

# 1/2" – 2-1/2" (DN 15 – 65) STANDARD PORT AND 1/2" – 2" (DN 15 – 50) FULL PORT SERIES 4000 BALL VALVES Threaded End – Socket Weld – Butt Weld

The JAMESBURY® Series 4000 ball valves offer the three most desirable attributes of high-quality valves: exceptional performance, great versatility, and economical cost.

This valve line includes both standard-port valves (to 2-1/2" [DN 65]) and full-port valves (to 2" [DN 50]) with three available end connections-threaded end, socket weld, and butt weld.

There are two basic groups of Series 4000 valves.

## FIRE-TITE® Valves

The first consists of FIRE-TITE valves fire-tested to meet API 607, Edition 4 and British Standard BS6755-Part 2 requirements. They are ideal for handling petroleum products and other flammable or hazardous substances, as well as for an extremely broad range of normal and corrosive services. These Series 4000 valves are available in materials conforming to NACE MR0103 requirements, and specifically prepared for oxygen or high-vacuum service. They are also available to conform to ANSI, API, BS and MSS standards.

Standard body and trim materials for FIRE-TITE valves are carbon steel with 316 stainless steel trim and all 316 stainless steel. Seat material options are PTFE (T) and XTREME® (X) for applications involving chemicals, petrochemicals, acids, caustics and steam. Delrin® (R) seats are for higher pressures, while PFA (B) seats resist the effects of polymerizing monomers such as butadiene and styrene. Metal (D) seats are also available for use with high-temperature fluids, saturated steam, and other heat-transfer media at pressures to 300 psi (20.7 bar) and temperatures to 600°F (316°C).



## Non FIRE-TITE Valves

Non FIRE-TITE valves are available in the same body and trim materials as FIRE-TITE valves with a wider range of seat material options. The standard seat material is XTREME (X), while PTFE (T), UHMW (U) polyethylene seats and Peek (L) seats are also available.

\*ANSI Class 400 standards for 2" (DN 50) full-port and 2-1/2" (DN 65) standard-port valves.

## FEATURES AND BENEFITS

- New XTREME seat provides longer life, expanded performance boundaries, and greater value.
- Polymeric flexible lip-seat design offers tight shut-off in either direction and extended cycle life with minimum maintenance.
- Available to meet ANSI Class 600 standards per B16.34, B31.1, B31.3, and B31.4.
- 3-piece construction facilitates servicing
- FIRE-TITE version with non-metallic seats meets API 607, Edition 4, and BS6755-Part 2 requirements
- NACE MR0103 compliance available

## NEW FEATURES AND BENEFITS For 1/2" – 2" (DN 15 – 50) standard port and 1/2" – 1-1/2" (DN 15 – 40) full bore valves

- New stem seal system is live loaded and engineered to assure long sealing life – patent pending.
- ISO 5211 Bonnet for global conformity.
- CE Marking option.
- New stainless steel linkage for VPVL, V-Series and ADC-Series actuators has a guided coupling to align topworks during assembly and eliminate side load stress on stem seals for long life, clean environment and reduced maintenance.

## Valve Performance and Value

### 1/2" – 2" (DN 15 – 50) Standard Port and 1/2" – 1-1/2" (DN 15 – 40) Full Bore Valves

Patented stem seal (70017915) has 3 engineered sealing zones to provide multiple barriers for long term sealing.

Internal Entry Stem

Handle with Slide Lock

ISO bonnet pad for simplified mounting of actuators and accessories.

Compression plate with disc springs for uniform stem seal compression to extend cycle life.

Thrust bearings.

Flexible lip seats adjust automatically for changing pressures, temperatures and wear. XTREME, PTFE, Peek, PFA, Delrin, UHMW Polyethylene and metal seats available.

Heavy wall thickness and bolt cross section.

Composite PTFE and graphite seals for a tight joint that outperforms API 607 4th edition requirements.

Permanently attached corrosion resistant metal nameplate for positive identification on all ANSI and API valves.

Full interchangeability of body and end caps for standard or full port. Threaded, socket weld and butt weld end connections available.

For 2" (DN 50) full bore and 2-1/2" (DN 65) standard port, refer to page 6.  
All constructions marked comply with MSS SP-25.

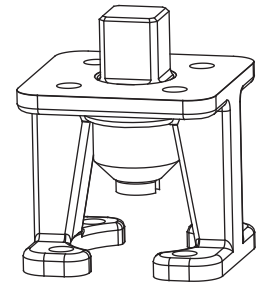
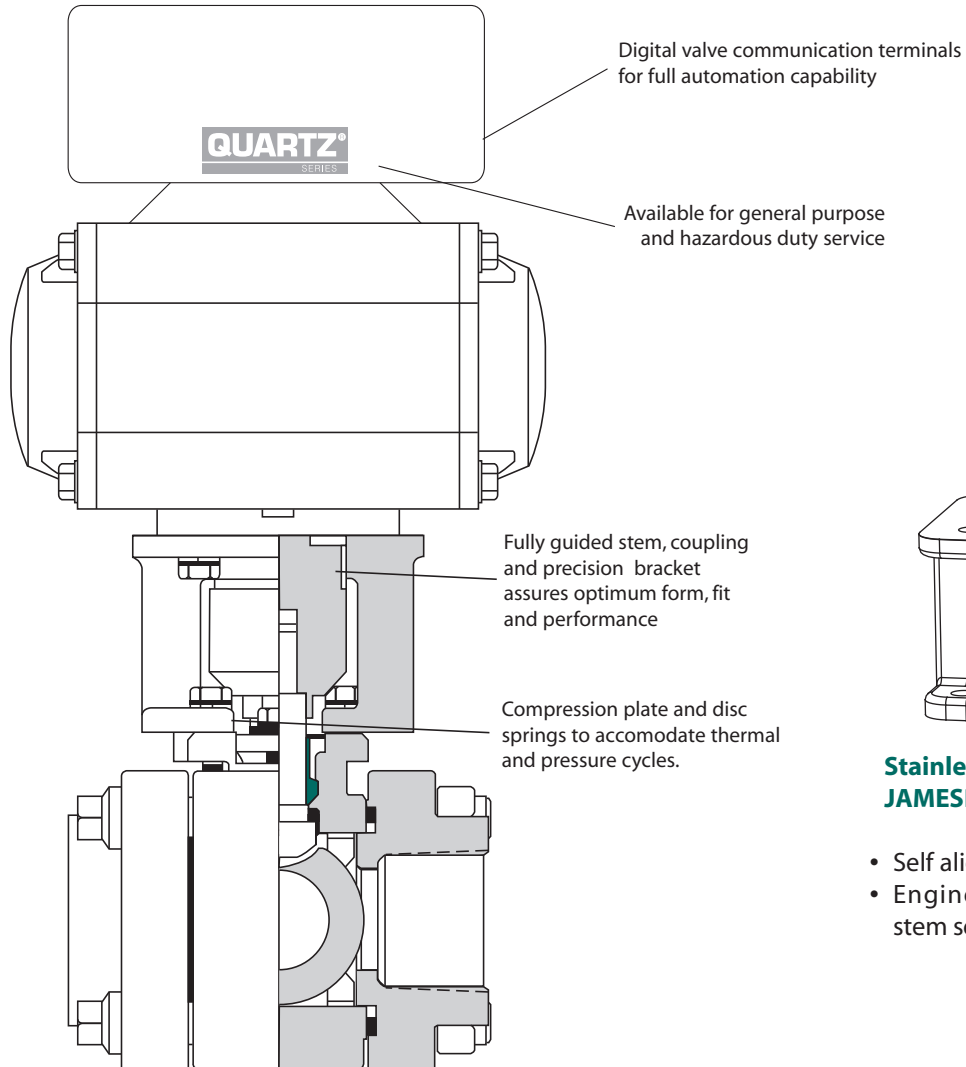
### XTREME Performance and Value

