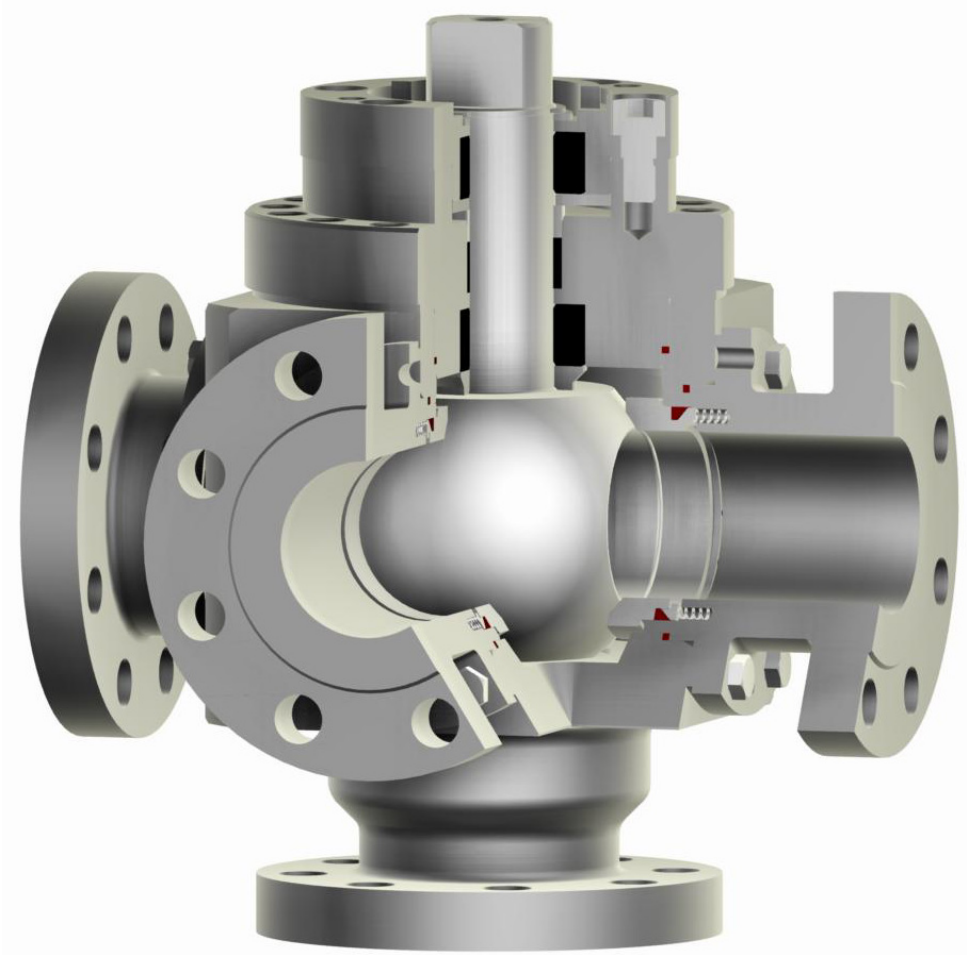
Multiway Ball Valve with Vertical In-/Outlet Metal Seated

Type 24-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° L- or double-L-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
14	Distance Disc
16	Plate Spring
17	Coil Spring
20	Sealing Ring
21	Seat Ring
23	Body Gasket
24	Stem Packing
25	Bearing Ring
26	Bearing Ring
27	Body Gasket
28	Screw
29	Screw
30	Screw
50	Distance Disc
51	Locking Ring

