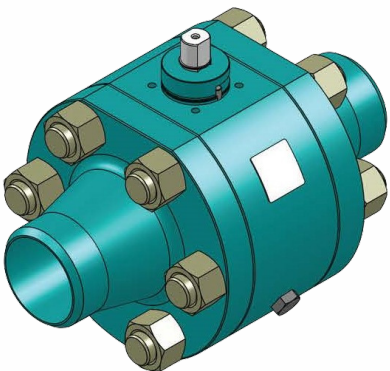
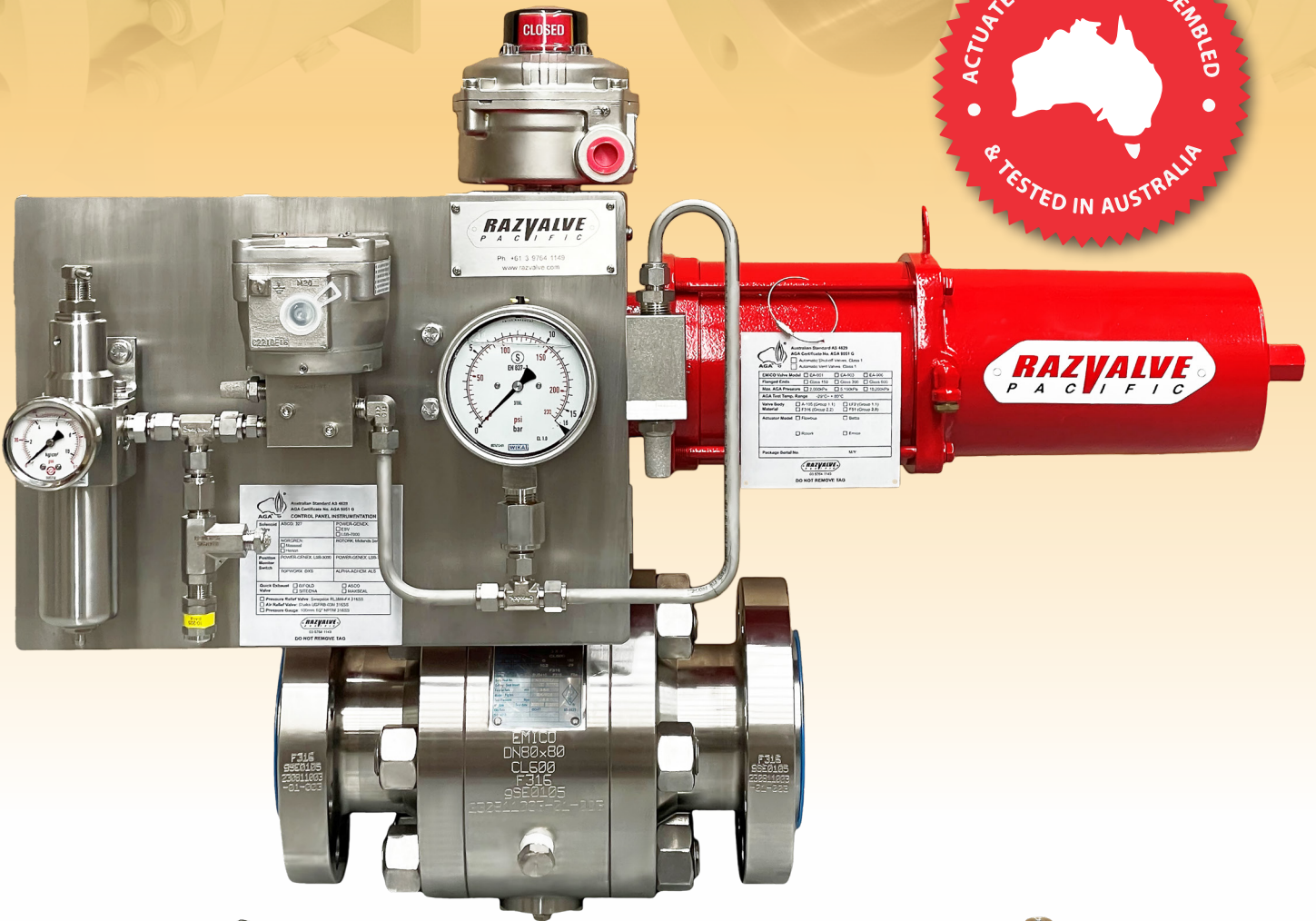


EMICO

EMICO EA 900 SERIES TRUNNION BALL VALVES
API 6D / FIRE SAFE

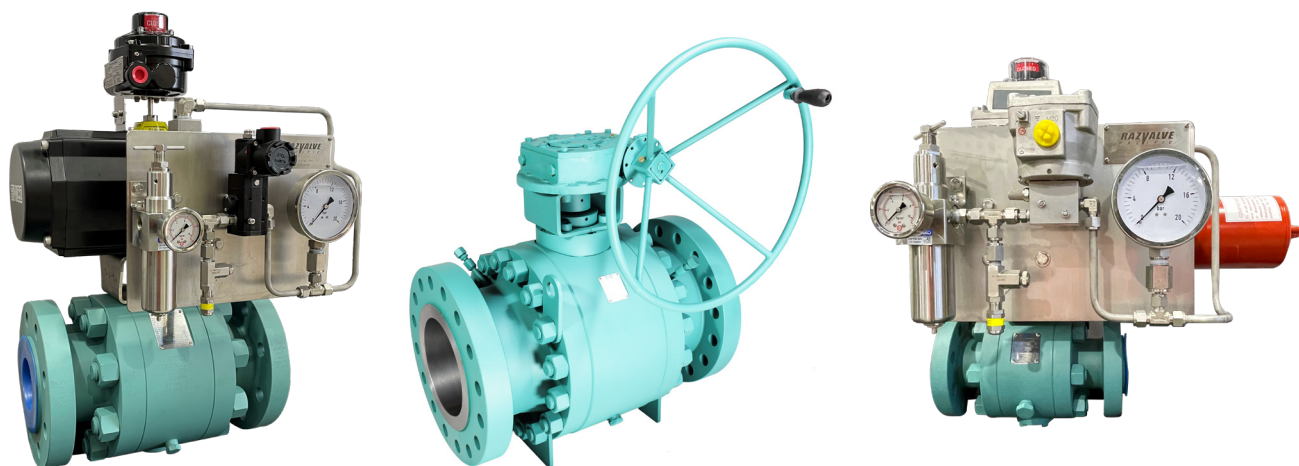


AGA-APPROVED MANUAL & AUTOMATIC

EMICO A fast-growing ball valve manufacturer, EMICO supplies a line of forged 3-piece, bolted construction trunnion ball valves ranging from 2" (50mm) to 12" (300mm) and up to ASME Class 1500. EMICO ball valves are internationally distributed and widely used in the production, refining and transportation of oil, gas and chemical products. Modern facilities and equipment coupled with a long history of quality products ensure every valve is manufactured to exacting standards.

QUALITY ASSURANCE & CERTIFICATION

- EMICO was the first ball valve manufacturer in Taiwan to implement the ISO 9002 Quality Assurance System. In 2000, it further obtained ISO 9001 Certification, certified by TUV Rheinland.
- EMICO is an authorised licensee to use API 6D and certified to PED CE, ATEX, TA-Luft and is UL listed.
- EMICO is certified to Australian Gas Association (AGA)
- Fire safe designs are fire-safe to API 607 fire test requirements and tested and certified by Southwest Research Institute (SwRI) in Texas, USA and TUV.
- EMICO has an established Engineering Department of engineers, technicians and an R&D centre with many years experience in the manufacture of quality ball valves.
- All valves are fully traceable and certified to EN 10204-2004 3.1 (chemical, mechanical, hydrostatic & pneumatic pressure tests) and can be supplied with NDE performed to ASME B16.34 international standards. Valves are tested and certified to API 598 & API6D



PRODUCTION, QUALITY CONTROL & SAFETY

We at EMICO believe that more end users are increasingly attaching importance to safety and quality of valves at a reasonable price. Precision high-quality trunnion ball valves call for precision production techniques and quality materials. We at EMICO go to all lengths to ensure that perfection is achieved in each and every ball valve before it leaves our factory.

All our valves are manufactured under a controlled QA system with documented procedures that meet industry specifications and customer requirements. QA and QC procedures cover the purchase and verification of raw material forgings & materials, machining and internal process controls, testing, packing and shipping.

All EMICO trunnion ball valves are manufactured from forgings to guarantee favourable microstructures and better mechanical properties than cast steel. Since EMICO also use low temperature material A350 LF2 for trunnion ball valves, they can be used at low temperatures - 46°C by merely modifying the O-rings and some parts.

Each trunnion ball valve manufactured by EMICO undergoes design validation through functional and pressure tests, ensuring conformance to International specifications and customer requirements. Torque tests are carried out to ensure that all EMICO valves comply with our low-torque requirements, ensuring that valves are safe to operate after installation and in long service.

All valves are certified to EN 10204-2004 3.1

EMICO TRUNNION BALL VALVE FIGURE NUMBERING SYSTEM

Example for: 50mm, Class 600, Full Bore, RF Flanged, Ball Valve, A105 Body, 316L Trim, Viton AED FR58/90 O-Ring, RPTFE Seat, Lever Operated, Cavity Sealant facility

20	906	F	R	2	3	4	1	L	1
1	2	3	4	5	6	7	8	9	10

1. Valve size

Code	Inch	mm
* 20	2"	50
* 30	3"	80
* 40	4"	100
* 60	6"	150
* 80	8"	200
AO	10"	250

2. Valve Series No. & ASME Class

Code	Class
* 901	150
* 903	300
* 906	600
909	900
915	1500

3. Bore Design

Code	Class
* F	Full Bore
R	Reduced Bore

4. End Connection

Code	Description
R	Raised Face
J	RTJ
W	BW

5. Shell Material

Code	Description
1	A105N
2	LF2
3	F316L
4	F53

* AGA Approval Range

6. Trim Material

Code	Description
1	A105N/LF2 +ENP
2	AISI 410
3	F316L
4	F51
5	F53

7. O-Ring Material

Code	Description
1	NBR
2	Viton
3	Viton AED FR25/90
4	Viton AED FR58/90
5	HNBR Elast-O-Lion101
6	HNBR Elast-O-Lion 985
7	FKM Viton GLT

8. Seat Material

Code	Description
1	RPTFE
2	Devlon V
3	PEEK
4	Nylon PA12

9. Valve Operation

Code	Description
L	Lever Handle
W	Worm Gear
S	Spring Return Actuator
D	Double Acting Actuator
E	Electric Actuator

10. Other

Code	Description
1	Cavity Sealant
2	Seat Sealant Injection
3	Stem Sealant Injection
N	NACE

DESIGN & INSPECTION STANDARDS

ITEM	STANDARD
Valve Design	API 6D
Pressure/Temperature Rating for Body	ASME B16.34
Pressure/Temperature Rating for Soft Seal	Per Seat insert & O-ring material used
Shell Wall Thickness	ASME B16.34
Bore Dimensions	API 6D
Face to Face Dimensions	ASME B16.10
Flanged End Dimensions	ASME B16.5
Butt Weld End Dimensions	ASME B16.25
Pressure Tests	API 6D/API 598
Fire Safe Type Test	API 607 Ed.5/ISO 10497-5:2004
Nace	MR 0175
Materials	Per Relevant ASTM Standards
Material & Certificate	EN 10204-2004 3.1

AGA APPROVALS



Manual Shut-off Class 1
AS 4617 - 2018
(Incl Amdt. 1)
Certificate No. 9052

Automatic Shut-off & Vent
Valves Class 1
AS 4629 - 2005
(Incl. Amdt 2)
Certificate No. 9051

Temperature tested by AGA
-29°C~ 80°C
Size Range: 50mm, 80mm,
100mm, 150mm & 200mm

ADDITIONAL INFORMATION FOR EA906 (CLASS 600), EA-903 (CLASS 300), AND EA-901 (CLASS 150) TRUNNION MOUNTED BALL VALVE COVERING AGA SUPPLIES.