XTREME seats provide longer life, expanded performance boundaries, and the greatest possible value. XTREME is a unique material that resulted from a technological

breakthrough in our polymer research lab. The material is a fluoropolymer-based blend proprietary to JAMESBURY that provides superior quarter-turn performance.

**JAMESBURY 'The Ultimate Process Automation Package'  
for VPVL Pneumatic Actuators, V-Series and ADC-Series Electric Actuators**

**For 1/2" – 2" (DN 15 – 50) Standard Port and 1/2" – 1-1/2" (DN 15 – 40) Full Port Series 4000**



**Stainless steel linkages for  
JAMESBURY ISO Actuators**

- Self aligning
- Engineered for optimum stem seal performance

**Automation Performance and Value**

Series 4000 valves combined with JAMESBURY actuators, network capable valve monitors and communication devices offer a total value and performance package. Available with pneumatic VALV-POWR® VPVL actuators,

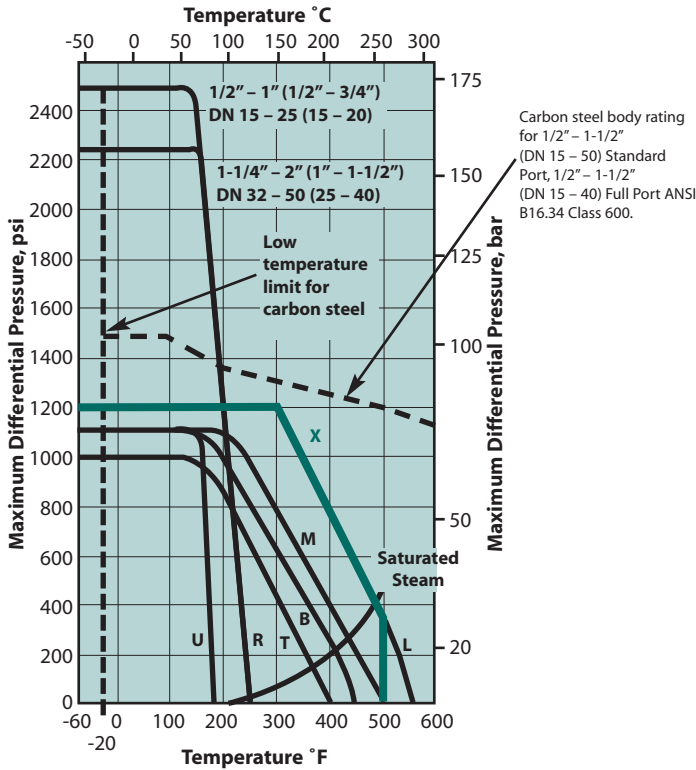
V-Series and ADC-Series electric actuators and with STONEL® QUARTZ®, ECLIPSE®, and HAWKEYE® digital monitors or VCTs, the packages have a wide range of applications. Visit our website at [www.metso.com/automation](http://www.metso.com/automation).

### Valve Seat Ratings

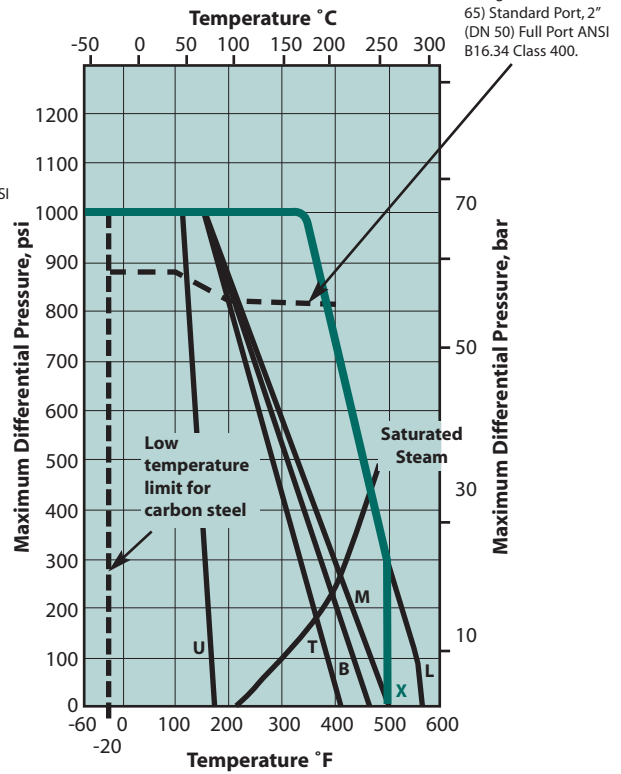
These ratings are based on differential pressure with valve ball in the fully closed position and refer to seats only. Refer to valve body ratings on page 5 to be sure that all components are satisfactory for the application.

