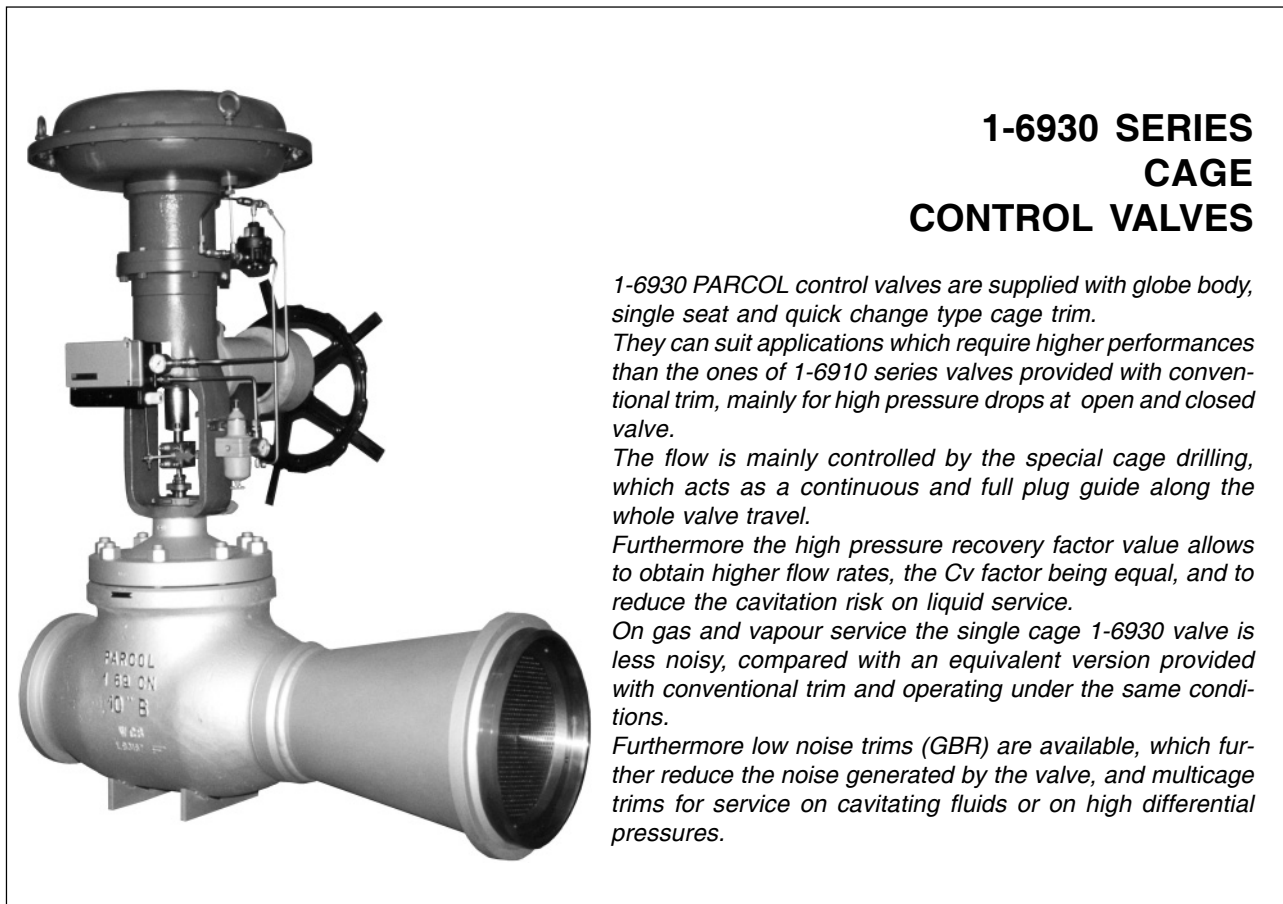




**1-6930 SERIES
CAGE
CONTROL VALVES**



1-6930 SERIES CAGE CONTROL VALVES

1-6930 PARCOL control valves are supplied with globe body, single seat and quick change type cage trim.

They can suit applications which require higher performances than the ones of 1-6910 series valves provided with conventional trim, mainly for high pressure drops at open and closed valve.

The flow is mainly controlled by the special cage drilling, which acts as a continuous and full plug guide along the whole valve travel.

Furthermore the high pressure recovery factor value allows to obtain higher flow rates, the Cv factor being equal, and to reduce the cavitation risk on liquid service.

On gas and vapour service the single cage 1-6930 valve is less noisy, compared with an equivalent version provided with conventional trim and operating under the same conditions.

Furthermore low noise trims (GBR) are available, which further reduce the noise generated by the valve, and multicage trims for service on cavitating fluids or on high differential pressures.

MAIN FEATURES

BODY

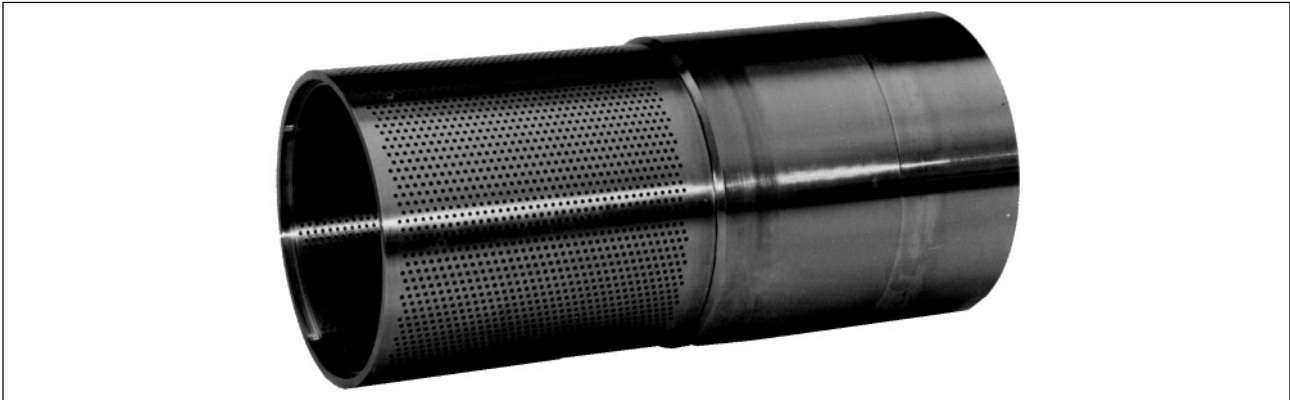
- type : globe, single port, not invertible
Available angle valve 1-4430 series
- construction : cast
- material : standard from stock:
carbon steel WCB type and AISI 316
stainless steel
other materials on request:
carbon steel LCB type, Cr-Mo alloyed
steels, AISI 316L stainless steel
- sizes : 1" through 16"
- connections : - screwed ANSI B2.1 up to DN 2" included
- UNI, ANSI, DIN flanged
- socket welding up to DN 2" included
- BW ANSI B16.25 butt welding ends
- ratings : - PN 250 ANSI 1500 for socket welding construction up to DN 2"
- PN 100 ANSI 600 for screwed construction up to DN 2"
- PN 10/16/25/40/63/100/150/250
ANSI 150/300/600/900/1500 for butt welding and flanged construction

BONNET

- type : plain, extended and bellows seal
finned on request
- construction : flanged type, forged or welding assembled
- materials : same as for body in the corresponding forged or rolled construction
- packing : graphited teflon split rings or pure graphite rings

PLUG

- sizes : full or reduced ports as per Cv table
- type : standard or balanced; balanced with soft seat for 2" sizes and above
- guiding : by the cage all along the travel
- materials : see material list



SEAT

- mounting : free fitted in the body without screwing or forcing.
Centered in the cage to grant the alignment with the plug.
Body and seat coupling sealed by means of a flat gasket

- materials : see material list

CAGE

- construction : rolled or forged cylinder drilled and tightened between body and bonnet.
Multicage available, beside the standard single cage (standard and low noise type GBR) series

- materials : see material list

- drilling : linear and exponential characteristics available

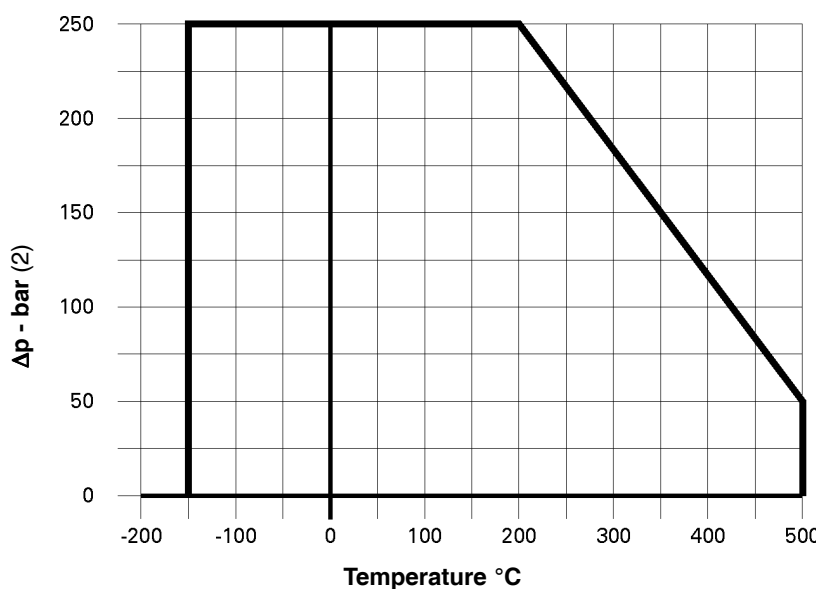
SEAT LEAKAGE (IEC 60534-4 classes)

- standard non-balanced construction : class IV.
Class V on request

- balanced construction with teflon sealing on the plug : class IV.
Class V on request.

