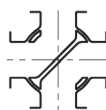
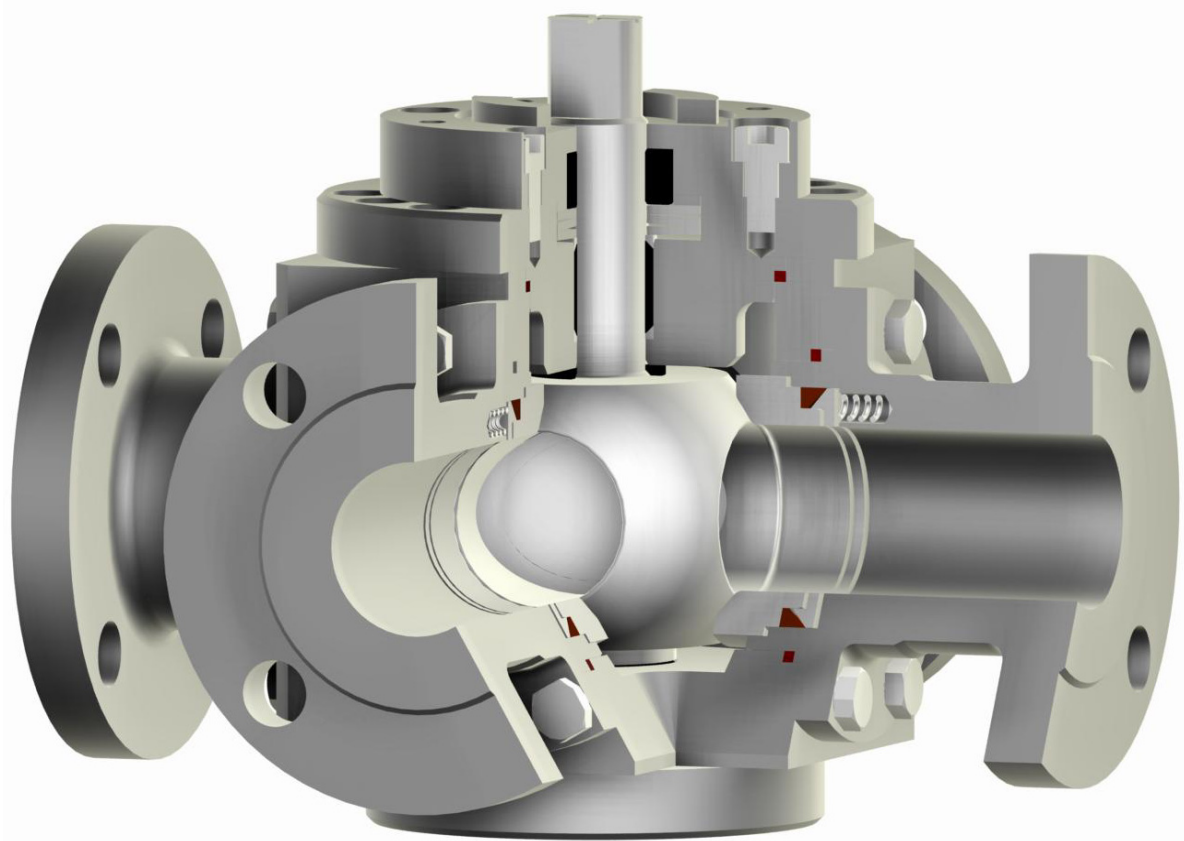




Four-Way Ball Valve Metal Seated Type 23-M



Design Characteristics

- ✓ Split body
- ✓ Ball with integral stem and twin bearings
- ✓ Live loaded stem packing
- ✓ Spring loaded seat system
- ✓ Fire Safe design optional
- ✓ 90° X-port

Design Standards

- ✓ EN 12516, EN 1983, ISO 5211, AD-2000
- ✓ ASME B 16.34, API 608

Range of Application

- ✓ Diameter ½" to 20" / DN 15 to 500
- ✓ Class 150 to 1500 / PN 10 to 250
- ✓ -20°F to +1000°F / -60°C to +550°C

Approvals

- ✓ "TA-Luft" certified for low fugitive emissions

Testing Standards

- ✓ EN 12266-1/2
- ✓ API 598



Main Parts

- 1 Body
- 2 Body End Connection
- 4 Retainer Ring
- 5 Ball with Stem
- 8 Gland Washer
- 10 Bearing Cover
- 12 Cover
- 13 Bearing Ring
- 14 Distance Disc
- 16 Plate Spring
- 17 Coil Spring
- 20 Sealing Ring
- 21 Seat Ring
- 23 Body Gasket
- 24 Stem Packing
- 25 Bearing Ring
- 27 Body Gasket
- 28 Screw
- 29 Screw
- 30 Screw