Valves in carbon steel are suitable for service to -20°F (-29°C), valves in 316 stainless steel to -60°F (-51°C) or -40°F (-40°C) with Delrin seats. Lower temperature limits for body boltings are B7: -20°F (-29°C), B7M: -50°F (-46°C), L7M: -60°F (-51°C), B8: -60°F (-51°C).

**1/2" – 2" (DN 15-50) Standard Port,  
1/2" – 1-1/2" (DN 15-40) Full Port Valves**



**2-1/2" (DN 65) Standard Port,  
2" (DN 50) Full Port Valves**

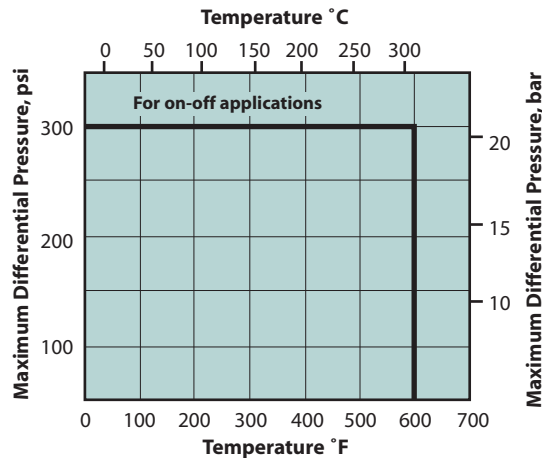


**X-XTREME T-PTFE M-Filled PTFE R-Delrin L-Peek**  
**U-UHMW polyethylene B-PFA**

\*Full port sizes in parenthesis.

**Note:** All 1/2" (DN 15) Series 4000 valves have 1/2" (DN 15) port.

### Metal-Seated Valves



### SPECIFICATIONS

Series 4000 valves are available in types that meet the following industry specifications.

Specification	Description
ANSI B1.20.1	Pipe Threads
ANSI B16.11	Steel Fitting Socket Welding & Thread
ANSI B16.25	Buttwelding Ends
ANSI B16.34	Valves-Flanged and Buttwelding Ends
ANSI B31.1	Power Piping
ANSI B31.3	Chemical Plant & Petroleum Refining Piping
ANSI B31.4	Liquid Petroleum Piping
API 598	Valve Inspection & Testing
API 607-4	Fire Test for Soft-seated Valves (Div. of Refining)
API 608	Metal Ball Valves - Flanged, Threaded and Welding End
BS 21	Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions)
BS 6755-Part 2	Testing of Valves - Specification for Fire Type-Testing Requirements
BS 5351	British Standard Specification for Steel Ball Valve for the Petroleum, Petro-chemical and Allied Industries
DIN 2999-1	Pipe threads for tubes and fittings; parallel internal thread and taper external thread; tread dimensions

#### Valve Body Ratings

These are the maximum working pressure ratings of the valve body only. The seat ratings on page 4 determine the practical pressure limitation in actual service. Working pressure rating is at -20°F to +100°F (-29°C to +38°C).

#### Standard Version - Body Rating

Valve Size*		Working Pressure - Body Material: Carbon Steel and 316 Stainless Steel	
Inches	DN	psi	bar
1/2 - 1 (1/2 - 3/4)	15 - 25 (15 - 20)	2500	172
1-1/4 - 2 (1 - 1-1/2)	32 - 50 (25 - 40)	2250	155
2-1/2 (2)	65 (50)	1000	69

\*Full-port sizes in parentheses

#### ANSI Version - Body Rating

Temperature	ANSI Class 600 1/2" - 2" (DN 15 - 50) Standard Port 1/2" - 1-1/2" (DN 15 - 40) Full Port		ANSI Class 400 2-1/2" (DN 65) Standard Port 2" (DN 50) Full Port	
	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
°F	psi	psi	psi	psi
-20 to +100	1480	1440	990	960
200	1360	1240	900	825
300	1310	1120	875	745
400	1265	1025	845	685
500	1205	955	800	635
<b>Shell Test Pressure</b>	<b>2250</b>	<b>2200</b>	<b>1500</b>	<b>1500</b>

Temperature	ANSI Class 600 1/2" - 2" (DN 15 - 50) Standard Port 1/2" - 1-1/2" (DN 15 - 40) Full Port		ANSI Class 400 2-1/2" (DN 65) Standard Port 2" (DN 50) Full Port	
	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
°C	bar	bar	bar	bar
-29 to +38	102.1	99.3	68.3	66.2
100	93.2	84.4	61.9	56.2
150	90.2	77.0	60.3	51.2
200	87.6	71.3	58.5	47.6
250	83.9	66.8	55.7	44.4
<b>Shell Test Pressure</b>	<b>154</b>	<b>150</b>	<b>103</b>	<b>100</b>

ISO 7-1

MSS SP-25  
MSS SP-55  
MSS SP-72  
NACE MR0103

Pipe threads where pressure-tight joints are made on the threads -- Part 1: Dimensions, tolerances and designation  
Standard Marking System for Valves  
Quality Standard for Steel Fittings for Valves  
Ball Valves with Flanged or Buttweld End  
Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments

#### Flow Data

The table below provides flow coefficients, Cv, of Series 4000 valves. The Cv values represent the flow of water at +60°F through the valve in U.S. gallons per minute at a pressure drop of 1 psi.

Valve Size		Standard port	Full port
Inches	DN	Cv*	Cv*
1/2	15	13	13
3/4	20	33	40
1	25	44	65
1-1/4	32	46	90
1-1/2	40	95	135
2	50	111	251
2-1/2	65	216	—

\*Cv = 1.167 Kv.

#### Maximum Leakage Rates

All series 4000 valves are factory tested with air. Polymeric seated valves are verified to be bubble tight using 100 psi air. Metal seats are also tested with air to ensure that leakage does not exceed the rates shown below.