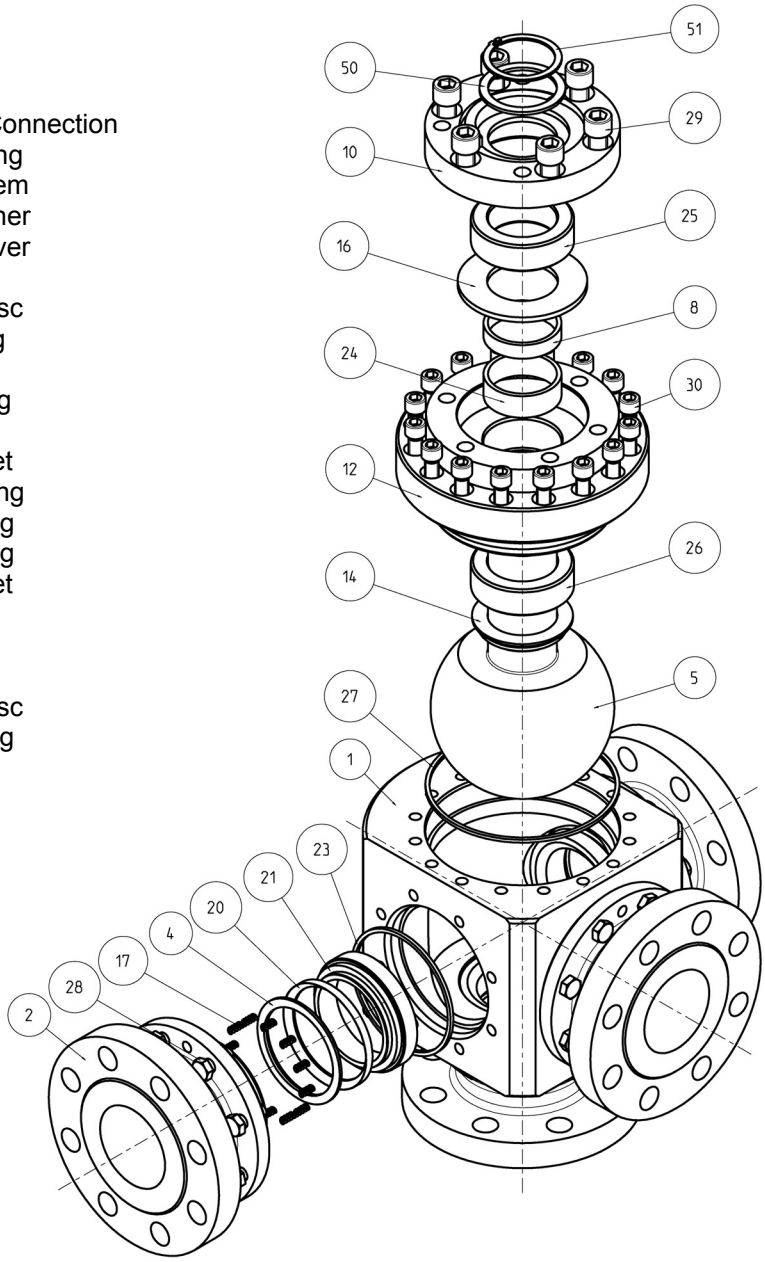


Fig.1

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. This valve can have up to four connections and the ball can be designed with L- or double L-port.

