Fully Welded

Ball
Valves

Pietro Fiorentini®

Fully Welded

> Ball Valves

Pietro Fiorentini®

Reference Standards

ASTM American Society for Testing and Materials
ASME American Society of Mechanical Engineers
NACE National Association of Corrosion Engineers
MR-01-75 Sulfide Stress Cracking Resistant material For Oil Field Equipment
API American Petroleum Institute
Spec. 6D Specification for pipeline valves
Spec. RP-6FA Recommended Practice for Fire Test for Valves
Std. 607 Fire test for soft-seated quater turn valves
Std. 598 Valve Inspection and Test

ANSI American National Standard Institute
B16.5 Steel Pipe Flanges and Flanged Fittings
B16.10 Face to Face and End to End Dimension of Ferrous Valves
B16.25 Butt-Welding End
B16.34 Steel Valves
B31.8 Gas Transmission and Distribution Piping System

MSS-SP Manufacturers Standardization Society of the valve Fitting industry
SP6 Standard Finish for Contact Face of Pipe Flangers and Connecting End Flanges of Valves and Fittings
SP25 Standard marking System for Valves Fittings Flanges and Unions
SP61 Hydrostatic Testing of Steel Valves
SP72 Ball Valves with Flanged or Butt Welding Ends for general service

BRITISH STANDARD
BS4504 Flanges and Bolting for pipes, Valves and Fittings Steel ball Valves for the Petroleum
BS5351 Petrochemicals and Allied Industries Testing of Valves
BS6755 Part. 1 Specification for production Pressure Testing Requirements
Part. 2 Specification for Fire Type - Testing Requirements

Designed With Your Needs In Mind

1. **Triple-barrier stem seals**
Repackable online under pressure in both open and close position
2. **Anti blow-out stem**
3. **Emergency sealant injection stem and seat**
High pressure grease fitting with triple metal to metal seal for reverse flow prevention
4. **Sealant groove**
All the way aroung on the external side of the seat ring
5. **Heavy metal seat ring with soft insert**
6. **Preloaded elicoidal springs**
Around the seal unit provide maximum operational safety minimizing torque value
7. **Two self regulating fork shaped bushings**
Reduce stress concentration on stem-ball connection
8. **Body bleed fitting**
Body cavity may be drained in open and close position
9. **Forged body and ball**
10. **Standard bonnet construction**
For easy fitting at job-site of extensions, gearing and power operators
11. **Stem-thrust plate**
12. **Trunnions thrust plate**
PTFE impregnated steel bearings assure smooth non-sticking operation without lubrication

Fully Welded

> Ball Valves

Valve full and reduced bore

FIG. 450

FULL BORE
DN 2"÷3" Class 150÷1500
4" Class 150÷300

FIG. 460

REDUCE BORE

CUT WAY X-X
Stem ball connections

CUT WAY Y-Y
Emergency sealing (upon request)

Drain plug

FIG. 450

FULL BORE
DN 4" Class 600÷1500
6"÷24" Class 150÷1500

FIG. 450

FULL BORE
DN 26"÷36" Class 150÷600

Construction Materials

BODY GROUP		TRIM NUMBER		
POS-ITEM	DESCRIPTION	10	11	12
1	BODY	ASTM A 350LF2	ASTM A 350LF2	ASTM A 350-LF2
5	BONNET (UP)	ASTM A 350LF2	ASTM A 350LF2	ASTM A 350-LF2
10-35	CAP SCREW	ISO 898/1-8.8″	ISO 898/1-8.8″	ISO 898/1-8.8″
11	STEM KEY	AISI 4140	AISI 4140	AISI 4140
12	BONNET (LOW) ≤ DN24″	ASTM A 350LF2	ASTM A 350LF2	ASTM A 350-LF2
13	DRAIN PLUG	ASTM A 105	ASTM A 105 RC22	AISI 316
14	PLUG	ASTM A 105	ASTM A 105 RC22	AISI 316
25	STOP PIN	IISO 898/1-8.8″	AISI 316	AISI 316
26	TAIL PIECE	ASTM A 350LF2	ASTM A 350LF2	ASTM A 350-LF2
34	FLANGE	ASTM A 350LF2	ASTM A 350LF2	ASTM A 350LF2
47	HAND LEVER	ASTM A 106*	ASTM A 106*	ASTM A 106*
48-52	NUT	ISO 898/1-6S*	ISO 898/1-6S*	ISO 898/1-6S*
49	SPING WASHER	AISI 1075	AISI 1075	AISI 1075
62	GREASE NIPPLE	ASTM A 105	ASTM A 105 RC22	AISI 316
65-36	PIN	AISI 4140*	AISI 4140*	AISI 4140*
66	STEM STOP	AISI 1040*	AISI 1040*	AISI 1040*
74	WRENCH HEAD	ASTM A 105*	ASTM A 105*	ASTM A 105*
75	WASHER	ASTM A 283=GrC*	ASTM A 283=GrC*	ASTM A 283=GrC*
	BALL BRACKET≥ 26″	EN10025-P335 NH	FOR ALL TRIM	
	TEMPERATURE LIMIT	-29º C (-20º F)	-29º C (-20º F)	-46º C (-50º F)