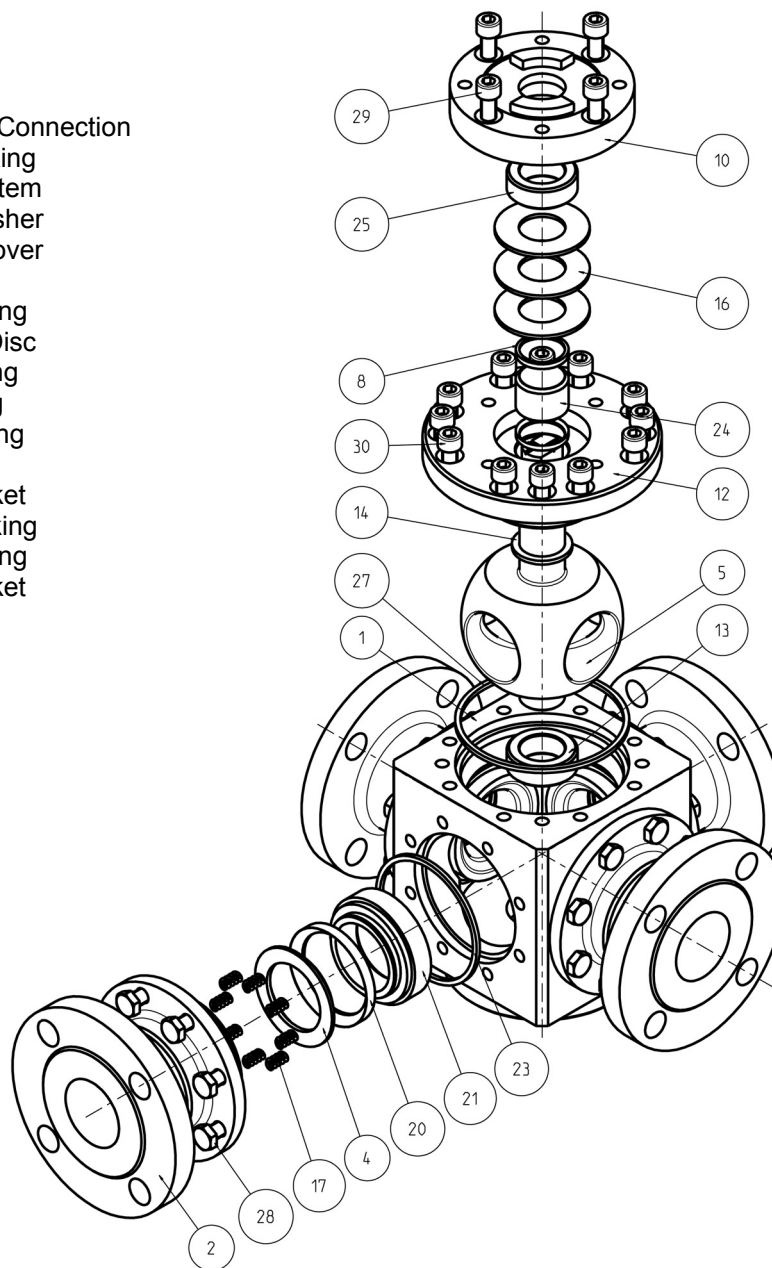


Fig.1

Description

This PERRIN ball valve has twin bearing ball with integral stem and split body housing. The spring loaded metallic seat system and live loaded stem packing also provide continuous tightness during short-term temperature and pressure changes.

The valve is equipped with an integral actuator mounting flange for actuator connection according to ISO 5211. Stem extensions, locking devices and actuators with accessories, can be attached without operating interruptions.

The ball valve has an antistatic design. The stem packing and sealings are "TA-Luft" certified for low fugitive emissions.