Valve Size - inches		Leakage Rate - scfm at Differential Pressure		
Standard Port	Full Port	100 psi	200 psi	300 psi
1/2	1/2	5.0	7.0	8.6
3/4	—	7.0	9.9	12.1
1 - 2	3/4 - 1-1/2	9.0	12.7	15.5
—	2	11.0	14.0	17.0

Valve Size - DN		Leakage Rate - m³/hr Differential Pressure		
Standard Port	Full Port	7 bar	14 bar	20 bar
15	15	8.5	11.9	14.6
20	—	11.9	16.8	20.6
25 - 50	20 - 40	15.3	21.6	26.3
—	50	18.7	23.8	28.8



<b>BILLS OF MATERIALS AND PARTS LIST</b>			
<b>FIRE-TITE 1/2" – 2" (DN 15 – 50) Standard Port, 1/2" – 1-1/2" (DN 15 – 40) Full Port Valves</b>			
<b>Part No.</b>	<b>Part Name</b>	<b>Body Material</b>	
		<b>Carbon Steel (22)</b>	<b>316 Stainless Steel (36)</b>
1	Body	Carbon steel ASTM A216 Type WCB	316 Stainless steel ASTM A351 Type CF8M
2	Body Cap	Carbon steel ASTM A216 Type WCB	316L Stainless steel ASTM A351 Type CF3M
3	Ball	316 Stainless steel, Monel, Hastelloy C	
4	Stem	316 Stainless steel, 17-4 PH Stainless steel, Monel, Hastelloy C	
5	Seat	PTFE, XTREME, 17-4 PH, PFA, Delrin®, UHMW polyethylene, as specified	
6/18	Body Seals	PTFE & Graphite, Spiral wound 316 Stainless steel graphite/PTFE (with Peek, metal seats or configuration L)	
7	Secondary Stem Seal	Graphite	
8	Primary Stem Seal	PTFE, TFM® (XTREME-Seated Valves), Graphite (w/metal seats), UHMWPE (w/UHMWPE seats)	
10	Stem Guide	Peek (Metal-Seated Valves)	
13	Stem Bearing	Filled PTFE (Peek when metal-seated) (Delrin when Delrin-seated), UHMWPE (w/UHMWPE seats)	
16	Hex Nut	316 Stainless steel	
17	Handle	Carbon steel (zinc plated)	300 Series Stainless steel
19	Lock Washer	300 Series Stainless steel	
20	Compression Plate	316 Stainless steel	
25	Socket Cap Screw	316 Stainless steel	
26	Handle Stop Spacer	316 Stainless steel	
29	Hex Cap Screw	316 Stainless steel	
31	Disc Springs	Inconel	
52	Body Bolt/Tie Rod	ASTM A193 Gr. B7	ASTM A193 Gr. B8
53	Hex Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 8
54	Weld End Tag	Paper	
# Requires 17-4 PH stem			
<b>Non FIRE-TITE 1/2" – 1-1/2" (DN 15 – 40) Full Port &amp; 1/2" – 2" (DN 15 – 50) Standard Port Valves</b>			
<b>Part No.</b>	<b>Part Name</b>	<b>Body Material</b>	
		<b>Carbon Steel (22)</b>	<b>316 Stainless Steel (36)</b>
1	Body	Carbon steel ASTM A216 Type WCB	316 Stainless steel ASTM A351 Type CF8M
2	Body Cap	Carbon steel ASTM A216 Type WCB	316L Stainless steel ASTM A351 Type CF3M
3	Ball	316 Stainless steel, Monel, Hastelloy C	
4	Stem	316 Stainless steel, 17-4 PH Stainless steel, Monel, Hastelloy C	
5	Seat	PTFE, Peek #, as specified	
6/18	Body Seal	PTFE & Graphite, Spiral wound 316 Stainless steel graphite/PTFE (with Peek seats or configuration L)	
8	Primary Stem Seal	PTFE, Graphite (with Peek seats)	
10	Stem Guide	Peek (Peek seated valves)	
13	Stem Bearing	Filled PTFE (Peek when Peek-seated)	
16	Hex Nut	316 Stainless steel	
17	Handle	Carbon steel (Zinc plated)	300 Series Stainless steel
19	Lock Washer	300 Series Stainless steel	
20	Compression Plate	316 Stainless steel	
24	Stem Bearing	Filled PTFE (Peek when Peek-seated)	
25	Socket Cap Screw	316 Stainless steel	
26	Handle Stop Spacer	316 Stainless steel	
29	Hex Cap Screw	316 Stainless steel	
31	Disc Springs	Inconel	
52	Body Bolt/Tie Rod	ASTM A193 Gr. B7	ASTM A193 Gr. B8
53	Hex Nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 8
54	Weld End Tag	Paper	
# Requires 17-4 PH stem			



<b>BILLS OF MATERIALS AND PARTS LIST</b>			
<b>FIRE-TITE 2" (DN 50) Full Port and 2 1/2" (DN 65) Standard Port Valves</b>			
<b>Part No.</b>	<b>Part Name</b>	<b>Body Material</b>	
		<b>Carbon Steel (22)</b>	<b>316 Stainless Steel (36)</b>
1	Body	Carbon steel ASTM A216 Type WCB	316 Stainless steel ASTM A351 Type CF8M
2	Body Cap	Carbon steel ASTM A216 Type WCB	316L Stainless steel ASTM A351 Type CF3M
3	Ball	316 Stainless steel	
4	Stem	316 Stainless steel or 17-4 PH Stainless steel	
5	Seat	PTFE, XTREME, 17-4 PH, as specified	
6	Body Seal	Spiral wound 316 Stainless steel graphite/PTFE	
7	Secondary Stem Seal	Graphite	
8	Stem Seal	PTFE, TFM (XTREME-Seated Valves)	
12	Indicator Stop	316 Stainless steel	
16	Stem Nut	Carbon steel	Stainless steel
17	Handle	Ductile Iron	
19	Shakeproof Washer	Carbon steel	
21	Compression Ring	316 Stainless steel	
22	Identification Tag	Stainless steel	
24	Stem Bearing	Filled PTFE (Peek when metal-seated)	
25	Hex Cap Screw**	ASTM A193 Gr. B7, B7M, A320 Gr. L7M	ASTM A193 Gr. B7, B8, A453 Gr. 660
52	Body Bolt/Tie Rod**	ASTM A193 Gr. B7, B7M, A320 Gr. L7M	ASTM A193 Gr. B7, B8, A453 Gr. 660
53	Hex Nut**	ASTM A194 Gr. 2H, 2M, 7M	ASTM A194 Gr. 2H, 2M, A453 Gr. 660
54	Weld End Tag	Paper	

\*\* A193 Gr. B7 Body Fasteners unless otherwise specified.

