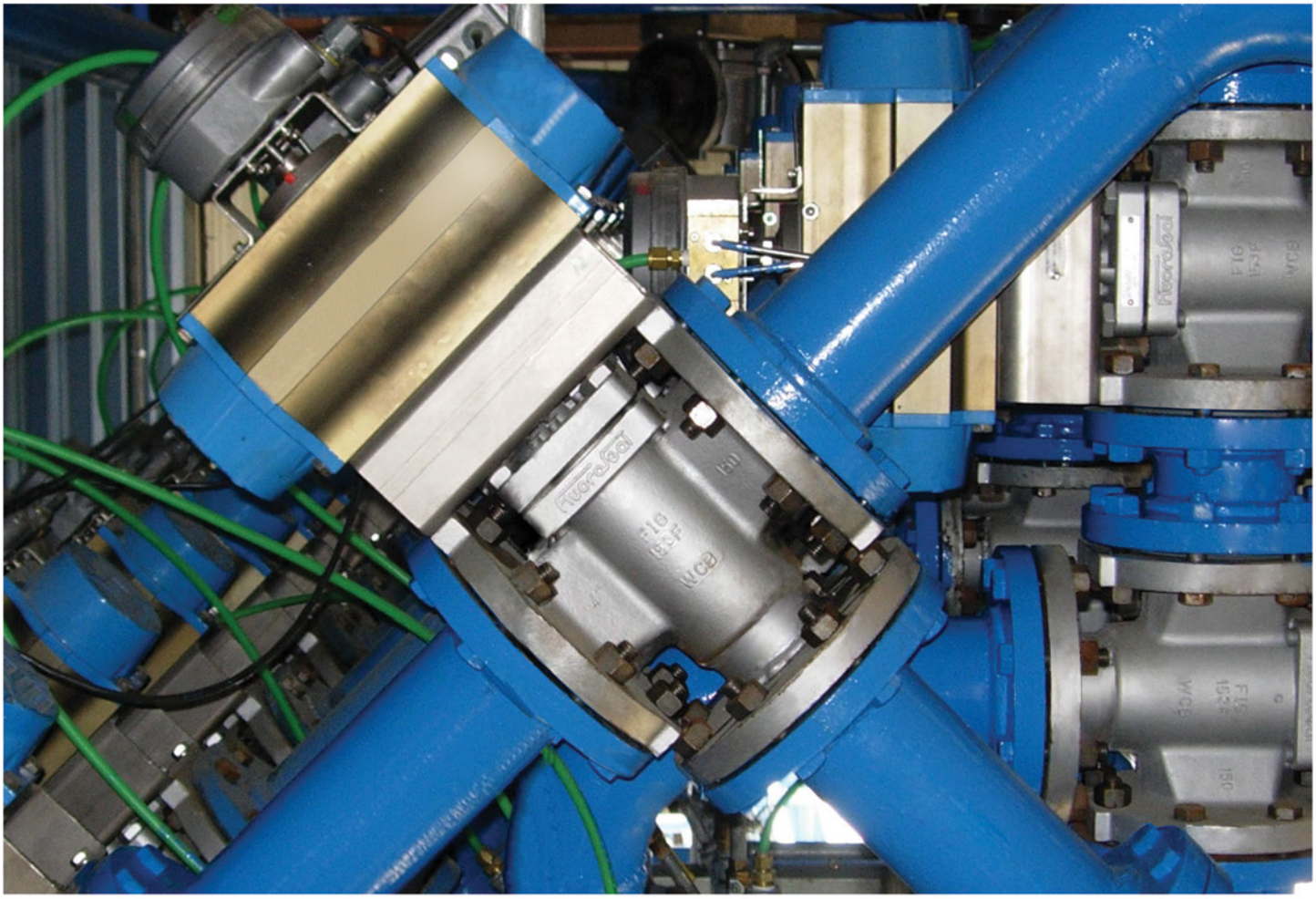
FluoroSeal



COMPANY OVERVIEW

INDUSTRIAL VALVE MANUFACTURER

ASME/ANSI/API/DIN/ISO

Headquarters & Foundry - Lachine, QC, Canada

FluoroSeal U.S.A. - Missouri City, TX, USA

FluoroSeal Europe GmbH - Mönchengladbach, Germany

FluoroSeal China - Suzhou, China


FluoroSeal China (Foundry) - Shuyang, China

WORLDWIDE PRESENCE

FluoroSeal operations span across the world - from headquarters in Canada, to an international sales force and manufacturing. Comprised of over 500 employees worldwide, FluoroSeal is a leading provider of innovative solutions to the flow control industry.

For over 30 years, FluoroSeal has been manufacturing and customizing a wide range of valves, parts, and accessories for various industries such as Oil & Gas, Chemical, Petrochemical, Power, Pharmaceutical, and Mining. Our client-oriented culture allows us to understand complex industry needs and meet the highest quality standards - that is why our manufacturing processes are ISO 9001:2008 and PED 2014/68/EU certified.

Our foundries and manufacturing plants in Canada and China enhance our capability to offer an extensive range of high quality valves at competitive prices in a wide range of exotic alloys on demand. With its large network of warehouses, distributors, and representatives, FluoroSeal is capable of delivering valve products, technical support, and complementary services world-wide and is able to support its customers with quick deliveries in case of emergencies and unscheduled shutdowns.

Our product offering is continuously evolving thanks to our team of highly skilled designers, engineers, and metallurgists who ensure the application of the latest technologies in CAD software, production methods, machinery, quality control procedures, and product testing to all of our products.

At FluoroSeal, we are inspired and committed to developing innovative flow control solutions for every industry we serve.

QUALITY ASSURANCE

FluoroSeal valves bring all of the best design features to the market and they are also inspected throughout the full manufacturing process from foundry to packaging to ensure high quality and consistency in every unit.

ISO 9001 : 2008


CERTIFICATE
TUV Rheinland of North America, Inc.
Fluoroseal Incorporated
Fluoroseal Specialty Valves (Suzhou) Co., Ltd.
Design and Manufacture of Industrial Valves
ISO 9001:2008
74 300 7468

Design and Manufacture of Industrial Valves

PED 2014/68/EU


Certificate

Design and Manufacture of Industrial Valves

AD 2000 -Merkblatt W0


Certificate

Production of Investment Castings

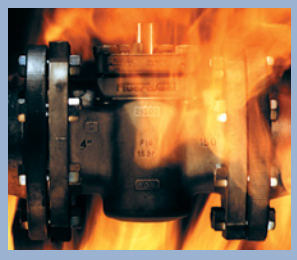
FIRE SAFE & FUGITIVE EMISSIONS TESTING

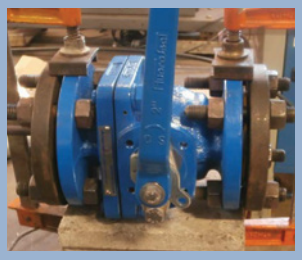
Fluoroseal conducts intensive testing on all its designs to achieve the highest standards in Fugitive Emissions (FE) and fire resistance.

