

Proven Performance & Reliability



Fossil Power Systems Inc.





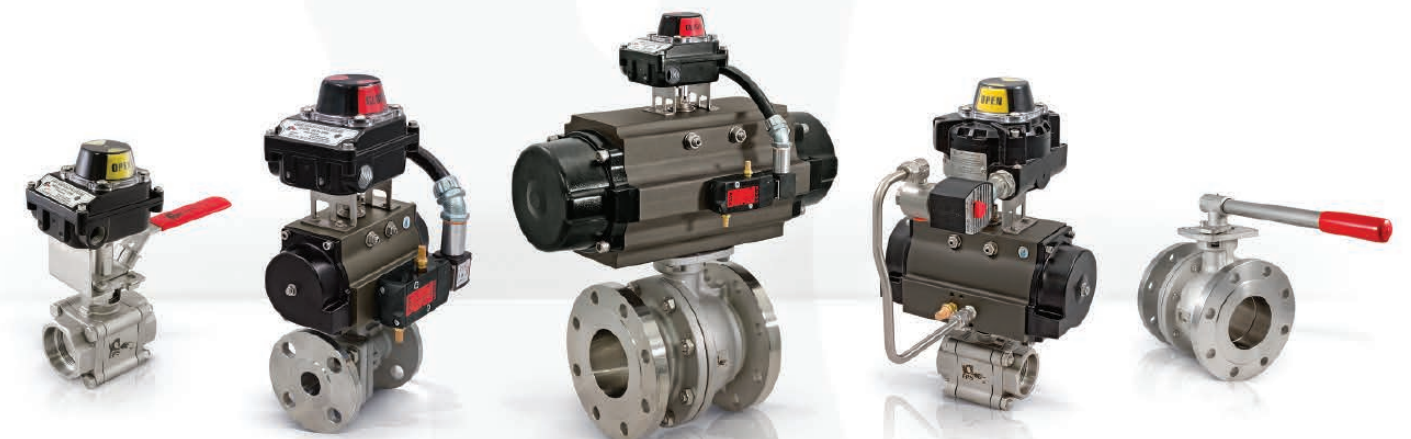
THE COMPANY

Fossil Power Systems (FPS), is a Canadian company that was founded in 1981. From humble beginnings as a designer and manufacturer of ignitors, flame scanners and drum level probes, FPS has evolved to become a worldwide leader in the design and manufacturing of firing equipment and safety systems for the power generation, pulp and paper, and petrochemical industries.

FPS developed many of the technologies that are currently being used throughout the industry on flame scanning, gas/oil ignition and water level measurement equipment. Our products are specified on new construction and retrofit projects around the world. FPS has products installed in over 70 countries, all developed, manufactured and tested in our factory in Nova Scotia, Canada.

FPS is one of very few companies in the world that can provide complete boiler gas conversion expertise, with the ability to provide the correct ignition equipment, flame scanners, natural gas piping design/fabrication, burner management system (BMS), combustion control system (CCS), and manage local approvals.

FPS continues to be the industry leader in technology advancement and we are grateful for the opportunity to **continue making boilers cleaner, safer and more reliable.**



LOCATION

FPS is located in Dartmouth, Nova Scotia, Canada. A 45,000 ft² facility in Dartmouth houses all project management and design engineering, as well as manufacturing/testing of all high pressure columns, fuel piping systems, ignition equipment, valves, control systems and electronic products.

FPS also has an engineering and sales office in Edmonton, Alberta and many authorized sales distributors worldwide.

Since 1987, FPS has maintained an exclusive marketing agreement with Babcock & Wilcox, for all ignition product sales and service in the USA.

FPS

V A L V E S

SAFETY SHUT-OFF VALVES

FPS valves are approved to the industry's top standards including: API 607 6th Edition Fire Safe, Factory Mutual (FM) Class 7400 Liquid and Gas Safety Shut-off Valves, CSA 3.16/CGA Interim Requirement No. 60 Lever Operated Gas Shut-off Valves, CGA 3.9 Automatic Safety Shut-off Gas Valves, CSA 6.5/ANSI Z21.21 Automatic Valves for Gas Appliances, and CRN registration in all Canadian Provinces.



