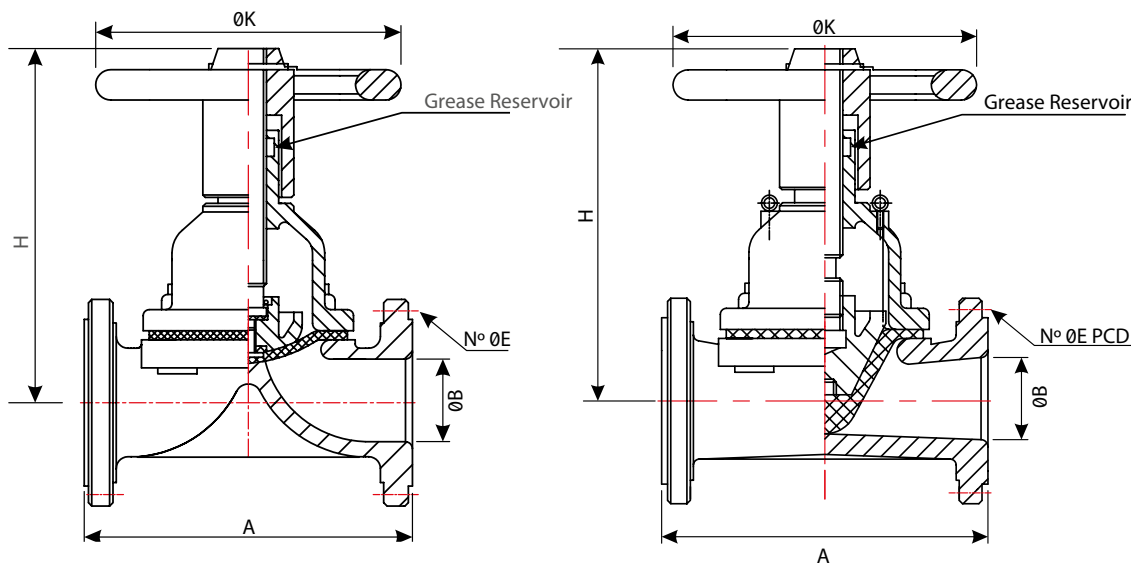
V401 Series Weir / V402 Straight Through Type Diaphragm Valves

Ideally suited to be installed as a tight shut-off or control valve in lines particularly containing abrasive or corrosive chemicals, slurries, powders, gases and high viscosity liquids with suspended solids which tend to clog conventional valves. Face to Face dimensions are according to BS 5156 (short-pattern) or DN3202-F1 (long-pattern). Available as unlined or lined with flanged or threaded end connections.

Weir in the flow passage is designed to reduce the flexing of the diaphragm to a minimum, while providing a smooth and streamlined flow passage. Permits the use of a great variety of construction materials such as PTFE for the diaphragm. Unlike "Weir Type" diaphragm valves, valves with "Straight Through" flow passage require a more flexible diaphragm, therefore the construction material for diaphragms is restricted to elastomers.



Weir Type Diaphragm Valve with Threaded End Connections



Material List

Part Name	Material
Body / Bonnet	GG25 Cast Iron
	GGG40 Ductile Iron
	WCB Carbon Steel
	ASI304 SS
	ASI316 SS
Diaphragm	EPDM
	NBR
	Butyl
	Viton
	Silicon
	PTFE



Weir Type Diaphragm Valve with Flanged Ends



Straight Through Type Stainless Steel Diaphragm Valve with Flanged Ends

Optional Accessories/Configurations

- Threaded End Connections
- Pneumatic Actuator Operated
- Lockable Handwheel

Dimensions(mm)

Size (DN)	A (Unlined Body)		A (Lined Body)		ØB	ØK	H (Open)	H (Closed)	PN10			Net Unit Weight (kg)	
	BS5156	DIN3202F1	BS5156	DIN3202F1					Axis	ØE	N°	BS5156	DIN3202F1
15	108	130	114	136	15	100	110,0	102,0	65	14	4	3,3	3,8
20	117	150	123	156	21	100	108,0	100,0	75	14	4	3,6	4,0
25	127	160	133	166	26	120	122,5	120,0	85	14	4	4,3	4,8
32	146	180	152	186	32	120	130,5	118,0	100	18	4	6,5	7,5
40	159	200	165	206	38	120	131,5	119,0	110	18	4	7,0	8,0
50	190	230	196	236	51	164	194,5	177,0	125	18	4	10,5	11,5
65	216	290	222	296	64	185	220,0	196,0	145	18	4	15,5	16,5
80	254	310	260	316	76	200	279,0	249,0	160	18	8	22,5	25,5
100	305	350	313	358	102	220	293,5	261,0	180	18	8	30,0	32,0
125	356	400	364	408	127	250	309,5	272,0	210	18	8	44,0	46,0
150	406	480	414	488	152	285	413,0	362,0	240	22	8	63,0	69,0
200	521	600	529	608	203	340	475,5	413,0	295	22	8	112,0	126,0
250	635	730	643	738	254	395	595,5	523,0	350	22	12	170,0	185,0
300	749	850	757	858	305	445	748,0	653,0	400	22	12	158,0	273,0



Pneumatically Actuated Straight Through Type Diaphragm Valve



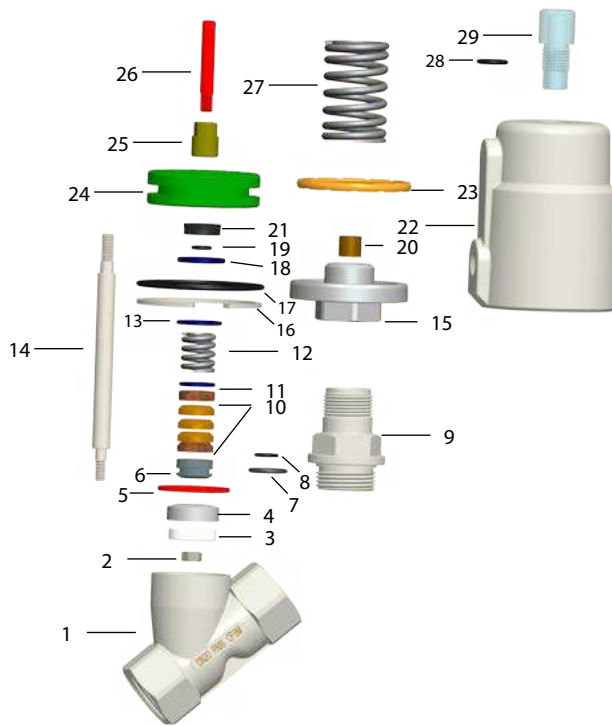
V500 Pneumatic Angle Seat Valves

Proval V500 Series pneumatic angle seat valves are suitable for water, steam, gases and chemicals for open-close applications. The V500 Series valves are having a large use on filling and textile machines.

Due to their superior engineered design, PROVAL V500 Series angle seat valves offer an excellent flow control with low pressure loss. Valves can be installed in any position

preferably with actuator face up. Actuators can be rotated through 360° for tubing.

PROVAL V500 Series angle seat valves are manufactured in spring return Normally Open (NO), Normally Closed (NC) and Double Acting (DA) versions.



Angle Seat Valve Complete with Monitoring Device



Positioner Controlled Angle Seat Valve

Material List

No	Part Name	Material	No	Part Name	Material	No	Part Name	Material
1	Body	CF8M	11	Seat	PTFE	21	Y-Ring	Viton
2	Locking Nut	SS316	12	Spring	SS304	22	Actuator	CF8M
3	Seat	PTFE	13	Washer	SS304	23	Piston O-Ring	Viton
4	Seat Carrier	CF8M	14	Pinion	SS316	24	Piston	AL
5	Body Seal	PTFE	15	Cover	SS304	25	Nut	AL
6	Stem Seal-1	PTFE+Carbon	16	Circlip	SS304	26	Indicator	Nylon
7	Stem Seal-2	PTFE	17	O-Ring	NBR	27	Spring	65Mn
8	Stem Seal-3	PTFE+Carbon	18	Washer	SS304	28	O-Ring	NBR
9	Cap	CF8M	19	O-Ring	NBR	29	Plug	PC
10	Packing	PTFE	20	Bushing	Alloy			

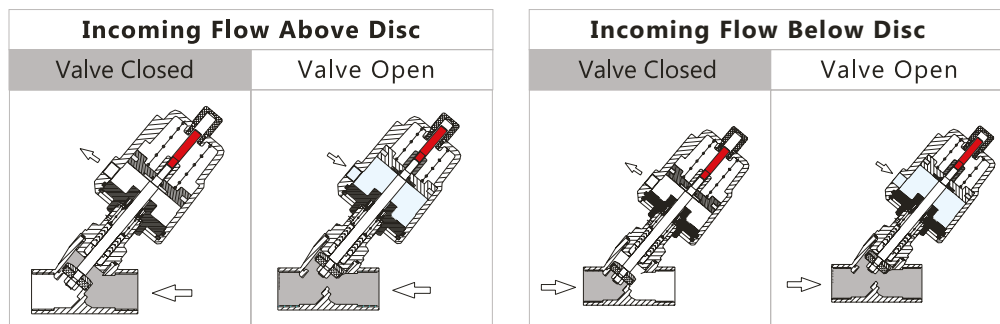
V500 Pneumatic Angle Seat Valves

Flow Direction Options,

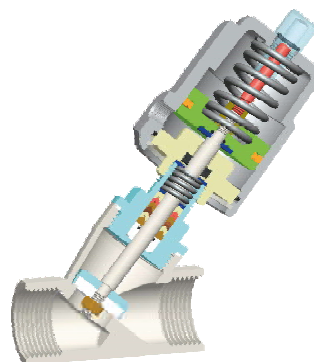
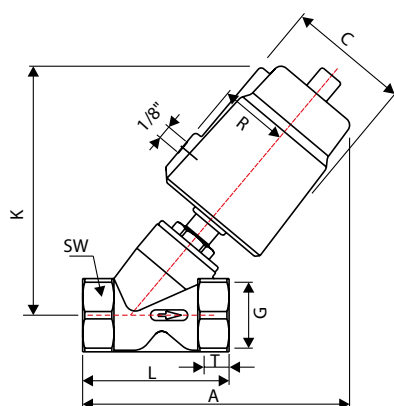
2/2 way-Allows flow in either direction.

Flow above the disc enables valves to withstand higher pressure.

Flow below the disc slows the closing speed of the valve, thus prevents the possibility of water hammer.



Dimensions



Dimensions and Technical Data

Size (DN)	Thread (G)	Orifice (mm)	Kv (m ³ /h)	Actuator Size	C	R	K	A	T	L	SW	Incoming Flow Above Disc		Incoming Flow Below Disc	
												Max. Working Pressure	Control Pressure	Max. Working Pressure	Control Pressure
10	3/8"	13	3,8	40	50,5	27	111	119	12	68	27	16 bar	3,0-4,5 bar	11 bar	3,0 bar
				50	60	33	124	131				16 bar	3,0-3,5 bar	14 bar	3,0 bar
15	1/2"	13	4,7	40	50,5	27	111	119	15	68	27	16 bar	3,0-4,5 bar	11 bar	3,0 bar
				50	60	33	124	131				16 bar	3,0-3,5 bar	14 bar	3,0 bar
20	3/4"	18	9,5	50	60	33	128	136	16	75	32	16 bar	3,0-4,0 bar	11 bar	3,0 bar
25	1"	24	18,1	50	60	33	136	145	17	90	40	16 bar	3,0-4,5 bar	14 bar	3,0 bar
				63	75	41	162	169				16 bar	3,0-3,5 bar	14 bar	4,5 bar
32	1-1/4"	31	23,1	63	112	41	174	187	21	116	50	16 bar	3,0-5,5 bar	6 bar	4,5 bar
				90	75	57	220	229				16 bar	2,5-3,5 bar	16 bar	5,0 bar
40	1-1/2"	35	32,9	63	75	41	175	187	21	116	56	16 bar	3,0-6,5 bar	5 bar	4,5 bar
				90	112	57	222	230				16 bar	2,5-4,0 bar	16 bar	5,0 bar
50	2"	45	52,8	63	75	41	183	201	22	138	69	12 bar	3,0-7,0 bar	6 bar	5,0 bar
				90	112	57	232	244				16 bar	2,5-4,5 bar	10 bar	5,0 bar
65	2-1/2"	61	82,6	90	112	57	262	282	26	178	85	10 bar	2,5-6,0 bar	7 bar	5,0 bar

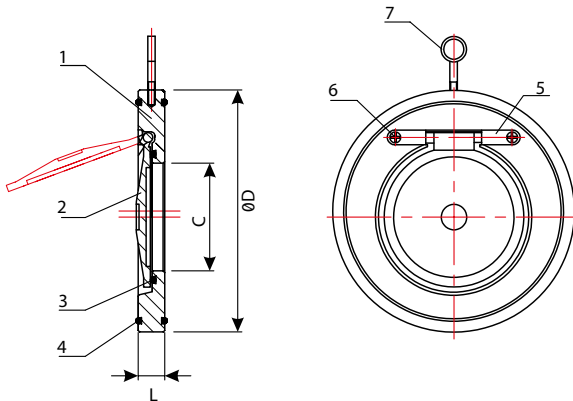


V701 Series Wafer Type Swing Check Valves

- Available in sizes ranging from DN40 up to DN600
- Designed in accordance with the requirements of EN 1074-3 and pressure tested to EN 12266-1
- Very low weight and ultra short face to face dimensions.
- In-built face sealing 'O' Ring eliminates the use of flange gaskets.
- Ideally suited for handling fresh, sea, waste water, steam, acids and alkaline liquid.
- Maximum Allowable Operating Pressure is 16 bar(g)
- A minimum back pressure of 0,3 bar is required to keep the valve tight.



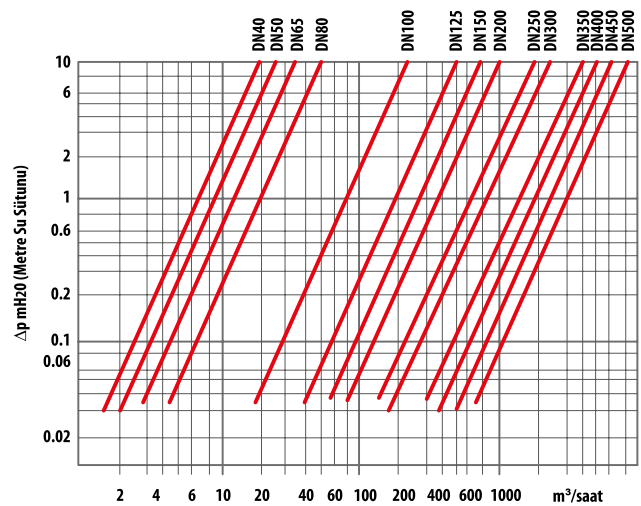
Part List



Material List

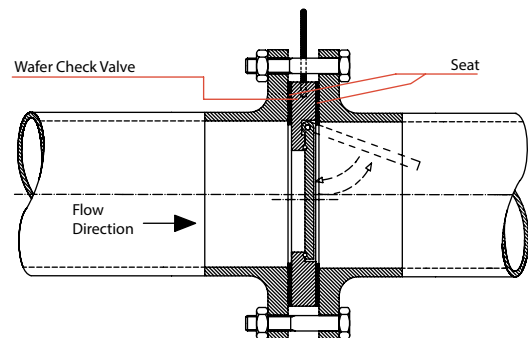
No	Part Name	Material
1	Body	ASTM A105 / AISI304 / AISI316 / AISI316L / Bronze
2	Disc	AISI304 / AISI316 / AISI316L / Bronze
3/4	O-Ring / Seal	EPDM / NBR / Viton / Silicon / PTFE
5	Washer	AISI316 / WCB
6	Screw	AISI316
7	Eye Bolt	Galvanized Steel

Pressure Drop Curve



Dimensions(mm)

Size (DN)	L	C	ØD			Net Unit Weight (Kg)
			PN6	PN10	ANSI150	
40	14	22	88	92	86	0,7
50	14	32	98	107	105	1,0
65	14	40	118	127	124	1,2
80	14	54	134	142	137	1,7
100	18	70	154	162	175	2,5
125	18	92	184	192	195	3,1
150	20	114	209	218	220	4,2
200	22	154	264	273	279	7,2
250	26	200	319	328	329	12,0
300	28	235	375	378	384	18,0
350	38	280	425	438	444	32,0
400	44	316	475	489	491	46,0
450	50	360	530	532	550	63,0
500	56	405	580	585	610	87,0
600	62	486	680	690	724	130,0



V702 Series Disco Type Check Valves

- Available in sizes ranging from DN15 to DN200 with precision lapped metal-to-metal seating providing tight shut-off.
- Ideally suited to be used as a backflow prevention valve in water/wastewater treatment, marine, HVAC and other general industrial applications involving liquids, gases and steam.



Material List

No	Part Name	Material			
1	Body	Brass	A216 WCB	AISI316	AISI316L
2	Disc	AISI304	AISI304	AISI316	AISI316L
3	Spring	AISI304	AISI304	AISI316	AISI316L

Availability According to Material of Construction

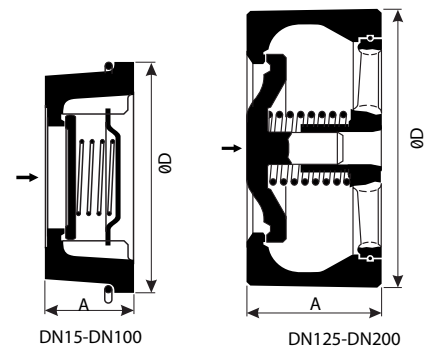
No	Size	Brass	A216 WCB	AISI316	AISI316L
1	DN15-100	•		•	•
2	DN125-DN200		•	•	•

Max Operating Pressure According to Material of Construction(bar)

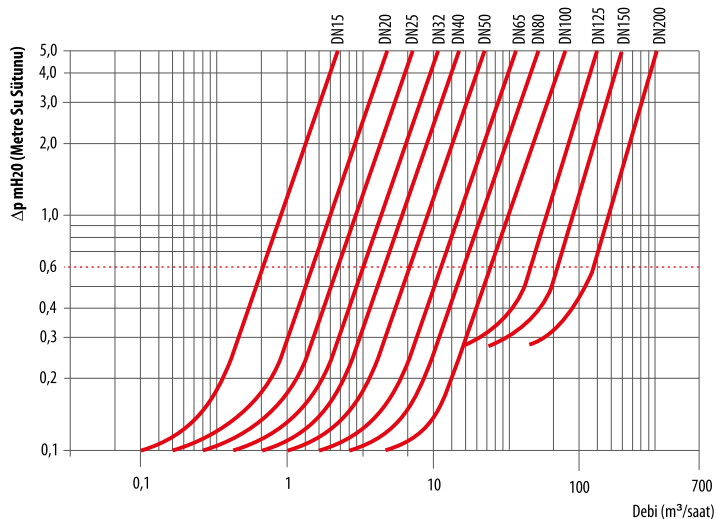
No	Pressure Rating	Brass	A216 WCB	AISI316	AISI316L
1	PN10/16	•	•	•	•
2	PN40			•	•

Dimensions(mm)

Size(DN)	15	20	25	32	40	50	65	80	100	125	150	200
A	16	19	22	28	32	40	46	50	60	90	106	140
ØD	40	47	56	72	82	95	115	132	152	193	222	288



Pressure Drop Curve



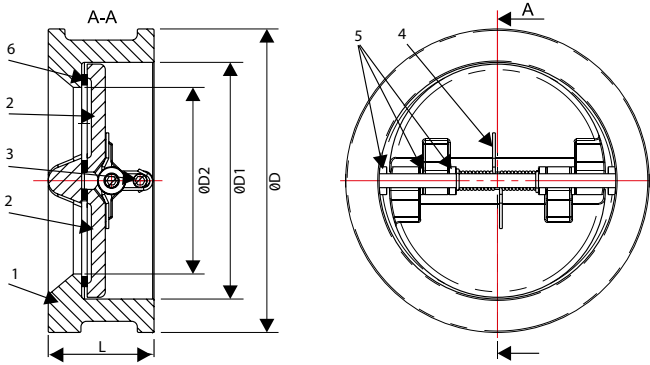
Opening Pressure According to Flow Direction (mbar)

Size (DN)	15	20	25	32	40	50	65	80	100	125	150	200
Flow Direction ↑	10	10	10	12	13	14	15	16	18	35	38	37
Flow Direction →	7,5	7,5	7,5	8,5	9	9,5	10	10,5	11,5	22,5	24	23,5
Flow Direction ↓	5	5	5	5	5	5	5	5	5	10	10	10



V703 Series Dual Plate Check Valves

Available in sizes from DN50 to DN600 with two spring-loaded D-shaped discs. Designed to be clamped between flanges in either vertical or horizontal position. Travel of the disc from the fully open to the closed position is smaller than in single plate check valves, therefore the response of the valve to retarding flow is very fast. Low Noise / Less restriction to flow in the full open position / Substantially lower pressure drop
 Suitable to use with general service piping systems, water, oil, gasoline, chemicals - compressible gasses and compressed air



Design Standards

Design Standard	API6D
Flange	ANSI 150, PN6, 10, 16, 25, 40
Face to Face	EN558-1 / API594

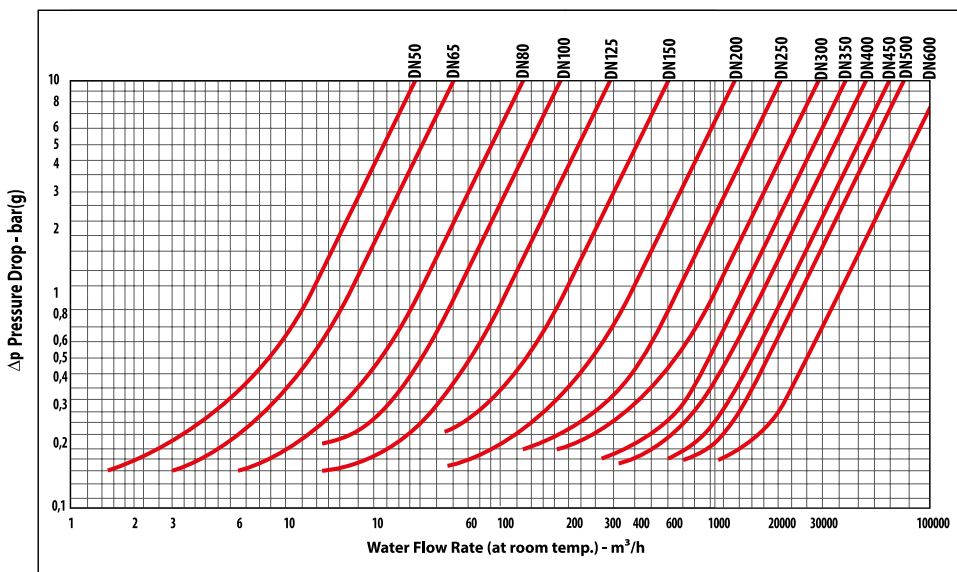
Dimensions (mm)

Size (DN)	ØD	ØD1	ØD2	L	
				EN 558-1	API 594 #150
50	107	65	43,3	43	60
65	127	80	60,2	46	67
80	142	94	66,4	64	73
100	162	117	90,8	64	73
125	192	145	116,9	70	-
150	218	170	144,6	76	98
200	273	224	198,2	89	127
250	328	265	233,7	114	146
300	378	310	279,05	114	181
350	438	360	327,87	127	184
400	489	410	375,88	140	191
450	555	450	414,06	152	203
500	594	505	467,83	152	219
600	690	624	569,59	178	222

Material List

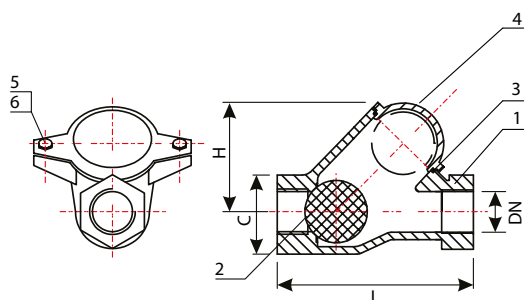
No	Part Name	Materials
1	Body	GG25, GGG40, AISI304, AISI316
2	Disc	GGG40, AISI304, AISI316, Bronze
3	Hinge Pin	AISI316
4	Spring	AISI316
5	Washer	PTFE
6	Seat	EPDM, NBR, PTFE, Viton

Pressure Drop Curve



V704 Series Threaded End Ball Check Valves

- Available in sizes ranging from DN40 to DN400.
- Ideally suited to be used particularly on the suction and discharge sides of pumps installed in lines containing high viscosity media, slurries.
- Designed according to EN 1074-3 and pressure tested to EN 12266-1
- A minimum back pressure of 0,3 bar is required to ensure leak tightness.