EA-906

Class 600	1480PSI / 10,200kPa (CS Group 1.1)
Minimum Temperature:	-29°C to 38°C
Maximum Temperature:	150°C (Devlon V seat inserts)
Carbon Steel body (Group 1.1):	102bar/1,480psi/10,200kPa
Stainless Steel body (Group 2.2):	99.36bar/1,441psi/9,936kPa
Stainless Steel body (Group 2.8):	103.4bar/1,499psi/10,340kPa
As AGA-tested valve:	10,200kPa / -29°C ~ 80°C

EA-903

Class 300	740PSI / 5100kPa (CS Group 1.1)
Minimum Temperature:	-29°C to 38°C
Maximum Temperature:	190°C (RPTFE seat inserts)
Carbon Steel body (Group 1.1):	51.1bar/740psi/5,110kPa
Stainless Steel body (Group 2.2):	49.6bar/720psi/4,960kPa
Stainless Steel body (Group 2.8):	51.7 bar/749psi/5,170kPa
As AGA-tested valve:	5,110kPa / -29°C ~ 80°C

EA-901

Class 150	285PSI / 2000kPa (CS Group 1.1)
Minimum Temperature:	-29°C to 38°C
Maximum Temperature:	230°C (RPTFE seat inserts)
Carbon Steel body (Group 1.1):	19.6bar/285psi/1,960kPa
Stainless Steel body (Group 2.2):	19bar/275psi/1,900kPa
Stainless Steel body (Group 2.8):	20bar/290psi/2,000kPa
As AGA-tested valve:	1,960kPa / - 29°C ~ 80°C

AGA CERTIFIED PRODUCT

Certificate Holder: EAYUAN METAL INDUSTRIAL CO., LTD

ABN/ACN No. (if applicable): N/A

Agent (if applicable): N/A

Type of Component: Trunnion Ball Valves Type 1

Model No. & Description:
(Refer www.aga.asn.au for more details)
EMICO
EA-901, EA-903 & EA-906
EA-901 (Class 150) 2,000 kPa
EA-903 (Class 300) 5,100 kPa
EA-906 (Class 600) 10,200 kPa

Sizes: 50, 80, 100, 150 & 200mm
Working Temperature Range: -29°C to +80°C

Relevant Standard(s): AS 4617 – 2018 (Inc Amdt 1)

This is to certify that the particular **COMPONENT** specifically described herein and supplied to The Australian Gas Association (hereafter called the AGA) by the Certificate Holder named above has been subject to "type-testing" and assessed by the AGA to comply with the requirements of the AGA's Product Certification Scheme for Type Tested Gas Products.

This Certificate is issued on the express conditions that:

- (i) The Certificate Holder undertakes to comply with the Rules Governing The AGA's Product Certification Scheme (hereafter called the Rules Governing);
- (ii) This Certificate remains the property of the AGA; and
- (iii) The AGA reserves the right to cancel this Certificate in accordance with the Rules Governing, and in such an event the Certificate Holder undertakes to surrender the Certificate to the AGA upon request.

Client Manager

Certificate Authorised

Certificate first issued: **20 June 2023**

Certificate No: **9052**

This copy valid from: **20 June 2023** Refer specification issue: **01**

This Certificate issued by The Australian Gas Association ABN 98 004 206 044

Manual Valve Tag Data

AGA Certificate No:9052
EA-901(CI.150)-2,000kpa
AGA Test Temp.: -29°C~80°C
AS 4617-2018(Incl Amdt1)

AGA Certificate No:9052
EA-903(CI.300)-5,100kpa
AGA Test Temp.: -29°C~80°C
AS 4617-2018(Incl Amdt1)

AGA Certificate No:9052
EA-906(CI.600)-10,200kpa
AGA Test Temp.: -29°C~80°C
AS 4617-2018(Incl Amdt1)

Automatic Shut-off and Vent Valve Tag Data

Australian Standard AS 4629
AGA Certificate No. AGA 9051 G

Automatic Shut-off Valves, Class 1
 Automatic Vent Valves, Class 1

EMICO Valve Model	<input type="checkbox"/> EA-901	<input type="checkbox"/> EA-903	<input type="checkbox"/> EA-906
Flanged Ends	<input type="checkbox"/> Class 150	<input type="checkbox"/> Class 300	<input type="checkbox"/> Class 600
Max. AGA Pressure	<input type="checkbox"/> 2,000kPa	<input type="checkbox"/> 5,100kPa	<input type="checkbox"/> 10,200kPa
AGA Test Temp. Range	-29°C ~ + 80°C		
Valve Body Material	<input type="checkbox"/> A-105 (Group 1.1)	<input type="checkbox"/> LF2 (Group 1.1)	<input type="checkbox"/> F316 (Group 2.2)
Actuator Model	<input type="checkbox"/> Flowbus	<input type="checkbox"/> Bettis	<input type="checkbox"/> Rotork
	<input type="checkbox"/> Rotork	<input type="checkbox"/> Emico	
Package Serial No.	M/Y:		

03 9764 1149
DO NOT REMOVE TAG

Australian Standard AS 4629
AGA Certificate No. AGA 9051 G

CONTROL PANEL INSTRUMENTATION

Solenoid Valve	ASCO: 327	POWER-GENEX: <input type="checkbox"/> ESV <input type="checkbox"/> LSB-7000
	NORGREN: <input type="checkbox"/> Maxseal <input type="checkbox"/> Herion	ROTORK: Midlans Series 70
Position Monitor Switch	POWER-GENEX: LSB-3000	POWER-GENEX: LSB-7000
	TOPWORX: DXS	ALPHA-ACHEM: ALS

Quick Exhaust Valve BIFOLD ASCO
 SITECNA MAXSEAL

Pressure Relief Valve: Swagelok RL3M4-F4 316SS
 Air Relief Valve: Shako USFRB-03N 316SS
 Pressure Gauge: 100mm 1/2" NPTM 316SS

03 9764 1149
DO NOT REMOVE TAG

AGA CERTIFIED PRODUCT

Certificate Holder: RAZVALVE PACIFIC PTY LTD

ABN/ACN No. (if applicable): 76 132 617 399

Agent (if applicable): N/A

Type of Component: Automatic Shut-Off & Vent Valve, Class 1

Model No. & Description:
(Refer www.aga.asn.au for more details)
Razvalve
EA-901 Rated 1,950 kPa
EA-903 Rated 5,110 kPa
EA-906 Rated 10,200 kPa

Sizes 50, 80, 100, 150, 200mm
3 Piece Full Port Ball Valves with Spring Return Pneumatic Actuators

With combination of:
Actuator Model Options: Flowbus, Bettis, Rotork (Sized: 3 bar ~ 6 bar (72~87psi)) and EMICO
Solenoid Valve Options: Norgren (Maxseal, Asco, Rotork Midlans and Power-Genex) (Voltage options: 240V AC, 110V AC, 24V AC/DC, 12V DC)
Valve Position Monitor Options: Power-Genex, Topworx and ALS (limit switch boxes with position proving & position indicating)

Relevant Standard(s): AS 4629 – 2005 (Inc. Amendment 2)

This is to certify that the particular **COMPONENT** specifically described herein and supplied to The Australian Gas Association (hereafter called the AGA) by the Certificate Holder named above has been subject to "type-testing" and assessed by the AGA to comply with the requirements of the AGA's Product Certification Scheme for Type Tested Gas Products.

This Certificate is issued on the express conditions that:

- (i) The Certificate Holder undertakes to comply with the Rules Governing The AGA's Product Certification Scheme (hereafter called the Rules Governing);
- (ii) This Certificate remains the property of the AGA; and
- (iii) The AGA reserves the right to cancel this Certificate in accordance with the Rules Governing, and in such an event the Certificate Holder undertakes to surrender the Certificate to the AGA upon request.

Client Manager

Certificate Authorised

Certificate first issued: **17 October 2023**

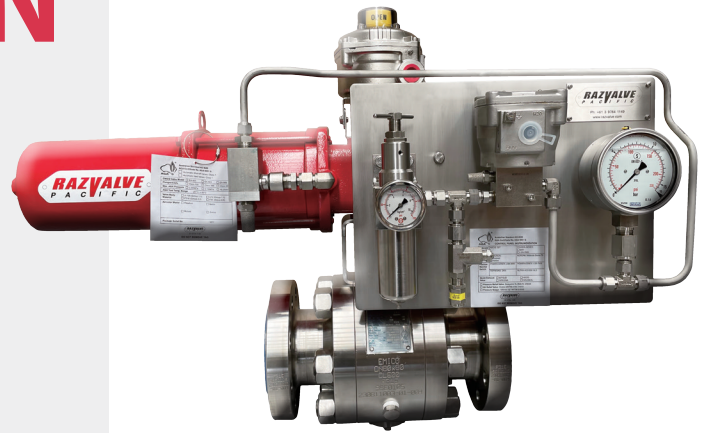
Certificate No: **9051**

This copy valid from: **17 October 2023** Refer specification issue: **01**

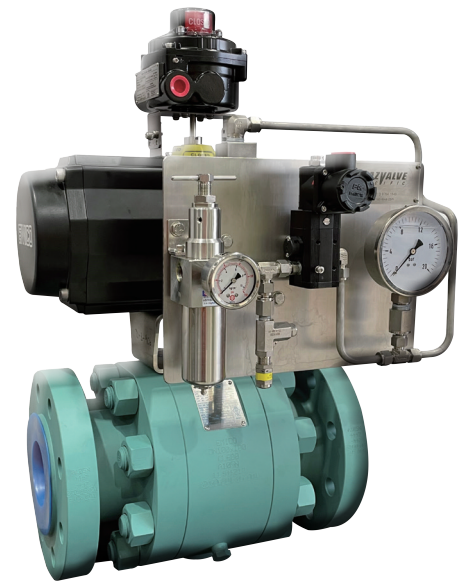
This Certificate issued by The Australian Gas Association ABN 98 004 206 044

EA-900 BALL VALVE ACTUATION

- Valves fitted with Spring Return Pneumatic Actuators.
- Valves have actuators sized for full rated valve line pressures and based on 550ka air supply.
- Automatic valve packages are available for Shut-off as well as Vent applications.
- Minimum 50% safety factor has been considered for gas sizing applications.
- Actuators have air piped connections.
- Accessories include solenoid valves, limit switches, air filter regulators, air relief valve. Available in various power voltages and Explosion Proof, Intrinsically Safe & General Purpose.
- Stainless Steel Control Panel fitted to all packages with above accessories.



Vent valve set-up with scotch-yoke actuator (fail open)



Shut-off set-up with rack & pinion actuator (fail close)

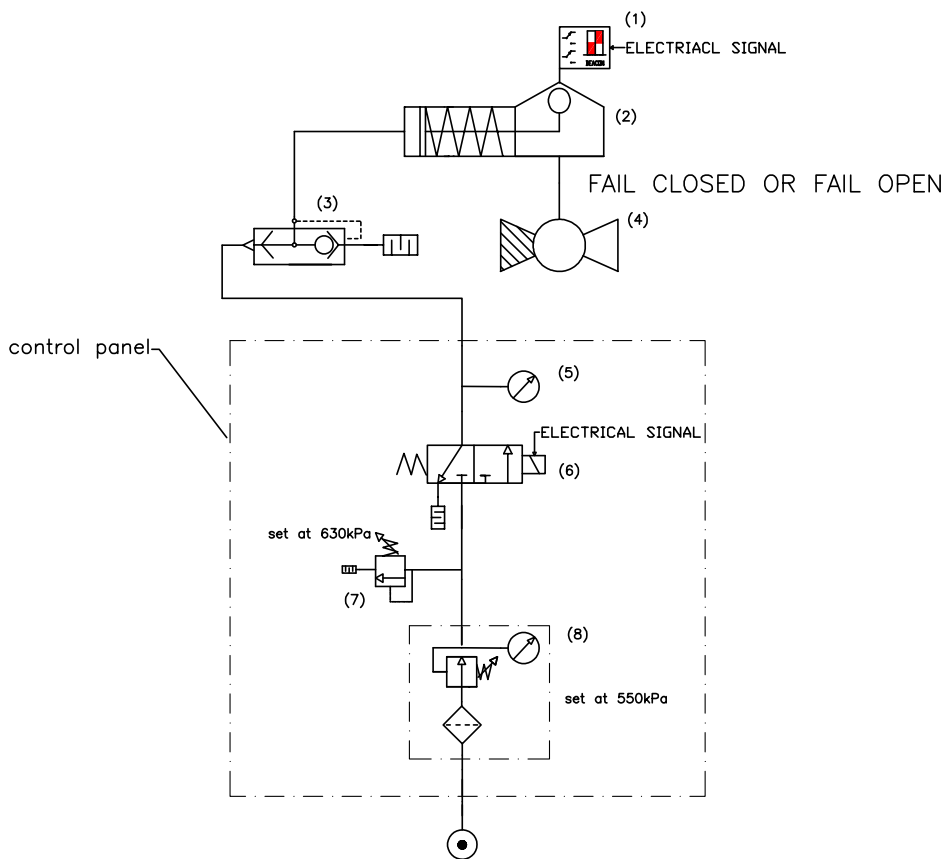
Refer to Drawings + Technical Data for Information