FPS VALVE OVERVIEW

FPS is a leader in reliable, cost-effective, high performance shut-off valve technology. Our automatic and manual shut-off valves are installed around the world in pulp and paper, petrochemical and power boiler applications. FPS valves provide low maintenance, leak proof and fail safe operation.

Blow Out Proof Stem

Extra high cycle life: maintenance free, live loaded, triple sealing, high cycle stem packing systems provide extra long service life.

Leak Watch Window

Early warning of stem leak.

316 SS Ends

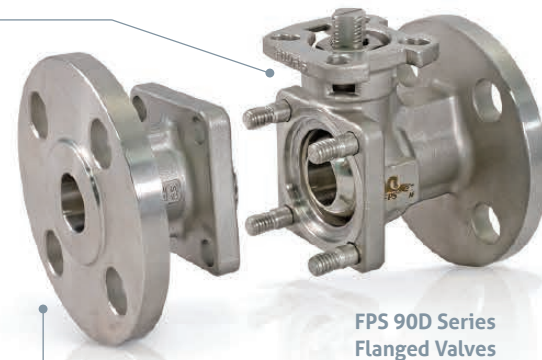
NPT, Socket Weld connections available on 88 Series. 150lb and 300lb Flanges available on 90D Series.



Fail Safe Spring Return Actuator
On loss of air or control power, actuator will fully return the valve to its fail safe position.

Direct Actuator To Valve Mounting
No couplings.

Variety of Solenoid Options Available
Refer to options and configuration section of this brochure.



FPS 90D Series Flanged Valves

**Fully Encapsulated Body Seals**

Bi-directional valve seals prevent leaks in both directions. 3-piece design allows for ease of maintenance.

Series 88:
3 Piece
Valve Body**FPS CSA APPROVED VALVES**

FPS Valves are approved for use on CSA B149.3 systems. Our CSA valve assemblies are registered with CSA and have undergone operational, durability, electrical and leak testing to comply with the following standards:

Manual Valves:

- CGA Interim Requirement No. 60 Lever Operated Gas Shut-off Valves (This standard covers all requirements of CSA 3.16 but specifies a higher allowable process pressure).
- CSA 3.16-2015 Lever Operated Non-Lubricated Gas Shut-Off Valves.



FPS 90D Series Valve

FPS FACTORY MUTUAL (FM) APPROVED VALVES

FPS FM Valves are registered with Factory Mutual, a requirement for any shut-off valve to be installed in an FM insured commercial or industrial application. Our FM valves are tested and approved to the following standard:

FM/CSA Automatic Valve Dual Approval:

FPS automatic valves are available with both FM class 7400 and CSA 6.5 approval.

UL APPROVED VALVES

FPS "9650" series manual valves and automatic safety shut-off valves have been tested in accordance with and conform to ULC/ORD-C842 for use with No. 2 fuel oil. These valves are for use on CSA 3.139 systems. FPS valves can adhere to MR0175 for NACE compliance.



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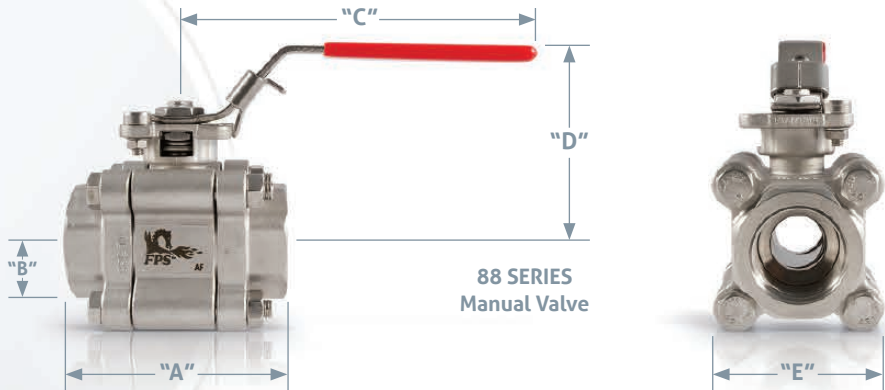
88 SERIES (NPT & SW)

