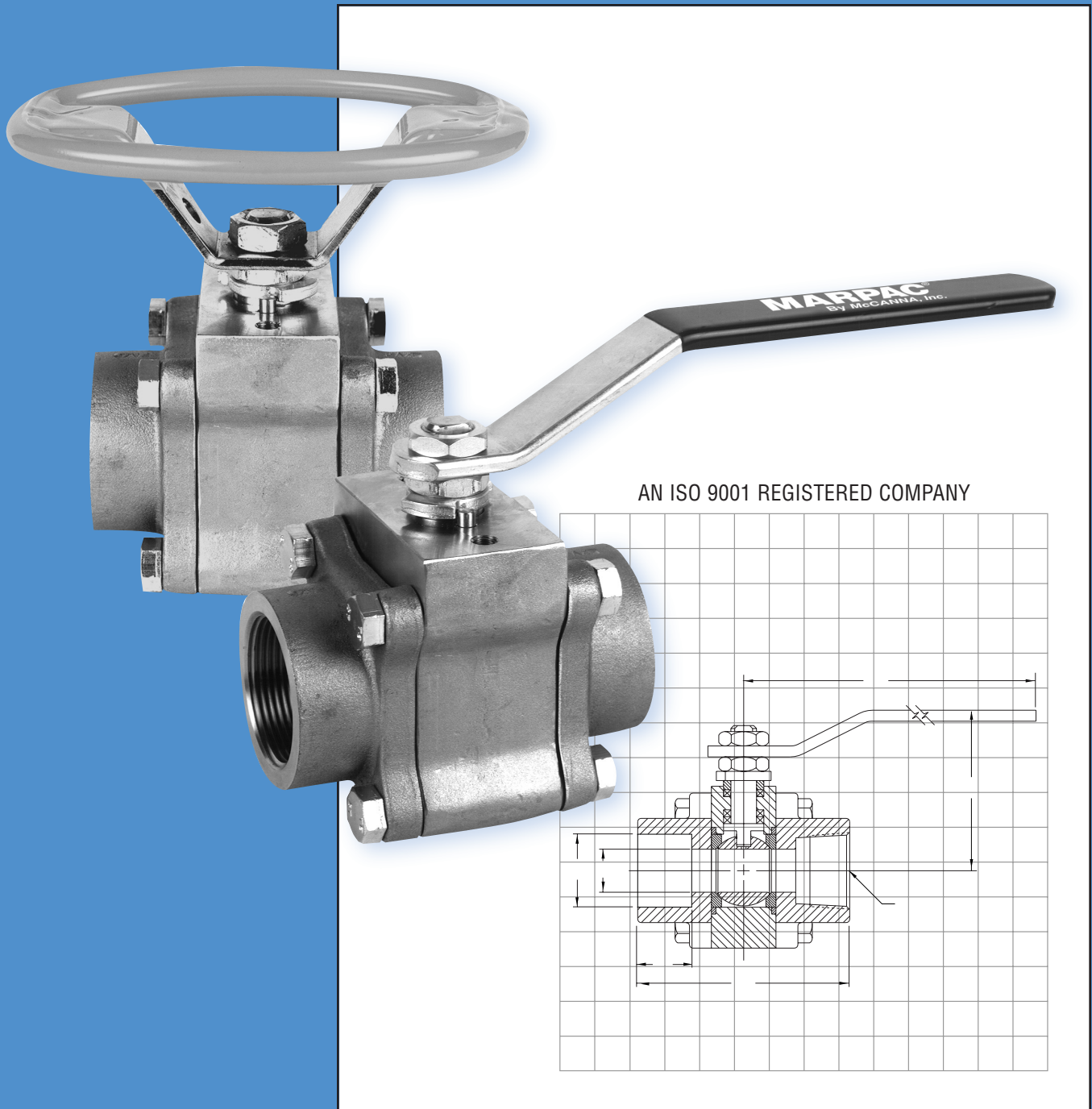




McCANNA/MARPAC Valves

R0400-R4



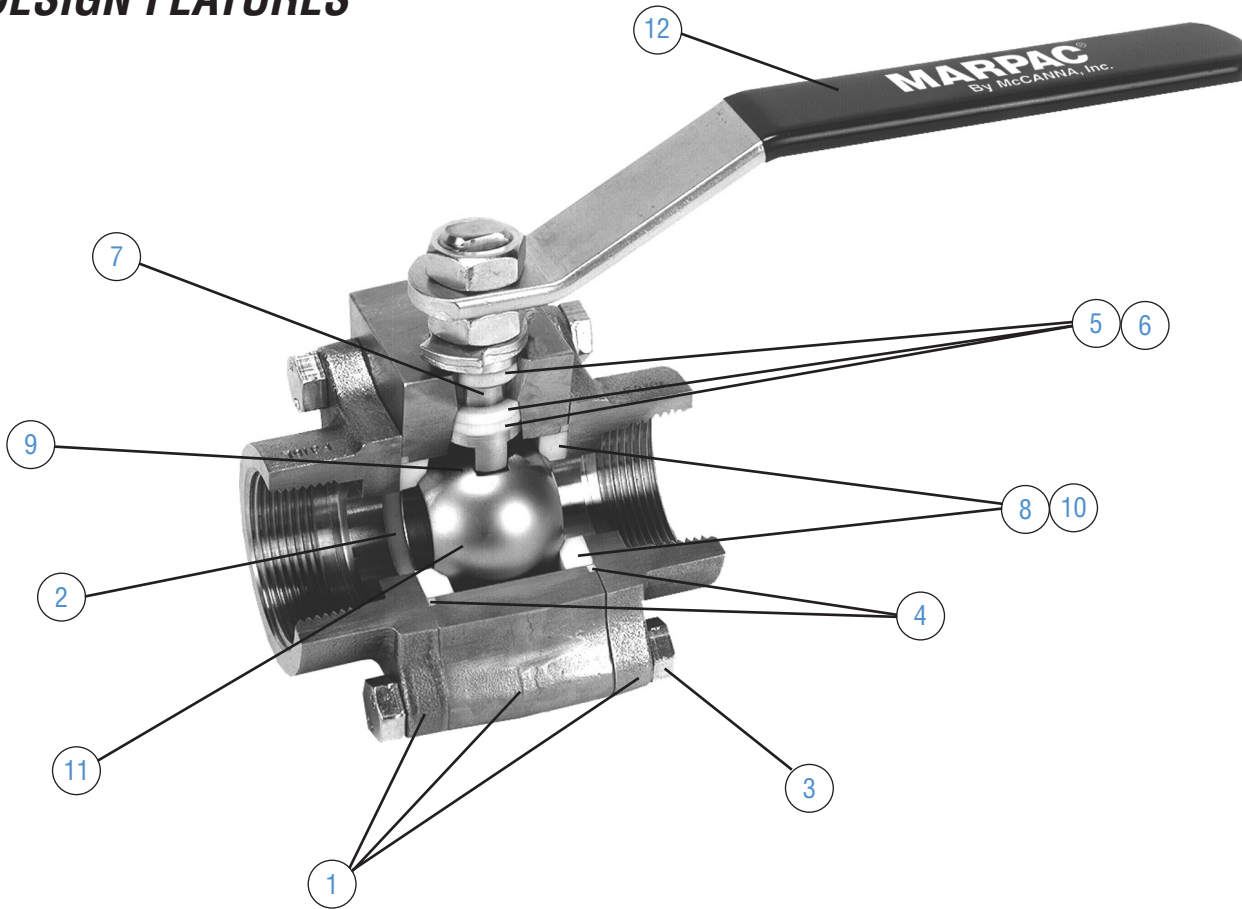
Tri-Pac™ E325 / E525 Ball Valve

*Three-Piece Bolted Body, In-Line Maintainable,
Regular and Full Port*

MARPAC by McCANNA

Tri-Pac E325/E525 Ball Valves

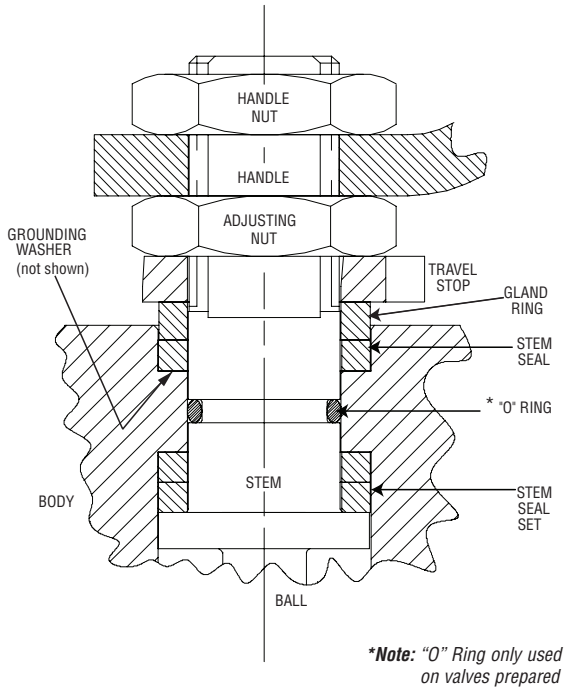
DESIGN FEATURES



1. MARPAC three-piece design has a true swing out body. No body lips or body rings to interfere with in-line maintenance.
2. Offered in regular port (E325) for economy and full port (E525) for minimum pressure drop, MARPAC Tri-Pac Ball Valves offer both high standards and quality in a rugged design.
3. Large, enclosed body bolts maintain body seal through temperature fluctuations. Fully enclosed bolt thread configuration protects against corrosion; essential for API-607 fire test qualification.
4. Precisely compressed body seal controls seat pre-load, achieving bubble tight seal at low pressures.
5. Conical shaped TFE and RTFE packing rings completely fill the packing cavity to provide tight sealing at low compressive force.
6. Dual packing sets maximize seal integrity and eliminate problems commonly associated with multiple top loaded packing designs. Greater distance between stem support points and tighter tolerances reduce destructive stem wobble.
7. The internal entry stem and high strength shoulder ensure maximum integrity conforming to anti-blowout requirements.