- balanced construction with graphite sealing on the plug: class IV.

- balanced construction with graphoil sealing on the plug: class IVS1.



BASIC RATING OF 1-6930 SERIES VALVES (1)

The valve rating is referred to the standard construction supplied with AISI 321 + graphite gaskets.

(1) These ratings are independent from body and trim ratings.

(2) Refer to the upstream pressure when the fluid enters through the cage (side inlet).

MULTICAGE TRIM

Approximate values of pressure recovery factor F_L and of pressure differential ratio factor x_T

Number of cages	F_L	x_T
2	0.955	0.81
3	0.975	0.86

Values are approximately valid for all models and for both flow directions.

SINGLE CAGE TRIM - LINEAR CHARACTERISTIC

Flow coefficients Cv for ratings 150 ÷ 600 ^{(1) (2)}

Size in.	Port in.	Seat dia. mm	Travel mm	Travel %										
				5	10	20	30	40	50	60	70	80	90	100
1	3/4	20	17	0.26	0.61	1.66	3.1	4.5	6.0	7.4	8.7	10.3	11.4	11.9
	1/2	14	17	0.17	0.45	1.23	2.0	2.8	3.5	4.4	5.2	6.0	6.6	7.2
1.1/2	1.1/2	38	34	0.77	2.3	6.2	10.3	14.4	18.4	23	27	29	32	34
	1	28	25	0.58	1.60	4.5	7.8	10.8	13.4	16.2	19.0	21	23	24
	3/4	20	25	0.26	0.82	2.5	4.1	5.6	7.3	9.2	11.0	12.4	13.7	15
2	2	47.5	34	1.00	2.8	8.1	13.1	19.5	26	32	38	43	45	48
	1.1/2	38	34	0.77	2.3	6.1	10.1	14.0	17.8	22	26	31	36	38
	1	28	25	0.58	1.60	4.5	7.8	10.8	13.4	16.3	19.2	22	24	26
3	3	73.5	45	2.0	6.4	20	36	52	68	85	101	114	122	129
	2	47.5	34	1.00	4.0	13.4	22	30	37	45	53	61	66	72
	1.1/2	38	34	0.77	2.3	6.1	10.1	14.0	17.8	22	26	31	37	42
4	4	95	60	2.7	8.9	28	54	78	108	135	160	176	188	200
	3	73.5	45	2.0	6.4	20	35	51	66	82	97	113	128	143
	2	47.5	34	1.00	4.0	13.4	22	30	37	45	53	61	67	72
6	6	127	76	4.6	16.2	52	99	147	203	251	300	344	367	385
	5	112	76	3.9	14.6	46	80	113	145	176	207	239	272	302
	4	95	60	2.7	8.9	28	53	76	104	131	154	183	208	235
	3	73.5	45	2.0	6.4	20	35	51	66	82	97	114	130	145
8	8	162	100	6.9	27	89	170	256	331	402	477	544	578	610
	7	147	100	6.2	24	77	139	201	253	306	360	412	463	510
	6	127	76	4.6	16.1	51	97	143	196	242	292	340	385	430
	5	112	76	3.9	14.6	46	80	113	145	176	207	241	275	307
10	4	95	60	2.7	8.9	28	53	76	104	131	154	183	209	238
	10	216	100	10.8	46	157	304	422	563	666	777	869	918	975
	9	186	100	9.3	42	140	246	346	444	536	620	709	785	840
	8	162	100	6.9	27	88	167	249	320	392	471	547	613	685
	7	147	100	6.2	24	77	139	201	253	306	363	420	478	537
12	6	127	76	4.6	16	51	97	143	196	242	292	342	389	435
	12	244	100	13.8	58	197	349	494	650	783	922	1049	1180	1305
	10	216	100	10.8	45	155	298	410	546	653	770	884	987	1105
	9	186	100	9.3	42	140	246	346	444	538	626	719	804	895
	8	162	100	6.9	27	88	167	249	320	392	472	550	619	695
14	7	147	100	6.2	24	77	139	201	253	306	363	420	479	540
	14	293	150	18.8	87	289	482	686	895	1089	1318	1529	1656	1755
	13	266	150	16.7	77	265	445	637	823	990	1155	1312	1447	1525
	12	244	100	13.8	57	195	342	479	626	748	877	994	1118	1235
	10	216	100	10.8	45	155	298	410	546	653	770	888	991	1110
16	9	186	100	9.3	42	140	246	346	444	538	626	719	806	900
	16	343	200	27	119	378	649	936	1266	1556	1824	2065	2193	2310
	15	323	200	23	98	325	550	791	1034	1276	1509	1755	1956	2045
	14	293	150	18.8	86	286	472	666	862	1045	1261	1455	1660	1860
	13	266	150	16.7	77	265	445	637	823	993	1164	1323	1476	1635
12	244	100	13.8	57	195	342	479	626	748	877	998	1127	1245	

(1) Values valid also for ANSI 900÷1500 ratings up to DN 12" (½" port only for DN 1"; reduced ports only up to DN 8")

(2) The valve rangeability can be calculated as $Cv_{(100\%)} / Cv_{(5\%)}$

Pressure recovery factor F_L and pressure differential ratio factor x_T

Size in.	Port in.	Travel 10%		Travel 100%	
		F_L	x_T	F_L	x_T
1	3/4	0.94	0.78	0.92	0.72
	1/2	0.94	0.78	0.92	0.72
1.1/2	1.1/2	0.94	0.78	0.92	0.73
	1	0.94	0.78	0.92	0.72
	3/4	0.94	0.78	0.92	0.72
2	2	0.94	0.78	0.92	0.73
	1.1/2	0.94	0.78	0.91	0.71
	1	0.94	0.78	0.91	0.70
3	3	0.94	0.78	0.92	0.72
	2	0.94	0.78	0.91	0.70
	1.1/2	0.94	0.78	0.90	0.69
4	4	0.94	0.78	0.92	0.73
	3	0.94	0.78	0.90	0.69
	2	0.94	0.78	0.91	0.70
6	6	0.94	0.78	0.92	0.72
	5	0.94	0.78	0.90	0.69
	4	0.94	0.78	0.90	0.68
8	3	0.94	0.78	0.90	0.68
	8	0.94	0.78	0.92	0.72
	7	0.94	0.78	0.91	0.70
	6	0.94	0.78	0.90	0.69
4	5	0.94	0.78	0.90	0.68
	4	0.94	0.78	0.90	0.68

Size in.	Port in.	Travel 10%		Travel 100%	
		F_L	x_T	F_L	x_T
10	10	0.94	0.78	0.92	0.72
	9	0.94	0.78	0.91	0.70
	8	0.94	0.78	0.90	0.69
	7	0.94	0.78	0.90	0.68
12	6	0.94	0.78	0.90	0.68
	12	0.94	0.78	0.90	0.69
	10	0.94	0.78	0.90	0.68
	9	0.94	0.78	0.90	0.68
	8	0.94	0.78	0.90	0.68
14	7	0.94	0.78	0.90	0.68
	14	0.94	0.78	0.91	0.72
	13	0.94	0.78	0.91	0.70
	12	0.94	0.78	0.90	0.68
	10	0.94	0.78	0.90	0.68
16	9	0.94	0.78	0.90	0.68
	16	0.94	0.78	0.92	0.73
	15	0.94	0.78	0.91	0.71
	14	0.94	0.78	0.90	0.68
	13	0.94	0.78	0.90	0.68
12	12	0.94	0.78	0.90	0.68