VALVE DIMENSIONS

88 SERIES AUTOMATIC VALVE DIMENSIONS



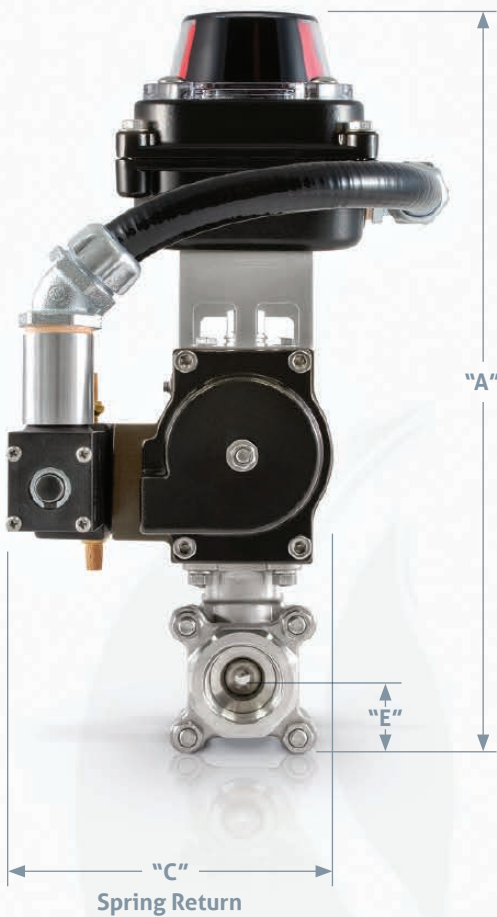
Size	CV	"A"*** mm (in)	"B" Spring Return mm (in)	"C"*** mm (in)	"D" mm (in)	"E" mm (in)	Weight kg (lbs)
1/4"	8	282 (11.1)	188 (7.4)	159 (6.25)	74.9 (2.95)	26.2 (1.03)	5.4 (11.9)
3/8"	8	282 (11.1)	188 (7.4)	159 (6.25)	74.9 (2.95)	26.2 (1.03)	5.4 (11.9)
1/2"	8	282 (11.1)	188 (7.4)	159 (6.25)	74.9 (2.95)	26.2 (1.03)	5.4 (11.9)
3/4"	15	282 (11.1)	188 (7.4)	159 (6.25)	73.1 (2.88)	26.2 (1.03)	5.9 (13)
1"	34	292 (11.49)	188 (7.4)	159 (6.25)	86.6 (3.41)	32.6 (1.28)	7.6 (16.7)
1-1/4"	56	326 (12.83)	204 (8.03)	178 (7.0)	106 (4.17)	34 (1.34)	8.3 (18.2)
1-1/2"	85	358 (14.1)	250.8 (9.87)	197 (7.75)	109 (4.29)	38.6 (1.52)	11.8 (26.0)
2"	125	378 (14.88)	250.8 (9.87)	197 (7.75)	127 (5.0)	42.9 (1.69)	13.3 (29.3)



