



شرکت ملی گاز ایران

National Iranian Gas Co.

مدیریت پژوهش و فناوری

Research and Technology Management

امور تدوین استانداردها

Standardization Division

**IGS**

Iranian Gas Standards

مشخصات فنی خرید

شیرهای توپکی کلاس ۱۵۰

Ball Valves Class Rating :150 part(1)

SPECIFICATION FOR BALL VALVES,

WELDING ENDS , CLASS, 150

SIZE : 2-6 IN

BALL VALVE , FOR GAS DISTRIBUTION AND TRANSMISSION PIPE -  
LINE , CARBON STEEL , BUTT WELDING ENDS , CLASS 150 , WRENCH  
OPERATED .

BODY SHALL BE ALL WELDED TYPE , ANTI STATIC DESIGN.  
STEM SHALL BE OF THE ANTI BLOW OUT TYPE WITH AT LEAST TWO OR  
MORE STEM SEALS IN THE DESIGN , TOP SEAL SHALL BE EASILY  
REPLACEABLE UNDER PRESSURE .

ALL VALVES SHALL BE FURNISHED WITH A VALVE POSITION IND-  
ICATOR , SHOWING OPEN POSITION IN THE DIRECTION OF FLOW AND  
CLOSE POSITION PERPENDICULAR TO DIRECTION OF FLOW , THE SHUT  
AND OPEN TERMS ( IN ENGLISH ) SHALL BE PERMANENTLY INDICATED  
IN A VISIBLE LOCATION.

DESIGN , DIMENSIONS , TESTING AND MARKING ALL ACCORDING  
TO API 6D LATEST EDITION .

MATERIAL:

BODY, COVER AND BONNET: CAST CARBON STEEL AT LEAST TO ASTM A216 GRADE WCB/WCC OR TO B.S. 1504-161 GRADE 430/480 ,OR FORGED CARBON STEEL AT LEAST TO ASTM A105 OR B.S. 1503 GRADE 221/ 550 , OR CARBON STEEL PLATE AT LEAST TO ASTM A 516 GR.70.

BALL : CAST CARBON STEEL AT LEAST TO ASTM A216 GRADE WCB/WCC. OR TO B.S.1504 -161 GRADE 430/480 ,OR FORGED CARBON STEEL TO ASTM A 105 OR B.S. 1503 GRADE 221/550 .

BALL SHALL BE HARD CHROMIUM OR ELECTROLESS NICKEL PLATED WITH FINAL MIRROR FINISH PREPARATION AND MIN. PLATING THICKNESS OF 25  $\mu$ M ACC. TO ASTM B 650 AND B 656 RESPECTIVELY.

STEM : SHALL BE FORGED CARBON STEEL AT LEAST TO ASTM A105 OR B.S. 1503 GRADE 221/550 ,OR BAR ALLOY STEEL AT LEAST TO AISI 4140 WITH HARD CHROMIUM OR ELECTROLESS NICKEL PLATING .

NON- METALLIC PARTS: O-RING AND SOFT SEATS SHALL BE MADE OF SUITABLE ELASTOMER FLURO- CARBON MATERIAL (TYPE AND RELEVANT STANDARD SHALL BE SPECIFIED BY MANUFACTURER).

VALVE EXTERNAL SURFACE SHALL BE PAINTED ACC .TO MANUFACTURING STANDARD.

(TECHNICAL DETAILS SHALL BE PROVIDED BY MANUFACTURER).

3/ IN CASE OF REDUCED BORE ,PORT AREA SHALL BE SPECIFIED  
BY MANUFACTURER.

4/ WRENCH SHALL BE QUOTED SEPARATELY.

تاریخ تائید : در کمیته تخصصی لوله ، اتصالات و شیرآلات مورخ  
تاریخ تصویب : در کمیته عالی استاندارد مورخ

RADIOGRAPHY: ALL VALVES ENDS IN 5 PERCENT OF EACH INDIVIDUAL ORDER SHALL BE 100 PERCENT RADIOGRAPHED FOR A LENGTH AT LEAST TWICE OF THE THICKNESS OF THE VALVE BODY.