SINGLE CAGE TRIM - EXPONENTIAL CHARACTERISTIC

Flow coefficients Cv for ratings 150 ÷ 600 ⁽¹⁾⁽²⁾

Size in.	Port in.	Seat dia. mm	Travel mm	Travel %											
				5	10	20	30	40	50	60	70	80	90	100	
1	3/4	20	17	0.26	0.47	1.00	1.8	2.6	3.8	5.1	6.4	8.0	9.5	11.2	
	1/2	14	17	0.17	0.31	0.67	1.1	1.7	2.3	3.0	3.9	4.8	5.7	6.4	
1.1/2	1.1/2	38	34	0.77	1.5	3.1	5.4	8.2	11.6	16	21	27	30	32	
	1	28	25	0.58	1.02	2.0	3.5	5.3	7.2	10.4	14.0	17.3	21	24	
	3/4	20	25	0.26	0.47	1.2	2.1	3.1	4.5	5.9	8.0	10.3	12.1	13.6	
2	2	47.5	34	1.00	1.9	4.0	6.4	10.7	15	22	28	35	41	45	
	1.1/2	38	34	0.77	1.5	3.0	5.3	8.0	11.2	15	20	25	31	37	
	1	28	25	0.58	1.02	2.0	3.5	5.3	7.2	10.4	14.0	17	21	24	
3	3	73.5	45	2.0	4.2	10	17	27	38	54	71	87	104	116	
	2	47.5	34	1.00	2.2	5.3	8.8	15.0	21	30	37	45	53	60	
	1.1/2	38	34	0.77	1.5	3.0	5.3	8.0	11.2	15	20	26	32	38	
4	4	95	60	2.7	5.2	12	23	38	59	85	112	142	168	180	
	3	73.5	45	2.0	4.1	10	17	27	37	52	67	83	99	114	
	2	47.5	34	1.00	2.2	5.3	8.8	15.0	21	30	37	45	53	60	
6	6	127	76	4.6	10.1	25	51	83	128	174	226	276	322	360	
	5	112	76	3.9	8.9	22	40	59	87	119	153	192	233	272	
	4	95	60	2.7	5.1	11	23	37	57	82	107	135	161	190	
8	3	73.5	45	2.0	4.1	10	17	27	37	52	67	83	99	115	
	8	162	100	6.9	15	39	80	136	201	286	370	446	512	570	
	7	147	100	6.2	15	37	70	109	148	198	256	314	381	450	
10	6	127	76	4.6	10.0	25	50	81	123	166	215	265	311	360	
	5	112	76	3.9	8.9	22	40	59	87	119	153	192	234	275	
	4	95	60	2.7	5.1	11	23	37	57	82	107	135	161	191	
12	10	216	100	10.8	24	61	130	208	337	468	596	710	813	900	
	9	186	100	9.3	21	54	109	177	277	383	471	561	644	735	
	8	162	100	6.9	15	39	79	132	194	274	354	433	501	575	
14	7	147	100	6.2	15	37	70	109	148	198	256	314	386	462	
	6	127	76	4.6	10	25	50	81	123	166	215	265	311	365	
	12	244	100	13.8	36	101	189	313	453	601	750	883	1020	1145	
16	10	216	100	10.8	24	60	127	202	325	447	571	689	795	915	
	9	186	100	9.3	21	54	109	177	277	383	471	564	650	745	
	8	162	100	6.9	15	39	79	132	194	274	354	433	502	580	
18	7	147	100	6.2	15	37	70	109	148	198	256	314	386	465	
	14	293	150	18.8	44	111	217	355	555	770	1027	1242	1472	1640	
	13	266	150	16.7	39	106	195	317	468	667	893	1091	1282	1460	
20	12	244	100	13.8	36	100	185	304	437	574	711	832	958	1075	
	10	216	100	10.8	24	60	127	202	325	447	571	689	796	920	
	9	186	100	9.3	21	54	109	177	277	383	471	564	650	745	
24	16	343	200	27	67	171	326	507	733	1057	1412	1768	2068	2200	
	15	323	200	23	51	133	240	390	583	823	1078	1375	1695	1960	
	14	293	150	18.8	44	110	213	344	534	736	975	1178	1384	1590	
30	13	266	150	16.7	39	106	195	317	468	667	893	1098	1292	1495	
	12	244	100	13.8	36	100	185	304	437	574	711	832	960	1080	

(1) Values valid also for ANSI 900÷1500 ratings up to DN 12" (½" port only for DN 1"; reduced ports only up to DN 8")

(2) The valve rangeability can be calculated as $Cv_{(100\%)} / Cv_{(5\%)}$

Pressure recovery factor F_L and pressure differential ratio factor x_T

Size in.	Port in.	Travel 10%		Travel 100%	
		F_L	x_T	F_L	x_T
1	3/4	0.94	0.78	0.90	0.69
	1/2	0.94	0.78	0.91	0.70
1.1/2	1.1/2	0.94	0.78	0.92	0.73
	1	0.94	0.78	0.91	0.70
	3/4	0.94	0.78	0.91	0.71
2	2	0.94	0.78	0.91	0.71
	1.1/2	0.94	0.78	0.90	0.69
	1	0.94	0.78	0.91	0.69
3	3	0.94	0.78	0.91	0.70
	2	0.94	0.78	0.90	0.68
	1.1/2	0.94	0.78	0.90	0.68
4	4	0.94	0.78	0.91	0.71
	3	0.94	0.78	0.90	0.68
	2	0.94	0.78	0.90	0.68
6	6	0.94	0.78	0.91	0.70
	5	0.94	0.78	0.90	0.68
	4	0.94	0.78	0.90	0.68
8	3	0.94	0.78	0.90	0.68
	8	0.94	0.78	0.91	0.71
	7	0.94	0.78	0.90	0.69
10	6	0.94	0.78	0.90	0.68
	8	0.94	0.78	0.91	0.71
	5	0.94	0.78	0.90	0.68
12	4	0.94	0.78	0.90	0.68
	6	0.94	0.78	0.90	0.68
	4	0.94	0.78	0.90	0.68

Size in.	Size in.	Travel 10%		Travel 100%	
		F_L	x_T	F_L	x_T
10	10	0.94	0.78	0.91	0.70
	9	0.94	0.78	0.90	0.68
	8	0.94	0.78	0.90	0.68
	7	0.94	0.78	0.90	0.68
	6	0.94	0.78	0.90	0.68
12	12	0.94	0.78	0.90	0.68
	10	0.94	0.78	0.90	0.68
	9	0.94	0.78	0.90	0.68
	8	0.94	0.78	0.90	0.68
	7	0.94	0.78	0.90	0.68
14	14	0.94	0.78	0.90	0.69
	13	0.94	0.78	0.90	0.69
	12	0.94	0.78	0.90	0.67
	10	0.94	0.78	0.90	0.68
	9	0.94	0.78	0.90	0.68
16	16	0.94	0.78	0.91	0.71
	15	0.94	0.78	0.90	0.69
	14	0.94	0.78	0.90	0.68
	13	0.94	0.78	0.90	0.68
	12	0.94	0.78	0.90	0.67

SINGLE CAGE TRIM - GBR TYPE

Flow coefficients Cv for ratings 150 ÷ 600 ^{(1) (2)}

Size in.	Size in.	Seat dia. mm	Travel mm	Travel %										
				5	10	20	30	40	50	60	70	80	90	100
1	3/4	20	17	0.26	0.68	2.05	3.5	4.9	6.3	7.7	9.0	10.3	11.4	11.8
	1/2	14	17	0.17	0.49	1.39	2.3	3.1	3.9	4.7	5.5	6.1	6.6	7.0
1.1/2	1.1/2	38	34	0.78	2.3	6.5	10.7	14.8	18.7	22	26	28	30	32
	1	28	25	0.58	1.57	4.3	7.1	9.9	12.4	14.8	17.1	19.6	22	23
	3/4	20	25	0.26	0.90	3.0	5.0	6.8	8.7	10.5	12.1	13.3	14.3	15
2	2	47.5	34	1.00	3.2	8.7	13.9	19.6	25	30	35	40	42	45
	1.1/2	38	34	0.78	2.3	6.4	10.5	14.4	18.1	22	25	29	32	35
	1	28	25	0.58	1.57	4.3	7.1	9.9	12.4	14.8	17.2	20	22	24
3	3	73.5	45	2.0	9.2	27	45	63	79	95	110	118	125	130
	2	47.5	34	1.00	3.3	11.0	18.8	26.2	33	40	46	53	60	65
	1.1/2	38	34	0.78	2.3	6.4	10.5	14.4	18.1	22	25	29	32	36
4	4	95	60	2.7	15.3	42	69	97	122	146	167	178	189	200
	3	73.5	45	2.0	9.1	26	44	61	76	91	106	121	135	147
	2	47.5	34	1.00	3.3	11.0	18.8	26.2	33	40	46	53	60	65
6	6	127	76	4.6	27.3	77	126	178	223	268	312	349	372	390
	5	112	76	3.9	21.5	59	96	134	167	200	231	263	294	322
	4	95	60	2.7	15.2	41	68	94	118	141	164	188	210	230
	3	73.5	45	2.0	9.1	26	44	61	76	91	107	122	137	151
8	8	162	100	6.9	43	122	203	284	356	422	488	545	579	610
	7	147	100	6.2	34	94	155	215	270	322	373	421	469	510
	6	127	76	4.6	27.1	76	124	173	216	258	301	342	383	420
	5	112	76	3.9	21.5	59	96	134	167	200	233	266	298	329
	4	95	60	2.7	15.2	41	68	94	118	141	164	188	211	234
10	10	216	100	10.8	67	186	308	431	551	654	756	850	909	955
	9	186	100	9.3	55	151	248	347	437	521	602	685	767	830
	8	162	100	6.9	43	120	198	276	345	413	481	546	612	675
	7	147	100	6.2	34	94	155	215	270	323	376	428	481	531
	6	127	76	4.6	27	76	124	173	216	258	301	343	386	425
12	12	244	100	13.8	76	212	349	489	634	766	895	1023	1147	1270
	10	216	100	10.8	67	184	302	419	532	635	739	838	938	1035
	9	186	100	9.3	55	151	248	347	437	523	607	694	779	865
	8	162	100	6.9	43	120	198	276	345	413	482	550	619	685
	7	147	100	6.2	34	94	155	215	270	323	376	428	482	535
14	14	293	150	18.8	121	337	556	778	997	1191	1389	1567	1666	1755
	13	266	150	16.7	107	305	502	696	875	1041	1206	1373	1489	1555
	12	244	100	13.8	76	209	342	475	610	732	851	967	1079	1190
	10	216	100	10.8	67	184	302	419	532	635	739	841	942	1040
	9	186	100	9.3	55	151	248	347	437	523	607	694	780	865
16	16	343	200	27	178	494	822	1154	1459	1748	2015	2151	2254	2355
	15	323	200	23	155	425	696	967	1223	1451	1679	1897	2011	2085
	14	293	150	18.8	121	332	544	755	961	1147	1327	1506	1684	1855
	13	266	150	16.7	107	305	502	696	875	1046	1217	1384	1549	1715
	12	244	100	13.8	76	209	342	475	610	732	851	970	1087	1200