88 SERIES MANUAL VALVE DIMENSIONS

Size	CV	"A" mm (in)	"B" mm (in)	"C" mm (in)	"D" mm (in)	"E" mm (in)	Weight kg (lbs)
1/4"	8	74.9 (2.95)	26.2 (1.03)	133.3 (5.2)	73.9 (2.91)	51 (2.01)	0.89 (1.96)
3/8"	8	74.9 (2.95)	26.2 (1.03)	133.3 (5.2)	73.9 (2.91)	51 (2.01)	0.88 (1.94)
1/2"	8	74.9 (2.95)	26.2 (1.03)	133.3 (5.2)	73.9 (2.91)	51 (2.01)	0.83 (1.82)
3/4"	15	74.9 (2.95)	26.2 (1.03)	133.3 (5.2)	73.9 (2.91)	51 (2.01)	0.84 (1.85)
1"	34	86.6 (3.40)	32.6 (1.28)	133.3 (5.2)	73.9 (2.91)	61.4 (2.42)	1.50 (3.31)
1-1/4"	56	106 (4.17)	34 (1.34)	172.7 (6.8)	99 (3.9)	67.8 (2.67)	2.17 (4.78)
1-1/2"	85	109 (4.29)	38.6 (1.52)	172.7 (6.8)	99 (3.9)	77 (3.03)	4.27 (9.41)
2"	125	127 (5)	42.9 (1.69)	214.6 (8.45)	126.7 (5)	86.5 (3.4)	5.30 (11.68)

* Note: Height Dimension "A" Shown for Watertight Limit Switch. For Assemblies with Explosion Proof Limit Switch add 25.4 mm (1") to Dimension "A".
** Note: Dimension "C" Approximate. Dimension varies depending on solenoid used.



FPS

90D SERIES (150# & 300#)