Parts List / Materials

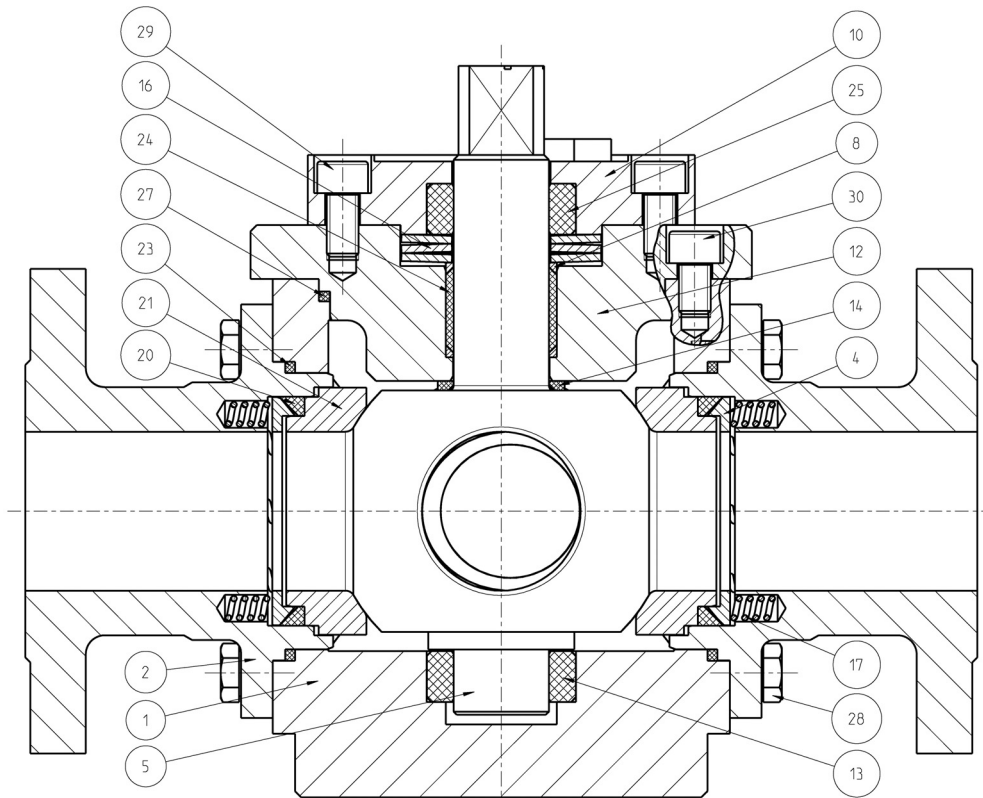


Fig.2

Item	Designation	ASME		DIN EN	
		-20°F up to +1000°F	-20°F up to +1000°F	-60°C up to +550°C	-10°C up to +450°C
1	Body	A351 CF8M	A216 WCB	1.4408 ¹⁾	1.0619
2	Body End Connection	Type 316 (up to 2")	A105 (up to 2")	1.4571 (up to 2")	1.0460 (up to 2")
4	Retainer Ring	Type 316	Type 316	1.4571	1.4571
5	Ball with Stem	Type 316 coated A351 CF8M coated	Type 316 coated A351 CF8M coated	1.4571 coated 1.4408 ¹⁾ coated	1.4571 coated 1.4408 ¹⁾ coated
8	Gland Washer	Type 316	Type 316	1.4571	1.4571
10	Bearing Cover	Type 316	A105	1.4571	1.0460
12	Cover	Type 316 A351 CF8M	A216 WCB A105	1.4571 1.4408 ¹⁾	1.0619 1.0460
13	Bearing Ring	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony
14	Distance Disc	Type 316	Type 316	1.4571	1.4571
16	Plate Spring ²⁾	Type 301	AISI 6150	1.4310	1.8159
17	Coil Spring	Type 316	Type 316	1.4571	1.4571
20	Sealing Ring	Graphite	Graphite	Graphite	Graphite
21	Seat Ring	Type 316 coated	Type 316 coated	1.4571 coated	1.4571 coated
23	Body Gasket	Graphite	Graphite	Graphite	Graphite
24	Stem Packing				
25	Bearing Ring	Carbon	Carbon	Carbon	Carbon
27	Body Gasket	Graphite	Graphite	Graphite	Graphite
28	Screw	SS	SS	SS	SS
29	Screw	SS	SS	SS	SS
30	Screw	SS	SS	SS	SS

Tab.1

1) Temperature limitation 300°C [576°F] acc. to German technical rule AD-2000 W5 if intercrystalline corrosion resistant is required

2) Material 2.4668 (Inconel 718) is generally required for operating temperature over 200°C [392°F]