8. A fully supported, notched seat design provides pressure equalization for the upstream seat, prevents seat blow out and reduces torque.
9. A hole provided in the ball stem slot adds secondary, positive cavity pressure relief and further prevents seat blow out in the open position.
10. Seats are available in a variety of materials including RTFE, TFE, UHMWP and Thermopac (carbon/fiberglass filled TFE); ideal for a wide range of applications.
11. Stainless steel ball and stem are standard, providing durability and longer service life.
12. A long sturdy plastic coated handle provides a positive gripping surface and reduced heat transfer.
13. Integral actuator mounting pad allows for easy automation.

DESIGN BENEFITS

Reliable Stem Seal Design



Dual Packing Sets

Dual packing sets maximize seal integrity and eliminate problems commonly associated with multiple ring top loaded packing designs.

The lower seal set is the first line of defense against leakage. Seal is maintained by tightening the adjusting nut, backing the stem shoulder into the first packing ring causing it to compress and expand into its cavity. Line pressure pushing up on the stem reduces the required adjusting nut force.

The upper set is simultaneously adjusted by tightening the adjusting nut. This upper set backs up the lower set, and also cushions the lower set when subjected to high line temperatures. As line temperatures increase, the lower seal expands in its cavity. This expansion forces the stem shoulder downwards and the upper set cushions its movement.

MARPAC dual stem seal design is a basic but important innovation that delivers better seal life and requires fewer adjustments in service.

Improved operation is achieved by overall design rather than simply changing materials.

Drilled Stem Slot

MARPAC balls are drilled through the stem slot to avoid thermal expansion damage with the valve in the open position. This drilling does not cause the valve to become unidirectional.

Convenience

Integral Actuator Mounting Pad

MARPAC Tri-Pac E325/E525 Ball Valves include integral actuator mounting pads with predrilled holes to allow easy automation in the factory or in the field without line shutdown.



APPLICATIONS AND SERVICES

Specifically designed and prepared
 MARPAC Tri-Pac E325/E525 Ball Valves
 are available for special services, including:

Chlorine Service

Chlorine service preparation includes ball cavity-to-upstream pressure relief (which makes the valve unidirectional), internal entry stems with port position indication, flow direction markings, dry assembly, additional O-ring stem seal, dry leak testing and cleaning and polyethylene packaging. Ball and stem material selection is dependent upon moisture content (316 Stainless Steel, Monel[®] or Hastelloy C[®]).

