

**1-6911 SERIES
CONTROL
VALVES**

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The line of PARCOL 1-6911 series control valves provides the most versatile globe body type single seat available with heavy top guiding design.

They have an unusual combination of premium features that suit them for a wide range of applications, including viscous fluids and slurries, with reduced costs.

Due to their simple construction and reduced number of parts, maintenance becomes easier and less expensive.

The 1-6911 series control valves can be supplied with a wide range of pneumatic actuators and, on request, electric or electrohydraulic ones for on-off or continuous control duty.

Main features and advantages of valves series 1-6911 are listed on the page aside.

1-6911 SERIES CONTROL VALVES



Valve type 1-6911 with hydraulic actuator

FEATURES OF SERIES 1-6911 CONTROL VALVES	ADVANTAGES
large free-flow passages with smooth body contour and no dead zones.	<ul style="list-style-type: none"> - higher CV values - reduced erosion and contamination - permit handling of slurries and viscous fluids
heavy top plung guide only. When the valve is open the plug is out of the seat.	<ul style="list-style-type: none"> - simple and cheaper construction - compact plug design and smooth, contour assures a higher stability - reduced possibility of seizures
lower seat diameters. Valves series 1-6911 are provided with the maximum seat diameter above which no increases of valve CV are possible.	<ul style="list-style-type: none"> - higher allowable pressure drops - reduced sizes of actuators - better seat tightness when plug is in closed position
fewer body and trim parts. The standard trim includes four parts only: plug, seat, stem and pin.	<ul style="list-style-type: none"> - lower maintenance cost - reduced inventory - easier trim substitution - less possibility of damages
wide range of components and accessories.	<ul style="list-style-type: none"> - higher versatility - wide possibility of applications
wide selection of reduced capacity trims for each body size and large material selection. All std PARCOL pneumatic actuators are available and in addition electric ones and all possible accessories.	<ul style="list-style-type: none"> - safe and reliable services

SPECIFICATION

BODY

- type : globe, single port and non reversible.
- construction : from casting except for sizes up to 2" and rating above PN 100 which are forged.
- materials :
 - from stock - ASTM A 216 WCB and ASTM A 351 CF8M.
 - on request - ASTM A 352 LCB, Cr. Mo steel, special stainless steel and alloy cast irons.
- dimension : 1/2" through 16".
- connections :
 - 1/2" -2" screwed ends ANSI B2.1;
 - socket weld ends up to 2";
 - butt weld ends according to ANSI B16.25;
 - flanged ends according to UNI, ANSI and DIN standars.



Valve type 1-6911 with single acting cylinder actuator.

- ratings : – carbon or alloy steel-screwed or socket weld ends PN 100/ANSI 600;
– carbon or alloy steel-flanges or butt-weld ends - PN 10/ANSI 150 through PN 250/ANSI 1500;
- steam jacket : – carbon or stainless steel bodies may be supplied with jacket; standard rating PN 16/ANSI 150; higher ratings available on request.

BONNET

- joint : stud bolted.
- type : standard, extended with bellows seal, special for cryogenic service and finned on request.
- materials : the same as the bodies but rolled, forged or fabricated.
- packing box : bolted type.

TEMPERATURE CAPABILITIES OF PACKINGS (1)

Type of packing	Description	Temperature limits °C	
		plain bonnet (2)	extended bonnet (3)
TFG	Split-rings of braided graphited teflon yarn	-10÷ +200	-100÷ +300
GRF	Solid rings of pure graphite	-10÷ +600	-100÷ +600
VTC	Solid glass loaded teflon V-rings, compression adjustable	-10÷ +170	-100÷ +270
VPV	Solid pure teflon V-rings in double set for pressure and vacuum service	-10÷ +150	-100÷ +250

- (1) Fluid temperature at valve inlet.
 (2) Values given for continuous service and with all types of fluids.
 (3) Values suitable for continuous gas service.
 For additional information please refer to Bulletin 1-VII.

PLUG

- sizes : full or reduced as per CV table.
- form : micro-flute for sizes up 1/4" and contoured for larger ones.
– characteristic: equal percentage or quick opening for all sizes.
– linear on request.
- guiding : top and port for micro-flute type and only top for contoured one.
- materials : see material classes table Standard construction AISI 316 with or without stellite coatings.
Other materials on request.
- plug soft seat insert : teflon or rubber for tight shut-off applications. For teflon insert the maximum temperature is 200°C and maximum pressure drop is 20 bar in closed position.

STEM

- type : threaded and pinned to the valve plug.
- materials : highly polished AISI 316 with maximum surface roughness 0,4 Ra.
– other materials on request.

GUIDE BUSHING

- type : long, heavy and precision fitted into the bonnet.
- materials : please refer to materials table.

SEAT RING

- type : screwed into the body; or request, for very critical applications, the seat ring can be welded to the body.
- materials : the same as the plug.
- leakage : according to IEC 60534-4 (ANSI B 16.104) Classes. (see separate table).

Seating	Available leakage classes
metal-to-metal	standard Class IV on request Class V
soft	5 times Class VI values



Valve type 1-6911 with electric actuator.



Valve type 1-6911 with full jacketed body and bonnet.

FLOW COEFFICIENT CV - Flow under the plug (1)