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

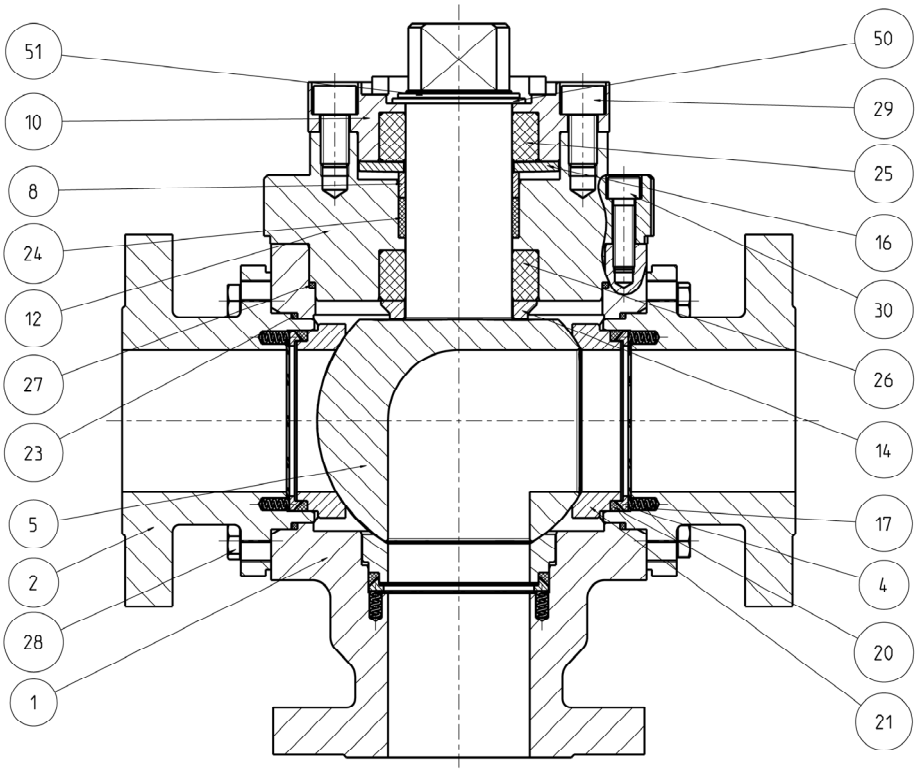


Fig.2

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 Type 316 (up to 2")	A216 WCB A105 (up to 2")	1.4408[1)] 1.4571 (up to 2")	1.0619 1.0460 (up to 2")
2	Body End Connection				
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
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
26	Bearing Ring	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony
27	Sealing Ring	Graphite	Graphite	Graphite	Graphite
28	Screw	SS	SS	SS	SS
29	Screw	SS	SS	SS	SS
30	Screw	SS	SS	SS	SS
50	Distance Disc	Carobronze	Carobronze	Carobronze	Carobronze
51	Locking Ring	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