Oxygen Service

Oxygen service preparation includes removal of all burrs, chips and other foreign matter. All valves are then subjected to degreasing and 100% “black light” inspection. The valves are then assembled and nitrogen tested. All oxygen service assemblies are then polyethylene packaged. While other materials are available upon request, 316 stainless steel is the standard material for oxygen service.

Sour Gas Service (NACE)

MARPAC E325/E525 Ball Valves are available prepared for sour gas service. Such valves are designed and manufactured in accordance with NACE Standard MR-01-75 Class 3 (current revision). The valves’ materials of construction and their processing are such that maximum hardness requirements of any wetted or critical part are controlled by NACE Standards. Carbon Steel valves are provided with 316 Stainless Steel balls, stems and glands. For buried or insulated service or certification beyond general design and manufacturing considerations, please contact Flowserve.

Flammable or Hazardous Service

All standard MARPAC Tri-Pac E325/E525 Ball Valves are available in FIRE-GARD[®] configuration for use with flammable media and other applications. Designed and tested to the exacting requirements of API 607 4th Edition, MARPAC FIRE-GARD Ball Valves feature secondary metal-to-metal seating and high temperature body seals and packing.

Generally, application restrictions are based on the type of seat and seal materials used. Seat materials available on MARPAC Tri-Pac E325/E525 Ball Valves allow you to use ball valves in steam or other services to take advantage of the many inherent ball valve benefits (positive shut-off, easy maintenance and convenient automation).

For valve and seat recommendations, please contact Flowserve with specific application information.

Some successful applications are:

- **Hot Oil**
- **Thermal Fluid Service** (P seats/F seals)
- **Steam** (R seats/F seals suggested to 150 psig/366°F)
 (P seats/F seals suggested to 250 psig
 including superheated steam to 450°F)

Options and Accessories

- MARPAC E325 and E525 ball valves are supplied with a manufacturer’s CWP nameplate, unless the valve is ordered as an ANSI valve. When ordered as an ANSI valve, a high pressure shell test and ANSI nameplate will be added. Both the shell test and ANSI nameplate marking are in accordance with ANSI B16.34 (1996).
- MARPAC E325/E525 design meets all other requirements of ANSI B16.34 (1996) whether or not the shell test is selected.
- Pneumatic and electric actuators.
- SS 304 body bolting; SS external trim; SS handles, and oval safety handles.
- Wide range of body, trim, seat and seal materials available.

TECHNICAL DATA

Valve Flow Coefficients (C_v)

Valve Size		E325 Regular Port	E525 Full Port
in	mm		
1/4	6	4.8	—
3/8	9	6	—
1/2	12	8	12
3/4	20	12	29
1	25	29	50
1-1/4	32	50	—
1-1/2	40	60	110
2	50	110	500