Typical Schematic Layout



1 - Position Monitor	OPTION 1	POWER-GENEX MODEL LSB-3000 ALUMINIUM DIECAST OR 316SS Exd IECEx
	OPTION 2	TOPWORX SERIES DXS 316SS Exd & Exia IECEx
	OPTION 3	ALPHA CONTROLS ALS-500M2 Exd or ALS-200M2PP Exia or ALS-600 & ALS-200M2 GENERAL PURPOSE, ALUMINIUM DIE-CAST OR STAINLESS STEEL
2 - Pneumatic Actuator	OPTION 1	FLOWBUS EPA050-130-S2
	OPTION 2	BETTIS CBB520-SR60-CW
	OPTION 3	ROTORK CP/S-045-120A/BL
3 - Quick Exhaust Valve	OPTION 1	ASCO 316SS NPT-1/4" NPT 8800A10000N0000 OR 1/2" 8800A10200N0000
	OPTION 2	BIFOLD 316SS NPT-1/4" S06-QEV OR 1/2" S12-QEV
	OPTION 3	MAXSEAL 316SS NPT-1/4" QEV13AA1H00S OR 1/2" QEV13AA3H00S
4 - Emico 50mm Class 600 3 Piece Ball Valve EA-906 -Flanged Ends (or Butt Weld)		
5 - 100mm Pressure Gauge 1/2 NPTM BOTTOM ENTRY LIQUID FILLED 0-20Bar Class EN837.1		
6 - Solenoid Valve	OPTION 1	NORGREN MAXSEAL Y0133AA 3/2 316SS 1/4 " NPT OR HERION 2401138-4622/72 OR 24010 BRASS & 316SS 1/4" NPT Exd & Exia IECEx
	OPTION 2	ASCO 316SS & BRASS 327 Series 3/2 1/4" NPT Exd IECEx
	OPTION 3	ROTORK MIDLAND SERIES 70, 3/2, 316L SS 1/4" OR 3/8" NPT Exd IECEx
	OPTION 4	POWER-GENEX ESV-S, ESV 3/2 ALUMINIUM DIECAST OR 316SS Exd IECEx
7 - Swagelok Pressure Relief Valve 316SS RL3M4-F4 (1/4" MNPT/FNPT)		
8 - Shako 316SS Filter Regulator 3/8 NPT USFRB-03N		



Swagelok 3/8" Tube Fittings Prochem 3/8" x 1.2mm wall 316SS dual certified seamless tubing ASTM A269 / A213	Customer		
	Sheet	Drawing Number	REV
	1	AGA 80mm ACTUATED VALVE	
	Date	Customer Order Number	Razvalve Reference Number
	28/02/23		

Typical Control Panel

REV.	DATE	DESCRIPTION

ITEM	PART NO.	DESCRIPTION:	MATERIAL:	SUPPLIER:	QTY:
1	USFRB-03N	FILTER REGULATOR 3/8" NPTF	316SS	SHAKO	1
2	SS-RL3M4-F4	PRESSURE RELIEF VALVE 1/4" NPTM/F	316SS	SWAGELOK	1
3	240113B-4622/72	SOLENOID VALVE 1/4" NPTF	BRASS	HERION	1
4	EN637.1	100MM PRESSURE GAUGE 0-20BAR 1/2" NPTM	316SS	RAZVALVE	1
5	VA-P-350X256X3	3MM 316SS MOUNTING PANEL	316SS	RAZVALVE	1

USED ON	NAME	SIG	DATE	TITLE:
	DRN		25/05/23	CONTROL PANEL LAYOUT AGA ASSEMBLIES 50 TO 200MM EMICO 3 PIECE EA-906 BALL VALVES
	CKD		25/05/23	

CUSTOMER:	DRAWING No.	SIZE
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES	AGA CP 50-200	A4

MATERIAL	THIRD ANGLE PROJECTION	ORDER No.	SCALE:	RAZVALVE REF NO
			1:3	AGA CP 50-200

NOTIFY D.O. OF DRAWING ERRORS

Typical Bill of Materials

DESCRIPTION	STANDARD	LOW TEMPERATURE	STAINLESS STEEL
BODY	A105N	A350 LF2	F316/L
FLANGED ENDS	A105N	A350 LF2	F316/L
BALL	A105+ENP	A350 LF2+ENP/F316	F316/L
SEAT	A182 F6a	A182 F6a	F316/L
SEAT INSERT	RPTFE / DEVLON ²	RPTFE / DEVLON ²	RPTFE / DEVLON ²
UPPER STEM	AISI 410 ³	AISI 410 ³	F316/L ³
LOWER STEM	AISI 410 ³	AISI 410 ³	F316/L ³
GLAND	A105	A350 LF2	F316/L
STOP PLATE	A105	A350 LF2	F316/L
STUDS	A193 B7M	A 194 L7M	A193 GR B8
NUTS	A194 2HM	A194 GR 7M	A194 GR 8
BODY PLUG	A105	A350 LF2	F316/L
LOWER STEM SCREW	AISI 304	AISI 304	AISI 304
STEM BEARING UPPER	S/STEEL+PTFE	S/STEEL+PTFE	S/STEEL+PTFE
STEM BEARING LOWER	S/STEEL+PTFE	S/STEEL+PTFE	S/STEEL+PTFE
SEAT SPRING	INCONEL X-750	INCONEL X-750	INCONEL X-750
GLAND PACKING	GRAPHITE	GRAPHITE	GRAPHITE
GASKET BODY / FLANGE	GRAPHITE	GRAPHITE	GRAPHITE
O-RING SEAT / FLANGE	FKM	FKM	FKM
STOP PLATE	CARBON STEEL	A350 LF2	AISI 316/L
GASKET SEAT	GRAPHITE	GRAPHITE	GRAPHITE
LEVER HANDLE	CARBON STEEL	CARBON STEEL	CARBON STEEL
GEAR OPERATOR	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON
O-RING BODY / FLANGE	FKM	FKM	FKM
O-RING STEM / BODY	FKM	FKM	FKM
O-RING LOWER STEM	FKM	FKM	FKM
O-RING UPPER STEM	FKM	FKM	FKM
ANTI-STATIC DEVICE	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL
SEALANT INJECTION FITTING	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL
SAFETY CHECK VALVE	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL

Notes:

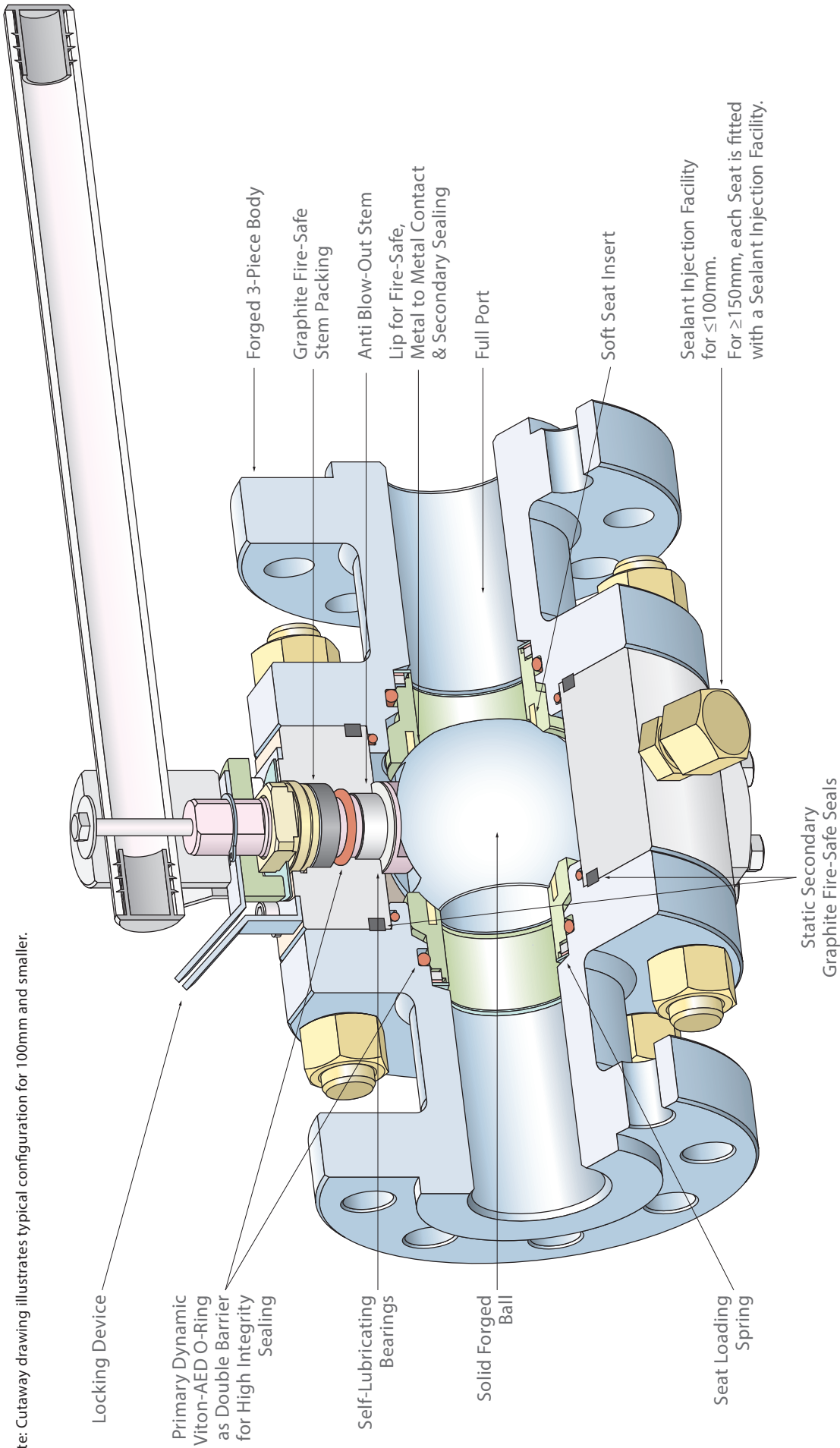
1. FKM (Fluoroelastomer): There are a number of fluoroelastomers which can be selected according to media, temperatures and other AED qualities.
2. Other materials are available depending on service conditions and pressure class.
3. Other materials are supplied dependant on pressure class and media.

Manufacturer	Eayuan Metal Industrial Co., Ltd		
Specification	API 6D		
Serial No.			
Pressure Class Rating	CL 300		
Body & Flanges (ASTM)	ASTM A105		
Stem - Ball - Seat	17-4PH	A182 F316	A182 F316
O-Ring - Seat Insert	Viton	AED	DEVLON
MOP MPa	MOT °C	4.6	120
mOP MPa	mOT °C	5.1	-40
Model / Fig No.	EA-903		
Nominal valve size	8"		
Face to face	mm	501.7	
QSL Level	QSL 1		
Date of Manufacture			
Manufacture country	Made in Taiwan	6D-0623	



EA 900 SERIES TRUNNION BALL VALVE

Note: Cutaway drawing illustrates typical configuration for 100mm and smaller.



Locking Device

Primary Dynamic Viton-AED O-Ring as Double Barrier for High Integrity Sealing

Self-Lubricating Bearings

Solid Forged Ball

Seat Loading Spring

Static Secondary Graphite Fire-Safe Seals

Forged 3-Piece Body

Graphite Fire-Safe Stem Packing

Anti Blow-Out Stem

Lip for Fire-Safe, Metal to Metal Contact & Secondary Sealing

Full Port

Soft Seat Insert

Sealant Injection Facility for $\leq 100\text{mm}$.