INTERNAL GROUP		TRIM NUMBER			
POS-ITEM	DESCRIPTION	30	31	32	35
2	SEAL	ASTM A 350LF2+ENP	ASTM A 350LF2+ENP	ASTM A 350-LF2+ENP	AISI 316+ENP
3	BALL	ASTM A 105+ENP	ASTM A 105+ENP RC22	ASTM 350-LF2+ENP	AISI 316
4	STEM	AISI 410	AISI 410 RC22	AISI 410	AISI 316*
9-31	THRUST PLATE	CS-DRY BEARNING	CS-DRY BEARNING RC22	AISI 316-DRY BEARNING	AISI 316-DRY BEARNING
20-43	SPRING	AISI 302	INCONEL X 750 RC22	INCONEL X 750	INCONEL X 750
22-23	THRUST BEARNING	CS-DRY BEARNING	CS-DRY BEARNING RC22	AISI 316-DRY BEARNING	AISI 316-DRY BEARNING
32	THRUST BUSHING	ASTM A 105+ENEP	ASTM A 105+ENEP RC22	AISI 316	AISI 316
50	GLAND	AISI 1018*	AISI 1018+ENEP RC22	AISI 316	AISI 316
	TEMPERATURE LIMIT	-29º C (-20º F)	-29º C (-20º F)	-46º C (-50º F)	-46º C (-50º F)

Pietro Fiorentini®

Fully Welded

SEAL GROUP

ITEM	DESCRIPTION	RATING	NBR	FKM	ECO
2	SEAT INSERT - CLASS	150 ÷ 600	PTFE/NITRILE •	PTFE/VITON •	PTFE/HYDRIN •
		900 ÷ 1500	NYLON PA 12 G	PEEK	NYLON PA 12 G
31	THRUST PLATE UP TO DN 3°		PTFE	PTFE	PTFE
45	PACKAGING		PTFE	PTFE	PTFE
6-17-21-24-38-56-63	O RING		NITRILE/BUNA-N	VITON	HYDRIN
58-59	FIRE SAFE RING		GRAFITE - GRAPHITE		
55	FIRE SAFE RING		AISI 316 + GRAPHITE		
	TEMPERATURE LIMIT		- 29° C to + 121° C	- 10° C to + 200° C	- 46° C to +121° C
			(-20° F to + 250° F)	(+ 14° F to + 392° F)	(- 50° F to _ 250° F)

Note:
* zinc coated
** alternative ASTM A 564 VI74 (17-4-PH)
ENP: electroless nickel plated

CS: carbon steel
Dry bearing: boccole autolubrificanti
RC: hardness Rockwell C
• Seat insert alternative (Consult our technical dep. for temperature limit).
* zinc coated
** alternative ASTM A 564 VI74 (17-4-PH)** Note:**

BODY GROUP

TRIM	MATERIAL	CRUDE OIL	NACE ■	LOW TEMP.(-50° F)	NATURAL GAS
10	CARBON STEEL	○	NR	NR	○
11	CARBON STEEL (NACE)	○	○	NR	○
12	CARBON STEEL LOW TEMP.	○	NR	○	○
	INTERNAL GROUP				
30	CARBON STEEL	○	NR	NR	○
31	CARBON STEEL (NACE)	○	○	NR	○
32	CARBON STEEL LOW TEMP.	○	NR	○	○
35	STAINLESS STEEL	○	○	○	○
	SEALS GROUP				
NBR	NITRILE/BUNA-N	○	○	NR	○
FKM	VITON	○	○	NR	○
ECO	HYDRIN	○	○	○	○

NR: NOT RECCOMENDED
○ GOOD
■ **NACE:** MR-01-75 - SULFIDE STRESS CRACKING RESISTANT MATERIAL FOR OIL FIELD EQUIPMENT

TRIM APPLICATION INFORMATION

The indicated table is based on the Pietro Fiorentini experience and on the application experiences with our valves at the values fixed by the ASTM/ASME/ ANSI/API regulations. The indications can be considered as a guide for the choice of the trim, but they are not an explicit or implicit guarantee for the proper application of our products or for their adaptability for a particular use.