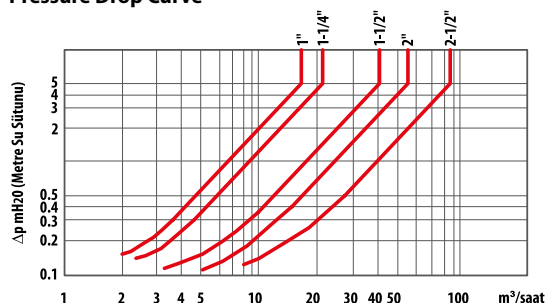
Material List

No	Part Name	Material
1	Body	Epoxy Powder Coated GGG40 Ductile Iron
2	Ball	Rubber Lined Alu
3	O-Ring /Body Seal	EPDM/NBR
4	Cover	Epoxy Powder Coated GGG40 Ductile Iron
5/6	Bolt	AISI316

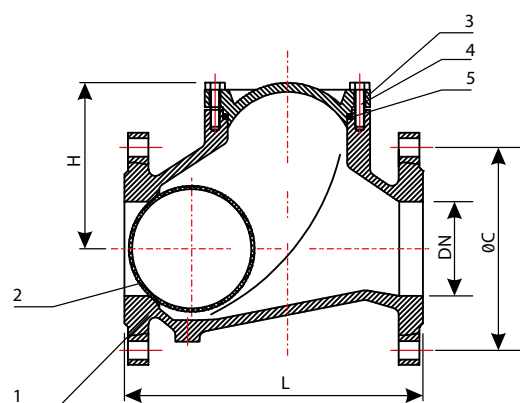
Dimensions-Threaded End Valve(mm)

Size(DN)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
L	125	132	145	174	200	243
C	47	59	70	82	106	132
H	75	75	85	126	113	165
Net Unit Weight (kg)	1,3	1,7	2,6	4,2	5,5	10,0

Pressure Drop Curve



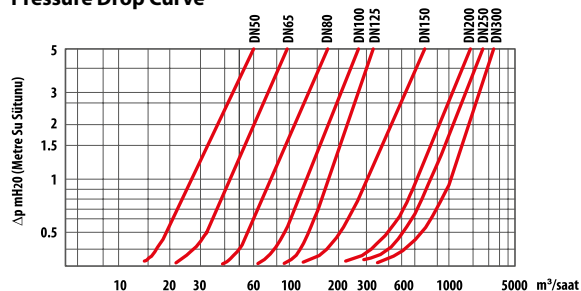
V704 Series Flanged End Ball Check Valves



Material List

No	Part Name	Material
1	Body	Epoxy Powder Coated GGG40 Ductile Iron
2	Ball	Rubber Lined Alu
3	Cap	Epoxy Powder Coated GGG40 Ductile Iron
4	Bolt	AISI316
5	O-Ring /Body Seal	EPDM/NBR

Pressure Drop Curve



Dimensions- Flanged End Valves (mm)

Size(DN)	40	50	65	80	100	125	150	200	250	300	350	400
L	180	200	240	260	300	350	400	500	600	700	800	900
ØC	PN10	110	125	145	160	180	210	240	295	350	400	460
	PN16	110	125	145	160	180	210	240	295	355	410	470
H	98	106	129	146	194	207	240	322	388	458	610	705
Net Unit Weight (kg)	7,0	7,7	11,2	15,5	22,0	33,0	45,0	90,0	163,0	230,0	290,0	450,0



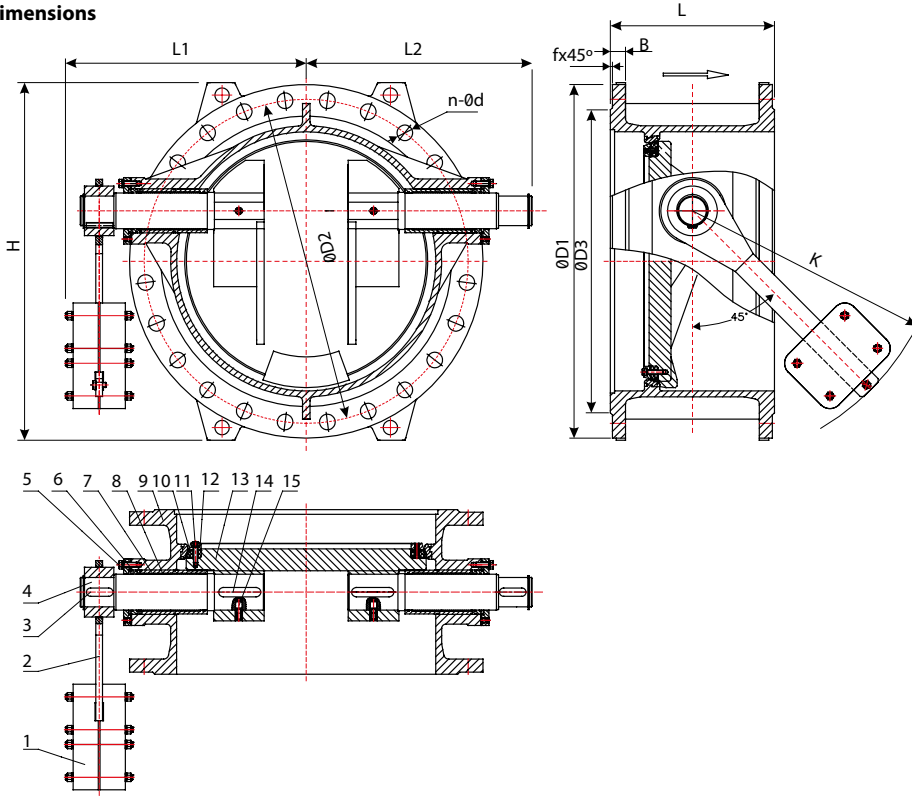


V705 Series Tilting Check Valves

- Available in sizes ranging from DN100 to DN1400 for pressure ratings PN10/PN16/PN25
- Ideally suited to be used as a backflow prevention valve in water/wastewater treatment, marine, pump station and other general industrial applications.
- Designed in accordance with the requirements of EN593.
- Face to face dimensions conform to EN558-1 Basic Series 14.



Dimensions



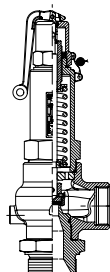
Material List

No	Part Name	Material
1	Weight	GG25 Cast Iron
2	Weight Lever	Steel
3	Key	AISI420 Stainless Steel
4	Stem	AISI420 Stainless Steel
5	Cover	Steel
6	Retaining Ring	AISI304 Stainless Steel
7	Spacer Bush	AISI304 Stainless Steel
8	Bushing	AISI420 Stainless Steel
9	Body	GGG40/50 Ductile Iron
10	Seal Ring	EPDM
11	Screw	AISI304 Stainless Steel
12	Retaining Ring	Steel / St.Steel
13	Disc	GGG40/50 Ductile Iron
14	Key	AISI420 Stainless Steel
15	Pin	AISI420 Stainless Steel

Dimensions(mm)

Size (DN)	ØD1	ØD2		ØD3		n-Ød		B	L	fx45°	H	K	L1	L2
		PN10	PN16	PN10	PN16	PN10	PN16							
100	220	180	180	211	211	8-18	8-18	19	190	4x38	220	200	200	184
125	250	210	210	211	211	8-18	8-18	19	200	4x39	260	200	223	207
150	285	240	240	211	211	8-23	8-23	19	210	4x40	295	200	245	230
200	340	295	295	266	266	8-23	12-23	20	230	4x41	350	200	268	252
250	405	350	355	319	319	12-23	12-28	22	250	4x42	415	300	331	305
300	460	400	410	370	370	16-23	12-28	24,5	270	4x43	470	300	343	317
350	520	460	470	429	432	16-23	16-28	26,5	290	4x44	530	400	415	382
400	580	515	525	480	480	16-28	16-31	28	310	4x45	590	400	414	389
450	640	565	585	530	548	20-28	20-31	30	330	4x45	650	450	469	444
500	715	620	650	582	609	20-28	20-34	31,5	350	4x45	725	500	521	487
600	840	725	770	682	720	20-31	20-37	36	390	5X45	850	600	572	502
700	910	840	840	794	794	24-31	24-37	39,5	430	5X45	920	700	635	595
800	1025	950	950	901	901	24-34	24-41	43	470	5X45	1035	800	711	680
900	1125	1050	1050	1001	1001	28-34	28-41	46,5	510	5X45	1135	880	963	898
1000	1255	1160	1170	1112	1112	28-37	28-44	50	550	5X45	1265	1000	945	890
1200	1485	1380	1390	1328	1328	32-41	32-50	57	630	5X45	1495	1200	960	938
1400	1685	1590	1590	1530	1530	36-44	36-50	60	710	5X45	1685	1400	1240	1210

V650 Series Threaded Safety Valves



Services,

- Liquids
- Gases
- Steam

Operating Temperature Range

+ 260°C / + 400°C

Material List

Body	GGG40.3		AISI316Ti		
Bonnet	GGG40.3		AISI316Ti		
Seat	EPDM	NBR	Viton	PTFE	Metal

Type-1 Proportional Safety Valves

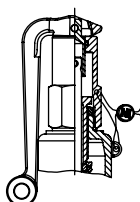
Inlet(Inch)	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Outlet(Inch)	1/2" or 3/4"			1"			
Set Pressure (bar)	Min	0,1	0,1	0,1	0,05	0,05	0,05
	Max	140	140	140	90	45	45

Type-10 Standard Safety Valves

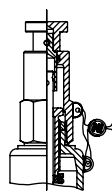
Inlet(Inch)	3/8"	1/2"	3/4"	1"	1 1/4"
Outlet(Inch)	1/2" or 3/4"			1"	
Set Pressure (bar)	Min	0,1	0,1	0,1	0,1
	Max	140	140	140	70

Type-19 Full Lift Safety Valves

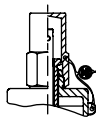
Inlet(Inch)	3/4"	1"	1 1/4"	1 1/2"
Outlet(Inch)	1 1/2"			
Set Pressure (bar)	Min	0,1	0,05	0,05
	Max	130	130	70



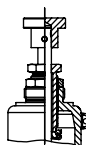
Head C
Gas Tight
Lifting Lever



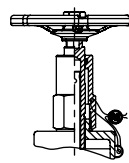
Head B
Gas Tight
Lifting Button



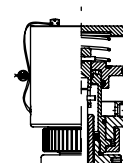
Head C
Gas Tight
Cap



Head D
Lifting Button
Not Gas Tight

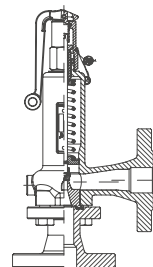


Head F
Gas Tight with
Handwheel



Head H
Pneumatic
Lifting

V651 Series Flanged Safety Valves



Services,

- Liquids
- Gases
- Steam

Operating Temperature Range

+ 260°C / + 400°C

Material List

Body	GGG40.3		AISI316Ti		
Bonnet	GGG40.3		AISI316Ti		
Seat	EPDM	NBR	Viton	PTFE	Metal

Type-3 Proportional Safety Valves

Inlet(Inch)	15	20	25	32	40	50	54	80	100
Outlet(Inch)	15	20	25	32	40	50	54	80	100
Set Pressure (bar)	Min	0,1	0,1	0,1	0,1	0,1	0,1	0,25	0,25
	Max	250	250	250	100	100	100	63	40

Type-30 Standard Safety Valves

Inlet(Inch)	15	20	25	32	40	50	65	80	100
Outlet(Inch)	15	20	25	32	40	50	65	80	100
Set Pressure (bar)	Min	0,1	0,1	0,1	0,1	0,1	0,1	0,05	0,05
	Max	40	40	40	40	40	40	35	18

Type-31 Standard Safety Valves

Inlet(Inch)	15	20	25	32	40	50	65	80
Outlet(Inch)	20	25	32	40	50	65	80	100
Set Pressure (bar)	Min	0,1	0,1	0,1	0,1	0,05	0,05	0,05
	Max	40	40	40	40	40	35	18

Type-32 Full Lift Safety Valves

Inlet(Inch)	15	20	25	32	40	50	65
Outlet(Inch)	25	32	40	50	65	80	100
Set Pressure (bar)	Min	0,2	0,1	0,1	0,1	0,1	0,1
	Max	40	40	40	40	25	25



V800 Series Pneumatic Pinch Valves

Available in sizes ranging from DN40 to DN250. Valve body serves as a built-in actuator, eliminating the need for use of costly actuators.

Ideally suited to be used as a shut-off or throttling valve mainly in mining, chemical, waste/water treatment and conveying applications involving abrasive or corrosive slurries, powders, chemicals, coarse particles or fibrous substances.

Offered in "Normally Open" or "Normally Closed" configurations, requires only a 3/2 way or a pilot operated control valve. Designed to allow quick and easy sleeve replacement thus reducing maintenance costs.

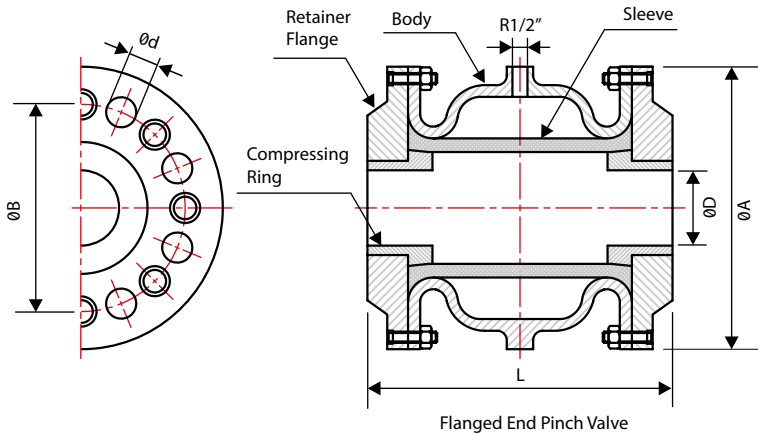
Leak free performance in both direction even on trapped solids. In order to ensure tight closure, air supply to close the valve must be approximately 1,5 bar higher than line pressure.



Flanged Pneumatic Pinch Valves

Pinch Valves - Flanged End Connection (DN40-DN250)

Body Construction Material : Die Cast Aluminum Body / Ductile Iron



Dimensions(mm)

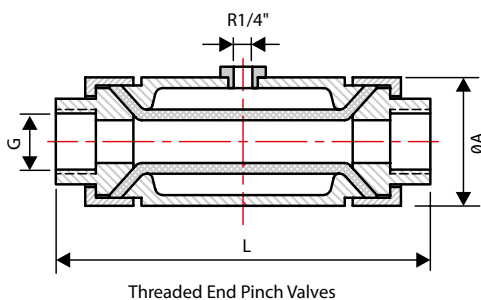
DN	ØD	L	ØA	ØB	Ød	n
40	40	155	150	110	18	4
50	60	166	165	125	18	4
65	60	183	185	145	18	4
80	75	220	200	160	18	8
100	100	280	220	180	18	8
125	120	348	250	210	18	8
150	145	418	285	240	22	8
200	190	555	340	295	22	8
250	250	610	390	350	22	12

Associated Accessories ,

- 3/2 Way Function Solenoid Valves
- Air Filter&Regulator Units
- Quick Exhaust Valves

Pinch Valves-Internal Threaded End Connection (1/2" - 2")

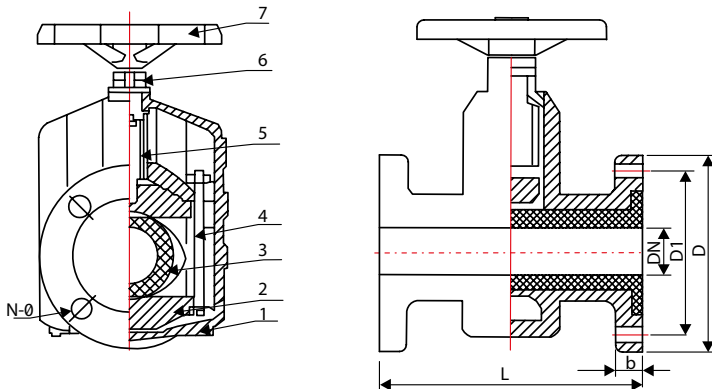
Body Construction Material : Carbon Steel / St.Steel



Dimensions(mm)

Size (DN)	G	L	ØA
15	1/2"	135	60
20	3/4"	142	60
25	1"	145	75
32	1-1/4"	170	90
40	1-1/2"	200	110
50	2"	220	120

V850 Series Flanged Manual Pinch Valves



Material List

No	Part Name	Material
1	Body	Aluminum / Cast* / Ductile Iron
2	Pinching Device	Aluminum / Cast* / Ductile Iron
3	Sleeve	Natural Rubber*/EPDM
4	Stud	Carbon Steel
5	Stem	Carbon Steel
6	Stud Nut	Carbon Steel
7	Handwheel	Cast Iron

*Natural Rubber is the best construction material for the sleeve from the point of resistance to cracking from flexing and also shows excellent resistance to abrasive wear and to corrosion from any corrosive fluids.

V850 Series Flanged End Pneumatic Pinch Valves

Depending upon the fail safe mode required, offered in double/single acting fail-closed or fail-open configurations.

- Versions fitted with electric actuators are available upon request.

Material List

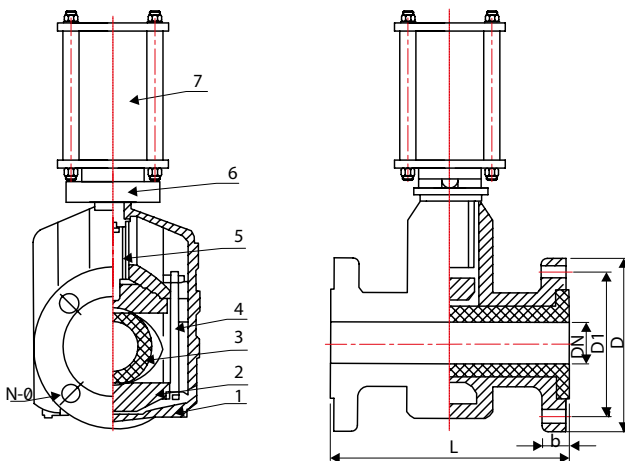
No	Part Name	Material
1	Body	Aluminum / Cast / Ductile Iron
2	Pinching Device	Aluminum / Cast / Ductile Iron
3	Sleeve	Natural Rubber
4	Stud	Carbon Steel
5	Stem	Carbon Steel
6	Stud Nut	Carbon Steel
7	Actuator	Aluminum / Carbon Steel

Dimensions(mm)

DN	L	D	D1	b	N-Ø
20	135	105	75	16	4-Ø14
25	145	115	85	16	4-Ø14
32	160	135	100	18	4-Ø18
40	180	145	110	18	4-Ø18
50	210	165	125	20	4-Ø18
65	250	185	145	20	4-Ø18
80	300	190	160	22	4-Ø18
100	350	215	180	22	8-Ø18
125	430	245	210	25	8-Ø18
150	500	280	240	25	8-Ø23
200	650	335	295	32	8-Ø23
250	800	390	350	32	12-Ø23
300	950	562	445	32	12-Ø23

Associated Accessories

- Open-Close Mechanical / Proximity Limit Switches
- Solenoid Valves
- Positioners
- Electric Actuators





V940 Series Globe Control Valves

V940 Globe control valves are used to precise temperature, pressure, flow and level control of services such as gases, liquids and steam.

Technical Specifications

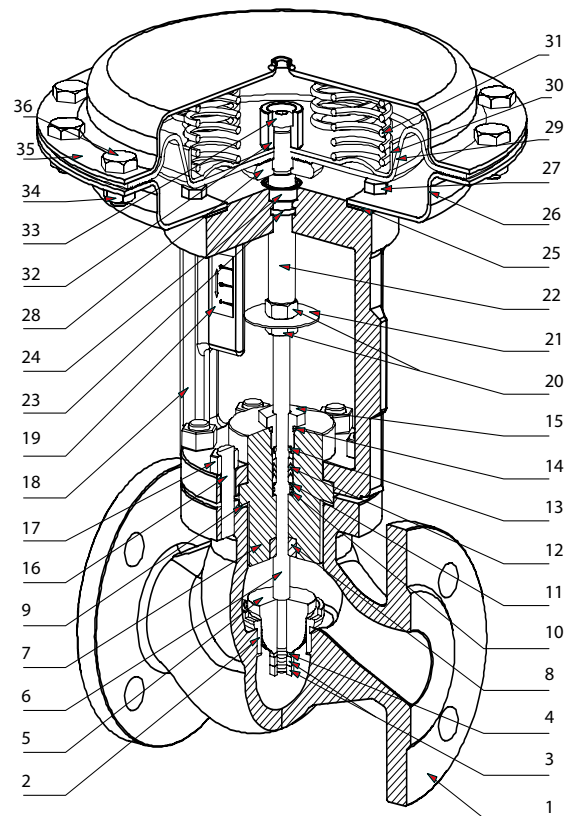
Body Material and Pressure Rating	GG25 Cast Iron (PN16)
	GGG40 Ductile iron (PN16)
	A216 Gr. WCB Steel (PN40)
	AISI316 Stainless Steel (PN40)
Trim Flow Characteristics	Equal Percentage (EQP)
	Linear (PL)
	Quick Open (PT)
Max Supply Pressure	35 PSI – 2.5 bar

Packing Material	PTFE ≤ 150°C
	PTFE+Graphite ≤ 200°C
	Pure Graphite ≤ 400°C
Leakage Rate	Standart AISI316 Class IV
	PTFE+Grafite Class VI
	Lapped St. Steel AISI316 Class V
Associated Accessories	Digital-Analog Positioners
	Filter-Regulator Units
	Solenoid Valves
	O-C Limit Switches
	Lock-Up Valves



Material List

No	Part Name	Material
1	Body	GG25/GGG40/AISI304/AISI316/PTFE
2	Seat	AISI 316 Stainless Steel
3	Lock Nut	AISI 304 Stainless Steel
4	Spring Washer	AISI 304 Stainless Steel
5	Plug	AISI 316 Stainless Steel
6	Stem	AISI 316 Stainless Steel
7	Bonnet	C40 Nickel Plated / AISI316
8	Guide Bush	AISI 304 Stainless Steel
9	Body Gasket	Europil WS 3640 or PTFE
10	Packing Spring	AISI 302 Stainless Steel
11	Spacer Bush	AISI 304 Stainless Steel
12	Packing	PTFE / PTFE+Graphite / Graphite
13	Internal O-Ring	Viton FPM 70
14	External O-Ring	Viton FPM 70
15	Adjusting Nut	AISI 303 Stainless Steel
16	Stud Bolt	Galvanized Steel
17	Lock Nut	DDIN 934 Galvanized Steel
18	Yoke	GGG50 Sfero Ductile Iron
19	Indicator Plate	Polycarbonate
20	Lock Nut	DIN 936 Galvanized Steel
21	Position Indicator	Aluminyum
22	Diaphragm Rod	AISI 303 Stainless Steel
23	O Ring	NBR
24	Rod Seal	NBR
25	Gasket	Elastomer
26	Lower Diaphragm Case	P11 Steel
27	Bolt	DIN 933 Galvanized Steel
28	Spacer	Galvanized Steel
29	Diaphragm	EPDM 70
30	Diaphragm Plate	P01 Steel
31	Spring	C98 UNI 3823
32	Diaphragm Bush	AISI 303 Stainless Steel
33	Nut	ISO 7380 Galvanized Steel
34	Hex Nut	DIN 934 Galvanized Steel
35	Diaphragm Upper Case	P11 Steel
36	Lock Nut	DIN 933 Galvanized Steel



V940 Globe Control Valves

Flow Factor Kv (m³/h) and Valve Dimensions (mm)

Size (DN)	15	20	25	32	40	50	65	80	100								
Kv (m ³ /h)	Equal Percentage	2,9	5,7	9,3	14,7	20,5	43	60,5	75,2	102,1							
	Linear	2,9	5,7	9,6	15,2	20,6	44	62,7	77	106,7							
	Quick Open	2,9	5,7	10,4	16,4	20,7	45,3	92,5	111,5	151,2							
	Reduced Bore (DN)	•	•	15	15	20	20	25	25	32	32	40	40	50	50	65	65
Dimensions(mm)	A	130	150	160	180	200	230	290	310	350							
	B	47,5	52,5	57,5	70	75	82,5	92,5	100	118							
	C-Standard	49	58	68	70	82	86	111	135	160							
	C-Finned Bonnet	181	190	200	202	214	218	309	333	363							
	C-Metal Bellowed	181	190	200	202	214	218	309	333	363							
	D	147	147	147	147	160	160	160	160	204							
	V	166	166	166	166	166	166	166	166	166							
	V1	11	11	11	19	19	19	28	28	28							

*The Kv values given above express flow rates in m³/h with a pressure drop of Δp 1 bar.

Diaphragm Actuator Dimensions (mm)

Actuator Model	T200	T250	T310	T400	T500
E	70	70	95	119	119
Ø F	210	292	336	408	520

Standard Flow Valves - Maximum Allowable Pressure Drop Δp (Kg/cm²)

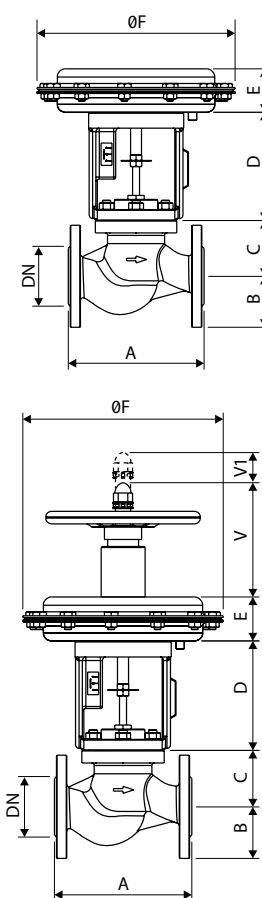
Actuator Model	Pneumatic Signal	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100
T200	3-15 psi	12	8	5	3	-	-	-	-	-
	6-18 psi	25	16	9	5,2	-	-	-	-	-
	6-30 psi	65	40	22	11	-	-	-	-	-
T250	3-15 psi	27	17	9	6	4	2,4	-	-	-
	6-18 psi	55	34	19	12	8	3	-	-	-
	6-30 psi	110	68	38	20	14,5	7	-	-	-
T310	3-15 psi	-	-	15,5	10	7	3,5	2,5	1,7	0,9
	6-18 psi	-	-	31	20	14	7	4,2	2,8	1,3
	6-30 psi	-	-	62	30	21	12	6,5	4,7	2,6
T400	3-15 psi	-	-	-	14,5	10,5	5	3,8	2,5	1,4
	6-18 psi	-	-	-	29,5	20,5	12	6,7	4	2,8
	6-30 psi	-	-	-	45	31,5	18	16	11	6,3
T500	3-15 psi	-	-	-	24,5	17,5	9,5	5,5	4,2	2,4
	6-18 psi	-	-	-	49	34,5	19,5	12,2	7	4,9
	6-30 psi	-	-	-	75	52,5	30,3	26	16	10,5

Note :

1. The values given above are referred to the force of actuator and they can be used within the limit of the body rating.
2. The actuator Δp (Kg/cm²) values given in the column 6-30 PSI are also valid for On/Off Valves with air supply at 30/35 PSI.