For $\geq 150\text{mm}$, each Seat is fitted with a Sealant Injection Facility.

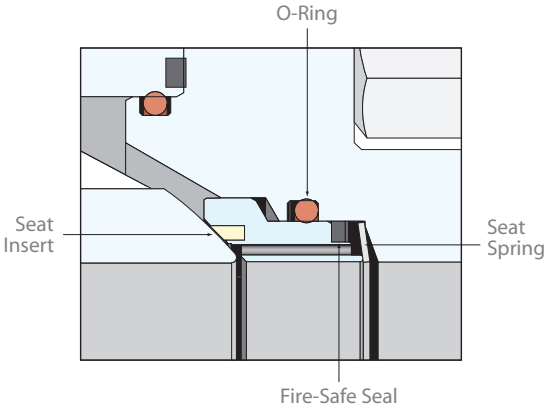
DESIGN FEATURES

EMICO trunnion ball valves are suitable for use in various applications, including but not limited to:

- Oil & Gas Pipelines – Onshore & Offshore - manifolds, separator systems, filter systems, drying systems
- Transportation of Oil & Gas – pumping & compressor stations, pig launching stations
- Gas Distribution - measuring & metering stations, pressure regulation & reduction stations
- Gas Storage Plants
- Petrochemical – processes and storage facilities
- Chemical & Process Plants

Seat Construction

Soft Seals – the resilient seat insert is the sealing contact between the ball and the seat and is securely locked into the stainless steel seat ring. O-ring and graphite fire-safe seal are the contact between the seat ring and the valve body.



Fire Safe Design

EMICO valves are tested and certified fire-safe to API 607 Edition 5 / ISO 10497-5:2004.

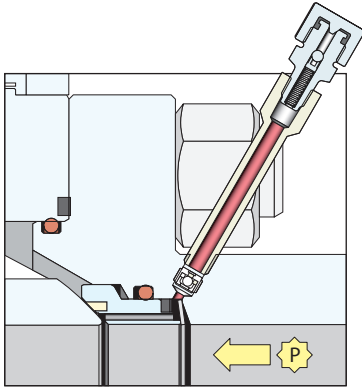
External – leakage to atmosphere is prevented by double sealing of O-ring and graphite gasket in the stem area and body joints. In the event of a fire damaging O-rings, the graphite packing and gaskets prevent / minimize leakage to atmosphere.

Internal – in the event of a fire, the seat resilient materials i.e. seat insert and O-rings burn, and the edge / metal lip of the seat, preloaded by the seat spring comes in contact with the ball and minimizes internal line fluid leakage. Leakage behind the seat is prevented by a graphite gasket.

Trunnion Ball – Stem and Trunnion Bearings

EMICO design incorporates a solid forged ball with top and bottom trunnions fitted with self lubricated PTFE impregnated stainless steel bearings. This provides low friction and less torque. In the closed position, thrust generated by pressure is supported by the trunnions.

Seat Sealing Mechanism

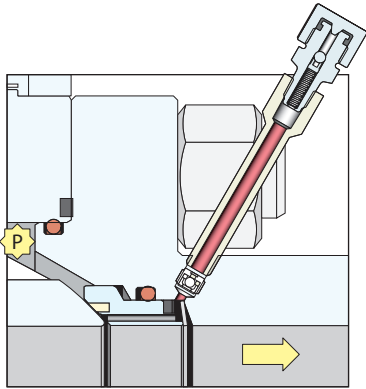


The floating seat design ensures the upstream and downstream seats are always in contact with the ball loaded by the seat spring and assisted by line pressure. Tight shut-off sealing is maintained independently by both seats at the same time.

Each seat is uni-directional depending on pressure and this allows a seal in both directions using one seat for each pressure direction. At low pressure, sealing is effected by the seat O-ring and spring that keep the seat in contact with the ball. As pressure increases, the seat reacts to the upstream seal, producing a proportional force in addition to the pre-loaded spring set to force the upstream seal tight against the ball. The total sealing force is the sum of the spring force plus the force resulting from the pressure which proportionally increases with line pressure.

Double Block & Bleed Function & Self Relieving Seats

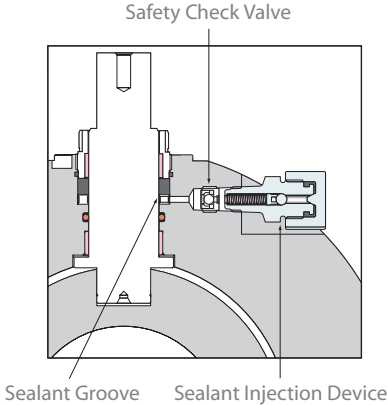
As each seat independently shuts off line fluid upstream and downstream of the ball, the valve bore and cavity are isolated from each other and the valve is ideal for double block and bleed service. The seats work independently of each other and two different media can be separated by the valve. As the seats are engineered to self-relieve, no pressure build-up can occur in the body cavity. The floating seat design allows the seat with the lowest pressure (downstream seat) to move slightly away from the ball to relieve excess cavity pressure into the valve bore, equalizing the pressure. This is done without the aid of external cavity relief or safety valves.



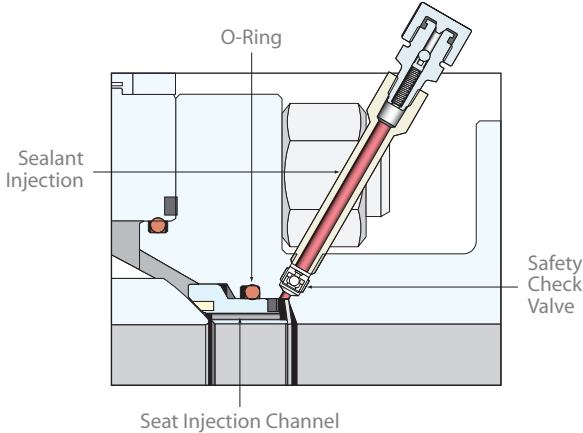
Emergency Secondary Sealing System

EMICO ball valves are non-lubricated. Additional emergency sealing injection for seats and stem can be provided for temporary sealing if foreign matter should cause damage to the sealing areas. As the valve is closed, the sealant is forced into the sealing areas. This is not a long-term solution to restoring sealing, rather a short-term prevention till maintenance is carried out, as with each valve operation the sealant can be washed through the system. Sealant fittings include safety check valves which prevent reverse flow, due to internal valve pressure, of the injected grease.

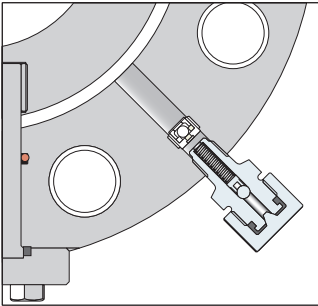
Stem – In the event of failure of the stem sealing system due to damage to O-rings and degradation of packing, an emergency sealant injection point ensures temporary sealing through the sealant groove. Seal restoration can be performed either with the valve open or closed.



Seats - Valves 6" (150mm) and larger can be supplied with seat sealant injection facilities to provide temporary sealing through the sealant grooves, in the event of damage to the seat insert. Valves 4" (100mm) and below can be supplied with a cavity sealant injection facility.



Seat Sealant System - 6" (150mm) and above



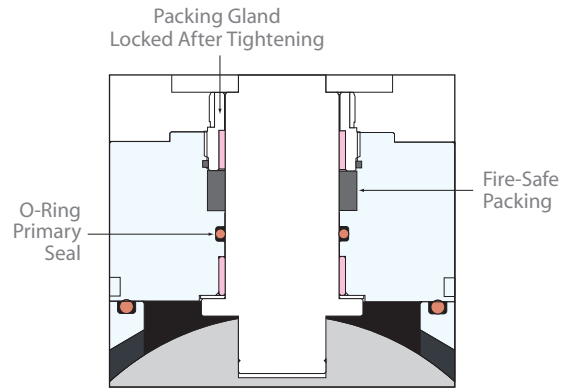
Cavity Sealant System - 4" (100mm) and below

Double Barrier Seals

The body to end connections and stem sealing incorporates double barrier protection for maximum safety against pressure envelope leakage.

In the stem area, the primary sealing is an O-ring followed by a secondary fire-safe graphite gland packing.

Sealing between body and end flanges is by an O-ring followed by a fire safe graphite gasket inside the valve body.



Operating Torque

EMICO trunnion ball valves are precision manufactured to ensure low operating torques, resulting in longer operational life. Low torques allow the use of smaller size actuators and are a cost advantage when sizing actuators. Contact EMICO for details.

Anti-Static Device

Spring-loaded pin assembly ensures electric continuity between body, stem and ball.

Drain

A drain plug is fitted as standard on all valves. This port can be used to verify valve seat leakage or to drain the valve if required.

Stop Plate & Locking Device

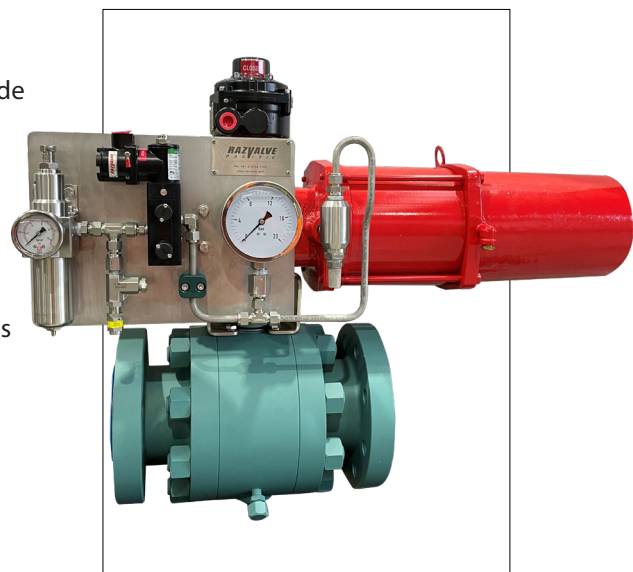
EMICO ball valves are equipped with a stop plate to ensure true open and closed positions. This also takes out the guess work at site should operators need to be changed. All lever and gear operated valves are supplied with a locking mechanism for open and closed positions.

Anti Blow-Out Stem

Anti blow-out proof stem with collar fitted from inside the body.

