



3PC HIGH PRESSURE BALL VALVES

TITAN SERIES

Engineered Valves For High Pressure Severe Service Applications

MODELS

- 1540 Series: Carbon Steel
- 1550 Series: Stainless Steel

- ANSI Class 1500/900
- Both RF & RTJ Flanged Ends
- NPT, Socket & Butt Weld - 5000 WOG
- Extended Weld End Optional

- Standard Ball & V Port
- Control Valves

Available Materials

- LCC & 316SS
- Specials

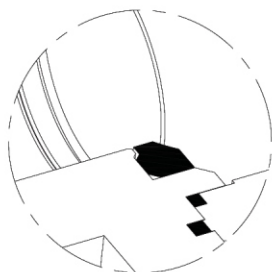
Seat Options

- Delrin, Devlon, PEEK, Metal

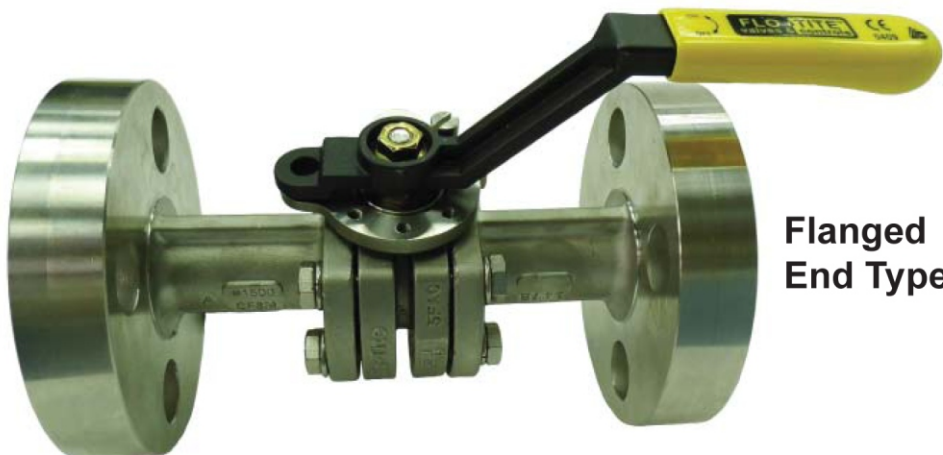
Size Range:

1/2" - 2"

Captive Seals



Detail of Protected seat & encapsulated body seal design. Isolates & protects both seats and seals from flow path. Helps to prevent cold flow.



Flanged End Type



Threaded End Type

Design Features:

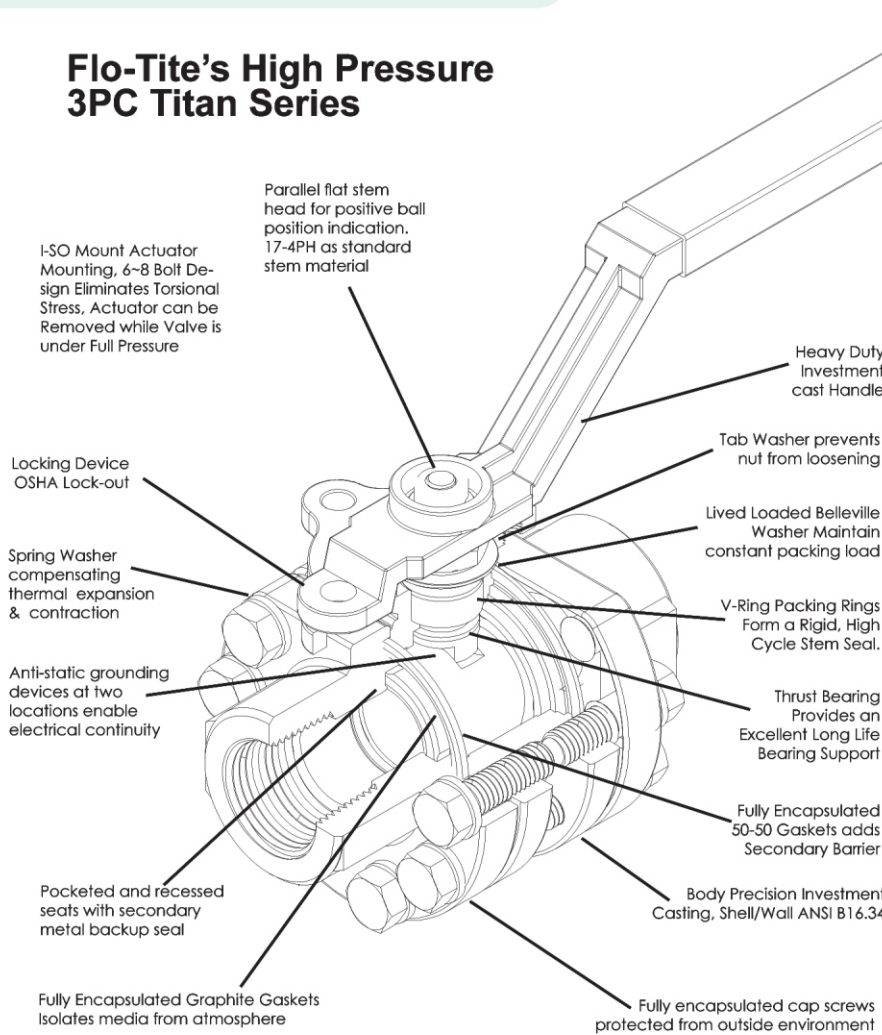
| | |
|-----------------------------------|---|
| • 3PC Bolted Body Design | • Ability to handle Pressure and Temperature Shock |
| • Blow-out Proof Stem Design | • Ability to withstand Higher Pressure Drop |
| • 17-4PH Stem Standard | • Ability to handle Slurries and Resist Abrasion and Wear |
| • Heavy Duty, Rugged Construction | • Ability to handle Thermal Fluid and Super Heated Steam |
| • Lockable Handles | • Bubble Tight Sealing to 5000 psi |
| • API 607-5th Edition Fire Safe | • Metal Seat Classes V & VI Shut Off |
| • API 608 Compliance | |
| • Anti-Static Ground | |
| • Casting Traceability | |
| • Actuator Mounting Pad, ISO5211 | |

Ideal for Steam, Hydraulic, Petrochemical, and many other industries that require high pressure ball valves

Design Specifications and Standards of Compliance

Flo-Tite's High Pressure 3PC Titan Series

Technical Specifications



All Titan series valves are designed to meet ASME/ANSI B16.34 class 900 & 1500 specifications and can be certified as such upon request at order submittal.

Threaded End Connections meet ASME/ANSI B1.20.1 NPT
Socket Weld End Connections meet ASME/ANSI B16.11.
Butt Weld End Connections meet MSS SP72, ANSI B16.25
Flanged End Connections meet ASME/ANSI Class 900/1500, ASME/ANSI B16.10 and B16.5

MSS SP25 compliance for standard marking system
All Titan Valves meet NACE MR0175 for sour gas service.

All valves are Fire Safe and certified to API 607 5th Edition. Fire Safe Designed Valves must have Graphite Stem packing.

Federal Spec WW-V-35C Type II valve body and end connections are high quality investment cast and solution annealed/ normalized.

All valves are hydrostatically shell tested to 1.5 x rating. All valves 100% air tested under water at 80-100 psi. Complies with API-598

Standard Valve Suitable to 25 Torr Vacuum
Specially cleaned valves can handle services of 0.02 mm. of Hg (20 micron).

Quality Assurance
All valves are manufactured to ISO 9001 quality standards

Standards and Specifications

Valves covered in this bulletin are available to conform to the following industry standards and specifications