DN in.	Port in.	Seat diam. mm	Stroke mm	Plug type (2)	THROTTLING PLUG - EXPONENTIAL CHARACTERISTIC ^{(3) (4)}												Disk Max Cv 100%
					Max Cv 100%	travel %											
						90%	80%	70%	60%	50%	40%	30%	20%	10%	5%		
1/2	1/2	15	17	C	5.7	4.4	3.0	1.80	1.24	0.85	0.59	0.40	0.28	0.19	0.16	7.5	
	3/8	12	17	C	2.7	1.88	1.31	0.92	0.64	0.45	0.31	0.22	0.15	0.11	0.09	4.8	
	1/4	12	17	P	1.25	0.89	0.64	0.46	0.33	0.23	0.17	0.12	0.09	0.06	0.05	--	
	3/16	10	17	P	0.60	0.45	0.34	0.26	0.19	0.14	0.11	0.08	0.06	0.05	0.04	--	
	1/8	8	17	P	0.30	0.23	0.18	0.14	0.11	0.08	0.06	0.05	0.04	0.03	0.03	--	
3/4	3/4	19	17	C	10.0	8.2	5.7	3.5	1.9	1.30	0.87	0.59	0.40	0.27	0.22	10.5	
	1/2	15	17	C	5.5	4.0	2.7	1.88	1.28	0.88	0.60	0.41	0.28	0.19	0.16	7.5	
	3/8	12	17	C	2.7	1.88	1.31	0.92	0.64	0.45	0.31	0.22	0.15	0.11	0.09	4.8	
	1/4	12	17	P	1.25	0.89	0.64	0.46	0.33	0.23	0.17	0.12	0.09	0.06	0.05	--	
	3/16	10	17	P	0.60	0.45	0.34	0.26	0.19	0.14	0.11	0.08	0.06	0.05	0.04	--	
	1/8	8	17	P	0.30	0.23	0.18	0.14	0.11	0.08	0.06	0.05	0.04	0.03	0.03	--	
1	1	23	17	C	12.9	9.9	6.6	4.0	2.6	1.74	1.14	0.75	0.50	0.33	0.26	14.5	
	3/4	19	17	C	10.4	7.8	5.1	3.0	2.0	1.35	0.90	0.60	0.40	0.27	0.22	11.3	
	1/2	15	17	C	5.5	4.0	2.7	1.85	1.27	0.87	0.59	0.41	0.28	0.19	0.16	7.5	
	3/8	12	17	C	2.7	1.88	1.31	0.92	0.64	0.45	0.31	0.22	0.15	0.11	0.09	4.8	
	1/4	12	17	P	1.25	0.89	0.64	0.46	0.33	0.23	0.17	0.12	0.09	0.06	0.05	--	
	3/16	10	17	P	0.60	0.45	0.34	0.26	0.19	0.14	0.11	0.08	0.06	0.05	0.04	--	
	1/8	8	17	P	0.30	0.23	0.18	0.14	0.11	0.08	0.06	0.05	0.04	0.03	0.03	--	
1.1/2	1.1/2	35	25	C	29	21	14.2	8.7	5.7	3.6	2.4	1.52	0.98	0.63	0.52	33	
	1.1/4	28	25	C	22	15.8	10.2	6.1	4.0	2.6	1.67	1.09	0.70	0.45	0.36	25	
	1	23	25	C	15.1	10.3	6.6	4.4	2.9	1.86	1.21	0.78	0.51	0.33	0.26	18	
2	2	45	25	C	46	37	26	16.1	9.5	6.3	4.1	2.7	1.77	1.15	0.91	53	
	1.1/2	35	25	C	33	25	17.3	10.8	7.3	5.0	3.4	2.3	1.55	1.06	0.52	38	
	1.1/4	28	25	C	24	16.5	10.4	6.2	4.0	2.6	1.69	1.09	0.71	0.46	0.36	26	
3	3	72	34	C	110	87	63	42	28	18.9	12.7	8.5	5.7	3.9	1.64	130	
	2.1/2	60	34	C	88	68	46	27	15.1	9.4	5.9	3.7	2.3	1.37	1.13	105	
	2	45	34	C	58	42	27	16.7	10.7	6.9	4.4	2.8	1.82	1.17	0.93	67	
4	4	86	45	C	187	158	127	95	71	50	32	19.0	9.6	4.0	2.7	200	
	3	72	45	C	138	107	72	40	22	13.8	8.6	5.3	3.3	2.1	1.70	148	
	2.1/2	60	45	C	107	78	48	26	15.9	9.8	6.1	3.7	2.3	1.44	1.07	117	
6	6	130	60	C	388	334	271	201	151	105	68	40	20	8.0	5.1	440	
	5	110	60	C	312	264	211	158	119	83	55	32	16.1	6.5	4.0	354	
	4	86	60	C	232	188	142	110	82	57	37	22	11.0	4.3	2.7	264	
8	8	165	76	C	630	543	441	335	241	168	108	63	30	11.1	7.0	710	
	6	130	76	C	455	377	287	224	166	117	76	45	22	8.5	4.9	520	
	5	110	76	C	354	284	217	168	124	87	57	34	16.7	6.6	3.9	400	
10	10	210	100	C	995	859	696	515	382	266	172	99	48	17.4	9.5	1125	
	8	165	76	C	685	580	466	345	260	183	119	69	34	12.3	6.3	830	
	6	130	76	C	489	396	298	232	172	121	79	46	23	8.6	5.0	560	
12	12	250	100	C	1485	1282	1053	811	579	407	263	152	73	26	12.0	1700	
	10	210	100	C	1125	946	754	562	422	295	192	112	54	19.8	9.5	1325	
	8	165	76	C	810	681	547	417	300	214	139	81	39	14.5	6.4	910	
14	14	300	125	C	1920	1667	1368	1016	756	526	340	196	95	33	15.2	2275	
	12	250	100	C	1470	1272	1046	815	585	417	271	158	77	28	13.8	1820	
	10	210	100	C	1230	1037	835	616	462	326	212	123	60	22	10.9	1410	
16	16	350	150	C	2590	2254	1847	1370	1017	707	456	263	127	46	14.2	3060	
	14	300	125	C	2070	1797	1481	1146	822	581	378	220	107	39	15.7	2550	
	12	250	100	C	1735	1464	1176	865	647	455	296	172	84	31	14.0	1970	

- (1) See separate table for rating ANSI 900, 1500, NPS 1" and below. The values listed on the table are applicable for rating ANSI 900, 1500, NPS ≥ 1.1/2" reduced port.
(2) C = contoured, F = flatted.
(3) Rangeability can be calculated as Cv (100%) / (Cv (5%).
(4) For plugs with linear characteristic (available on request) interpolate between Cv (5%) and CV (100%) of the corresponding exponential plug.