3) Materials for lower / higher temperature on request

Technical Data

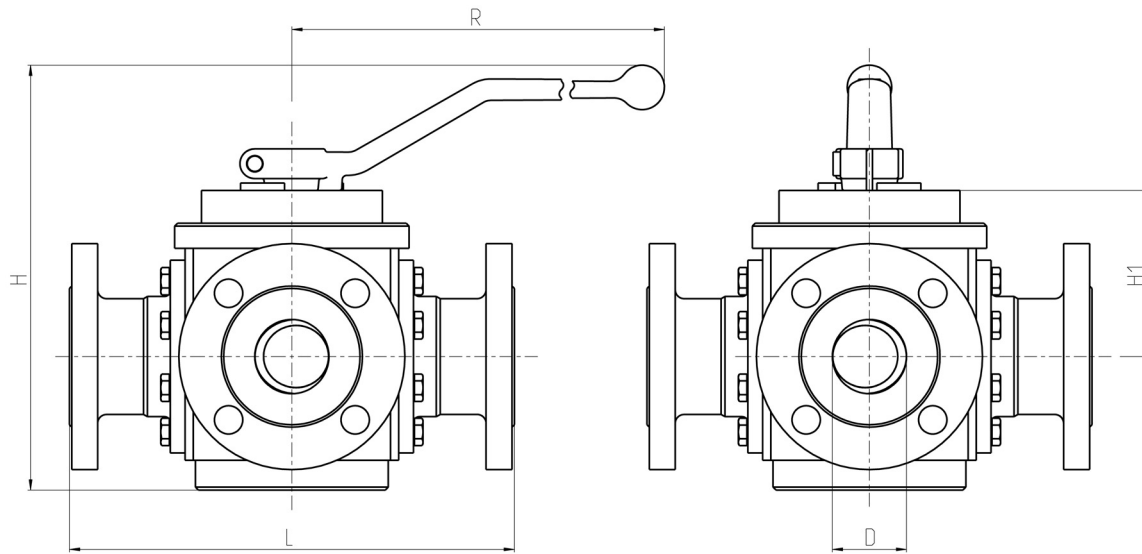


Fig.3

D = NPS = DN = Nominal Size
m = Weight
Cv; Kv = Flow Rate for X-Port

CLASS 150 - Full Bore

NPS [inch]	DN [mm]	H		H1		R		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
½	15	4,9	124	2,3	58	7	180	8	210	20	19	8,5
¾	20	5,4	137	2,8	70	7	180	9	230	36	24	11
1	25	6	153	2,9	74	12	300	9	230	55	33	15
1¼	32	6,4	163	3,1	80	12	300	10	260	90	51	23
1½	40	8,4	213	3,9	100	18	450	10	260	141	72	33
2	50	9,1	230	4,4	112	18	450	12	300	221	100	46
2½	65	9,6	244	4,7	119	18	450	13	340	372	143	65
3	80	11,9	301	6,1	156	31	800	15	380	564	193	88
4	100	12,7	323	6,6	167	31	800	17	430	882	268	122

Tab.2

CLASS 150 - Reduced Bore

NPS [inch]	NPS-R [inch]	H		H1		R		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
¾	½	4,9	124	2,3	58	7	180	9	230	18	22	10
1	¾	5,4	137	2,8	70	7	180	9	230	32	28	13
1¼	1	6	153	2,9	74	12	300	10	260	50	38	17
1½	1¼	6,4	163	3,1	80	12	300	10	260	81	59	27
2	1½	8,4	213	3,9	100	18	450	12	300	127	84	38
2½	2	9,1	230	4,4	112	18	450	13	340	199	118	54
3	2½	9,6	244	4,7	119	18	450	15	380	335	165	75
4	3	11,9	301	6,1	156	31	800	17	430	508	225	102

Tab.3



CLASS 300 - Full Bore

NPS [inch]	DN [mm]	H		H1		R		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
½	15	4,9	124	2,3	58	7	180	8	210	20	21	10
¾	20	5,4	137	2,8	70	7	180	9	230	36	29	13
1	25	6	153	2,9	74	12	300	9	230	55	39	18
1¼	32	6,4	163	3,1	80	12	300	10	260	90	59	27
1½	40	8,4	213	3,9	100	18	450	10	260	141	83	38
2	50	9,1	230	4,4	112	18	450	12	300	221	109	49
2½	65	9,6	244	4,7	119	18	450	13	340	372	154	70
3	80	11,9	301	6,1	156	31	800	15	380	564	213	97
4	100	12,7	323	6,6	167	31	800	20	520	882	306	139