ACCEPTANCE SHALL BE LEVEL 1,2,3 ACC.TO ASTM E446.

FULL BORE:

<u>SIZE</u> (IN)	<u>END</u> (IN)	<u>TO</u>	<u>END</u> (MM)
2	8 1/2		215.9
3	11 1/8		282.5
4	12		304.8
6	18		457.2

REDUCED BORE:

<u>SIZE</u> (IN)	<u>END</u> (IN)	<u>TO</u>	<u>END</u> (MM)
2	8 1/2		215.9
3	11 1/8		282.5
4	12		304.8
6	18		457.2

NOTES:

- 1/ MAX. REQUIRE OPENING TORQUE SHALL BE 32 KG-M UNDER MAX. CLASS RATING PRESSURE.
- 2/ FOR BURRIED TYPE ,STEM EXTENSION SHALL BE SPECIFIED BY END USER.

SPECIFICATION FOR BALL VALVES,

FLANGED ENDS , CLASS 150 ,

SIZE: 8 - 12 IN.

BALL VALVE, FOR GAS DISTRIBUTION AND TRANSMISSION PIPE-  
LINE, CARBON STEEL ,FLANGED ENDS, R.F., C.S.F., CLASS 150,  
BALL SHALL BE TRUNNION MOUNTED ,GEAR OPERATED ,ANTI STA-  
TIC DESIGN, DOUBLE BLOCK AND BLEED FACILITY IN OPEN AND  
CLOSE POSITION, WITH SEALANT INJECTION SYSTEM.

FIRE SAFE ACC. TO API RP6F OR API 607 ,OR B.S. 5146 .

STEM SHALL BE OF ANTI BLOW OUT TYPE WITH AT LEAST TWO  
OR MORE STEM SEALS IN DESIGN , TOP SEAL SHALL BE EASILY RE-  
PLACEABLE UNDER PRESSURE AND TO BE FITTED WITH THE FACILITY  
FOR INJECTION OF SEALANT .

ALL VALVES SHALL BE FURNISHED WITH A VALVE POSITION INDI-  
CATOR, SHOWING OPEN POSITION IN THE DIRECTION OF FLOW AND  
CLOSE POSITION PERPENDICULAR TO DIRECTION OF FLOW.

THE SHUT AND OPEN TERMS ( IN ENGLISH ) SHALL BE EMBOSSED  
IN A VISIBLE LOCATION .

DESIGN, DIMENSIONS, TESTING AND MARKING ALL ACC. TO API  
6D LATEST EDITION.

SPECIFICATION FOR BALL VALVES,

FLANGED ENDS , CLASS 150 ,

SIZE: 8 - 12 IN.

BALL VALVE, FOR GAS DISTRIBUTION AND TRANSMISSION PIPE-  
LINE, CARBON STEEL ,FLANGED ENDS, R.F., C.S.F., CLASS 150,  
BALL SHALL BE TRUNNION MOUNTED ,GEAR OPERATED ,ANTI STA-  
TIC DESIGN, DOUBLE BLOCK AND BLEED FACILITY IN OPEN AND  
CLOSE POSITION, WITH SEALANT INJECTION SYSTEM.

FIRE SAFE ACC. TO API RP6F OR API 607 ,OR B.S. 5146 .

STEM SHALL BE OF ANTI BLOW OUT TYPE WITH AT LEAST TWO  
OR MORE STEM SEALS IN DESIGN , TOP SEAL SHALL BE EASILY RE-  
PLACEABLE UNDER PRESSURE AND TO BE FITTED WITH THE FACILITY  
FOR INJECTION OF SEALANT .

ALL VALVES SHALL BE FURNISHED WITH A VALVE POSITION INDI-  
CATOR, SHOWING OPEN POSITION IN THE DIRECTION OF FLOW AND  
CLOSE POSITION PERPENDICULAR TO DIRECTION OF FLOW.

THE SHUT AND OPEN TERMS ( IN ENGLISH ) SHALL BE EMBOSSED  
IN A VISIBLE LOCATION .