F_L and X_T coefficients- Flow under the plug

DN in.	Port in.	travel 100%		travel 10%		DN in.	Port. in.	travel 100%		travel 10%	
		F _L	X _T	EXPONENTIAL				F _L	X _T	EXPONENTIAL	
				F _L	X _T					F _L	X _T
1/2	1/2	0.90	0.60	0.97	0.89	3	3	0.91	0.62	0.97	0.89
	3/8	0.92	0.65	0.97	0.89		2.1/2	0.90	0.63	0.97	0.90
	1/4	0.90	0.66	0.98	0.90		2	0.89	0.63	0.97	0.90
	3/16	0.93	0.69	0.98	0.89	4	4	0.90	0.60	0.97	0.90
	1/8	0.94	0.70	0.98	0.89		3	0.89	0.62	0.97	0.90
3/4	3/4	0.89	0.59	0.97	0.89	6	6	0.90	0.61	0.97	0.90
	1/2	0.90	0.63	0.97	0.89		5	0.90	0.63	0.97	0.90
	3/8	0.92	0.67	0.97	0.89	4	0.88	0.62	0.97	0.90	
	1/4	0.90	0.66	0.98	0.90	8	8	0.90	0.61	0.97	0.90
	3/16	0.93	0.69	0.98	0.89		6	0.89	0.62	0.97	0.90
1/8	0.94	0.70	0.98	0.89	5		0.89	0.63	0.97	0.90	
1	1	0.90	0.61	0.97	0.90	10	10	0.90	0.61	0.97	0.90
	3/4	0.89	0.61	0.97	0.90		8	0.90	0.63	0.97	0.90
	1/2	0.90	0.65	0.97	0.89		6	0.00	0.00	0.00	0.00
	3/8	0.92	0.67	0.97	0.89	12	12	0.90	0.61	0.97	0.90
	1/4	0.90	0.66	0.98	0.90		10	0.90	0.63	0.97	0.90
1.1/2	3/16	0.93	0.69	0.98	0.89	14	14	0.91	0.62	0.97	0.90
	1/8	0.94	0.70	0.98	0.89		12	0.90	0.63	0.97	0.90
	1.1/2	0.90	0.61	0.97	0.90		10	0.89	0.63	0.97	0.90
	1.1/4	0.89	0.62	0.97	0.90	16	16	0.91	0.62	0.97	0.90
	1	0.89	0.63	0.97	0.90		14	0.90	0.63	0.97	0.90
2	2	0.90	0.61	0.97	0.90	16	16	0.91	0.62	0.97	0.90
	1.1/2	0.89	0.62	0.97	0.89		14	0.90	0.64	0.97	0.90
	1.1/4	0.88	0.62	0.97	0.90		12	0.89	0.63	0.97	0.90

The values are also suitable for ratings PN 100 and over, only for sizes 1" and larger

Cv, F_L and X_T coefficients - Size 1" and below - ANSI 900/1500 (1)

DN in.	Port - in.	3/4			1/2			3/8			1/4			3/16			1/8					
	Seat diam.- mm	19			15			12			12			10			8					
	Travel - mm	17			17			17			17			17			17					
	Cv	F _L	X _T	Cv	F _L	X _T	Cv	F _L	X _T	Cv	F _L	X _T	Cv	F _L	X _T	Cv	F _L	X _T				
plug (2)	R	P	R/P	R	P	R/P	R	P	R/P	R	P	R/P	R	P	R/P	R	P	R/P				
1/2	Sch. 80 PN 160÷250															0.6	0.94	0.7	0.3	0.94	0.7	
	Sch. 160																		0.3	0.95	0.71	
3/4	Sch. 80 PN 160÷250				4.7	6	0.92	0.67	2.7	4.4	0.93	0.69	1.25	0.92	0.67	0.6	0.94	0.7	0.3	0.94	0.7	
	Sch. 160								2.5	3.8	0.94	0.7	1.25	0.93	0.69	0.6	0.95	0.71	0.3	0.95	0.71	
	XXS																		0.3	0.96	0.73	
1	Sch. 80 PN 160÷250	9	10	0.94	0.7	5.5	7	0.91	0.66	2.7	4.4	0.92	0.67	1.25	0.91	0.66	0.6	0.93	0.69	0.3	0.94	0.7
	Sch. 160					5	6.5	0.93	0.69	2.7	4.4	0.93	0.69	1.25	0.92	0.67	0.6	0.94	0.7	0.3	0.94	0.7
	XXS									2.5	3.8	0.94	0.7	1.25	0.92	0.67	0.6	0.95	0.71	0.3	0.95	0.71

(1) F_L and X_T values refer to full-open position and flow under the plug.

(2) R = characterized plug (contoured or piston)

P = disk

MAX ALLOWABLE DIFFERENTIALS - bar
Packing A - seat-leakage class IV

Body size in.	Port in.	Seat diam. mm	DIAPHRAGM CATEGORY 1					DIAPHRAGM CATEGORY 2					DIAPHRAGM CATEGORY 3					CYLINDER						
			250	310	390	450	600 D63	250	310	390	450	600 D63	250	310	390	450	600 D63	100	160	200	300	450	600	
1/2	1/2	15	18	35			47	77				133	150											
	3/8	12	30	55			75	122				150	150											
	1/4	12	30	55			75	122				150	150											
	3/16	10	44	80			109	150				150	150											
	1/8	8	69	126			150	150				150	150											
3/4	3/4	19	11	21			29	48				82	131											
	1/2	15	18	35			47	77				133	150											
	3/8	12	30	55			75	122				150	150											
	1/4	12	30	55			75	122				150	150											
	3/16	10	44	80			109	150				150	150											
1	1	23	7,3	14			19	32				56	89											
	3/4	19	11	21			29	48				82	131											
	1/2	15	18	35			47	77				133	150											
	3/8	12	30	55			75	122				150	150											
	1/4	12	30	55			75	122				150	150											
1.1/2	1.1/2	35		5,5	10	16					15	25	38			37	67	100			8,8	26	42	
	1.1/4	28		8,9	17	26					23	39	59			59	104	150			14	41	66	
	1	23		13	25	39					35	58	88			87	150	150			21	61	98	
2	2	45		3,1	6,1	9,7					8,8	15	22			22	40	60			5,1	15	25	
	1.1/2	35		5,5	10	16					15	25	38			37	67	100			8,8	26	42	
	1.1/4	28		8,9	17	26					23	39	59			59	104	150			14	41	66	
3	3	72		2,1	3,5	6,8					5,7	8,8	15			15	23	41			5,9	9,6	24	
	2.1/2	60		3,1	5,1	10					8,3	13	22			23	34	59			8,6	14	34	
	2	45		5,9	9,4	18					15	23	40			40	61	105			15	25	61	
4	4	86		1,2	2,2	4,6					4	6,2	11			9,5	17	29			4	6,6	16	
	3	72		2	3,4	6,8					5,9	9,1	15			14	24	41			5,9	9,6	24	
	2.1/2	60		3	5	9,9					8,6	13	22			20	35	59			8,6	14	34	
6	6	130				1,9					2,7	4,6				5,3	12				2,8	7,1	16	
	5	110				1,2	2,7				3,8	6,5				7,5	17				3,9	10	22	
	4	86				2,1	4,5				6,4	11				12	29				6,6	16	36	
8	8	165				1					2,9					7,8					4,3	9,7		
	6	130				1,8					4,8					13					7,1	16		
	5	110				2,6					6,8					18					10	22		
10	10	210									1,7					4,9					2,6	5,9	11	
	8	165				1					2,8					7,8					4,3	9,7	18	
	6	130				1,8					4,7					13					7,1	16	29	
12	12	250									1,2					3,4					1,8	4,1	7,7	
	10	210									1,7					4,9					2,6	5,9	11	
	8	165				1					2,8					7,8					4,3	9,7	18	

