



**FLANGED STEEL
BALL VALVES
A-20 SERIES**





FLANGED STEEL BALL VALVES A-20 SERIES



- Full Bore
- Range: 15mm to 200mm
- Locking Device: Standard
- Anti - static
- ANSI Class 150
- ISO 5211 Mounting Pad
- Price: Highly Competitive
- Quality: ISO 9001/9002



FIRESAFE SERIES

Fig. EA25AF
Fig. EA25AC
A - 20 Series
Firesafe Certified
Stainless Steel
& Carbon Steel



NON - FIRESAFE SERIES

Fig. EA402F
Fig. EA402C
A - 20 Series
Non - Firesafe
Stainless Steel
& Carbon Steel

EMICO- FIGURE NUMBERING SYSTEM



Example: EA25AF = EMICO ball valve firesafe, A351 CF8M S/S flanged ANSI 150

Applications

EMICO A-20 Series ball valves comply with API & ASME / ANSI standards and are suitable for oil & petroleum, LP Gas, petrochemical processing, pulp & paper, general industry. The valves are suitable for handling a variety of fluids in corrosive and non - corrosive applications in oil, petrochemical, chemical, gas, paper, and general processing.

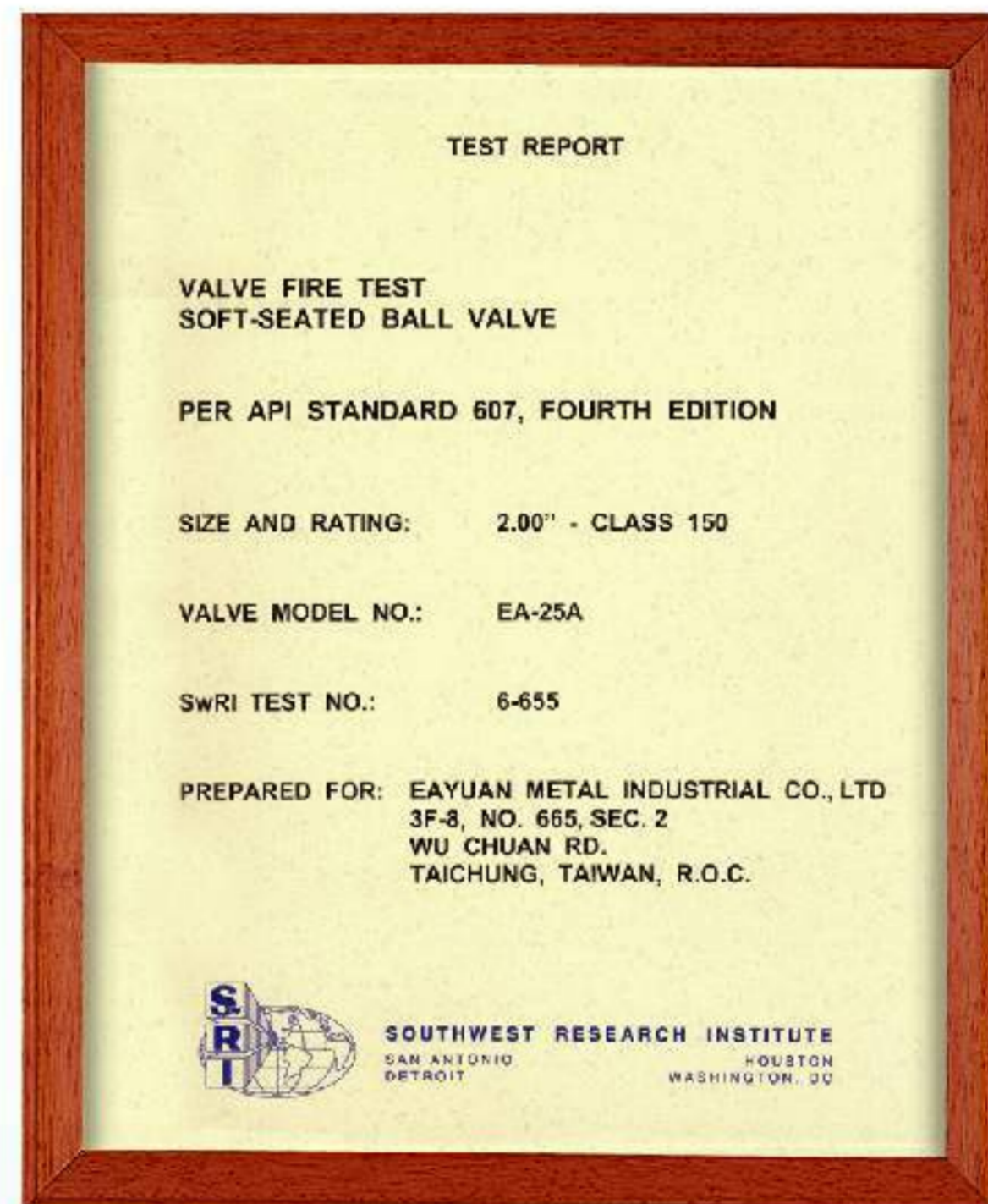
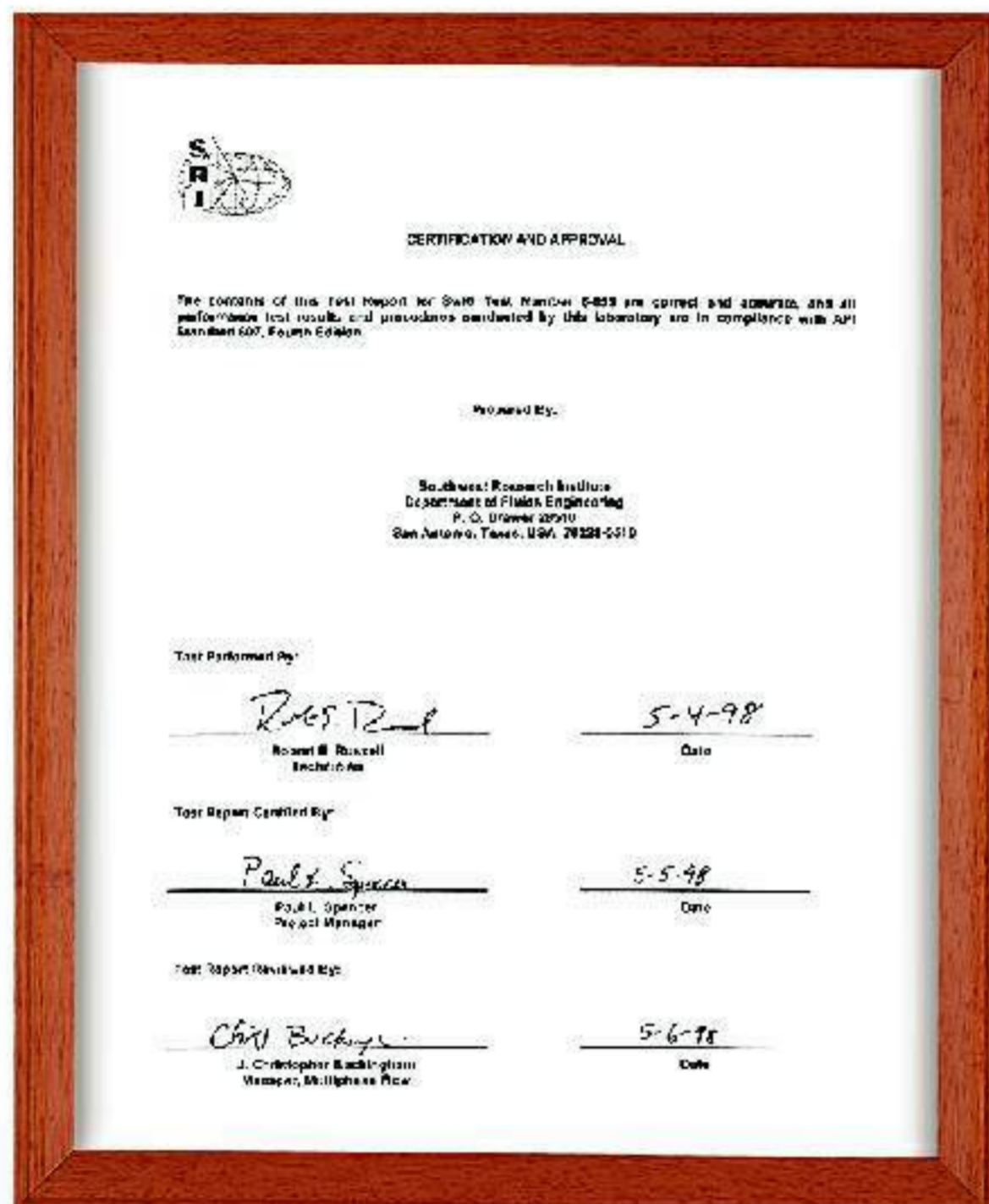
FLANGED STEEL BALL VALVES A-20 SERIES



EMICO Ball Valve Fire Safe to API 607 Ed. 4

EMICO EA - 25A ball valves have independently - witnessed fire tests to API 607 Ed. 4.

These tests were performed and witnessed by Southwest Research Institute, Houston, USA and TUV Rheinland Taiwan.



Typical EMICO fire safe test certificates

EMICO fire safe ball valves are designed & manufactured to an approved fire safe tested standard to minimise both external and internal fluid leakages in the event of a plant fire.

During a fire, PTFE soft seals are damaged or destroyed. Examples of how metal-to-metal contact is achieved at all sealing areas are illustrated below.

Fig. 1: contact between the ball and the fire safe lip of the body, & **Fig. 2:** contact between the stem shoulder and machined backseat of the body.