Overall dimensions Fully Welded valves full bore

CLASS 150

Fig. 450-1

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
2"	216	100	51	400	205				19	LEVER
3"	283	125	76	550	225				44	LEVER
4"	305	145	102	550	250				61	LEVER
6"	457	230	152	76		265	300	263	101	MG 987/S
8"	521	265	203	70		360	500	320	249	MG 50
10"	559	315	254	92		400	500	345	367	MG 100
12"	635	355	305	125		450	700	415	542	MG 180
14"	762	385	336	125		485	700	415	675	MG 180
16"	838	420	387	137		500	700	440	785	MG 250
18"	914	470	438	137		600	700	440	1215	MG 250
20"	991	505	489	137		680	700	440	1540	MG 250/80
24"	1143	610	590	164		780	700	540	2465	MG 350
26"	1245	640	635	853		853	700	585	2628	MG 450
28"	1346	680	686	888		888	700	585	3009	MG 450
30"	1397	750	737	928		928	700	585	3580	MG 450
32"	1524	790	781	973		973	700	585	4080	MG 450
36"	1727	870	876	1043		1043	700	585	6087	MG 450
INCH				MILLIMETERS					KG.	TYPE

Hand lever

CLASS 300

Fig. 450-3

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
2"	216	100	51	400	205				21	LEVER
3"	283	125	76	550	225				43	LEVER
4"	305	145	102	60		206		135	73	MG 984/S
6"	457	230	152	76		265	300	263	107	MG 987/S
8"	521	265	203	92		375	500	345	257	MG 100
10"	559	315	254	92		400	500	345	363	MG 100
12"	635	355	305	125		450	700	415	525	MG 180
14"	762	385	336	125		485	700	415	679	MG 180
16"	838	420	387	137		500	700	440	956	MG 250
18"	914	470	438	137		600	700	440	1335	MG 250/80
20"	991	505	489	164		680	700	540	1604	MG 350
24"	1143	610	590	164		780	700	540	2914	MG 550
26"	1245	680	635	225		855	700	585	2870	MG 450
28"	1346	750	686	240		945	700	655	3379	MG 550
30"	1397	790	737	240		1015	700	655	4136	MG 550
32"	1524	815	781	240		1062	700	655	4619	MG 550
36"	1727	910	876	160		1170	700	760	6715	RG 3800
INCH				MILLIMETERS					KG.	TYPE

Side view gear operator

Gear operator

Pietro Fiorentini®

Fully Welded

CLASS 600

Fig. 450-6

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
2"	292	100	51	550	205				21	LEVER
3"	356	125	76	550	225				48	LEVER
4"	432	145	102	76		210	300	263	93	MG 987
6"	559	230	152	70		295	500	320	190	MG 50
8"	660	265	203	101		390	600	284	332	MG 150
10"	788	315	254	125		435	700	415	442	MG 180
12"	838	355	305	137		460	700	440	612	MG 250
14"	889	385	336	137		490	700	440	853	MG 250/80
16"	991	420	387	164		540	700	540	1063	MG 350
18"	1092	470	438	240		615	700	600	1631	MG 550
20"	1194	505	489	240		705	700	600	1982	MG 550
24"	1397	610	590	240		810	700	600	2561	MG550/115
26"	1448	720	635	240		855	700	585	3828	MG 550
28"	1549	790	686	240		883	700	655	4479	MG 550
30"	1651	890	737	160		962	700	655	4965	RG 3800
32"	1778	905	781	160		977	700	655	5799	RG 3800
36"	2083	1040	876	160		1092	700	760	8508	RG 3800
INCH				MILLIMETERS					KG.	TYPE