Micro Flow Valves - Maximum Allowable Pressure Drop Δp (Kg/cm²)

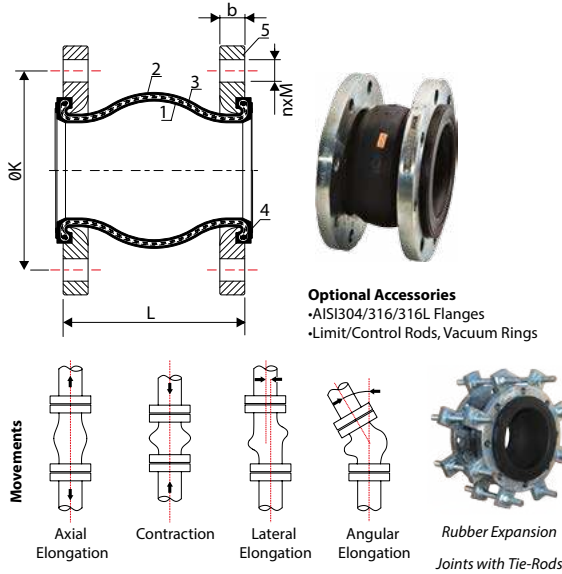
Actuator Model	Supply Basıncı	MFP 1/8"	MFP 3/16"	MFP 1/4"	MFP 3/8"	MFS1SG 1/4"	MFS2SG 1/4"	MFS1SG 3/8"	MFS2SG 3/8"
T200 DN15-20 Micro Flow	3-15 psi	200	90	50	30	50	50	30	30
	6-18 psi	400	180	100	60	100	100	60	60
	6-30 psi	1300	580	340	160	340	340	160	160
Kv (m ³ /h)		0,22	0,61	1,1	2,26	0,56	1,04	1,05	1,94





K100 Series Single Sphere Rubber Expansion Joints with Floating Flanges

Available in sizes ranging from DN32 to DN600. Absorb mechanical vibrations caused by pumps, turbines, compressors and motors. Dampen and insulate against the transmission of noise and undesirable disturbances generated by mechanical equipment. Reduce stress compensating for axial, lateral and angular movements caused by contraction and expansion of pipe lengths due to thermal changes.



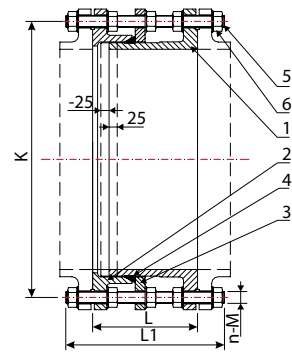
Dimensions(mm)

Size (DN)	PN	L (mm)	ØK (mm)	b (mm)	n (Qty)	M	Max Allowable Movement			
							Axial Elongation (mm)	Axial Compression (mm)	Lateral Movement (mm)	Angular Movement
32	PN10/16	95	100	16	4	18	6	9	9	15°
40	PN10/16	95	110	18	4	18	6	10	9	15°
50	PN10/16	105	125	18	4	18	7	10	10	15°
65	PN10/16	115	145	20	4	18	7	13	11	15°
80	PN10/16	135	160	20	8	18	8	15	12	15°
100	PN10/16	150	180	22	8	18	10	19	13	15°
125	PN10/16	165	210	24	8	18	12	19	13	15°
150	PN10/16	180	240	24	8	22	12	20	14	15°
200	PN10/16	210	295	24	8	22	16	25	22	15°
250	PN10	230	350	28	12	22	16	25	22	15°
	PN16		355	28	12	26				
300	PN10	245	400	28	12	22	16	25	22	15°
	PN16		410	30	12	26				
350	PN10	255	460	28	16	22	16	25	22	15°
	PN16		470	32	16	26				
400	PN10	255	515	30	16	26	16	25	22	15°
	PN16		525	34	16	30				
450	PN10	255	565	30	20	26	16	25	22	15°
	PN16		585	32	20	30				
500	PN10	255	620	32	20	26	16	25	22	15°
	PN16		650	36	20	33				
600	PN10	255	725	36	20	30	16	25	22	15°
	PN16		770	44	20	36				

Material List	No	Part Name	Material
	1	Internal Liner (Bellow)	EPDM or NBR
	2	External Liner (Bellow)	GGG40, AISI304, AISI316, Bronze
	3	Middle Liner	Naylon Cord Fabric
	4	Wire	Hardened Steel
	5	Flange	St37 or Stainless Steel (Optional)

D100 Series Dismantling Joints

Provide easy access to pumps, valves and flow meters, without having to move large sections of pipework. Allow up to 25 mm of longitudinal adjustment.



No	Part Name	Material
1	End Flange (Long)	Ductile Iron - GGG40
2	End Flange (Short)	Ductile Iron - GGG40
3	Gland Flange	Ductile Iron - GGG40
4	Seal	EPDM/NBR
5	Tie-Rod	Galvanized Steel
6	Nut	Carbon Steel

Optional Faeyures,

- Stainless Steel Studs
- Stainless Steel Nuts

Working Temp.,
Min: -15°C, Max: +70°C



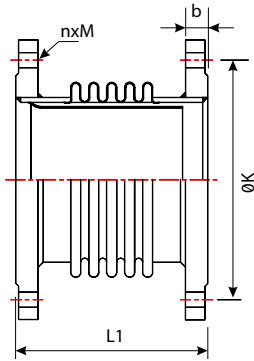
Dimensions(mm)

	DN	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400
P N 1 0	L	175	175	175	175	195	205	225	235	245	245	255	275	275	295	295	315	380	355
	L1	300	300	300	320	340	350	360	380	380	390	410	420	480	520	520	520	590	590
	n-M	8-16	8-16	8-16	8-20	8-20	12-20	12-20	16-20	16-24	16-24	20-24	20-27	24-27	24-30	28-30	28-33	32-36	36-39
	K	160	180	210	240	295	350	400	460	515	565	620	725	840	950	1050	1160	1380	1590
	Weight	18	20	24	30	42	62	67	85	105	135	155	225	300	361	400	516	895	1194
P N 1 6	L	175	175	175	175	195	205	225	235	245	245	255	275	275	295	295	315	335	355
	L1	300	300	300	320	340	360	360	400	420	420	440	480	480	520	520	540	600	630
	n-M	8-16	8-16	8-16	8-20	12-20	12-24	12-24	16-24	16-27	20-27	20-30	20-33	24-33	24-36	28-36	28-39	32-45	36-45
	K	160	180	210	240	295	355	410	470	525	585	650	770	840	950	1050	1170	1390	1590
	Weight	18	20	24	30	45	66	84	107	142	177	200	305	321	469	535	698	1070	1270

* Weight : Net unit weight in kg.

K150 Series Metal Expansion Joints

K150 series expansion joints are used as a damping device for axial elongation, shrinkage, angular and axial movements caused by vibrations, sound and other thermal changes produced by machines or pumps on the pipe lines.



Metal Expansion Joint



Welded Metal Expansion Joint

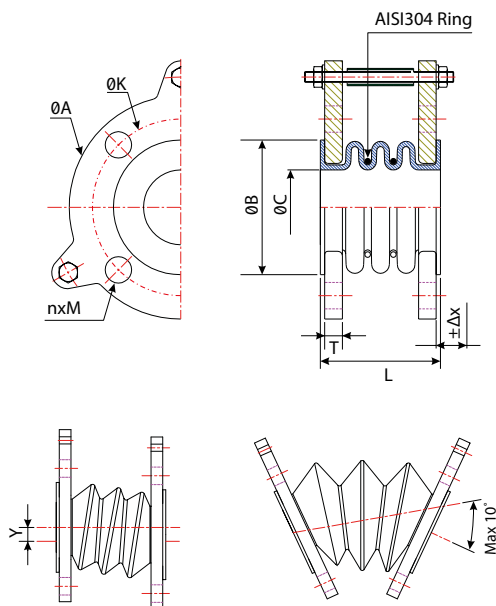
Material List	No	Part Name	Material
	1	Bellow	AISI304, AISI316, AISI321
	2	Liner (Optional)	AISI304, AISI316, AISI321
	3	Flanges	St37, AISI304, AISI316

Dimensions(mm)

Size (DN)	PN	L1			K (mm)	b (mm)	n (Qty)	M
		Expansion						
		30mm	45mm	60mm				
25	PN10/16	110	-	-	85	16	4	14
32	PN10/16	110	-	-	100	18	4	18
40	PN10/16	120	150	-	110	18	4	18
50	PN10/16	120	150	-	125	18	4	18
65	PN10/16	120	150	180	145	20	4	18
80	PN10/16	120	150	180	160	20	8	18
100	PN10/16	120	150	185	180	22	8	18
125	PN10/16	125	155	190	210	24	8	18
150	PN10/16	130	155	200	240	24	8	22
200	PN10/16	150	190	230	295	24	8	22
250	PN10				350	28	12	22
	PN16	165	205	245	355	28	12	26
300	PN10				400	28	12	22
	PN16	165	215	245	410	30	12	26
350	PN10				460	28	16	22
	PN16	170	215	255	470	32	16	26
400	PN10				515	30	16	26
	PN16	170	230	255	525	34	16	30
450	PN10				565	30	20	26
	PN16	185	235	270	585	32	20	30
500	PN10				620	32	20	26
	PN16	195	235	285	650	36	20	33
600	PN10				725	36	20	30
	PN16	190	245	240	770	44	20	36

K200 Series PTFE Expansion Joints

K200 series PTFE expansion joints are used as a damping device for axial elongation, shrinkage, angular and axial movements caused by vibrations, sound and other thermal changes produced by machines or pumps on the chemical corrosive pipe lines.



No	Part Name	Material
1	Bellow	Pure PTFE, Anti-Static PTFE (min. 3.05 max. 3.5 mm)
2	Flanges	St37, AISI304 or AISI316
3	Studs	AISI304, AISI316



PTFE Expansion Joint

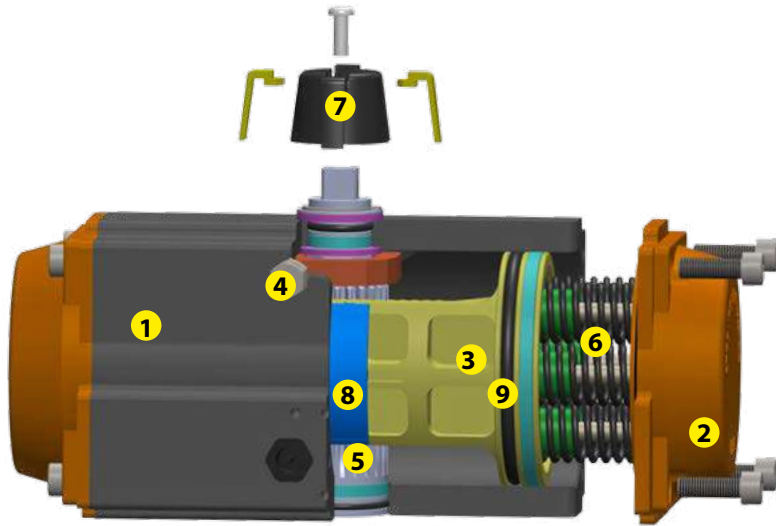
Dimensions(mm)

DN	L	ØA	ØB	ØC	T	PN10			X	Y
						ØK	ØM	n		
25	50	108	50,8	20	10	85	14	4	4	3
32	50	127	73	37	10	100	18	4	4	3
40	55	127	73	37	10	110	18	4	5	3
50	70	152,4	92	49	12	125	18	4	6	3
65	75	177,8	104,8	56	12	145	18	4	6	5
80	100	190,5	127	71	12	160	18	8	8	6
100	100	228,6	157	93	14	180	18	8	10	8
125	100	279,4	157	93	14	210	18	8	10	8
150	100	279,4	216	146	16	240	22	8	10	8
200	150	342,9	270	195	16	295	22	8	12	10
250	150	406,4	324	257	20	350	22	12	12	10
300	150	482,6	381	302	20	400	22	12	12	10



A210 Series Pneumatic Actuators

Proval A210 Series innovative, compact design pneumatic rack and pinion rotary actuators including all critical components are manufactured in-house using dedicated state-of-the-art CNC machines following ISO quality assurance standards. Proval pneumatic actuators that can be set either to fail-open or fail-close, comes in 18 different sizes in both double and single acting types. This Series of actuators having torque figures in ranges 9 to 9767 Nm are well suited to operate part-turn valves such as plug, ball and butterfly valves.



General Features

- Compact design
- Available in 18 different sizes
- Spring return or double acting versions
- High and Low temperature executions
- Common end caps on SR and DA
- Namur accessory mounting configuration
- Bi-directional stroke adjustment bolts
- Operating media - clean, dry air or non-corrosive gases
- Modular preloaded spring cartridges
- Durable, trouble free operation

1. Actuator Body

Heavy duty extruded aluminium body having a smooth surface finish is hard anodised both externally and internally to increase corrosion resistance and life span of internal parts. Different types of protective coatings, such as ENP, PFA and ECTFE allowing actuators to be used in harsh environments are available upon request.



Hard Anodising

PFA / ETFE Coating

Electroless Nickel Plating

2. End Caps

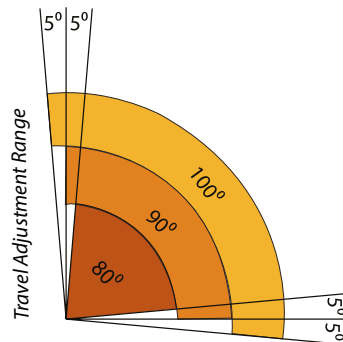
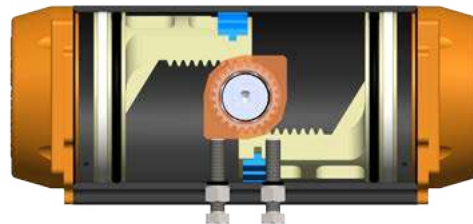
Epoxy powder coated die-cast aluminium end caps are identical for actuators in single and double acting configuration to facilitate conversion on site. Alternatively ENP, PFA, ECTFE etc coatings are available for highly aggressive environments.

3. Pistons

Die-cast aluminium pistons are treated with a special coating to decrease friction coefficient and increase wear resistance. The direction of pinion rotation (CCW to CW) can be changed by rotating the pistons 180° around their axis as the pistons installed at the both ends of the actuator are identical to each other.

4. Travel Adjustment

Each end of actuator travel (CW and CCW) can be adjusted by $\pm 5^\circ$ turning the right and left stroke adjustment bolts placed independently of each other, IN or OUT.

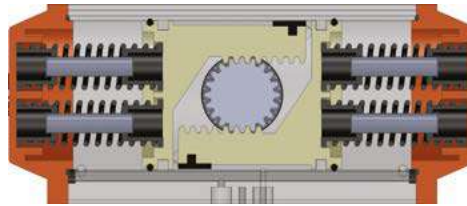


5. Pinion (Drive Shaft)

Alloy-steel shafts are designed and machined precisely in compliance with ISO5211, DIN3337, VDI/VDE 3845 standards. Plated in electroless nickel to provide substantially improved performance, wear and corrosion resistance in aggressive environments.

6. Preloaded Cartridge Springs

High grade steel spring cartridges are cathodolysis coated to provide highly improved safety and corrosion resistance in fail safe and emergency shut down operations.



7. Indicator

All actuators are furnished with a local position indicator that provides visual indication of valve/actuator position.

8. Bearings & Guides

High quality, low friction bearings and guides to avoid metal-to-metal contact and ensure reliable and stable linear motion.



9. Seals

Actuators fitted with NBR o-rings are suitable for use at temperatures ranging from -20 °C to +80 °C. FKM and Silicon O-rings are available for low and high temperature executions.



10. Traceability

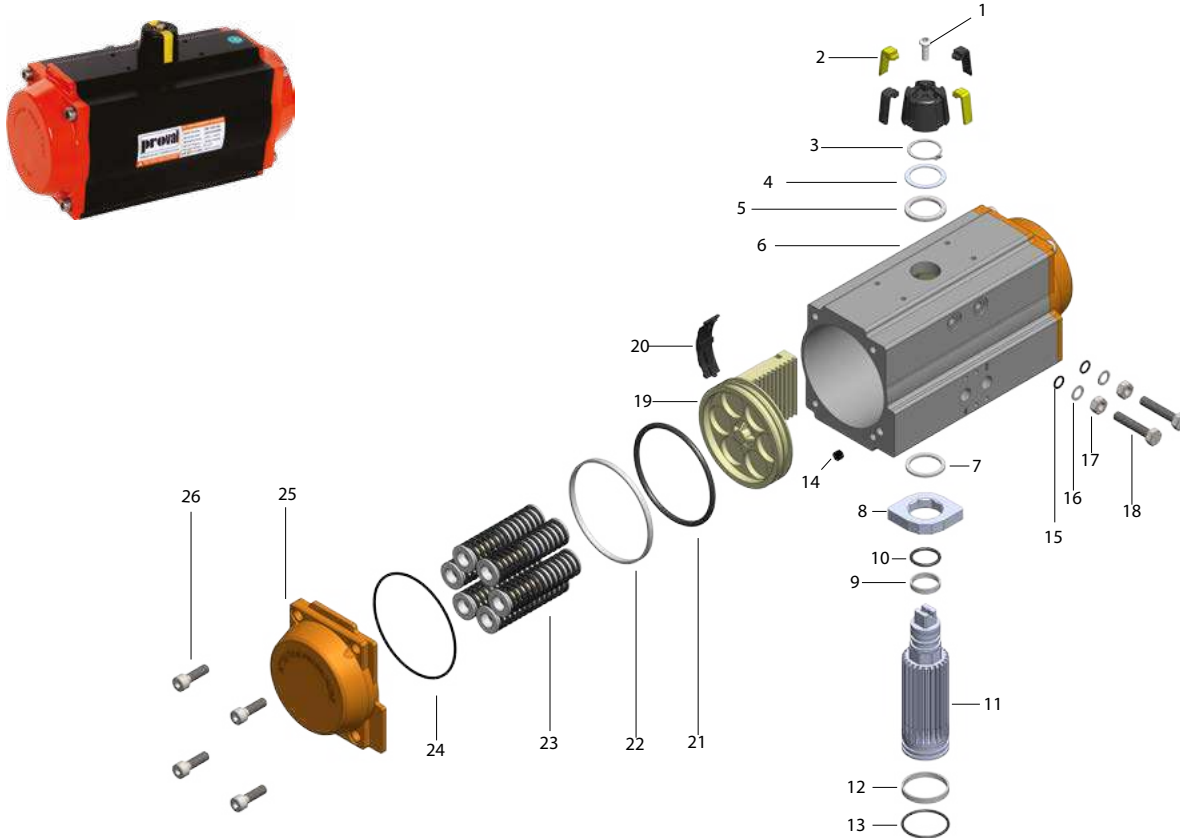
A unique Serial number is assigned to all actuators to facilitate identification and provide maximum traceability.

	PA TYPE PNEUMATIC ACTUATOR	
	Model Nr / Type : PA 052 DA ISO Flange / Sq. : F03/F05 - 11X11 Rotation / Stroke: CCW / 90° ± 5° Inlet Port : G 1/4" Op. Temperature: -20°C ~ 80°C Max Air Supply : 8 Bar Seal / Stem Mtrl : NBR / STL+ENP Body Finish : STANDARD Serial Number : 10140255	www.proval.net 
CE II 2 GDc PC Made in Turkey ⚠ DISASSEMBLY WHILE PRESSURIZED WILL CAUSE SERIOUS INJURIES		

High quality, durable and self-adhesive stickers indicating temperature/pressurating limitations of actuators are affixed to actuators and need to be strictly considered when commissioning

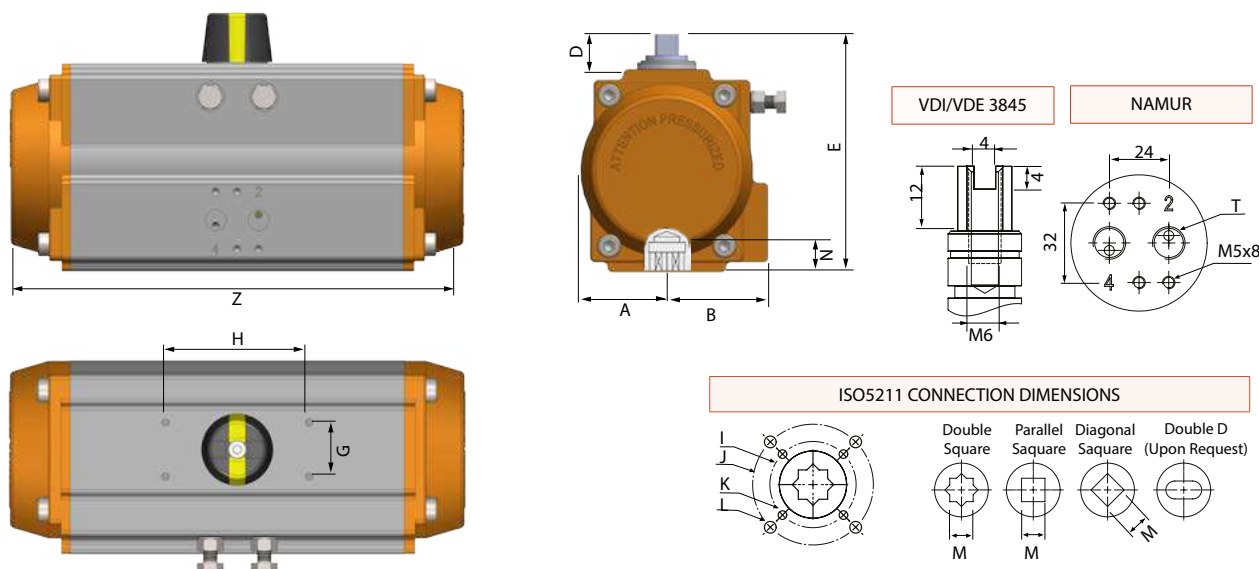


A210 Series 90° Rotation Pneumatic Actuators Part List



No.	Description	Qty	Standard Material	Protection	Optional Material
1	Indicator Screw	1	Stainless Steel	Galvanized Coating	Stainless Steel
2	Indicator	1	Plastic		
3	Circlip	1	Stainless Steel		
4	Metal Washer	1	Stainless Steel		
5	Washer	1	Engineering Plastics		
6	Body	1	Extruded Aluminium Alloy	Hard Anodizing	Stainless Steel , Epoxy / Nickel Coating
7	Inner Washer	1	Engineering Plastics		
8	Cam	1	Alloy Steel		
9	Pinion Upper Bearing	1	Engineering Plastics		
10	Pinion Upper O-Ring	1	NBR		
11	Pinion	1	Alloy Steel	Nickel Plating / Galvanized Coating	Stainless Steel
12	Pinion Lower Bearing	1	NBR		Viton/Silicon
13	Pinion Lower O-Ring	1	Engineering Plastics		
14	Sealing Plug	2	NBR		Viton/Silicon
15	Adjustment Screw O-Ring	2	NBR		Viton/Silicon
16	Washer (Adjustment Bolt)	2	Stainless Steel		
17	Nut (Adjustment Bolt)	2	Stainless Steel		
18	Stroke Adjustment Bolt	2	Stainless Steel		
19	Piston	2	Aluminium Die Cast	Alodine Coating	
20	Guide Piston	2	Engineering Plastics		
21	Piston Bearing	2	Engineering Plastics		
22	Piston O-Ring	2	NBR		Viton/Silicon
23	Cartridge Springs	0~12	Spring Steel	Cataphoresis Coating	
24	End Cap O-Ring	2	NBR		Viton/Silicon
25	End Cap	2	Cast Aluminium	Epoxy Powder Coatinga	Stainless Steel
26	Cap Screw	8	Stainless Steel		

A210 Series 90° Rotation Pneumatic Actuators Dimensions and Weight Information



Dimensions(mm)

Model	A	B	D	E	G	H	I	J	K	L	M	N	Z	T
PA 32	23	23	20	65	25	50	ø36	-	M5x8	-	9	14	99	G1/8"
PA 40	40	36	20	81	30	80	ø36	ø50	M5x8	M6x10	9-11	14	124	G1/4"
PA 52	30	41	20	92	30	80	ø36	ø50	M5x8	M6x10	9-11	14	154	G1/4"
PA 63	36	47	20	107,5	30	80	ø50	ø70	M6x10	M8x13	9-11-14	18	166	G1/4"
PA 75	42	53	20	119,5	30	80	ø50	ø70	M6x10	M8x13	11-14	18	186	G1/4"
PA 83	46	57	20	128,7	30	80	ø50	ø70	M6x10	M8x13	14-17	21	205	G1/4"
PA 92	50	58	20	136,8	30	80	ø50	ø70	M6x10	M8x13	14-17	21	253	G1/4"
PA 105	57,5	64	20	153	30	80	ø70	ø102	M8x13	M10x16	17-22	26	268	G1/4"
PA 125	67,5	74,5	20	175	30	80	ø70	ø102	M8x13	M10x16	22	26	301	G1/4"
PA 140	75	77	20	191,5	30	80	ø102	ø125	M10x16	M12x20	27	31	392	G1/4"
PA 160	87	87	20	217	30	80	ø102	ø125	M10x16	M12x20	27	31	451	G1/4"
PA 190	103	103	30	260	30	130		ø140		M16x25	36	40	525	G1/4"
PA 210	113	113	30	285	30	130		ø140		M16x25	36	40	532	G1/4"
PA 240	130	130	30	318	30	130		ø165		M20x25	46	50	610	G1/4"
PA 270	147	147	30	356	30	130		ø165		M20x25	46	50	722	G1/4"
PA 300	140	173	30	382	30	130		ø165		M20x25	46	55	774	G1/2"
PA 350	164	195	30	438	30	130	ø165	ø254	M20x25	M16x25	46	50	912	G1/2"
PA 400	260	260	30	494	30	130	ø165	ø254	M20x25	M16x25	46	50	945	G1/2"

Actuator Unit Weights (Kg/Pc)

Model	PA 32	PA 40	PA 52	PA 63	PA 75	PA 83	PA 92	PA 105	PA 125	PA 140	PA 160	PA 190	PA 210	PA 240	PA 270	PA 300	PA 350	PA 400
Spring Return	-	-	1,5	2,2	2,9	3,6	5,5	6,7	10,4	14,4	23,3	46,1	53,1	73,3	115,9	110,00	186,50	289,00
Double Acting	0,5	0,7	1,4	2,1	2,7	3,3	5,0	5,9	9,0	12,0	19,0	39,1	44,1	59,0	93,6	130,00	234,40	360,40

Air Consumption of Actuators (Lt/Stroke)

Model	PA 32	PA 40	PA 52	PA 63	PA 75	PA 83	PA 92	PA 105	PA 125	PA 140	PA 160	PA 190	PA 210	PA 240	PA 270	PA 300	PA 350	PA 400
Opening (Lt)	0,03	0,06	0,12	0,21	0,30	0,43	0,64	0,88	1,4	2,2	3,2	5,4	6,8	9	14	23,8	35,1	52,6
Closing (Lt)	0,04	0,08	0,16	0,23	0,34	0,47	0,73	0,95	1,6	2,5	3,7	5,9	7,5	11	17	29,7	46,3	36

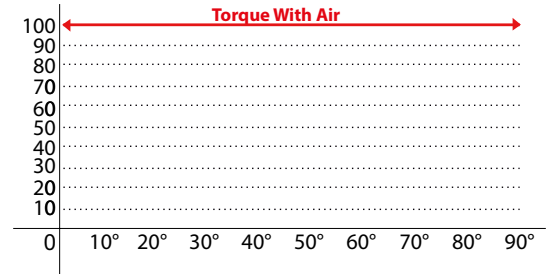


A210 Series 90° Rotation Double Acting Pneumatic Actuators Working Principles

A210 Series Double acting actuators require compressed air to be supplied in both opening and closing strokes.