MAX ALLOWABLE DIFFERENTIALS - bar
Packing B - seat-leakage class IV

Body size in.	Port in.	Seat diam. mm	DIAPHRAGM CATEGORY 1					DIAPHRAGM CATEGORY 2					DIAPHRAGM CATEGORY 3					CYLINDER						
			250	310	390	450	600 D63	250	310	390	450	600 D63	250	310	390	450	600 D63	100	160	200	300	450	600	
1/2	1/2	15	14	29			43	72				128	150											
	3/8	12	23	47			68	114				150	150											
	1/4	12	23	47			68	114				150	150											
	3/16	10	34	68			99	150				150	150											
	1/8	8	54	107			150	150				150	150											
3/4	3/4	19	8,4	18			26	44				80	127											
	1/2	15	14	29			43	72				128	150											
	3/8	12	23	47			68	114				150	150											
	1/4	12	23	47			68	114				150	150											
	3/16	10	34	68			99	150				150	150											
1/8	8	54	107			150	150				150	150												
1	1	23	5,5	12			18	30				54	87											
	3/4	19	8,4	18			26	44				80	127											
	1/2	15	14	29			43	72				128	150											
	3/8	12	23	47			68	114				150	150											
	1/4	12	23	47			68	114				150	150											
3/16	10	34	68			99	150				150	150												
1/8	8	54	107			150	150				150	150												
1.1/2	1.1/2	35		4,5	9,2	15			14	23	36			36	65	98			7,5	24	39			
	1.1/4	28		7,3	14	23			22	37	57			57	102	150			12	38	62			
	1	23		11	22	35			33	55	84			85	150	150			18	57	92			
2	2	45		2,5	5,3	8,7			8,2	14	21			22	39	59			4,3	14	24			
	1.1/2	35		4,5	9,2	15			14	23	36			36	65	98			7,5	24	39			
	1.1/4	28		7,3	14	23			22	37	57			57	102	150			12	38	62			
3	3	72		1,8	3,1	6,3			5,4	8,4	15			15	23	40			5,5	9,1	23			
	2.1/2	60		2,7	4,6	9,2			7,9	12	21			22	33	58			8,1	13	33			
	2	45		5,1	8,5	16			14	22	38			40	60	103			14	24	59			
4	4	86		1	1,9	4,2			3,7	6	10			9,3	17	28			3,7	6,2	16			
	3	72		1,7	3	6,2			5,6	8,7	15			13	24	40			5,5	9,1	23			
	2.1/2	60		2,6	4,4	9,1			8,2	13	22			19	35	59			8,1	13	33			
6	6	130			1	1,7			2,6	4,4				5,2	12					2,6	6,9	15		
	5	110			1,8	2,4			3,7	6,3				7,4	17					3,7	9,7	21		
	4	86				4,1			6,2	10				12	28					6,2	16	35		
8	8	165									2,8									4,2	9,5			
	6	130				1,7					4,6									6,9	15			
	5	110				2,4					6,5									9,7	21			
10	10	210									1,6									2,5	5,8	11		
	8	165									2,7									4,2	9,5	17		
	6	130				1,5					4,5									6,9	15	28		
12	12	250									1,1									1,7	4	7,5		
	10	210									1,6									2,5	5,8	11		
	8	165									2,7									4,2	9,5	17		

MAX ALLOWABLE DIFFERENTIALS - bar
Packing A - seat-leakage class V

Body size in.	Port in.	Seat diam. mm	DIAPHRAGM CATEGORY 1					DIAPHRAGM CATEGORY 2					DIAPHRAGM CATEGORY 3					CYLINDER						
			250	310	390	450	600	250	310	390	450	600	250	310	390	450	600 D63	100	160	200	300	450	600	
1/2	1/2	15		17				29	59				115	150										
	3/8	12	7,5	33				53	100				150	150										
	1/4	12	7,5	33				53	100				150	150										
	3/16	10	17	53				82	150				150	150										
	1/8	8	36	93				137	150				150	150										
3/4	3/4	19		7,1				15	34				68	116										
	1/2	15		17				29	59				115	150										
	3/8	12	7,5	33				53	100				150	150										
	1/4	12	7,5	33				53	100				150	150										
	3/16	10	17	53				82	150				150	150										
1	1	23		2,5				7,9	21				44	77										
	3/4	19		7,1				15	34				68	116										
	1/2	15		17				29	59				115	150										
	3/8	12	7,5	33				53	100				150	150										
	1/4	12	7,5	33				53	100				150	150										
1.1/2	1.1/2	35			2,8	8,7							30	59	92			1,1	18	34				
	1.1/4	28			7,1	16			7,2	17	30		49	95	147			4,5	31	56				
	1	23		1,8	13	27			23	47	76		75	143	150			9,6	49	86				
2	2	45				3,7			2,8	8,9	16		16	34	54				9,6	19				
	1.1/2	35			2,8	8,7			7,2	17	30		30	59	92			1,1	18	34				
	1.1/4	28			7,1	16			14	29	49		49	95	147			4,5	31	56				
3	3	72					3,1			1,9	5,1	11		12	20	37			2,1	5,9	20			
	2.1/2	60					5,5			3,8	8,4	18		18	30	54			4,1	9,5	30			
	2	45			3,5	12				9	17	34		34	55	99			9,6	19	55			
4	4	86						3			2,5	7		5,7	13	25				2,8	13			
	3	72						5,4			2,1	5,4	12		10	21	37			2,1	5,9	20		
	2.1/2	60									4,1	8,8	18		15	31	55			4,1	9,5	30		
6	6	130										2,1									4,6	13		
	5	110										3,6			2,8	10				1	7,1	19		
	4	86									2,7	7,1			8,7	25				2,8	13	32		
8	8	165														5,5					2	7,4		
	6	130														10					4,6	13		
	5	110										2,3				15					7,1	19		
10	10	210														3,1						4,1	9,1	
	8	165														5,5					2	7,4	15	
	6	130									2,2					10					4,6	13	26	
12	12	250														1,9						2,6	6,2	
	10	210														3,1						4,1	9,1	
	8	165														5,5					2	7,4	15	