DESIGN, DIMENSIONS, TESTING AND MARKING ALL ACC. TO API  
6D LATEST EDITION.

4

MATERIALS:

BODY, COVER AND BONNET: CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/WCC OR TO B.S. 1504 GRADE 430/480 OR FORGED CARBON STEEL AT LEAST TO ASTM A105 OR TO B.S. 1503 GRADE 221/550,

BALL : CAST CARBON STEEL AT LEAST TO ASTM A216 GRADE WCB/WCC OR TO B.S. 1504- 161 GRADE 430/480 ,OR FORGED CARBON STEEL TO ASTM A 105 OR. B.S. 1503 GRADE 221/550 BALL SH — ALL BE HARD CHROMIUM OR ELECTROLESS NICKEL PLATED WITH FINAL MIRROR FINISH PREPARATION AND MIN.PLATING THICKNESS OF 25  $\mu$ M ACC. TO ASTM B 650 AND ASTM B 656 RESPECTIVELY.

STEM : SHALL BE FORGED CARBON STEEL AT LEAST TO ASTM A 105 OR TO B.S.1503 GRADE 221/550, OR BAR ALLOY STEEL AT LEAST TO AISI 4140 WITH HARD CHROMIUM OR ELECTROLESS NICKEL PLATING .

BOLTS AND NUTS: SHALL BE ACC.TO ASTM A 193 B7/ 194 2H.

NON- METALLIC PARTS: SHALL BE MADE OF SUITABLE ELASTOMER FLUOROCARBON METERIAL (TYPE AND RELEVANT STANDARD SHALL BE SPECIFIED BY MANUFACTURER) .

2



VALVE EXTERNAL SURFACE SHALL BE PAINTED ACC. TO MANUFACTURING STANDARD ( TECHNICAL DETAILS SHALL BE PROVIDED BY MANUFACTURER ).

FULL BORE

<u>SIZE</u> ( IN )	<u>FACE TO FACE</u>		<u>BODY CONSTRUCTION</u>
	( IN )	( MM )	
8	18	457.2	SPLIT BODY
8	18	"	FULLY WELDED
10	21	533.4	SPLIT BODY
10	21	"	FULLY WELDED
12	24	609.6	SPLIT BODY
12	24	"	FULLY WELDED

REDUCED BORE

<u>SIZE</u> ( IN )	<u>FACE TO FACE</u>		<u>BODY CONSTRUCTION</u>
	( IN )	( MM )	
8	18	457.2	SPLIT BODY
8	18	"	FULLY WELDED
10	21	533.4	SPLIT BODY
10	21	"	FULLY WELDED
12	24	609.6	SPLIT BODY
12	24	"	FULLY WELDED

NOTES :

- 1/ IN CASE OF REDUCED BORE, PORT AREA SHALL BE SPECIFIED BY MANUFACTURER.

تاریخ نائید : در کمیته تخصصی لوله ، اتصالات و شیرآلات مورخ  
تاریخ تصویب : در کمیته عالی استاندارد مورخ

SPECIFICATION FOR BALL VALVES,  
WELDING ENDS , CLASS 150 ,  
SIZE :8 -12 IN .

BALL VALVE , FOR GAS DISTRIBUTION AND TRANSMISSION PIPE-  
LINE , CARBON STEEL , BUTT WELDING ENDS , CLASS 150 , BALL  
SHALL BE TRUNNION MOUNTED , GEAR OPERATED , BODY SHALL BE  
ALL WELDED TYPE, ANTI STATIC DESIGN , DOUBLE BLOCK AND BLEED  
FACILITY .

FIRE SAFE ACC .TO API 607 OR API 607, OR B.S. 5146 .

STEM SHALL BE OF ANTI BLOW OUT TYPE WITH AT LEAST TWO  
OR MORE STEM SEALS IN DESIGN , TOP SEAL SHALL BE EASILY RE-  
PLACEABLE UNDER PRESSURE AND TO BE FITTED WITH THE FACILITY  
FOR INJECTION OF SEALANT .