Tab.4

CLASS 300 - Reduced Bore

NPS [inch]	NPS-R [inch]	H		H1		R		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
¾	½	4,9	124	2,3	58	7	180	9	230	18	23	10,5
1	¾	5,4	137	2,8	70	7	180	9	230	32	29	13
1¼	1	6	153	2,9	74	12	300	10	260	50	40	18
1½	1¼	6,4	163	3,1	80	12	300	10	260	81	62	28
2	1½	8,4	213	3,9	100	18	450	12	300	127	86	39
2½	2	9,1	230	4,4	112	18	450	13	340	199	120	55
3	2½	9,6	244	4,7	119	18	450	15	380	335	170	77
4	3	11,9	301	6,1	156	31	800	20	520	508	235	107

Tab.5



PN 16

DN [mm]	H [mm]	H1 [mm]	R [mm]	L [mm] Perrin Standard	Kv [m³/h]	m [kg]
15	124	58	180	210	17	9
20	137	70	180	230	31	11
25	153	74	300	230	48	15
32	163	80	300	260	78	24
40	213	100	450	260	122	33
50	230	112	450	300	191	46
65	244	119	450	340	322	64
80	301	156	800	380	488	87
100	323	167	800	430	763	120

Tab.6

PN 40

DN [mm]	H [mm]	H1 [mm]	R [mm]	L [mm] Perrin Standard	Kv [m³/h]	m [kg]
15	124	58	180	210	17	9
20	137	70	180	230	31	11
25	153	74	300	230	48	15
32	163	80	300	260	78	24
40	213	100	450	260	122	33
50	230	112	450	300	191	50
65	244	119	450	340	322	70
80	301	156	800	380	488	95
100	323	167	800	520	763	133

Tab.7

Other dimensions and pressure classes on request.

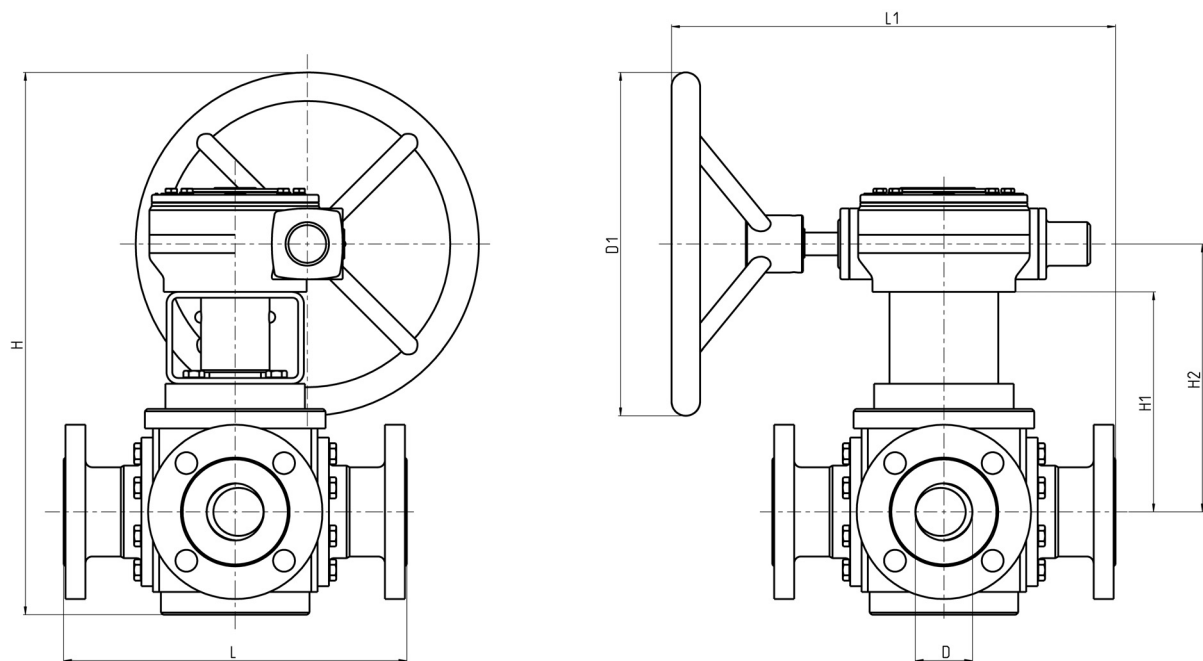


Fig.4

D = NPS = DN = Nominal Size
m = Weight
Cv; Kv = Flow Rate for X-Port

CLASS 150 - Full Bore

NPS [inch]	DN [mm]	H		H1		H2		L1		D1		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
6	150	32	821	8	201	13	331	20,3	515	28	700	24	600	1985	375	171
8	200	35	877	10	266	18	456	23	588	20	500	31	800	3528	879	400
10	250	42	1057	11	284	20	504	29	725	28	700	35	900	5511	1188	540
12	300	41	1053	12	312	20	512	30	770	24	600	35	900	7937	2151	978
14	350	45	1152	14	345	25	635	39	995	20	500	40	1025	10803	3098	1408
16	400	55	1408	19	470	30	760	42	1075	28	700	45	1150	14111	3829	1741
20	500	78	1987	30	763	46	1181	47	1202	36	914	49	1250	22048	5602	2547