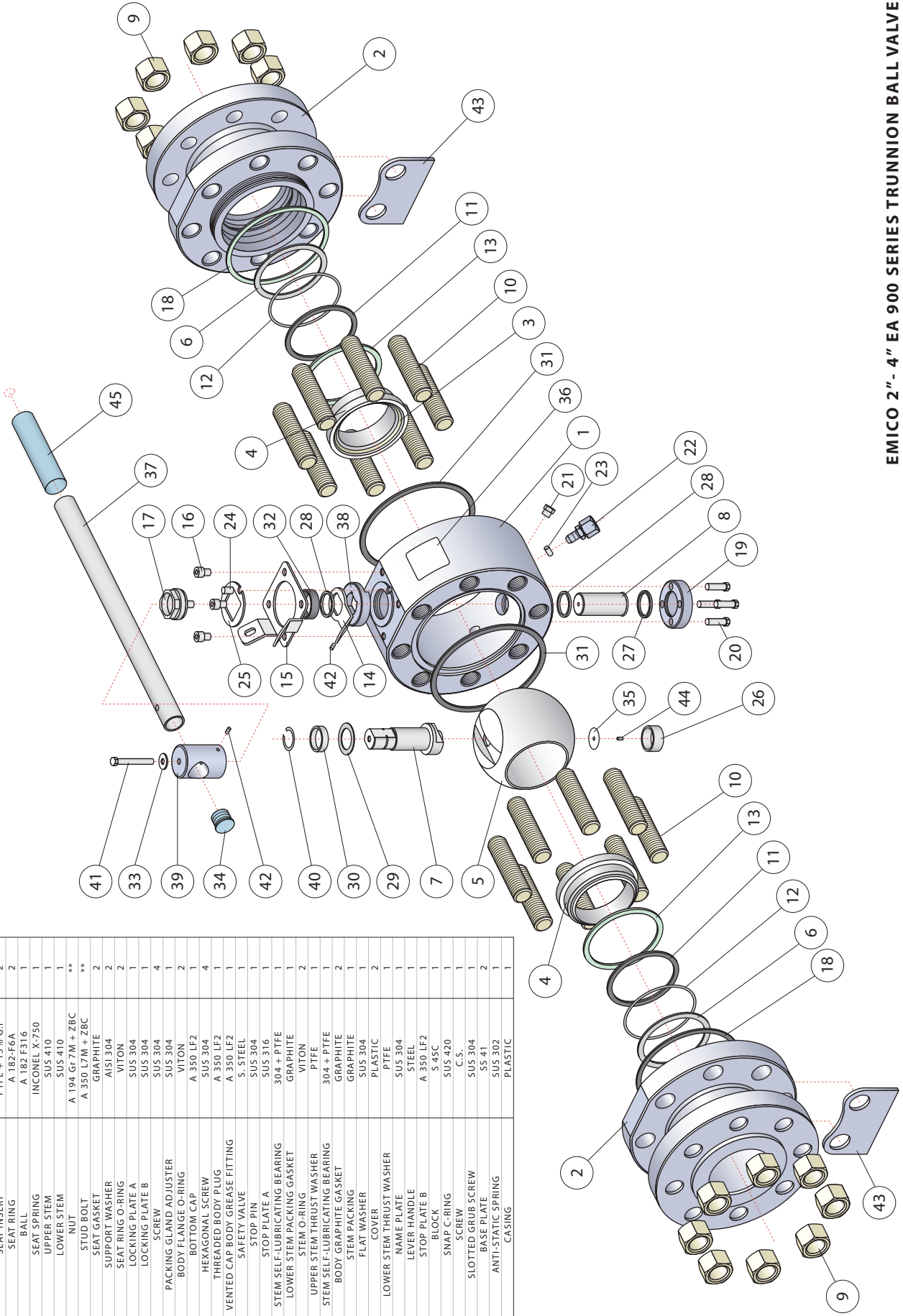
Bore Dimensions

Valves are supplied in full as well as reduced bore. In addition, full bore valves can have pipe bore machined to match pipe bores of different schedules for optimum pigging.



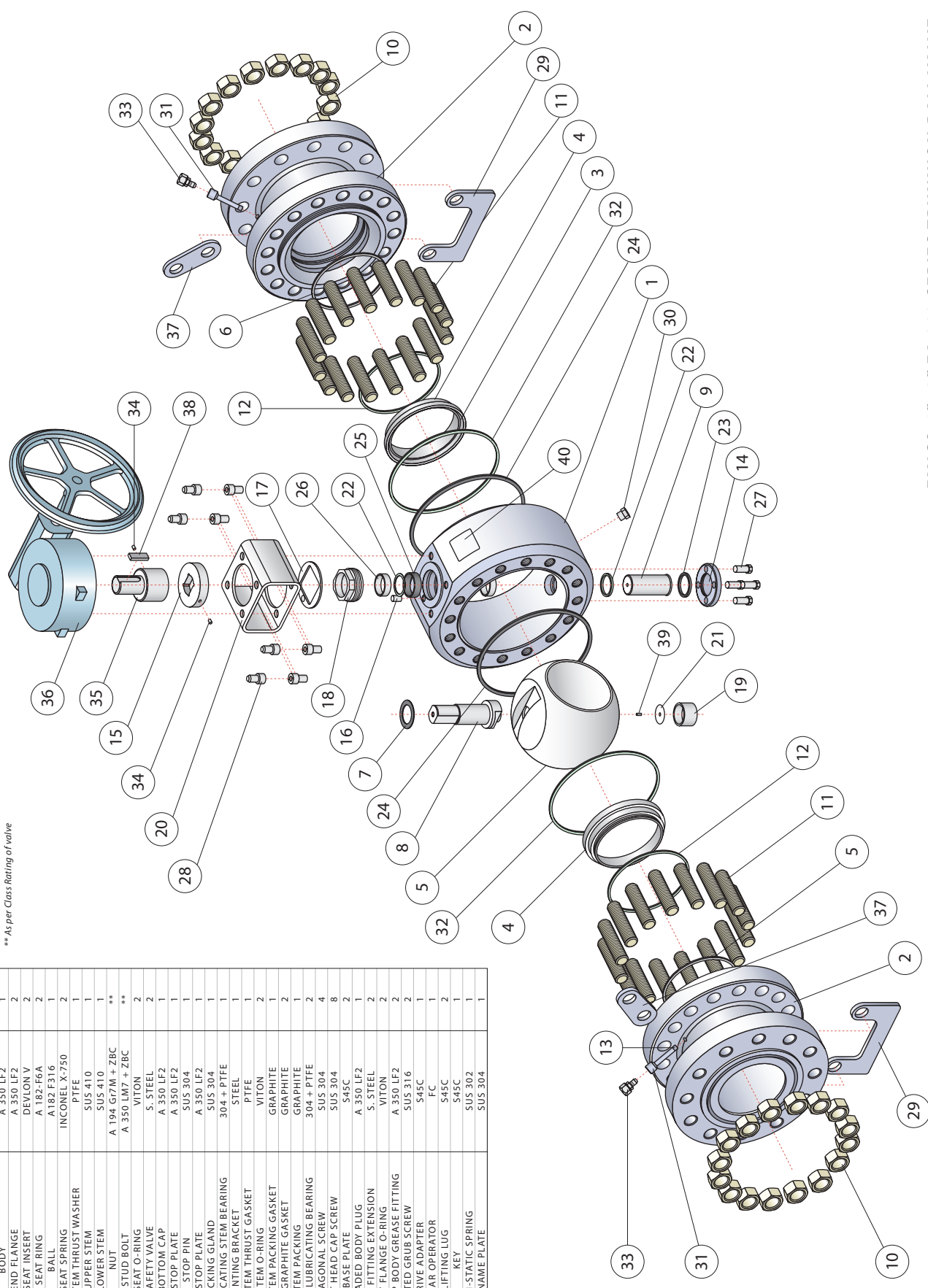
*Consult EMICO for alternative materials
 **As per Class Rating of valve

PART NO.	PART	MATERIAL*	QUANTITY
1	BODY	A 350 LF2	1
2	END FLANGE	A 350 LF2	2
3	SEAT INSERT	PTFE ± 15% GF	2
4	SEAT RING	A 182-F6A	2
5	BALL	A 182 F316	1
6	SEAT SPRING	INCONEL X-750	1
7	UPPER STEM	SUS 410	1
8	LOWER STEM	SUS 410	1
9	NUT	A 194 Gr 7M + ZBC	**
10	STUD BOLT	A 350 L7M + ZBC	**
11	SEAT GASKET	GRAPHITE	2
12	SUPPORT WASHER	AISI 304	2
13	SEAT RING O-RING	VITON	2
14	LOCKING PLATE A	SUS 304	1
15	LOCKING PLATE B	SUS 304	1
16	SCREW	SUS 304	4
17	PACKING GLAND ADJUSTER	SUS 304	1
18	BODY FLANGE O-RING	VITON	2
19	ROTTOM CAP	A 350 LF2	1
20	HEXAGONAL SCREW	SUS 304	4
21	THREADED BODY PLUG	A 350 LF2	1
22	VENTED CAP BODY GREASE FITTING	A 350 LF2	1
23	SAFETY VALVE	S-STEEL	1
24	STOP PIN	SUS 304	1
25	STOP PLATE A	SUS 316	1
26	STEM SELF-LUBRICATING BEARING	304 + PTFE	1
27	LOWER STEM PACKING GASKET	GRAPHITE	1
28	STEM O-RING	VITON	2
29	UPPER STEM THRUST WASHER	PTFE	1
30	STEM SELF-LUBRICATING BEARING	304 + PTFE	1
31	BODY GRAPHITE GASKET	GRAPHITE	2
32	STEM PACKING	GRAPHITE	1
33	FLAT WASHER	SUS 304	1
34	COVER	PLASTIC	2
35	LOWER STEM THRUST WASHER	PTFE	1
36	NAME PLATE	SUS 304	1
37	LEVER HANDLE	STEEL	1
38	STOP PLATE B	A 350 LF2	1
39	BLOCK	S-45C	1
40	SNAP C-RING	SUS 420	1
41	SCREW	C.S.	1
42	SLOTTED GRUB SCREW	SUS 304	1
43	BASE PLATE	SS 41	2
44	ANTI-STATIC SPRING	SUS 302	1
45	CASING	PLASTIC	1