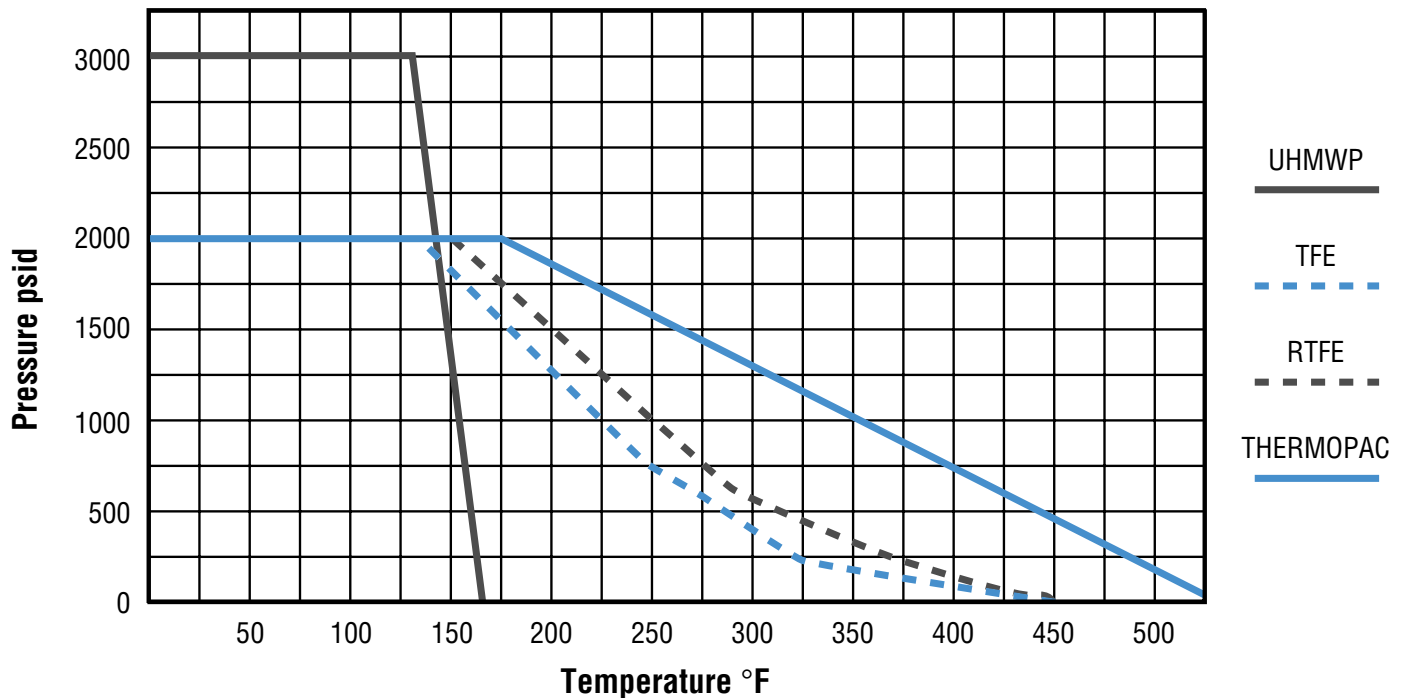
Pressure/Temperature Ratings

CWP (psig) @ -20 to 100°F*

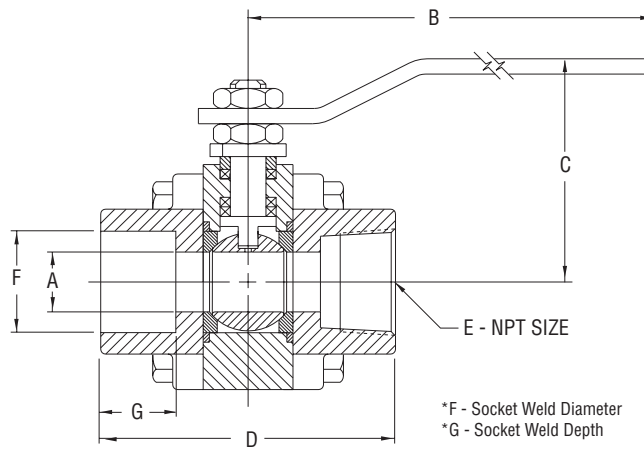
Model	Sizes	Seats	Body / End Material
			CS A105 & SS316
E325	1/4" thru 2"	T, R, P	2000
E325	1/4" thru 2"	J	3000
E525	1/2" thru 1 1/2"	T, R, P	2000
E525	1/2" thru 1 1/2"	J	3000
E525	2"	T, R, P	1000
E525	2"	J	1500

* SS versions are rated from -50°

Seat Pressure / Temperature Ratings for Compatible Fluids



DIMENSIONS AND WEIGHTS



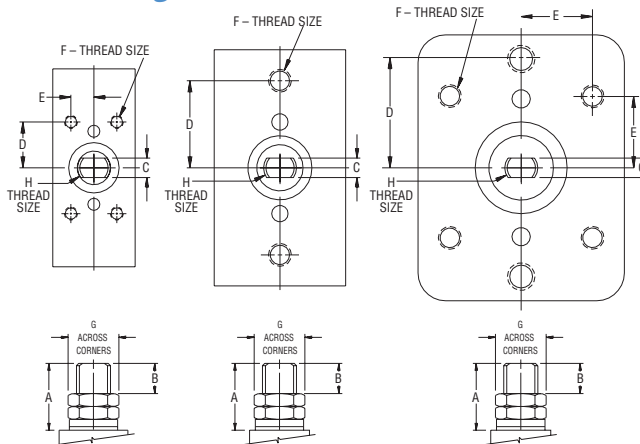
E325 Regular Port – Dimensions in Inches

