



# Three Piece 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 and Weld Ends - 4500 WOG**

**with seat change to Peek - 5000 WOG**

Extended Weld End (Optional)

Standard Ball & V Port -Standard Port

Control Valves

**Available Materials**

LCC & 316SS

Specials

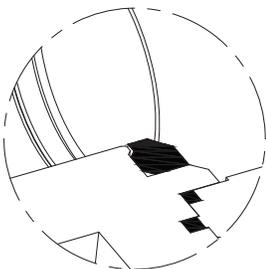
**Seat Options**

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**



Titan Series

STANDARD PRODUCT NUMBERS

- 1551-SS-1-DGG-L (SS NPT)
- 1552-SS-2-DGG-L (SS SW C/F for price)
- 1553-SS-3-DGG-L (SS BW C/F for price)
- 1558-SS-8-DGG-L (SS Flanged)
- 1541-LC-1-DGG-L (LC NPT)
- 1542-LC-2-DGG-L (LC SW C/F for price)
- 1543-LC-3-DGG-L (LC BW C/F for price)
- 1548-LC-8-DGG-L (LC Flanged)

**Threaded End Type**



**Design Features:**

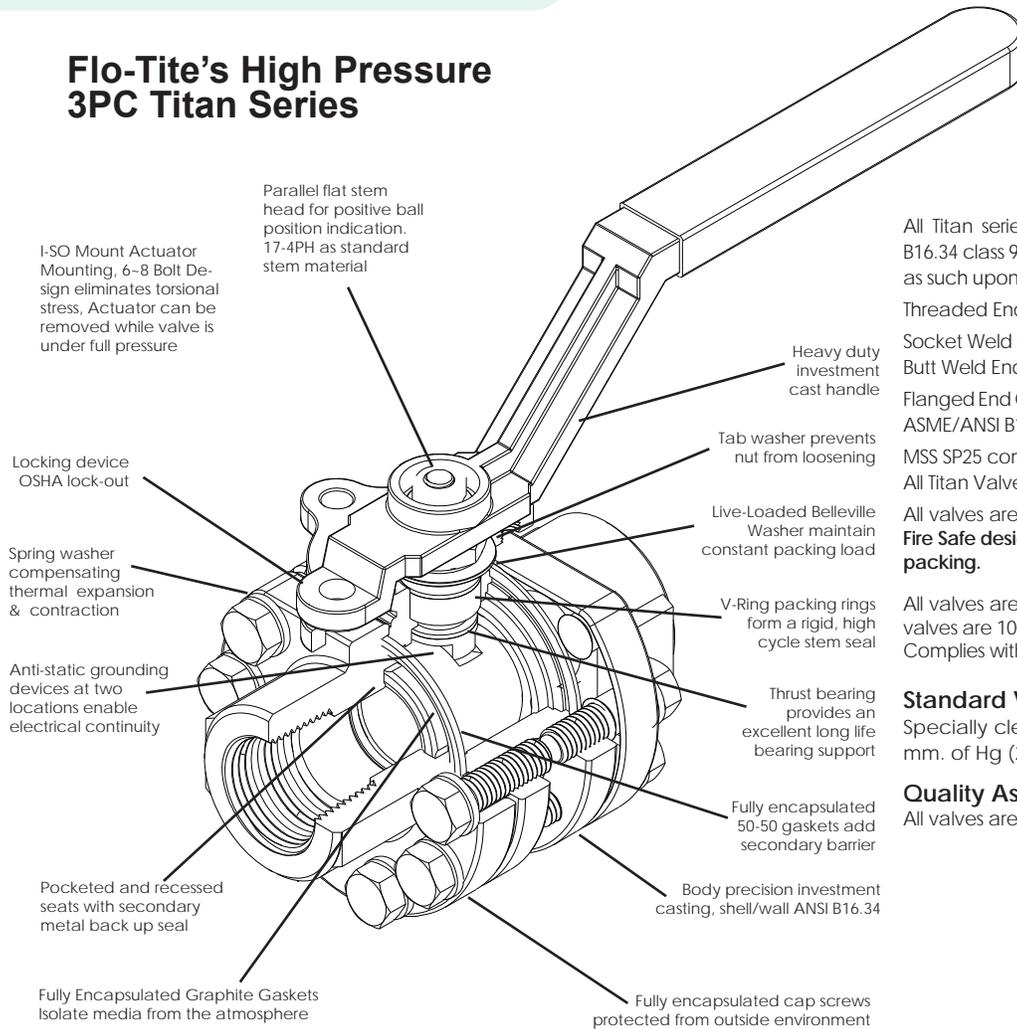
- |                                   |   |
|-----------------------------------|---|
| • 3 piece bolted body design      | • Ability to handle pressure, temperature, and shock      |
| • Blow out proof stem design      | • Ability to withstand higher pressure drop               |
| • 17-4PH stem standard            | • 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 4500 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.**

All valves are hydrostatically shell tested to 1.5 x rating. All valves are 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 mentioned in this bulletin are available to conform to the following industry standards and specifications:

**All valves are manufactured to ISO 9001 quality standards**

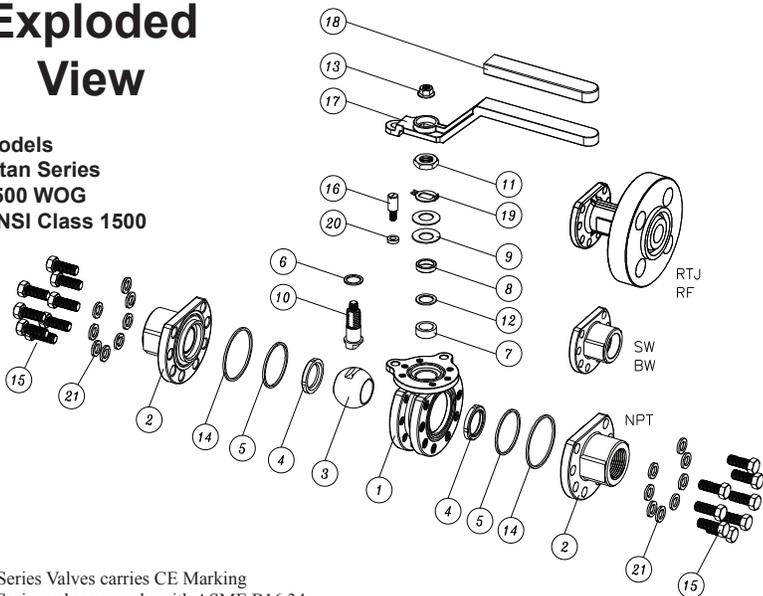
WW-V-35C	Federal specification: valve, ball
ANSI/ASME B16.10	Face-to-face / end-to-end dimensions of ferrous valves
ANSI/ASME B16.5	Steel pipe flanges and flange fittings
ANSI/ASME B16.34	Steel valves - flanged and butt welded end
ANSI/ASME B31.1	Power piping
ANSI/ASME B31.3	Chemical plant & petroleum 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 welded 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 butt welded 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, fittings or 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  
4500 WOG  
ANSI Class 1500



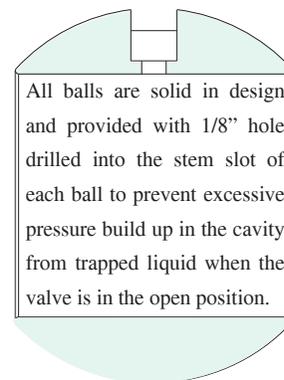
## Bill of Materials

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

# Parts included in the repair kits

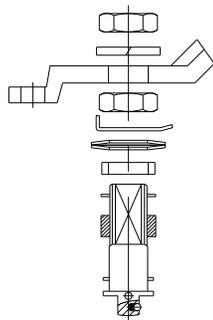
Titan Series Valves carries CE Marking  
Titan Series valves comply with ASME B16.34.  
All valves are tested to ASME B16.34 and API 598  
Threaded End Connections meet ASME/ANSI B1.20.1

## Ball Design Added Safety Feature



All balls are solid in design and provided with 1/8" hole drilled into the stem slot of each ball to prevent excessive pressure build up in the cavity from trapped liquid when the valve is in the open position.

## Flo-Tite's HI-TEK Stem Assembly



Flo-Tite's Van-Guard Seal, state of the art stem-sealing system, incorporates a set of valve stem seals. This unique system eliminates the possibility of valve stem leaks in most 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 the 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	
SS -Standard 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 -Standard 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 188.

**Ball:** All ball material is supplied standard as 316SS & 304SS. If a different material is required, please specify as a special feature.  
**Stem:** All stem material is supplied standard as 17-4PH. Please specify as a special feature if SS316 is needed.

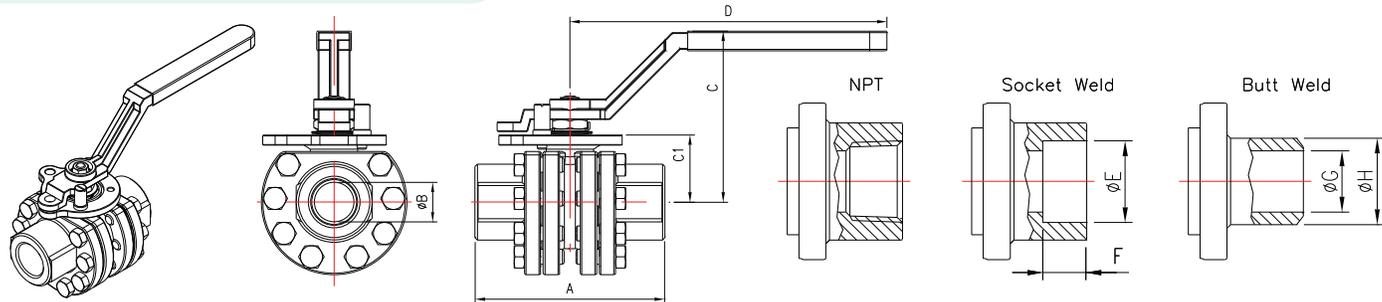
**Standard Valves are Fire Safe with Graphite Seals**

## Ordering Example by Part Numbers

MODEL	BODY MATERIAL	2ND END CONNECTION	SEAT	STEM SEAL	BODY SEAL	OPERATOR	SIZE	SPECIAL FEATURE
NPT End Standard 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 as possible on the application, such as media type, temperature, pressure, pipe size, and etc.