(1) Values valid also for ANSI 900÷1500 ratings up to DN 12" (½" port only for DN 1"; reduced ports only up to DN 8")

(2) The valve rangeability can be calculated as $Cv_{(100\%)} / Cv_{(5\%)}$

Pressure recovery factor F_L and pressure differential ratio factor x_T

Size in.	Port in.	Travel 10%		Travel 100%	
		F_L	x_T	F_L	x_T
1	3/4	0.94	0.78	0.94	0.77
	1/2	0.94	0.78	0.94	0.77
1.1/2	1.1/2	0.94	0.78	0.94	0.78
	1	0.94	0.78	0.94	0.77
	3/4	0.94	0.78	0.94	0.78
2	2	0.94	0.78	0.94	0.77
	1.1/2	0.94	0.78	0.93	0.76
	1	0.94	0.78	0.93	0.76
3	3	0.94	0.78	0.94	0.78
	2	0.94	0.78	0.93	0.76
	1.1/2	0.94	0.78	0.93	0.76
4	4	0.94	0.78	0.94	0.78
	3	0.94	0.78	0.93	0.76
	2	0.94	0.78	0.93	0.76
6	6	0.94	0.78	0.94	0.78
	5	0.94	0.78	0.93	0.76
	4	0.94	0.78	0.93	0.76
	3	0.94	0.78	0.93	0.76
8	8	0.94	0.78	0.94	0.78
	7	0.94	0.78	0.93	0.76
	6	0.94	0.78	0.93	0.76
	5	0.94	0.78	0.93	0.76
4	4	0.94	0.78	0.93	0.76

Size in.	Size in.	Travel 10%		Travel 100%	
		F_L	x_T	F_L	x_T
10	10	0.94	0.78	0.94	0.78
	9	0.94	0.78	0.93	0.76
	8	0.94	0.78	0.93	0.76
	7	0.94	0.78	0.93	0.76
12	6	0.94	0.78	0.93	0.76
	12	0.94	0.78	0.93	0.76
	10	0.94	0.78	0.93	0.76
	9	0.94	0.78	0.93	0.76
14	8	0.94	0.78	0.93	0.76
	7	0.94	0.78	0.93	0.76
	14	0.94	0.78	0.94	0.77
	13	0.94	0.78	0.94	0.77
16	12	0.94	0.78	0.93	0.76
	10	0.94	0.78	0.93	0.76
	9	0.94	0.78	0.93	0.76
	16	0.94	0.78	0.94	0.78
	15	0.94	0.78	0.94	0.77

BALANCED PLUG WITH TEFLON SEAL ANSI 150÷600
Seat leakage V - packing A

PORT	TRAVEL mm	DIAPHRAGMS										CYLINDERS								
		CATEGORY I			CATEGORY II			CATEGORY III			D63		CAT. I		CAT. II		CAT. III		CAT. IV	
		390	450	600	390	450	600	390	450	600	AIR to-open	AIR to-close	300	450	300	450	300	450	300	450
2"	34				100	100		100	100											
3"	45				22	100		100	100											
4"	60					100	100		100	100										
5"	76						100			100										
6"	76						100			100										
7"	100										100	100								
8"	100										100	100								
9"	100										100	100								
10"	100										100	100								
12"	100										100	100								
13"	150										100	100					100		100	
14"	150										100	100					48		100	
15"	200										100	46		100		100	10	100	71	100
16"	200										100	26		100		100	100	40	100	100

BALANCED PLUG WITH GRAPHOIL SEAL ANSI 150÷600
Seat leakage IVS1 - packing B

PORT	TRAVEL mm	DIAPHRAGMS										CYLINDERS								
		CATEGORY I			CATEGORY II			CATEGORY III			D63		CAT. I		CAT. II		CAT. III		CAT. IV	
		390	450	600	390	450	600	390	450	600	AIR to-open	AIR to-close	300	450	300	450	300	450	300	450
2"	34	18	49		100	100		100	100											
3"	45		49		100	100		100	100											
4"	60		10	100		100	100		100	100										
5"	76			86			100			100										
6"	76			86			100			100										
7"	100										100	100								
8"	100										100	100								
9"	100										100	100								
10"	100										100	100								
12"	100										100	100								
13"	150										100	100	100		100		100		100	
14"	150										100	100	86		100		100		100	
15"	200										100	100	52	100	100	100	100	100	100	100
16"	200										100	100	35	100	86	100	100	100	100	100

BALANCED PLUG WITH GRAPHITE SEAL ANSI 150÷600
Seat leakage IV - packing A-B

PORT	TRAVEL mm	DIAPHRAGMS										CYLINDERS								
		CATEGORY I			CATEGORY II			CATEGORY III			D63		CAT. I		CAT. II		CAT. III		CAT. IV	
		390	450	600	390	450	600	390	450	600	AIR to-open	AIR to-close	300	450	300	450	300	450	300	450
3"	45	100	100		100	100		100	100											
4"	60		100	100		100	100		100	100										
5"	76			100			100			100										
6"	76			100			100			100										
7"	100										100	100								
8"	100										100	100								
9"	100										100	100								
10"	100										100	100								
12"	100										100	100								
13"	150										100	100	100		100		100		100	
14"	150										100	100	100		100		100		100	
15"	200										100	100	100	100	100	100	100	100	100	100
16"	200										100	100	100	100	100	100	100	100	100	100