The output torques generated by actuators in double acting configuration vary mainly depending on the cylinder diameter and air supply pressure; it is simply calculated by multiplying the piston area by pitch circle radius of the pinion and by the supply pressure.

As shown in the diagram at the right the double acting pneumatic actuators are capable of offering constant torque through the 90° full stroke



Torque Output Through Full 90° Stroke

Counter Clockwise Rotation (CCWR)

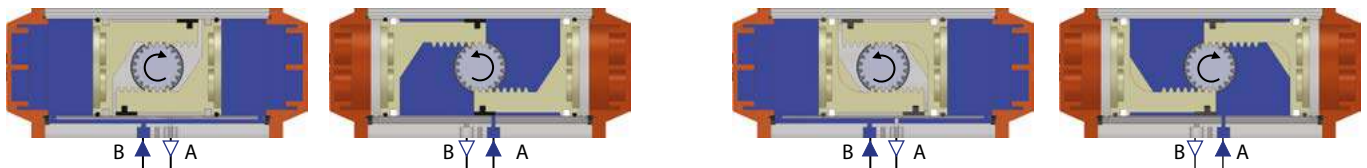
Air supplied through port B forces the piston towards each other causing the pinion to rotate clockwise while air is being exhausted through port A.

Air supplied through port A forces the piston away from each other causing the pinions to rotate counter clockwise while air is being exhausted through port B.

Clockwise Rotation (CWR)

Air supplied through port B forces the piston towards each other causing the pinion to rotate counter clockwise while air is being exhausted through port A.

Air supplied through port A forces the piston away from each other causing the pinions to rotate clockwise while air is being exhausted through port B.



The Proval actuators typically operate counter clockwise to open and clockwise to close. The direction of pinion rotation (CCW to CW) can be reversed changing the orientation of pistons as shown in the picture above.

Double Acting Actuators Torque Values (Nm)

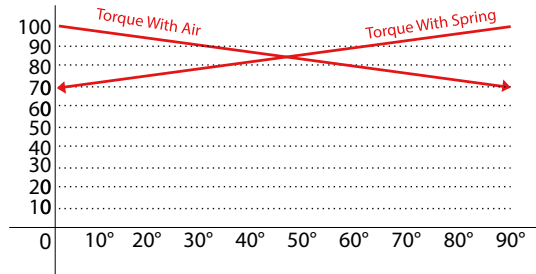
Model	Air Supply Pressure (bar)									
	2	2,5	3	4	4,5	5	5,5	6	7	8
PA 32DA	2	3,5	4	6	7	7,5	8	9	10	12
PA 40DA	6	8	10	13	14	16	18	20	22	26
PA 52DA	8	10	12	16	18	20	22	24	28	32
PA 63DA	15	19	22	30	33	37	40	44	52	58
PA 75DA	20	26	30	40	45	50	55	60	70	80
PA 83DA	33	40	48	63	71	79	86	94	110	125
PA 92DA	45	57	68	90	102	113	124	136	158	182
PA 105DA	66	83	100	132	149	166	182	200	232	265
PA 125DA	101	126	151	202	226	252	276	301	352	402
PA 140DA	171	214	257	342	385	428	471	513	599	684
PA 160DA	266	333	399	532	600	665	732	798	932	1064
PA 190DA	426	532	639	852	958	1064	1170	1277	1490	1702
PA 210DA	532	665	798	1064	1198	1330	1463	1596	1862	2128
PA 240DA	770	962	1155	1540	1732	1924	2117	2309	2693	3078
PA 270DA	1169	1462	1755	2340	2632	2925	3217	3510	4095	4680
PA 300DA	1526	1908	2289	3052	3434	3815	4197	4578	5341	6104
PA 350DA	2285	2856	3427	4570	5141	5712	6283	6854	7997	9139
PA 400DA	3256	4069	4883	6511	7325	8139	8953	9767	11394	13022

A210 Series 90° Rotation Spring Return Pneumatic Actuators Working Principles

Spring return actuators require compressed air to be supplied for the opening stroke only as they utilize pre-stressed cartridge springs for reversing the rotation.

Unlike acting actuators the output torques generated by spring return actuators depends not only on the cylinder diameter and input air pressure but also on the force created by the springs. Therefore spring return actuators are larger than the double acting actuators that produce the same torque.

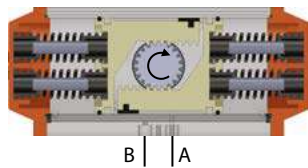
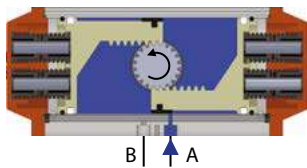
As shown in the diagram at the right, the torque curve is a straight line sloping down due to preloaded springs.



Counterclockwise Rotation (FAIL CW)

Air supplied through port A forces the piston away from each other, compressing springs and causing the pinion to rotate counter clockwise while air is being exhausted through port B.

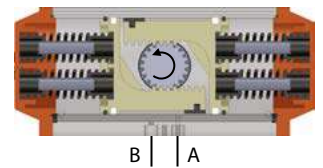
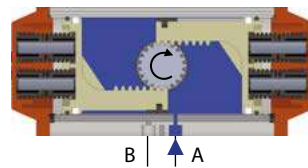
In case of loss/release of air pressure, springs forces the pistons towards each other causing the pinion to rotate counter clockwise with exhaust air existing through port A.



Clockwise Rotation (CWR)

Air supplied through port A forces the pistons away from each other, compressing springs and causing the pinion to rotate clockwise while air is being exhausted through port B.

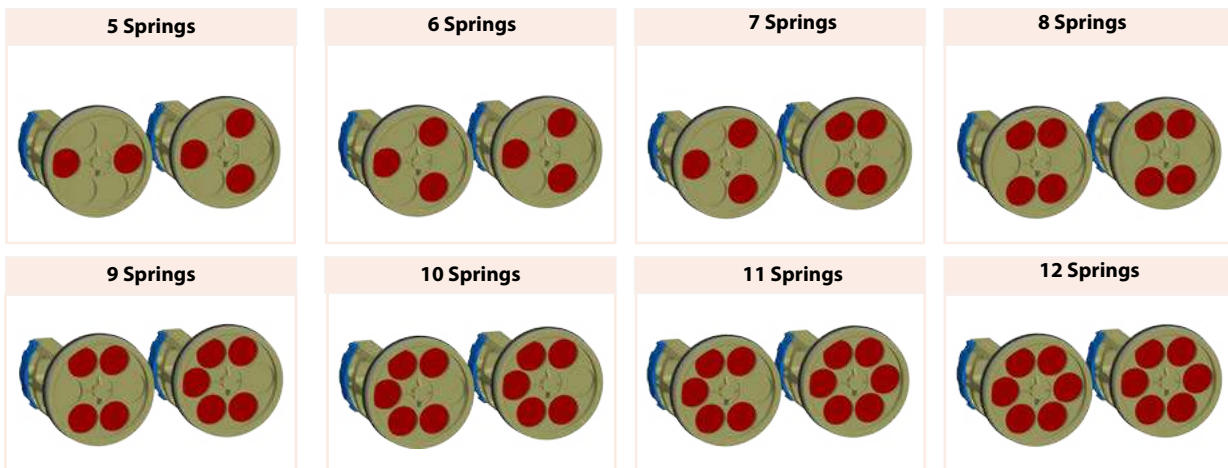
In case of loss/release of air pressure, springs forces the pistons towards each other causing the pinion to rotate counter clockwise with exhaust air existing through port A.



The proval actuators are preset for fail closed (CW) operation as standard, but can be adjusted easily for fail open (CCW) rotation.

Positioning of Springs for Spring Return Actuators

Springs must be inserted in a symmetrical manner as shown below to prevent side load from occurring between the pistons and actuators



Unless otherwise specified, Proval pneumatic actuators supplied as standard with a complete spring pack (12 springs) sized for 6 bar supply pressure. For different air supplies, actuators can be configured by removing springs from the end caps.



A210 Series 90° Rotation Single Acting Actuators Torque Output Values (Nm)

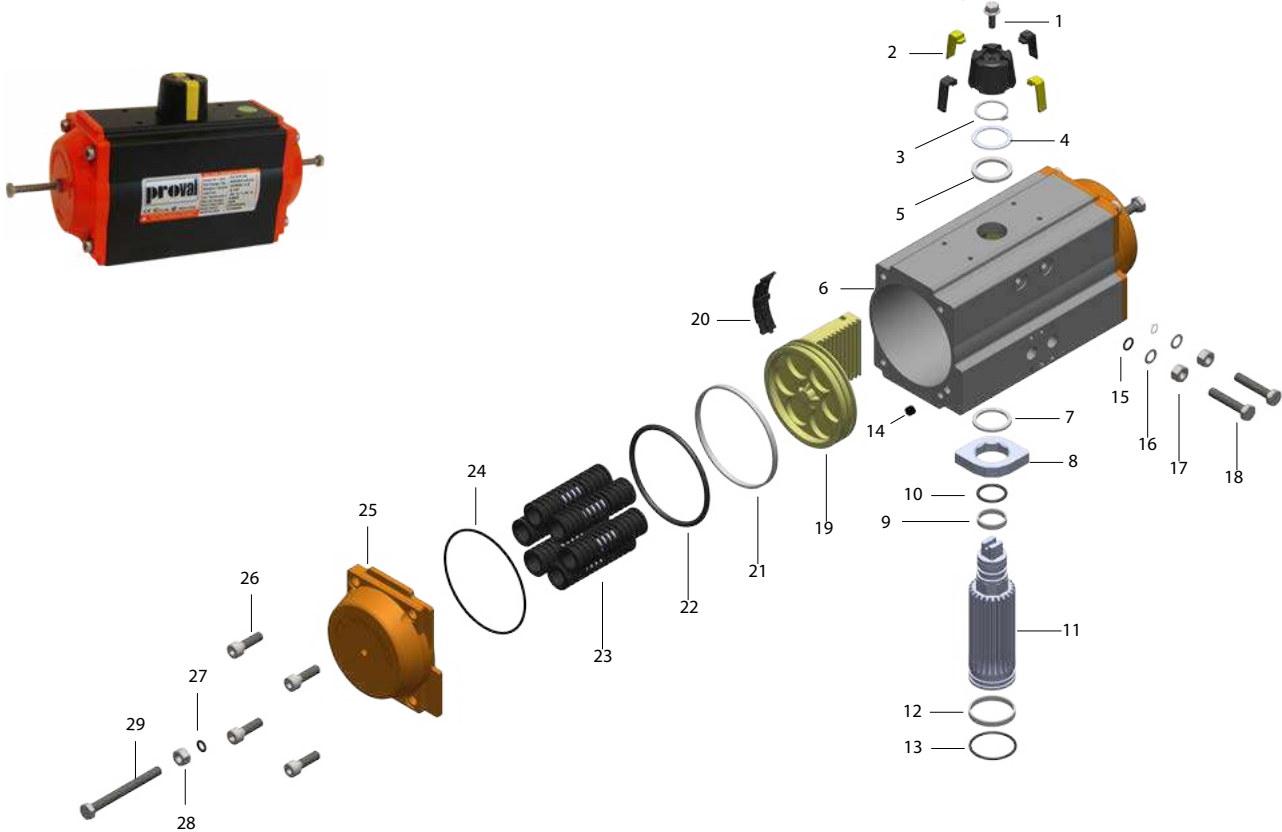
		Air to Springs Torque Output Values (Nm)														Spring Torque (Nm)	
Air Supply	Nrof Springs	2,5 Bar		3 Bar		4 Bar		5 Bar		6 Bar		7 Bar		8 Bar		90°	0°
Model		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
		Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop
PA 52SR	5	5,7	3,8	7,6	5,7											6,2	4,3
	6	4,9	2,5	6,9	4,5	10,9	8,5									7,4	5
	7	4	1,3	6	3,3	9,8	7,3	14	10,4							8,6	5,9
	8			5,2	2	9,2	6	13,2	9,1	17,2	14,1					9,9	6,7
	9			4,3	0,8	8,3	4,8	12,3	7,9	16,3	12,8	20,3	16,8			11,1	7,6
	10					7,4	3,6	11,5	6,7	15,5	11,6	19,5	15,6			12,4	8,5
	11					6,6	2,3	10,6	5,4	14,6	10,4	18,6	14,3	22,6	18,3	13,6	9,3
	12							9,7	4,2	13,8	9,1	17,8	12,2	21,8	17,1	14,8	10,2
PA 63SR	5	11,4	7,7	15	11,4	22,3	16,6									10,4	6,8
	6	10,1	5,7	13,6	9,3	20,9	14,9	28,3	23,9							12,5	8,2
	7	8,6	3,6	12,5	7,2	19,5	14,5	26,8	21,9							14,6	9,6
	8			10,9	5,1	18,2	12,4	25,5	19,8	32,8	27	40,1	34,3			16,7	10,9
	9					16,8	10,4	24,1	17,7	31,4	24,9	38,7	32,2			18,8	12,3
	10					1,4	8,2	22,8	15,6	30	22,8	37,3	30,1	44,7	37,4	20,9	13,7
	11							21,5	13,5	28,7	20,7	36	28	43,3	35,3	22,9	15
	12						20	11,4	27,3	18,6	34,6	25,9	41,9	33,3	25	16,4	
PA 75SR	5	14,5	10,6	19,4	15,5	29,5	25,7									14,5	10,5
	6	12,4	7,6	17,3	12,6	27,4	22,7	37,5	32,8							17,4	12,7
	7	10,4	4,8	15,2	9,7	25,3	19,9	35,4	29,9							20,3	14,8
	8			13,1	6,8	23,1	16,9	33,3	27	43,2	37	53,3	47			23,2	16,9
	9					21	14,1	31,2	24,1	41,1	34,1	51,2	44,2			26,1	19
	10					19	11,1	28,8	21,2	39	31,2	49,1	41,2	59,1	51,2	29	21,1
	11							27	18,3	37	28,3	47	38,4	57	48,4	31,9	23,2
	12						24,9	15,4	34,9	25,4	44,9	35,4	54,9	45,4	34,7	25,3	
PA 83SR	5	23,3	16,1	31,1	24	46,8	39,7									23	15,8
	6	20,1	11,5	28	19,3	43,7	35,1	59,4	50,7							27,6	19
	7	17	6,9	24,8	14,8	40,5	30,5	56,2	46,2							32,2	22,1
	8			21,7	10,1	37,4	25,8	53,1	41,5	68,8	57,2	84,5	72,9			36,8	25,3
	9					34,2	21,3	49,9	37	65,6	52,6	81,2	68,3			41,4	28,5
	10					31	16,6	46,7	32,3	62,4	48	78,1	63,7	93,8	79,3	46	31,6
	11							43,6	27,7	59,3	43,4	75	59,1	90,6	74,8	50,6	34,8
	12						40,4	23,2	56,1	38,9	71,7	54,5	87,4	70,2	55,2	38	
PA 92SR	5	33,1	22	44,2	33,2	66,8	55,9									34,4	23,3
	6	28,4	15,2	39,6	26,4	62,2	49	84,8	71,6							41,2	28
	7	23,8	8,2	34,9	19,4	57,5	42,1	80,2	64,7							48,1	32,7
	8			31,3	12,6	52,9	35,2	75,5	57,9	98,1	80,5	120,7	103			55	37,3
	9					48,2	28,4	70,9	51	93,5	73,6	116	96,1			61,9	42
	10					43,6	21,5	66,2	44,1	88,8	66,7	111,3	89,2	134	111,8	68,7	46,7
	11							61,5	37,2	84,1	59,9	106,6	82,4	129,2	105	75,6	51,4
	12						56,8	30,4	79,4	53	101,9	75,5	124,5	98,1	82,5	56	
PA 105SR	5	51	33,4	67,5	49,9	100,6	83									49,2	31,6
	6	44,7	23,5	61,1	40	94,2	73,2	127,3	106,2							59,1	38
	7	38,4	13,7	54,9	30,3	87,9	63,4	121	96,4							68,9	44,3
	8			48,5	20,4	81,6	53,5	114,7	86,5	147,7	119,6	180,8	152,7			78,7	50,6
	9					75,3	43,7	108,4	76,8	141,5	109,8	174,5	142,9			88,6	56,9
	10					68,9	33,4	102	66,5	135,1	99,6	168,2	132,6	201,2	165,7	98,4	63,3
	11							95,7	57	128,7	90,1	161,8	123,1	194,8	156,2	108,3	69,6
	12						89,4	47,5	122,5	80,6	155,5	113,6	188,6	146,7	118,1	75,9	
PA 125SR	5	73	47	98	72	148	122									79	52
	6	63	31	88	56	138	107	188	157							94	63
	7	52	15	77	40	127	90	178	141							110	73
	8			67	25	117	75	167	125	217	176	268	226			125	84
	9					107	59	157	109	207	159	257	210			141	94
	10					96	44	146	94	196	144	247	194	297	245	157	105
	11							136	78	186	128	236	178	286	228	173	115
	12						125	63	176	113	226	163	276	213	188	125	
PA 140SR	5	128	85	171	127	256	213									129	86
	6	111	59	154	102	239	187	325	273							155	103
	7	94	33	137	76	222	162	308	247							181	120
	8			120	50	205	136	291	221	376	307	462	392			206	137
	9					187	110	273	196	358	281	444	367			232	155
	10					170	84	256	169	341	255	427	340	512	426	258	172
	11							238	143	324	229	409	314	495	400	284	189
	12						221	118	307	203	392	289	478	374	310	206	

A210 Series 90° Rotation Single Acting Actuators Torque Output Values (Nm)

		Air to Springs Torque Output Values (Nm)														Spring Torque (Nm)	
Air Supply	Nr of Springs	2,5 Bar		3 Bar		4 Bar		5 Bar		6 Bar		7 Bar		8 Bar		90°	0°
Model		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
		Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop
PA 160SR	5	193	124	259	191	392	324									208	140
	6	165	83	232	149	365	282	498	415							250	168
	7	137	41	203	107	336	240	469	373							292	196
	8			176	66	309	199	442	290	575	465	708	598			333	223
	9					280	157	413	237	546	423	679	556			375	251
	10					253	115	386	248	519	381	652	514	786	647	417	279
	11								358	207	491	340	624	473	757	606	458
	12							330	165	463	298	596	431	729	564	500	335
PA 190SR	5	332	222	438	329	651	542									309	200
	6	292	161	398	267	611	480	824	693							371	240
	7	252	99	358	205	571	418	784	631							433	280
	8			318	143	531	356	744	569	957	782	1169	995			495	320
	9					491	295	704	507	917	720	1130	933			557	360
	10					451	233	664	446	877	658	1090	871	1302	1084	618	400
	11							624	384	837	597	1050	809	1263	1022	680	440
	12							584	322	797	535	1010	748	1223	960	742	480
PA 210SR	5	390	285	523	418	789	684									380	275
	6	335	209	468	342	734	608	1000	874							456	330
	7	280	133	413	266	679	532	945	798							532	385
	8			358	190	624	456	890	722	1156	988	1422	1254			608	440
	9					569	380	835	646	1101	912	1367	1178			684	495
	10					514	304	780	570	1046	836	1312	1102	1578	1368	760	550
	11							725	494	991	760	1257	1026	1523	1292	836	605
	12							670	418	936	684	1202	950	1468	1216	912	660
PA 240SR	5	552	409	744	600	1129	985									554	410
	6	470	297	662	489	1047	874	1432	1259							665	492
	7	388	187	580	379	964	764	1349	1149							775	575
	8			498	268	883	653	1267	1037	1652	1422	2037	1807			886	656
	9					800	542	1185	926	1569	1311	1954	1696			998	739
	10					718	431	1103	816	1488	1201	1872	1586	2257	1970	1108	821
	11							1021	705	1406	1090	1791	1474	2176	1859	1219	903
	12							939	594	1323	979	1708	1363	2093	1748	1330	985
PA 270SR	5	903	675	1195	968	1779	1552									787	560
	6	790	519	1083	811	1667	1396	2252	1981							943	672
	7	679	361	972	654	1556	1238	2141	1823							1101	783
	8			860	497	1444	1081	2029	1666	2614	2252	3199	2836			1258	895
	9					1332	923	1917	1509	2502	2094	3087	2678			1416	1007
	10					1220	767	1805	1352	2390	1937	2974	2521	3560	3107	1572	1119
	11							1693	1194	2278	1779	2862	2364	3448	2949	1730	1231
	12							1582	1037	2167	1623	2751	2207	3336	2792	1887	1342
PA 300SR	5	1097	729													1061	730
	6	935	494	1316	875											1273	876
	7	772	258	1153	639	1916	1402									1485	1022
	8			991	403	1754	1166	2517	1929							1697	1168
	9					1592	930	2355	1693	3118	2456					1909	1213
	10					1430	695	2193	1458	2956	2221	3719	2984	4482	3747	2122	1460
	11							2030	1222	2793	1985	3556	2748	4319	3511	2334	1606
	12							1868	986	2631	1749	3394	2512	4157	3275	2546	1752
PA 350SR	5	1553	964													1702	1173
	6	1292	586	1863	1157											2043	1408
	7	1031	208	1602	779	2745	1929									2383	1642
	8			1341	401	2484	1544	3626	2686							2724	1877
	9					2224	1165	3366	2307	4508	3449					3064	2112
	10					1936	787	3105	1929	4247	3071	5390	4214	6532	5356	3405	2346
	11							2804	1551	3986	2693	5129	3836	6271	4978	3745	2581
	12							2584	1172	3726	2314	4869	3457	6011	4599	4086	2816
PA 400SR	7	2028	869													2880	1837
	8	1736	411	2550	1225											3292	2100
	9			2259	768	3887	2396									3703	2362
	10			1967	311	3595	1939	5223	3567							4115	2624
	11					3303	1482	4931	3110	6559	4738					4526	2887
	12					3012	1025	4640	2653	6268	4281	7895	5908	9523	7536	4938	3149
	13							4348	2195	5976	3823	7603	5450	9231	7078	5349	3412
	14							4057	1738	5685	3866	7312	4993	8940	6621	5761	3674
	15							3765	1281	5393	2909	7020	4536	8648	6164	6172	3937
	16									5101	2452	6728	4079	8356	5707	6584	4199



A211 Series 90° Rotation Pneumatic Actuators With 100% Travel Stop Arrangement

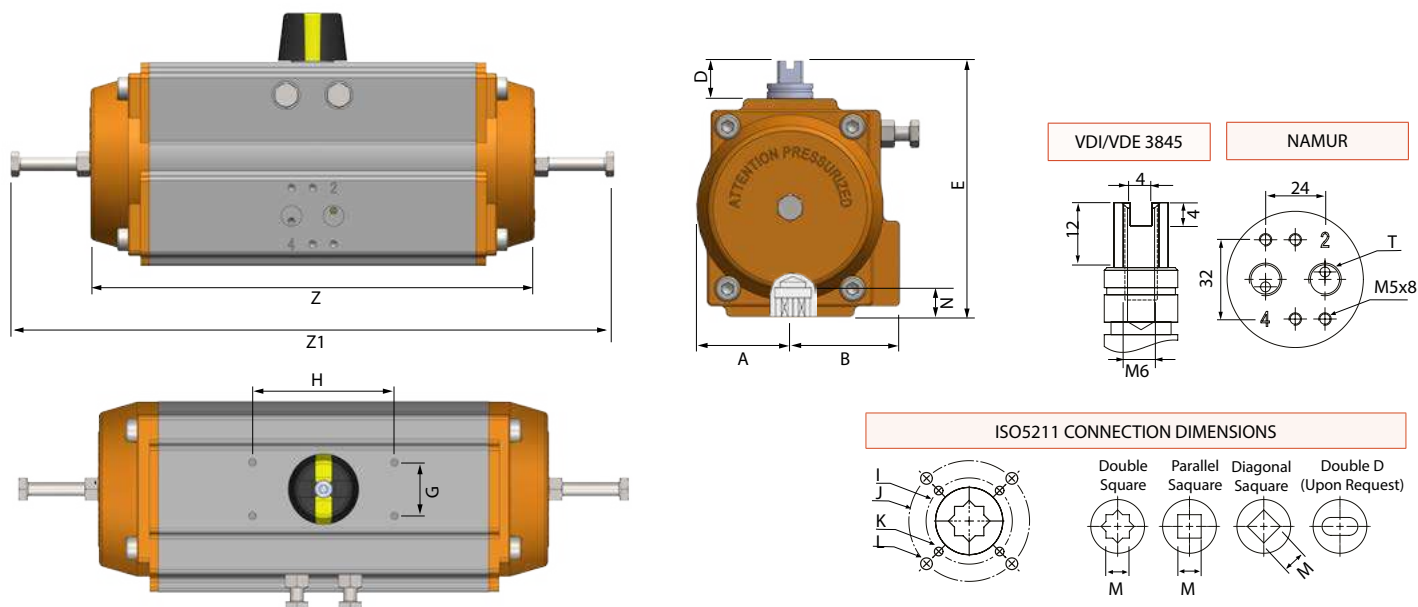


No.	Description	Qty	Standart Material	Protection	Opsiyonel Material
1	Indicator Screw	1	Stainless Steel	Galvanized	Stainless Steel
2	Indicator	1	Plastic		
3	Circlip	1	Stainless Steel		
4	Metal Washer	1	Stainless Steel		
5	Washer	1	Engineering Plastics		
6	Body	1	Extruded Aluminium Alloy	Hard Anodizing	Polyester, ENP, PFA, ECTFE Coatings
7	Inner Washer	1	Engineering Plastics		
8	Cam	1	Alloy Steel		
9	Pinion Upper Bearing	1	Engineering Plastics		Viton / Silicon
10	Pinion Upper O-Ring	1	NBR		
11	Pinion	1	Alloy Steel	Nickel Plating / Galvanized	Stainless Steel
12	Pinion Lower Bearing	1	NBR		Viton / Silicon
13	Pinion Lower O-Ring	1	Engineering Plastics		
14	Sealing Plug	2	NBR		Viton / Silicon
15	Adjustment Screw O-Ring	2	NBR		Viton / Silicon
16	Washer (Adjustment Bolt)	2	Stainless Steel		
17	Nut (Adjustment Bolt)	2	Stainless Steel		
18	Stroke Adjustment Bolt	2	Stainless Steel		
19	Piston	2	Aluminium Die Cast	Alodine Coating	
20	Guide Piston	2	Engineering Plastics		
21	Bushinglama Washeru (Piston)	2	Engineering Plastics		
22	Piston Bearing	2	NBR		Viton / Silicon
23	Cartridge Springs	0~12	Spring Steel	Cataphoresis Coating	
24	End Cap O-Ring	2	NBR		Viton / Silicon
25	End Cap	2	Cast Aluminium	Epoxy Powder Coating	ENP, PFA, ECTFE Coatings
26	Cap Screw	8	Stainless Steel		
27	O-Ring	2	NBR		Viton / Silicon
28	Nut	2	Stainless Steel		
29	Limit Adjustment Bolt	2	Stainless Steel		

A211 Series 90° Rotation Pneumatic Actuators With 100% Travel Stop Arrangement

A211 Series pneumatic actuator has externally adjustable travel stop arrangement that permits opening of the actuator to be restricted to any position between full close (0±5°) to full open (90±5°) position by rotating the limit adjustment nut in clock wise or counter clockwise direction until the desired stroke (double and single acting possible) reached.