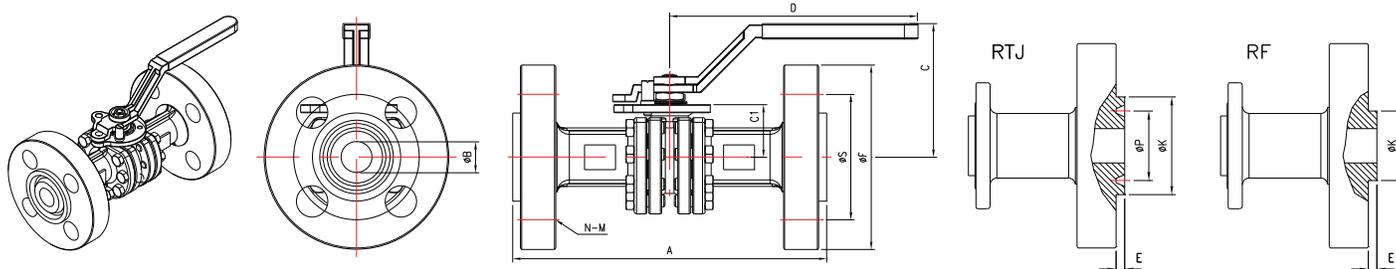
## Dimensions and Weights



### 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										3600 psi	4500 psi	
1/2"	3.35	3.35	3.35	0.59	3.66	1.34	6.30	0.86	0.39	0.496	0.882	15	180	237	4.06
3/4"	4.13	4.13	4.13	0.79	3.96	1.56	6.30	1.07	0.51	0.638	1.094	35	300	403	5.73
1"	4.72	4.72	4.72	0.98	4.21	1.67	7.87	1.33	0.51	0.846	1.366	68	630	836	7.5
1 1/2"	5.91	5.91	5.91	1.50	5.63	2.76	10.43	1.92	0.51	1.272	1.941	155	1800	2280	22.4
2"	6.30	6.30	6.30	1.50	5.63	2.76	10.43	2.41	0.64	1.630	2.417	155	1900	2350	23.7

\*Note: Torques are for clean liquid media only



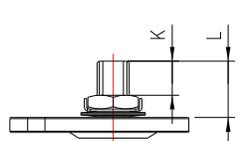
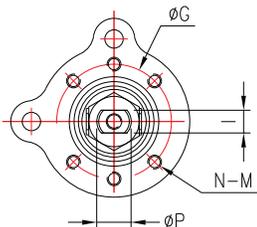
### Flanged Ends ANSI Class 900/1500

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						3600 psi	4500 psi	
1/2"	8.50	8.50	0.59	3.66	1.34	6.30	0.25	0.25	4.75	1.38	2.38	0.88	4	1.562	3.25	15	180	237	12.4
3/4"	9.00	9.00	0.79	3.96	1.56	6.30	0.25	0.25	5.12	1.69	2.62	0.88	4	1.750	3.50	35	300	403	16.4
1"	10.0	10.0	0.98	4.21	1.67	7.87	0.25	0.25	5.88	2.00	2.81	1.00	4	2.000	4.00	68	630	836	23.5
1 1/2"	12.0	12.0	1.50	5.63	2.76	10.43	0.25	0.25	7.00	2.88	3.62	1.12	4	2.688	4.88	155	1800	2280	48.2
2"	14.5	14.62	1.50	5.63	2.76	10.43	0.25	0.31	8.50	3.62	4.88	1.00	8	3.750	6.50	155	1900	2350	70.7

\*Note: Torques are for clean liquid media only

## Mounting Dimensions

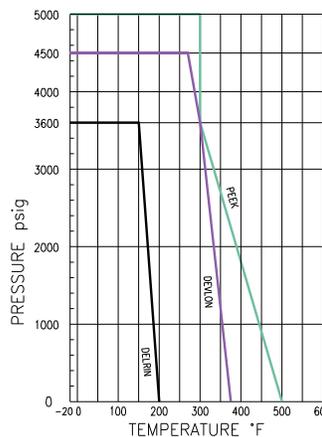
Size	G	I	K	L	M	N	P	ISO
1/2"	1.65	0.28	0.45	0.65	M5	6	M10	F04
3/4"	1.65	0.33	0.48	0.78	M5	6	M12	F04
1"	1.97	0.39	0.68	1.07	M6	6	M14	F05
1 1/2"	2.76	0.47	0.72	1.12	M8	8	3/4-10unc	F07
2"	2.76	0.47	0.72	1.12	M8	8	3/4-10unc	F07



**IMPORTANT:**  
Verify mounting dimensions before manufacturing mounting hardware.

Actuator Mounting Pad with 6 or 8 threaded holes.  
The bolting circle diameter complies with 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 are available.



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