ACTUATOR CATEGORIES

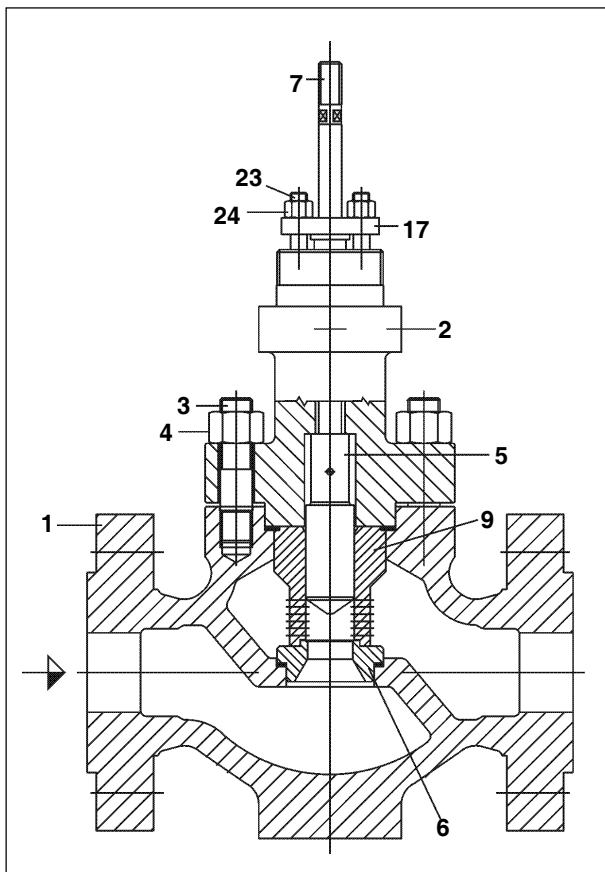
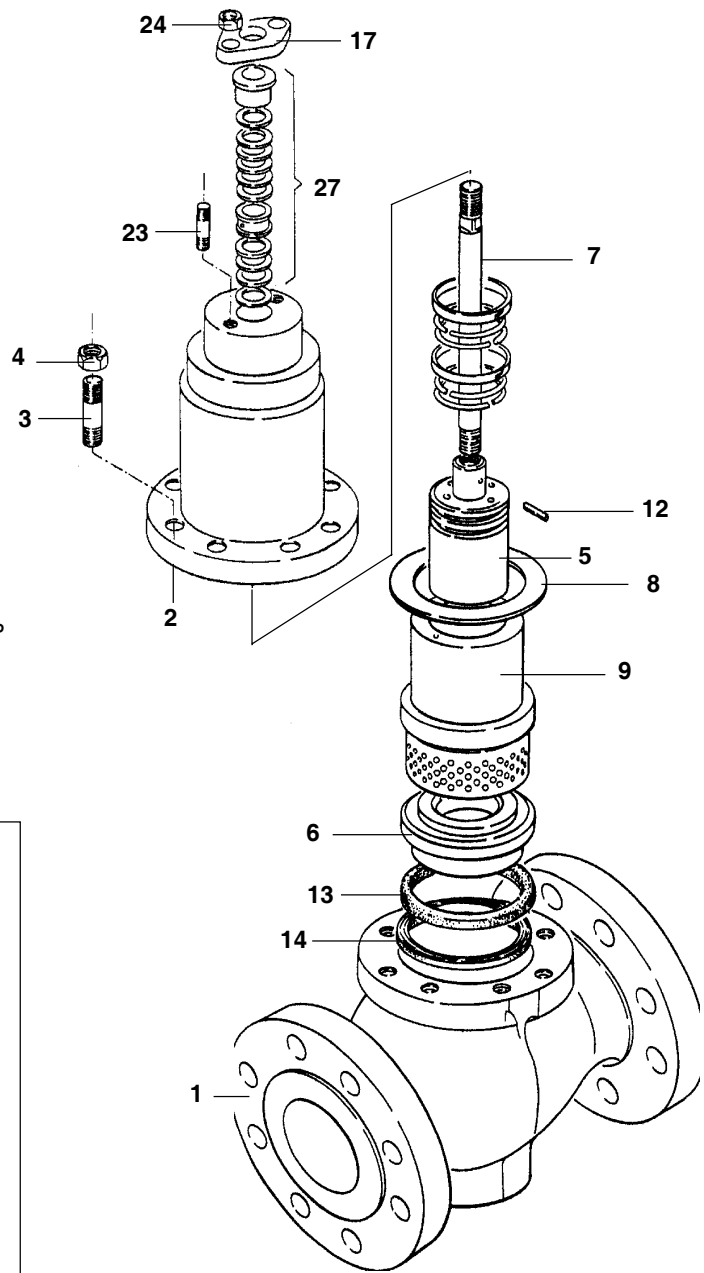
ACTUATOR		Category I		Category II		Category III		Category IV	
DIAPHRAGM	Air action	To-close or to-open		To-close		To-open		To-close	
	Spring range - psi	3 ÷ 15		6 ÷ 30		6 ÷ 30		6 ÷ 30	
	Air supply - psi	20		35		35		40	
S.A. CYLINDERS ⁽¹⁾	Air action	To-open		To-close		To-open		To-close	
	Spring range - bar	1.5 ÷ 3		0.5 ÷ 2		2 ÷ 3.5		0.5 ÷ 2	
	Air supply - bar	3.5		4		4.5		5	
D.A. CYLINDERS ⁽¹⁾	Air supply - bar	1.5		2		2.5		3	

(1) S.A. = Single acting with spring D.A. = Double acting

POS.	PART NAME
1	BODY
2	BONNET
3	STUD BOLT
4	NUT
5	PLUG
6	SEAT
7	STEM
8	BODY GASKET
9	CAGE
11	ADAPTER
12	PLUG PIN
13	GASKET (for special construction)
14	GASKET
15	GASKET
17	PACKING FLANGE
23	STUD BOLT
24	NUT
25	SERIAL PLATE (not shown)
26	SCREW (not shown)
27	STEM PACKING

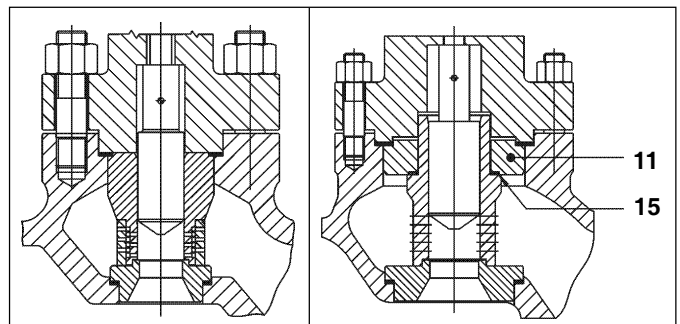
NOTE

The drawing outlines a 1-6933 valve supplied with TFG or TFP packing and balanced plug with G type insert.