<b>Non FIRE-TITE 2" (DN 50) Full Port and 2-1/2" (DN 65) Standard Port Valves</b>			
<b>Part No.</b>	<b>Part Name</b>	<b>Body Material</b>	
		<b>Carbon Steel (22)</b>	<b>316 Stainless Steel (36)</b>
1	Body	Carbon steel ASTM A216 Type WCB	316 Stainless steel ASTM A351 Type CF8M
2	Body Cap	Carbon steel ASTM A216 Type WCB	316L Stainless steel ASTM A351 Type CF3M
3	Ball	316 Stainless steel	
4	Stem	316 Stainless steel* or 17-4 PH Stainless steel (PEEK-seated valves)	
5	Seat	PTFE, XTREME, Peek, UHMW PE, as specified	
6	Body Seal	Spiral wound 316 Stainless steel graphite/PTFE, EPT (UHMWPE seated valves)	
8	Stem Seal	PTFE, TFM (XTREME-Seated Valves), UHMW PE (UHMW PE-seated valves)	
12	Indicator Stop	316 Stainless steel	
16	Stem Nut	Carbon steel	Stainless steel
17	Handle	Ductile Iron	
19	Shakeproof Washer	Carbon steel	
21	Compression Ring	316 Stainless steel	
22	Identification Tag	Stainless steel	
24	Stem Bearing	Filled PTFE (XTREME and PTFE seats) same as seat material for Peek and UHMW PE Seats	
25	Hex Cap Screw**	ASTM A193 Gr. B7, B7M, A320 Gr. L7M	ASTM A193 Gr. B7, B8, A453 Gr. 660
52	Body Bolt/Tie Rod**	ASTM A193 Gr. B7, B7M, A320 Gr. L7M	ASTM A193 Gr. B7, B8, A453 Gr. 660
53	Hex Nut**	ASTM A194 Gr. 2H, 2M, 7M	ASTM A194 Gr. 2H, 2M, A453 Gr. 660
54	Weld End Tag	Paper	

\*\* A193 Gr. B7 Body Fasteners unless otherwise specified.



### VALVE TORQUE DATA

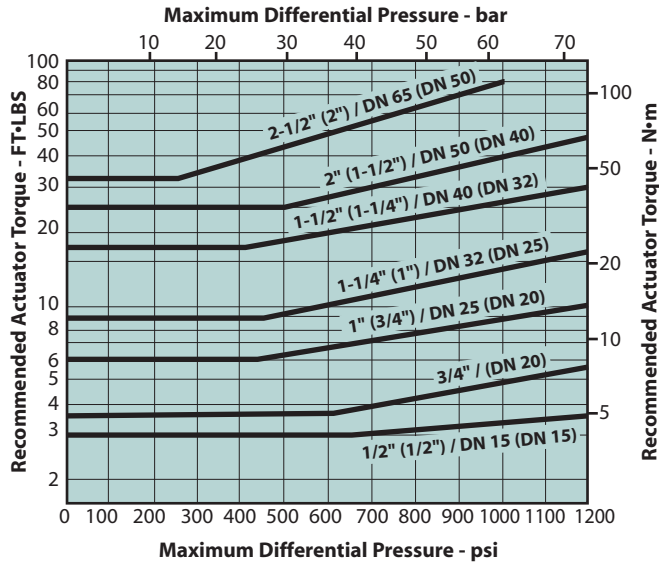
Use these torque charts for Series 4000 valves as a guide for actuator selection. For torque output values and actuator selection tables refer to actuator bulletins.

For difficult service (slurries, semi-solids) increase values by 50%. If in doubt, select a larger actuator.

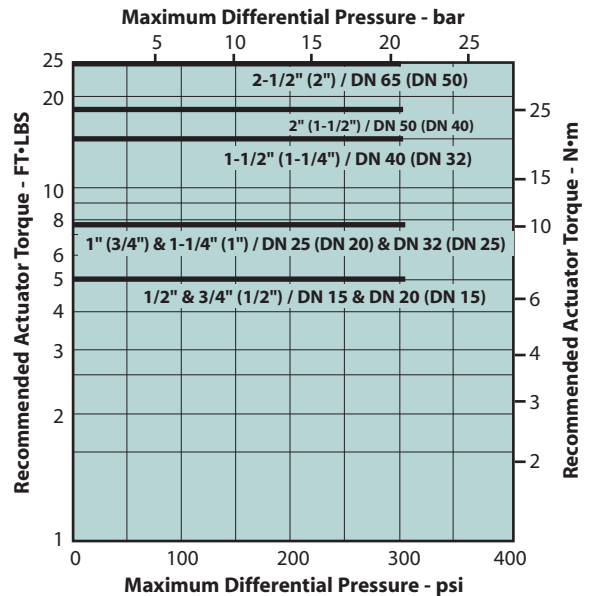
Additional requirements may be imposed by media characteristics, trim, and frequency of valve operation.

Values shown in the charts are based on using standard factory procedures for valve-actuator assembly.

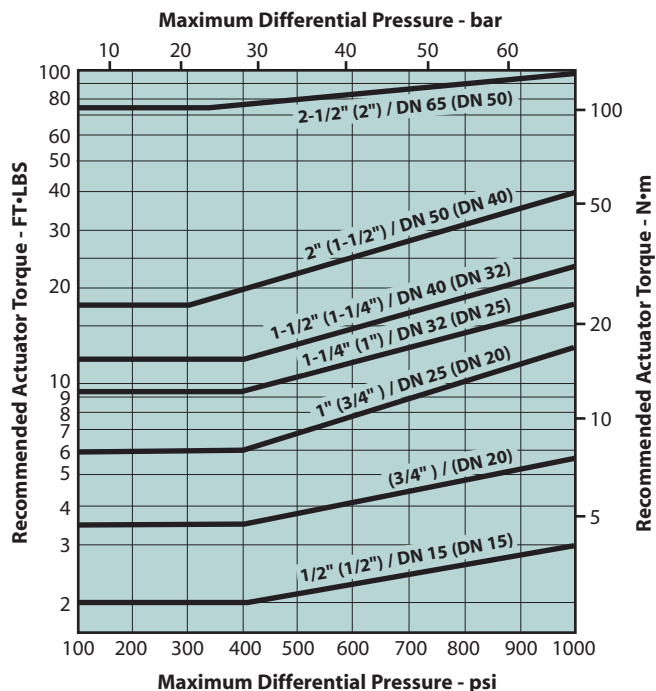
**XTREME (X) Seated Standard-Port Valves**  
(Full-port sizes in parentheses)