A211 Series 90° Pneumatic Actuators Dimensions and Weight Information



Dimensions(mm)

Model	A	B	D	E	G	H	I	J	K	L	M	N	Z	Z1 (0°)	Z1 (90°)	T
PA 52	30	41	20	92	30	80	ø36	ø50	M5x8	M6x10	9-11	14	146	205	236	G1/4"
PA 63	36	47	20	107	30	80	ø50	ø70	M6x10	M8x13	9-11-14	18	171	212	250	G1/4"
PA 75	42	53	20	120	30	80	ø50	ø70	M6x10	M8x13	11-14	18	186	225	263	G1/4"
PA 83	46	57	20	128	30	80	ø50	ø70	M6x10	M8x13	14-17	21	205	257	304	G1/4"
PA 92	50	58	20	136	30	80	ø50	ø70	M6x10	M8x13	14-17	21	253	276	332	G1/4"
PA 105	58	64	20	153	30	80	ø70	ø102	M8x13	M10x16	17-22	26	267	285	348	G1/4"
PA 125	68	75	20	175	30	80	ø70	ø102	M8x13	M10x16	22	26	301	349	418	G1/4"
PA 140	75	77	20	192	30	80	ø102	ø125	M10x16	M12x20	27	31	390	478	572	G1/4"
PA 160	87	87	20	217	30	80	ø102	ø125	M10x16	M12x20	27	31	451	604	714	G1/4"
PA 190	103	103	30	260	30	130	ø140		M16x25		36	40	525	634	760	G1/4"
PA 210	113	113	30	285	30	130	ø140		M16x25		36	40	532	634	758	G1/4"
PA 240	130	130	30	318	30	130	ø165		M20x25		46	50	610	658	800	G1/4"
PA 270	147	147	30	356	30	130	ø165		M20x25		46	50	722	680	850	G1/2" G1/4"

Torque Values (Nm)

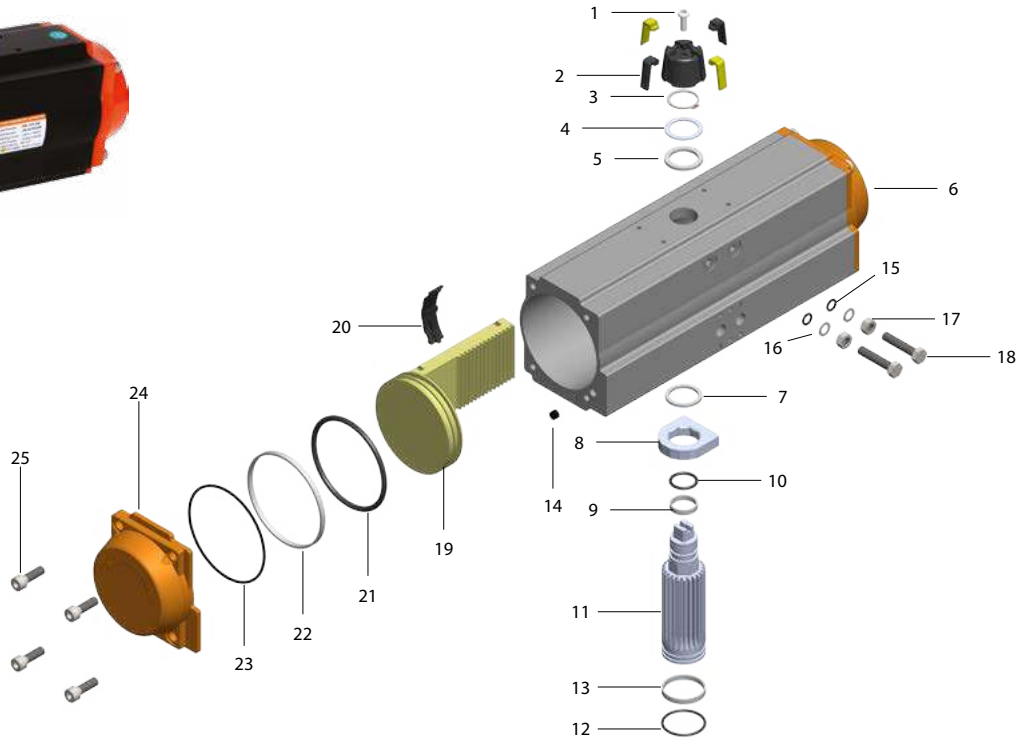
Output Torque Values are identical to that of A210 Series. Please see Torque Charts on pages 56,58,59

Actuator Unit Weights (Kg/Pc)

Model	PA 52	PA 63	PA 75	PA 83	PA 92	PA 105	PA 125	PA 140	PA 160	PA 190	PA 210	PA 240	PA 270
Spring Return	1,6	2,3	3,0	3,7	5,6	6,8	10,6	14,7	24,0	46,8	53,8	74,0	116,6
Double Acting	1,5	2,2	2,8	3,4	5,1	6,0	9,2	12,3	19,7	39,8	44,8	59,7	94,3

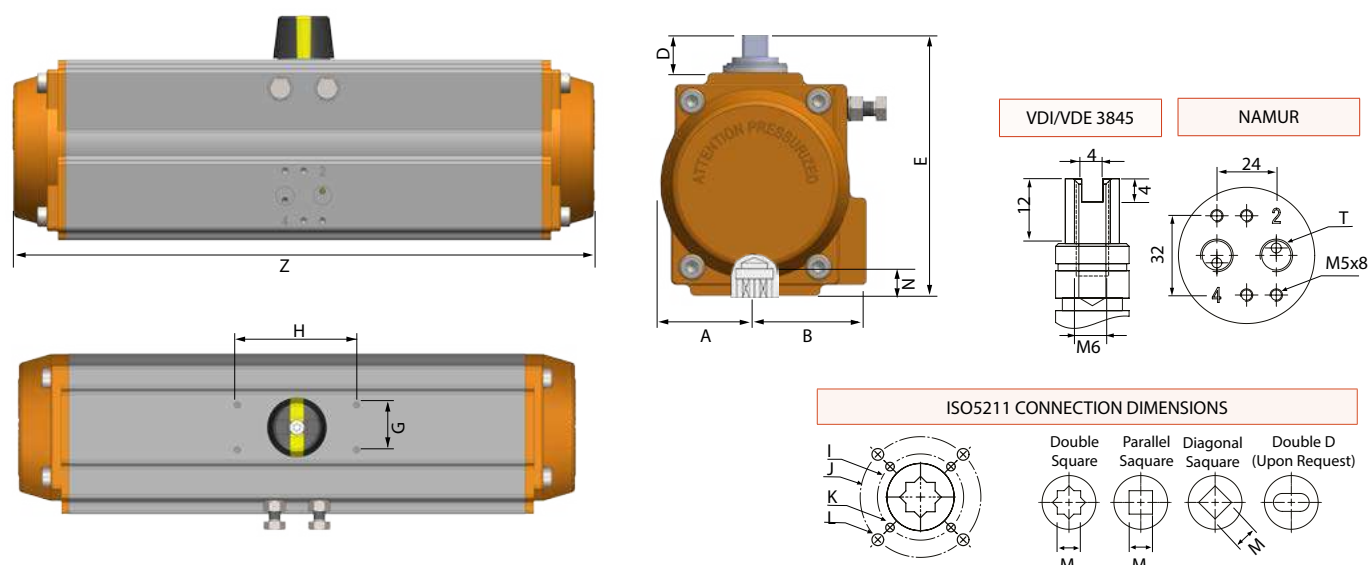


A212 Series 120°~180° Double Act. Pneumatic Actuators Part List



No.	Part Name	Qty	Standart Material	Protection	Optional Material
1	Indicator Screw	1	Stainless Steel		
2	Indicator	1	Plastic		
3	Circlip	1	Stainless Steel		
4	Metal Washer	1	Stainless Steel		
5	Washer	1	Engineering Plastics		
6	Body	1	Extruded Aluminium Alloy	Hard Anodizing	Stainless Steel, Epoksi/Nickel Plated
7	Inner Washer	1	Engineering Plastics		
8	Cam	1	Alloy Steel		
9	Pinion Upper Bearing	1	Engineering Plastics		
10	Pinion Upper O-Ring	1	NBR		Viton/Silicon
11	Pinion	1	Alloy Steel	Nickel Plating / Galvanized	Stainless Steel
12	Pinion Lower O-Ring	1	NBR		Viton/Silicon
13	Pinion Lower Bearing	1	Engineering Plastics		
14	Sealant	2	NBR		Viton/Silicon
15	Adjustment Screw O-Ring	2	NBR		Viton/Silicon
16	Washer (Adjustment Bolt)	2	Stainless Steel		
17	Nut (Adjustment Bolt)	2	Stainless Steel		
18	Limit Adjustment Screw	2	Stainless Steel		
19	Piston	2	Extruded Aluminium Alloy	Alodine Coating	
20	Guide Piston	2	Engineering Plastics		
21	Piston Bearing	2	Engineering Plastics		
22	Piston O-Ring	2	NBR		Viton/Silicon
23	End Cap O-Ring	2	NBR		Viton/Silicon
24	End Cap	2	Cast Aluminium	Epoxy Powder Coating	Stainless Steel
25	Cap Screw	8	Stainless Steel		

A212 Series 120°~180° Double Act. Pneumatic Actuators Dimensions



Dimensions(mm)

Model	A	B	D	E	G	H	I	J	K	L	M	N	Z 120°	Z 180°	T
PA 52	30	41,5	20	92	30	80	ø36	ø50	M5x8	M6x10	9-11	14	166	223	G1/4"
PA 63	36	47	20	107,5	30	80	ø50	ø70	M6x10	M8x13	9-11-14	18	179	246	G1/4"
PA 75	42	53	20	119,5	30	80	ø50	ø70	M6x10	M8x13	11-14	18	200	269	G1/4"
PA 83	46	57	20	128,7	30	80	ø50	ø70	M6x10	M8x13	14-17	21	222	307	G1/4"
PA 92	50	58,5	20	136,8	30	80	ø50	ø70	M6x10	M8x13	14-17	21	273	374	G1/4"
PA 105	57,5	64	20	153	30	80	ø70	ø102	M8x13	M10x16	17-22	26	291	405	G1/4"
PA 125	67,5	74,5	20	175	30	80	ø70	ø102	M8x13	M10x16	22	26	327	455	G1/4"
PA 140	75	77	20	191,5	30	80	ø102	ø125	M10x16	M12x20	27	31	426	597	G1/4"
PA 160	87	87	20	217	30	80	ø102	ø125	M10x16	M12x20	27	31	491	691	G1/4"

Torque Output Values (Nm)

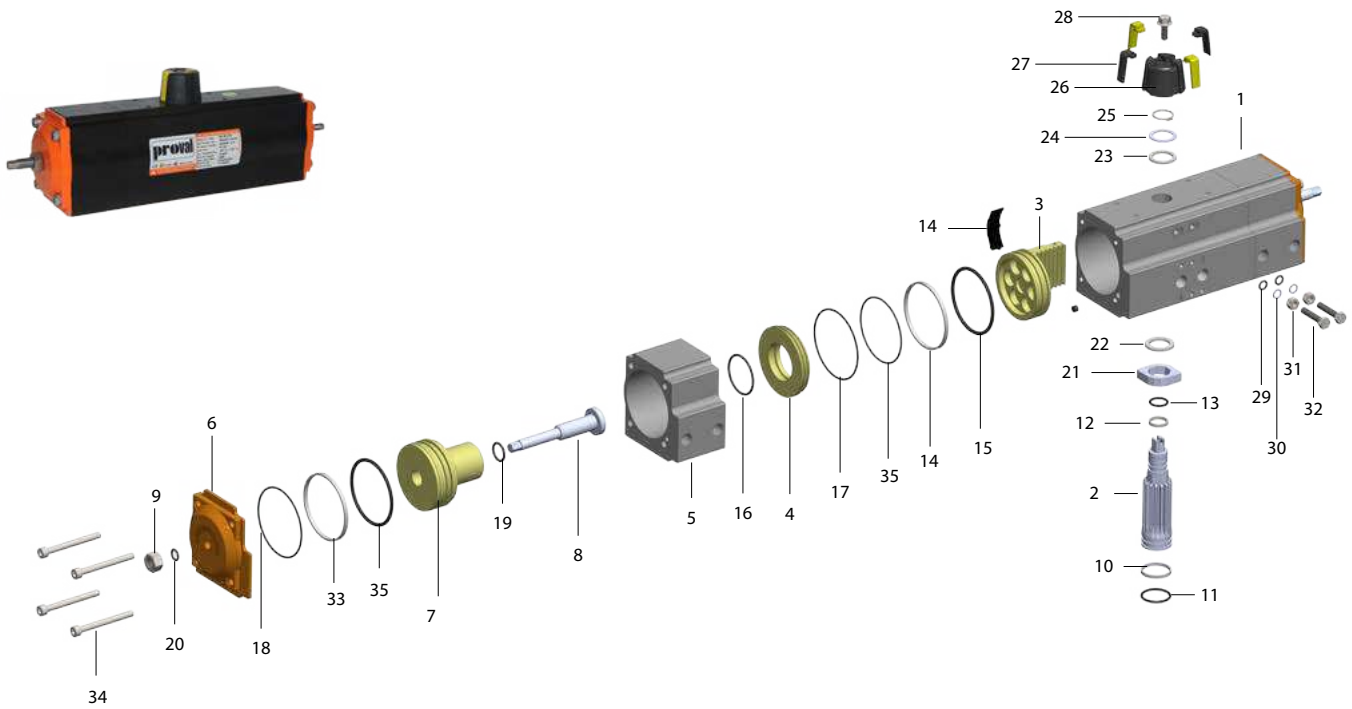
Model	Air Supply Pressure (bar)									
	2	2,5	3	4	4,5	5	5,5	6	7	8
PA 52DA	8	10	12	16	18	20	22	24	28	32
PA 63DA	15	19	22	30	33	37	40	44	52	58
PA 75DA	20	26	30	40	45	50	55	60	70	80
PA 83DA	33	40	48	63	71	79	86	94	110	125
PA 92DA	45	57	68	90	102	113	124	136	158	182
PA 105DA	66	83	100	132	149	166	182	200	232	265
PA 125DA	101	126	151	202	226	252	276	301	352	402
PA 140DA	171	214	257	342	385	428	471	513	599	684
PA 160DA	266	333	399	532	600	665	732	798	932	1064

Actuator Unit Weights (Kg/Pc)

Model	PA 52	PA 63	PA 75	PA 83	PA 92	PA 105	PA 125	PA 140	PA 160
A212 - 120°	1,5	2,2	2,9	3,5	5,5	6,5	9,5	13	20
A212 - 180°	1,8	2,7	3,5	4,3	6,5	7,5	11,5	15,5	25,5



A213 Series 3 Position Pneumatic Actuators Part List



Part List

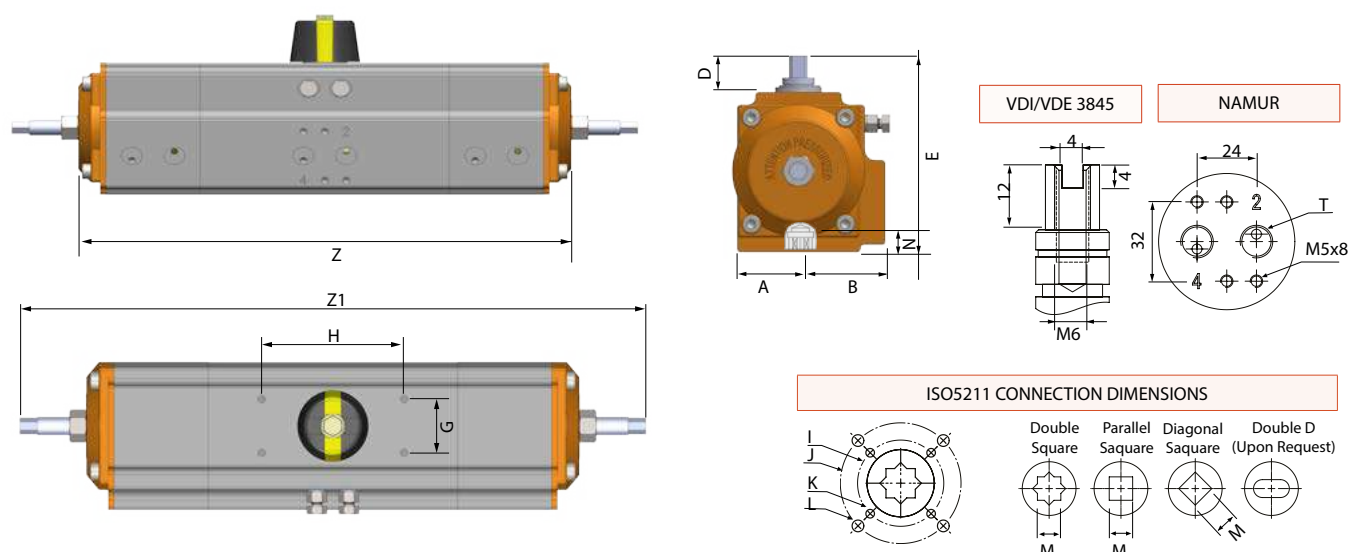
No	Part Name	Material	Protection	Qty	No	Part Name	Material	Protection	Qty
1	Body	Alu Extrusion	Anodising	1	19	Piston Shaft O-Ring	NBR		2
2	Pinion	Alloy Steel	ENP Coating	1	20	Shaft Cap O-Ring	NBR		2
3	Piston	Alu Die Cast	ENP Coating	2	21	Cam	Alloy Steel	Galvanizing	1
4	Body Mid Part	Aluminium	Anodising	2	22	Inner Washer	Engineering Plastics		1
5	Body Ext. Part	Alu Extrusion	Anodising	2	23	Washer	Engineering Plastics		1
6	End Cap	Die Cast Alu	Alodyne&Polyester	2	24	Metal Washer	Stainless Steel		1
7	Auxiliary Piston	Die Cast Alu	Alodyne Coating	2	25	Circlip	Stainless Steel		1
8	Shaft	Stainless Steel		2	26	Indicator Body	Plastic		1
9	Nut	Stainless Steel		2	27	Indicator Part	Plastic		4
10	Lower Stem Bushing	Engineering Plastics		1	28	Indicator Screw	Stainless Steel		1
11	Lower Stem O-Ring	NBR		1	29	Adjustment Screw O-Ring	NBR		2
12	Upper Stem Bushing	Engineering Plastics		1	30	Adjustment Screw Washer	Stainless Steel		2
13	Upper Stem O-Ring	NBR		1	31	Nut	Stainless Steel		2
14	Guide Piston	Engineering Plastics		2	32	Hexagon Bolt	Stainless Steel		2
15	Piston O-Ring	NBR		2	33	Outer Nut	Stainless Steel		2
16	Piston Shaft O-Ring	NBR		2	34	Cap Bolt	Stainless Steel		2
17	Body O-Ring	NBR		2	35	O-Ring	NBR		2
18	Cap O-Ring	NBR		2					

A213 Series 3 Position Pneumatic Actuators

A213 Series 3 position 90 degrees rotating rotary pneumatic actuators offers a midway position to be set in any desired position between 0 and 90 degrees by adjusting the set screws located outside of the end caps

- Well suited for coarse-precise dosing filling, batching operations
- Field adjustable
- Double and single acting
- Namur accessory mounting configuration
- 180 degree rotation on request

A213 Series 3 Position Pneumatic Actuators Dimensions



Dimensions(mm)

Model	A	B	E	D	G	H	I	J	K	L	M	N	Z	Z1 (0°)	Z1 (90°)	T
PA 52	30	41,5	92	20	30	80	ø36	ø50	M5x8	M6x10	9-11	14	283	413	444	G1/4"
PA 63	36	47	107,5	20	30	80	ø50	ø70	M6x10	M8x13	9-11-14	18	305	445	483	G1/4"
PA 75	42	53	119,5	20	30	80	ø50	ø70	M6x10	M8x13	11-14	18	342	499	537	G1/4"
PA 83	46	57	128,7	20	30	80	ø50	ø70	M6x10	M8x13	14-17	21	377	550	597	G1/4"
PA 92	50	58,5	136,8	20	30	80	ø50	ø70	M6x10	M8x13	14-17	21	465	678	735	G1/4"
PA 105	57,5	64	153	20	30	80	ø70	ø102	M8x13	M10x16	17-22	26	492	718	781	G1/4"
PA 125	67,5	74,5	175	20	30	80	ø70	ø102	M8x13	M10x16	22	26	553	807	876	G1/4"
PA 140	75	77	191,5	20	30	80	ø102	ø125	M10x16	M12x20	27	31	720	1051	1145	G1/4"
PA 160	87	87	217	20	30	80	ø102	ø125	M10x16	M12x20	27	31	825	1209	1319	G1/4"

Torque Values (Nm)

Output Torque Values are identical to that of A210 Series. Please see Torque Charts on pages 56,58,59

Actuator Weights (Kg/Pc)

Model	PA 52	PA 63	PA 75	PA 83	PA 92	PA 105	PA 125	PA 140	PA 160
A213-DA	3,2	4,8	6,2	7,5	11,4	13,5	20,6	27,4	43,4
A213-SR	3,3	4,9	6,4	7,8	11,9	14,3	22,0	29,8	47,7



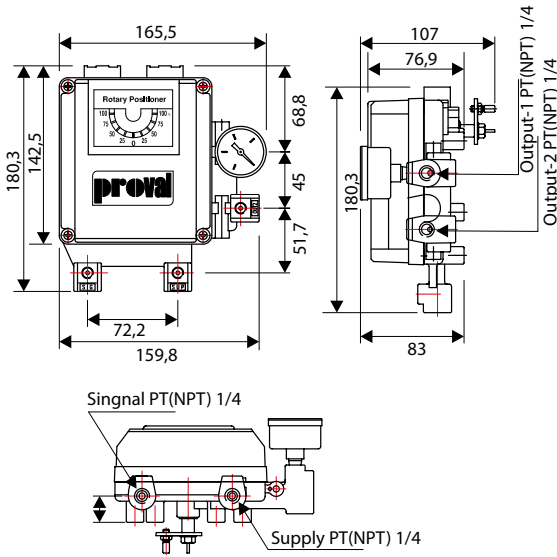
A230 Series Electro-Pneumatic Positioners

E/P Positioners are working with DC 4-20 mA or 0-10 Volt input signal and generate modulating control on rotary or linear valves.