All Valves are Manufactured to ISO 9001 Quality Standards

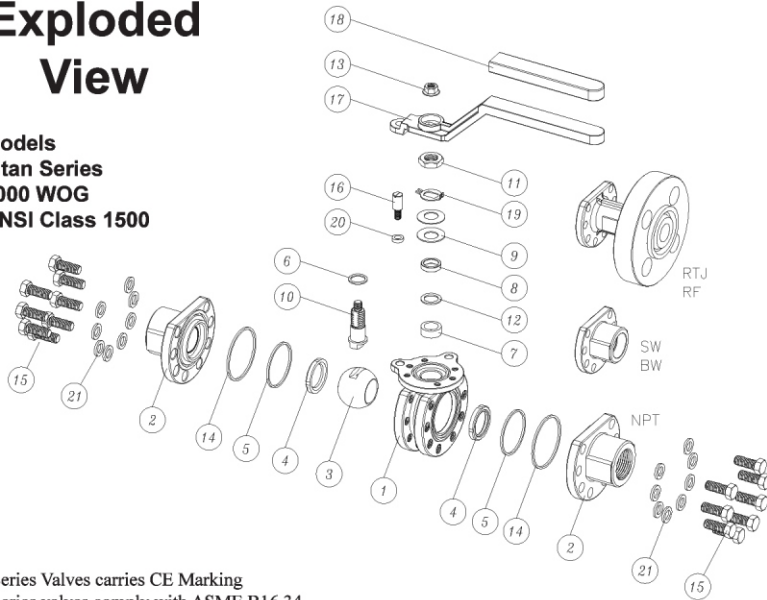
| | |
|-------------------|--|
| WW-V-35C | Federal Specification: Valve, Ball |
| ANSI/ASME B16.10 | Face-to-Face / End-to-End Dimensions of Ferrous Valves |
| ANSI/ASME B16.5 | Steel Pipe Flanges and Flange Fittings |
| ANSI/ASME B16.34 | Steel Valves - Flanged and Buttwelded End |
| ANSI/ASME B31.1 | Power Piping |
| ANSI/ASME B31.3 | Chemical Plant & Petroleum Refinery Piping |
| ANSI/FCI70-2-1976 | For Control Valve Leakage |
| BS 6755, Part 2 | Testing of Valves-Specification for Fire Type Testing |
| ISA 5752:1982 | Metal Valves for use in Flange Piping Systems |
| ISA 75.02 | Valve Sizing Coefficient Cv, Piping Geometry Factor Fp & Pressure Drop Limitation XT |
| ISA S75.19 | Hydrostatic Testing of Control Valves |
| ISO 5211 | Dimensions for Attachment of Actuators/ Gear Boxes to Valves (ISO Mounting) |
| MSS-SP-25 | Standard Marking Systems for Valves |

| | |
|-------------|---|
| MSS-SP-55 | Quality Standards for Steel Casting |
| MSS-SP-6 | Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valve and Fittings |
| MSS-SP-44 | Steel Pipe Line Flanges |
| MSS-SP-61 | Pressure Testing of Steel Valves |
| MSS-SP-72 | Ball Valves with Flanged or Butt-Welding Ends for General Service |
| MSS-SP-96 | Terminology for Valves and Fittings |
| NACE MR0175 | Sulfide Stress Cracking Resistant Materials for Oilfield Equipment |
| API 608 | Metal Ball Valves Used in on-off Service that have Buttwelded or Flanged Ends for Size 1/2"-12" NPS |
| API 6D | Specifications for Pipeline Valves |
| API 598 | Valve Inspection and Testing |
| MSS-SP-53 | Quality Standard for Steel Casting and Forging for Valves, Flanges and Fittings and Other Piping Component - Magnetic Particle Examination Method |
| MSS-SP-93 | Quality Standard for Steel Casting and Forging for Valves, Flanges and Fittings and Other Piping Components - Liquid Penetrant Method |

Design and Technical Data

Exploded View

Models
Titan Series
5000 WOG
ANSI Class 1500

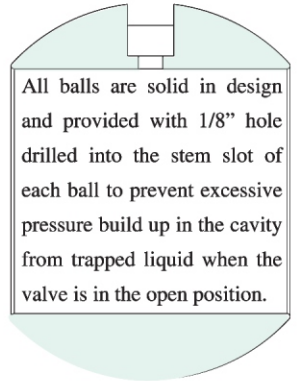


Titan Series Valves carries CE Marking
 Titan Series valves comply with ASME B16.34.
 All valves are tested to ASME B16.34 and API 598
 Threaded End Connections meet ASME/ANSI B1.20.1