**Metal (D) Seated Standard-Port Valves**  
(Full-port sizes in parentheses)

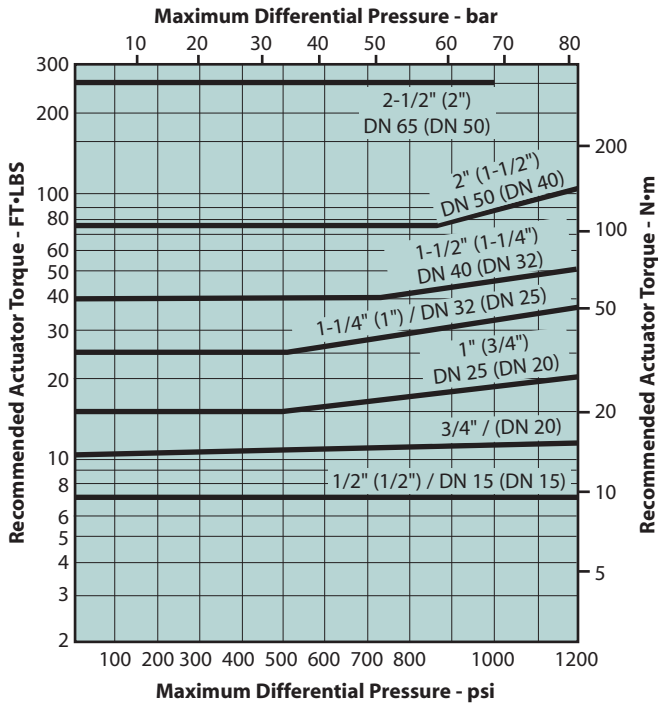


**PTFE (T) Seated Standard-Port Valves**

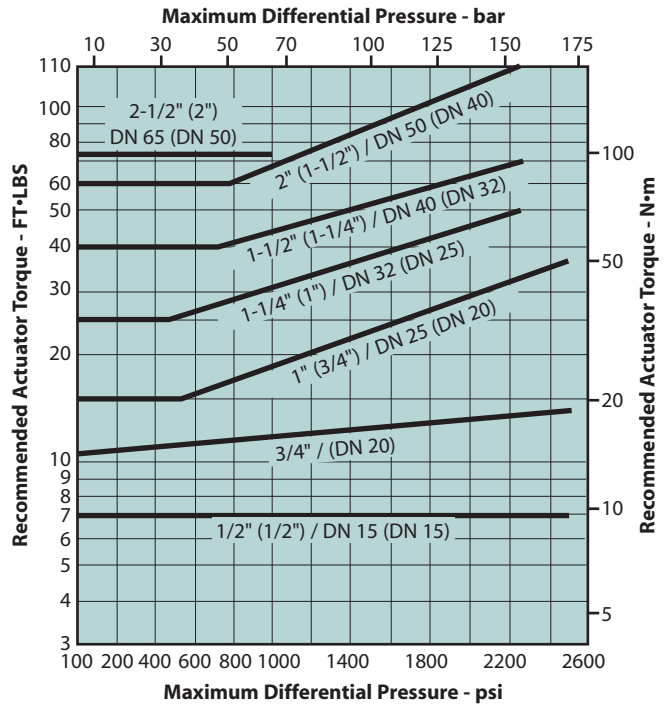


**VALVE TORQUE DATA (CONTINUED)**

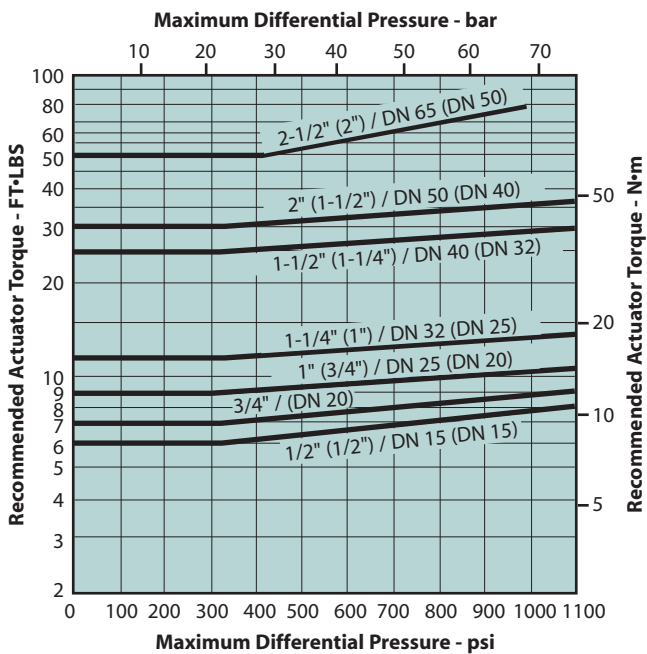
**Peek (L) Seated Standard-Port Valves  
(Full-port sizes in parentheses)**



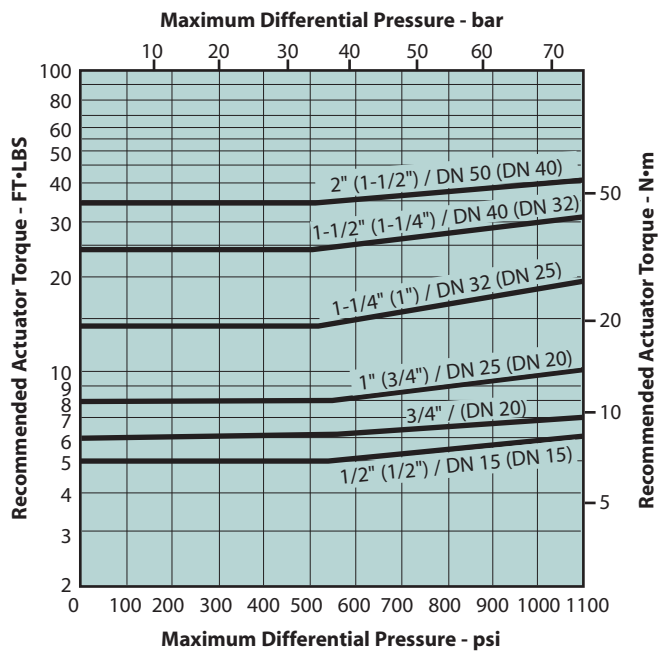
**Delrin (R) Seated Standard-Port Valves  
(Full-port sizes in parentheses)**



**UHMW (U) Polyethylene Seated Standard-Port Valves  
(Full-port sizes in parentheses)**



**PFA (B) Seated Standard-Port Valves**



### ACTUATORS

Metso offers a full line of integrally designed actuators for automated systems or for easier control of inaccessible or remote valves. Pneumatic actuators that include double-acting and spring-return piston, vane, and rack and pinion units, spring-diaphragm types, and electric actuators are available for all valves. Electric actuators are available with both watertight and hazardous location enclosures.