TA-Luft : 2002


CERTIFICATE

FE Severe Service Seal Configuration

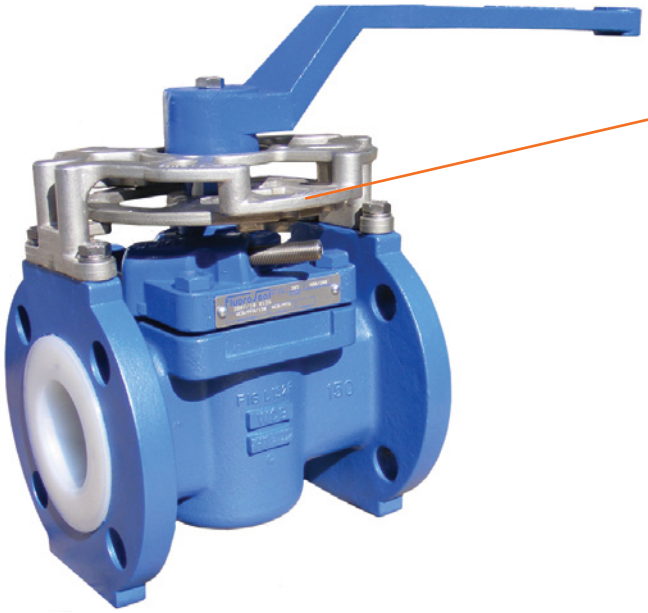




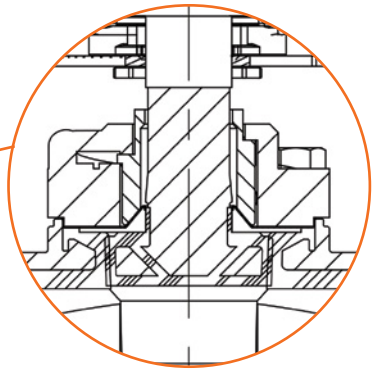
INDUSTRIES SERVED

- Chemical
- Fertilizers
- Food Processing
- Mining
- Oil & Gas
- Pharmaceutical
- Power Generation
- Pulp & Paper
- Steel Manufacturing

LINED PLUG VALVES



FluoroSeal® Class 150, EZ Seal Lined Plug Valve



EZ Seal Lined Plug Valve - Top Seal

DESIGN FEATURES

- Robust, Bi-directional, Fully Adjustable In-Line & External Sealing
- Body & Plug Liners securely locked through a series of dovetail grooves and anchoring holes
- External Expoxy Coating Resists Atmospheric Corrosion
- Virgin, UnPigmented PFA Liners
- Cavity Free
- NonLubricated, Maintenance Free
- Quarter Turn Operation
- Low Emissions, TALUFT, ISO 15848-1 CO3, EPA Method 21
- Optional EZ Seal single point seal adjustment

FluoroSeal® EZ-SEAL® Bracket and Lock

CLASS AND SIZE RANGES

Lined Plug Valves

- ANSI/ASME Class 150 Flanged Ends (1/2" to 14")
- ANSI/ASME Class 300 Flanged Ends (1" to 6")
- DIN PN 16 (DN 25 to DN 350)

STANDARD CONFIGURATION

- ASTM A216 Body & Plug with virgin unpigmented PFA lining

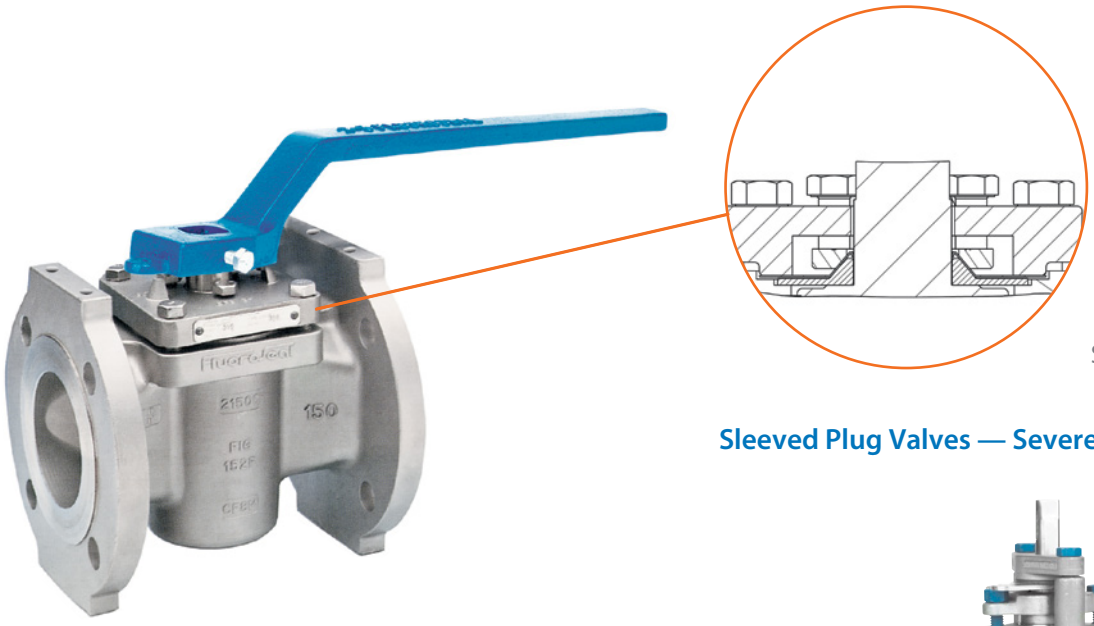
Optional Configurations

- ASTM A351 CF8M Body & Plug with virgin unpigmented PFA lining
- ASTM A351 CN7M Body & Plug with virgin unpigmented PFA lining

DESIGN AND TESTING STANDARDS

API 598
API 599
ASME B16.10
ASME B16.5
ASME B16.34
ASME B16.42
ASTM F1545
DIN EN 558-1
DIN EN 12266
EPA Method 21
ISO 15848-1 CO3
MSS SP-55
MSS SP-25
MSS SP-61
PED 97
TALUFT