Tab.8

CLASS 150 - Reduced Bore

NPS [inch]	NPS-R [inch]	H		H1		H2		L1		D1		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
6	5	27	687	7	167	12	297	19	492	20	500	24	600	1240	352	160
8	6	34	852	8	201	13	331	20	515	28	700	31	800	1786	444	202
10	8	36	909	10	266	18	456	23	588	20	500	35	900	3175	1019	463
12	10	43	1095	11	284	20	504	29	725	28	700	35	900	4960	1386	630
14	12	42	1079	12	312	20	512	30	770	24	600	40	1025	7143	2487	1131
16	14	47	1183	14	345	25	635	39	995	20	500	45	1150	9723	3574	1625
20	18	57	1459	19	470	30	760	42	1075	28	700	49	1250	16072	5334	2425

Tab.9



CLASS 300 - Full Bore

NPS [inch]	DN [mm]	H		H1		H2		L1		D1		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
6	150	33	840	12	307	17	431	24	610	20	500	24	600	1985	768	349
8	200	39	998	14	366	20	507	31	790	24	600	31	800	3528	1463	665
10	250	49	1255	18	452	25	633	28	718	31	800	35	900	5511	2070	941
12	300	52	1313	24	610	33	828	31	792	18	450	41	1050	7937	2719	1236
14	350	59	1495	24	600	35	898	37	937	24	610	45	1150	10803	3693	1679
16	400	61	1559	25	632	37	930	38	975	24	610	45	1150	14111	4270	1941
20	500	83	2097	34	863	49	1253	50	1278	36	914	49	1250	22048	6404	2911

Tab.10

CLASS 300 - Reduced Bore

NPS [inch]	NPS-R [inch]	H		H1		H2		L1		D1		L Perrin Standard		Cv [gal/min]	m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		[lbs]	[kg]
6	5	31	796	7	167	13	337	22	560	24	600	24	600	1240	720	327
8	6	34	872	12	307	17	431	24	610	20	500	31	800	1786	992	451
10	8	41	1029	14	366	20	507	31	790	24	600	35	900	3175	1700	773
12	10	51	1293	18	452	25	633	28	718	31	800	41	1050	4960	2408	1095
14	12	53	1345	24	610	33	828	31	792	18	450	45	1150	7143	3159	1436
16	14	60	1527	24	600	35	898	37	937	24	610	45	1150	9723	4096	1862
20	18	64	1622	25	632	37	930	38	975	24	610	49	1250	16072	5001	2273

Tab.11

PN 16

DN [mm]	H [mm]	H1 [mm]	H2 [mm]	L1 [mm]	D1 [mm]	L [mm] Perrin Standard	Kv [m³/h]	m [kg]
150	824	201	331	515	700	600	1717	147
200	1026	266	456	588	800	800	3052	344
250	1007	284	504	679	600	900	4767	465
300	992	312	512	770	500	900	6866	840
350	1145	345	635	888	500	1025	9345	1215
400	1275	470	760	953	450	1150	12207	1502
500	1996	763	1181	1202	914	1250	19073	2207

Tab.12

PN 40

DN [mm]	H [mm]	H1 [mm]	H2 [mm]	L1 [mm]	D1 [mm]	L [mm] Perrin Standard	Kv [m³/h]	m [kg]
150	924	307	431	515	700	600	1717	299
200	1077	366	507	588	800	800	3052	573
250	1136	452	633	679	600	900	4767	815
300	1308	610	828	770	500	1050	6866	1068
350	1408	600	898	888	500	1150	9345	1455
400	1445	632	930	953	450	1150	12207	1694
500	2068	863	1253	1202	914	1250	19073	2524

Tab.13

Other dimensions and pressure classes on request.