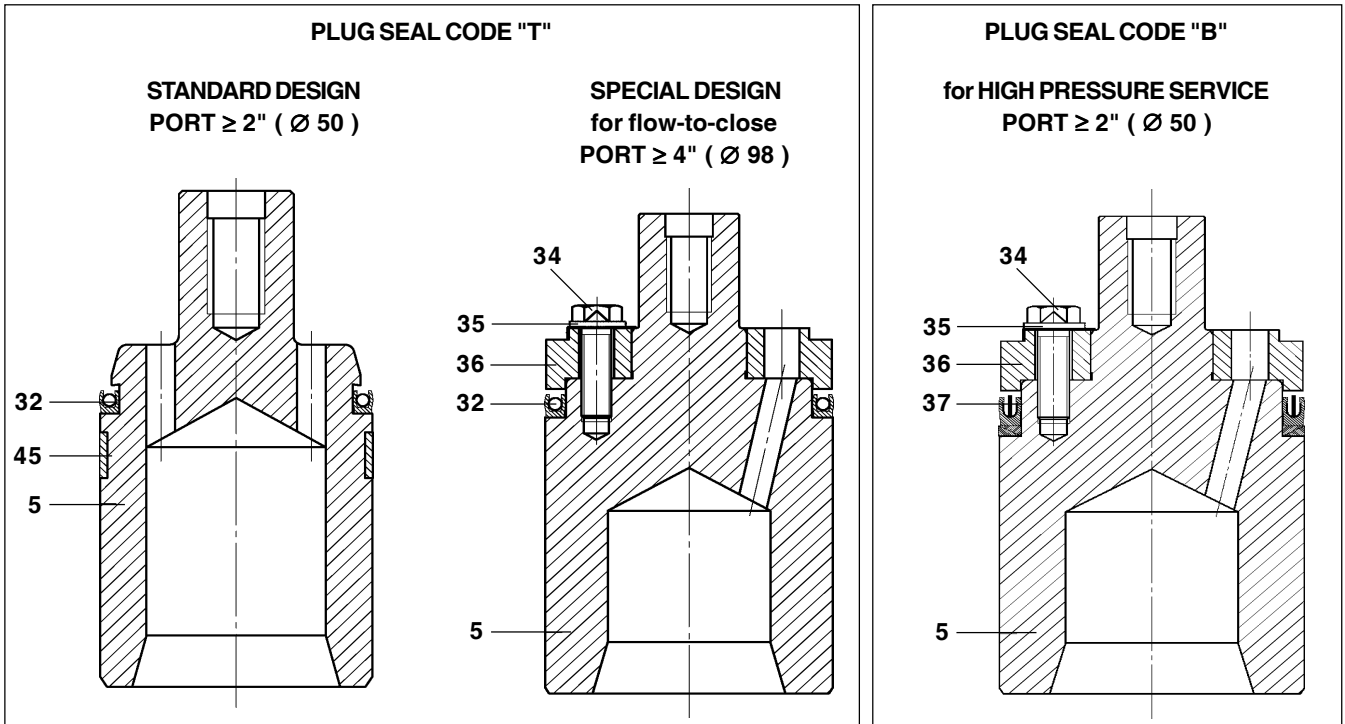


MULTICAGE TRIM

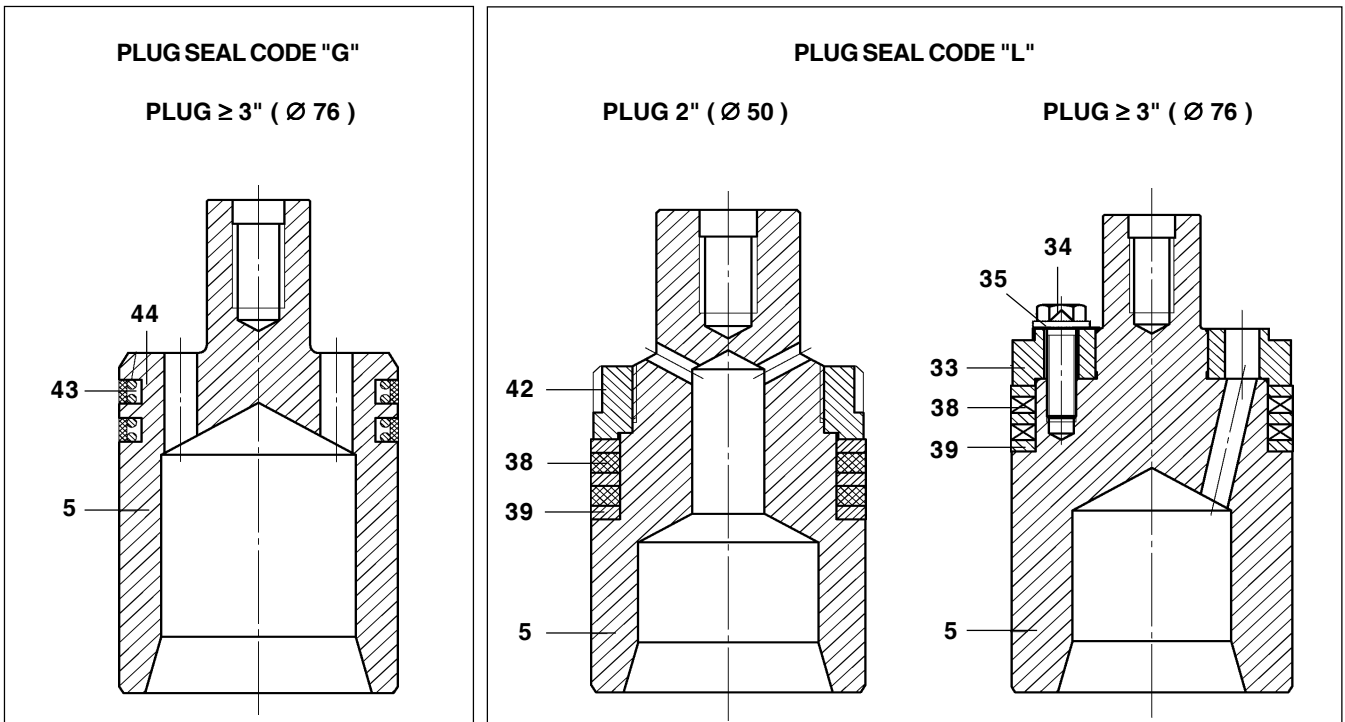
ADAPTER ASSEMBLY



BALANCED PLUGS WITH TEFLON SEAL



BALANCED PLUGS WITH GRAPHITE SEAL



MATERIAL CLASSES

BASIC CLASS	Item	Part name	A	C	D	E	F	G	H	
	1	BODY	A 216WCB	A 217 WC6	A 217 WC9	A 217 C5	A 352 LCB	AISI 316	AISI 316L	
	2	BONNET	A 105	A 182 F11	A 182 F22	A 182 F5a	A 350 LF2	AISI 316	AISI 316L	
	3	STUD BOLT	A 193 B7 (1)					XM 19	XM 19	
	4	NUT	A 194 4					AISI 304	AISI 304	
	5	PLUG	SEE SUB-CLASS TABLE							
	6	SEAT								
	7	STEM								
	8-14-15	GASKET	AISI 321 + GRAPHITE							
	9	CAGE	SEE SUB-CLASS TABLE							
	11	ADAPTER	A 105	A 182 F11	A 182 F22	A 182 F5a	A 350 LF2	AISI 316	AISI 316L	
	12	PIN	AISI 304							(2)
	17	FLANGE	A 105 ZINC PLATED					AISI 316		
	23	STUD BOLT	AISI 304							
	24	NUT	AISI 304							
	25	SERIAL PLATE	AISI 304							
	26	SCREW	AISI 304							
	27	STEM PACKING	SEE BULL. 1 - VII							
	32	SEAL RING	Reinforced Teflon							
	33	FLANGE	SEE SUB-CLASS TABLE							
	34	SCREW	AISI 304					AISI 316	N. A.	
	35	LOCK WASHER	AISI 304 annealed							
	36	FLANGE	AISI 304							
	37	SEAL RING + B.U.	Reinforced Teflon							
	38	SEAL RING	GRAPHOIL							N. A.
	39	SPACER	GRAPHITE							
	42	RING NUT	AISI 304							AISI 316L
	43	SEAL RING	GRAPHITE							N. A.
	44	SPRING	INCONEL X 750							
	45	SLIDING RING (PORT ≥ 12")	Reinforced teflon							

SUB-CLASS		CAGE Item 9	PLUG Item 5	SEAT Item 6	STEM Item 7	FLANGE Item 33
	01	17-4-PH H900	F6NM hardened	17-4-PH H900	AISI 316	F6NM hardened
	02		F6NM nitrided			
	03		F6NM fully stellite (3)			
	04	CA6NM nitrided	F6NM hardened	F6NM hardened		
	05		F6NM nitrided	F6NM seat stellite (3)		
	06		F6NM fully stellite (3)			
	07	AISI 304 nickel plated (4)	AISI 316	AISI 316	AISI 316	AISI 316
	11		AISI 316 seat stellite (3)	AISI 316 seat stellite (3)		
	12		F6NM fully stellite (3)	AISI 316 fully stellite (3)		
	13					
	14	AISI 316L	AISI 316L + HASTELLOY C276 fully	AISI 316L + HASTELLOY C276 seat	AISI 316L	/
	21	17-4-PH H1150	F6NM hardened	17-4-PH H1150	AISI 316	F6NM hardened
	22		F6NM nitrided			
23	F6NM fully stellite (3)					
SEALS PLUG CODE						
T	REINFORCED TEFLON SEAL RING (item 32)					
L	GRAPHOIL SEAL RING (item 38)					
G	GRAPHITE SEAL RING (item 43)					
N	WITHOUT SEAL RING					
B	REINFORCED TEFLON SEAL RING + BACK-UP (item 37)					

- (1) A 193 B16 over 450°C
- (2) Stem welded to the plug
- (3) Cobalt stellite grade 6
- (4) AISI 304 can be replaced by AISI 316 without notice

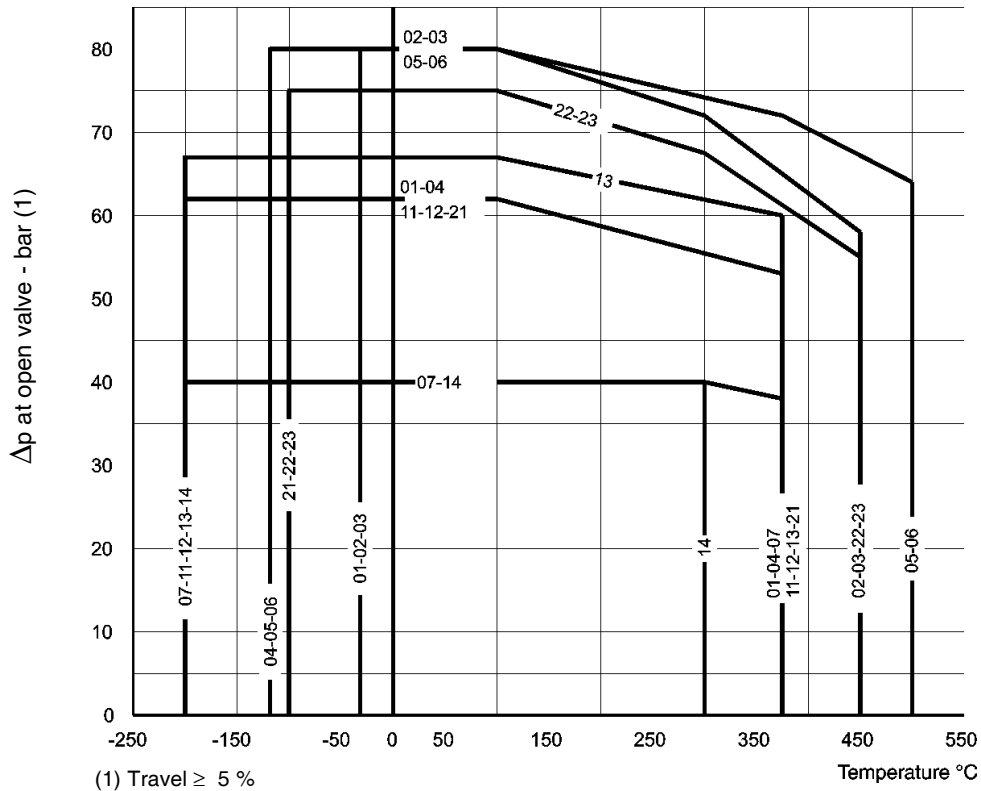
BASIC CLASS	SUBCLASS	TEMPERATURE LIMITS °C (1) (2)									
		DN									
		1"-1.1/2"-2"	3"	4"	6"	8"	10"	12"	14"	16"	
A A 216 WCB	01	-30 +375									
	02-03	-30 +430									
	04	NOT APPLICABLE					-30 +375	-30 +360	-30 +300	-30 +250	-30 +200
	05-06						-30 +430				
	07-11-12-13	-30 +300	-30 +200	-30 +170	-30 +220	-30 +190	-30 +160	-30 +130	-30 +100	-30 +80	
C A 217 WC6	01	-30 +375									
	02-03	-30 +450			-30 +430	-30 +450	-30 +430	-30 +360	-30 +300	-30 +250	-30 +200
	04	NOT APPLICABLE					-30 +375				
	05-06						-30 +500				
D A 217 WC9	01	-30 +375									
	02-03	-30 +450			-30 +430	-30 +450	-30 +430	-30 +360	-30 +300	-30 +250	-30 +200
	04	NOT APPLICABLE					-30 +375				
	05-06						-30 +500				
E A 217 C5	01	-30 +375									
	02-03	-30 +450	-30 +390	-30 +360	-30 +420	-30 +360	-30 +300	-30 +250	-30 +210	-30 +170	
	04	NOT APPLICABLE									
	05-06										-30 +500
F A 352 LCB	01	-30 +340									
	02-03	-30 +340									
	04	-45 +340									
	05-06	-45 +340									
	07-11-12-13	-45 +300	-45 +200	-45 +170	-45 +220	-45 +190	-45 +160	-45 +130	-45 +100	-45 +80	
	21-22-23	-45 +340									
G AISI 316	07-11-12-13	-150 +375	-150 +320	-150 +280	-150 +350	-150 +300	-150 +260	-150 +220	-150 +180	-150 +150	
H AISI 316L	14	-150 +300			-150 +300						