SLEEVED PLUG VALVES



Sleeved Plug Valve - Top Seal

FluoroSeal® Class 150, Sleeved Plug Valve

DESIGN FEATURES

- Full Pressure/Temperature Rating in all classes
- Robust, Bi-directional, Fully Adjustable In-Line & External Sealing
- Investment Castings provide tighter dimensional control
- Cavity Free
- Non-Lubricated
- Maintenance Free
- Quarter Turn Operation
- Low Emissions, TALUFT, ISO 15848-1 CO3, EPA Method 21
- Optional EZ Seal single point seal adjustment
- Live loaded Chevron Packing with FE detection port

DESIGN AND TESTING STANDARDS

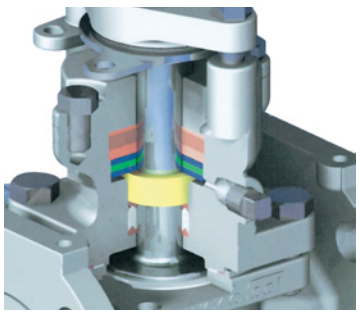
API 598	DIN EN 12266
API 599	EPA Method 21
API 607	ISO 15848-1 CO3
ASME B16.10	MSS SP-55
ASME B16.5	MSS SP-25
ASME B16.34	MSS SP-61
ASME B16.42	PED 97
ASME B16.25	TA-LUFT
DIN EN 558-1	
DIN EN 1092-1	

Sleeved Plug Valves — Severe Service (FE)

FluoroSeal® Class 300, Severe Service (FE)

DESIGN FEATURES

- Innovative shaft seal provides self-adjusting, redundant and independent packing available in all PTFE or PTFE and flexible graphite combinations. Configured for optional monitoring or injection port.
- Primary shaft seal extrusion is controlled with reinforced PTFE end rings, secondary shaft seal utilizes tight gap metallic shaft for full metal containment
- In-line seal adjustable independent of shaft seal
- Bonnet is double sealed with fully contained independent PTFE and flexible graphite seal backing up the primary seal at the sleeve



FluoroSeal® Severe Service (FE) Top Seal

CLASS AND SIZE RANGES

Sleeved Plug Valves — 2-Way (Standard and Fire Safe)

- ANSI/ASME Class 150/300/600 Flanged Ends & Buttweld Ends (1/2" to 24")
- DIN PN 16 & PN 40 Flanged Ends & Buttweld Ends (DN 15 to DN 600)
- ANSI/ASME Class 150/300/600/800 Screwed Ends & Socket Weld Ends (1/2" to 2 ½")

Sleeved Plug Valves — Full Round Port

- ANSI/ASME Full Port Class 150/300/600 Flanged Ends & Buttweld Ends (1/2" to 12")

Sleeved Plug Valves — Multiport

- ANSI/ASME Multiport Class 150/300 Flanged Ends & Buttweld Ends (1/2" to 14")
- ANSI/ASME Multiport Class 150/300/600/800 Screwed Ends or Socket Weld Ends (1/2" to 2")
- Multiport DIN PN 10, 16, 25 & 40 (DN 15 to DN 150)

Sleeved Plug Valves — Severe Service (FE)

Live loaded Chevron Packing with FE detection port

- ANSI/ASME Class 150/300/600 Flanged Ends & Buttweld Ends (1/2" to 16")
- ANSI/ASME Multiport Class 150/300/600W Screwed Ends or Socket Weld Ends (1/2" to 2")

Sleeved Plug Valves — Special Service

Caged Control Plug Valves

- ANSI/ASME 150/300/600 Class (1" to 14")

Double Block & Bleed and Sampling Plug Valves

FluoroSeal® Double Block and Bleed Plug Valve with Gear

Full Port FluoroSeal® 300 Class, Sleeved Plug Valve

OPTIONS - Special Cleaning Plug Valves (Chlorine Service)

- FluoroSeal® Sleeved Plug Valves are manufactured in accordance with the recommendations of the Chlorine Institute Pamphlet 6 and provide superior performance in this demanding application.

OPTIONS - JACKETED PLUG VALVES

- FluoroSeal® offers a number of jacketing solutions to customers requiring steam or hot oil-heated two-way or multiport plug valves to prevent process line freezing: either the bolt-on full jacket, or a welded-on full or partial jacketed valves.

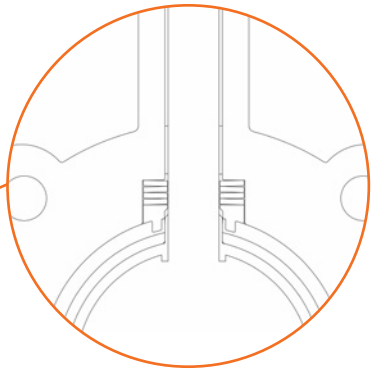
Standard Welded Full Jacket with Oversized Flanges

Partial Welded Jacket

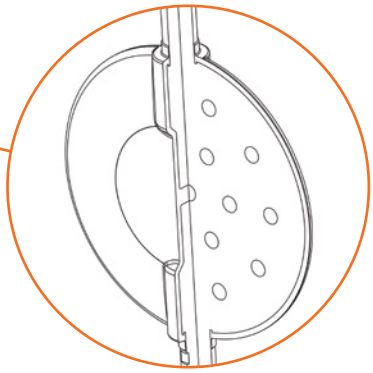
Multiport with Full Welded Jacket

LINED BUTTERFLY VALVES

FluoroSeal® Class 150, Wafer Lined Butterfly Valve



Lined Butterfly Valve - Stem Packing



Lined Butterfly Valve - Disc detail riveting

DESIGN FEATURES

- Energized seat for Bubble tight shut-off
- Live loaded low emissions Stem Seal
- 2-piece body Lug or Wafer type
- Spherical profile disc
- PFA Lining is riveted to Disc to prevent delamination
- Integral disc and shaft
- Blowout proof stem
- ISO 5211 mounting
- Bearings system for a precise shaft alignment into body cavity
- Dust-Seal to protect against foreign substance

DESIGN AND TESTING STANDARDS

API 598
API 609
ASME B16.10
ASME B16.5
ASME B16.34
ASTM F1545-97
DIN EN 558-1
DIN EN 12266
DIN EN 1092-1
ISO 15848
ISO 15848-1 CO3
ISO 5211
MSS SP-55
MSS SP-25
MSS SP-61
PED

STANDARD CONFIGURATION

- ASTM A216 WCB Body, ASTM A995 CD4MCuN Disc & Stem/Virgin unpigmented PFA lining, and GF2P (Molecularly Enhanced PTFE) Seat