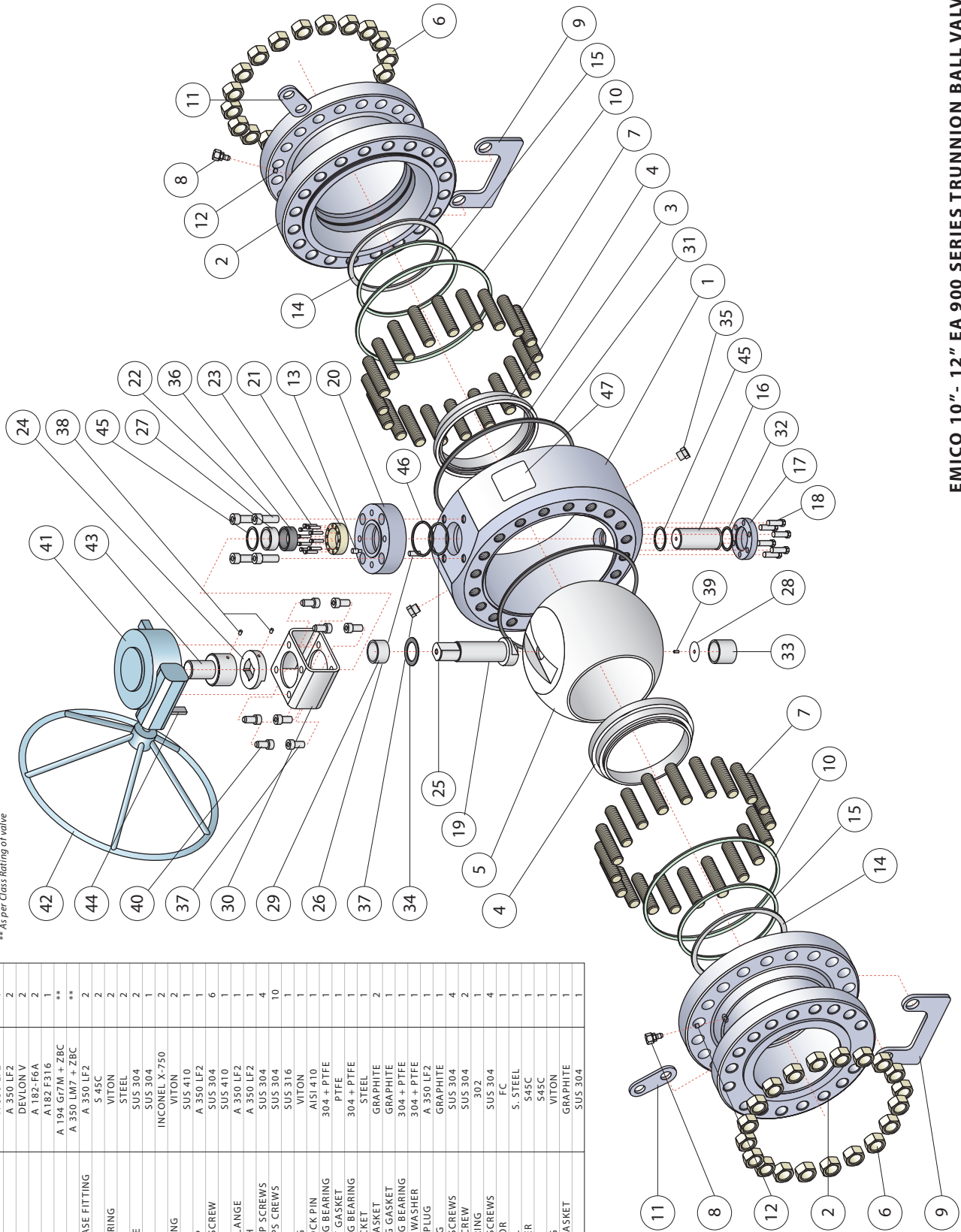


*Consult EMICO for alternative materials
 ** As per Class Rating of valve

PART NO.	PART	MATERIAL*	QUANTITY
1	BODY	A 350 LF2	1
2	END FLANGE	A 350 LF2	2
3	SEAT INSERT	DEVILON V	2
4	SEAT RING	A 182-F6A	2
5	BALL	A182 F316	2
6	SEAT SPRING	INCONEL X-750	2
7	UPPER STEM THRUST WASHER	PTFE	1
8	UPPER STEM	SUS 410	1
9	LOWER STEM	SUS 410	1
10	NUT	A 194 G77M + ZBC	**
11	STUD BOLT	A 350 LM7 + ZBC	**
12	SEAT O-RING	VITON	2
13	SAFETY VALVE	S. STEEL	2
14	BOTTOM CAP	A 350 LF2	1
15	STOP PLATE	A 350 LF2	1
16	STOP PIN	SUS 304	1
17	STOP PLATE	SUS 304	1
18	PACKING GLAND	SUS 304	1
19	SELF-LUBRICATING STEM BEARING	STEEL	1
20	MOUNTING BRACKET	STEEL	1
21	LOWER STEM THRUST GASKET	PTFE	1
22	STEM O-RING	VITON	2
23	LOWER STEM PACKING GASKET	GRAPHITE	1
24	BODY GRAPHITE GASKET	GRAPHITE	2
25	STEM PACKING	GRAPHITE	1
26	STEM SELF-LUBRICATING BEARING	304 + PTFE	2
27	HEXAGONAL SCREW	SUS 304	4
28	SOCKET HEAD CAP SCREW	SUS 304	8
29	BASE PLATE	S45C	2
30	THREADED BODY PLUG	A 350 LF2	1
31	SEALANT FITTING EXTENSION	S. STEEL	1
32	BODY FLANGE O-RING	VITON	2
33	VENTED CAP BODY GREASE FITTING	A 350 LF2	2
34	SLOTTED GRUB SCREW	SUS 316	2
35	DRIVE ADAPTER	S45C	1
36	GEAR OPERATOR	FC	1
37	LIFTING LUG	S45C	2
38	KEY	SUS 302	1
39	ANTI-STATIC SPRING	SUS 304	1
40	NAME PLATE	SUS 304	1

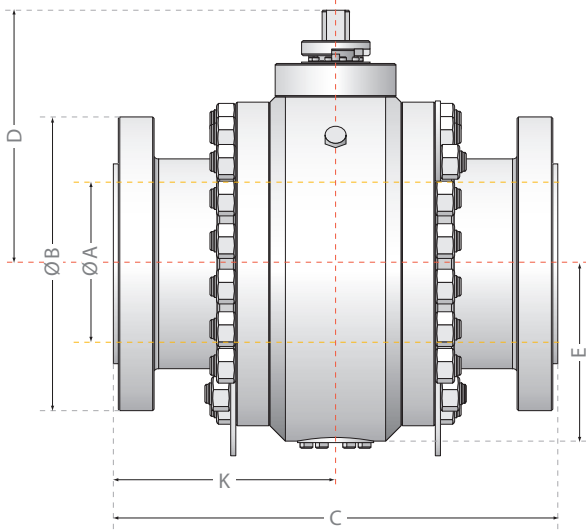


*Consult EMICO for alternative materials
 ** As per Class Rating of valve



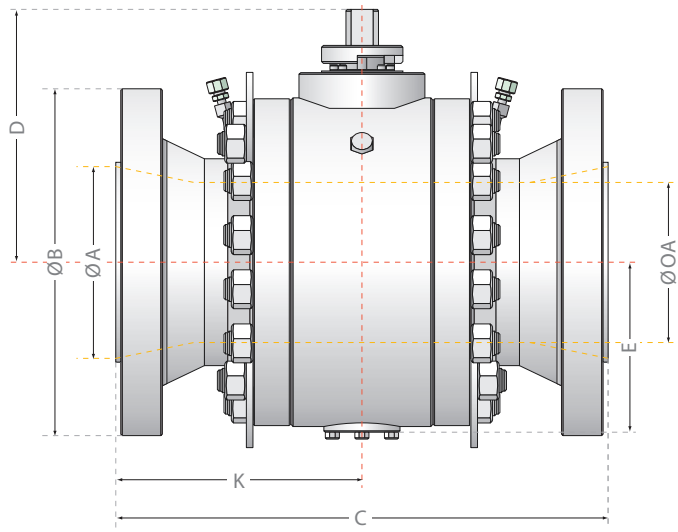
PART NO.	PART	MATERIAL*	QUANTITY
1	BODY	A 350 LF2	1
2	END FLANGE	A 350 LF2	2
3	SEAT INSERT	DEVLOM V	2
4	SEAT RING	A 182-F6A	2
5	BALL	A182 F316	1
6	NUT	A 194 G7/M + Z8C	**
7	STUD BOLT	A 350 LM7 + Z8C	**
8	VENTED CAP BODY GREASE FITTING	A 350 LF2	2
9	BASE PLATE	S 45C	2
10	BODY FLANGE O-RING	VITON	2
11	LIFTING LUG	STEEL	2
12	SAFETY VALVE	SUS 304	2
13	STOP PIN	SUS 304	1
14	SEAT SPRING	INCONEL X-750	2
15	SEAT RING O-RING	SUS 410	2
16	LOWER STEM	SUS 410	1
17	BOTTOM CAP	A 350 LF2	1
18	M16 HEXAGONAL SCREW	SUS 304	6
19	UPPER STEM	SUS 410	1
20	PACKING GLAND FLANGE	A 350 LF2	1
21	COLLAR BUSH	A 350 LF2	1
22	M24 SOCKET HEAD CAP SCREWS	SUS 304	4
23	M8 SOCKET HEAD CAPS CNEWS	SUS 304	10
24	STOP PLATE	SUS 316	1
25	STEM O-RING	VITON	1
26	PACKING GLAND LOCK PIN	AISI 410	1
27	STEM SELF-LUBRICATING BEARING	304 + PTFE	1
28	LOWER STEM THRUST GASKET	PTFE	1
29	STEM SELF-LUBRICATING BEARING	304 + PTFE	1
30	MOUNTING BRACKET	STEEL	1
31	BODY GRAPHITE GASKET	GRAPHITE	2
32	LOWER STEM PACKING GASKET	GRAPHITE	1
33	STEM SELF-LUBRICATING BEARING	304 + PTFE	1
34	UPPER STEM THRUST WASHER	304 + PTFE	1
35	THREADED BODY PLUG	A 350 LF2	1
36	STEM PACKING	GRAPHITE	1
37	SOCKET HEAD CAP SCREWS	SUS 304	4
38	SLOTTED GRUB SCREW	SUS 304	2
39	ANTI-STATIC SPRING	302	1
40	SOCKET HEAD CAP SCREWS	SUS 304	4
41	GEAR OPERATOR	FC	1
42	HAND WHEEL	S STEEL	1
43	DRIVE ADAPTER	S45C	1
44	KEY	S45C	1
45	STEM O-RING	VITON	1
46	PACKING GLAND GASKET	GRAPHITE	1
47	NAME PLATE	SUS 304	1

DIMENSIONS & WEIGHTS



ASME CLASS 150 / ISO PN20 FULL BORE

DN		ØA	C Face to Face (mm) RF	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm		ØB	ØD	ØE	
2	50	50	178	152	115	95.5	17
3	80	76	203	190	135	120.5	31
4	100	100	229	229	167.5	140.5	52
6	150	150	394	279	227.5	190.4	145
8	200	201.4	457	343	268.5	227	270
10	250	252.4	533	406	339	272.3	460
12	300	303.4	610	483	406.5	329	750



ASME CLASS 150 / ISO PN20 REDUCED BORE

DN		ØA	ØOA	C Face to Face (mm) RF	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm	mm		ØB	ØD	ØE	
3x2	80	76	50	203	190	115	95.5	23
4x3	100	100	76	229	229	135	120.5	40
6x4	150	150	100	394	279	167.5	140.5	82
8x6	200	201.4	150	457	343	227.5	190.4	180
10x8	250	252.4	201.4	533	406	268.5	227	310
12x10	300	303.4	252.4	610	483	339	272.3	540
14x12	350	336	303.4	686	533	406	329	790

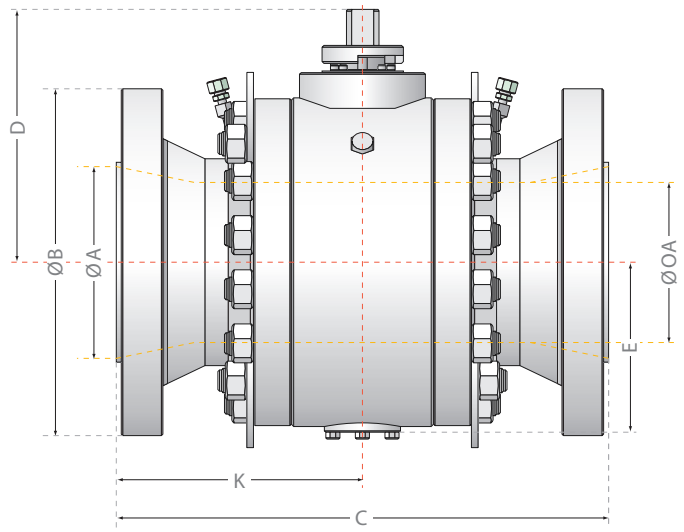
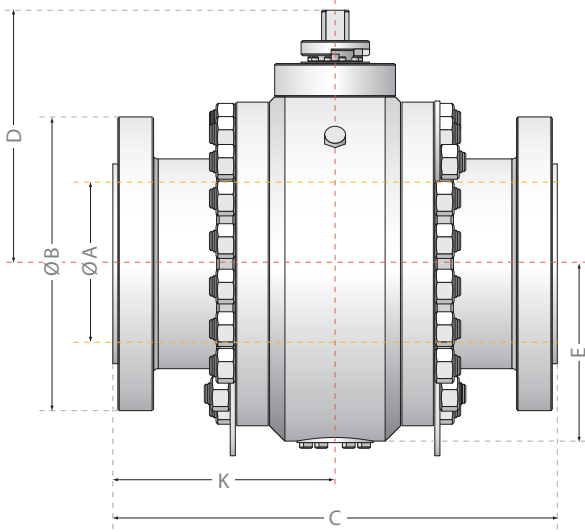
ASME CLASS 300 / ISO PN50 FULL BORE

DN		ØA	C Face to Face (mm) RF	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm		ØB	ØD	ØE	
2	50	50	216	165	115	95.5	23
3	80	76	282.5	210	135	120.5	43
4	100	100	304.8	254	167.5	140.5	70
6	150	150	403.4	318	227.5	190.4	165
8	200	201.4	501.7	381	268.5	227	280
10	250	252.4	568.5	444	339	272.3	500
12	300	303.4	647.7	521	406.5	329	810

ASME CLASS 300 / ISO PN50 REDUCED BORE

DN		ØA	ØOA	C Face to Face (mm) RF	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm	mm		ØB	ØD	ØE	
3x2	80	76	50	282.5	210	115	95.5	35
4x3	100	100	76	304.8	254	135	120.5	58
6x4	150	150	100	403.4	318	167.5	140.5	95
8x6	200	201.4	150	501.7	381	227.5	190.4	210
10x8	250	252.4	201.4	568.5	444	268.5	227	360
12x10	300	303.4	252.4	647.7	521	339	272.3	600
14x12	350	336	303.4	762	584	406.5	329	920

DIMENSIONS & WEIGHTS



ASME CLASS 600 / ISO PN100 FULL BORE

DN		ØA	C Face to Face (mm) RF	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm		ØB	ØD	ØE	
2	50	50	292.1	165	115	95.5	30
3	80	76	355.6	210	151	126.3	65
4	100	100	431.8	273	192.5	157	125
6	150	150	558.8	356	265	198.8	280
8	200	201.4	660.4	419	334.5	261	500
10	250	252.4	787.4	508	378.5	307	750
12	300	303.4	838.2	559	444.2	361	1150