AUTOMATIC VALVE DIMENSIONS



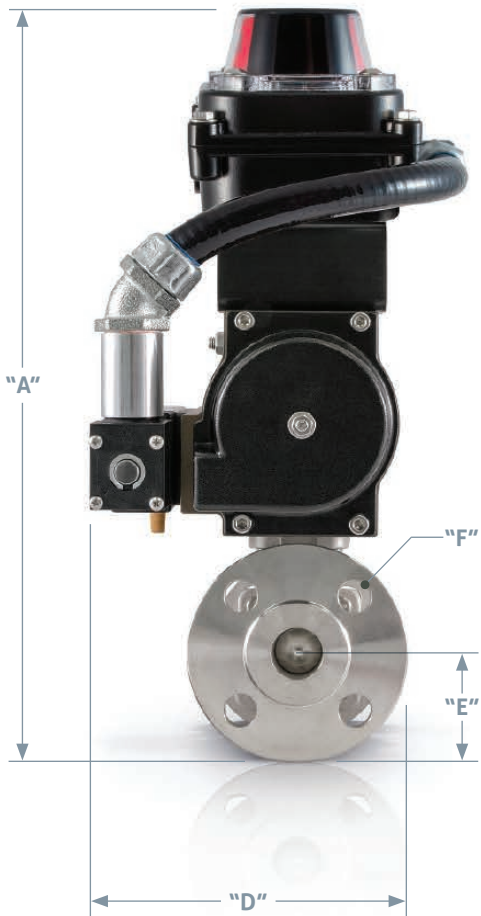
90D SERIES AUTOMATIC VALVE DIMENSIONS

Size	CV	"A"* mm (in)	"B" mm (in)	"C" mm (in)	"D"* mm (in)	"E" mm (in)	"F" Bolts			Weight kg (lbs)
							No.	F1 Dia. of Holes	F2 Dia. of Pattern	
1/2"	12	326 (12.84)	195 (7.8)	108.44 (4.3)	127 (5)	45 (1.78)	4	16 (0.62)	60 (2.38)	5.2 (11.5)
3/4"	32	335 (13.2)	195 (7.8)	117.56 (4.62)	133 (5.25)	49.3 (1.94)	4	16 (0.62)	70 (2.75)	5.6 (12.3)
1"	70	348 (13.7)	204 (8)	127.36 (5.01)	137 (5.38)	54 (2.12)	4	16 (0.62)	80 (3.12)	7.2 (15.9)
1-1/2"	240	408 (16.06)	251 (9.87)	165.68 (6.52)	152 (6)	63.6 (2.5)	4	16 (0.62)	98 (3.88)	13 (28.7)
2"	410	454 (17.74)	350 (13.8)	178.84 (7.04)	178 (7)	76.35 (3)	4	20 (0.75)	120 (4.75)	20.6 (45.5)
2-1/2"	680	485 (19.09)	350 (13.8)	192 (7.56)	229 (9)	88.89 (3.5)	8	20 (0.75)	140 (5.5)	25.7 (56.7)
3"	940	540 (21.26)	404 (15.9)	203 (8)	229 (9)	95.63 (3.76)	8	20 (0.75)	152 (6)	38 (86)
4"	1740	605 (23.82)	488 (19.2)	228 (9)	251 (9.88)	114.5 (4.5)	8	20 (0.75)	191 (7.5)	59.4 (130.9)
6"	5000	729 (28.7)	640 (25.2)	393 (15.5)	305 (12)	140 (5.5)	10	23 (0.88)	241 (9.5)	127.3 (280.6)

150#

Size	CV	"A"* mm (in)	"B" mm (in)	"C" mm (in)	"D"* mm (in)	"E" mm (in)	"F" Bolts			Weight kg (lbs)
							No.	F1 Dia. of Holes	F2 Dia. of Pattern	
1/2"	12	329 (12.95)	195 (7.8)	139.75 (5.5)	191 (7.5)	47.75 (1.88)	4	16 (0.62)	60 (2.38)	5.7 (12.6)
3/4"	32	355 (14)	195 (7.8)	150.5 (5.9)	196 (7.7)	58.75 (2.31)	4	16 (0.62)	70 (2.75)	7.3 (16.1)
1"	70	360 (14.2)	204 (8)	165.5 (6.5)	203 (8)	62 (2.44)	4	16 (0.62)	80 (3.12)	9.3 (20.5)
1-1/2"	240	423 (16.65)	251 (9.87)	191 (7.5)	226 (8.9)	77.75 (3.06)	4	16 (0.62)	98 (3.88)	16.6 (36.6)
2"	410	460 (18.1)	350 (13.8)	216 (8.5)	252 (9.9)	83 (3.27)	4	20 (0.75)	120 (4.75)	24 (52.9)
2-1/2"	680	501 (19.72)	350 (13.8)	240 (9.5)	264 (10.4)	95.5 (3.76)	8	20 (0.75)	140 (5.5)	31.1 (68.6)
3"	940	550 (21.65)	404 (15.9)	282 (11.1)	300 (11.8)	105 (4.13)	8	20 (0.75)	152 (6)	46 (101.4)
4"	1740	618 (24.33)	488 (19.2)	302 (11.9)	320 (12.6)	127 (5.0)	8	20 (0.75)	191 (7.5)	76.6 (160)
6"	5000	748 (29.45)	640 (25.2)	403 (15.9)	363 (14.3)	158.5 (6.24)	10	23 (0.88)	241 (9.5)	151.7 (334.4)

300#



* Note: Height Dimension "A" Shown for Watertight Limit Switch. For Assemblies with Explosion Proof Limit Switch add 25.4 mm (1") to Dimension "A".
** Note: Dimension "D" Approximate. Dimension varies depending on solenoid used.