ALL VALVES SHALL BE FURNISHED WITH A VALVE POSITION INDI-  
CATOR , SHOWING OPEN POSITION IN THE DIRECTION OF FLOW AND  
CLOSE POSITION PERPENDICULAR TO DIRECTION OF FLOW .

THE SHUT AND OPEN TERMS ( IN ENGLISH ) SHALL BE EMBOSSED  
IN A VISIBLE LOCATION .

DESIGN , DIMENSIONS , TESTING AND MARKING ALL ACC.TO API  
6D LATEST EDITION .

41

MATERIALS :

BODY, COVER AND BONNET: CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/WCC OR TO B. S. 1504 GRADE 430 / 480 , OR FORGED CARBON STEEL AT LEAST TO ASTM A105 OR TO B.S. 1503 GRADE 221 / 550 , OR CARBON STEEL PLATE AT LEAST TO ASTM A 516 GR.70.

BALL : CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/ WCC OR TO B.S. 1504-161 GRADE 430 / 480 , OR FORGED CARBON STEEL TO ASTM A105 OR B.S. 1503 GRADE 221/550 .  
BALL SHALL BE HARD CHROMIUM OR ELECTROLESS NICKEL PLATED WITH FINAL MIRROR FINISH PREPARATION AND MIN. PLATING THICKNESS OF 25  $\mu$ M ACC .TO ASTM B 650 AND ASTM B 656 RESPECTIVELY.

STEM : SHALL BE FORGED CARBON STEEL AT LEAST TO ASTM A105 OR TO B.S. 1503 GRADE 221/550 OR BAR ALLOY STEEL AT LEAST TO AISI 4140 WITH HARD CHROMIUM OR ELECTROLESS NICKEL PLATING .

NON - METALLIC PARTS: O-RINGS AND SOFT SEATS SHALL BE MADE OF SUITABLE ELASTOMER FLURO - CARBON MATERIAL( TYPE AND RELEVANT STANDARD SHALL BE SPECIFIED BY MANUFACTURER ) .

VALVE EXTERNAL SURFACE SHALL BE PAINTED ACC. TO MANUFACTURING STANDARD ( TECHNICAL DETAILS SHALL BE PROVIDED BY MANUFACTURER ) .

RADIOGRAPHY : ALL VALVES ENDS IN 5 PERCENT OF EACH INDIVIDUAL ORDER SHALL BE 100 PERCENT RADIOGRAPHED FOR A LENGTH AT LEAST TWICE OF THE THICKNESS OF THE VALVE BODY .

ACCEPTANCE SHALL BE LEVELS 1,2,3, ACC .TO ASTM E 446.

FULL BORE :

<u>SIZE</u> ( IN )	<u>END TO</u> ( IN )	<u>END</u> ( MM )
8	20½	520.7
10	22	558.8
12	25	635

REDUCED BORE :

<u>SIZE</u> ( IN )	<u>END TO</u> ( IN )	<u>END</u> ( MM )
8	20½	520.7
10	22	558.8
12	25	635

NOTES :

- 1/ IN CASE OF REDUCED BORE, PORT AREA SHALL BE SPECIFIED BY MANUFACTURER .

تاریخ تأیید : در کمیته تخصصی لوله و اتصالات و شیر آلات مورخ

کمیته عالی استاندارد مورخ

تاریخ تصویب : در

6/

SPECIFICATION FOR BALL VALVES,  
FLANGED ENDS , CLASS 150,  
SIZE : 16 - 24 IN.

2048

BALL VALVE, FOR GAS DISTRIBUTION AND TRANSMISSION PIPELINE, CARBON STEEL , FLANGED ENDS, R.F., C.S.F., CLASS 150 , BALL SHALL BE TRUNNION MOUNTED, GEAR OPERATED, ANTI STATIC DESIGN, DOUBLE BLOCK AND BLEED FACILITY IN OPEN AND CLOSE POSITION, WITH SEALANT INJECTION SYSTEM .

FIRE SAFE ACC. TO API PR 6F OR API 607 OR B.S. 5146 .