MAX ALLOWABLE DIFFERENTIALS - bar
Packing B - seat-leakage class V

Body size in.	Port in.	Seat diam. mm	DIAPHRAGM CATEGORY 1					DIAPHRAGM CATEGORY 2					DIAPHRAGM CATEGORY 3					CYLINDER					
			250	310	390	450	600	250	310	390	450	600	250	310	390	450	600 D63	100	160	200	300	450	600
1/2	1/2	15		11			24	54			110	150											
	3/8	12		24			46	91			150	150											
	1/4	12		24			46	91			150	150											
	3/16	10	6,9	41			72	137			150	150											
	1/8	8	20	73			121	150			150	150											
3/4	3/4	19		3,7			12	30			66	113											
	1/2	15		11			25	54			110	150											
	3/8	12		24			46	91			150	150											
	1/4	12		24			46	91			150	150											
	3/16	10	6,9	41			72	137			150	150											
1	1/2	15		11			25	54			110	150											
	3/8	12		24			46	91			150	150											
	1/4	12		24			46	91			150	150											
	3/16	10	6,9	41			72	137			150	150											
	1/8	8	20	73			121	150			150	150											
1.1/2	1.1/2	35			1,5	7		6	16	28			29	58	90			17	32				
	1.1/4	28			5	14		12	27	47			47	93	144			2,4	29	52			
	1	23			10	23		21	44	72			73	140	150			6,5	46	81			
2	2	45				2,7		2,2	8,1	15			16	33	53				8,6	18			
	1.1/2	35			1,5	7,1		6,2	16	28			29	58	90				17	32			
	1.1/4	28			5	14		12	27	47			47	93	144			2,4	29	52			
3	3	72					2,5		1,6	4,7	11			11	19	36			1,8	5,3	19		
	2.1/2	60					4,7		3,4	7,8	17			18	29	54			3,6	8,7	29		
	2	45			2,5	10			8,3	16	32			34	54	97			8,6	18	53		
4	4	86								2,2	6,6			5,5	13	24				2,4	12		
	3	72					2,4		1,8	5	11			9,7	20	37			1,8	5,3	19		
	2.1/2	60					4,6		3,7	8,2	17			15	30	54			3,6	8,7	29		
6	6	130									1,9			2,7	9,9						4,4	13	
	5	110									3,3			4,4	14						6,7	18	
	4	86								2,4	6,7			8,4	25					2,4	12	32	
8	8	165														5,4					1,9	7,2	
	6	130														10					4,4	13	
	5	110									2,1					15					6,7	18	
10	10	210														3						4	8,9
	8	165														5,4					1,9	7,2	15
	6	130								2						10					4,4	13	26
12	12	250														1,9						2,5	6
	10	210														3						4	8,9
	8	165														5,4					1,9	7,2	15

MAXIMUM DIFFERENTIALS CORRECTION COEFFICIENT

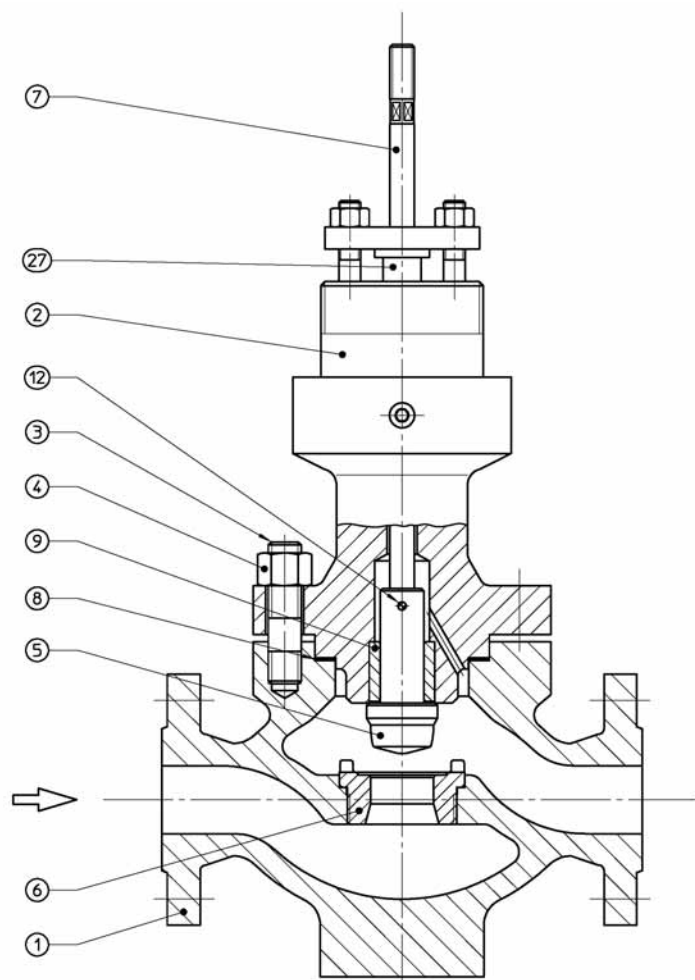
ACTUATORS	DIAPHRAGM CATEGORY 1					DIAPHRAGM CATEGORY 2					DIAPHRAGM CATEGORY 3			
	to open		to close			to open		to close			to open			
Flow	to open	to close	to open	to close	to open	to close	to open	to close	to open	to close	to open	to close		
Air														
Air supply (psi)	20	20	35	20	20	20	35	20	40	35	35	35	35	35
Spring range (psi)	3÷15	3÷15	6÷30	3÷15	3÷15	9÷15	6÷30	3÷9	6÷30	6÷30	6÷30	15÷30	18÷30	3÷15
Coefficient	1	1	1	1	1	1,5	1	1,5	1,33	1	1	1	1,2 (*)	1,2

(*) Only for 600 actuators with stroke through ≤ 60 mm

CYLINDERS	Single action							Double acting	
	air to open				air to close				
Air supply (bar)	3,5	4	4,5	5	3,5	4	Pa	1,5	Pa
Spring range (bar)	1,5÷3	2÷3,5	2,5÷4	3÷4,5	0,5÷2	1÷2,5	P ₁ ÷P ₂	–	–
Coefficient	1	1,33	1,66	2	1	1	★	1	★★

★ Coefficient=(P_a-P₂) / 1,5
★★ Coefficient=P_a/ 1,5

- NOTES:** – The max differentials can be used for the valve in closed position with flow under the plug and downstream atmospheric pressure.
 – When flow is over the plug (to close) the Δp's values are conservative for small ports.
 – The values were limited to 150 bar and the actual body rating can become limiting.
 – See Cv's table to check the applicability of this table to ratings over PN 100.
 – Packing «A» = types VTP (pure teflon V-ring), and TFG (graphited teflon split-ring).
 – Packing «B» = types VTC, GRF, VPV, GRFV, VTC2, VTP2.