A230 PRE positioners can be applied on both double acting and single acting actuators.

A230 PRP Pneumatic Positioners (P/P): Pneumatic positioners are working with 3-15 PSI air signal and can be applied both on double and single acting actuators.

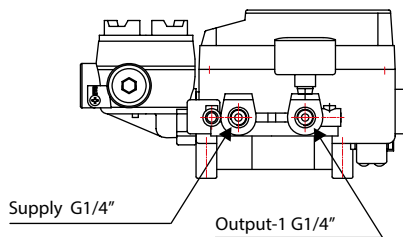
Dimensions(mm)



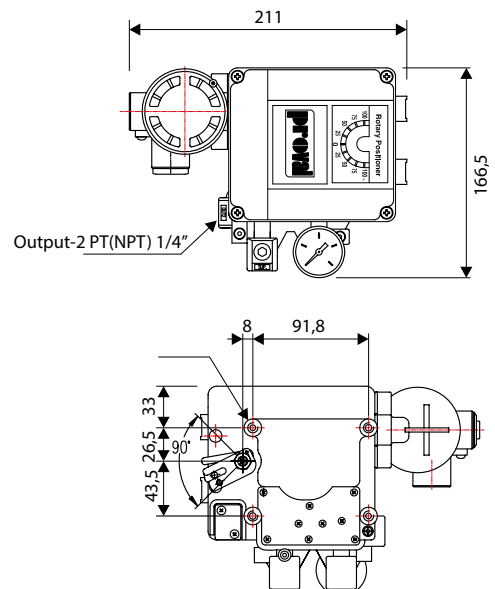
A230 PRP

Description	Proval Brand, A230 Series Pneumatic Positioners
Type	Rotary Type (90° Part Turn)
Body Material	Powder Epoxy Coated Aluminium Die Casting
Input Signal	DC 4/20 mA
Output Signal	Optionally DC 4/20 mA or 0-1 kOhm
Protection Class	IP67
Air Consumption	3 Lt/min
Working Temp.	-20° C / +70° C
Flow Capacity	80 Lt/min

A230 PRE Electro-Pneumatic Positioners (E/P): E/P Positioners are working with DC 4-20 mA or 0-10 Volt input signal and generate modulating control on rotary or linear valves. A230 PRE positioners can be applied on both double acting and single acting actuators.



Dimensions(mm)



Description	Proval Brand, A230 Series Pneumatic Positioners
Type	Rotary Type (90° Part Turn)
Body Material	Powder Epoxy Coated Aluminum Die Casting
Input Signal	DC 4/20 mA
Output Signal	Optionally DC 4/20 mA or 0-1 kOhm
Protection Class	IP67
Air Consumption	3 lt/min
Working Temp.	-20° C / +70° C
Flow Capacity	80 lt/min

A234 Series PRD Digital Positioner

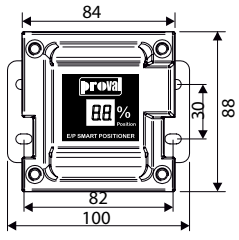
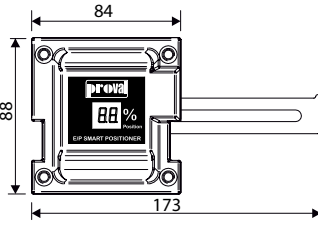
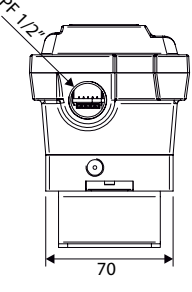
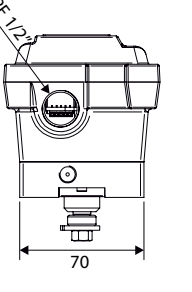
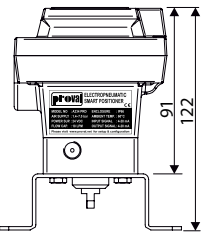
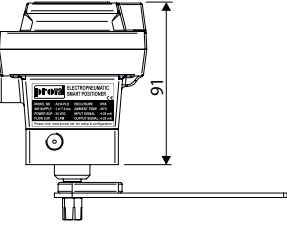
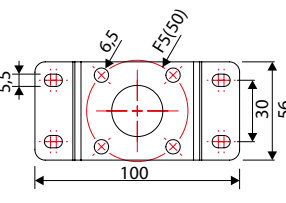
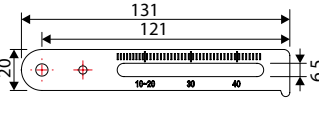
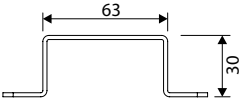
PROVAL A234 Series PRD digital (smart) positioners have been developed to be used with pneumatic actuated quarter turn valves and dampers for precision position control.

A234 Series smart positioners owing to their compact design and advanced features are well suited for modulating control applications.



A234 Series PRD

Dimensions(mm)

A234 PRD	A234 PLD
	
	
	
	
	

Features

Digital Display	Digital % Position Indicator
Position Feedback	4-20 mA Output (Standard)
Auto Calibration	One-Button Calibration
Position Protection	Fail Freeze / in case of power failure
Failure Modes	Fail Open/ Fail Close
Protection Class	IP67

Technical Specifications

	A234 PRD	A234 PLD
Type	Rotary	Linear
Stroke	0~90°	20 mm
Flow Capacity	18 Lt/min	9 Lt/min
Power Supply	24 VDC	
Input Signal	4~20 mA DC	
Output Signal	4~20 mA DC	
Air Supply Pressure	1.4~7.0 bar (0.14~0.7 Mpa)	
Impedance	Max 160Ω / 2 mA DC	
Tubing Connection	1/8" BSP	
Conduit	G 1/2"	
Repeatability	± %3 (FS)	
Linearity	± %5 (FS)	
Hysteresis	± %5 (FS)	
Sensitivity	± %2 (FS)	
Output Characteristics	Linear, Equal Percentage, Quick Opening	
Material	Epoxy Powder Coated Alu Die Cast	
Protection Class	IP66	
Weight	0.82 Kg	



A240 NAMUR Type 3/2 - 5/2 Convertible Solenoid Valves

Proval A240 type general purpose 3/2 way and 5/2 way solenoid valves with namur interface configuration are interchangeable for use on either double and single acting pneumatic actuators.

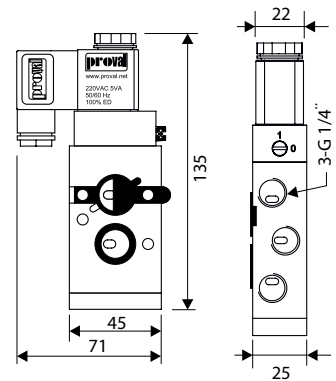
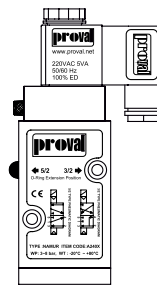
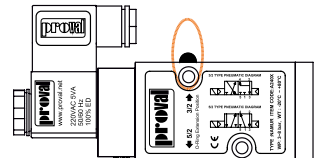
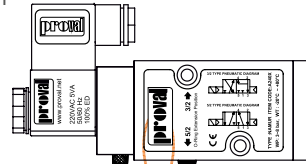
General Features,

- * Direct mounting on NAMUR interface actuators
- * Easy convertible between 3/2 and 5/2 way(DA or SR) by replacing the o-ring position
- * Lockable manual operator
- * Standard IP65 enclosure single coil (spring return),

Technical Specifications,

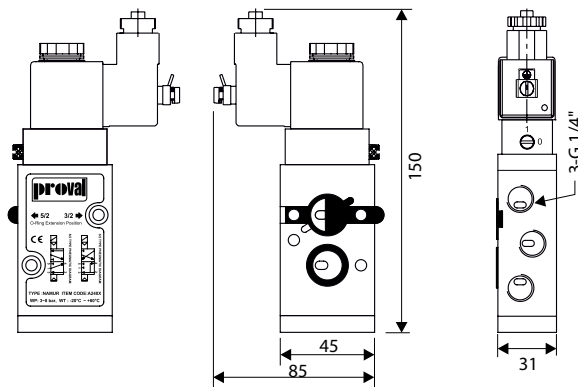
Item Code	A240-E	A240-B	A240-A	A240-C	A240-D
Power Supply	12 VDC	24 VDC	24 VAC	110 VAC	230 VAC
Power Consumption	3W	3W	5VA	5VA	5VA
Air Supply	G 1/4"				
Working Pressure	3 - 8 bar				
Protection Class	IP65				
Working Temperatur	-20° C ~ + 80° C				
Flow Capacity	720 Lt/min				

Spare Parts for Solenoid Valves	
Model	Description
A240PB	9mm Coil, IP65
A240PBX	9mm Coil, Exproof
A240SP	Standard Socket
A240SPL	Socket with LED



A240X Hazardous Area NAMUR Type 3/2 - 5/2 Convertible Solenoid Valves

Proval A240X type 3/2 way and 5/2 way solenoid valves with namur interface configuration are interchangeable for use on either double and single acting pneumatic actuators in potentially explosive environments.



Item Code	A240X-BIA	A240X-BM	A240X-CM	A240X-DM	A240X-BDM	A240X-CDM	A240X-DDM
Power Supply	24 VDC	24 VDC	110 VAC	230 VAC	24 VDC	110 VAC	230 VAC
ATEX Certificate	Ex ia IIB T6 Ga	Ex II 2G Ex mb IIC T5 Gb Ex II 2D Ex tb IIIC T95			Ex II 2G Ex db mb IIC T4/T5 Gb Ex II 2D Ex tb IIIC T130/T95° C IP66 Db		
ATEX Group	Group II	Group II			Group II		
Category	2 G/D	2 G/D			2 G/D		
Zone	Zone 1,2 / 21,22	Zone 1,2 / 21,22			Zone 1,2 / 21,22		
Explosion Group	IIC	IIC			IIC		
Heat Class	T6	T5			T5		
Air Supply	G 1/4"						
Working Pressure	3 - 8 bar						
Flow Capacity	720 Lt/min						

A244 NAMUR Type 5/3 Dual Coil Solenoid Valves

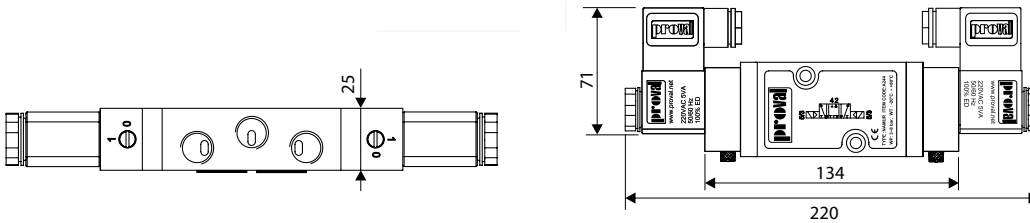
A244 Series valves are suitable for pneumatic actuators with NAMUR interface, spring return to middle position, with manual override and centre closed.

Technical Specifications,

Item Code	A244-E	A244-B	A244-A	A244-C	A244-D
Power Supply	12 VDC	24 VDC	24 VAC	110 VAC	230 VAC
Power Consumption	3W	3W	5VA	5VA	5VA
Air Supply	G 1/4"				
Working Pressure	3 - 8 bar				
Protection Class	IP65				
Working Temperature	-20° C ~ + 80° C				
Flow Capacity	720 Lt/min				



NAMUR Type Dual Coil Solenoid Valves



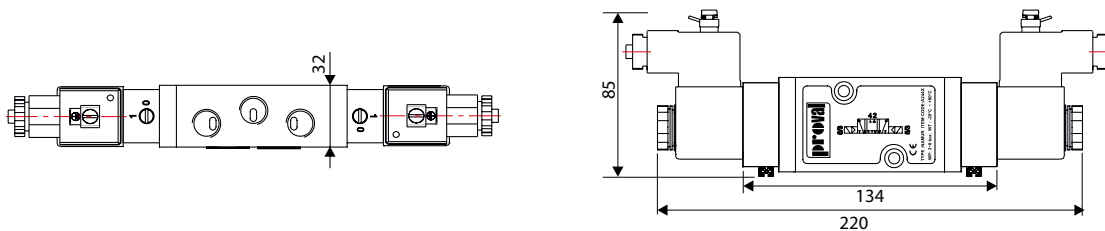
A244X Hazardous Area NAMUR Type 5/3 Dual Coil Solenoid Valves

A244X Series valves are suitable for NAMUR interface pneumatic actuators for use in potentially explosive areas, spring return to middle position, with manual override, centre closed with intrinsically safe (ia) or encapsulated (m) ATEX coils.

Item Code	A244X-BIA	A244X-BM	A244X-CM	A244X-DM	A244X-BDM	A244X-CDM	A244X-DDM
Power Supply	24 VDC	24 VDC	110 VAC	230 VAC	24 VDC	110 VAC	230 VAC
ATEX Certificate	Ex ia IIB T6 Ga	Ex II 2G Ex mb IIC T5 Gb Ex II 2D Ex tb IIIC T95		Ex II 2G Ex db mb IIC T4/T5 Gb Ex II 2D Ex tb IIIC T130/T95 °C IP66 Db			
ATEX Group	Group II	Group II		Group II			
Category	2 G/D	2 G/D		2 G/D			
Zone	Zone 1,2 / 21,22	Zone 1,2 / 21,22		Zone 1,2 / 21,22			
Explosion Group	IIC	IIC		IIC			
Heat Class	T6	T5		T5			
Air Supply	G 1/4"						
Working Pressure	3 - 8 bar						
Flow Capacity	720 Lt/min						

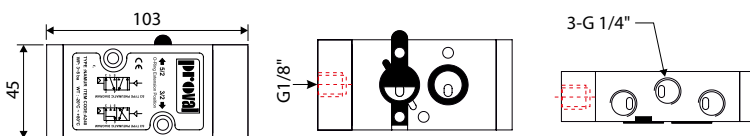


NAMUR Type Dual Coil ATEX Solenoid Valves



A246 NAMUR Type 3/2 - 5/2 Convertible Air Pilot Operated Solenoid Valves

Pneumatically actuated, 3/2 - 5/2 way convertible NAMUR solenoid valves with mechanical spring, actuated by permanent signal are used on pneumatic actuators for switching the valve position.

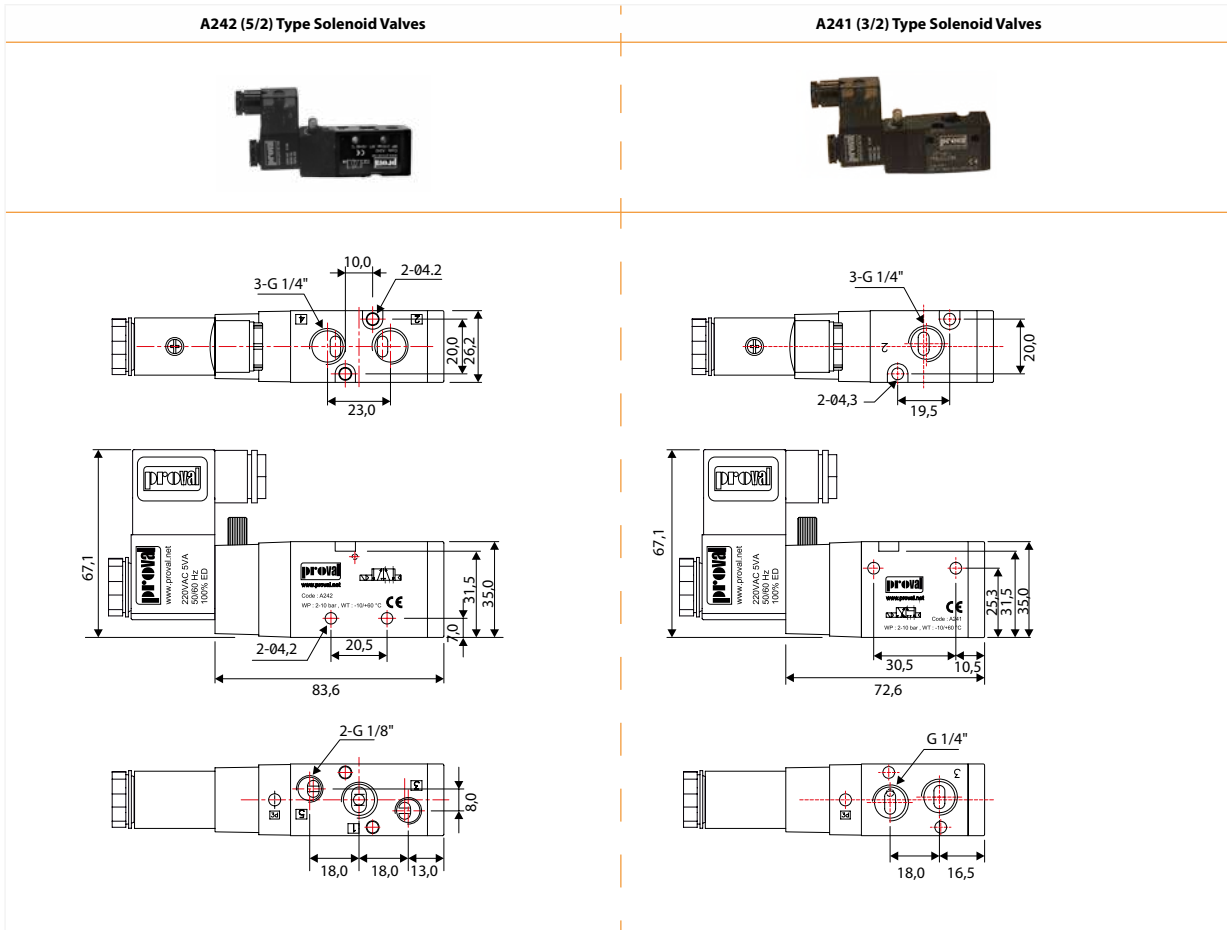


NAMUR Type Air Pilot Solenoid Valves



A241 (3/2) / A242 (5/2) Type Solenoid Valves

Proval A241 and A242 Series air solenoid valves can be used single or assembled on a rack from 2 to 10 pcs.



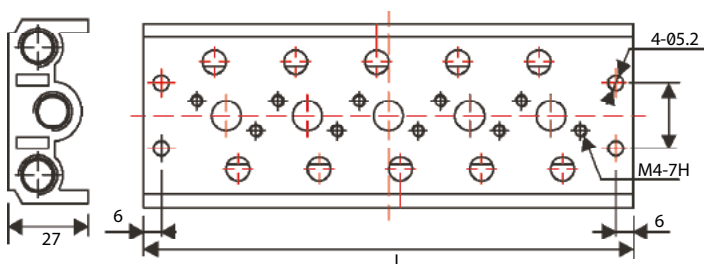
Material List

Part Name	Material
Body	Hard Anodised Aluminum Extrusion
Piston	Aluminum Extrusion
Screw	AISI316 Stainless Steel
Spring	AISI316 Stainless Steel
Seal	NBR

Technical Specifications

Power Supply	12 VDC	24 VDC	24 VAC	110 VAC	220 VAC
Power Consumption	3W	3W	5VA	5VA	5VA
Air Supply	G 1/4"				
Working Pressure	2 - 10 bar				
Protection Class	IP65 (Optional Eex m II T5 ATEX)				
Working Temperature	-10 °C ~ + 70 °C				
Flow Capacity	720 Lt/min				

5/2 Type Valve Rack



Nr. of Valves	2	3	4	5	6
L (mm)	56	84	111	139	166
Nr. of Valves	7	8	9	10	
L (mm)	194	211	249	276	

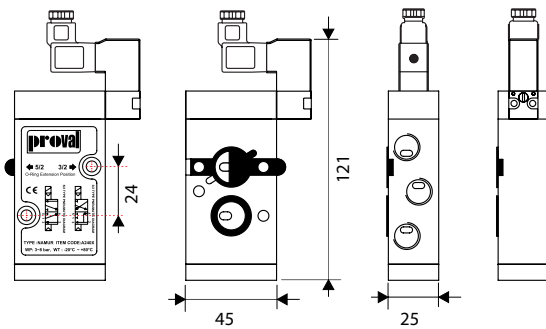
A240-AS-i Namur Type Low Current Solenoid Valve and Sensors

Solenoid valves with low power and current values for AS-i (Actuator Sensor Inference) network solutions are combined with compatible switches to control the on / off commands of the valves on the AS-i circuit and transmit the open-closed signals to the bus circuit.

By means of a single AS-i master unit, 62 valves can be controlled at a distance of max. 100 mt from a through 2-core cable. An additional 100 mt distance can be obtained with the repeater. AS-i solutions offer customers easy and flexible cabling and practical troubleshooting.

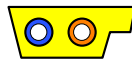


Dimensions(mm)

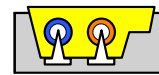


Technical Specifications,

Item Code	A240-B-ASI
Power Consumption	1~3 W (DC)
Working Pressure	2-8 bar
Protection Class	IP65
Working Temp.	-20° C ~ +80° C
Geçiş Debişi	750 lt/Min

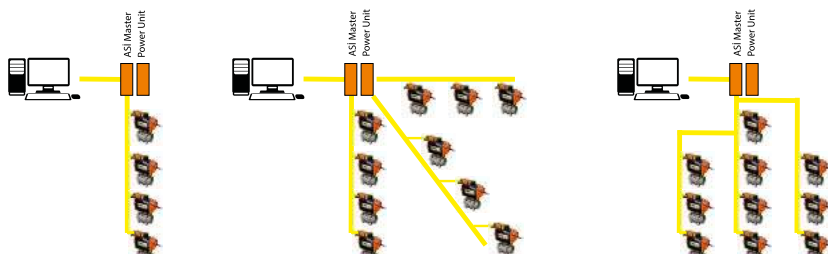


AS-I Cable



AS-I Cable with Connector

Typical AS-i Network Application Examples,



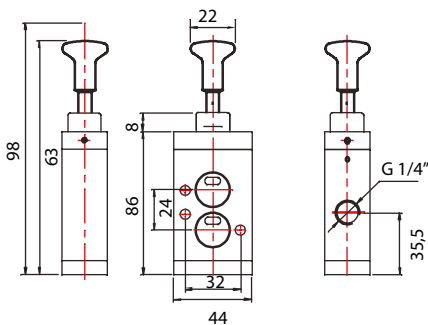
AS-i Network Compatible Actuated Valves

A175 Actuator Air Supply Block & Bleed Valves

A175 Pneumatic supply air block and bleed valves are used as a manual override bypass valve between pneumatic actuators and a Namur solenoid valve. Under normal operation, air flows freely into the actuator. In case of maintenance or manual operation via manual override gearbox (A280 Series), the spool is shifted to block pressure ports and exhaust the pressurised air from chambers of actuator for safe manual operation.



Dimensions(mm)



Material List

Part Name	Material
Body	Anodised Aluminum
Spool	Anodised Aluminum
Seal	NBR
Flow Orifice	Ø5.6mm
Working Temp.	-20°C ~ +80°C
Working Pressure	0 ~8 bar
Working Type	3/2 - 5/2 Valves

ACTUATOR BLOCK & BLEED VALVE CE

Item Code : A175
 W.Type : 3/2 - 5/2 Way NAMUR
 W.Pressure : 0 ~ 10.0 bar
 W.Temperature : -20°C ~ +80°C
 Flow Capacity : 740 lt/min (5.0 bar)





A250 Limit Switch Boxes

PROVAL A250 Series limit switch boxes are used on rotary valve actuators to generate open/close signal and monitor the valve position.

General Features,

- 3D continuous visual position indicator
- Easily adjustable spring forced CAM system
- Standard IP67 enclosure
- 2 pcs Open/Close mechanical or proximity switches
- Easily adjustable brackets and suitable for all NAMUR VDI/VDE interface actuators
- Terminal strip with 8 points angled to allow for easy wiring and direct connection of solenoid valve inside the switch box.