NOT APPLICABLE

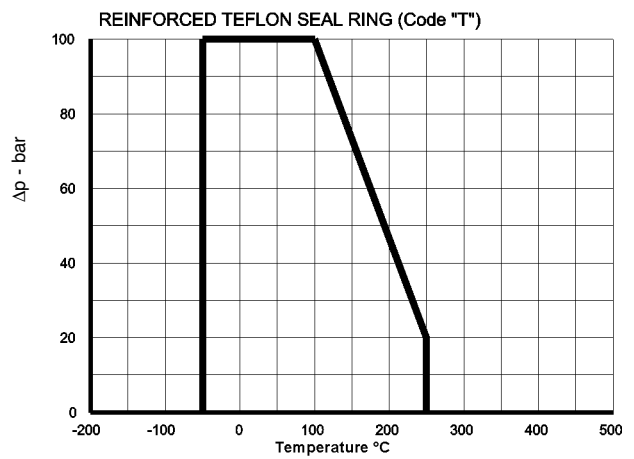
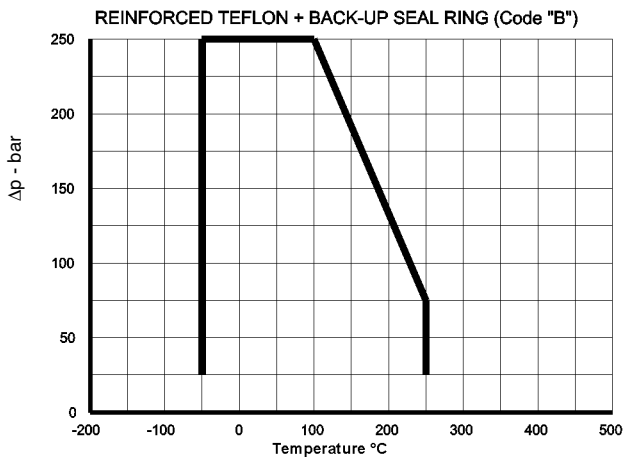
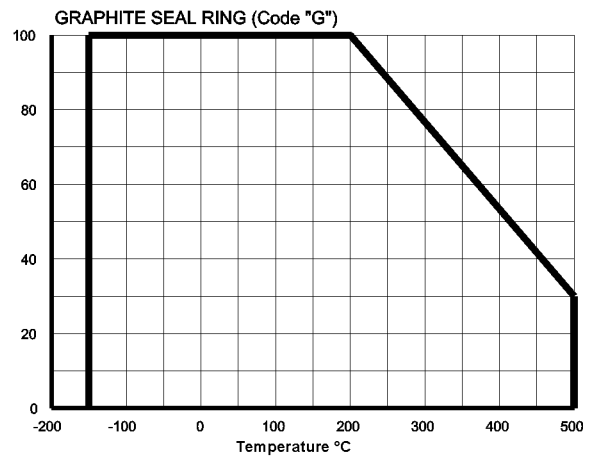
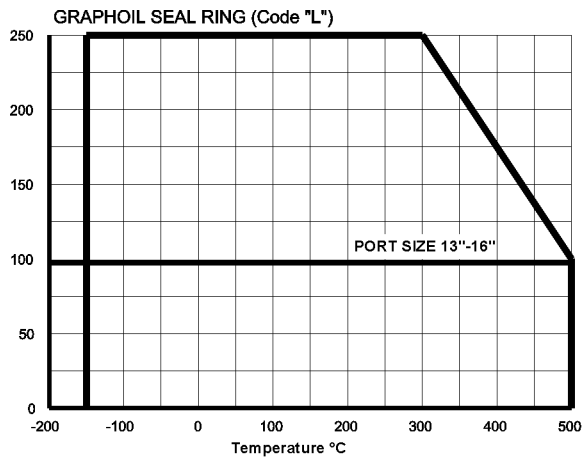
		MAXIMUM DIFFERENTIAL PRESSURE FOR SUB-CLASS - bar (3) (4) (5)													
		01	02	03	04	05	06	07	11	12	13	14	21	22	23
OPEN VALVE (6)	GAS	62	80	62	80	40	62	67	40	62	75				
	LIQUID	31	40	31	40	23	31	34	23	31	37				
CLOSED VALVE (7)	GAS	100	200	100	200	40	200	40	100	180					
	LIQUID	50	100	50	100	25	100	25	50	90					

- Temperatures listed in the table refer to "basic class / sub-class" combinations. For balanced trims supplied with seal inserts limits can be set to lower values (see diagrams).
- Temperatures listed in the table refer to the inlet fluid and are supposed equal to the valve ones. For stud bolts (3), nuts (4) and flange (17) a 20°C ΔT is assumed.
- Δp max be limited to lower values where the plung is provided with seal inserts (see diagrams).
- Δp max are valid for fluids which do not hold abrasive parts and for not-cavitating liquids.
- Values intended for ambient temperature
- Travel ≥ 5% - single cage
- Values valid for seat leakage V and IVS1.

Max differential pressure for gas at open valve - bar
(single cage trim)



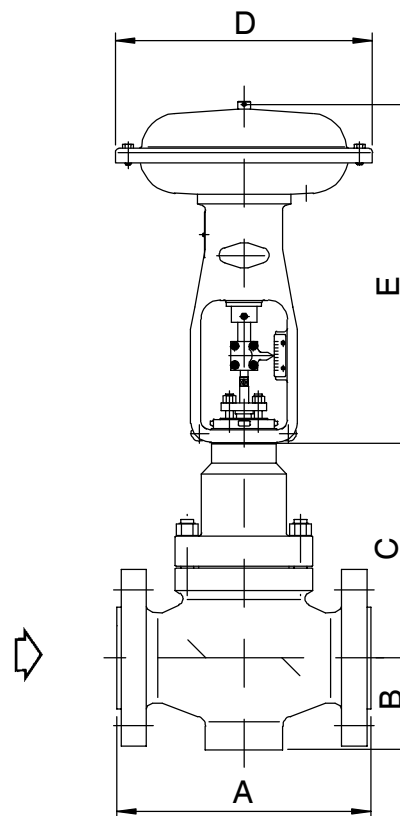
PRESSURE / TEMPERATURE RATINGS FOR PLUG WITH SEAL RINGS



OVERALL DIMENSIONS ANSI 150 ÷ 600 - mm

DN	A										B								
	FLANGED						BW		SW & SCREWED		FLANGED			BW		SW & SCREWED			
	ANSI 150 RF	ANSI 150 RJ	ANSI 300 RF	ANSI 300 RJ	ANSI 600 RF	ANSI 600 RJ	ANSI 300	ANSI 600	ANSI 300	ANSI 600	ANSI 150	ANSI 300	ANSI 600	ANSI 300	ANSI 600	ANSI 300	ANSI 600		
1"	184	197	197	210	210	210	210	210	210	210	210	210	65	65	73	65	73	65	73
1.1/2"	222	235	235	248	251	251	251	251	251	251	251	251	82	82	89	89	89	89	89
2"	254	267	267	283	286	289	286	286	286	286	286	286	87	87	102	102	102	102	102
3"	298	311	317	333	337	340	337	337	/	/	/	/	120	120	125	125	125	/	/
4"	352	365	368	384	394	397	394	394	/	/	/	/	135	135	140	140	140	/	/
6"	451	464	473	489	508	511	508	508	/	/	/	/	167	170	185	170	185	/	/
8"	543	556	568	584	610	613	610	610	/	/	/	/	193	198	220	198	220	/	/
10"	673	686	708	724	752	755	752	752	/	/	/	/	225	230	260	230	260	/	/
12"	737	750	775	791	819	822	819	819	/	/	/	/	270	275	307	275	307	/	/
14"	889	902	927	943	972	975	1029	1029	/	/	/	/	314	314	314	314	314	/	/
16"	1016	1029	1057	1073	1108	1111	1108	1108	/	/	/	/	378	378	390	378	390	/	/