Size	A	B	C	D	E	F*	G*	Weight (lb)
1/4"	.43	4.69	1.94	2.56	1/4"-18"	.560	.588	1.3
3/8"	.43	4.69	1.94	2.56	3/8"-18"	.695	.600	1.3
1/2"	.43	4.69	1.94	2.56	1/2"-14"	.860	.718	1.3
3/4"	.55	4.69	2.15	2.78	3/4"-14"	1.070	.801	2.3
1"	.75	6.50	3.05	3.69	1"-11-1/2"	1.335	.937	2.3
1-1/4"	1.14	8.50	4.09	4.19	1-1/4"-11-1/2"	1.680	.983	7.5
1-1/2"	1.14	8.50	4.09	4.53	1-1/2"-11-1/2"	1.920	.983	7.0
2"	1.50	8.50	4.69	4.97	2"-11-1/2"	2.411	1.000	12.7

E525 Full Port – Dimensions in Inches

Size	A	B	C	D	E	F*	G*	Weight (lb)
1/2"	.55	4.69	2.15	2.78	1/2"-14"	.860	.718	2.3
3/4"	.75	6.50	3.05	3.69	3/4"-14"	1.070	.801	4.0
1"	1.14	8.50	4.09	4.19	1"-11-1/2"	1.335	.937	7.0
1-1/2"	1.50	8.50	4.69	4.96	1-1/2"-11-1/2"	1.920	.983	12.7
2"	1.97	15.00	5.27	5.63	2"-11-1/2"	2.411	1.000	17.5