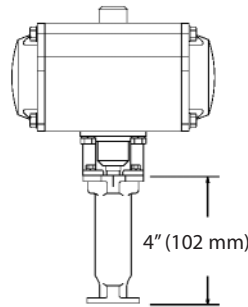
For further information on actuators for Series 4000 valves, see the following:

Type	Bulletin
Spring-Diaphragm Actuators	A110-4
VPVL Mod C Actuators	A111-3
V-Series Electric Actuators	A200-1
ADC-Series Electric Actuators	A201-1

### ACCESSORIES

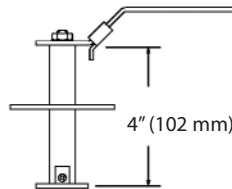
#### Bonnet/Stem Extensions SE-096, 097 & 098

4" (102 mm) bonnet/stem extensions are available for applications that require insulated pipe, particularly useful for automated products, extension can also be used to prevent interference between actuators and companion pipelines and equipment. They are ideal as extension that require locking lever or locking oval handle capability. Stainless steel construction offers the option of using the extension to complement the carbon steel stem extension (SE-093, 094 & 095) offerings.



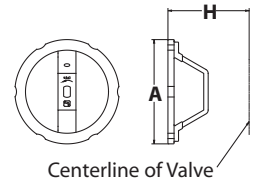
#### Stem Extensions SE-093, 094 & 095

A standard 4" (102 mm) stem extension is offered for Series 7000 valves (1/2" – 2") for improved accessibility, particularly when used in insulated pipelines. Stem extension kits can be ordered factory-mounted or shipped separately for field mounting.



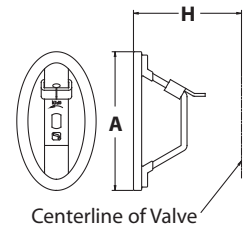
#### Round Handles

Series 4000 ball valves have optional round handles available. To order handles separately, specify the part number shown in the accessories table below.



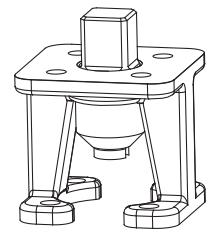
#### Oval handles with slide-lock

Optional oval handle saves space and may be padlocked to retain the valve in the open or closed position.



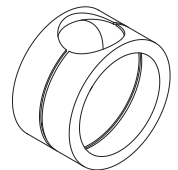
#### Stainless steel linkages for JAMESBURY ISO Actuators

- Self aligning
- Engineered for optimum stem seal performance



#### Cavity Fillers

Cavity fillers are available in 4000 series full bore valves. The fillers are PTFE and used for sanitary applications and in processes where cross contamination is a concern. Food processing, pharmaceuticals, cosmetics, paints, solvents, finishes and dyes are typical applications where fillers are employed.



Accessories Table - inches (DN/mm)									
Valve Size*		Bonnet/Stem† Extension	Stem Extension	Locking Oval	Round	Round/Oval Handle		Allowable Max. Torque FT•LBS (N•m)	
Standard Bore	Full Bore					Dimension A	Dimension H	Round	Oval
1/2" (15)	1/2" (15)	SE-096	SE-093	112-0108-30	112-0105-30	4.00 (101.6)	2.96 (75.2)	9 (14)	9 (14)
3/4" (20)	—	SE-096	SE-093	112-0108-30	112-0105-30	4.00 (101.6)	3.11 (79.0)	9 (14)	9 (14)
1" (25)	3/4" (20)	SE-097	SE-094	112-0109-30	112-0106-30	4.50 (114.3)	3.70 (94.0)	18 (25)	18 (25)
1-1/4" (32)	1" (25)	SE-097	SE-094	112-0109-30	112-0106-30	4.50 (114.3)	3.83 (97.3)	18 (25)	18 (25)
1-1/2" (40)	1-1/4" (32)	SE-098	SE-095	112-0110-30	112-0107-30	5.75 (146.0)	4.75 (120.7)	25 (34)	25 (34)
2" (50)	1-1/2" (40)	SE-098	SE-095	112-0110-30	112-0107-30	5.75 (146.0)	4.94 (125.5)	25 (34)	25 (34)
2-1/2" (65)	2" (50)	—	—	—	—	—	—	—	—

\* Specify LD 64 when a locking device is required for 2" (DN 50) full bore and 2-1/2" (DN 65) standard port valves.

† For valves with Peek (L), Delrin (R) or 17-4 PH SS (D) seats.

## HOW TO ORDER SERIES 4000 BALL VALVES

To specify a Series 4000 valve, select the body style, the combination of body and trim material, the proper seat material, and the appropriate body bolts for the application. Code numbers are fully descriptive of a valve. They are made up of size and a figure designation based on the following coding:

**EXAMPLE:** This order code calls for a 3/4" standard-port NPT FIRE-TITE valve with carbon steel body, 316 stainless steel ball and stem, XTREME seats and XTREME seats and PTFE seals, and ASTM A193 Gr. B7 bolts with ASTM A194 Gr 2H nuts.