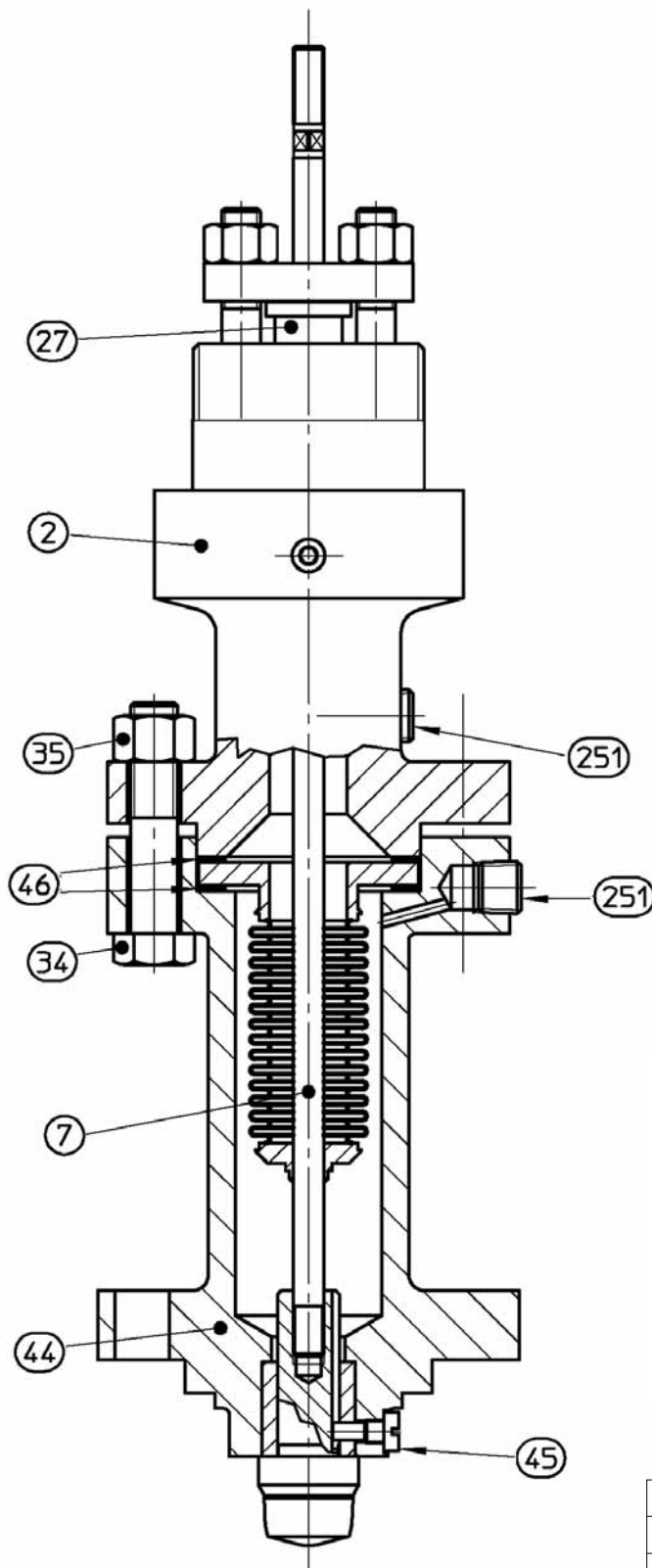


PART REFERENCE

1	BODY
2	BONNET
3	STUD
4	NUT
5	PLUG
6	SEAT
7	STEM
8	GASKET
9	GUIDE BUSHING
12	PIN
27	PACKING BOX (1)

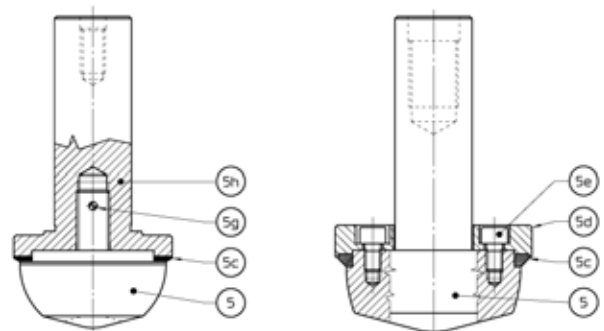
(1) For additional information please refer to Bulletin 1-VII

BELLOWS SEAL ASSEMBLY



2	BONNET
7	STEM
27	PACKING BOX
34	SCREW
35	NUT
44	BELLOWS CHAMBER
45	LOCKING SCREW
46	GASKET
251	PLUG

PLUG TEFLON INSERT



5	VALVE PLUG
5c	PLUG INSERT
5d	PLUG INSERT FLANGE
5e	SCREW
5g	ELASTIC PIN
5h	PLUG POST

MATERIALS CLASSES (1)

BASIC CLASS	ITEM	NAME	A	C	D	E	F	G	H	
	1	BODY	SA 216 WCB	SA 217 WC6	SA 217 WC9	SA 217 C5	SA 352 LCB	AISI 316	AISI 316L	
	2	BONNET	SA 105	SA 182 F11	SA 182 F22	SA 182 F5a	SA 350 LF2	AISI 316	AISI 316L	
	3	STUD	SA 193 B7 (2)	SA 193 B7 (2) (3)			SA 193 B7 (2)	SA 193 B7 (2) (3)		
	4	NUT	SA 194 4 (2)							
	5	PLUG	SEE SUB-CLASS TABLE							
	6	SEAT RING								
	7	STEM								
	8	GASKET	SYNTHETIC COMPOUND (4)							
	9	GUIDE BUSHING	SEE SUB-CLASS TABLE							
	12	PIN	SEE SUB-CLASS TABLE							
	27	PACKING	SEE BULLETIN 1-VII							
	BELLOW SEAL ASSEMBLY									
	34	SCREW	AISI 304							
	35	NUT	AISI 304							
	36	BELLOWS	AISI 316L							
	44	BELLOWS HOUSING	SA 105	SA 182 F11	SA 182 F22		SA 350 LF2	AISI 316	AISI 316L	
	45	SCREW	17 - 4 PH H900				17 - 4 PH H1150	HASTELLOY C276		
46	GASKET	SYNTHETIC COMPOUND (5)								
251	PLUG	AISI 316L								

SUB-CLASS	ITEM	5	6	7		9	12
	NAME.	PLUG	SEAT RING	STEM		GUIDE BUSHING	PIN
				ANSI 150-600 ANSI 900-1500 FOR TEMP. ≤ 430°C	ANSI 900-1500 FOR TEMP. > 430°C		
	01	AISI 316	AISI 316	AISI 316	NOT AVAILABLE	AISI 420	AISI 304
	02	AISI 316 SEAT JOINT STELLITED	AISI 316 SEAT JOINT STELLITED		XM 19		(6)
	03	AISI 316 SEAT JOINT AND POST STELLITED		AISI 316	XM 19	AISI 316 STELL.	(6)
	04	AISI 316 FULLY STELLITED	AISI 316 FULLY STELLITED				
	05		AISI 316 STELL. CONO				
	06	17 - 4 - PH H900	AISI 316 FULLY STELLITED	AISI 316	XM 19	S 21.800	AISI 304
	07		17 - 4 - PH H900				
	10	AISI 316	AISI 316	AISI 316	NOT AVAILABLE	AISI 316 STELL.	(6)
	11	AISI 316 SEAT JOINT STELLITED	AISI 316 SEAT JOINT STELLITED		XM 19		
	12	AISI 316 SEAT JOINT AND POST STELLITED					
	13	AISI 316 FULLY STELLITED	AISI 316 FULLY STELLITED				
	14	MONEL K500	MONEL K500	MONEL 400	NOT AVAILABLE	MONEL 400	AISI 304
	15	AISI 316L	AISI 316L	AISI 316L		HASTELLOY C276	
16	17 - 4 - PH H1150	17 - 4 - PH H1150	AISI 316	17 - 4 - PH H1150		AISI 316 STELL.	