Fig. 1 covers internal leakage and **Fig. 2** external leakage.

All fire safe valves are fitted with flexible graphite body seals and graphite stem packing.

Fig. 1-Ball/Body Contact

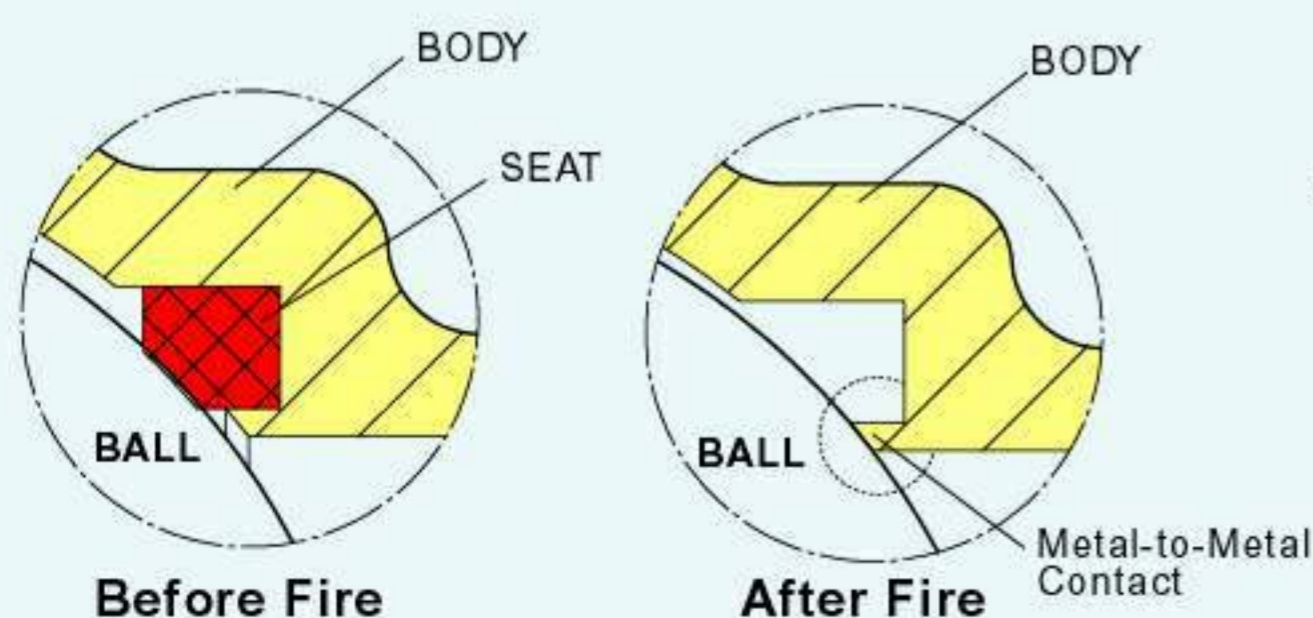
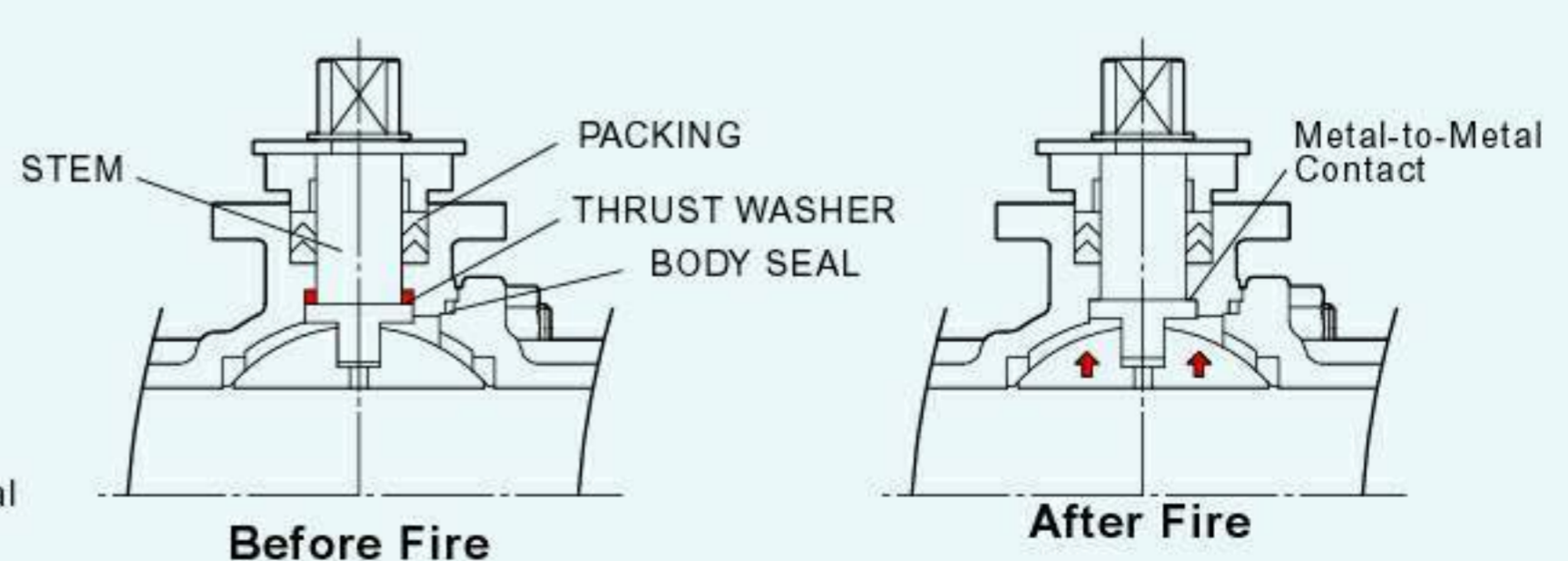
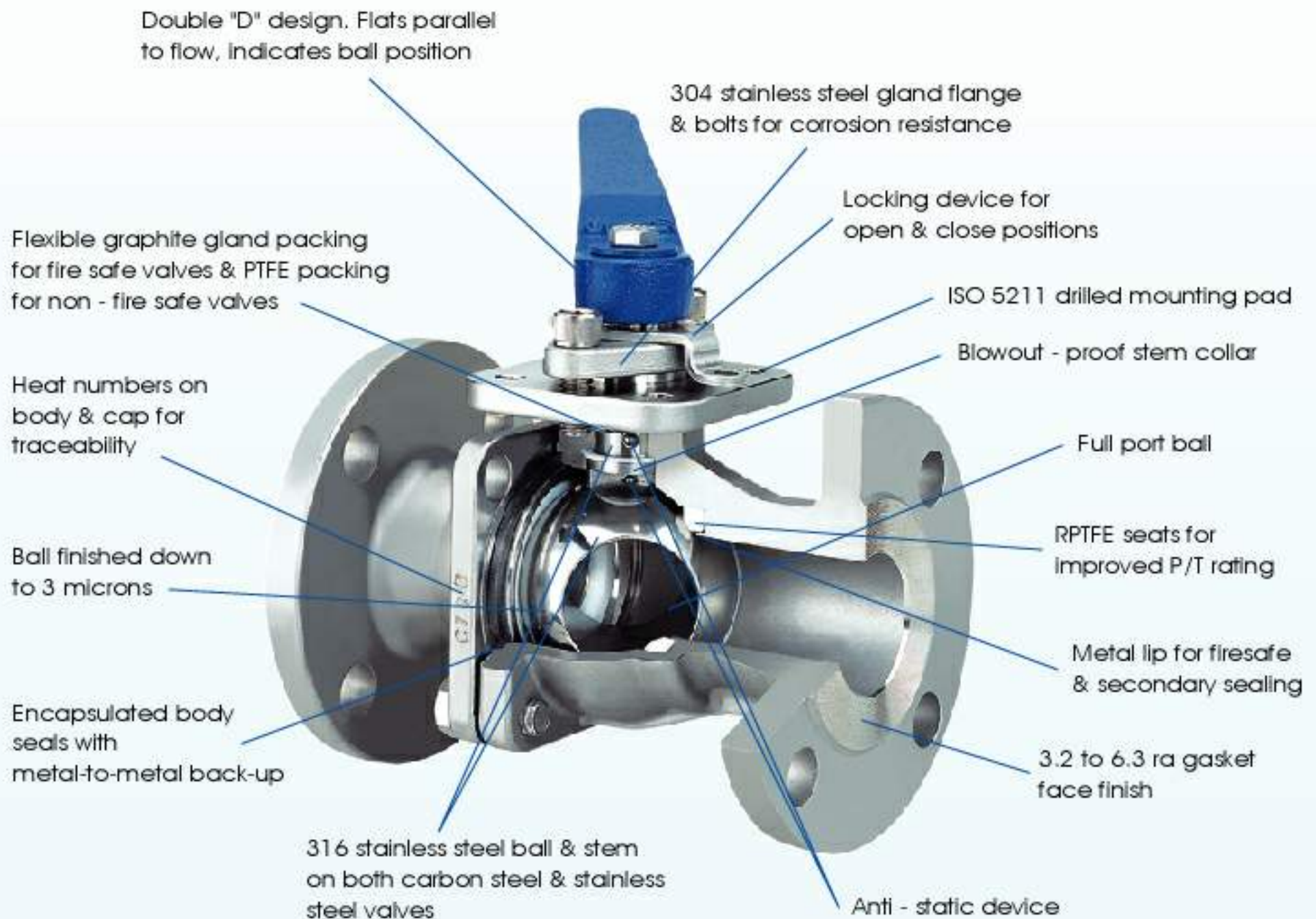