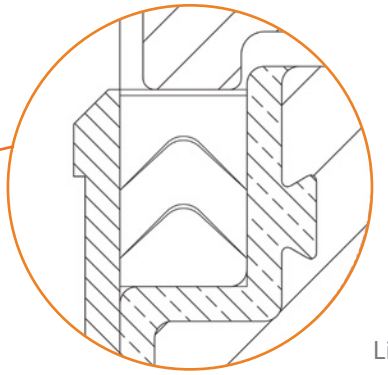
CLASS AND SIZE RANGES

Lined Butterfly Valves

- Pressure Rating 150 psig Wafer or Lug (2" to 24")
- DN50 to DN600

LINED BALL VALVES

FluoroSeal® Class 150, Lined Ball Valve



Lined Ball Valve - Stem Seal

DESIGN FEATURES

- Low Emission Stem Seal ISO 15848-1 CO3
- Full Port design
- Superior Seat design
- PFA lined body and ball
- Anti blowout stem
- Standard actuator mounting
- Antistatic design
- Live loaded low emission packing design
- Metal to metal contact body joint design
- Virgin PFA unpigmented

Al2O3 Ceramic Ball (Optional)
ideal in chlorine applications

V-Control Ball (Optional)
for fine flow control

CLASS AND SIZE RANGES

Lined Ball Valves — Full Port

- ANSI/ASME Class 150 Flanged Ends (1/2" to 6")
- DN15 to DN100, PN10-16

Lined Ball Valves — V-Port

- ANSI/ASME Class 150 Flanged Ends (1/2" to 6")
- DN15 to DN100, PN10-16

STANDARD CONFIGURATION

- ASTM A395. Gr. 65-45-15 DI body/Virgin unpigmented PFA lined, ASTM A351. Gr. CF8 Ball & Stem/ Virgin unpigmented PFA Lined Full-port, PTFE Seats, and GF2P (Molecularly Enhanced PTFE) Seals

* Available in Stainless Steel body

DESIGN AND TESTING STANDARDS

API 598
ASME B16.42
ASME B16.5
ASME B16.10
ASME B16.34
DIN EN 558-1
DIN EN 1092-1
DIN EN 12266
ISO 5211
ISO 15848-1 CO3
MSS SP-55
PED

HIGH PERFORMANCE BUTTERFLY VALVE

FluoroSeal® Class 150, Wafer High Performance Butterfly Valve

DESIGN FEATURES

- Double offset design
- GF2P single-piece seat offers positive shut-off and abrasion resistance
- No contact between seat and disc in open/intermediate position
- Additional PTFE seal ring for added through-body leak protection
- ISO 5211 for Direct Mount Capability
- Available in wafer, lug and double flange configurations
- Lockable position plate for wrench operated valve
- Bi-directional bubble tight shut-off
- Longer lasting with less maintenance
- Low torque required to actuate valve translates into lower cost of actuation
- Blowout-proof stem
- High CV configuration for valves 4" & under

DESIGN AND TESTING STANDARDS

API 598
API 609
API 607
ASME B16.5
ASME B16.34
ISO 10497
ISO 1548-1 CO3
ISO 5211
MSS SP-25
MSS SP-68
PED

CLASS AND SIZE RANGES

HIgh Performance Butterfly Valve

- ANSI/ASME Class 150/300 Wafer, Lug, or Double Flange (2 ½" to 24")

STANDARD CONFIGURATION

Carbon Steel Valve

- ASTM A216, Gr.: WCB body, ASTM A351 Gr.: CF8M disc, ASTM A564, 630 (17-7PH) Shaft, GF2P (Molecularly Enhanced PTFE) seat, PTFE packing, ASTM A193 Gr.: B7 gland studs and ASTM A216, Gr.: WCB Gland

Stainless Steel Valve

- ASTM A351, Gr.: CF8M body and disc, ASTM A564, 630 (17-4PH) Shaft, GF2P (Molecularly Enhanced PTFE) seat, PTFE packing, ASTM A193 Gr.: B8 gland studs, ASTM A351, Gr.: CF8 Gland

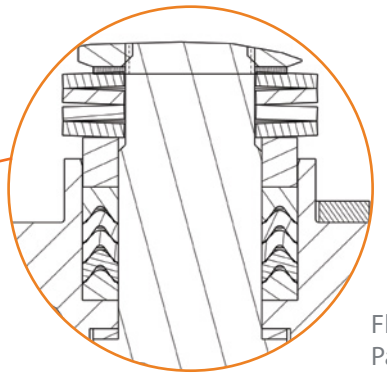
Table 1 - Available Materials

Code	Descriptions	ASTM Designation	DIN
WCB	Carbon Steel	ASTM A216 Gr. WCB	1.0619
LCB	Carbon St. Low Temp.	ASTM A352 Gr. LCB	1.6220
LCC	Carbon St. Low Temp.	ASTM A352 Gr. LCC	1.7219
304	304 Stainless Steel	ASTM A351 Gr. CF8	1.4308
304L	304L Stainless Steel	ASTM A351 Gr. CF3	1.4309
316	316 Stainless Steel	ASTM A351 Gr. CF8M	1.4408
316L	316L Stainless Steel	ASTM A351 Gr. CF3M	1.4409
317	317 Stainless Steel	ASTM A351 Gr. CG8M	
317L	317L Stainless Steel	ASTM A351 Gr. CG3M	
A20	Alloy 20	ASTM A351 Gr. CN7M	1.4500
904L	904L Stainless Steel	Cast Grade	1.4584
CD4	CD4MCuN	ASTM A995 Gr. 1B	1.4517
HB	HASTELLOY B	ASTM A494 Gr. N7M	2.4882
HB2	HASTELLOY B 2	ASTM A494 Gr. N12MV	2.4685
HC	HASTELLOY C	ASTM A494 Gr. CW6M	2.4883
HC2	HASTELLOY C 276	ASTM A494 Gr. CW12MW	2.4686
I600	INCONEL	ASTM A494 Gr. CY40	2.4816
NI	Nickel	ASTM A494 Gr. CZ-100	2.4816
MO	MONEL	ASTM A494 Gr. M35-1	2.4365
TC2	Titanium (Comm. Pure)	ASTM B367 Gr. C2	3.7035
TC3	Titanium	ASTM B367 Gr. C3	3.7031
TC5	Titanium	ASTM B367 Gr. C5	
ZR2	Zirconium	ASTM B752 Gr. 702C	
ZR5	Zirconium	ASTM B752 Gr. 705C	