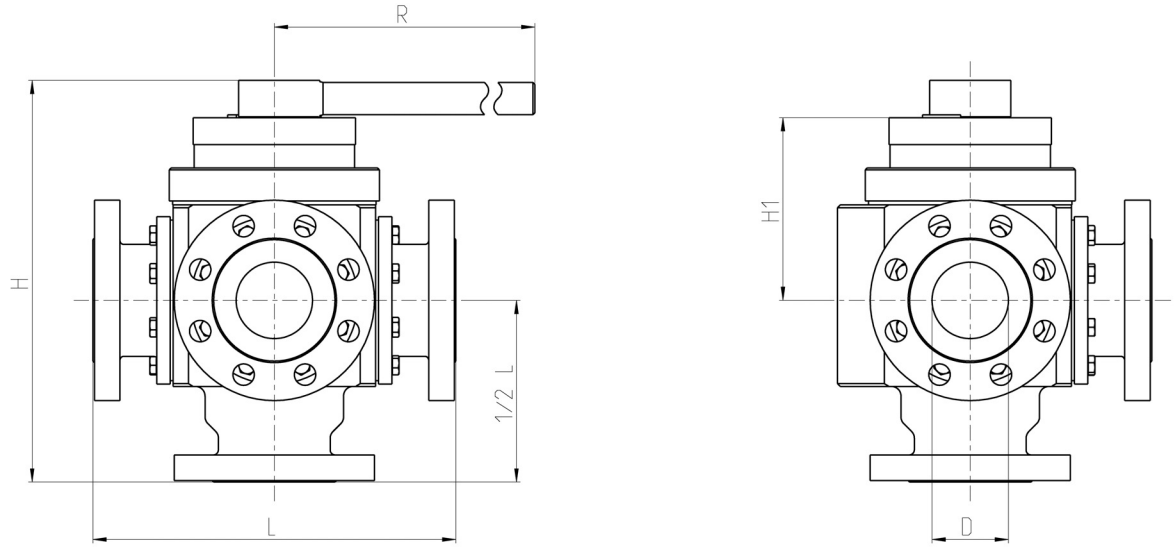


Fig.3

D = NPS = DN = Nominal Size
m = Weight
Cv; Kv = Flow Rate for L-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	8,3	210	23	19	8,5
¾	20	5,4	137	2,8	70	7	180	9,1	230	42	24	11
1	25	6	153	2,9	74	12	300	9,1	230	66	33	15
1¼	32	6,4	163	3,1	80	12	300	10,2	260	109	51	23
1½	40	8,4	213	3,9	100	18	450	10,2	260	171	72	33
2	50	9,1	230	4,4	112	18	450	11,8	300	267	100	46
2½	65	9,6	244	4,7	119	18	450	12,2	310	453	143	65
3	80	11,9	301	6,1	156	31	800	12,2	310	687	193	88
4	100	12,7	323	6,6	167	31	800	13,8	350	1074	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	9,1	230	21	22	10
1	¾	5,4	137	2,8	70	7	180	9,1	230	37	28	13
1¼	1	6	153	2,9	74	12	300	10,2	260	59	38	17
1½	1¼	6,4	163	3,1	80	12	300	10,2	260	98	59	27
2	1½	8,4	213	3,9	100	18	450	11,8	300	154	84	38
2½	2	9,1	230	4,4	112	18	450	12,2	310	240	118	54
3	2½	9,6	244	4,7	119	18	450	12,2	310	408	165	75
4	3	11,9	301	6,1	156	31	800	13,8	350	618	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	23	21	10
¾	20	5,4	137	2,8	70	7	180	9	230	42	29	13
1	25	6	153	2,9	74	12	300	9	230	66	39	18
1¼	32	6,4	163	3,1	80	12	300	10	260	109	59	27
1½	40	8,4	213	3,9	100	18	450	10	260	171	83	38
2	50	9,1	230	4,4	112	18	450	12	300	267	109	49
2½	65	9,6	244	4,7	119	18	450	13	340	453	154	70
3	80	11,9	301	6,1	156	31	800	15	380	687	213	97
4	100	12,7	323	6,6	167	31	800	17	430	1074	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	21	23	10,5
1	¾	5,4	137	2,8	70	7	180	9	230	37	29	13
1¼	1	6	153	2,9	74	12	300	10	260	59	40	18
1½	1¼	6,4	163	3,1	80	12	300	10	260	98	62	28
2	1½	8,4	213	3,9	100	18	450	12	300	154	86	39
2½	2	9,1	230	4,4	112	18	450	13	340	240	120	55
3	2½	9,6	244	4,7	119	18	450	15	380	408	170	77
4	3	11,9	301	6,1	156	31	800	17	430	618	235	107

Tab.5

PN 16

DN [mm]	H [mm]	H1 [mm]	R [mm]	L [mm] Perrin Standard	Kv [m^3/h]	m [kg]
15	124	58	180	210	20	9
20	137	70	180	230	36	11
25	153	74	300	230	57	15
32	163	80	300	260	94	24
40	213	100	450	260	148	33
50	230	112	450	300	231	46
65	244	119	450	310	392	64
80	301	156	800	310	594	87
100	323	167	800	350	929	120

Tab.6

PN 40

DN [mm]	H [mm]	H1 [mm]	R [mm]	L [mm] Perrin Standard	Kv [m^3/h]	m [kg]
15	124	58	180	210	20	9
20	137	70	180	230	36	11
25	153	74	300	230	57	15
32	163	80	300	260	94	24
40	213	100	450	260	148	33
50	230	112	450	300	231	50
65	244	119	450	340	392	70
80	301	156	800	380	594	95
100	323	167	800	430	929	133

Tab.7

Other dimensions and pressure classes on request.