Hand lever

Side view gear operator

Gear operator

Full Bore

CLASS 900

Fig. 450-9

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
2"	368	110	51	700	215				35	LEVER
3"	381	130	76	70		190	400	310	78	MG 50
4"	457	155	102	90		230	400	360	130	MG 50
6"	610	191	152	90		340	550	360	305	MG 150
8"	737	225	203	105		410	700	430	450	MG 180
10"	838	280	254	130		490	700	545	650	MG 250
12"	925	332	305	162		510	700	650	1020	MG 250/80
14"	1029	375	324	162		560	700	650	1290	MG 250/80
16"	1130	425	375	118		655	700	660	1650	MG 550
INCH				MILLIMETERS					KG.	TYPE

Hand lever

CLASS 1500

Fig. 450-15

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
2"	368	110	51	700	215				34	LEVER
3"	470	135	76	70		210	400	310	114	MG 50
4"	546	160	102	90		240	400	360	146	MG 50
6"	705	230	146	90		360	700	430	445	MG 150
8"	832	270	194	130		445	700	545	560	MG 250
10"	991	325	241	162		522	700	650	850	MG 250/80
12"	1130	365	289	118		550	700	660	1270	MG 550
14"	1257	418	318	200		652	700	670	2105	MG 550
16"	1384	460	362	200		705	700	670	3190	MG 550
INCH				MILLIMETERS					KG.	TYPE

Side view gear operator

Gear operator

Full Bore

Fully Welded

Overall dimensions Fully Welded valves reduced bore

CLASS 150

Fig. 460-1

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
3"X 2"	283	100	51	400	205				21	LEVER
4"X 3"	305	125	76	550	225				47	LEVER
6" X 4"	457	145	102	550	250				66	LEVER
8"X 6"	521	230	152	76		265	300	263	122	MG 987/S
10"X 8"	559	265	203	70		360	500	320	257	MG 50
12"X 8"	635	265	203	70		360	500	320	308	MG 50
12"X 10"	635	315	254	92		400	500	345	399	MG 100
14"X 10"	762	315	254	92		400	500	345	505	MG 100
14"X 12"	762	355	305	125		450	700	415	537	MG 180
16"X14"	838	385	336	125		485	700	415	735	MG 180
18"X16"	914	420	387	137		500	700	440	881	MG 250
20"X18"	991	470	438	137		600	700	440	283	MG 250
22"X 20"	1092	505	489	137		680	700	440	1283	MG 250/80
24"X20"	1143	505	489	137		680	700	440	1564	MG 250/80
26"X 24"	1245	610	590	164		780	700	540	1759	MG 350
28"X 24"	1346	640	590	225		780	700	585	2425	MG 450
30"X 28"	1397	680	686	225		888	700	585	2840	MG 450
32"X 28"	1524	750	686	225		888	700	585	3251	MG 450
36"X 32"	1626	790	781	225		973	700	585	3867	MG 450
INCH				MILLIMETERS					KG.	TYPE

CLASS 300

Fig. 460-3

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
3"X 2"	283	100	51	400	205				22	LEVER
4"X 3"	305	125	76	550	225				47	LEVER
6" X 4"	457	145	102	60		206	300	135	78	MG 984/S
8"X 6"	521	230	152	76		265	300	263	115	MG 987/S
10"X 8"	559	265	203	92		375	500	345	277	MG 100
12"X 8"	635	265	203	92		375	500	345	296	MG 100
12"X 10"	635	315	254	92		400	500	345	393	MG 100
14"X 10"	762	315	254	92		400	500	345	418	MG 100
14"X 12"	762	355	305	125		450	700	415	567	MG 180
16"X14"	838	385	336	125		485	700	415	734	MG 180
18"X16"	914	420	387	137		500	700	440	1033	MG 250
20"X18"	991	470	438	137		600	700	440	1442	MG 250/80
22"X 20"	1093	505	489	164		680	700	540	1733	MG 350
24"X20"	1143	505	489	164		680	700	540	1985	MG 350
26"X 24"	1245	610	590	164		780	700	540	2925	MG 550
28"X 24"	1346	610		225			700	585	3100	MG 550
30"X 28"	1397	750		240			700	655	3650	MG 550
32"X 28"	1524	750		240			700	655	4468	MG 550
36"X 32"	1727	815		240			700	655	5887	MG 550
INCH				MILLIMETERS					KG.	TYPE