ASME CLASS 600 / ISO PN100 REDUCED BORE

DN		ØA	ØOA	C Face to Face (mm) RF	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm	mm		ØB	ØD	ØE	
3x2	80	76	50	355.6	210	115	95.5	42
4x3	100	100	76	431.8	273	150.8	126.3	92
6x4	150	150	100	558.8	356	192.6	157	175
8x6	200	201.4	150	660.4	419	265.1	198.8	350
10x8	250	252.4	201.4	787.4	508	334.2	261	620
12x10	300	303.4	252.4	838.2	559	378	307	850
14x12	350	336	303.4	889	603	444.2	361	1250

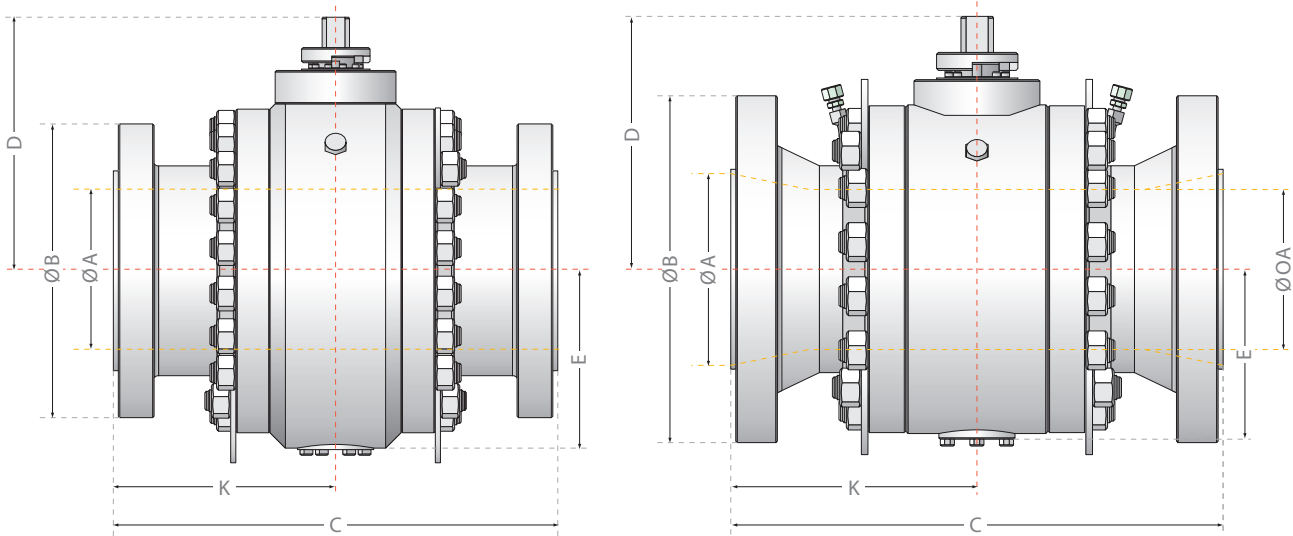
ASME CLASS 900 / ISO PN150 FULL BORE

DN		ØA	C Face to Face (mm) RF	C Face to Face (mm) RTJ	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm			ØB	ØD	ØE	
2	50	50	368.3	371.3	216	115	95.5	45
3	80	76	381	384	241	151	126.3	70
4	100	100	457.2	460.2	292	192.5	157	135
6	150	150	609.6	612.6	381	265	198.8	310
8	200	201.4	736.6	739.6	470	334.5	261	580
10	250	252.4	838.2	841.2	546	403.2	335	900
12	300	303.4	965.2	968.2	610	476	411	1700

ASME CLASS 900 / ISO PN150 REDUCED BORE

DN		ØA	ØOA	C Face to Face (mm) RF	C Face to Face (mm) RTJ	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm	mm			ØB	ØD	ØE	
3x2	80	76	50	381	384	241	115	95.5	55
4x3	100	100	76	457.2	460.2	292	151	126.3	100
6x4	150	150	100	609.6	612.6	381	192.5	157	215
8x6	200	201.4	150	736.6	739.6	470	265	198.8	430
10x8	250	252.4	201.4	838.2	841.2	546	334.5	261	730
12x10	300	303.4	252.4	965.2	968.2	610	403.2	335	1130
14x12	350	336	303.4	1028.7	1038.4	641	476	411	1800

DIMENSIONS & WEIGHTS



ASME CLASS 1500 / ISO PN250 FULL BORE

DN		ØA	C	C	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm	Face to Face (mm) RF	Face to Face (mm) RTJ	ØB	ØD	ØE	
2	50	50	368.3	371.3	216	129.2	107	54
3	80	76	469.9	472.9	267	182.5	152	120
4	100	100	546.1	549.1	311	225	185	185
6	150	150	704.9	711.2	394	304	235	450
8	200	201.4	831.8	841.5	483	379.2	328	850
10	250	252.4	990.6	1000.3	584	435	390	1550
12	300	303.4	1130.3	1146	673	494	460	2300

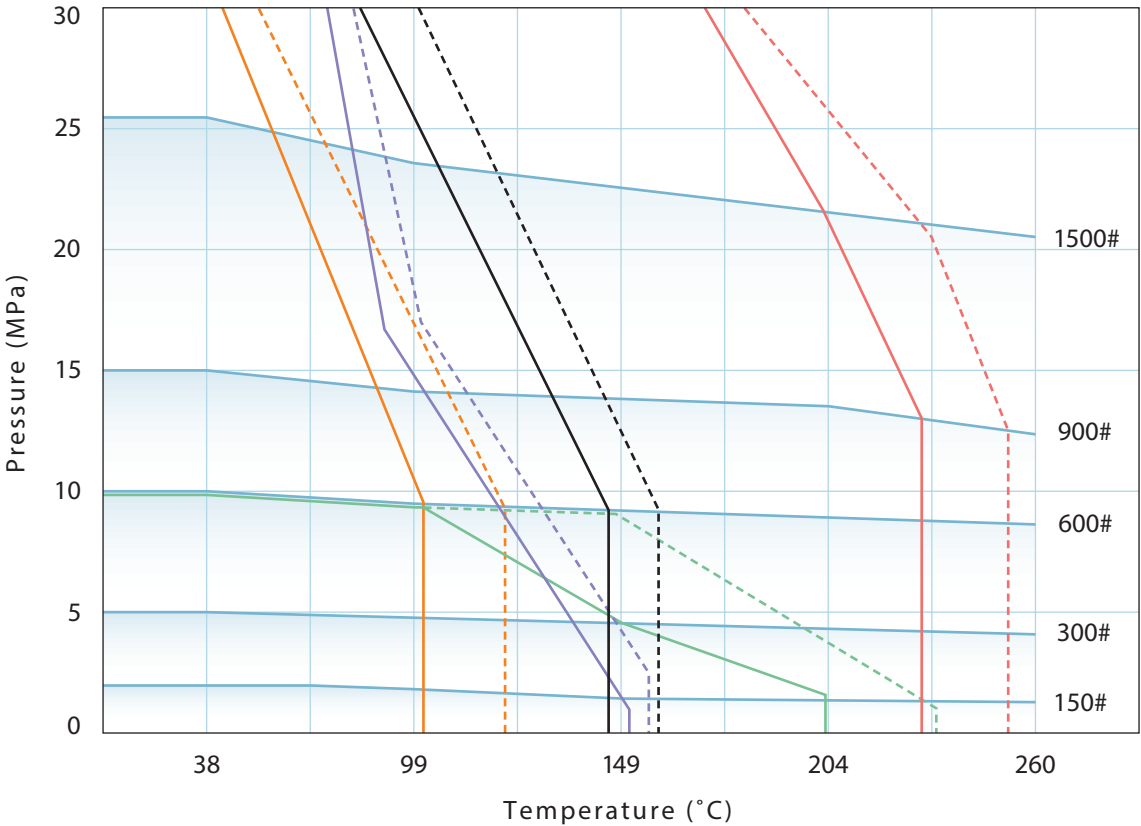
ASME CLASS 1500 / ISO PN250 REDUCED BORE

DN		ØA	ØOA	C	C	Dimensions (mm)			Weight (kg) Flanged
Inch	mm	mm	mm	Face to Face (mm) RF	Face to Face (mm) RTJ	ØB	ØD	ØE	
3x2	80	76	50	469.9	472.9	267	129.2	107	75
4x3	100	100	76	546.1	549.1	311	182.5	152	140
6x4	150	150	100	704.9	711.2	394	225	185	310
8x6	200	201.4	150	831.8	841.5	483	304	235	600
10x8	250	252.4	201.4	990.6	1000.3	584	379.2	328	1050
12x10	300	303.4	252.4	1130.3	1146	673	435	390	1800
14x12	350	318	303.4	1257.3	1276.4	749	494	460	2600

PRESSURE / TEMPERATURE RATINGS - SOFT SEATS

Pressure Temperature ratings of soft seated ball valves are determined by the sealing / soft materials used in the valve e.g. seat insert, O-rings, gland packing, gaskets. Choice of sealing materials used is determined by the service conditions including pressure, temperature, service media, etc. These curves are based on the limits of ASME B16.34 for standard classes and group materials 1-1, 1-2 & 1-3.

The P/T curves prepared below are representative of the manufacturer’s experience and technical information and these have been adapted to EMICO’s valves. If very high or very low temperatures are expected, please consult the manufacturer.



- NYLON PA 12
- RPTFE
- PCTFE
- DEVLON V
- PEEK

Solid Lines - Continuous Temperature
 Dotted Lines - Intermittent / Peak Temperatures

COMPUTED FLOW COEFFICIENT (CV) VALUES

Size		ASME Class	ASME Class	ASME Class	ASME Class	ASME Class
Inch	mm	150/ ISO PN20	300/ ISO PN50	600/ ISO PN100	900/ ISO PN150	1500/ ISO PN250
2	50	500	430	370	320	320
3	80	1360	1100	1020	920	820
4	100	2500	2000	1850	1760	1600
5	150	5300	5250	4400	4300	4150
8	200	10750	10100	8450	8475	8010
10	250	17500	16820	14250	14160	13220
12	300	26750	25950	22550	21200	18800

WORKING & TEST PRESSURES

GROUP 1.1 CARBON STEELS (A105, A350 LF2, etc.)

Class		Maximum Working Pressure		Shell Test Pressure		Seat Test Pressure		Air Test	
ASME	ISO	Bar	psi	Bar	psi	Bar	psi	Bar	psi
150	PN20	20	285	30	425	22	300	5.6	80
300	PN50	54	740	78	110	57	800	5.6	80
600	PN100	102	1480	154	2175	113	1600	5.6	80
900	PN150	153	2220	230	3250	167	2400	5.6	80
1500	PN250	255	3705	383	5400	281	4000	5.6	80

GROUP 2.3 AUSTENSTIC STEELS (F316L, etc.)

Class		Maximum Working Pressure		Shell Test Pressure		Seat Test Pressure		Air Test	
ASME	ISO	Bar	psi	Bar	psi	Bar	psi	Bar	psi
150	PN20	16	230	24	345	18	360	5.6	80
300	PN50	41	600	63	900	46	660	5.6	80
600	PN100	82.5	1200	125	1780	92	1310	5.6	80
900	PN150	124	1800	187	2660	137	1950	5.6	80
1500	PN250	206	3000	311	4425	228	3245	5.6	80

Note: Other group materials have different pressure ratings. Refer ASMI B16.34 for alternative materials and pressure ratings.