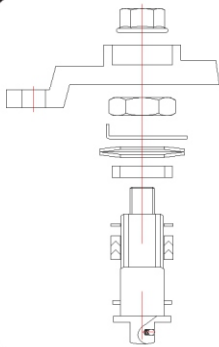
Materials of Construction

| No. | Parts | Stainless Steel | Carbon Steel |
|-----|-------------------|-------------------|-------------------------|
| 1 | Body | ASTM A351 CF8M | ASTM A352 LCC |
| 2 | End Cap | ASTM A351 CF8M | ASTM A352 LCC |
| 3 | Ball | A351 CF8M / SS316 | A351 CF8 / SS304 |
| 4 | Seat | DELRIN / PEEK | DELRIN / PEEK |
| 5 | Inner Gasket | 50%SS + PTFE | 50%SS + PTFE |
| 6 | Thrust Washer | 25% Carbon + PTFE | 25% Carbon + PTFE |
| 7 | Stem Packing | Graphite | Graphite |
| 8 | Gland | SS304 | SS304 |
| 9 | Belleville Washer | SS301 | SS301 |
| 10 | Stem | 17-4PH | 17-4PH |
| 11 | Packing Nut | SS304 | SS304 |
| 12 | Packing Protector | 25% Carbon + PTFE | 25% Carbon + PTFE |
| 13 | Handle Nut | Carbon Steel | Carbon Steel |
| 14 | Outer Gasket | Graphite | Graphite |
| 15 | Bolt | A193 B8 / SS304 | A320 L7M / Carbon Steel |
| 16 | Handle Stopper | SS304 | Carbon Steel |
| 17 | Handle | Carbon Steel | Carbon Steel |
| 18 | Handle Cover | PVC | PVC |
| 19 | Nut Lock | SS304 | SS304 |
| 20 | Stop Washer | SS304 | Carbon Steel |
| 21 | Spring Washer | SS304 | Carbon Steel |

Ball Design Added Safety Feature



Flo-Tite's HI-TEK Stem Assembly



Flo-Tite's Van Guard Seal, state of the art stem sealing system. Incorporating a set of valve stem seals. This unique system eliminates the possibility of valve stem leaks in most all media applications.

Improved thrust washer design allows more sealing surface effectively blocking all leak paths during rotation.

V-Ring Packing Set expands sideways as it is compressed and pressurized blocking all air pockets. The Van-Guard stem system is energized by Belleville washers which continuously adjusts packing compression to compensate for wear, pressure or temperature fluctuation.

Note: Standard Valve is Fire Safe Design with Graphite Packing

TITAN Series - Product Identification Code for Full Valve Model Numbers

| MODEL | BODY MATERIAL | | 2ND END CONNECTION | | SEAT | | STEM SEAL | | BODY SEAL | | OPERATOR | | SIZE | | | |
|--|---------------|----|--------------------|---|--------|---|---------------|---|-----------|----|---------------|----|---------|----|-------|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | |
| SS - Full Port NPT 1551 - SS SW 1552 - SS BW 1553 - SS #1500 RF 1558 - SS #1500 RTJ 1559 - SS | 316SS | SS | Threaded | 1 | Delrin | D | TFM | F | TFM | F | Lever Locking | L | 1/4 | 8 | | |
| | WCB | CS | Socket Weld | 2 | CTFM | Y | CTFM | Y | RTFM | X | | | 3/8 | 10 | | |
| | LCC | LC | Butt Weld | 3 | DEVLON | V | RPTFE | R | RPTFE | R | Oval Locking | O | 1/2 | 15 | | |
| | Alloy 20 | A2 | #1500 RF | 8 | RPTFE | R | 50/50 | S | 50/50 | S | | | 3/4 | 20 | | |
| LC - Full Port NPT 1541 - LC SW 1542 - LC BW 1543 - LC #1500 RF 1548 - LC #1500 RTJ 1549 - LC | 316L | SL | #1500 RTJ | 9 | 50/50 | S | UHMWPE | U | UHMWPE | U | Gear | G | 1 | 25 | | |
| | | | | | | | UHMWPE | U | Graphite | G | Graphite | G | Deadman | SR | 1 1/4 | 32 |
| | | | | | | | PEEK | P | | | Actuator | A | 1 1/2 | 40 | | |
| | | | | | | | Cavity Filled | C | | | Bare Stem | N | 2 | 50 | | |
| | | | | | | | Metal | M | | | | | 2 1/2 | 65 | | |

Special Features: are noted at the end of the identification number, please see special feature codes.

For extended number, see Tech Bulletin page 191.

Ball: All ball material is supplied standard as 316SS & 304SS. If different material is required please specify as special feature.

Stem: All stem material is supplied standard as 17-4PH. Please specify as special feature if SS316 is needed.