DN	PORT	TRAVEL mm	ACTUATOR	C		
				PLAIN	FINNED	EXTENDED
1"	3/4"-1/2"	17	DIAPHR. 310	168	237	265
1.1/2"	1.1/2"	34	DIAPHR. 390	202	269	282
			DIAPHR. 450	202	269	282
	1"	25	DIAPHR. 310	195	270	295
			DIAPHR. 390	195	255	295
2"	2"	34	DIAPHR. 390	273	273	353
			DIAPHR. 450	273	273	353
	1.1/2"	34	DIAPHR. 390	203	270	283
			DIAPHR. 450	203	270	283
3"	3"	45	DIAPHR. 390	319	329	419
			DIAPHR. 450	319	379	419
	2"	34	DIAPHR. 390	294	319	394
			DIAPHR. 450	294	341	394
4"	1.1/2"	34	DIAPHR. 390	224	324	324
			DIAPHR. 450	224	324	324
	4"	60	DIAPHR. 450	345	360	465
			DIAPHR. 600	345	360	465
6"	3"	45	DIAPHR. 390	323	370	423
			DIAPHR. 450	323	370	423
	2"	34	DIAPHR. 390	298	345	398
			DIAPHR. 450	298	345	398
8"	6"-5"	76	DIAPHR. 600	389	439	509
			DIAPHR. 450	345	435	465
	4"	60	DIAPHR. 600	345	421	465
			DIAPHR. 390	323	423	423
10"	8"-7"	100	DIAPHR. D63	487	538	625
			DIAPHR. 600	391	467	511
	6"	76	DIAPHR. 450	347	447	467
			DIAPHR. 600	347	467	467
12"	10"-9"	100	DIAPHR. D63	509	560	647
			DIAPHR. D63	493	544	631
	8"-7"	100	DIAPHR. 600	412	517	532
			DIAPHR. D63	524	587	662
14"	10"-9"	100	DIAPHR. D63	510	573	648
			DIAPHR. D63	494	579	632
	14"-13"	150	CYLINDER 300	628	670	757
			CYLINDER 450	789	831	882
16"	12"	100	DIAPHR. D63	569	656	656
			DIAPHR. D63	555	642	622
	16"	200	CYLINDER 300	789	831	882
			CYLINDER 450	789	847	940
14"-13"	150	CYLINDER 300	664	758	810	
		CYLINDER 450	789	847	940	
12"	100	DIAPHR. D63	637	763	763	



ACTUATOR

TYPE	D	E		MASS - kg	
		DIRECT	REVERSE	DIRECT	REVERSE
DIAPHR. 310	325	412	494	16	19
DIAPHR. 390	400	511	662	29	39
DIAPHR. 450	482	584	750	48	63
DIAPHR. 600	631	754	954	98	130
DIAPHR. D63 ⁽¹⁾	640	985 ⁽²⁾	1022 ⁽²⁾	185 ⁽³⁾	215 ⁽³⁾
CYL. 300 ⁽⁴⁾	390	700 ⁽²⁾	1300 ⁽²⁾	120	120
CYL. 450 ⁽⁴⁾	575	900 ⁽²⁾	1950 ⁽²⁾	360	360

- (1) For travel = 100 mm
- (2) Without in-line handwheel operator (CML). With direct CML = 1211mm; with reverse CML = 1248mm
- (3) Without in-line handwheel operator (CML). With direct CML = 225 kg; with reverse CML = 255 kg
- (4) For travel = 200mm

OVERALL DIMENSIONS ANSI 900 ÷ 1500 - mm

DN	A								B					
	FLANGED				BW		SW & SCREWED		FLANGED		BW		SW & SCREWED	
	ANSI 900 RF	ANSI 900 RJ	ANSI 1500 RF	ANSI 1500 RJ	ANSI 900	ANSI 1500	ANSI 900	ANSI 1500	ANSI 900	ANSI 1500	ANSI 900	ANSI 1500	ANSI 900	ANSI 1500
1"	273	273	273	273	279	279	279	279	78	82	78	82	78	82
1.1/2"	333	333	333	333	330	330	330	330	95	95	95	95	95	95
2"	375	378	375	378	375	375	375	375	113	113	113	113	113	113
3"	441	444	460	463	460	460	-	-	140	140	140	140	-	-
4"	511	514	530	533	530	530	-	-	150	160	150	160	-	-
6"	714	717	768	774	768	768	-	-	195	205	195	205	-	-
8"	781	784	838	848	832	832	-	-	250	260	225	235	-	-
10"	864	867	991	1001	991	991	-	-	290	300	290	300	-	-
12"	1016	1019	1130	1146	1130	1130	-	-	320	350	320	350	-	-

DN	PORT.	TRAVEL mm	ACTUATOR	C		
				BONNET		
				PLAIN	FINNED EXTENDED	
1"	3/4"	17	DIAPHR. 450	234	301	
			DIAPHR. 390	234	279	
	1/2"	17	DIAPHR. 310	234	294	
			DIAPHR. 390	234	279	
1.1/2"	1"	25	DIAPHR. 450	224	291	
			DIAPHR. 390	224	291	
	3/4"	25	DIAPHR. 450	224	291	
			DIAPHR. 310	210	270	
	1/2"	17	DIAPHR. 390	222	289	
			DIAPHR. 450	295	355	
2"	2"	34	DIAPHR. 600	295	355	
			DIAPHR. 450	279	339	
	1.1/2"	34	DIAPHR. 600	279	339	
			DIAPHR. 450	263	323	
	1"	25	DIAPHR. 390	263	310	
			DIAPHR. 450	263	323	
	3"	2.1/2"	34	DIAPHR. 450	304	364
				DIAPHR. 600	304	390
DIAPHR. 450				299	359	
DIAPHR. 600				299	359	
1.1/2"		34	DIAPHR. 450	300	360	
			DIAPHR. 600	300	360	
1"		25	DIAPHR. 450	284	344	
			DIAPHR. 450	327	387	
4"	3"	45	DIAPHR. 600	327	413	
			DIAPHR. 450	307	367	
	2.1/2"	34	DIAPHR. 600	307	393	
			DIAPHR. 450	302	362	
	2"	34	DIAPHR. 600	302	362	
			DIAPHR. 450	318	378	
	1.1/2"	34	DIAPHR. 600	318	378	
			DIAPHR. 600	412	485	
	6"	6"-5"	76	DIAPHR. 600	412	485
				DIAPHR. 600	368	441
4"		60	DIAPHR. 450	356	429	
			DIAPHR. 600	356	429	
3"		45	DIAPHR. 450	371	441	
			DIAPHR. 600	371	441	
8"	8"-7"	100	DIAPHR. D63	519	637	
			DIAPHR. 600	479	580	
	6"-5"	76	DIAPHR. 600	479	569	
			DIAPHR. 600	570	699	
10"	8"-7"	100	DIAPHR. D63	554	683	
			DIAPHR. 600	542	617	
	6"	76	DIAPHR. 600	650	800	
12"	10"-9"	100	DIAPHR. D63	650	800	
			DIAPHR. D63	630	780	

MASS ANSI 150 ÷ 600 - kg

DN	FLANGED			BW-SW	
	ANSI 150	ANSI 300	ANSI 600	ANSI 300	ANSI 600
1"	24	24	24	17	17
1.1/2"	32	32	38	33	35
2"	40	40	50	35	37
3"	60	65	85	55	60
4"	90	100	130	95	110
6"	168	198	240	195	200
8"	260	315	400	236	360
10"	420	510	640	425	490
12"	610	715	925	640	680
14"	1320	1320	1600	1165	1400
16"	1830	1830	2200	1610	1950

MASS ANSI 900 ÷ 1500 - kg

DN	FLANGED		BW - SW	
	ANSI 900	ANSI 1500	ANSI 900	ANSI 1500
1"	30	40	23	28
1.1/2"	50	65	45	60
2"	70	90	50	70
3"	140	240	100	170
4"	180	260	160	220
6"	340	470	280	380
8"	560	780	500	700
10"	800	1200	600	900
12"	1250	1850	950	1400



PARCOL S.p.A. Via Isonzo, 2 - 20010 CANEGRATE (MI) - ITALY

Telephone: +39 0331 413 111 - Fax: +39 0331 404 215
e-mail: sales@parcol.com - <http://www.parcol.com>