STEM SHALL BE OF THE ANTI BLOW OUT TYPE WITH AT LEAST TWO OR MORE STEM SEALS IN THE DESIGN, TOP SEAL SHALL BE EASILY REPLACEABLE UNDER PRESSURE AND TO BE FITTED WITH THE FACILITY FOR INJECTION OF SEALANT.

ALL VALVES SHALL BE FURNISHED WITH A VALVE POSITION INDICATOR SHOWING OPEN POSITION IN THE DIRECTION OF FLOW AND CLOSE POSITION PERPENDICULAR TO DIRECTION OF FLOW.

THE SHUT AND OPEN TERMS( IN ENGLISH) SHALL BE EMBOSSED IN A VISIBLE LOCATION .

DESIGN , DIMENSIONS, TESTING AND MARKING ALL ACC. TO API 6D LATEST EDITION.

MATERIALS:

BODY, COVER AND BONNET: CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/WCC OR TO B.S. 1504 GRADE 430/480 OR FORGED CARBON STEEL AT LEAST TO ASTM A105 OR TO B.S. 1503 GRADE 221/550,

BALL : CAST CARBON STEEL AT LEAST TO ASTM A216 GRADE WCB/WCC OR TO B.S. 1504-161 GRADE 430/480 ,OR FORGED CARBON STEEL TO ASTM A 105 OR. B.S. 1503 GRADE 221/550 BALL SH— ALL BE HARD CHROMIUM OR ELECTROLESS NICKEL PLATED WITH FINAL MIRROR FINISH PREPARATION AND MIN.PLATING THICKNESS OF 25  $\mu$ M ACC. TO ASTM B 650 AND ASTM B 656 RESPECTIVELY.

STEM : SHALL BE FORGED CARBON STEEL AT LEAST TO ASTM A 105 OR TO B.S.1503 GRADE 221/550, OR BAR ALLOY STEEL AT LEAST TO AISI 4140 WITH HARD CHROMIUM OR ELECTROLESS NICKEL PLATING .

BOLTS AND NUTS: SHALL BE ACC.TO ASTM A 193 B7/ 194 2H.

NON- METALLIC PARTS: SHALL BE MADE OF SUITABLE ELASTOMER FLURO-CARBON METERIAL (TYPE AND RELEVANT STANDARD SHALL BE SPECIFIED BY MANUFACTURER) .

VALVE EXTERNAL SURFACE SHALL BE PAINTED ACC. TO MANUFACTURING STANDARD ( TECHNICAL DETAILS SHALL BE PROVIDED BY MANUFACTURER).

FULL BORE

<u>SIZE</u> (IN)	<u>FACE TO FACE</u> (IN)	<u>FACE TO FACE</u> (MM)	<u>BODY CONSTRUCTION</u>
16	30	762	SPLIT BODY
16	30	"	FULLY WELDED
20	36	914.4	SPLIT BODY
20	36	"	FULLY WELDED
22	—	—	SPLIT BODY
22	—	—	FULLY WELDED
24	42	1066.8	SPLIT BODY
24	42	1066.8	FULLY WELDED

REDUCED BORE

<u>SIZE</u> (IN)	<u>FACE TO FACE</u> (IN)	<u>FACE TO FACE</u> (MM)	<u>BODY CONSTRUCTION</u>
16	30	762	SPLIT BODY
16	30	"	FULLY WELDED
20	36	914.4	SPLIT BODY
20	36	"	FULLY WELDED
22	—	—	SPLIT BODY
22	—	—	FULLY WELDED
24	42	1066.8	SPLIT BODY
24	42	1066.8	FULLY WELDED

NOTES:

- 1/ MATERIAL AND THICKNESS OF MATCHING PIPE SHALL BE SPECIFIED BY END USER.
- 2/ OTHER METHODS OF OPERATION AND RELEVANT TECH. SPEC SHALL BE SPECIFIED BY END USER.
- 3/ IN CASE OF REDUCED BORE , PORT AREA SHALL BE SPECIFIED BY MANUFACTURER .