FPS

90D SERIES

MANUAL VALVE DIMENSIONS



90D SERIES MANUAL VALVE DIMENSIONS



Size	CV	"A" mm (in)	"B" mm (in)	"C" mm (in)	"D" mm (in)	"E" Bolts			Weight kg (lbs)	150 #
						No.	E1 Dia. of Holes	E2 Dia. of Pattern		
1/2"	12	108 (4.3)	45 (1.75)	165 (6.5)	82.7 (3.3)	4	16 (0.62)	60 (2.38)	1.81 (4)	
3/4"	32	117 (4.6)	49 (1.94)	165 (6.5)	87.2 (3.4)	4	16 (0.62)	70 (2.75)	2.19 (4.8)	
1"	70	127 (5)	54 (2.12)	165 (6.5)	94.8 (3.7)	4	16 (0.62)	80 (3.12)	2.91 (6.4)	
1-1/2"	240	165 (6.5)	64 (2.5)	262 (10.3)	147.1 (5.8)	4	16 (0.62)	98 (3.88)	6.4 (14.1)	
2"	410	178 (7)	76 (3)	262 (10.3)	154.6 (6.1)	4	20 (0.75)	120 (4.75)	9.19 (20.3)	
2-1/2"	680	190 (7.5)	89 (3.5)	262 (10.3)	174 (6.9)	8	20 (0.75)	140 (5.5)	14.3 (31.5)	
3"	940	204 (8)	96 (3.75)	365 (14.4)	178.7 (7)	8	20 (0.75)	152 (6)	19.5 (43)	
4"	1740	229 (9)	115 (4.5)	365 (14.4)	203.2 (8)	8	20 (0.75)	191 (7.5)	31.0 (68.3)	
6"	5000	394 (15.5)	140 (5.5)	750 (29.5)	276.7 (10.9)	10	23 (0.88)	241 (9.5)	75.0 (165.3)	

Size	CV	"A" mm (in)	"B" mm (in)	"C" mm (in)	"D" mm (in)	"E" Bolts			Weight kg (lbs)	300 #
						No.	E1 Dia. of Holes	E2 Dia. of Pattern		
1/2"	12	140 (5.5)	49 (1.94)	165 (6.5)	84.7 (3.3)	4	16 (0.62)	60 (2.38)	2.3 (5.07)	
3/4"	3	152 (6)	60 (2.36)	165 (6.5)	99.5 (3.9)	4	16 (0.62)	70 (2.75)	3.9 (8.60)	
1"	70	165 (6.5)	63 (2.48)	165 (6.5)	99.5 (3.9)	4	16 (0.62)	80 (3.12)	5.0 (11.02)	
1-1/2"	240	190 (7.5)	79 (3.11)	262 (10.3)	147.1 (5.8)	4	16 (0.62)	98 (3.88)	10.05 (22.16)	
2"	410	216 (8.5)	83 (3.27)	262 (10.3)	154.6 (6.1)	4	20 (0.75)	120 (4.75)	12.56 (27.69)	
2-1/2"	680	241 (9.5)	97 (3.82)	262 (10.3)	174 (6.9)	8	20 (0.75)	140 (5.5)	19.72 (43.48)	
3"	940	282 (11.1)	114 (4.49)	365 (14.4)	179 (7)	8	20 (0.75)	152 (6)	27.50 (60.63)	
4"	1740	305 (12)	127 (5.0)	365 (14.4)	203 (8)	8	20 (0.75)	191 (7.5)	44.20 (97.44)	
6"	5000	403 (15.8)	159 (6.25)	750 (29.5)	276.7 (10.9)	10	23 (0.88)	241 (9.5)	99.40 (219.14)	

T-Pipe Handle - 3" to 6"

Stainless Steel Handle with Vinyl Sleeve - ½" to 2-½"



FPS 88 & 90D SERIES VALVES
AMBIENT PRESSURE & TEMPERATURE RATINGS

Valve Approval	Maximum Operating Pressure*	Maximum Ambient Operating Temperature*	Minimum Ambient Operating Temperature*
CSA Automatic Gas Valves	1380kPa (200psig)	50°C (122°F)	-45°C (-49°F)
CSA Manual Gas Valves	1380kPa (200psig)	65°C (149°F)	-40°C (-40°F)
FM Automatic Liquid & Gas Valves	1380kPa (200psig)	60°C (140°F)	-10°C (14°F)
All Other Valves	Consult Factory	Consult Factory	-45°C (-49°F)

* Note: CSA and FM pressure and temperature ratings are lower than actual maximum operating conditions. Please consult factory for more information.