(1) An example of a complete classification: E102

basic class | sub-class

- (2) For temperature < - 30 °C the stud material shall be AISI 304 or XM 19 cond. A and nut material shall be AISI 304.
- (3) For temperature > + 450 °C the stud material shall be SA 193 B16.
- (4) For rating ≤ ANSI 600: T ≤ 300 °C inorganic compound; T > 300 °C armoured graphite.
Rating > ANSI 600: AISI 321 + graphite (PTFE gaskets on request).
- (5) T ≤ 300 °C inorganic compound; T > 300 °C armoured graphite.
- (6) Stem welded to the plug.

PLUG TEFLON INSERT

SUB-CLASS	ITEM	5c	5d	5e	5g	5h
	NAME	INSERT	FLANGE	SCREW	PIN	PLUG POST
	01	TEFLON				AISI 316
	07		AISI 316	AISI 316	AISI 304	17 - 4 - PH H900
	10					AISI 316
	14				MONEL 400	MONEL K500
	15		NOT AVAILABLE	NOT AVAILABLE	AISI 316L	AISI 316L
	16		AISI 316	AISI 316	AISI 304	17 - 4 - PH H1150

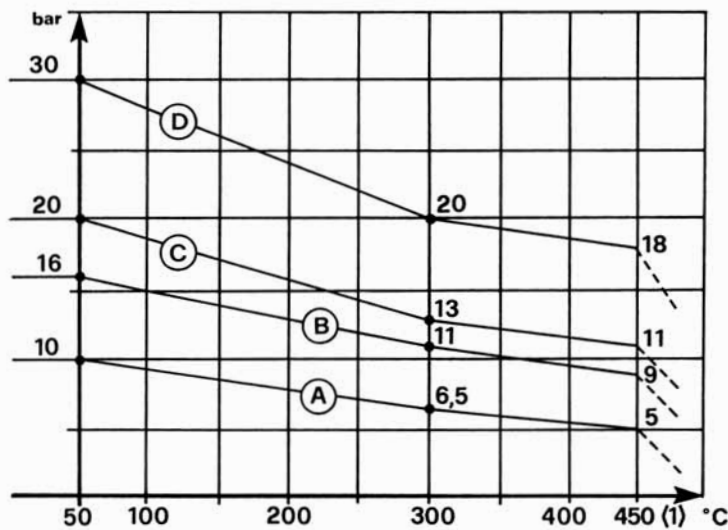
MATERIALS CLASSES AVAILABILITY °C

	SUB-CLASS											DN			
	0.1	02-03-04	05	06	07	10	11-12	13	14	15	16				
BASIC CLASS	A A 216 WCB	-20 +400	-20 +400	-20 +400	-20 +400	-20 +400	-20 +400	-20 +430	-20 +430	-20 +430		-20 +400	1/2" - 2"		
		-20 +250	-20 +250	-20 +250	-20 +250		-20 +400	-20 +400	-20 +400				3" - 4"		
		-20 +180	-20 +180	-20 +180	-20 +180		-20 +250	-20 +250	-20 +250				6" - 8"		
		-20 +180	-20 +180	-20 +180	-20 +180		-20 +180	-20 +180	-20 +180				10" - 12"		
	C A 217 WC6	+20 +400	+20 +400	+20 +400	+20 +400	+20 +400				+20 +450			1/2" - 2"		
		+20 +250	+20 +250	+20 +250	+20 +250								3" - 4"		
		+20 +180	+20 +180	+20 +180	+20 +180								6" - 8"		
		+20 +180	+20 +180	+20 +180	+20 +180								10" - 12"		
	D A 217 WC9	+20 +400	+20 +400	+20 +400	+20 +400	+20 +400				+20 +450			1/2" - 2"		
		+20 +250	+20 +250	+20 +250	+20 +250								3" - 4"		
		+20 +180	+20 +180	+20 +180	+20 +180								6" - 8"		
		+20 +180	+20 +180	+20 +180	+20 +180								10" - 12"		
	E A 217 C5	+20 +400	+20 +400	+20 +400	+20 +400	+20 +400				+20 +450			1/2" - 2"		
		+20 +360	+20 +360	+20 +360	+20 +360								3" - 4"		
		+20 +210	+20 +210	+20 +210	+20 +210								6" - 8"		
		+20 +140	+20 +140	+20 +140	+20 +140								10" - 12"		
	F A 352 LCB						-45 +340	-45 +340	-45 +340	-45 +340		-45 +340	1/2" - 2"		
							-45 +250	-45 +250	-45 +250				3" - 4"		
							-45 +180	-45 +180	-45 +180				6" - 8"		
							-45 +180	-45 +180	-45 +180				10" - 12"		
	G AISI 316					-29 +290	-29 +400	-29 +450	-29 +500		-29 +300		-29 +340		
						-29 +200							-29 +320	-29 +230	1/2" - 2"
						-29 +120							-29 +190	-29 +140	3" - 4"
						-29 +80							-29 +130	-29 +90	6" - 8"
H AISI 316L									-29 +300			10" - 12"			
								-29 +450				1/2" - 2"			
								-29 +320				3" - 4"			
								-29 +190				6" - 8"			
								-29 +130			10" - 12"				
SERVICE	TRIM INOX	STD APPLICATIONS				TRIM INOX FOR CORROSIVE SERVICES			TRIM MONEL	TRIM AISI 316L					
WHEN REQUIRED NORM N.A.C.E. MR-01-75															

- NOTE:**
- The listed temperatures are those of the fluid at valve inlet.
 - For bellows assemblies see the separate rating curves.
 - The sub-classes corresponding to the blanks are available only on request.
 - The classes A1 - A7 - G10 are normally stocked up to 4" size.