NOTES:

1. Other and special alloys available on request.

FLOATING BALL VALVES



Floating Ball Valve - Stem Packing

FluoroSeal® Reduced Port Floating Ball Valve - Uni-body

FluoroSeal® Full Port Floating Ball Valve - 2 Piece Body

DESIGN FEATURES

- Short Pattern
- Live loaded Chevron Packing stem seal for reduced fugitive emissions
- Blowout proof stem
- Anti-static grounding of all metallic parts
- Self relieving seats eliminate pressure build up in body cavity
- ISO 5211 mounting
- Available in Fire Safe option

CLASS AND SIZE RANGES

Floating Ball Valves — Unibody

- ANSI/ASME Class 150/300 Flanged Ends (1/2" to 6")

Floating Ball Valves — 2 Piece Body

- ANSI/ASME Class 150/300 Flanged Ends (1/2" to 12")

Table 1 - Available Materials

Code	Descriptions	ASTM Designation	DIN
WCB	Carbon Steel	ASTM A216 Gr. WCB	1.0619
LCB	Carbon St. Low Temp.	ASTM A352 Gr. LCB	1.6220
LCC	Carbon St. Low Temp.	ASTM A352 Gr. LCC	1.7219
304	304 Stainless Steel	ASTM A351 Gr. CF8	1.4308
304L	304L Stainless Steel	ASTM A351 Gr. CF3	1.4309
316	316 Stainless Steel	ASTM A351 Gr. CF8M	1.4408
316L	316L Stainless Steel	ASTM A351 Gr. CF3M	1.4409
317	317 Stainless Steel	ASTM A351 Gr. CG8M	
317L	317L Stainless Steel	ASTM A351 Gr. CG3M	
A20	Alloy 20	ASTM A351 Gr. CN7M	1.4500
904L	904L Stainless Steel	Cast Grade	1.4584
CD4	CD4MCuN	ASTM A995 Gr. 1B	1.4517
HB	HASTELLOY B	ASTM A494 Gr. N7M	2.4882
HB2	HASTELLOY B 2	ASTM A494 Gr. N12MV	2.4685
HC	HASTELLOY C	ASTM A494 Gr. CW6M	2.4883
HC2	HASTELLOY C 276	ASTM A494 Gr. CW12MW	2.4686
I600	INCONEL	ASTM A494 Gr. CY40	2.4816
NI	Nickel	ASTM A494 Gr. CZ-100	2.4816
MO	MONEL	ASTM A494 Gr. M35-1	2.4365
TC2	Titanium (Comm. Pure)	ASTM B367 Gr. C2	3.7035
TC3	Titanium	ASTM B367 Gr. C3	3.7031
TC5	Titanium	ASTM B367 Gr. C5	
ZR2	Zirconium	ASTM B752 Gr. 702C	

DESIGN AND TESTING STANDARDS

API 598
API 607
API 608
ASME B16.5
ASME B16.25
ASME B16.10
ISO 10497
ISO 15848-1 CO3
MSS SP-55
MSS SP-25
MSS SP-61

HF ALKYLATION PLUG VALVES - UOP LISTED

FluoroSeal® Class 300, HF Alkylation Plug Valve

DESIGN FEATURES

- Long Lasting Bubble Tight Sealing
- Adjustable In-Line & External Sealing
- Cavity Free
- Non-Lubricated
- Quarter Turn Operation
- Full Port and EZ-SEAL® HF Alkylation designs are available

CLASS AND SIZE RANGES

HF Alkylation Plug Valves — Standard Port

- ANSI/ASME Class 300 Screwed Ends (1/2" to 2")
- ANSI/ASME Class 300 Flanged Ends (1/2" to 24")

DESIGN AND TESTING STANDARDS

API 598
API 599
API 607
ASME B16.5
ASME B16.11
ASME B16.10
DIN EN 558-1
DIN EN 1092-1
DIN EN 12266
ISO 15848-1
MSS SP-55
MSS SP-61
MSS SP-25
PED
TA-LUFT

HF Alkylation Plug Valves — Full Round Port

- ANSI/ASME Class 300 Flanged Ends (3/4" to 10")

EZ Seal HF Alkylation Plug Valves

- ANSI/ASME Class 300 Flanged Ends (1/2" to 6")

STANDARD CONFIGURATION

Reduced Port Flanged End

- ASME Class 300 UOP approved 2-way flanged end reduced port sleeved plug valve with A494 M35-1 body and plug, PTFE sleeve, monel FS stem seals, A216 WCB cover, A193 B7M cover bolts/studs with A194 2HM nuts, lever or enclosed gear operator.

Reduced Port Threaded End

- ASME Class 300 UOP approved 2-way threaded end reduced port sleeved plug valve with A494 M35-1 body and plug, PTFE sleeve, monel FS stem seals, A216 WCB cover, A193 B7M cover bolts/studs with A194 2HM nuts, lever or enclosed gear operator.

EZ Seal Reduced Port Flanged End

- ASME Class 300 UOP approved 2-way flanged end reduced port sleeved plug valve EZ Seal single point adjustment. Valve to incorporate A494 M35-1 body and plug, PTFE sleeve, monel FS stem seals, A216 WCB cover, A193 B7M cover bolts/studs with A194 2HM nuts, lever or enclosed gear operator.

Reduced Port Socket Weld End

- ASME Class 300 UOP approved 2-way socket weld end reduced port sleeved plug valve with A494 M35-1 body and plug, PTFE sleeve, monel FS stem seals, A216 WCB cover, A193 B7M cover bolts/studs with A194 2HM nuts, lever or enclosed gear operator.

Full Round Port Flanged End

- ASME Class 300 UOP approved 2-way flanged end full port sleeved plug valve with A494 M35-1 body and plug, PTFE sleeve, monel FS stem seals, A216 WCB cover, A193 B7M cover bolts/studs with A194 2HM nuts, lever or enclosed gear operator.