تاریخ تائید : در کمیته تخصصی لوله ، اتصالات و شیر آلات مورخ  
تاریخ تصویب : در کمیته عالی استاندارد مورخ



SPECIFICATION FOR BALL VALVES,

WELDING ENDS , CLSAA 150,

SIZE: 16 - 24 IN ,

BALL VALVE , FOR GAS DISTRIBUTION AND TRANSMISSION PIPE-  
LINE , CARBON STEEL , BUTT WELDING ENDS, CLASS 150 ,BALL SHALL  
BE TRUNNION MOUNTED , GEAR OPERATED ,BODY SHALL BE ALL WEL -  
DED TYPE ,ANTI STATIC DESIGN, DOUBLE BLOCK AND BLEED FACILITY.

FIRE SAFE ACC.TO API PR 6F OR API 607 OR B.S. 5146 .

STEM SHALL BE OF THE ANTI BLOW OUT TYPE WITH AT LEAST  
TWO OR MORE STEM SEALS IN THE DESIGN, TOP SEAL SHALL BE EASILY  
REPLACEABLE UNDER PRESSURE AND TO BE FITTED WITH THE FACILITY  
FOR INJECTION OF SEALANT .

ALL VALVES SHALL BE FURNISHED WITH A VALVE POSITION INDI-  
CATOR ,SHOWING OPEN POSITION IN THE DIRECTION OF FLOW AND CL-  
OSE POSITION PERPENDICULAR TO DIRECTION OF FLOW.

THE SHUT AND OPEN TERMS(IN ENGLISH ) SHALL BE EMBOSSED IN  
A VISIBLE LOCATION .

DESIGN ,DIMENSIONS , TESTING AND MARKING ALL ACC. TO API  
6D LATEST EDITION .

MATERIALS :

BODY ,COVER AND BONNET: CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/WCC OR TO B.S. 1504 GRADE 430/480 , OR FORGED CARBON STEEL AT LEAST TO ASTM A:105 OR TO B.S. 1503 GRADE 221/550, OR CARBON STEEL PLATE AT LEAST TO ASTM A 516 GR.70.

BALL : CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/WCC OR TO B.S. 1504-161 GRADE 430/480 ,OR FORGED CARBON STEEL TO ASTM A 105 OR B.S. 1503 GRADE 221/ 550 .  
BALL SHALL BE HARD CHROMIUM OR ELECTRO-LESS NICKEL PLATED WITH FINAL MIRROR FIN-ISH PREPARATION AND MIN. PLATING THICK-NESS OF 25  $\mu$ M ACC. TO ASTM B 650 AND ASTM B 656 RESPECTIVELY.

STEM : SHALL BE FORGED CARBON STEEL AT LEAST TO ASTM A 105 OR TO B.S. 1503 GRADE 221/ 550 , OR BAR ALLOY STEEL AT LEAST TO AISI 4140 WITH HARD CHROMIUM OR ELECTROLESS NICKEL PLATING .

NON - METALLIC PARTS: O-RINGS AND SOFT SEATS SHALL BE MADE OF SUITABLE ELASTOMER FLURO -CARBON MATE-RIAL .(TYPE AND RELEVANT STANDARD SHALL BE SPECIFIED BY MANUFACTURER).

VALVE EXTERNAL SURFACE SHALL BE PAINTED ACC. TO MANUFACTURING STANDARD ( TECHNICAL DETAILS SHALL BE PROVIDED BY MANUFACTURER ).

RADIOGRAPHY: ALL VALVES ENDS IN 5 PERCENT OF EACH INDIVIDUAL ORDER SHALL BE 100 PERCENT RADIOGRAPHED FOR A LENGTH AT LEAST TWICE OF THE THICKNESS OF THE VALVE BODY .

ACCEPTANCE SHALL BE LEVELS 1,2,3 ACC TO ASTM E 446.