Fig. 2-stem/Body Contact



DESIGN



Cross-section of a typical EMICO full port, split body ball valve displaying basic design

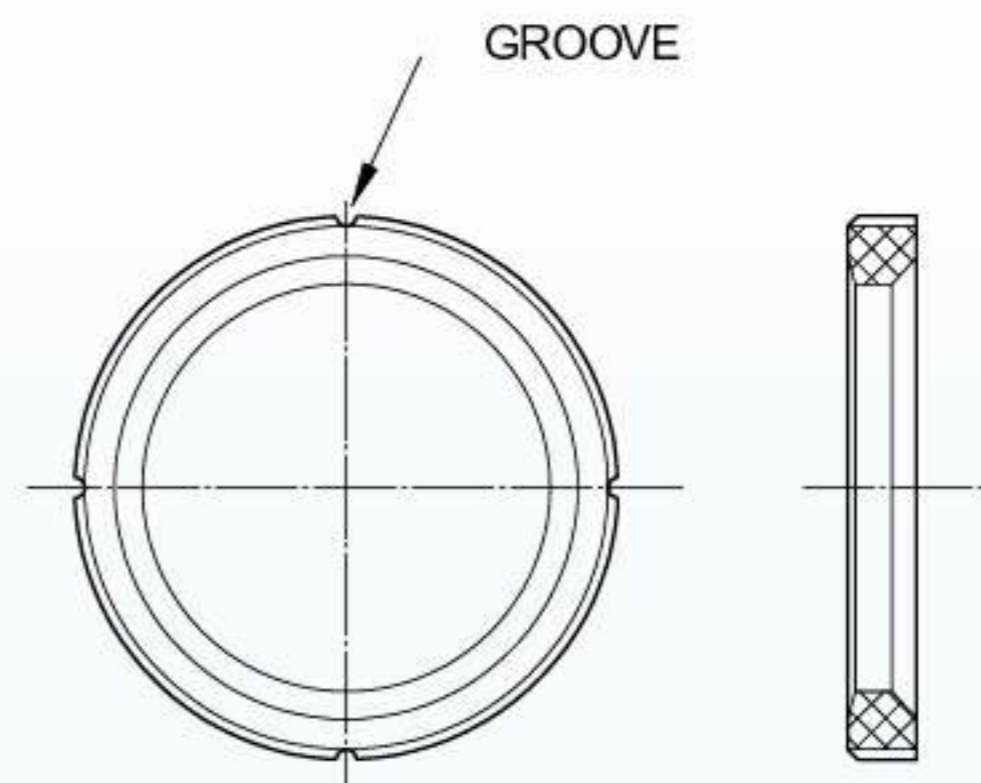
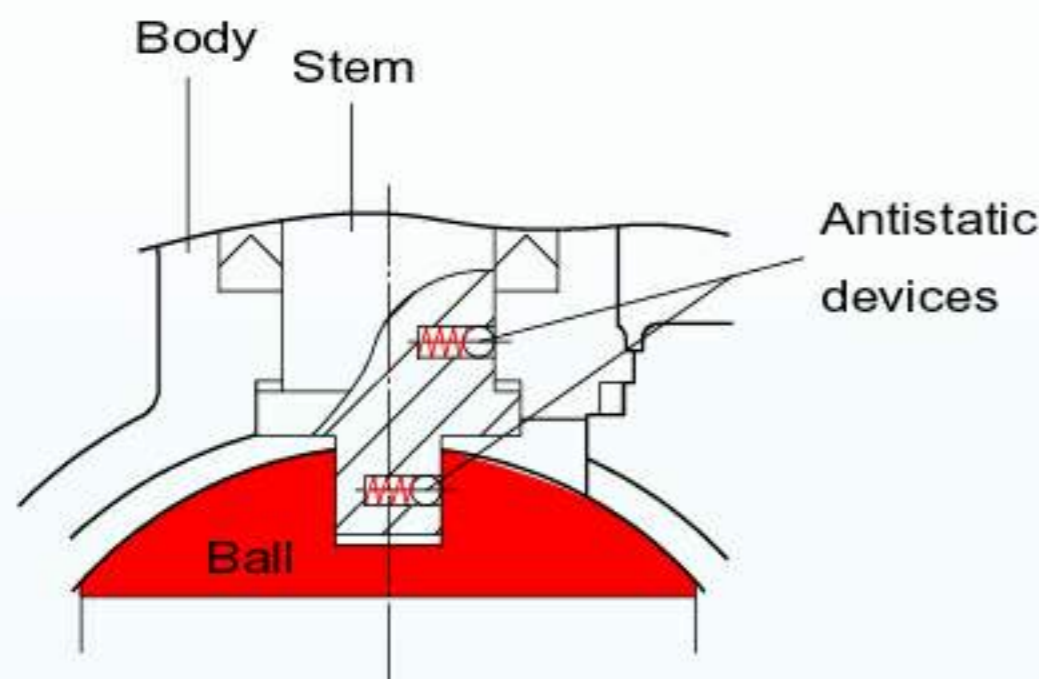
- **BODY:** Investment castings upto 100mm with high quality finish. Sand Cast above 100mm.
- **PORT:** Full Port
- **DESIGN:** ANSI B16.5 & ANSI B16.34.
- **TESTING:** API 607 & API 598.
- **DIMENSIONS:** Face to face dimensions ANSI B16.10 long pattern.
- **SEALING:** Bubble-tight bi-directional sealing is achieved by the use of two rigid seats firmly secured in the valve body on either side of the ball. Seat rings encapsulated to minimise erosion & cold flow. In floating ball designs, pressure upstream causes downstream movement of the ball effecting a seal against the downstream seat ring.

FLANGED STEEL BALL VALVES A-20 SERIES



FEATURES

Quality manufactured & tested under
Quality Assurance systems ISO 9001 & 9002



- **Anti - static plunger** - positive earthing of ball and stem to valve body, preventing static electricity build - up.
- **Blowout - proof stem** - Internally fitted back-seated stem prevents anti - blowout under pressure and also functions as the backseat for stem sealing.
- **Locking device** - locks valve in open and closed positions to prevent accidental valve operation.
- **Double "D"** stem design ensures lever can only be fitted in line with flow direction for positive open / closed indication.
- Stem bearing on 150mm & 200mm valves, reduces side thrust.
- **ISO 5211** Actuator Mount - Integral actuator mounting pad as standard for all modern pneumatic and electric actuators.
- **Bolted gland flange**. Actuators can be fitted to the valve without disturbing the gland.
- **316SS corrosion resistant** trim for longer valve life.
- Encapsulated body / cap gasket, eliminates seal extrusion.
- **15% Glass Fibre Reinforced PTFE** for higher pressure / temperature rating. Other seat materials are optionally available including Pure PTFE & Carbon-Filled PTFE.

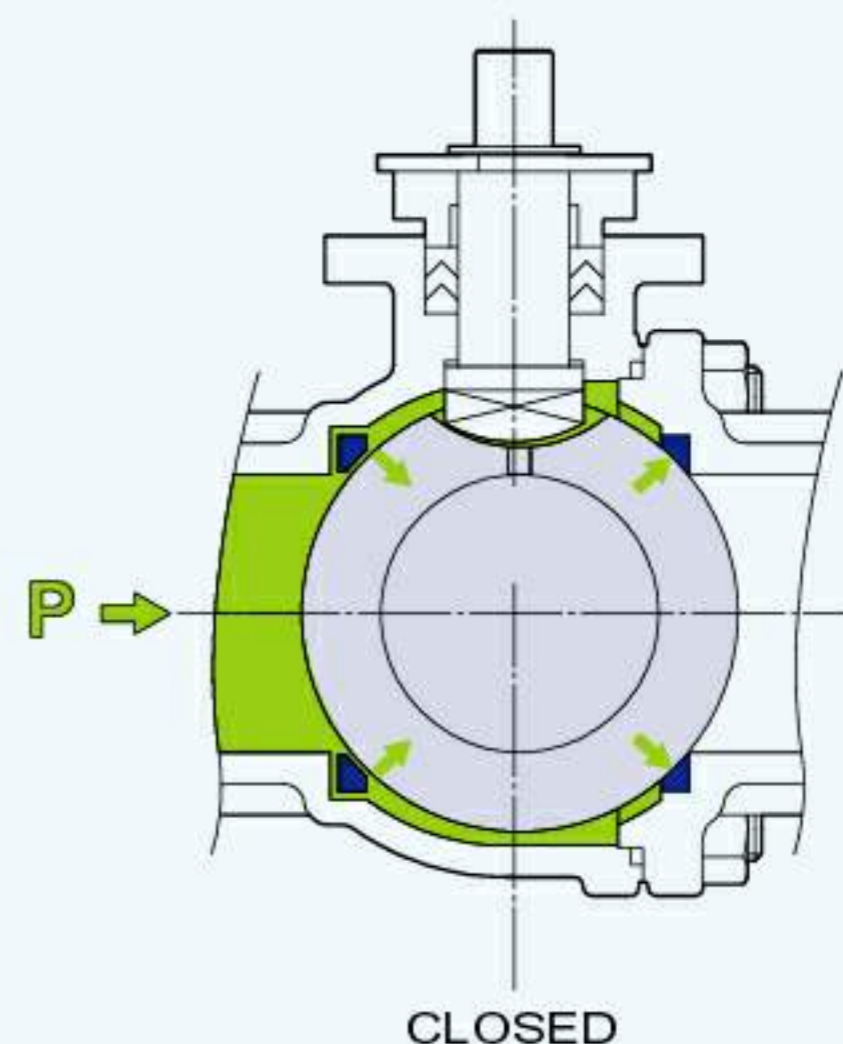
- **Pressure equalising grooves** - ensure efficient sealing at all pressures.