CAST STEEL VALVES

FluoroSeal® Class 300, Gate Valve

FluoroSeal® Class 300, Swing Check Valve

DESIGN FEATURES

Gate Valves

- Ideal for viscous liquids
- Used as a shut off valve
- Easy to maintain and disassemble
- Available in large sizes

Globe Valves

- Available in straight and angle patterns
- Moderate to good throttling capability
- Simple to resurface or machine the seats
- Good shutoff capacity
- Shorter stroke

Check Valves

- Swing plate design
- No spring to wear
- Low friction losses
- Drip tight seating
- Prevents backflow
- Works as backup system
- Low maintenance
- Can be installed vertically or horizontally

CLASS AND SIZE RANGES

Bolted Cover Check Valves

- ASME/ANSI 150/300 Class Flanged or Butt Weld Ends (2″ to 48″)
- ASME/ANSI 600 Class Flanged or Butt Weld Ends (2″ to 36″)
- ASME/ANSI 900 Class Flanged or Butt Weld Ends (2″ to 24″)
- ASME/ANSI 1500 Class Flanged or Butt Weld Ends (2″ to 24″)
- ASME/ANSI 2500 Class Flanged or Butt Weld Ends (2″ to 12″)

Bolted Bonnet Gate Valves

- ASME/ANSI 150/300 Class Flanged or Butt Weld Ends (2″ to 48″)
- ASME/ANSI 600 Class Flanged or Butt Weld Ends (2″ to 36″)
- ASME/ANSI 1500 Class Flanged or Butt Weld Ends (2″ to 24″)
- ASME/ANSI 2500 Class Flanged or Butt Weld Ends (2″ to 12″)

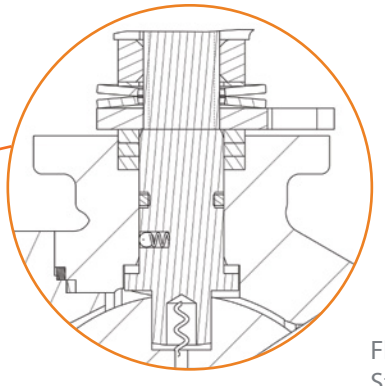
Bolted Bonnet Globe Valves

- ASME/ANSI 150 Class Flanged or Butt Weld Ends (2″ to 24″)
- ASME/ANSI 300 Class Flanged or Butt Weld Ends (2″ to 20″)
- ASME/ANSI 600 Class Flanged or Butt Weld Ends (2″ to 18″)
- ASME/ANSI 900 Class Flanged or Butt Weld Ends (2″ to 16″)
- ASME/ANSI 1500 Class Flanged or Butt Weld Ends (2″ to 12″)
- ASME/ANSI 2500 Class Flanged or Butt Weld Ends (2″ to 8″)

DESIGN AND TESTING STANDARDS

API 600
API 6FA
API 598
ANSI B16.10
ANSI B16.34
ANSI B16.25
ANSI B16.5
ANSI B16.47
ANSI B16.34
BS 1414 (Gate Valves)
BS 1873 (Globe Valves)
BS 1868 (Check Valves)
NACE MR0175

FLOATING BALL VALVE



Floating Ball Valve - Fire Safe Stem Packing

FluoroSeal® Class 150, Floating Ball Valve, 2 Piece Body

FluoroSeal® Floating Ball Valve, Uni-body

DESIGN AND TESTING STANDARDS

API 6D
API 607
API 598
ANSI B16.10
ANSI B16.34
ANSI B16.5
ANSI B16.25
ISO 10497
ISO 5211
ISO 15848-1
MSS-SP-55

DESIGN FEATURES

- Long Pattern
- Designed and tested in accordance to API 6D
- Standard live loaded stem seal for reduced fugitive emissions
- Anti-static grounding of all metallic parts
- Self-relieving seats eliminate pressure build up in body cavity
- Blowout proof stem
- Live Loaded Graphite Packing
- Fire Safe design to API 607 and ISO 10497
- ISO 5211 mounting

CLASS AND SIZE RANGES

Floating Ball Valves — Full Round Port, 2 Piece Body

- ASME/ANSI 150/300 Class Flanged or Butt Weld Ends (1/2" to 12")
- ASME/ANSI 600 Class Flanged or Butt Weld Ends (1/2" to 4")

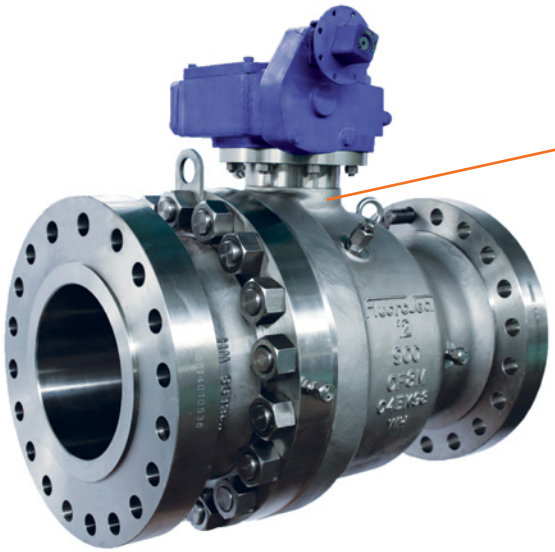
Floating Ball Valves — Reduced Port, Unibody

- ASME/ANSI 150/300 Class Flanged or Butt Weld Ends (1/2" to 6")

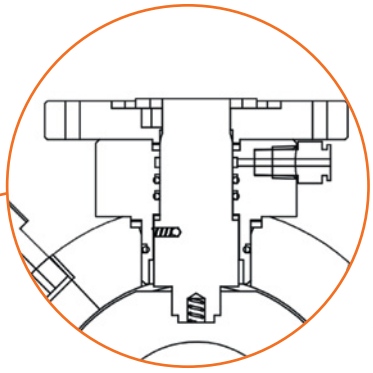
STANDARD CONFIGURATION

- ASTM A216 Gr. WCB Body and ASTM A351 Gr. CF8M Ball, Stem A182 F316, GF2P (Molecularly Enhanced PTFE) Seats
- ASTM A351 Gr. CF8M Body and Ball, ASTM A182 F316 Stem, GF2P (Molecularly Enhanced PTFE) Seats

2 PIECE TRUNNION-MOUNTED BALL VALVE



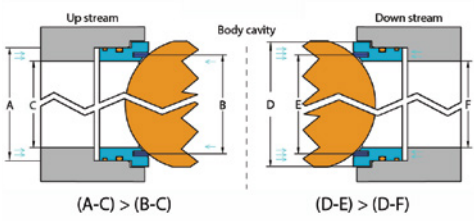
FluoroSeal® Class 900, 2 Piece Trunnion-Mounted Ball Valve



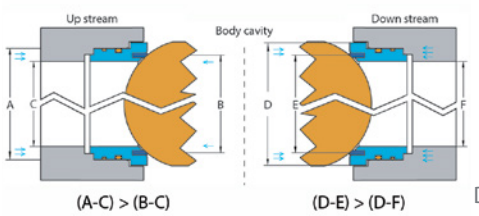
2 Piece Trunnion-Mounted Ball Valve - Stem Packing