BELLOWS ASSEMBLY RATINGS

Bellows material = AISI 316L



Fluid temperature at valve inlet:

Curve A std construction: NPS 6" ÷ 16"

Curve C heavy special construction: NPS 6" ÷ 16"

Curve B std construction NPS 1" ÷ 4"

Curve D heavy special construction NPS 1" ÷ 4"

NOTE: (1) Do not use over 450° because the mechanical properties become critical.

OVERALL DIMENSIONS (1) - mm

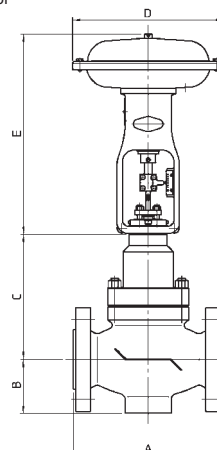
Size in.	Travel mm	FACE-TO-FACE "A" DIMENSION (2)																			
		Screwed	FLANGED										BUTT WELDING-ENDS (BW)					SOCKET-WELDING ENDS (SW)			
			ANSI 600	ANSI 150 RF	ANSI 150 RJ	ANSI 300 RF	ANSI 300 RJ	ANSI 600 RF	ANSI 600 RJ	ANSI 900 RF	ANSI 900 RJ	ANSI 1500 RF	ANSI 1500 RJ	ANSI 150	ANSI 300	ANSI 600	ANSI 900	ANSI 1500	ANSI 150÷300	ANSI 600	ANSI 900÷1500
1/2	17	206	184		190	201	203	201	273	273	273	273	203	203	203	279	279	206	206	279	
3/4	17	210	184		194	207	206	206	273	273	273	273	206	206	206	279	279	210	210	279	
1	17	210	184	197	197	210	210	210	273	273	273	273	210	210	210	279	279	210	210	279	
1.1/2	25	251	222	235	235	248	251	251	333	333	333	333	251	251	251	330	330	251	251	330	
2	25	286	254	267	267	283	286	289	375	378	375	378	286	286	286	375	375	286	286	375	
3	34		298	311	317	334	337	340	441	444	460	463	337	337	337	460	460	337	337		
4	45		352	365	368	384	394	397	511	514	530	533	394	394	394	530	530				
6	60		451	464	473	489	508	511	714	717	768	774	508	508	508	768	768				
8	76		543	556	568	584	610	613	781	784	838	848	610	610	610	832	832				
10	100																				
	76		673	686	708	724	752	755					752	752	752						
12	100																				
	76		737	750	775	791	819	822					819	819	819						
14	100																				
	76		889	902	927	943	972	975					1029	1029	1029						
16	200		1016	1029	1057	1073	1108	1111					1108	1108	1108						

Size in.	DIMENSION B										DIMENSION C					
	FLANGED					BUTT WELDING AND SOCKET-WELDING ENDS					PLAIN BONNET		EXTENDED BONNET		BELLOWS BONNET	
	ANSI 150	ANSI 300	ANSI 600	ANSI 900	ANSI 1500	ANSI 150	ANSI 300	ANSI 600	ANSI 900	ANSI 1500	ANSI 150÷600	ANSI 900÷1500	ANSI 150÷600	ANSI 900÷1500	ANSI 150÷300	ANSI 600
1/2	61	61	61	65	65	61	61	61	65	65	144	166	219	241	284	301
3/4	61	61	68	65	65	61	61	61	65	65	144	166	219	241	284	301
1	65	65	73	65	65	65	65	65	65	65	155	166	230	241	350	302
1.1/2	82	82	89	91	91	82	82	89	90	90	192	247	292	342	454	390
2	87	87	102	113	113	87	87	102	113	113	196	242	296	340	409	396
3	120	120	125	140	140	120	120	125	140	140	232	281	352	408	495	
4	135	135	140	150	160	135	135	140	150	160	279	320	399	450	565	
6	167	170	185	195	205	167	170	185	195	205	353	353	493	493	686	
8	193	198	220	250	260	193	198	220	250	260	410	485	570	625	786	
10	225	230	260			225	230	260			511		691		951	
											435					
12	270	275	307			270	275	307			534		714		975	
											489					
14	300	320	350			300	320	350			650		830			
16	378	378	390			378	378	390			900		1100			

- ANSI 150 dimensions also apply to PN 10-16
ANSI 300 dimensions also apply to PN 25-40
ANSI 600 dimensions also apply to PN 63-100
ANSI 900 dimensions also apply to PN 160
ANSI 1500 dimensions also apply to PN 250
- Tolerance on face-to-face "A" dimensions:
± 1,5 mm for body sizes up to 10"
± 3 mm for body sizes 12" and over
- 1-X-210 series actuators, except for D63 type which is 1-X-250 series actuator
- Without in-line handwheel operator (CML) / With CML
- For travel = 100 mm

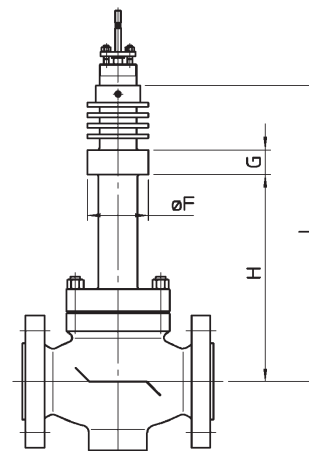
DIAPHRAGM ACTUATOR (3)

Type	D	E		MASS - kg	
		Direct action	Reverse action	Direct action	Reverse action
250	266	398	461	15	16
310	325	412	494	16	19
390	400	511	662	29	39
450	482	584	750	48	63
600	631	754	954	100	130
D63 (4) (5)	640	985 / 1211	1022 / 1248	185 / 225	215 / 255



OVERALL DIMENSIONS - mm

Size inch	CRYOGENIC SERVICES			
	F	G	H	L
1/2	100	40	410	602
3/4	100	40	410	602
1	100	40	400	617
1.1/2	110	50	665	880
2	120	60	665	880
3	130	70	712	950
4	130	80	755	1000
6	140	80	915	1160



MASS OF THE BODY - kg

Size inch	PLAIN BONNET			EXTENDED BONNET		
	ANSI 150	ANSI 300	ANSI 600	ANSI 150	ANSI 300	ANSI 600
1/2	10	10	11	12	12	13
3/4	10	11	14	12	13	16
1	12	12	17	15	15	20
1.1/2	23	24	30	26	27	33
2	29	30	43	34	35	48
3	50	60	70	56	66	76
4	75	95	110	82	102	117
6	120	130	150	130	140	160
8	250	350	450	265	365	455
10	450	550	750	470	570	770
12	680	830	1050	705	855	1075
14	925	1100	1400	960	1135	1435
16	1200	1400	1850	1250	1450	1900

The mass is referred to ANSI body flanged with full size port.
To obtain the total valve mass add actuator mass.



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