Velocity increases just before valve closure and when the ball is cracked off its seat. At these points, the seats are only partially supported by the ball.

The equalising grooves prevent seat damage from increased line velocity around the unsupported section of the seats. They reduce damage from cold flow (where seats are damaged by extrusion around the ball - a weakness of PTFE under pressure).

Pressure equalising grooves ensure that the upstream seat is free floating. Force acting on the downstream seat is limited to pressure exerted on the surface of the ball only and not the ball plus the upstream seat surfaces combined (piston effect). See sketch of EA25A below.

Advantage of this feature is lower valve break torque and seat wear.



FEATURES

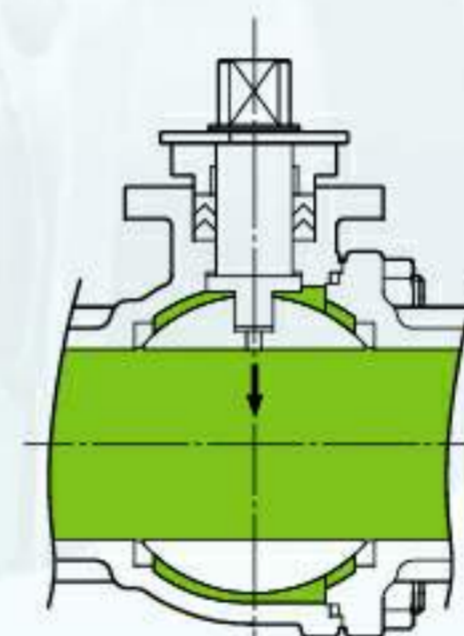
- Split body design for easy dismantling and repair.
- Testing - All valves have 100% seating and body test.
- Identification - Every Body & Cap is Heat Numbered, fully certified and traceable. Month & Year of manufacture on name plate tag.
- Stock - Repair Kits comprising seats, body seal, gland packing, thrust washer & stem bearing.

- **CAVITY PRESSURE RELIEF HOLES:**

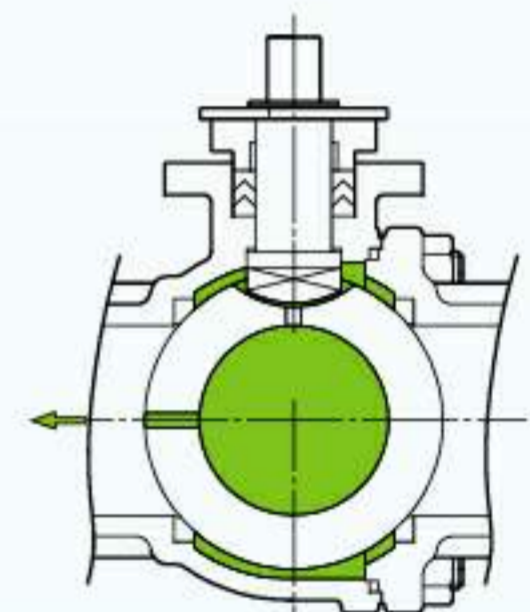
Heating of volatile fluid trapped in the body cavity can cause pressure build - up, permanently distorting the seats or the ball, unless properly relieved with cavity pressure relief holes.

Valve Open (standard) - with the valve in the open position, pressure equalisation between the body cavity and the line is achieved by a hole in the ball beneath the stem slot. This is standard on all EMICO ball valves.(see sketch below)

Valve Closed (optional) - internal Pressure equalising vent (hole drilled in upstream side of ball) can be supplied for certain applications e. g. ammonia, chlorine, LPG.(see sketch below)



VALVE OPEN



VALVE CLOSED

DESIGN AND TESTING STANDARDS AND SPECIFICATIONS

Pressure / Temperature Rating

Shell: ASME / ANSI B16.34
Valve: Valve Seat Materials (page. 7)

Shell Wall Thickness

ASME / ANSI B16.34

Face to Face

ASME / ANSI B16.10

Flange Dimensions

ASME / ANSI B16.5

Materials

ASTM

Marking

MSS SP 25

Valve Testing

API 598

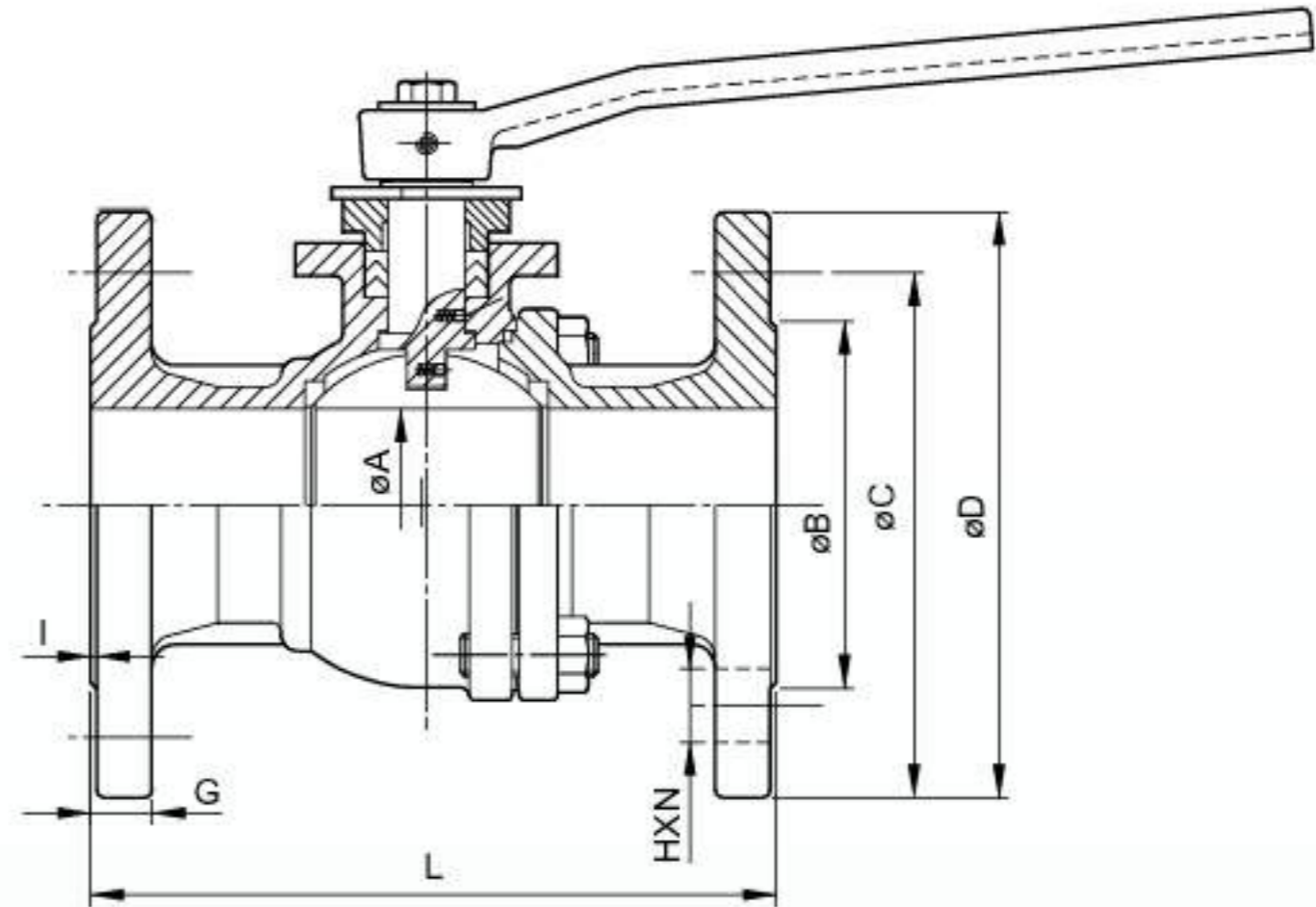
Fire Safe Testing

API 607 Edition 4

FLANGED STEEL BALL VALVES A-20 SERIES

Dimensions

Class 150
Carbon Steel &
Stainless Steel
Ball Valves



Dimensions of EA25AC & EA25AF

SIZE	A	B	C	D	G	I	L	H	N	ISO5211	Wt(kg)
1/2"	16	35	60.5	89	11.1	1.6	108	16	4	F05	1.56
3/4"	20	43	70	98	11.1	1.6	117	16	4	F05	2.14
1"	25	51	79.5	108	11.1	1.6	127	16	4	F07	2.96
1-1/2"	38	73	98.5	127	14.3	1.6	165	16	4	F07	5.74
2"	50	92	120.5	152	15.9	1.6	178	19	4	F07	8.46
2-1/2"	65	105	139.5	178	17.5	1.6	190	19	4	F07	11.7
3"	80	127	152.5	190	19.1	1.6	203	19	4	F10	18.76
4"	100	157	190.5	229	23.9	1.6	229	19	8	F10	30.2
5"	127	186	215.9	254	23.9	1.6	356	22	8	F10	48
6"	152	216	241.5	279	25.4	1.6	394	22	8	F12	77
8"	203	270	298.5	343	28.5	1.6	457	22	8	F14	152