Mounting Dimensions For Actuator Selection



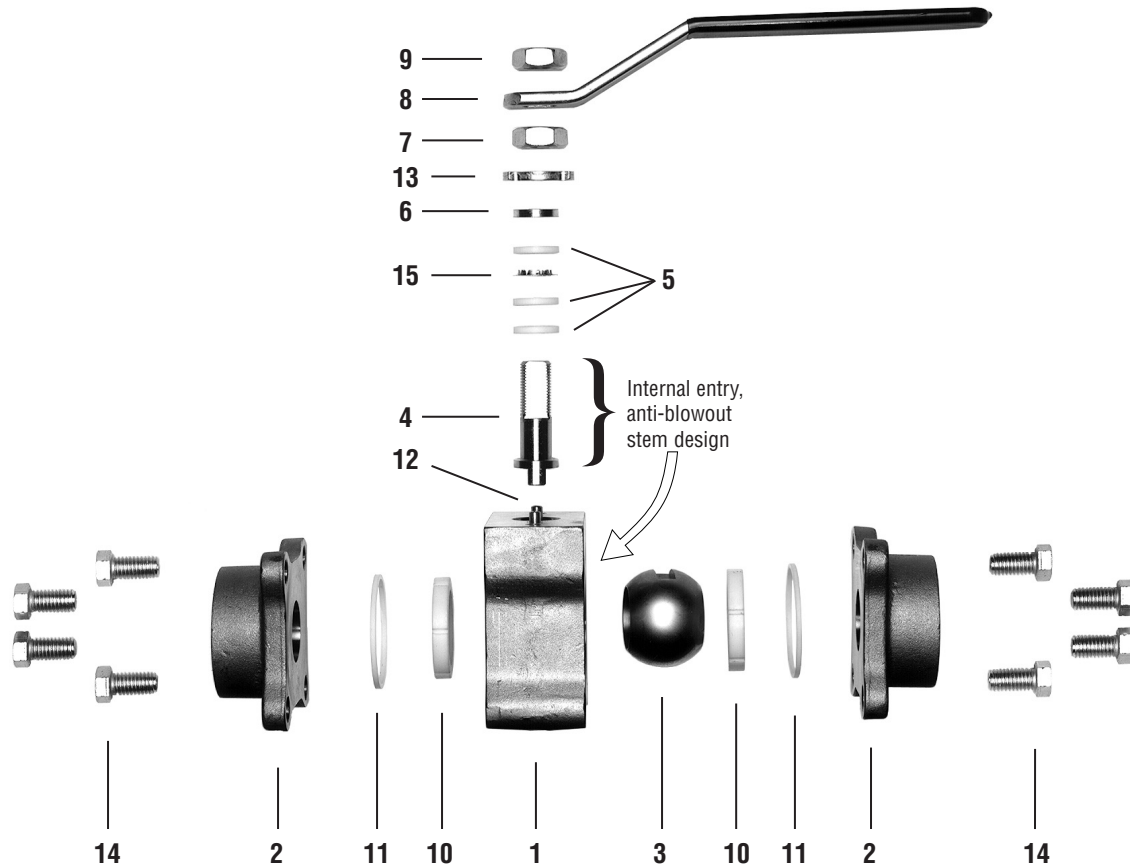
General Dimensions in Inches

Size - Valve Type	A	B	C	D	E	F	G	H
1/4" - 1/2" E325	.44	.15	.245	.40	.23	10-24 .29 DP	.65	3/8"-24
3/4" E325, 1/2" E525	.44	.17				.29 DP		
1" E325 3/4" E525	.78	.31	.285	.63	.31	10-24 .29 DP	.87	1/2"-20
1-1/4" & 1-1/2" E325 1" E525	1.11	.51	.410	1.19	N/A	5/16"-18 .47 DP	1.09	5/8"-18
2" E325 1-1/2" E525	1.25	.39	.473	1.48	N/A	3/8"-16 .56 DP	1.22	3/4"-16
2" E525	1.57	.44	.539	1.48	.97	5/16"-18 (THRU)	1.51	7/8"-14

*Note: Travel stop pins must be removed from valve body for actuation.

← FLOW →
Stems Shown in Open Valve Position

MATERIALS OF CONSTRUCTION

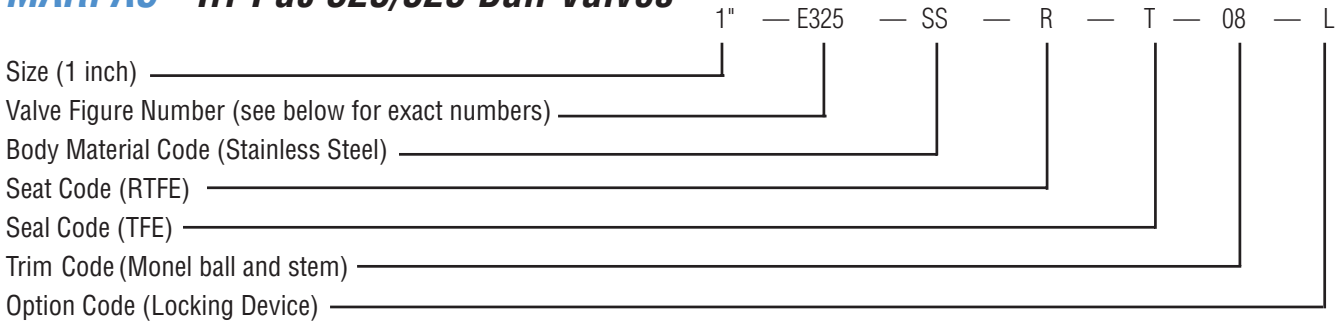


Item No.	Description	Carbon Steel	Stainless Steel
1	Body	Forged Carbon Steel **	Forged 316 Stainless Steel
2	End Adaptors	Forged Carbon Steel **	Cast 316L Stainless Steel ASTM A351 CF3M
3	Ball	316 Stainless Steel	316 Stainless Steel
4	Stem	316 Stainless Steel	316 Stainless Steel
5	Stem Seal Set	TFE, RTFE (Flexible Graphite used on FIRE-GUARD and Thermopac)	
6	Gland Ring	Carbon Steel (Zinc Plated)	304 Stainless Steel
7	Adjusting Nut	Carbon Steel (Zinc Plated)	
8	Handle	1/4" — 2" Carbon Steel Plastic Coated	
9	Stem Nut	Carbon Steel (Zinc -Plated)	
10	Seat	TFE, RTFE, UHMWP, Thermopac	
11	Body Seals	TFE, Viton®, (Flexible Graphite used on FIRE-GUARD and Themopac)	
12	Stop Pins	Carbon Steel (Zinc Plated)	
13	Travel Stop*	Carbon Steel (Zinc Plated)	
14	Bolts, Standard	Carbon Steel ASTM A193 Gr. B7	
15	Grounding Washer	302 Stainless Steel (non FIRE-GARD only)	

* Sizes 1" (25mm) and larger. 1/4" — 3/4" (6-20mm) have stop integral with handle.