<b>1</b>	-	<b>2</b>	<b>3</b>	<b>4</b>	-	<b>5</b>	<b>6</b>	<b>7</b>	-	<b>8</b>
3/4		4A	-	-		22	36	XT		1

<b>1</b>	<b>Size - 1/2 - 2-1/2 (DN 15-65) Standard Port, 1/2 - 2 (DN 15-50) Full Port</b>						
<b>inches</b>	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2
<b>DN</b>	15	20	25	32	40	50	65

<b>2</b>	<b>Body Style</b>
<b>4A</b>	Standard Port NPT
<b>4B</b>	Full Port NPT
<b>4C</b>	Std. Port socket weld
<b>4D</b>	Full port socket weld
<b>4F</b>	Std. port butt weld Schedule-5
<b>4G</b>	Std. port butt weld Schedule-10
<b>4H</b>	Std. port butt weld Schedule-40
<b>4J</b>	Full port butt weld Schedule-5
<b>4K</b>	Full port butt weld Schedule-10
<b>4L</b>	Full port butt weld Schedule-40
<b>4M</b>	Std. port NPT x soc. weld ends
<b>4N</b>	Full port NPT x soc. weld ends
<b>4P</b>	Full port butt weld Schedule 80
<b>4Q</b>	Std. port butt weld Schedule 80
<b>4R</b>	Std. port ISO 7 Rp (BS21 parallel DIN 2999)
<b>4S</b>	Std. port ISO 7 Rc (BS21 taper)
<b>4T</b>	Full port ISO 7 Rp (BS21 parallel DIN 2999)
<b>4U</b>	Full port ISO 7 Rc (BS21 taper)

<b>3</b>	<b>Configuration</b>
-	(no entry if FIRE-TITE)
<b>X</b>	Non-FIRE-TITE
<b>B</b>	ANSI B16.34, B31.1, B31.3, and 31.4
<b>M<sup>3*</sup></b>	ANSI B16.34 & BS5351 Class 600 with metric nameplate

<b>4</b>	<b>Special Service</b>
-	(no entry if standard)
<b>N</b>	NACE MR0103 w/exposed body fasteners
<b>O</b>	Oxygen (specify w/ANSI configuration B)
<b>Q</b>	PTFE Cavity Filler (Full Bore, 316 SS only)
<b>V</b>	High vacuum (specify w/ANSI configuration B)
<b>VC</b>	High vacuum certified (specify w/ANSI configuration B)
<b>C</b>	Chlorine (specify w/ANSI configuration B)
<b>TG</b>	Top Ground
<b>STGR</b>	Top and Bottom Ground
<b>LA</b>	Standard Emission Pak w/o Leakoff Connection
<b>LL</b>	Standard Emission Pak with Leakoff Connection

<b>5</b>	<b>Body Material</b>
<b>22</b>	Carbon steel
<b>36</b>	316 Stainless steel

<b>6</b>	<b>Ball and Stem Material</b>
<b>00</b>	Same as body (Carbon steel not available)
<b>36</b>	316 Stainless steel
<b>HB</b>	316 Stainless steel ball, 17-4 PH stem (required for RT & LG seats & seals)
<b>71</b>	Monel
<b>73</b>	Hastelloy C (non NACE MR0103 valves)

<b>7</b>	<b>Seat and Seal Material</b>	
	<b>Seats</b>	<b>Seal</b>
<b>Standard FIRE-TITE Options</b>		
<b>XT</b>	XTREME	TFM & Graphite
<b>TT</b>	PTFE	PTFE & Graphite
<b>DH</b>	17-4 PH Stainless steel	Graphite
<b>UU</b>	UHMW Polyethylene*	UHMW PE & Graphite
<b>RT<sup>2,4</sup></b>	Delrin* (non NACE MR0103 valves)	PTFE & Graphite
<b>BT</b>	PFA	PTFE & Graphite
<b>Non FIRE-TITE Options</b>		
<b>TT</b>	PTFE	PTFE
<b>UB</b>	UHMW Polyethylene	UHMW Polyethylene & EPT
<b>LG<sup>2,4</sup></b>	Peek*	Peek & Graphite
<b>LT<sup>2,4</sup></b>	Peek**	PTFE & Graphite

<b>8</b>	<b>Body Fasteners</b>	
	<b>Bolts or Tie Rods</b>	<b>Nuts</b>
<b>1</b>	ASTM A193 Gr. B7	ASTM A194 Gr. 2H
<b>2</b>	ASTM A193 Gr. B8*	ASTM A194 Gr. 8, 8C, 8M, BT, or 8F
<b>5<sup>1</sup></b>	ASTM A193 Gr. B7M	ASTM A194 Gr. 2HM
<b>7<sup>1</sup></b>	ASTM A320 Gr. L7M	ASTM A194 Gr. 7M
<b>8<sup>1</sup></b>	ASTM A453 Gr. 660	ASTM A453 Gr. 660

\* For 1/2" - 2" (DN 15 - 50) standard port and 1/2" - 1-1/2" (DN 15 - 40) full bore valves

\*\* For 2" (DN 50) full bore and 2-1/2" (DN 65) standard port only.

- Exposed bolting options for NACE MR0103 service.
- Requires high strength stem, not available for NACE MR0103 service.
- Valves larger than 1" (DN 25) are CE marked.
- Not a self-relieving seat design.

TFM is a registered trademark of Dyneon Co.

Delrin is a registered trademark of DuPont Co.

Subject to change without prior notice.

### Metso Automation Inc.

**Europe**, Levytie 6, P.O. Box 310, 00811 Helsinki, Finland.  
Tel. +358 20 483 150. Fax +358 20 483 151

**North America**, 44 Bowditch Drive, P.O. Box 8044, Shrewsbury, MA 01545, USA.  
Tel. +1 508 852 0200. Fax +1 508 852 8172

**Europe**, 6-8 rue du Maine, 68271 Wittenheim Cedex, France.  
Tel. +33 (0)3 89 50 64 00. Fax +33 (0)3 89 50 64 40

**South America**, Av. Independência, 2500- Iporanga, 18087-101, Sorocaba-São Paulo Brazil. Tel. +55 15 2102 9700. Fax +55 15 2102 9748/49

**Asia Pacific**, 238A Thomson Road, #25-09 Novena Square Tower A, 307684 Singapore.  
Tel. +65 6511 1011. Fax +65 6250 0830

**China**, 19/F, the Exchange Beijing, No. 118, Jianguo Lu Yi, Chaoyang Dist, 100022 Beijing, China.  
Tel. +86-10-6566-6600. Fax +86-10-6566-2575

**Middle East**, Roundabout 8, Unit AB-07, P.O. Box 17175, Jebel Ali Freezone, Dubai, United Arab Emirates. Tel. +971 4 883 6974. Fax +971 4 883 6836

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