Top Works

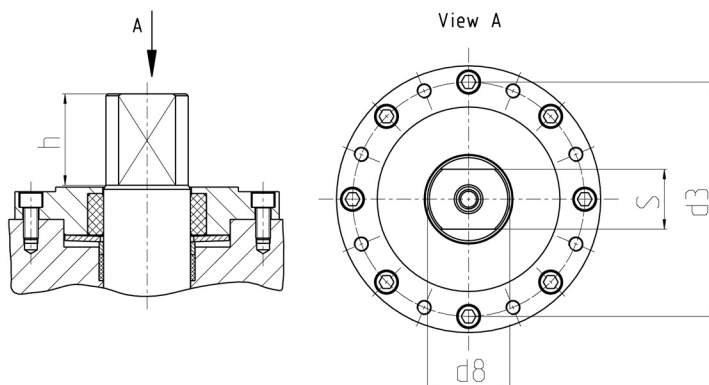


Fig.5

F	h		s		d3		d8	
	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
F07	22	0,9	12	0,5	70	2,8	17	0,7
F10	27	1,1	18	0,7	102	4	27	1,1
F12	38	1,5	32	1,3	125	4,9	40	1,6
F14	38	1,5	38	1,5	140	5,5	57	2
F16	48	1,9	44	1,7	165	6,5	68	2,7
F25	48	1,9	55	2,2	254	10	82	3,2
F35	94	3,7	65	2,6	356	14	98	3,9

Tab.14

Actuator-Connection ISO 5211 Full Bore

NPS [inch]	DN [mm]	CLASS / PN	
		150 / 16	300 / 40
½	15	F07	F07
¾	20	F07	F07
1	25	F07	F07
1¼	32	F07	F10
1½	40	F07	F10
2	50	F10	F10
2½	65	F10	F10
3	80	F12	F12
4	100	F12	F12
6	150	F12	F14
8	200	F14	F16*
10	250	F16	F25*
12	300	F16*	F25*
14	350	F25*	F35*
16	400	F25*	F35*
20	500	F35*	F40*

Reduced Bore

NPS [inch]	NPS-R [inch]	CLASS	
		150	300
½	-	-	-
¾	-	-	-
1	¾	F07	F07
1¼	1	F07	F07
1½	1¼	F07	F10
2	1½	F07	F10
2½	2	F10	F10
3	2½	F10	F12
4	3	F12	F12
6	4	F12	F14
8	6	F12	F14
10	8	F14	F16
12	10	F16	F25*
14	12	F16*	F25*
16	14	F25*	F35*
20	16	F25*	F35*