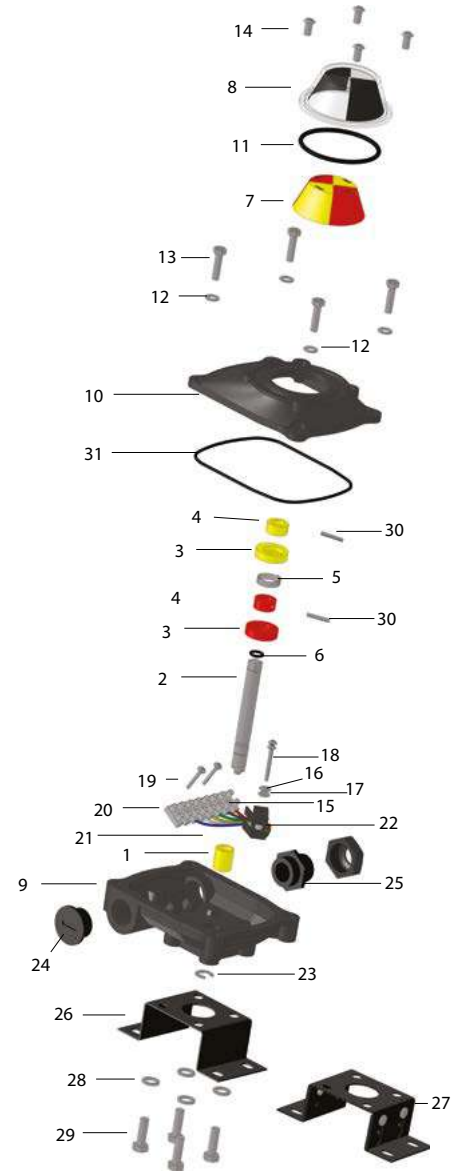


A250 PSM-PSP

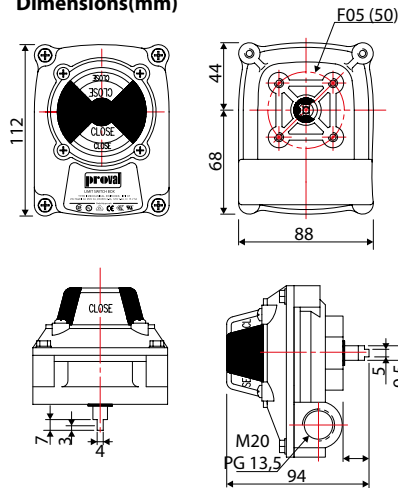
Standard Switch Boxes

No	Part Name	Material	Qty
1	Bushing	Brass	1
2	Pinion	SS420	1
3	Cam-1	Delrin	2
4	Cam-2	Delrin	2
5	Spring	SS420	1
6	Stem O-Ring	NBR	1
7	O/C Indicator	ABS	1
8	Cover	ABS	1
9	Body	Alu Die Cast	1
10	Cap	Alu Die Cast	1
11	O-Ring	NBR	1
12	Washer	SS304	4
13	Cap Screw	SS304	4
14	Screw	SS304	4
15	Switch		2
16	Spacer Bushing	Plastic	2

No	Part Name	Material	Qty
17	Washer	SS304	2
18	Switch Screw	SS304	2
19	Terminal Screw	SS304	2
20	Terminal	Plastic	1
21	Terminal Cable Screw	SS304	16
22	Cable Set		1
23	Circlip	SS304	1
24	Blind Plug	Plastic	1
25	Plug	Plastic	1
26	MB1 Braket	Steel	1
27	MB2 Braket	Steel	1
28	Adjustment Washer	SS304	4
29	Bolt	SS203	4
30	Cam Pin	Stem Steel	2
31	Body Seal Ring	NBR	1



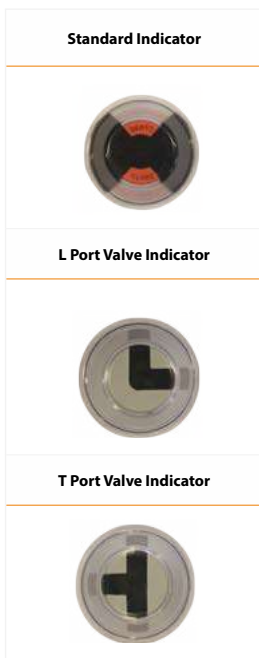
Dimensions(mm)



Bracket Dimensions

Model	Bracket Type	Mounting Dimension
MB-1		30x80 H: 20
MB-2		30x80 - 30x130 H: 20-30 Adjustable
MB-3		30x80 - 30x130 H: 40-50 Adjustable

Model	Switch Brand	Switch Type
A250 PSM-1	Zippy	Micro
A250 PSM-2	Crouzet	EF83161.3
A250 PSP-1	P+F	NBB2-V3-E2
A250 PSP-2	P+F	NJ2-V3-N
A250 PSP-3	P+F	SJ3,5-N
A250 PSP-4	IFM	ISS076
A250 PSP-5	P+F	NBB3-V3-Z4

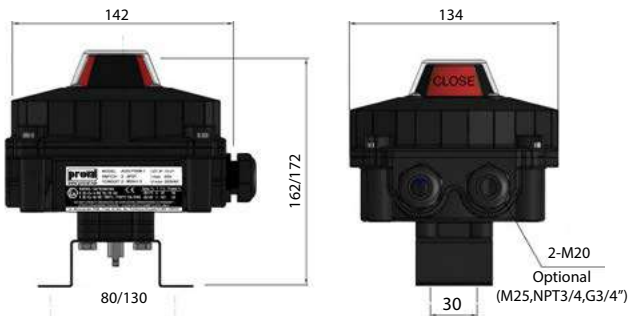


A250 Series Explosion Proof Limit Switch Boxes

A250 PPROVAL A250 PSX Series limit switch boxes are designed to integrate with pneumatically actuated quarter turn valve packages installed in potentially explosive environments and provide both visual and electrical indication of valve position.

General Features,

- Powder coated, corrosion resistant die-cast alu body
- 3D continuous visual position indicator
- Easily Adjustable, spring loaded cams
- Standard IP66 enclosure
- 2 Pc mechanical switches or Inductive sensors
- Easily adjustable brackets and suitable for all NAMUR VDI/VDE interface actuators
- Terminal strip with 8 points to allow for easy wiring and direct connection of solenoid valve inside the switch box.
- Applicable also on manual valves.



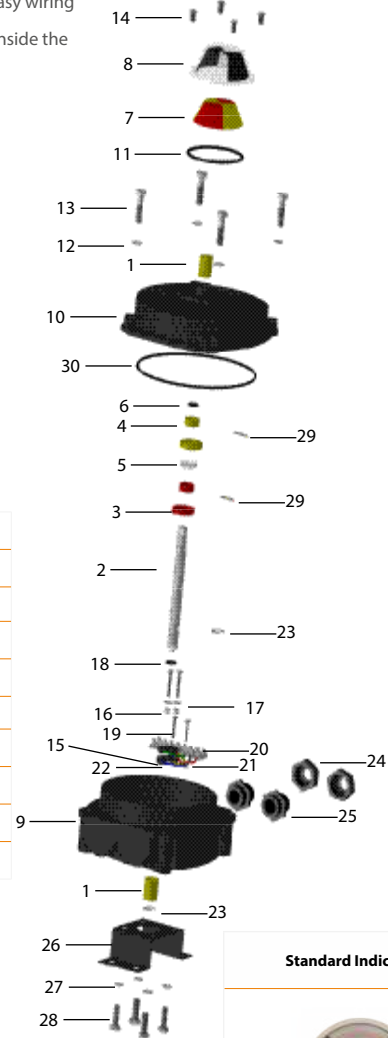
No	Part Name	Material	Qty
1	Bushing	Brass	2
2	Stem	AISI420	1
3	Cam-1	Delrin	2
4	Cam-2	Delrin	2
5	Spring	AISI301	1
6	Stem O-Ring	NBR	2
7	Indicator	ABS	1
8	Indicator Cam	Polikarbon	1
9	Body	Alu Die Cast	1
10	Cap	Alu Die Cast	1
11	Indicator Seal Ring	NBR	1
12	Thrust Washer	AISI304	4
13	Screw Cap	AISI304	4
14	Screw Indicator	AISI304	4
15	Limit Switch	Plastic	2
16	Switch Thrust Washer	AISI304	2
17	Spacer Bushing	Plastic	2
18	Screw	AISI304	2
19	Screw	AISI304	2
20	Terminal Strip	Plastic	1
21	Cable lug	Copper	16
22	Terminal Cable Set	Copper	1
23	Circlip	AISI304	2
24	Nut Cable Gland	Plastic/Metal	1
25	Cable Gland	Plastic/Metal	1
26	Bracket	Steel	1
27	Thrust Washer	AISI304	4
28	Bolt	AISI304	4
29	Pin	Steel	2
30	Body Seal Ring	NBR	1

Explosion Proof Classification	Ex II 2 GD
	Ex d II B T6 / T5 Gb
	Ex tb IIIC T85°C ~ 100°C Db IP66
Switch Type	Mechanical (Crouzet V3)
	Proximity (IFM/Pepperl+Fuchs)
Conduit Entry	Max 4, M15/M20 or M25
Working Temp.	-20°C K8 +80°C
Terminal Strip	8 Points
Protection Class	IP67
Weight	2 Kg

Model	Switch	Model
A250 PSXM	Crouzet	EF83161.3
A250 PSXP1	P+F	NBB2-V3-E2
A250 PSXP2	P+F	NJ2-V3-N
A250 PSXP3	P+F	SJ3,5-N
A250 PSXP4	IFM	IS5076
A250 PSXP-5	P+F	NBB3-V3-Z4

Bracket Sizerleri

Model	Bracket Type	Mounting Dimensions
MB-1		30x80 H: 20
MB-2		30x80 - 30x130 H: 20-30 Adjustable
MB-3		30x80 - 30x130 H: 40-50 Adjustable



Standard Indicator



L Port Valve Indicator



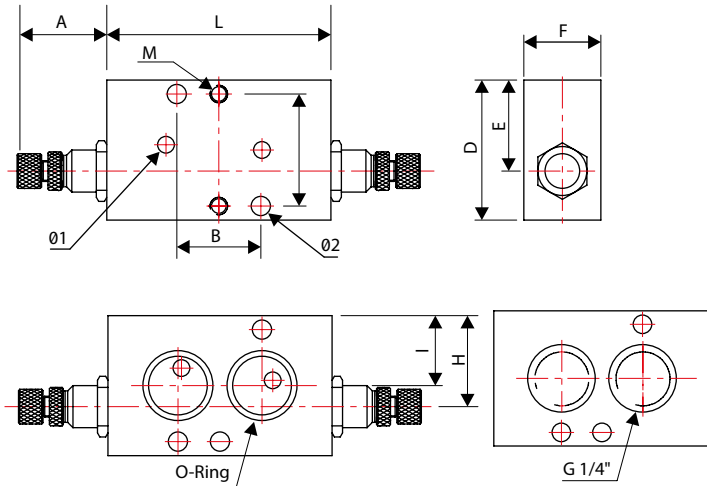
T Port Valve Indicator





A170 Actuator Speed Control Valves

A170 Series Namur speed-reducing valves are intended to be installed between solenoid valve and pneumatic actuators for precise throttling of exhaust and supply air to prevent water hammer and hydraulic shocks from occurring. Regulation of air flow is achieved by turning the easy-access, knurled screws that are located on both sides independently of each other.

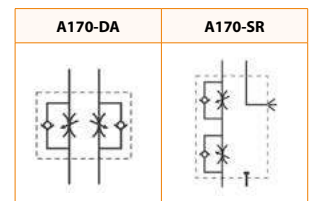


G1/4" Adaptor Plate for non NAMUR applications of Speed Reducer Valves

Technical Specifications

Max Air Flow	1400 L/Min @ 5 bar
Working Pressure	1,5 to 10 bar
Temperature	-20 °C to +60 °C

Working Principle

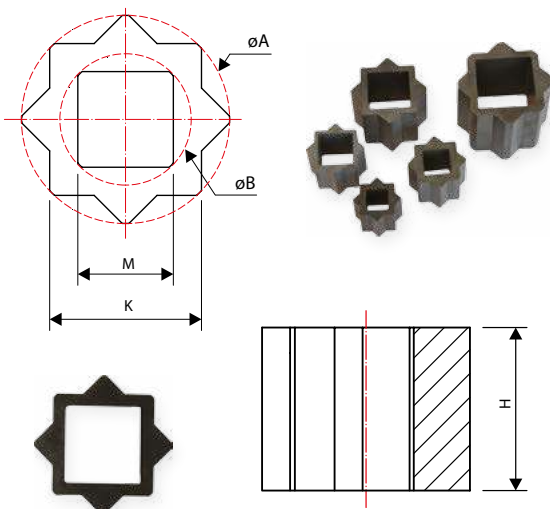


Dimensions(mm)

Type	A Min	A Max	B	L	D	E	F	H	I	M	Ø1	Ø2
A170-DA	25	32	24	64	40	20	20	20	20	M5X6	4,4	5,5
A170-SR	23	32	23	64	40	26	20	26	20	M5X6	4,4	5,5

A148 Square Reducers

Reduction adapters made of sintered steel are available in a wide variety of sizes to adapt the internal square of the actuator to the external square of the coupling or the valves.

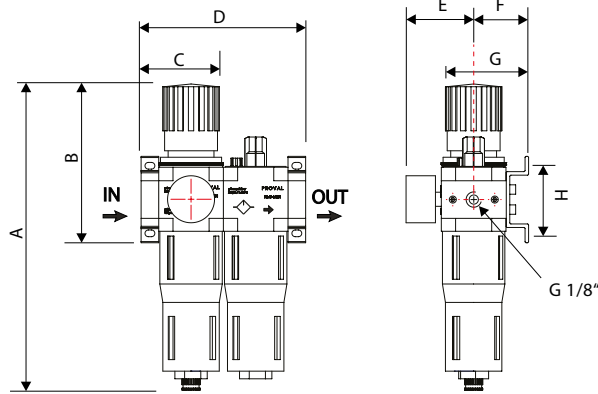


Dimensions(mm)

Type	K	-0,03 -0,05	øA	-0,1 -0,2	M	+0,14 +0,06	øB	H
11M9	11		15		9		12	12
14M9	14		19		9		12	16
14M11	14		19		11		14,8	16
17M11	17		23		11		14,8	19
17M14	17		23		14		19	19
19M14	19		26		14		19	21
19M17	19		26		17		23	21
22M14	22		30		14		19	24
22M17	22		30		17		23	24
22M19	22		30		19		26	24
27M17	27		37		17		23	29
27M19	27		37		19		26	29
27M22	27		37		22		30,3	29
36M19	36		49		19		26	38
36M22	36		49		22		30,3	38
36M27	36		49		27		37,3	38
46M36	46		60		36		60	48

A255 FRL Units

Proval A255 Series FRL units are used to filter, regulate and lubricate the pneumatic air.



A255-12



A255-14

Dimensions(mm)

Model	Giriş Çapı	A	B	C	D	E	F	G	H
A255-14	G1/4"	205	70	6	104	55	39	59	35
A255-12	G1/2"	260	98	7,5	140	65,5	46,5	74	59

Pneumatic Hoses, Fittings, Silencers and Speed Reducers

Model	Description
A141-6	6 mm PU Hose (200m/Roll)
A141-8	8 mm PU Hose (100m/Roll)
A141-10	10 mm PU Hose (100m/Roll)
A141-12	12 mm Hose (100m/Roll)
A142-186	1/8" - 6mm Straight Type Metallic Fittings
A142-188	1/8" - 8mm Straight Type Metallic Fittings
A142-146	1/4" - 6mm Straight Type Metallic Fittings
A142-148	1/4" - 8mm Straight Type Metallic Fittings
A142-1410	1/4" - 10mm Straight Type Metallic Fittings
A142-1412	1/4" - 12mm Straight Type Metallic Fittings
A142-1210	1/2" - 10mm Straight Type Metallic Fittings
A142-1212	1/2" - 12mm Straight Type Metallic Fittings
A143-186	1/8" - 6mm Dirsek Type Elbow Type Plastic Fittings
A143-188	1/8" - 8mm Dirsek Type Elbow Type Plastic Fittings
A143-146	1/4" - 6mm Dirsek Type Elbow Type Plastic Fittings
A143-148	1/4" - 8mm Dirsek Type Elbow Type Plastic Fittings
A144-186	1/8" - 6mm Type Speed Reducer Fittings
A144-188	1/8" - 8mm Type Speed Reducer Fittings
A144-146	1/4" - 6mm Type Speed Reducer Fittings
A145-18	1/8" Silencer
A145-14	1/4" Silencer
A146-18	1/8" Speed Reducer with Silencer
A146-14	1/4" Speed Reducer with Silencer
A147-14	1/4" Air Valve
A149-6	6mm Connection Fittings For Panels
A149-8	8mm Connection Fittings For Panels
A150-6	6 mm Connection Fittings
A150-8	8 mm Connection Fittings
A150-10	10 mm Connection Fittings
A150-12	12 mm Connection Fittings
A151-68	6-8 mm Reducer Type Connection Fittings
A151-610	6-10 mm Reducer Type Connection Fittings
A151-612	6-12 mm Reducer Type Connection Fittings
A151-810	8-10 mm Reducer Type Connection Fittings
A151-812	8-12 mm Reducer Type Connection Fittings
A152-68	6-8 mm Reducer T Fittings
A152-610	6-10 mm Reducer T Fittings
A152-612	6-12 mm Reducer T Fittings
A152-810	8-10 mm Reducer T Fittings
A152-812	8-12 mm Reducer T Fittings
A153-6	6 mm T Fittings
A153-8	8 mm T Fittings
A153-10	10 mm T Fittings



A141



A142



A143



A144



A145



A146



A147



A149



A150



A151



A152

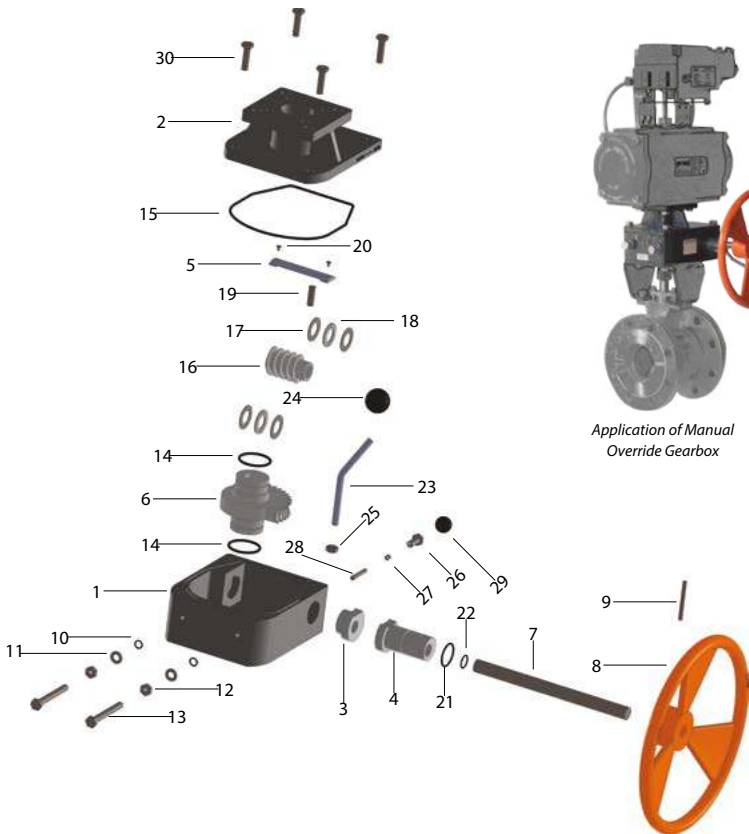


A153

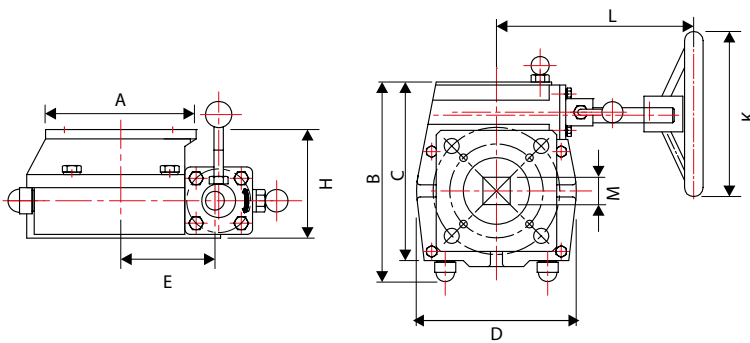


A280 Manual Override Gearboxes

Manual override gearboxes employ a declutchable worm and worm wheel mechanism for manually overriding the pneumatic and hydraulic valve actuators in process applications. PROVAL MOA Series manual override gearboxes are ruggedly designed and produced for users of all industries requiring reliable manual operation of actuated valves at emergency situation.



Application of Manual Override Gearbox



Material List

No	Part Name	Material	Qty
1	Body	Cast Iron	1
2	Cap	Cast Iron	1
3	Inner Eccentric Part	Carbon Steel	1
4	Outer Eccentric Part	Carbon Steel	1
5	Locking Part	Carbon Steel	1
6	Worm Gear	Ductile Iron	1
7	Shaft	AISI420	1
8	Handwheel	Cast Iron (MOA-1 / 2) Steel (MOA-3 / 7)	1
9	Pin	Carbon Steel	1
10	O-Ring	NBR	2
11	Washer	AISI304	2
12	Nut	AISI304	2
13	Hexagon Bolt	AISI304	2
14	O-Ring	NBR	2
15	Body Seal	NBR	1
16	Gear	Carbon Steel	1
17	Bushing	Carbon Steel	4
18	Bearing	Carbon Steel	2
19	Gear Pin	Carbon Steel	1
20	Bolt	AISI304	2
21	Guide Seal	NBR	1
22	Shaft Seal	NBR	1
23	Lever	Carbon Steel	1
24	Lever Head	Plastic	1
25	Locking Nut	AISI420	1
26	Locker Bolt	AISI304	1
27	Spring	Spring Steel	1
28	Locker Stem	Carbon Steel	1
29	Locker Head	Plastic	1
30	Cap Bolt	AISI304	4

Dimensions (mm)	Model	Ratio	Torque (Nm)	Weight (Kg)	Top Actuator Flange		Base Valve Flange		A	B	C	D	E	H	K	L	M
					ISO1	ISO2	ISO1	ISO2									
	A280-01	26:1	300	6,5	F05	F07	F05	F07	70	145	125	110	46	93	150	195	9-11-14
	A280-02	38:1	550	12,5	F07	F10	F07	F10	100	180	165	140	65	122	250	200	14-17-22
	A280-03	54:1	1200	17,0	F12 or F14		F12 or F14		130	225	199	175	85	95	300	233	27-36
	A280-04	80:1	2000	22,0	F14 or F16		F14 or F16		156	311	279	234	123	117	400	277	36
	A280-05	78:1	3100	38,0	F16		F16		162	350	322	276	142	122	600	323	46
	A280-06	98:1	6000	100,0	F25		F25		300	435	415	300	157	244	500	463	46
	A280-07	100:1	15000	180,0	F30		F30		350	592	544	470	225	278	700	558	55

S100 Series General Purpose Pilot Operated Solenoid Valves

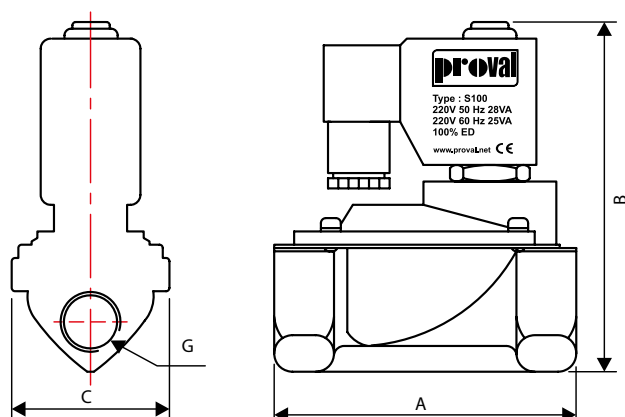
PROVAL S100 Series general purpose solenoid valves are used in water, air, oils and other industrial applications limited with the diaphragm material and pressure range. Viton (FKM) diaphragms allows S100 solenoid valves to be used in partially chemical corrosive lines.

Pilot operated solenoid valves requires min 0.5 bar line pressure to ensure 100% leak free operation.

S100 solenoid valves are available as NO - Normally Open and NC - Normally Closed versions.

LED type connectors provides continuous visual indication of valve open/close position.

Dimensions



NC - Normally Closed
Solenoid Valve



NO - Normally Open
Solenoid Valve

Dimensions(mm)

Size(G)	A	B	C	Orifice	Kv	Cv
1/4"	30	62	22	2,3	2,0	2,3
3/8"	66	104	48	13	3,8	4,5
1/2"	66	104	48	13	3,8	4,5
3/4"	74	111	58	25	10,2	12
1"	96	120	70	25	10,2	12
1-1/4"	129	137	96	38	18,8	22
1-1/2"	129	137	96	38	25,6	30
2"	161	158	112	50	40,9	48

Technical Specifications

Type	Pilot Operated (Normally Open/Close)
Minimum Working Pressure	0,5 bar
Maximum Working Pressure	16,0 bar
Viscosity	50 CST
ED	100% ED
Working Temperatures	EPDM (-5°C ~ -130°C) / FKM (-5°C ~ -150°C)
Body Material	Brass (EN 1503-4)
Diaphragm Materials	EPDM / FKM-Viton (Optional)



Solenoid Valve
With Timer

Options / Spare Parts



Coil



Diaphragm



Timer



Socket

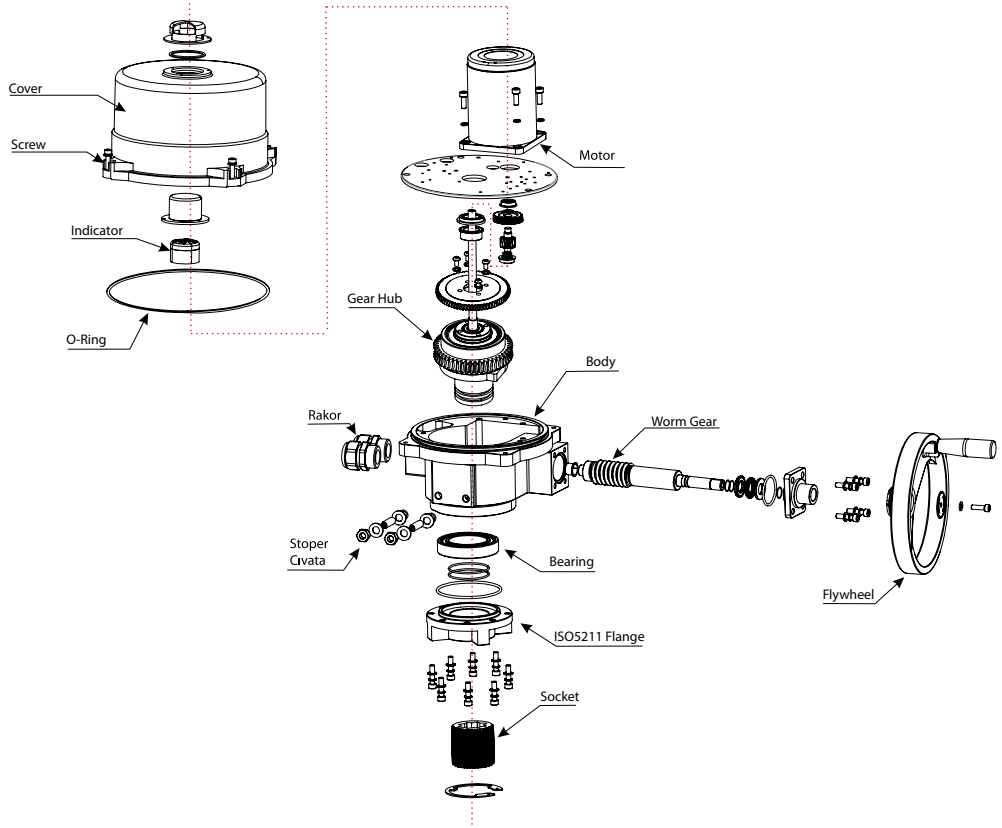


A100 Series Quarter Turn Electric Actuators

A100 series electric actuators are manufactured for on/off or proportional control of quarter turn butterfly, ball and plug valves and dampers.