Standard Valves Are Fire Safe with Graphite Seals

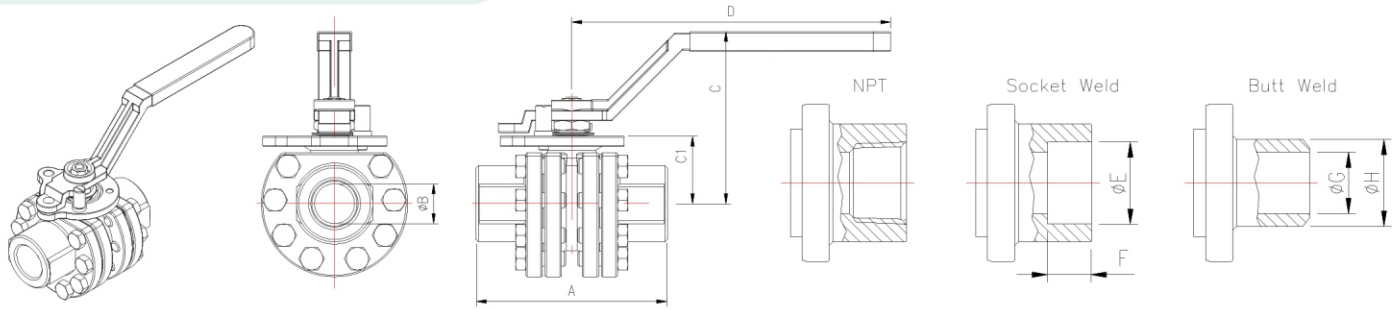
Ordering Example by Part Numbers

| MODEL | BODY MATERIAL | 2ND END CONNECTION | SEAT | STEM SEAL | BODY SEAL | OPERATOR | SIZE | SPECIAL FEATURE |
|-------------------------------|---------------|--------------------|------|-----------|-----------|----------|------|-------------------|
| NPT End Full Port LCC Body | LCC | SW | PEEK | Graphite | Graphite | Lever | 2" | Media Containment |
| 1541 | LC | 2 | P | G | G | L | 50 | H3 |

Ordering Information

When placing an order or requesting a quotation, please provide as many details on the application as possible such as media type, temperature, pressure, pipe size, and etc.

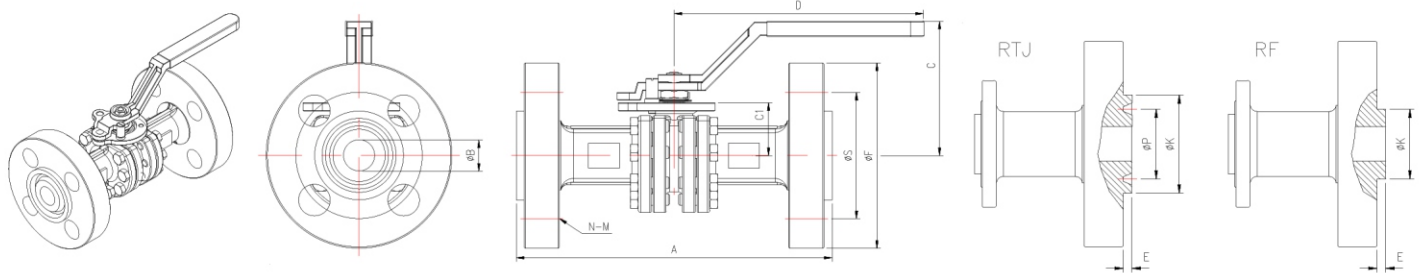
Dimensions and Weights



End Connections Threaded Socket Weld Butt Weld

| SIZE | A | | | B | C | C1 | D | E | F | G | H | Cv | Break Torque In-Lb * | | Weight Lbs |
|--------|------|------|------|------|------|------|-------|------|------|-------|-------|-----|----------------------|----------|------------|
| | NPT | SW | BW | | | | | | | | | | 1500 psi | 4000 psi | |
| 1/2" | 3.35 | 3.35 | 3.35 | 0.59 | 3.66 | 1.65 | 6.30 | 0.86 | 0.39 | 0.496 | 0.882 | 15 | 165 | 198 | 4.06 |
| 3/4" | 4.13 | 4.13 | 4.13 | 0.79 | 3.96 | 1.65 | 6.30 | 1.07 | 0.51 | 0.638 | 1.094 | 35 | 280 | 336 | 5.73 |
| 1" | 4.72 | 4.72 | 4.72 | 0.98 | 4.21 | 1.97 | 7.87 | 1.33 | 0.51 | 0.846 | 1.366 | 68 | 581 | 697 | 7.5 |
| 1 1/2" | 5.91 | 5.91 | 5.91 | 1.50 | 5.55 | 2.76 | 10.43 | 1.91 | 0.51 | 1.272 | 1.941 | 155 | 1618 | 1900 | 22.4 |
| 2" | 6.30 | 6.30 | 6.30 | 1.50 | 5.55 | 2.76 | 10.43 | 2.41 | 0.63 | 1.630 | 2.417 | 155 | 1741 | 2050 | 23.7 |