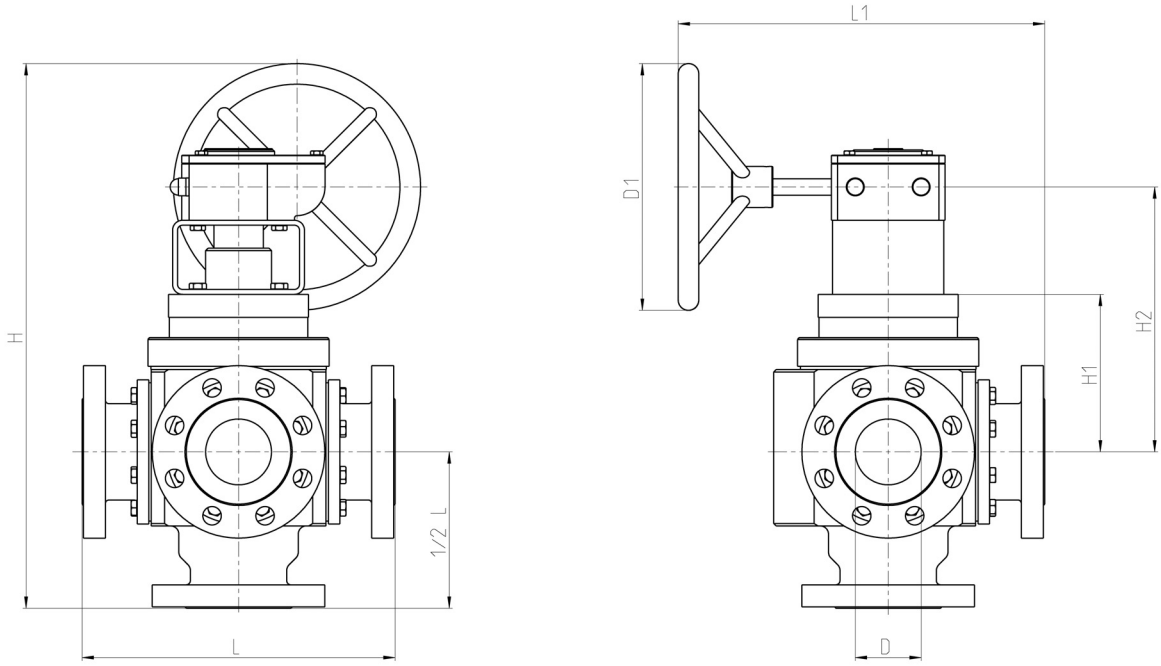


Fig.4

D = NPS = DN = Nominal Size
m = Weight
Cv; Kv = Flow Rate for L-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	22	550	2418	375	171
8	200	35	877	10	266	18	456	23	588	20	500	26	650	4299	879	400
10	250	42	1057	11	284	20	504	29	725	28	700	29	730	6986	1188	540
12	300	41	1053	12	312	20	512	30	770	24	600	35	900	9672	2151	978
14	350	45	1152	14	345	25	635	39	995	20	500	40	1025	13165	3098	1408
16	400	55	1408	19	470	30	760	42	1075	28	700	45	1150	17197	3829	1741
20	500	78	1987	30	763	46	1181	47	1202	36	914	49	1250	26870	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	22	550	1511	352	160
8	6	34	852	8	201	13	331	20	515	28	700	26	650	2177	444	202
10	8	36	909	10	266	18	456	23	588	20	500	29	730	3869	1019	463
12	10	43	1095	11	284	20	504	29	725	28	700	35	900	6287	1386	630
14	12	42	1079	12	312	20	512	30	770	24	600	40	1025	8705	2487	1131
16	14	47	1183	14	345	25	635	39	995	20	500	45	1150	11848	3574	1625
20	18	57	1459	19	470	30	760	42	1075	28	700	49	1250	19588	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	22	550	2418	768	349
8	200	39	998	14	366	20	507	31	790	24	600	30	750	4299	1463	665
10	250	49	1255	18	452	25	633	28	718	31	800	29	730	6986	2070	941
12	300	52	1313	24	610	33	828	31	792	18	450	41	1050	9672	2719	1236
14	350	59	1495	24	600	35	898	37	937	24	610	45	1150	13165	3693	1679
16	400	61	1559	25	632	37	930	38	975	24	610	45	1150	17197	4270	1941
20	500	83	2097	34	863	49	1253	50	1278	36	914	49	1250	26870	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	4	31	796	7	167	13	337	22	560	24	600	22	550	1511	720	327
8	6	34	872	12	307	17	431	24	610	20	500	30	750	2177	992	451
10	8	41	1029	14	366	20	507	31	790	24	600	29	730	3869	1700	773
12	10	51	1293	18	452	25	633	28	718	31	800	41	1050	6287	2408	1095
14	12	53	1345	24	610	33	828	31	792	18	450	45	1150	8705	3159	1436
16	14	60	1527	24	600	35	898	37	937	24	610	45	1150	11848	4096	1862
20	16	64	1622	25	632	37	930	38	975	24	610	49	1250	19588	5001	2273

Tab.11

PN 16

DN [mm]	H [mm]	H1 [mm]	H2 [mm]	L1 [mm]	D1 [mm]	L [mm] Perrin Standard	Kv [m^3/h]	m [kg]
150	824	201	331	515	700	480	2092	147
200	1026	266	456	588	800	600	3719	344
250	1007	284	504	679	600	730	6043	465
300	992	312	512	770	500	900	8367	840
350	1145	345	635	888	500	1025	11388	1215
400	1275	470	760	953	450	1150	14876	1502
500	1996	763	1181	1202	914	1250	23244	2207