Reduced Bore

Overall dimensions Fully Welded valves reduced bore

CLASS 600

Fig. 460-6

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
3"X 2"	356	100	51	550	205				23	LEVER
4"X 3"	432	125	76	550	225				52	LEVER
6" X 4"	559	145	102	76		210	300	263	100	MG 987
8"X 6"	660	230	152	70		295	500	320	205	MG 50
10"X 8"	788	265	203	101		390	600	284	359	MG 150
12"X 8"	838	265	203	101		390	600	284	382	MG 150
12"X 10"	838	315	254	125		435	700	415	478	MG 180
14"X 10"	889	315	254	125		435	700	415	509	MG 180
14"X 12"	889	355	305	137		460	700	440	661	MG 250
16"X14"	991	385	336	137		490	700	440	921	MG 250/80
18"X16"	1092	420	387	164		540	700	540	1148	MG 350
20"X18"	1194	470	438	240		615	700	600	1762	MG 550
22"X 20"	1296	505	489	240		705	700	600	2141	MG 550
24"X20"	1397	505	489	240		705	700	600	2452	MG 550
26"X 24"	1448	610	590	240		810	700	600	3575	MG 550/115
28"X 24"	1448	610	590	240		810	700	600	4134	MG 550
30"X 28"	1651	790	686	240		883	700	655	4838	MG 550
32"X 28"	1651	790	686	240		883	700	655	5363	MG 550
36"X 32"	2083	915	781	160		977	700	655	6762	RG 3800
INCH	MILLIMETERS								KG.	TYPE

Hand lever

Side view gear operator

Pietro Fiorentini®

Fully Welded

CLASS 600

Fig. 460-9

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
3"x 2"	381	110	51	700	215				51	LEVER
4"x 3"	457	130	76	70		190	400	310	85	MG 50
6"x 4"	610	155	102	90		230	400	360	190	MG 50
8"x 6"	737	191	152	90		340	550	360	345	MG 150
10"x 8"	838	225	203	105		410	700	430	560	MG 180
12"x 10"	965	280	254	130		490	700	545	790	MG 250
14"x 10"	1029	280	254	130		490	700	545	990	MG 250
16"x 12"	1130	332	305	162		510	700	650	1710	MG 250/80
18"x 14"	1219	375	324	162		560	700	650	1750	MG 250/80
20"x 16"	1321	425	375	118		655	700	650	1920	MG 550
INCH				MILLIMETERS					KG.	TYPE

Hand lever

CLASS 1500

Fig. 460-15

SIZE	BW	B	D	E(S1)	H2	H1	L	P	WEIGHT BW	GEAR OPERATOR
3"x 2"	470	110	51	700	215				79	LEVER
4"x 3"	546	135	76	70		210	400	310	738	MG 50
6"x 4"	705	160	102	90		240	400	360	255	MG 50
8"x 6"	832	230	146	90		360	700	430	495	MG 150
10"x 8"	991	270	194	130		445	700	545	590	MG 250
12"x 10"	1130	325	241	162		522	700	650	910	MG 250/80
14"x 10"	1257	325	241	162		522	700	650	1190	MG 250/80
16"x 12"	1384	365	289	118		550	700	660	1310	MG 550
18"x 14"	1537	418	318	200		652	700	670	2350	MG 550
INCH				MILLIMETERS					KG.	TYPE

Side view gear operator

Reduced Bore

Extended Stems

Fully Welded

TECHNICAL INFORMATION

Seat/Seal pressure - Temperature rating

Working pressure
Intermittent service

Working temperature

Working pressure
Intermittent service

* The values are referred to the ASTM A105/ASTM A26-WCB material.
Please make reference to the ANSI B 16.34 regulation for the rating of other materials.

The table shows the breakway of the ball valve Pietro Fiorentini in working conditions at room temperature.
For the scaling of the actuator or for the high/low temperature service it is recommended to consider a factor of safety.
Breakway torque of reduced bore valves refers to the lower nominal diameter.

EXAMPLE:
Fig. 450.6 DN 10" Class 600 = 2850 Nm (2100 ft. lbs)
Fig. 460.6 DN 12"x10" Class 600 = 2850 Nm (2100 ft. lbs)

Pietro Fiorentini S.p.A.
via E.Fermi 8/10
I-36057 Arcugnano (VI)
Italy

Tel. +39 0444 968.511
Fax. +39 0444 960.468

via Rosellini 1
I-20124 Milano
Italy

Tel. +39 02 696.14.21
Fax. +39 02 688.04.57

www.fiorentini.com

The data are not binding. We reserve the right to make eventual cheanges without prior notice.

CT-s519-E April 2007