*Note: Torques are for clean liquid media only



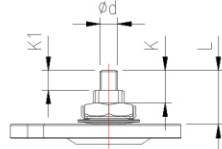
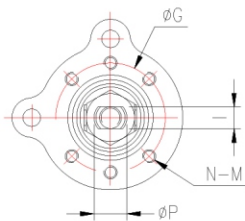
Flanged Ends ANSI Class 900/1500

| SIZE | A | | B | C | C1 | D | E | | F | K | | M | N | P | S | Cv | Break Torque In-Lb * | | Weight Lbs |
|--------|------|-------|------|------|------|-------|------|-------|------|------|------|------|---|-------|------|-----|----------------------|----------|------------|
| | RF | RTJ | | | | | RF | RTJ | | RF | RTJ | | | | | | 1500 psi | 4000 psi | |
| 1/2" | 8.50 | 8.50 | 0.59 | 3.66 | 1.65 | 6.30 | 0.25 | 0.25 | 4.75 | 1.38 | 2.38 | 0.88 | 4 | 1.562 | 3.25 | 15 | 165 | 198 | 12.4 |
| 3/4" | 9.00 | 9.00 | 0.79 | 3.96 | 1.65 | 6.30 | 0.25 | 0.25 | 5.12 | 1.69 | 2.62 | 0.88 | 4 | 1.750 | 3.50 | 35 | 280 | 336 | 16.4 |
| 1" | 10.0 | 10.0 | 0.98 | 4.21 | 1.97 | 7.87 | 0.25 | 0.25 | 5.88 | 2.00 | 2.81 | 1.00 | 4 | 2.000 | 4.00 | 68 | 581 | 697 | 23.5 |
| 1 1/2" | 12.0 | 12.0 | 1.50 | 5.55 | 2.76 | 10.43 | 0.25 | 0.25 | 7.00 | 2.88 | 3.62 | 1.12 | 4 | 2.688 | 4.88 | 155 | 1618 | 1900 | 48.2 |
| 2" | 14.5 | 14.62 | 1.50 | 5.55 | 2.76 | 10.43 | 0.25 | 0.312 | 8.50 | 3.62 | 4.88 | 1.00 | 8 | 3.750 | 6.50 | 155 | 1741 | 2050 | 70.7 |

*Note: Torques are for clean liquid media only

Mounting Dimensions

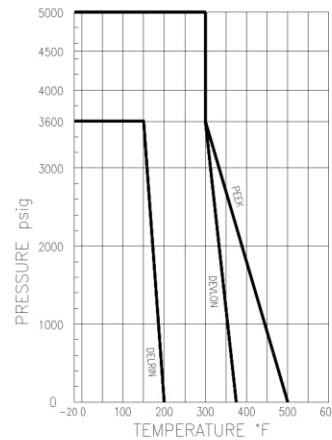
| Size | d | G | I | K | K1 | L | M | N | P | ISO |
|--------|-----|------|------|-------|-------|-------|----|---|-----------|-----|
| 1/2" | M6 | 1.65 | 0.28 | 0.413 | 0.256 | 0.591 | M5 | 6 | M10 | F04 |
| 3/4" | M8 | 1.65 | 0.33 | 0.559 | 0.394 | 0.807 | M5 | 6 | M12 | F04 |
| 1" | M8 | 1.97 | 0.39 | 0.583 | 0.354 | 0.965 | M6 | 6 | M14 | F05 |
| 1 1/2" | M10 | 2.76 | 0.47 | 0.866 | 0.512 | 1.248 | M8 | 8 | 3/4-10unc | F07 |
| 2" | M10 | 2.76 | 0.47 | 0.866 | 0.512 | 1.248 | M8 | 8 | 3/4-10unc | F07 |



IMPORTANT:
Verify mounting dimensions before manufacturing mounting hardware

Actuator Mounting Pad with 6 or 8 Threaded Holes. The Bolting Circle Diameter Complies w/ ISO 5211

Pressure/Temperature Chart



Titan Series Metal Seated Valves

High Temperature Metal Seated Ball Valves Are Well Suited for a variety of demanding services when high temperature and abrasive solids are present. Shut off classes V & VI available



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