DESIGN FEATURES

- Trunnion-Mounted Ball
- Designed and tested in accordance to API 6D
- Engineered stem seal for reduced fugitive emissions
- Single piston and double piston seats
- Emergency sealing points for seats and packing
- Trunnion and supporting bearings for reduced torque at high pressure
- Fire Safe Design to API607, ISO 10497, and API6FA
- Blowout proof stem
- Anti-static grounding of all metallic parts
- ISO 5211 mounting
- Emergency Seal and injection ports



Single Piston Effect



Double Piston Effect

CLASS AND SIZE RANGES

2 piece Trunnion-Mounted Ball Valve — Full Port

- ASME/ANSI 150/300/600 Class Flanged Ends (2" to 24")
- ASME/ANSI 900 Class Flanged Ends (2" to 16")
- ASME/ANSI 1500 Class Flanged Ends (2" to 12")

STANDARD CONFIGURATION

- 2Pcs Raised Face Flanged, Full Port Trunnion Ball Valve , Body and End Cap in ASTM A216 Gr. WCB/A352 Gr. LCB, Trunnion Seat Ring in ASTM Gr. A105/ LF2 + 0.075ENP, RPTFE Seat, Bolt ASTM A193 Gr. B7/A320 Gr. L7, Nut ASTM A194 Gr. 2H/A194 Gr. 7, Ball and Stem in ASTM A182 Gr. F316, Fire Safe, Soft Sealing in Viton/ HNBR, Wrench or Gear Operated.

DESIGN AND TESTING STANDARDS

API 6D
API 6FA
API 607
API 598
ANSI B16.10
ANSI B16.34
ANSI B16.5
ISO 5211
ISO 10497
NACE MR0175

3 PIECE TRUNNION-MOUNTED BALL VALVES

FluoroSeal® 3-piece Bolted Body Trunnion-Mounted Ball Valve

FluoroSeal® 3-piece Welded Body Trunnion-Mounted Ball Valve

DESIGN AND TESTING STANDARDS

API 6D
API 6FA
API 607
API 598
ISO 10497
ANSI B16.10
ANSI B16.34
ANSI B16.5
ANSI B16.47
ANSI B16.25
NACE MR0175

DESIGN FEATURES

- Designed and tested in accordance to API 6D
- Trunnion-Mounted Ball
- Floating Seat Rings
- Fire Safe design
- Twin Ball Double Block and Bleed
- Sealing and Fire-Safe Features
- Single Piston Effect or Double Piston Effect (Optional)
- Independent Ball And Stem
- Low Emission Valves
- Anti Blow-Out Stem
- Anti-Static design
- Stem Sealing
- Emergency Sealant Injection

BDB AND BW3 VALVE COMPARISON

Bolted body ball valves (BDB) and fully-welded ball valves (BW3) are very similar in many design features; however it is important to consider some key factors to determine the best valve for the application. These factors are mainly internal parts exposure to corrosive media, location (accessibility and available space), installation site (under or above ground), pipeline pressures and stresses, shipping costs (weight and size), and maintenance requirements.

Below is an overview of the main differences between designs:

BDB Valves

- Lower acquisition costs*
- Simplified on-site maintenance
- ASME Class 150 to ASME Class 2500
- Size Range: 2" up to 56" (Full Bore)

*Applicable for standard configuration only

BW3 Valves

- Welded joints reduce potential leakage paths
- Compact body design reduces overall size and weight
- Ideal for underground and buried service
- Maintenance-free
- ASME Class 150 to ASME Class 600
- Size Range: 6" up to 60" (Full Bore)

OPTIONAL EXTENDED STEM

For valves to be installed in buried service lines, FluoroSeal® Trunnion Mounted Ball Valves can be supplied complete with suitable stem extensions. All drain, vent and emergency sealant lines are firmly attached to the stem extension.

STANDARD CONFIGURATION

BDB & BW3 - Outer Trunnion (SS1)

- 3Pcs Raised Face Flanged, Full Bore/Reduced Bore Trunnion Ball Valve, Body and End Cap in ASTM A182 F316, Trunnion Seat Ring in ASTM A182 F316, RTFE(150/300)/DEVLON(600+) Seat, ASTM A193 B8M Bolt, ASTM A194 8M Nut, ASTM A182 F316 Ball, Stem in ASTM A182 F51 or A564 17-4 PH, Graphite + 304 Braided Fire Safe, and Wrench or Gear Operated.

BDB & BW3 - Outer Trunnion (CS1)

- 3Pcs Raised Face Flanged, Full Bore/Reduced Bore Trunnion Ball Valve, Body and End Cap in ASTM A105, Trunnion Seat Ring in ASTM A105+0.075ENP, RTFE(150/300)/DEVLON(600+) Seat, ASTM A193 B7M Bolt, ASTM A194 2HM Nut, ASTM A105+0.075ENP Ball, Stem in ASTM A105+ENP or AISI 4140+0.075ENP, Graphite + 304 Braided Fire Safe, and Wrench or Gear Operated.

BDB & BW3 - Inner Trunnion (CS2)

- 3Pcs Raised Face Flanged, Full Bore/Reduced Bore Trunnion Ball Valve, Body and End Cap in ASTM A350 LF2, Trunnion Seat Ring in ASTM A350 LF2+0.075ENP, RTFE(150/300)/DEVLON(600+) Seat, ASTM A320 L7M Bolt, ASTM A194 7M Nut, ASTM A350 LF2+0.075ENP Ball, Stem in ASTM A350 LF2+ENP or AISI 4140+0.075ENP, Graphite + 304 Braided Fire Safe, and Wrench or Gear Operated.

BDB & BW3 - Inner Trunnion (SS1)

- 3Pcs Raised Face Flanged, Full Bore/Reduced Bore Trunnion Ball Valve, Body and End Cap in ASTM A182 F316, Trunnion Seat Ring in ASTM A182 F316, RTFE(150/300)/DEVLON(600+) Seat, ASTM A193 B8M Bolt, ASTM A194 8M Nut, ASTM A182 F316 Ball, Stem in ASTM A182 F51 or A564 17-4 PH, Graphite + 304 Braided Fire Safe, and Wrench or Gear Operated.