* Feather Keyway

Tab.15

Pressure / Temperature Diagram

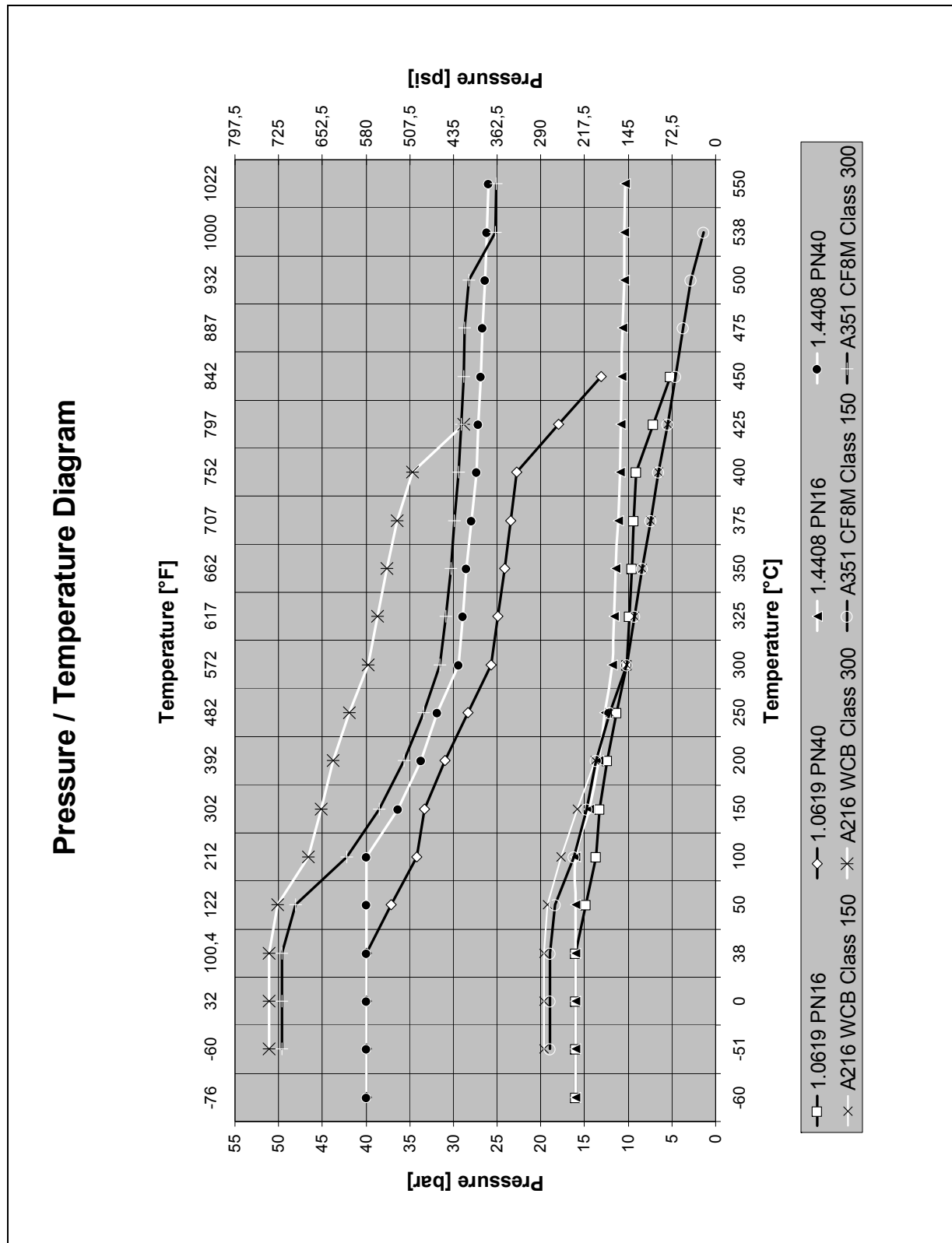


Fig.6



Options

1) Seat system with protected spring area

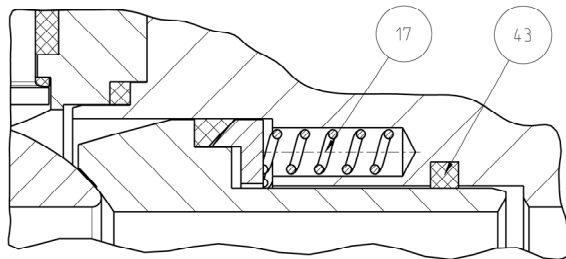


Fig.7

The area where the springs (17) are located is protected by graphite-based seal (43). This seal prevents material from entering the spring area or recess but allow the spring chamber to be energized by line pressure.

2) Adjustable stem packing

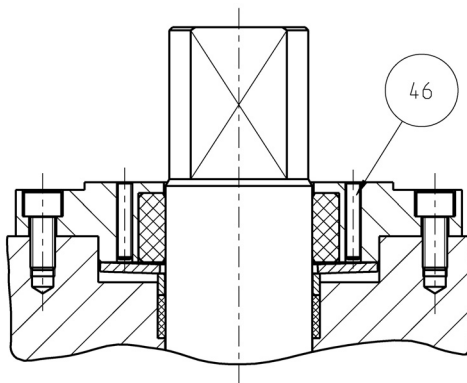


Fig.8

Additionally the live loaded stem packing may be equipped with hexagon socket screws (46). To fasten these screws it is possible to increase the spring force on the packing in the event of leakage.

3) Double-stage gland packing with sniffing connection

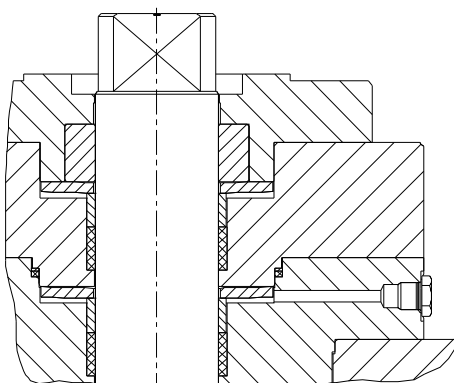


Fig.9

4) Ball positions

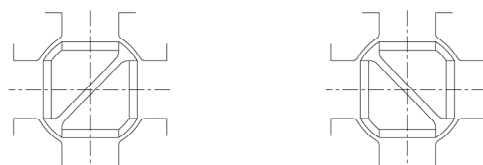


Fig.10

Technical modifications are reserved.