FULL BORE :

<u>SIZE</u> (IN)	<u>END TO END</u> (IN)	<u>END TO END</u> (MM)
16	33	838.2
20	39	990.6
22	—	—
24	45	1143

REDUCED BORE :

<u>SIZE</u> (IN)	<u>END TO END</u> (IN)	<u>END TO END</u> (MM)
16	33	838.2
20	39	990.6
22	—	—
24	45	1143

NOTES :

- 1/ MATERIAL AND THICKNESS OF MATCHING PIPE SHALL BE SPECIFIED BY END USER.

- 2/ OTHER METHODS OF OPERATION AND RELEVANT TECH .  
SPEC SHALL BE SPECIFIED BY END USER.
- 3/ IN CASE OF REDUCED BORE, PORT AREA SHALL BE SPE-  
CIFIED BY MANUFACTURER.

تاریخ: تأیید: در کمیته تخصصی لوله ، اتصالات و شیر آلات مورخ  
تاریخ تصویب: در کمیته عالی استاندارد مورخ

FULL BORE:

<u>SIZE</u> (IN)	<u>FACE TO FACE</u> (IN) (MM)		<u>BODY CONSTRUCTION</u>
2	8 $\frac{1}{2}$	215.9	SPLIT BODY
2	"	"	FULLY WELDED
3	11 $\frac{1}{8}$	282.5	SPLIT BODY
3	"	"	FULLY WELDED
4	12	304.8	SPLIT BODY
4	"	"	FULLY WELDED

REDUCED BORE:

<u>SIZE</u> (IN)	<u>FACE TO FACE</u> (IN) (MM)		<u>BODY CONSTRUCTION</u>
2	8 $\frac{1}{2}$	215.9	SPLIT BODY
2	"	"	FULLY WELDED
3	11 $\frac{1}{8}$	282.5	SPLIT BODY
3	"	"	FULLY WELDED
4	12	304.8	SPLIT BODY
4	"	"	FULLY WELDED

NOTES:

- 1/ MAX REQUIRE OPENING TORQUE SHALL BE 32 KG-M UNDER MAX. CLASS RATING PRESSURE.
- 2/ IN CASE OF REDUCED BORE, PORT AREA SHALL BE SPECIFIED BY MANUFACTURER
- 3/ WRENCH SHALL BE QUOTED SEPARATELY.

تاریخ تأیید: در کمیته تخصصی لوله، اتصالات و شیر آلات مورخ  
تاریخ تصویب: در کمیته عالی استاندارد مورخ

MATERIALS:

BODY, COVER AND BONNET: CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/WCC OR TO B.S. 1504 GRADE 430/480, OR FORGED CARBON STEEL AT LEAST TO ASTM A105 OR TO B.S. 1503 GRADE 221/550, OR CARBON STEEL PLATE AT LEAST TO ASTM A 516 GR.70.

BALL : CAST CARBON STEEL AT LEAST TO ASTM A 216 GRADE WCB/WCC OR TO B.S. 1504-161 GRADE 430/480 , OR FORGED CARBON STEEL AT LEAST TO ASTM A 105 OR B.S. 1503 GRADE 221/ 550.

BALL SHALL BE HARD CHROMIUM OR ELECTROLESS NICKEL PLATED WITH FINAL MIRROR FINISH PREPARATION AND MIN. PLATING THICKNESS OF 25  $\mu$ M ACC. TO ASTM B 650 AND ASTM B 656 RESPECTIVELY.

STEM : SHALL BE FORGED CARBON STEEL AT LEAST TO ASTM A 105 OR TO B.S. 1503 GRADE 221/550, OR BAR ALLOY STEEL AT LEAST TO AISI 4140 WITH HARD CHROMIUM OR ELECTROLESS NICKEL PLATING .

BOLTS AND NUTS : SHALL BE ACC. TO ASTM A 193 B7/194 2H .

NON-METALLIC PARTS: SHALL BE MADE OF SUITABLE ELASTOMER FLURO-CARBON MATERIAL (TYPE AND RELEVANT STANDARD SHALL BE SPECIFIED BY MANUFACTURER ).

VALVE EXTERNAL SURFACE SHALL BE PAINTED ACC. TO MANUFACTURING STANDARD (RELEVANT TECHNICAL DETAILS SHALL BE PROVIDED BY MANUFACTURER .)