Dimensions of EA402C & EA402F

SIZE	A	B	C	D	G	I	L	H	N	ISO5211	Wt(kg)
1/2"	16	35	60.5	89	11.1	1.6	108	16	4	F04	1.74
3/4"	20	43	70	98	11.1	1.6	117	16	4	F04	1.99
1"	25	51	79.5	108	11.1	1.6	127	16	4	F05	2.79
1-1/4"	32	64	89	117	12.7	1.6	140	16	4	F05	4.8
1-1/2"	38	73	98.5	127	14.3	1.6	165	16	4	F07	5.5
2"	50	92	120.5	152	15.9	1.6	178	19	4	F07	8.1
2-1/2"	65	105	139.5	178	17.5	1.6	190	19	4	F07	11.7
3"	80	127	152.5	190	19.1	1.6	203	19	4	F10	16.7
4"	100	157	190.5	229	23.9	1.6	229	19	8	F10	27
5"	125	186	215.9	254	23.9	1.6	356	22	8	F10	45
6"	150	216	241.5	279	25.4	1.6	394	22	8	F12	65
8"	200	270	298.5	343	28.5	1.6	457	22	8	F14	138

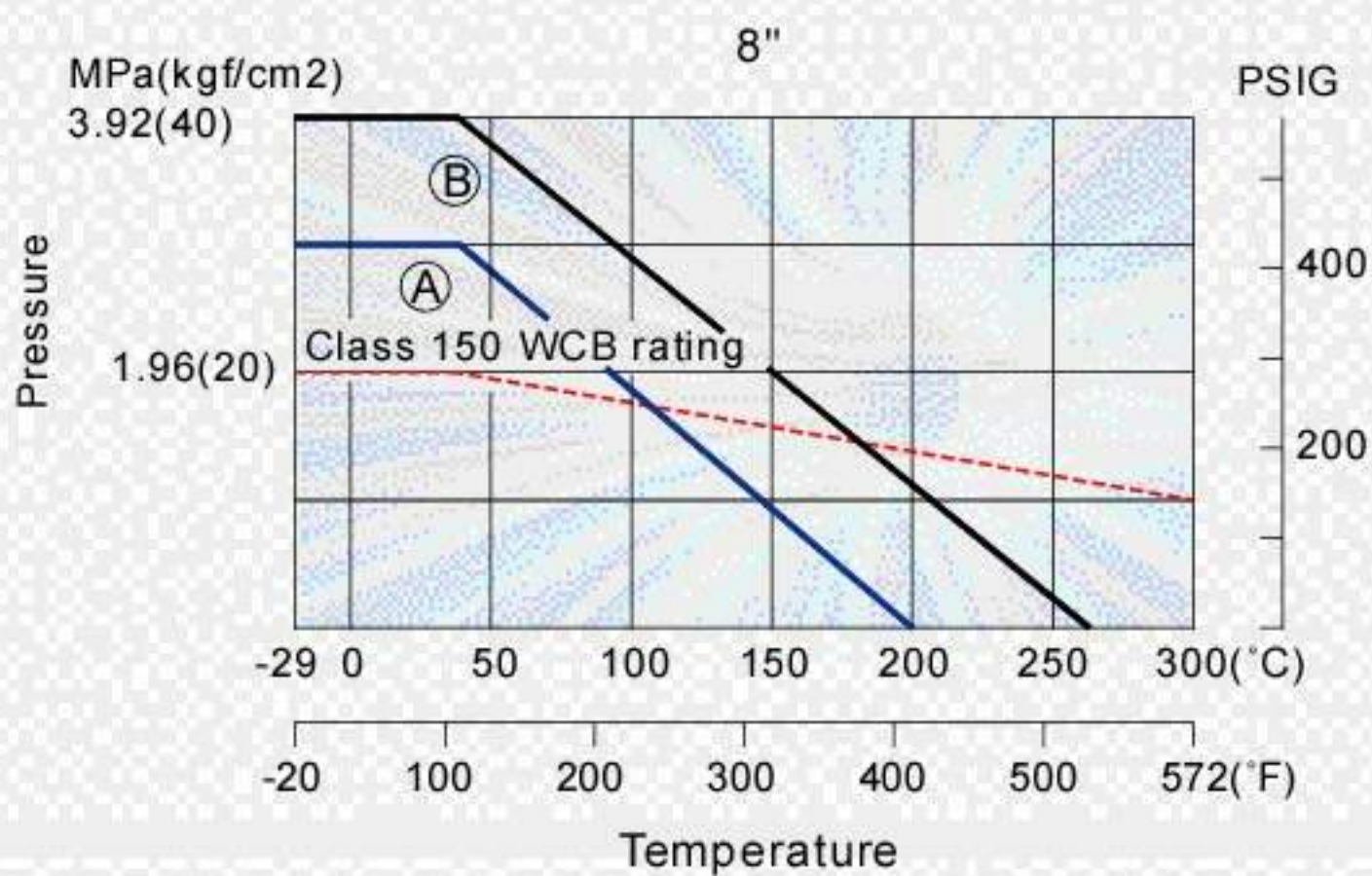
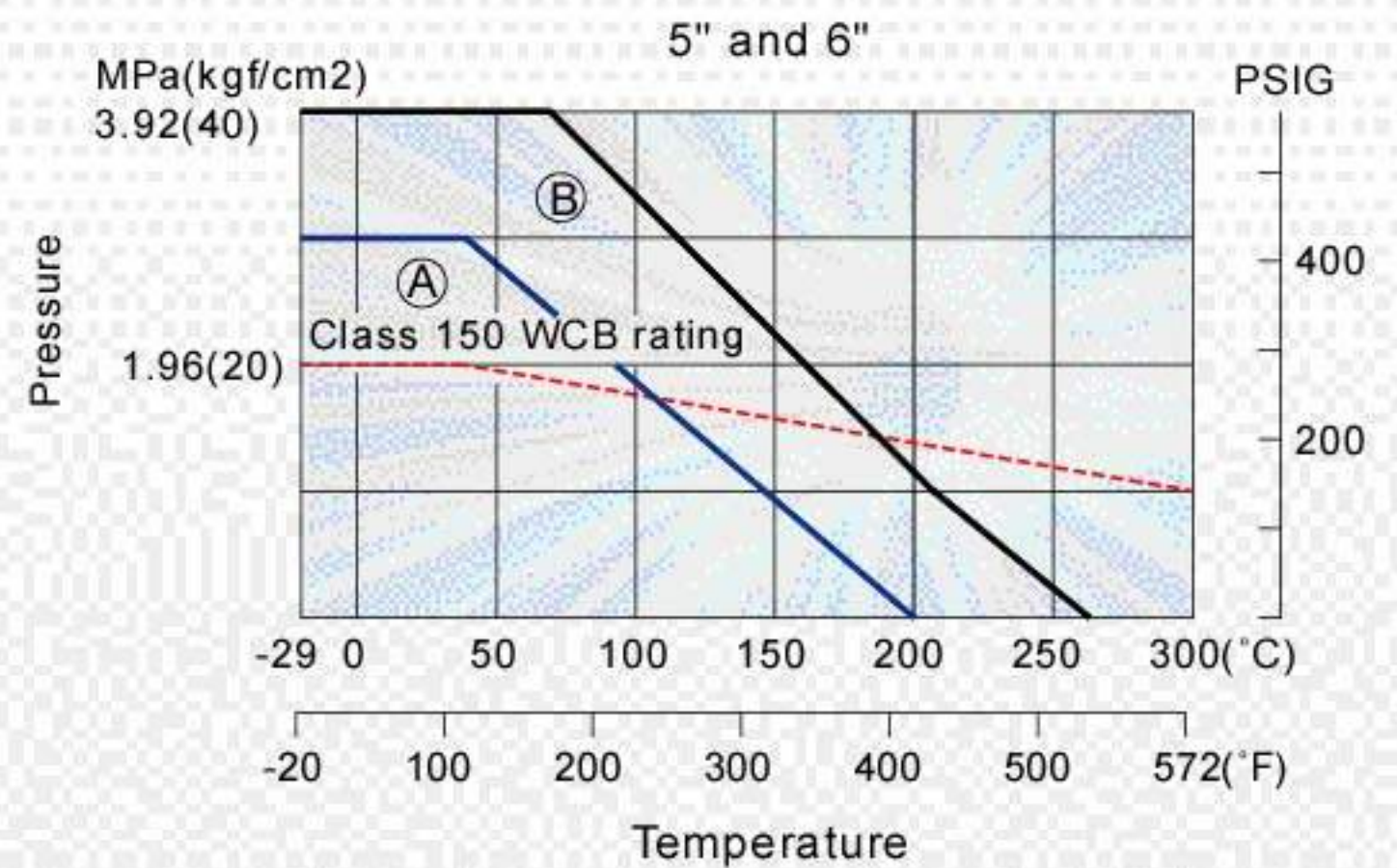
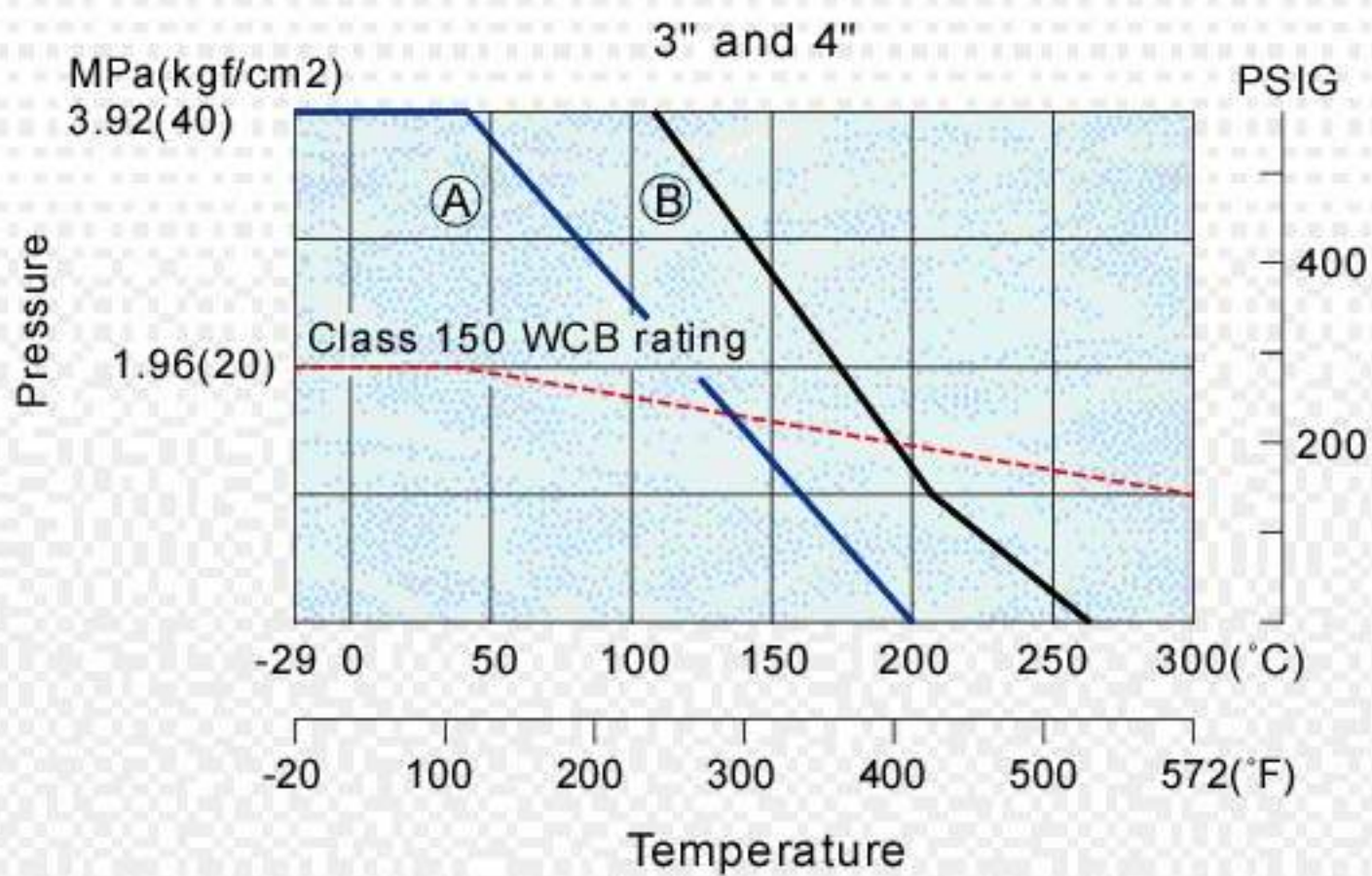
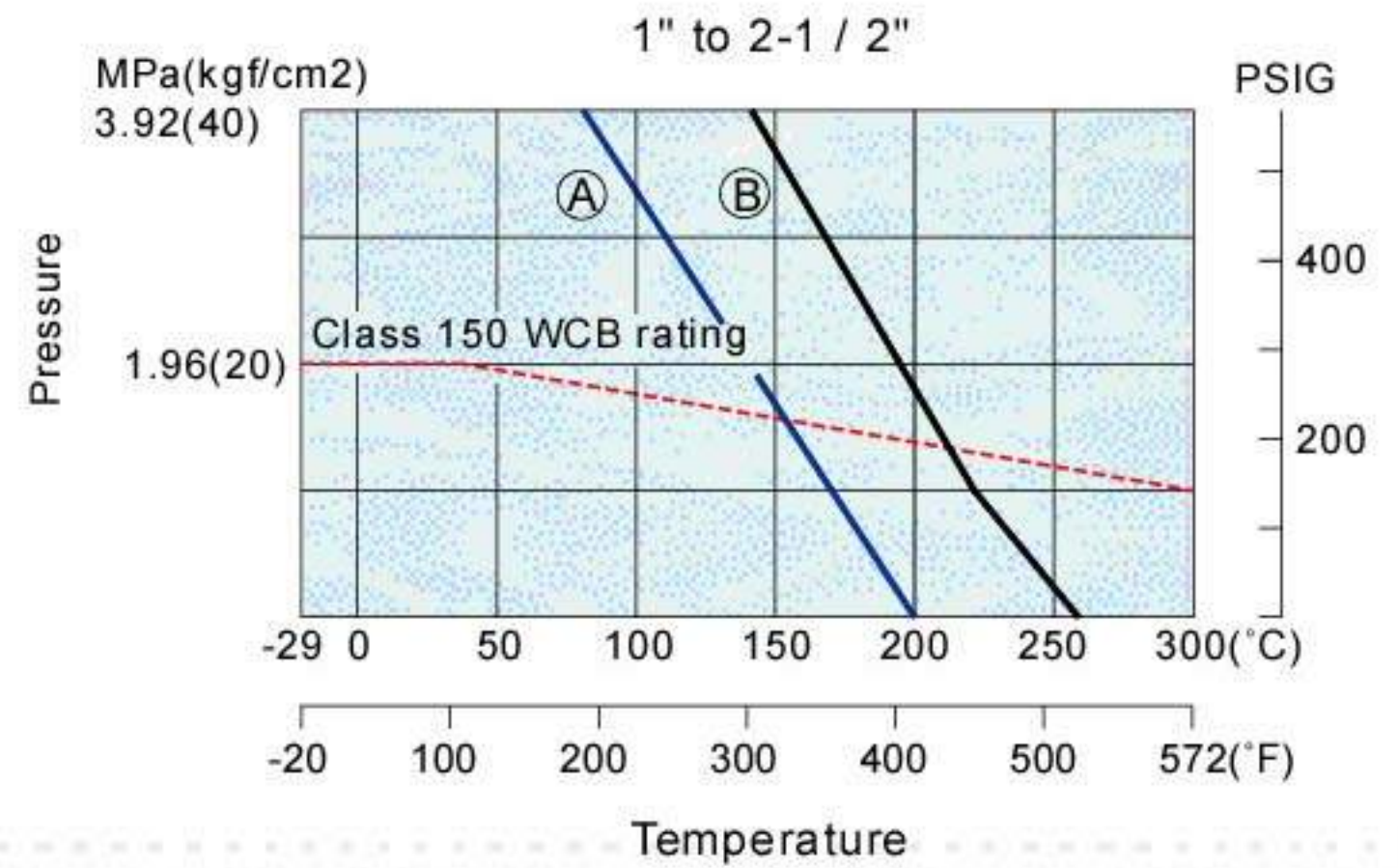
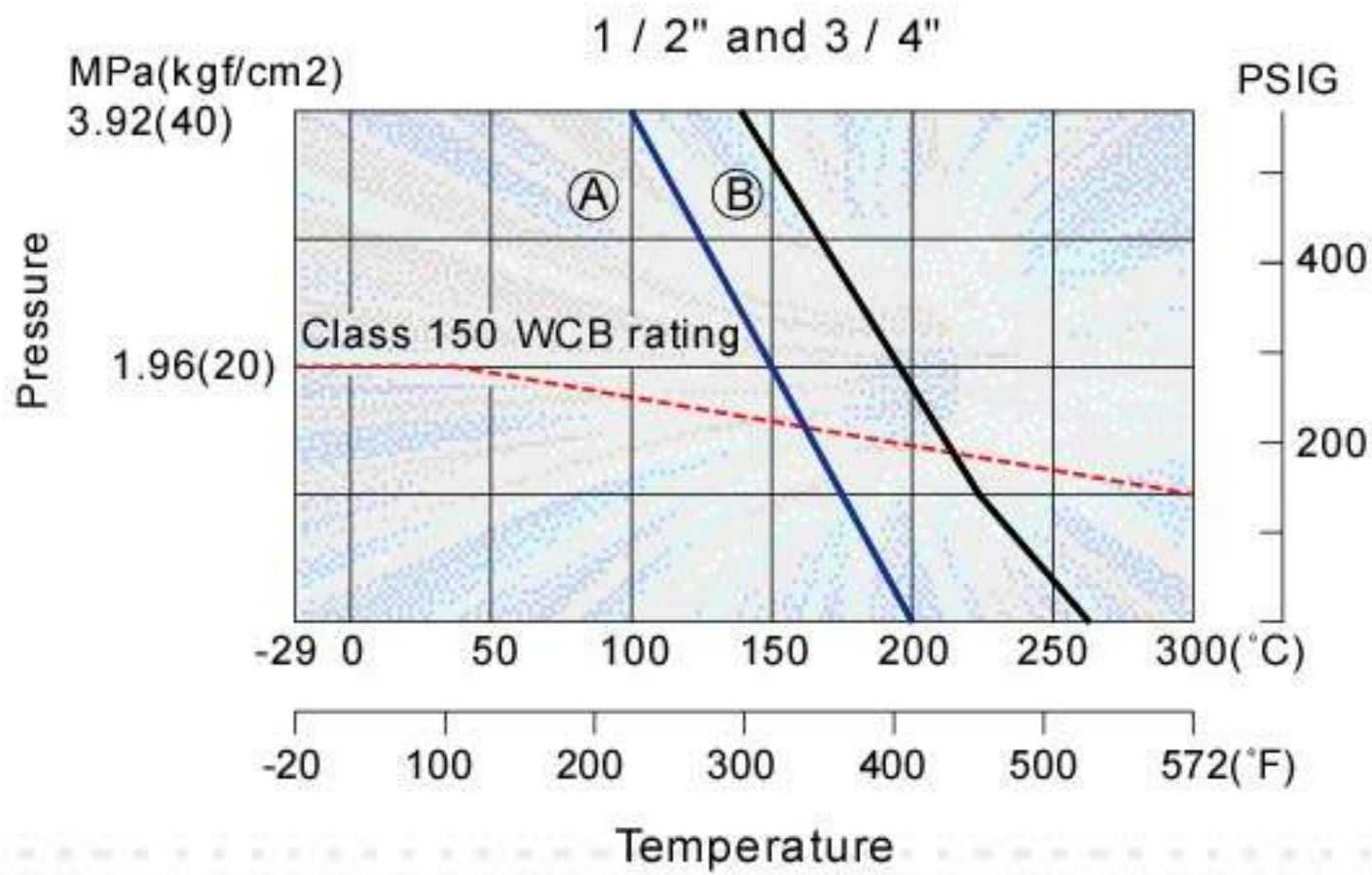
Test Pressure