Tab.12

PN 40

DN [mm]	H [mm]	H1 [mm]	H2 [mm]	L1 [mm]	D1 [mm]	L [mm] Perrin Standard	Kv [m^3/h]	m [kg]
150	924	307	431	515	700	550	2092	299
200	1077	366	507	588	800	750	3719	573
250	1136	452	633	679	600	730	6043	815
300	1308	610	828	770	500	900	8367	1068
350	1408	600	898	888	500	1025	11388	1455
400	1445	632	930	953	450	1150	14876	1694
500	2068	863	1253	1202	914	1250	23244	2524

Tab.13

Other dimensions and pressure classes on request.

Top Works

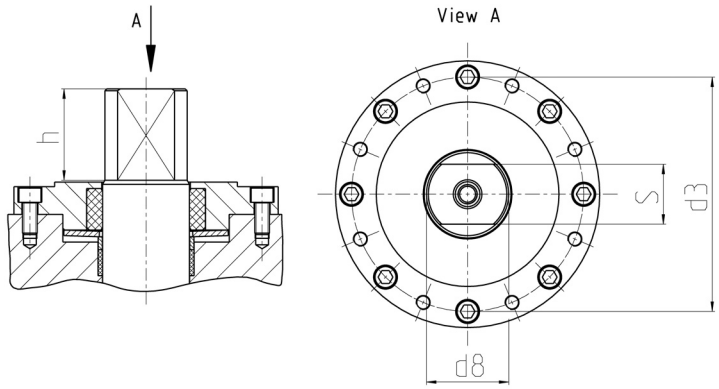


Fig.5

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