Table 1 - Available Materials

Code	Descriptions	ASTM Designation	DIN
CS1	Carbon Steel	ASTM A105	1.0460
CS2	Low Temp. Carbon Steel	ASTM A350 Gr. LF2	1.0566
CS3	Low Temp. Carbon Steel	ASTM A350 Gr. LF3	1.5637
CS4	Low Temp. Carbon Steel	ASTM A350 Gr. LF6	
SS1	316 Stainless Steel	ASTM A182 Gr. F316	1.4401
A20	Austenitic Stainless Steel	ASTM B 462, UNS N08020	2.466
F44	Austenitic Stainless Steel	ASTM A182 Gr. F44	1.4547
F55	Super Duplex F55	ASTM A182 Gr. F55	1.4501
825	Nickel Incoloy Alloy 825	ASTM B564, UNS N08825	
K40	Nickel Alloy Monel K400	ASTM B164 UNS N04400	2.4360
K50	Monel K500	ASTM B865 UNS N05500	2.4375
TF2	Titanium	ASTM B338 Gr. 2	3.7035
625	Nickel Alloy Inconel 625	ASTM B564 UNS N06625	2.4856
XXX	Special		

CLASS AND SIZE RANGES

3 Piece Bolted Body Outer or Inner Trunnion-Mounted Ball Valves

ASME/ANSI 150/300/600 Class Flanged or Butt Weld Ends (2" to 56")
ASME/ANSI 900 Class Flanged or Butt Weld Ends (2" to 36")
ASME/ANSI 1500 Class Flanged or Butt Weld Ends (2" to 24")
ASME/ANSI 2500 Class Flanged or Butt Weld Ends (2" to 12")

3 Piece Fully Welded Outer or Inner Trunnion-Mounted Ball Valves — Full Bore

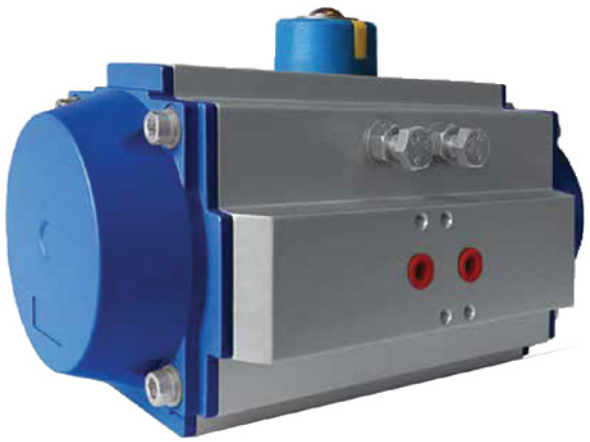
ASME/ANSI 150/300/600 Class Flanged or Butt Weld Ends (6" to 60")

3 Piece Fully Welded Outer or Inner Trunnion-Mounted Ball Valves — Reduced Bore

ASME/ANSI 150/300/600 Class Flanged or Butt Weld Ends (8x6" to 36x30")

FluoroSeal® 3-piece Twin Ball Trunnion-Mounted Double Ball Valve

PNEUMATIC ACTUATOR



FluoroSeal® Actuator Model FS095

DESIGN AND TESTING STANDARDS

ISO 5211
DIN 3337
VDI/VDE 3845
PED

DESIGN FEATURES

- Long term reliability in critical isolation and high cycling services
- High precision is achieved through multiple bearings and guides on pistons and racks
- Preloaded Spring Cartridges for ease of installation and safe maintenance
- Innovative universal drive shaft
- Multifunctional position indicator accepting a wide range of accessories
- Compact and modern design for various application environments
- Dual piston rack and pinion design allows for compactness, symmetrical mounting, high cycle life and rapid operation. Reverse operation achieved through piston inversion.
- Two external travel stop adjustments allow for a more accurate valve alignment through the independent +/- 4° adjustment, in either the closed or open position
- One piece pinion shaft provides blowout protection and maximum cycle life.

CLASS AND SIZE RANGES

Pneumatic Actuator

- 115 Psig Max Air Supply Pressure
- Smallest Torque Output 27 in.lb (3 N.m)
- Maximum Torque Output 110,652 in.lb (12502 N.m)

DECLUTCHABLE MANUAL OVERRIDE

FluoroSeal® FMO-C series declutchable override gear box

DESIGN AND TESTING STANDARDS

ISO 5211
IP65

DESIGN FEATURES

- Compact and simple design
- Light weight
- Manufactured with cast iron housing
- ISO 5211 direct mount
- Use in manual or pneumatic declutchable pin
- Filled with special lubricant
- Weatherproof: IP65

CLASS AND SIZE RANGES

Declutchable Override Gear Box

- Smallest Torque Output 2,655 in lbs (300 Nm)
- Maximum Torque Output 195,601 in lbs. (22,100 Nm)

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All products sent out will be carefully examined, counted and packed. The cost of any special packing or special handling caused by Buyer's requirements or requests shall be added to the amount of the order. No claim for shortages will be allowed unless made in writing within ten (10) days of receipt of a shipment. Claims for products damaged or lost in transit should be made to the carrier, as FluoroSeal Inc.'s responsibility ceases, and title passes, on delivery to the carrier.

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Orders covering special or non-standard products are not subject to cancellation except on such terms as FluoroSeal Inc. may specify on application.

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Prices and designs are subject to change without notice. All prices are F.O.B. Point of Shipment, unless otherwise stated.

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The amount of any sales, excise or other taxes, if any, applicable to the products, shall be added to the purchase price and shall be paid by Buyer unless Buyer provides FluoroSeal Inc. with an exemption certificate acceptable to the taxing authorities.

NUCLEAR PLANTS

Where the products, engineering design or fabrication is for nuclear plant applications, Buyer agrees (a) to take all necessary steps to add FluoroSeal Inc. as an insured supplier under the American Nuclear Insurers (ANI) pool and under the Mutual Atomic Energy Reinsurance Pool (MAERP) for property damage and liability insurance and if necessary steps could have been taken, but are not taken, Buyer shall hold FluoroSeal Inc. harmless against all such losses which could have been thus covered; (b) Buyer agrees to hold FluoroSeal Inc. harmless with respect to any personal injury or death, property damage or any other loss in a nuclear incident which is caused directly or indirectly by defective design, material, or workmanship, furnished by FluoroSeal Inc. and which is covered by insurance maintained by Buyer (or which could be so covered but with respect to which Buyer has elected to self-insure), and further agrees to waive subrogation by its carriers of such insurance against FluoroSeal Inc.; (c) as to nuclear hazards for which Buyer cannot obtain insurance coverage, the liability of FluoroSeal Inc. for any personal injury or death, property damage or any other loss directly caused by defective design, material, or workmanship furnished by FluoroSeal Inc. shall not exceed the value of the material furnished by FluoroSeal Inc. at the time of the loss occurrence.

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