- Shell Test (Hydrostatic) -2948 kpa (428psi):Carbon Steel
- Shell Test (Hydrostatic) -2859 kpa (415psi):Stainless Steel
- Seat Test (Air)-550kpa (80psi)



FLANGED STEEL BALL VALVES A-20 SERIES

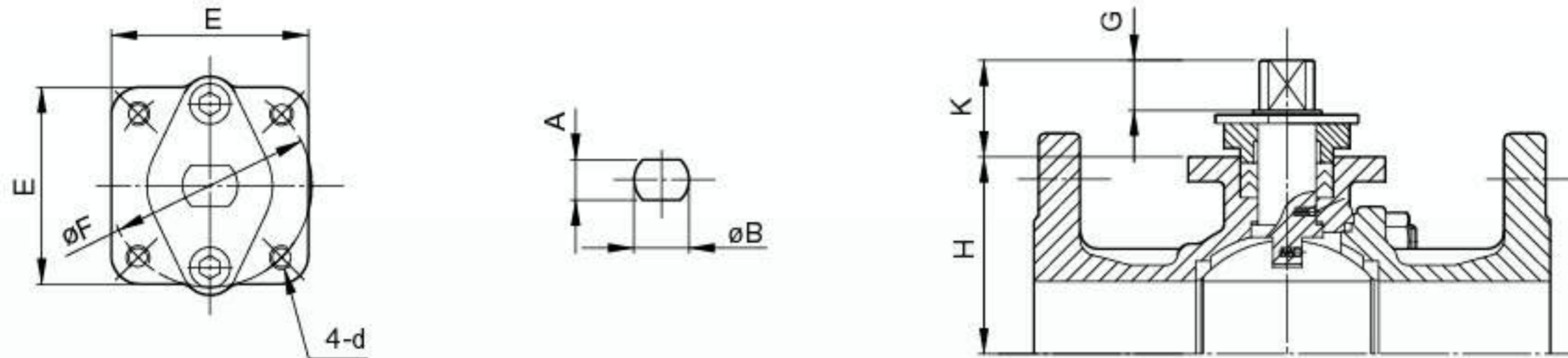
Pressure - Temperature Ratings



Seat Materials: A=PTFE
 B=RPTFE
 (15% Glass Fiber Reinforced PTFE is standard seat material for EMICO Ball Valves)
 Body Pressure ratings shown for WCB carbon steel valves.
 Stainless steel ball valves have slightly lower body ratings.

FLANGED STEEL BALL VALVES A-20 SERIES

Dimensions of ISO Actuator Mounting Pad EMICO, Fig Nos. EA25AC, EA25AF, EA402C & EA402F



Dimensions of EA25AC & EA25AF

SIZE	A	B	d	E	F	G	K	H	ISO 5211
1/2"	8	12	M6	50.7	50	4.75	16.3	34.16	F05
3/4"	8	12	M6	50.7	50	7.55	19.2	38.52	F05
1"	10	15	M8	68	70	13.2	27.1	45.62	F07
1-1/2"	14	19	M8	75.5	70	17.2	32.85	60.85	F07
2"	14	19	M8	75.5	70	17.2	32.85	69.19	F07
2-1/2"	14	19	M8	68	70	17.25	33	80	F07
3"	16	24	M10	95.3	102	24.45	44.5	96.21	F10
4"	20	30	M10	110	102	24.45	46.1	120	F10
5"	20	30	M10	96	102	24.45	47.2	150	F10
6"	26	38	M12	115	125	32.55	63	184	F12
8"	32	48	M16	137.5	140	42.05	76.5	237.5	F14

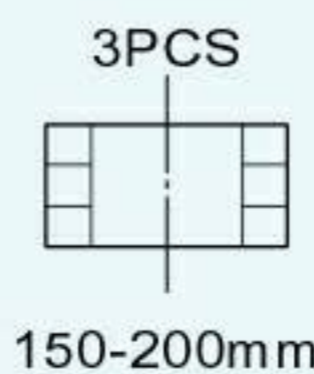
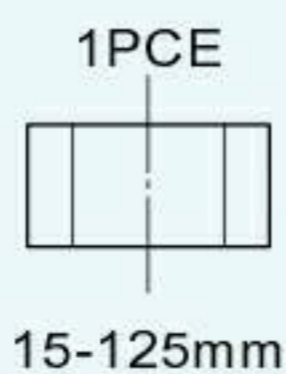
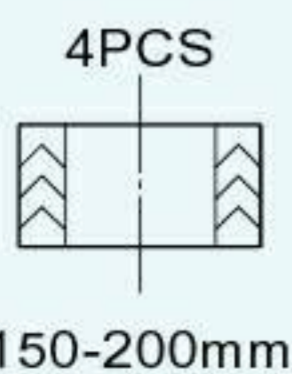
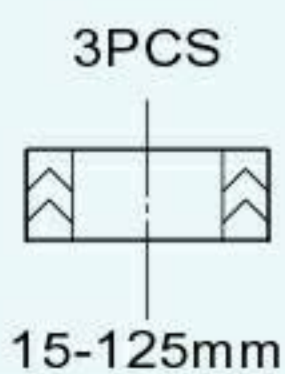
Dimensions of EA402C & EA402F

SIZE	A	B	d	E	F	G	K	H	ISO 5211
1/2"	8	12	M5	42	42	7.55	19.4	38.52	F04
3/4"	8	12	M5	42	42	7.55	19.4	38.52	F04
1"	10	15	M6	48	50	13.2	27.1	45	F05
1-1/4"	10	15	M6	48	50	13.2	27.9	48.5	F05
1-1/2"	14	19	M8	68	70	17.25	33.4	60.5	F07
2"	14	19	M8	68	70	17.25	33.4	67.9	F07
2-1/2"	14	19	M8	68	70	17.25	33.3	80	F07
3"	16	24	M10	96	102	24.25	44.6	101	F10
4"	20	24	M10	96	102	24.25	44.6	117	F10
5"	20	30	M10	92	102	24.25	47.2	148	F10
6"	26	38	M12	115	125	32.55	63	182	F12
8"	32	48	M16	137.5	140	42.05	76.5	233.5	F14

Stem Packing Details

PTFE Gland Packing
for EA402F & EA402C

Flexible Graphite Gland Packing
for EA25AC & EA25AF



15-125mm

150-200mm

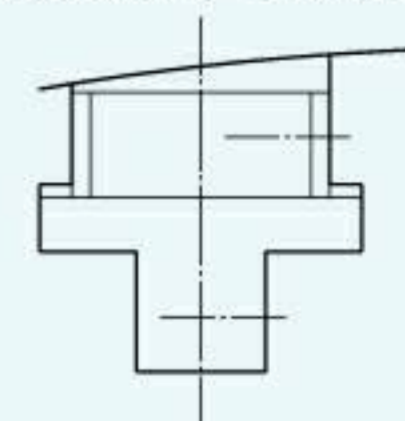
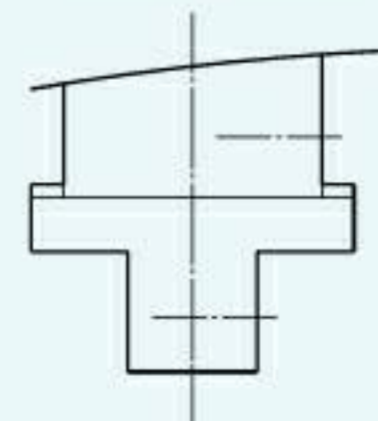
15-125mm

150-200mm

Thrust Washer & Stem Bearing Details

PTFE Stem
Thrust Washer

PTFE Stem
Thrust Washer+Stem Bearing



15-100mm

125-200mm

Name Plate Details

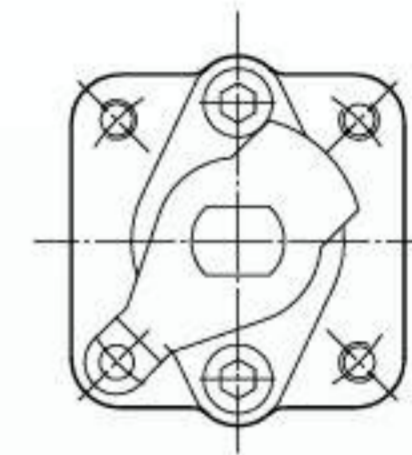
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	SIZE		TRIM		P/T	
	CLASS		SEAT		MF'D	

FLANGED STEEL BALL VALVES A-20 SERIES

Construction and Materials

NO.	Parts	EA25AC	EA25AF
1	Body	A216 WCB	A351 CF8M
2	End Cap	A216 WCB	A351 CF8M
3	Seats	PTFE + 15%G.F. REINFORCED	
4	Ball	A351 CF8M	A351 CF8M
5	Stem	SUS 316	SUS 316
6	Body Seal	FLEXIBLE GRAPHITE	
7	Thrust Washer	PTFE	
8	Stem Packing	FLEXIBLE GRAPHITE	
9	Gland Bush	PTFE	
10	Gland Flange	CF8	
11	Gland Bolts	SUS 304	
12	Stopper	SUS 304	
13	Snap Ring	STEEL	
14	Handle	DUCTILE IRON	
15	Flat Washer	STEEL	
16	Handle Bolt	SUS 304	
17	Bolts	ASTM A193 B8	
18	Socket Screw	STEEL	
19	Antistatic	SUS304	
20	Spring	SUS304	

LOCKING DEVICE
(Lock Open/Lock Close)



All part numbers are corresponding with those shown in valve assembly drawings.