FPS

88 & 90D SERIES

BILL OF MATERIALS



88 & 90D SERIES BILL OF MATERIALS

Item	Qty.	Description	Material	
1	1	Anti-Blowout Stem	SS316	Body
2	1	Ball	SS316	
3	1	Body	CF8M	
4	2	Seal	PTFE, RTFE*	
5	2	Joint Gasket	Graphite	
6	2	End Cap	CF8M	
7	4	Bolt	SS304	
8	4	Nut	SS304	
9	1	Pyramidal Stem Seal	RTFE	
10	1	O-Ring	VITON	
11	1	Chevron™ V-Ring Stem Packing	Graphite	Stem
12	1	Gland	15% Glass Fiber Filled PTFE	
13	1	Anti-Static Gland	SS304	
14	1	Belleville™ Washer	SS304	
15	1	Lock Saddle	SS304	
16	1	Stem Nut	SS304	
17	1	Anti Static Device	SS304	

* Standard seats listed. Consult factory for additional seat options.

LEAK PROOF STEM

9. Pyramidal Stem with Stem Seal

First stage of defense against leakage. 45 degree stem slope accompanied by the stem seal effectively blocks all leak paths during rotation.

10. O-Ring Stem Packing

Second stage of defense against leakage. Enhances stem seal and maintains stem alignment, ensuring extra long service life.

11. V-Ring Stem Packing

Third Stage of defense against leakage. Multi-layered V-Ring Chevron™ Packing expands sideways when compressed, blocking all air pockets to prevent a leak path.

12. Gland Bushing

RTFE bushing reduces stem seal friction.

13. Gland

Made of stainless steel, equally distributes compressive force on the packing and seal.

14. Belleville™ Washer

Automatic adjustment of stem sealing system compression for normal wear, pressure, and temperature fluctuations.

15. Lock Saddle

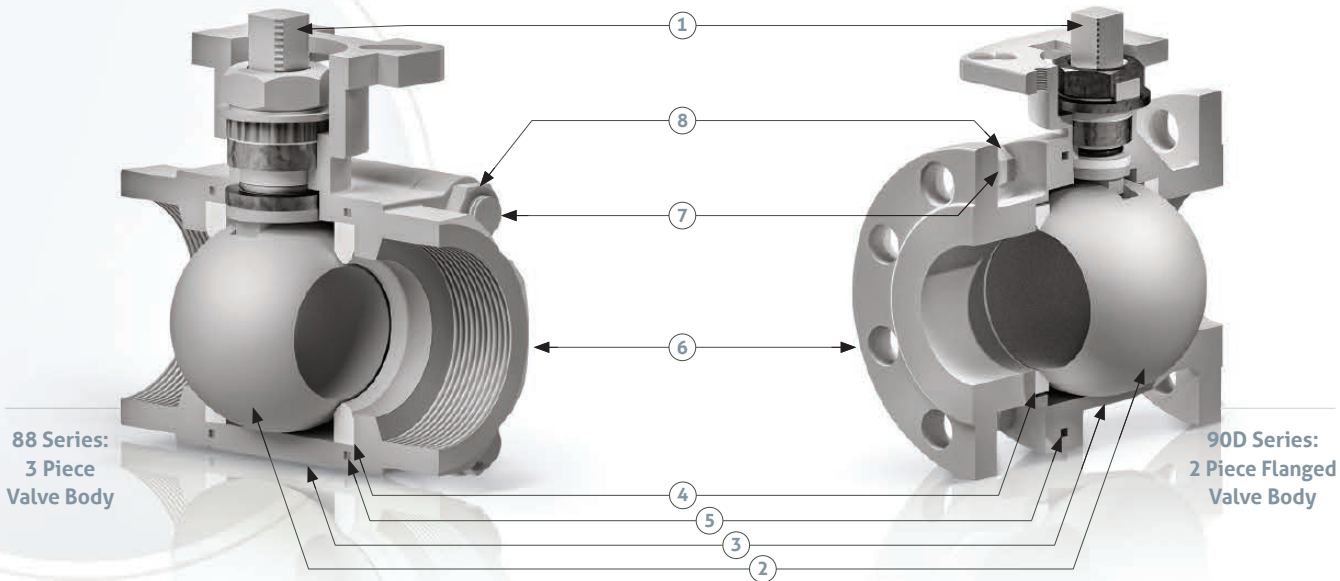
Stabilizes stem nut to prevent loosening during operation.