TRUNNION BALL VALVE PRODUCTION FLOW



Forge Shop



Body & End Forgings



Mechanical Properties Testing



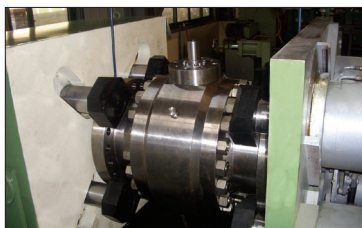
Machining



Component Cleaning



Assembly



Pressure Testing

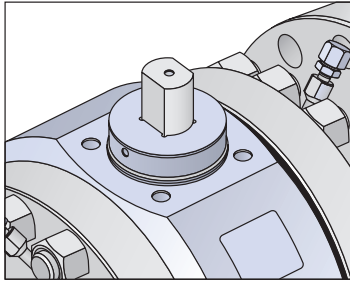


Painting



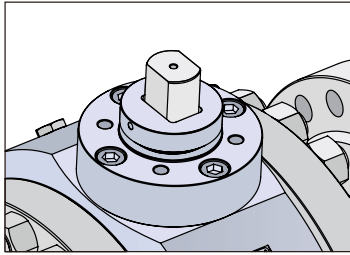
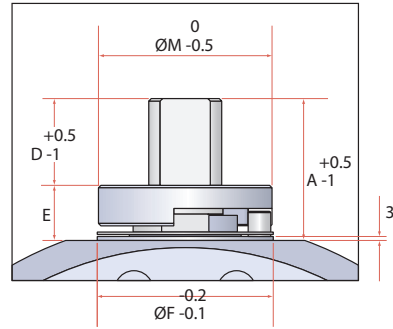
Packing

ISO DIMENSIONS



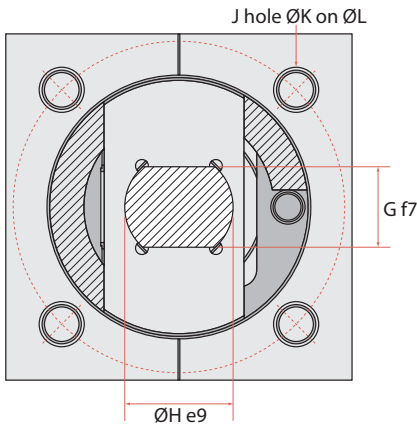
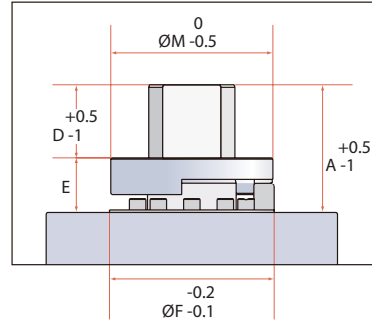
ISO TOP Flange Details

- EA-901-4"~12"
- EA-903-4"~12"
- EA-906-2"~8"
- EA-909-2"~8"
- EA-915-2"~6"

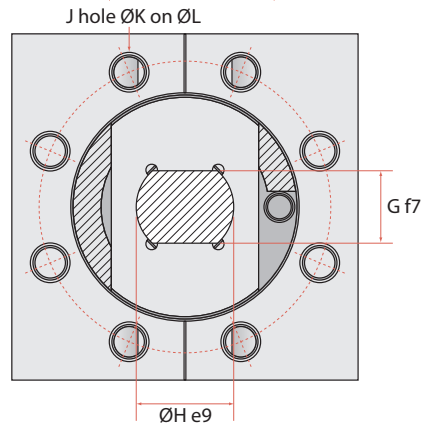


ISO TOP Flange Details

- EA-906-10"~12"
- EA-909-10"~12"
- EA-915-8"~12"



ISO Top Flange F25 - F26



ISO Top Flange F25 - F26

EA901 (Class 150)

FB	RB	A	D	E	F	G	H	J	K	L	M	ISO
2"x2"	3"x2"						21.0	4.0	M6	50.0	50.0	F05
3"x3"	4"x3"						21.0	4.0	M6	50.0	50.0	F05
4"x4"	6"x4"	48.8	26.0	22.8	55.0	19.0	23.9	4.0	M8	70.0	55.0	F07
6"x6"	8"x6"	54.3	27.0	27.3	70.0	27.0	32.9	4.0	M10	102.0	68.0	F10
8"x8"	10"x8"	54.3	27.0	27.3	70.0	27.0	32.9	4.0	M10	102.0	68.0	F10
10"x10"	12"x10"	73.4	38.0	35.4	100.0	36.0	43.9	4.0	M16	140.0	98.0	F14
12"x12"	14"x12"	97.0	55.6	41.4	130.0	40.0	53.9	4.0	M20	165.0	128.0	F16

EA903 (Class 300)

FB	RB	A	D	E	F	G	H	J	K	L	M	ISO
2"x2"	3"x2"						21.0	4.0	M6	50.0	50.0	F05
3"x3"	4"x3"						21.0	4.0	M6	50.0	50.0	F05
4"x4"	6"x4"	48.8	26.0	22.8	55.0	19.0	23.9	4.0	M8	70.0	55.0	F07
6"x6"	8"x6"	54.3	27.0	27.3	70.0	27.0	32.9	4.0	M10	102.0	68.0	F10
8"x8"	10"x8"	54.3	27.0	27.3	70.0	27.0	32.9	4.0	M10	102.0	68.0	F10
10"x10"	12"x10"	73.4	38.0	35.4	100.0	36.0	43.9	4.0	M16	140.0	98.0	F14
12"x12"	14"x12"	97.0	55.6	41.4	130.0	40.0	53.9	4.0	M20	165.0	128.0	F16

EA900 (Class 600)

FB	RB	A	D	E	F	G	H	J	K	L	M	ISO
2"x2"	3"x2"	36.2	18.3	17.9	55.0	17.0	20.0	4.0	M8	70.0	55.0	F07
3"x3"	4"x3"	48.8	26.0	22.8	55.0	19.0	23.9	4.0	M8	70.0	55.0	F07
4"x4"	6"x4"	54.3	27.0	27.3	70.0	27.0	32.9	4.0	M10	102.0	68.0	F10
6"x6"	8"x6"	73.4	38.0	35.4	100.0	36.0	43.9	4.0	M16	140.0	98.0	F14
8"x8"	10"x8"	97.0	55.6	41.4	130.0	40.0	53.9	4.0	M20	165.0	128.0	F16
10"x10"	12"x10"	102.2	64.1	38.1	130.0	40.0	53.9	4.0	M20	165.0	128.0	F16
12"x12"	14"x12"	101.5	57.7	43.8	130.0	50.0	68.0	4.0	M20	165.0	128.0	F16

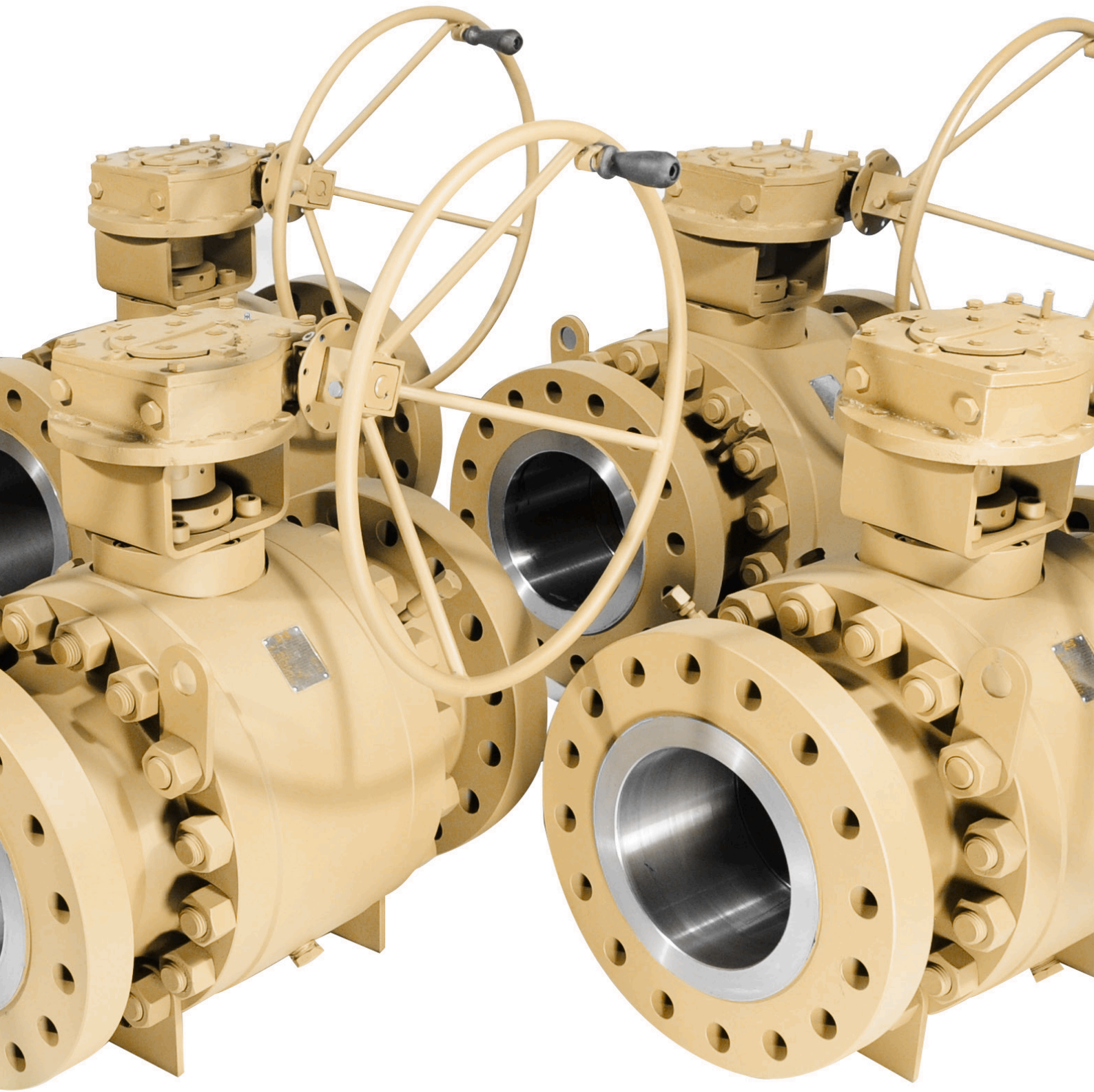
EA909 (Class 900)

FB	RB	A	D	E	F	G	H	J	K	L	M	ISO
2"x2"	3"x2"	36.2	18.3	17.9	55.0	17.0	20.0	4.0	M8	70.0	55.0	F07
3"x3"	4"x3"	48.8	26.0	22.8	55.0	19.0	23.9	4.0	M8	70.0	55.0	F07
4"x4"	6"x4"	54.3	27.0	27.3	70.0	27.0	32.9	4.0	M10	102.0	68.0	F10
6"x6"	8"x6"	73.4	38.0	35.4	100.0	36.0	43.9	4.0	M16	140.0	98.0	F14
8"x8"	10"x8"	105.3	63.9	41.4	130.0	40.0	53.9	4.0	M20	165.0	128.0	F16
10"x10"	12"x10"	103.7	61.7	42.0	130.0	50.0	68.0	4.0	M20	165.0	128.0	F16
12"x12"	14"x12"	105.8	66.0	39.8	200.0	60.0	83.9	8.0	M16	254.0	198.0	F25

EA915 (Class 1500)

FB	RB	A	D	E	F	G	H	J	K	L	M	ISO
2"x2"	3"x2"	44.2	22.7	21.5	55.0	19.0	23.9	4.0	M8	70.0	55.0	F07
3"x3"	4"x3"	55.4	28.4	27.0	70.0	27.0	32.9	4.0	M10	102.0	68.0	F10
4"x4"	6"x4"	74.0	38.0	36.0	100.0	36.0	43.9	4.0	M16	140.0	98.0	F14
6"x6"	8"x6"	99.9	59.5	40.4	130.0	40.0	53.9	4.0	M20	165.0	128.0	F16
8"x8"	10"x8"	101.8	58.7	43.1	130.0	50.0	68.0	4.0	M20	165.0	128.0	F16
10"x10"	12"x10"	105.8	66.0	39.8	200.0	60.0	83.9	8.0	M16	254.0	198.0	F25
12"x12"	14"x12"											





EAYUAN METAL INDUSTRIAL CO. LTD. (EMICO)
Taiwan Head Office:
16F-8, No. 386, Shizheng Rd., Xitun Dist.
Taichung City 407, Taiwan
Ph: 886-4-2259 1616

Australia Office:
RAZVALVE PACIFIC PTY LTD
13/28 Enterprise Drive, Rowville, Victoria 3178,
Australia
Ph: (03) 9764 1149

Reasonable care has been taken to ensure accuracy of the material in this brochure. EMICO recommends that you verify any information with your independent expert and rely solely on that expert's advice. EMICO expressly disclaims any and all liability whatsoever.