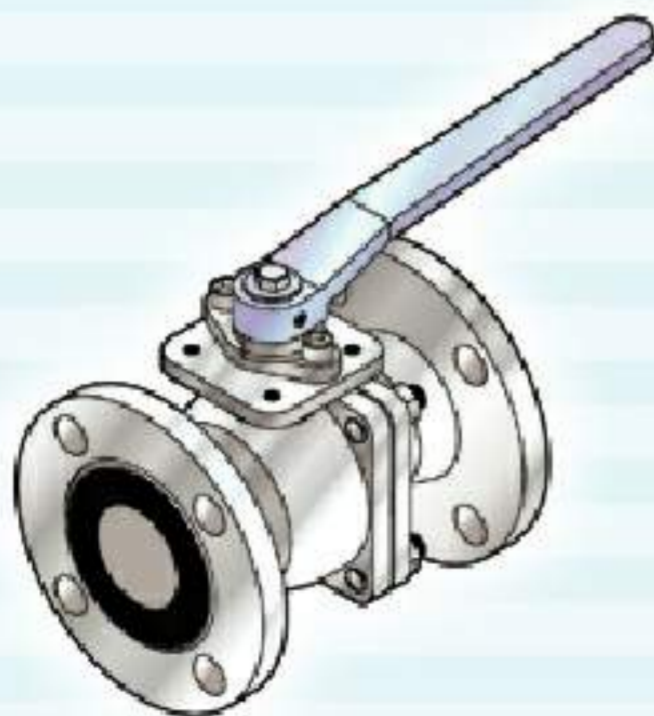
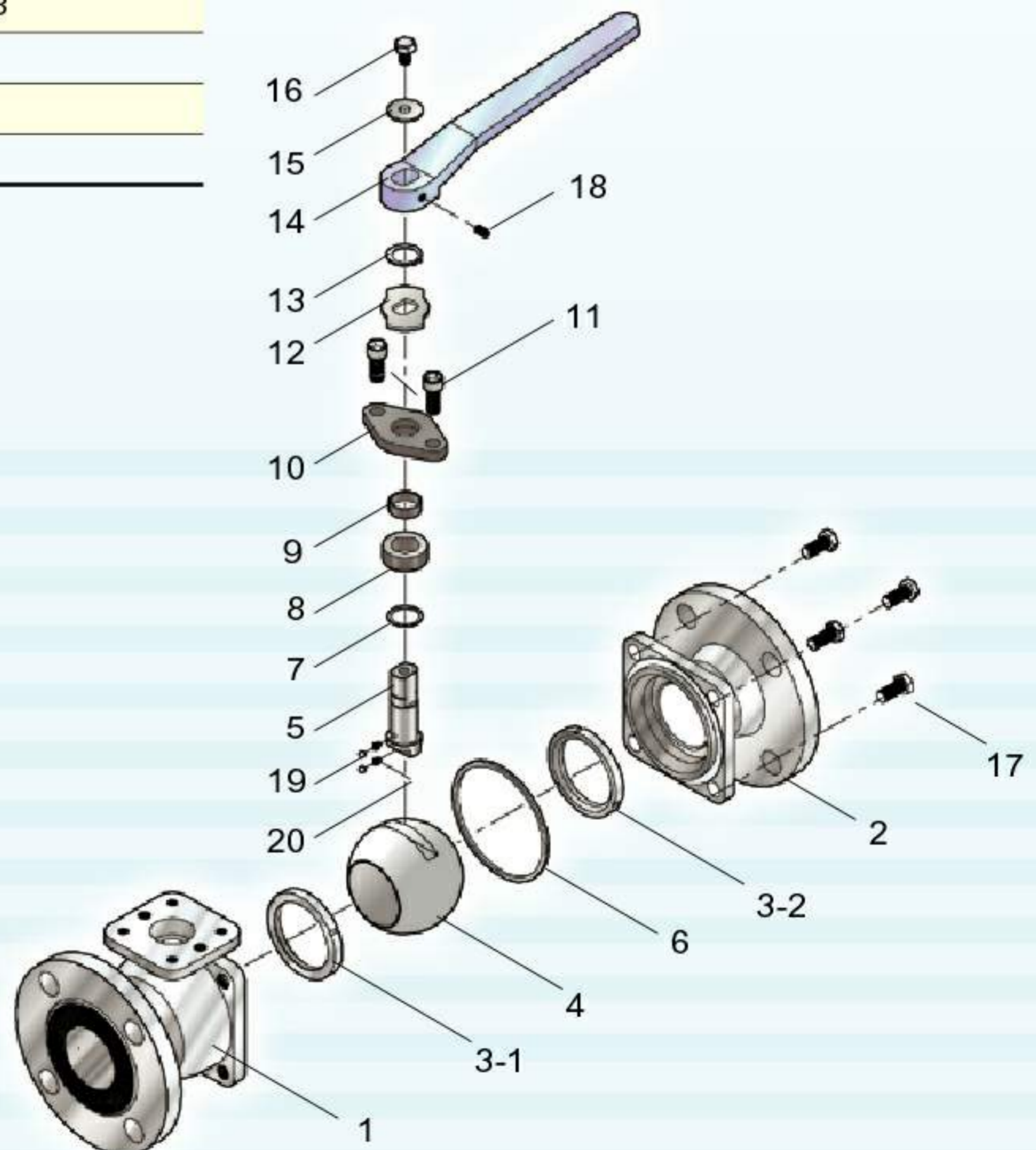


Illustration shows size 3" design.

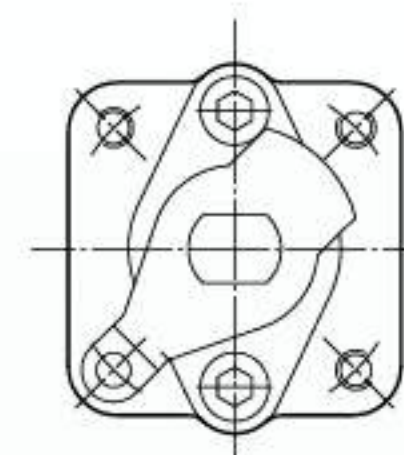


FLANGED STEEL BALL VALVES A-20 SERIES

Construction and Materials

NO.	Parts Name	EA402C	EA402F
1	Body	A216 WCB	A351 CF8M
2	End Cap	A216 WCB	A351 CF8M
3	Seats	PTFE + 15%G.F. REINFORCED	
4	Ball	A351 CF8M	A351 CF8M
5	Stem	SUS 316	SUS 316
6	Body Seal	PTFE	
7	Thrust Washer	PTFE	
8	Stem Packing	PTFE	
9	Gland Bush	PTFE	
10	Gland Flange	CF8	
11	Gland Bolts	SUS 304	
12	Stopper	SUS 304	
13	Snap Ring	STEEL	
14	Handle	DUCTILE IRON	
15	Flat Washer	STEEL	
16	Handle Bolt	SUS 304	
17	Stud	ASTM A193-B8M	
18	Nut	ASTM A194-8M	
19	Socket Screw	STEEL	
20	Anti State	SUS 304	
21	Spring	SUS 304	

LOCKING DEVICE
(Lock Open/Lock Close)



All part numbers are corresponding with those shown in valve assembly drawings.

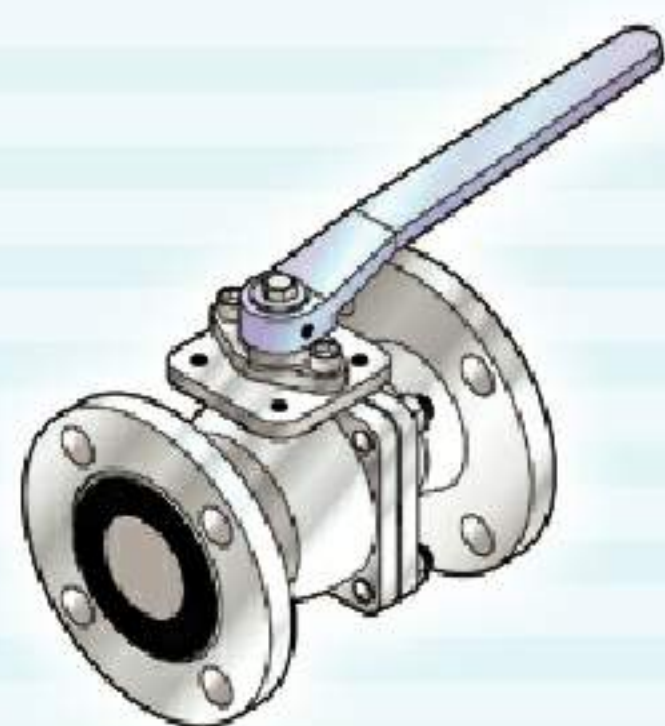


Illustration shows size 3" design.