16. Stem Nut

Compresses entire stem system to block leakage.

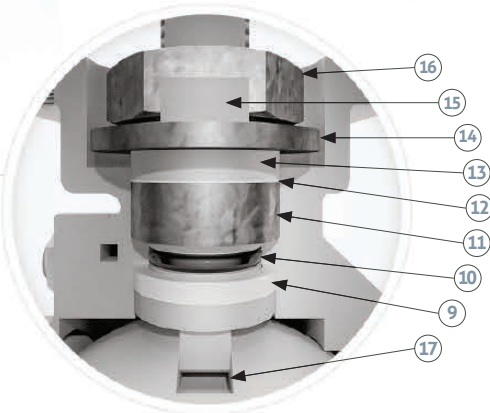
17. Anti-Static Device

Ball-to-stem anti-static device.



88 Series:
3 Piece
Valve Body

90D Series:
2 Piece Flanged
Valve Body



Valve Stem Sealing Detail

FPS

V A L V E S

OPTIONS & CONFIGURATIONS

88 SERIES END CONNECTIONS

NPT End Connection



Socketweld End Connection



* End connection material available: WCB or CP8M.

90D SERIES END CONNECTIONS

150# Flange Connection



300# Flange Connection



FPS SPRING RETURN ("FAIL-SAFE") ACTUATORS

FPS Actuators will fully return the valve to its fail safe position on loss of air or control power. Actuator can be configured to fail open or fail close.

FPS ACTUATOR FEATURES:

- Bi-Directional Pinion Travel Stops
- Low Air Pressure 50 psig - 70 psig
- Standard Air Pressure 70 psig - 120 psig
- Direct Actuator to Valve Mounting, No Brackets or Couplings
- Suitable for Low Temperature Operation -45°C/-49°F
- Stem Extensions Available for High Temperature Applications

Alternate options available. Please consult factory for more information.



Low Pressure Actuator



Standard Pressure Actuator

LIMIT SWITCH OPTIONS & FEATURES

- Water-tight (IP67)
- Mechanical Switches: 2-SPDT
- Contact Rating: 250VAC-15A, 125VDC-0.6A, 250VDC-0.3A
- Explosion Proof, Dust-Ignition Proof and Flame Proof
- **FM/US:**
 - Class I, Division 1, Groups A, B, C, D; IP67
 - Class II, Division 1, Groups E, F, G, Class III, Division 1; IP67
 - Class I, Zone 1, AEx db IIC T5 Gb; IP67
- **FM/C:**
 - Class I, Division 1, Groups C and D; IP67
 - Class II/III Division 1, Groups E, F, G; IP67
 - Class I, Zone 1, AEx db IIC T5 Gb; IP67



Explosion Proof Limit Switch



Standard Watertight Limit Switch



ASCO™ Solenoid Inline Spool Style

SOLENOID OPTIONS & FEATURES:

Body Material	316 Stainless Steel, Aluminum
Voltage	12VDC, 24VDC, 120VAC, 240 VAC
Enclosure Type	Explosion Proof, Watertight
Additional Styles/Options	NAMUR, Direct Mount
	Poppet Style
	Low Power Options
	Low Temperature Options
	Intrinsically Safe

* Typical options shown. Consult factory for additional options.



ASCO™ Solenoid Poppet Style



Steam Power Industries Hardware/Software Systems



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