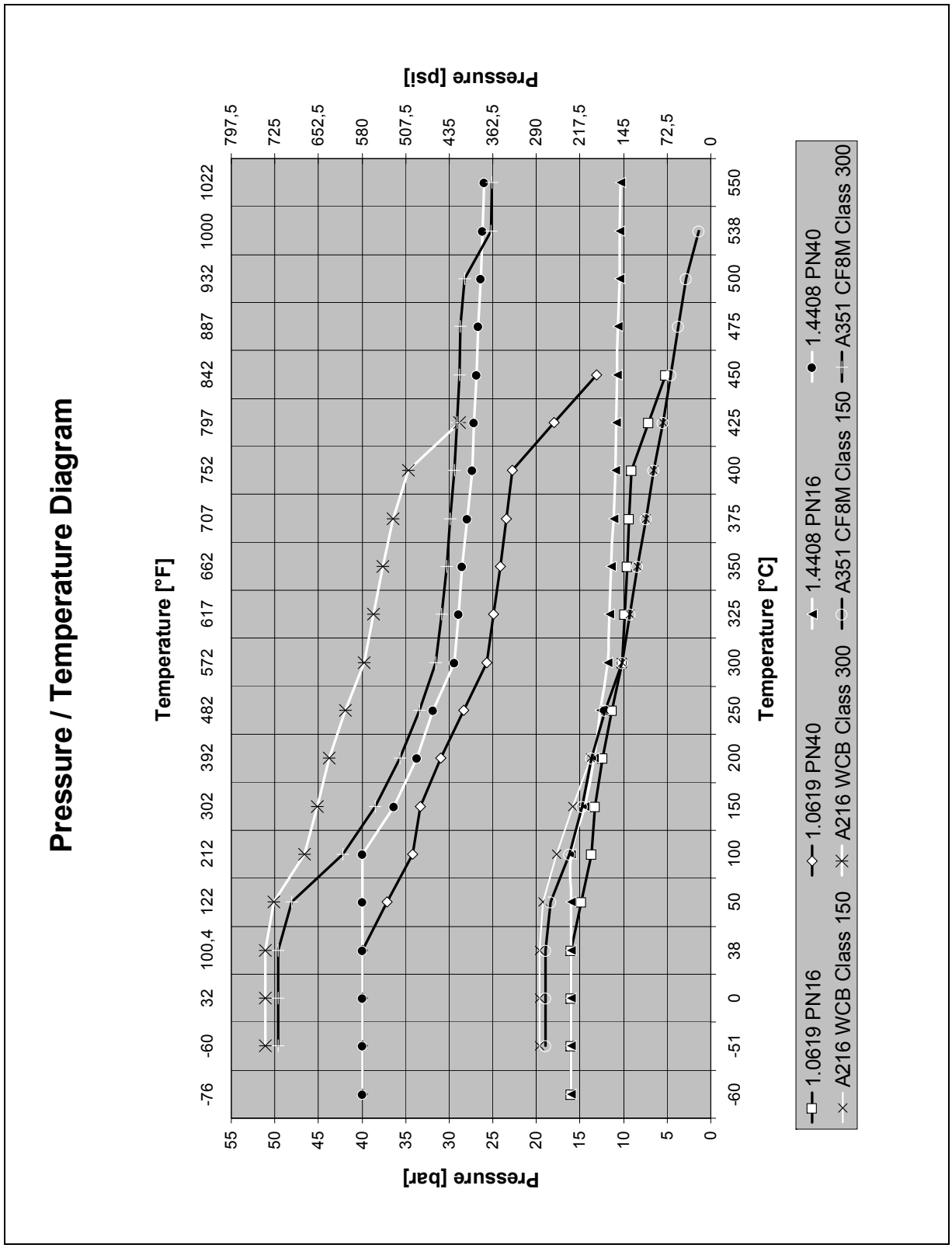


Fig.6

Options

1) Seat system with protected spring area

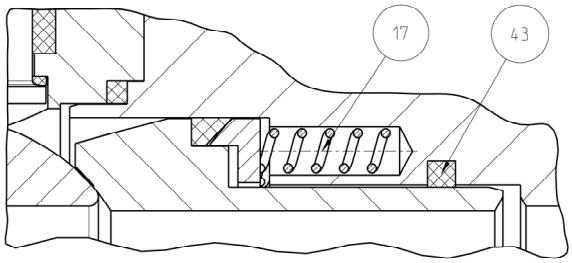


Fig.7

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

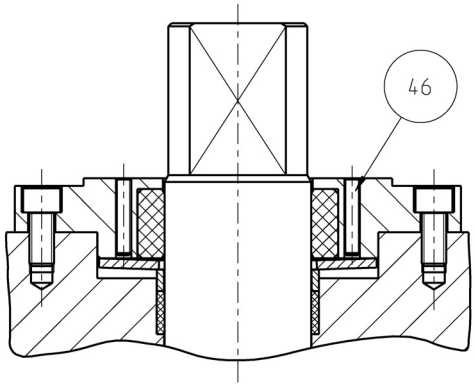


Fig.8

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

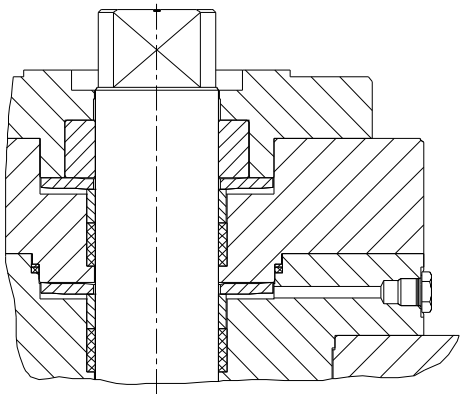


Fig.9

4) Versions

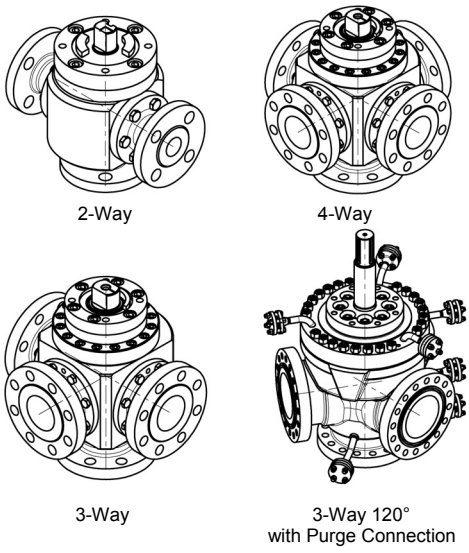


Fig.10

Technical modifications are reserved.

perrin GmbH
KUGELHÄHNE / BALL VALVES
EIN UNTERNEHMEN DER KITZ GRUPPE
A MEMBER OF KITZ CORPORATION