The electric actuators are manufactured according to industrial standards with high quality for iron and steel, chemical, marine, mining, paper, cement plants, as well as general industrial applications and water treatment plants, HVAC sector.

The electric actuators have the complete compliance with ISO5211 flange standard which allow the direct mounting to the valves with the same Standard.



Technical Specifications

Torque Output	20 Models available with torques ranging from 30-20000 Nm to meet specific requirements.
Housing	Hard anodized aluminum casting and external epoxy powder coating against severe industrial applications.
Protection Class	IP67 as standard and IP68 upon request.
Sealing	Enhanced by Double O-ring in all interfaces.
Self Locking	Provided by double worm gearing to keep position of valve unchanged against reverse torque exerted by valve.
Emergency Manual Operation	8 mm Hex Shaft for PRO 30 & PRO 50 Nm, Clutch-free manual override handwheel for PRO 80 and above sizes
Motor	Specially designed induction motor to generate high starting torque and high efficiency equipped with thermal protector to prevent damage from over heating.
Limit Switches	Directly engaged with driving shaft to set accurate position of valve.
Torque Limit Switches	Protects actuator from damage caused by overload from the driven valve over the whole travel. Standard available on PRO 100 and over sizes.
Anti Condensation Heater	5W Anti condensation heaters prevent condensation. For severe weather conditions additional heaters provided optionally.
External Mechanical Stopper	Prevents over run of travel angle in case limit switches fails.
Position Indicator	Continuous mechanical position indicator and window with dial.
Terminal Strip	Spring loaded push type terminal strip for secure wiring connection under severe vibration.
Ambient Temperature Range	-30 °C to +70 °C
Humidity Range	0-95% RH
Motor Starts, per Hour Max	600
Max Altitude	3000 mt

A100 Series Quarter Turn Electric Actuators Technical Information,

Model Number	Item Code	Power Supply	Torque (Nm)	Torque Switch	Cycle Time (Sec.)	Motor Power (W)	Duty Cycle		Current Draw (A)		
							On/Off	Modulating	Start	Run	LRA
PRO 030	A100FEP2003	24VDC	30	N/A	11	10W	25%	50%	1,88	0,75	1,45
	A100FEP3003	220VAC (50/60Hz)					25%	50%	0,13	0,05	0,10
PRO 050	A100FEP2005	24VDC	50	N/A	10	6W	25%	50%	2,25	0,9	1,80
	A100FEP3005	220VAC (50/60Hz)					25%	50%	0,53	0,21	0,50
PRO 080	A100FEP2008	24VDC	80	N/A	15	10W	25%	50%	2,25	0,9	1,80
	A100FEP3008	220VAC (50/60Hz)					25%	50%	0,50	0,21	0,50
PRO 100	A100FEP2010	24VDC	100	√	14	40W	25%	50%	8,00	3,2	6,00
	A100FEP3010	220VAC (50/60Hz)					25%	50%	1,00	0,42	0,80
	A100FEP4010	380VAC					25%	50%	0,80	0,32	0,60
PRO 200	A100FEP2020	24VDC	200	√	28	40W	25%	50%	8,00	3,2	6,00
	A100FEP3020	220VAC (50/60Hz)					25%	50%	1,00	0,42	0,80
	A100FEP4020	380VAC					25%	50%	0,80	0,32	0,60
PRO 300	A100FEP2030	24VDC	300	√	28	90W	25%	33%	8,50	3,5	6,50
	A100FEP3030	220VAC (50/60Hz)					25%	33%	1,15	0,46	0,85
	A100FEP4030	380VAC					25%	33%	0,80	0,35	0,65
PRO 400	A100FEP2040	24VDC	400	√	21	90W	25%	50%	14,00	5,6	10,50
	A100FEP3040	220VAC (50/60Hz)					25%	50%	2,20	0,9	1,80
	A100FEP4040	380VAC					25%	50%	1,50	0,62	1,20
PRO 600	A100FEP2060	24VDC	600	√	28	90W	25%	50%	14,00	5,6	10,50
	A100FEP3060	220VAC (50/60Hz)					25%	50%	2,20	0,9	1,80
	A100FEP4060	380VAC					25%	50%	1,50	0,62	1,20
PRO 800	A100FEP2080	24VDC	800	√	34	120W	25%	50%	14,00	5,6	10,50
	A100FEP3080	220VAC (50/60Hz)					25%	50%	2,20	0,9	1,80
	A100FEP4080	380VAC					25%	50%	1,50	0,62	1,20
PRO 1000	A100FEP2100	24VDC	1000	√	34	120W	25%	50%	20,00	8,4	16,00
	A100FEP3100	220VAC (50/60Hz)					25%	50%	2,50	1,1	2,00
	A100FEP4100	380VAC					25%	50%	2,00	0,8	1,50
PRO 1300	A100FEP3130	220VAC (50/60Hz)	1300	√	47/39	120W	25%	33%	3,20	1,3	2,50
	A100FEP4130	380VAC					25%	33%	2,30	0,92	1,75
PRO 1700	A100FEP3170	220VAC (50/60Hz)	1700	√	34/28	200W	25%	33%	5,50	2,2	4,00
	A100FEP4170	380VAC					25%	33%	2,50	1,1	2,00
PRO 2000	A100FEP3200	220VAC (50/60Hz)	2000	√	34/28	200W	25%	33%	6,20	2,5	4,50
	A100FEP4200	380VAC					25%	33%	3,20	1,3	2,50
PRO 2300	A100FEP3230	220VAC (50/60Hz)	2300	√	47/39	200W	25%	33%	5,50	2,2	4,50
	A100FEP4230	380VAC					25%	33%	2,50	1,1	2,00
PRO 3500	A100FEP3350	220VAC (50/60Hz)	3500	√	76/63	200W	25%	33%	5,50	2,2	4,50
	A100FEP4350	380VAC					25%	33%	2,50	1,1	2,00
PRO 5000	A100FEP3500	220VAC (50/60Hz)	5000	√	105/88	400W	25%	33%	5,50	2,2	4,50
	A100FEP4500	380VAC					25%	33%	2,50	1,1	2,00
PRO 8000	A100FEP3800	220VAC (50/60Hz)	8000	√	143/119	400W	25%	33%	5,50	2,2	4,50
	A100FEP4800	380VAC					25%	33%	2,50	1,1	2,00
PRO 13000	A100FEP41300	380VAC	13000	√	109/91	400W	25%	33%	5,00	2,00	3,60
PRO 16000	A100FEP41600	380VAC	16000	√	129/108	400W	25%	33%	5,00	2,00	3,60
PRO 20000	A100FEP42000	380VAC	20000	√	155/129	400W	25%	33%	5,00	2,00	3,60



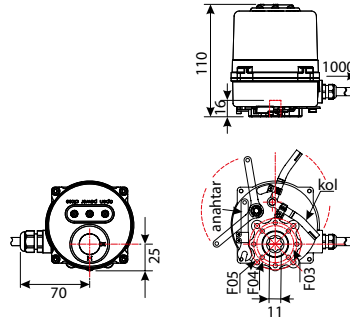
A100 Quarter Turn Electric Actuators

PRO 030 Model Electric Actuators

Model	PRO 030
Series	A100 FEP
Supply	24V AC/DC, 110V AC, 220V AC
Torque	30 Nm
F1/F2/F3	F03/F04/F05
Spindle Shaft	11x11
Weight (Kg)	1.0 Kg

Optional Accessories

IP68 Protection Class
Potentiometer (1 K Ohm)
RPC - 4-20 mA Remote Proportional Control Unit
4-20 mA Position Transmitter

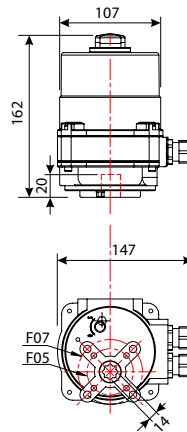


PRO 050 Model Electric Actuators

Model	PRO 050
Series	A100 FEP
Supply	24V AC/DC, 110V AC, 220V AC
Torque	50 Nm
F1/F2/F3	F05/F07
Spindle Shaft	14x14
Weight (Kg)	3.0 Kg

Optional Accessories

IP68 Protection Class
Potentiometer (1 K Ohm)
RPC - 4-20 mA Remote Proportional Control Unit
Local Control Unit
4-20 mA Position Transmitter
Fail-Safe Battery Back-Up

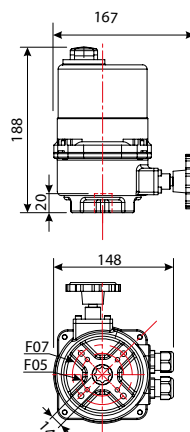


PRO 080 Model Electric Actuators

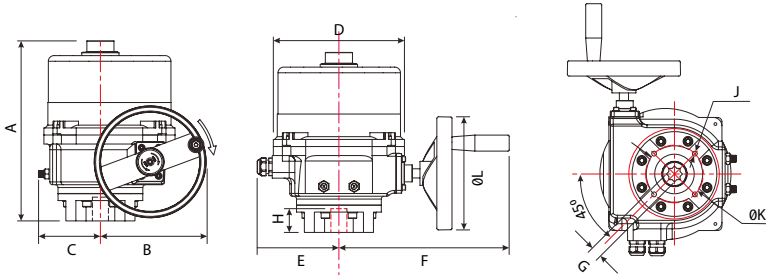
Model	PRO 080
Series	A100 FEP
Supply	24V AC/DC, 110V AC, 220V AC
Torque	80 Nm
F1/F2/F3	F05/F07
Spindle Shaft	14x14
Weight (Kg)	3.6 Kg

Optional Accessories

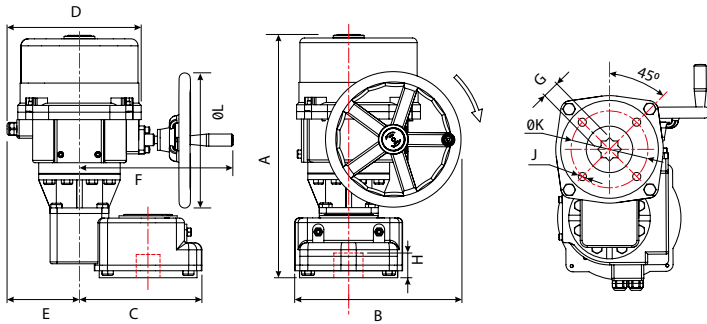
IP68 Protection Class
Potentiometer (1 K Ohm)
RPC - 4-20 mA Remote Proportional Control Unit
Local Control Unit
4-20 mA Position Transmitter
Fail-Safe Battery Back-Up



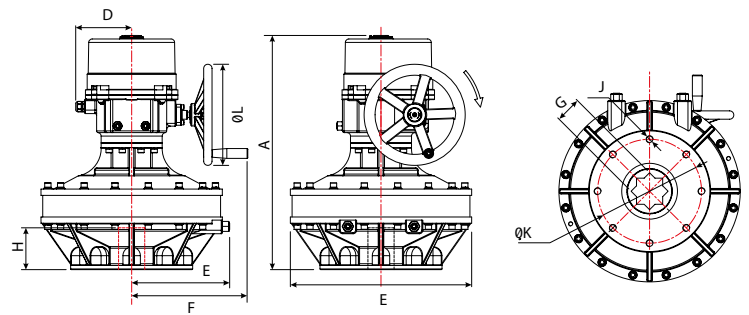
PRO 100 - 2300 Model Electric Actuators



PRO 3500 - 8000 Model Electric Actuators



PRO 13000 - 20000 Model Electric Actuators



Dimensions(mm)

Model	Item Code	Torque (Nm)	A	B	C	D	E	F	G	H	ISO5211 ØK	J	ISO5211 Top Flange	Conduit Entri	Unit Weight (Kg)
PRO 100	A100FEPX010	100	268	77	123	216	121	240	14X14	35	70	4-M8	F07 + F10	2 X PG16	11,00
									17X17						
PRO 200	A100FEPX020	200	268	77	123	216	121	240	14X14	35	70	4-M8	F07+ F10	2 X PG16	11,00
									17X17						
PRO 300	A100FEPX030	300	268	77	123	216	121	240	14X14	35	70	4-M8	F07 + F10	2 X PG16	22,00
									17X17						
PRO 400	A100FEPX040	400	327	103	187	266	150	297	22x22	55	102	4-M10	F10 + F12	2 X PG16	22,00
									22x22						
PRO 600	A100FEPX060	600	327	103	187	266	150	297	27x27	55	125	4-M12	F10 + F12	2 X PG16	22,00
									27x27						
PRO 800	A100FEPX080	800	327	103	187	266	150	297	27x27	55	125	4-M12	F14	2 X PG16	22,00
									27x27						
PRO 1000	A100FEPX100	1000	327	103	187	266	150	297	27x27	55	125	4-M12	F14	2 X PG16	22,00
									27x27						
PRO 1300	A100FEPX130	1300	327	103	187	266	150	297	27x27	55	125	4-M12	F14	2 X PG16	22,00
									27x27						
PRO 1700	A100FEPX170	1700	380	127	242	293	161	333	27x27	65	125	4-M16	F14	2 X PG16	36,00
									27x27						
PRO 2000	A100FEPX200	2000	380	127	242	293	161	333	27x27	65	125	4-M16	F14	2 X PG16	36,00
									27x27						
PRO 2300	A100FEPX230	2300	380	127	242	293	161	333	36x36	65	125	4-M16	F16	2 X PG16	36,00
									36x36						
PRO 3500	A100FEPX350	3500	532	118	242	293	308	186	40x40	85	140	4-M16	F16	2 X PG16	76,00
									40x40						
PRO 5000	A100FEPX500	5000	532	118	242	293	308	186	46x46	85	165	4-M20	F16	2 X PG16	76,00
									46x46						
PRO 8000	A100FEPX800	8000	545	160	242	293	343	160	55x55	130	254	8-M16	F25	2 X PG16	107,00
									55x55						
PRO 13000	A100FEPX1300	13000	672	520	-	293	281	331	55x55	120	254	8-M16	F25 / F30	2 X PG16	218,00
									75x75						
PRO 16000	A100FEPX1600	16000	672	520	-	293	281	331	55x55	120	298	8-M20	F25 / F30	2 X PG16	218,00
									75x75						
PRO 20000	A100FEPX2000	20000	672	520	-	293	281	331	55x55	120	298	8-M20	F25 / F30	2 X PG16	218,00
									75x75						

*X refers to power supply. X=2 for 24VDC, X=3 for 220VAC, X=4 for 380VAC actuators



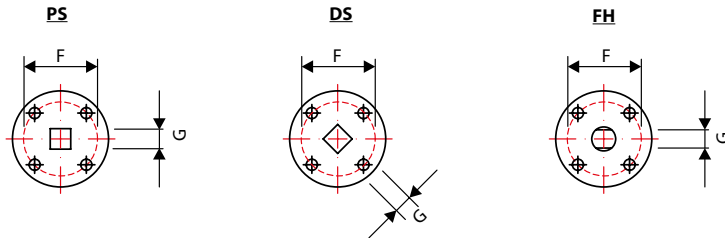
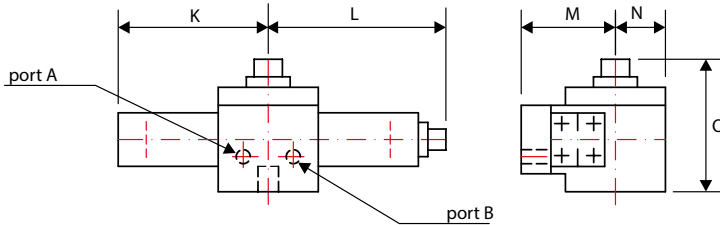
A300 Double Acting Hydraulic Actuators

Proval hydraulic actuators are used in rotary valves especially in marine applications.



Proval hydraulic actuators main specifications

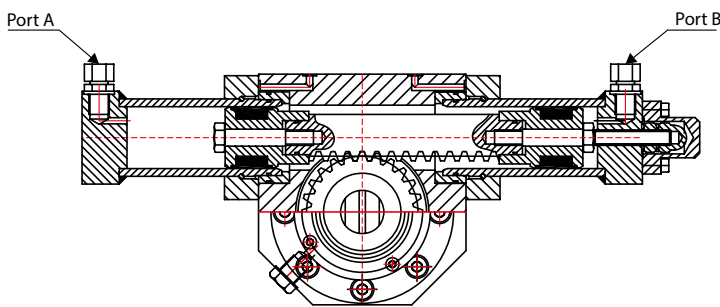
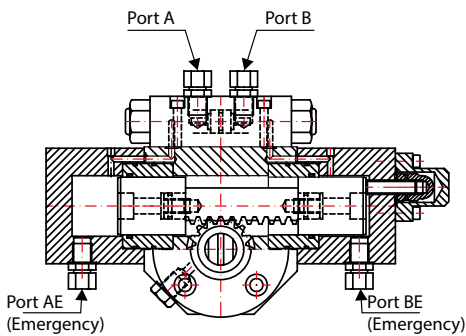
- Easy maintenance and repair
- High reliability due to basic construction
- Adjustable closed position
- Approved for marine used



Stainless Steel
Hydraulic Actuator

Technical Specifications

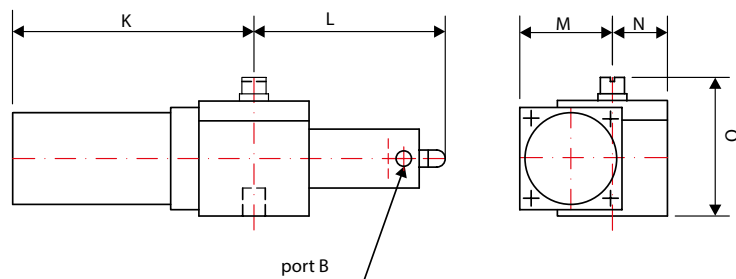
Working Type	Double / Single Acting
Design Type	Rack-Pinion
Work. Pressure	Standart 100 bar
Travel Angle	± 2° adjustable 90°
Assembly Type	Any Position
Emergency Op.	Couplings for hand pump
Accessories	Position switches Hydrolock



Dimensions(mm)

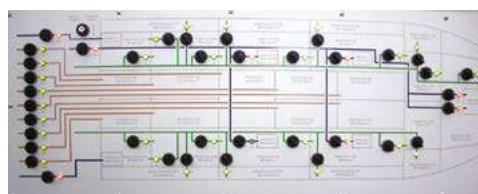
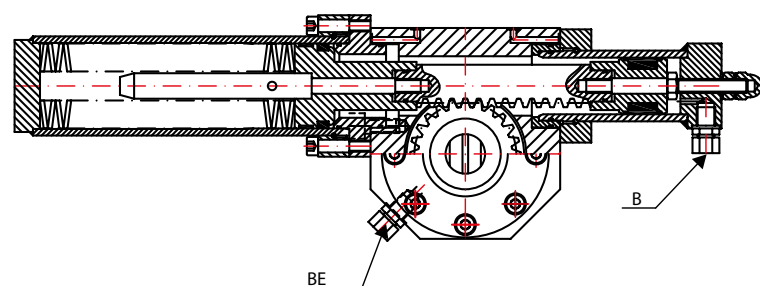
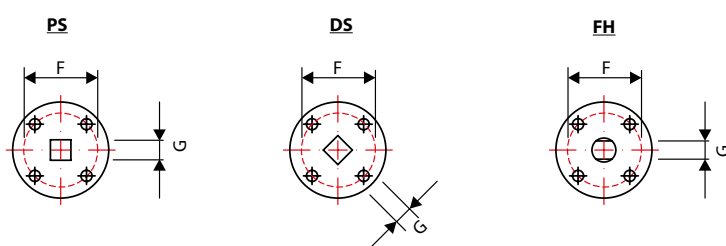
Model	K	L	M	N	O	F	Max. G			Torque Value
							PS	DS	FH	
A300PC0090	92	115	60	46	110	F05-F07	14	14	14	90 Nm
A300PC0225	121	158	71	47	130	F05-F07	17	17	17	225 Nm
A300PC0410	182	220	90	60	170	F07-F10	24	24	22	410 Nm
A300PC0640	182	220	90	60	170	F10-F12	24	24	22	640 Nm
A300PC0920	182	225	100	60	170	F12-F14	30	30	27	920 Nm
A300PC02170	220	275	115	90	195	F14-F16	40	40	40	2170 Nm

A300 Single Acting Hydraulic Actuators



Optional Accesories

- Hydro-Lock
- Special Coating for Submerged Actuators
- Manual Hand Pump
- Ballast / Cargo System Control Units
- Linear Type for Globe / Gate Valves



Mimic Control Panel



Hydraulic Power Pack



Solenoid Valve Box

Dimensions(mm)

Model	K	L	M	N	O	F	Max. G			Torque Output
							PS	DS	FH	
A300PT0035	166	110	60	46	96	F05-F07	14	14	14	35 Nm
A300PT0090	230	148	80	47	115	F05-F07	17	17	17	90 Nm
A300PT0165	320	210	100	60	155	F07-F10	24	24	22	165 Nm
A300PT0280	425	205	105	60	155	F10-F12	24	24	22	280 Nm
A300PT0370	425	215	110	60	155	F12-F14	30	30	27	370 Nm
A300PT0870	640	265	135	90	180	F14-F16	40	40	40	870 Nm

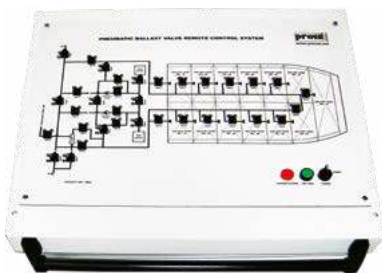
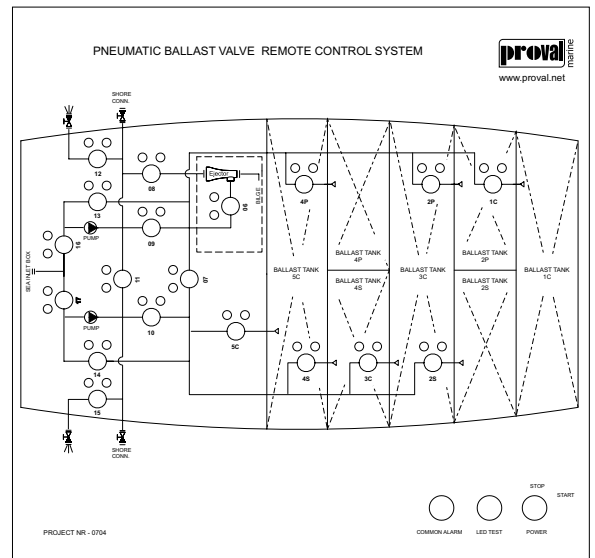
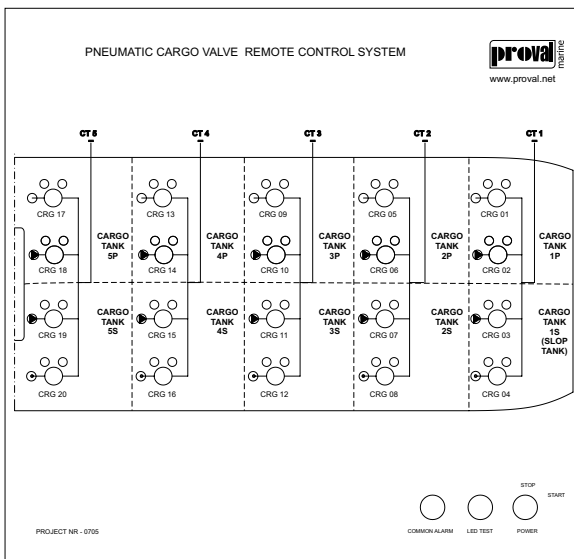


Proval Pneumatic Ballast / Cargo / Fuel Oil Valve Remote Control Systems

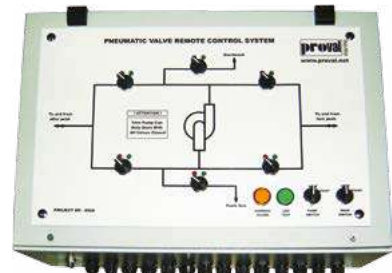
Proval pneumatic VRC systems are used in marine to control ballast, cargo or fuel oil automation systems.

Superiorities of Proval Pneumatic VRC Systems

- Environment friendly solution especially in submerged systems. In comparison with conventional hydraulic systems, there is no oil pressure in pneumatic systems to cause external leakage to ballast tanks.
- System runs on volumetric control principle and generates 100% reliable valve position signals
- There is no power outside the control box and is safe for explosive areas
- Can be operated with basic mimic diagrams or touch pad screens or PC based systems
- Lower risk caused in pipelines in comparison with hydraulic systems (100 bar) due to lower supply pressure (6 bar)
- There is no pressure in supply pipe lines while the system is off
- There is no need for additional power packs etc. System just requires 6 bar air supply and 24VDC power supply
- It requires lower space in comparison with hydraulic systems.
- Approved for marine use by all major classification societies.



Ballast System
Control Panel



Trim System
Control Panel



Factory / Headquarters

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