** Black Oxide Coated

How to Specify and Order MARPA[®] Tri-Pac 325/525 Ball Valves



Codes:

VALVE FIGURE NUMBER

- E325** — 3-Piece Bolted Body Regular Port
- E525** — 3-Piece Bolted Body Full Port

BODY MATERIALS

- CS** — Carbon Steel (WCB)
- SS** — Stainless Steel (316)

SEAT

- T** — TFE
- R** — Reinforced TFE
- J** — UHMWP
- P** — Thermopac

SEAL CODE

- T** — TFE
- L** — Viton A 90 Durometer
- R** — RTFE
- F** — FIRE-GARD (Flexible Graphite)
- C** — Flexible Graphite

BALL & STEM (TRIM) CODE

- 08** — Monel
- 12** — Stainless Steel (316)

SERVICE PREPARATION OPTIONS

- Y** — Chlorine
- A** — Oxygen
- HS** — Sour Gas (NACE)†
- Z** — Assembled Dry for Paint Service
- P** — Socket Weld Ends
- N** — 304 Stainless Steel Bolting
- K** — Grounding Device
- T1** — High Pressure Shell Tested for ANSI B16.34 (1988)
- T2** — High Pressure Shell Tested for ANSI MSS-SP-61

AUTOMATION

- L** — Locking Device
- D** — Safety Handle

Note: Some special features are limited to certain models, body, trim, seat or seal codes. Please inquire for specifics.

STANDARD SEAL MATERIAL IDENTIFICATION

Seat Material Code	Seal Code	Stem Seal Material	Body Seal Material
T	T	TFE	TFE
R	T	TFE	TFE
R	R	RTFE	TFE
R	F	Flexible graphite	Flexible graphite
J	R	RTFE	TFE
J	L	RTFE	Viton-90
P	C	Flexible graphite	

NOTICE

McCANNA and MARPA[®] by McCANNA Ball Valves are designed and manufactured using good workmanship and materials, and they meet all applicable industry standards. Flowserve is anxious to avoid injuries and property damage which could result from misapplication of the product. Proper valve selection is imperative. Examples of the misapplications or misuse of a valve include but are not limited to use in a service in which the pressure/temperature rating is exceeded or in a chemical service incompatible with the valve materials; use of undersized valve actuators; use of extremely fast valve actuation and/or continuous valve cycling on standard valves; making modifications of the product of any kind; failure to use caution in operating valves in high temperature, high pressure, or highly hazardous services; and the failure to maintain valves as recommended. The right is reserved to change or modify product design or construction without prior notice and without incurring any obligation to make such changes and modification on products previously or subsequently sold.

MARPAC[®] is a registered trademark of M&FC Holding Company Inc. • Tri-Pac[™] is a registered trademark of McCANNA. • Fire-Gard[®] is a registered trademark of M&FC Holding Company Inc. Viton[®] is a registered trademark of the DuPont Co. • Hastelloy[®] is a registered trademark of Haynes International. • Monel[®] is a registered trademark of Inco Alloys International.

Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can (and often does) provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Operation Maintenance (IOM) instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

While the information and specifications contained in this literature are believed to be accurate, they are supplied for informative purposes only and should not be considered certified or as a guarantee of satisfactory results by reliance thereon. Nothing contained herein is to be construed as a warranty or guarantee, express or implied, regarding any matter with respect to this product. Because Flowserve is continually improving and upgrading its product design, the specifications, dimensions and information contained herein are subject to change without notice. Should any question arise concerning these provisions, the purchaser/user should contact Flowserve Corporation at any one of its worldwide operations or offices.

For more information about Flowserve Corporation, contact www.flowserve.com or call USA 1 800 225 6989.

FLOWSERVE CORPORATION FLOW CONTROL DIVISION

1978 Foreman Drive
Cookeville, Tennessee 38501 USA
Phone: 931 432 4021
Facsimile: 931 432 3105
www.flowserve.com