

A
Bray
High
Performance
Company

Flow-Tek

A Subsidiary of BRAY INTERNATIONAL, Inc.

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3 Piece Ball Valves
Full Port: 1/4" - 2"
Standard Port: 3/4" - 2 1/2"



Triad Series

Model FP - Full Port
Model SP - Standard
Port

Flow-Tek's Triad Series ball valves feature live loaded stem seals and a redundant body seal design. Available in full and standard port models, these rugged, high pressure 3-piece valves are ideal for process, severe service, high temperature, and high cycle applications.

Fire Safe - Certified to API 607 4th Edition

Triad Series valves have been fire tested and meet or exceed these standards.

Secure Mount Triad Series valves offer ease of automation due to an integrally cast actuator mounting pad that complies with ISO 5211 standards.

Pressure Ratings

Models FP & SP: 2200 psi WOG

End Connections

- Threaded
- Socket Weld
- Butt Weld
- Extended Socket Weld
- Extended Butt Weld
- ASME/ANSI 600 Flanged
- Custom



Features

ANSI B16.34 Class 600

All Triad Series valves are designed to meet this specification and can be certified upon request at order submittal.

Smart Stem Assemblies

Flow-Tek manufactures heavy duty, high quality stems with double "D" connection to ball and operator mounting. All Flow-Tek stems are internal entry and blowout proof for maximum safety. Triad Series valves feature strong, large diameter stems with live-loaded, self-adjusting primary and secondary sealing. Utilizing belleville washers, the stem seal automatically adjusts to compensate for changes in temperature and normal wear. The assembly is secured by a saddle-type lock washer, preventing unthreading of stem nuts in high cycle automation applications.



Body Bolts (A) As standard Triad Series valves feature full hex head cap screws to join end connections to the tapped valve center section. This design, in lieu of a through bolt design, ensures precise alignment of the end caps – minimizing potential problems such as bolt shrinkage and elongation in severe temperature and thermal cycling applications. Less bolting movement reduces the chance for body seal failure.

Ball (B) Flow-Tek balls are precision machined and mirror finished for bubble-tight shut off with less operating torque. Ball edges have machined curvatures to reduce seat wear and provide a high cycle life. As an added safety feature, a hole in the stem slot of each ball equalizes pressure between the body cavity and the line media flow when the valve is in the open position.

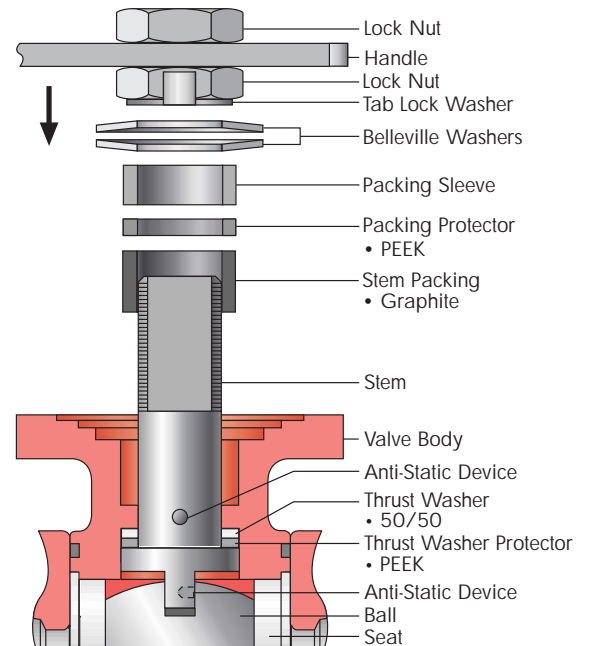
Body (C) Valve bodies are investment cast and solution annealed/normalized for the highest quality and added strength. Stainless Steel bodies and end caps are passivated. Carbon Steel units are phosphate coated for increased corrosion resistance. All body castings are marked with a foundry heat number for full traceability to ASTM standards.

Seat (D) Flow-Tek's seat design ensures bi-directional, bubble-tight sealing while providing the lowest possible torque. All resilient seats feature relief slots to relieve pressure past the upstream seat. This design also reduces friction, minimizes seat wear and reduces operating torque.

End Connections (E) The Triad Series is available with threaded, socket weld, butt weld, extended socket weld and butt-weld, ASME/ANSI 600 flanged or custom connections.

Double Lock Nut Design (F) Double lock nuts allow handles to be easily and safely removed while the valve is under full line pressure.

Live-Loaded Stem Seals (G) The live-loaded seals considerably increase the number of cycles between maintenance adjustments.



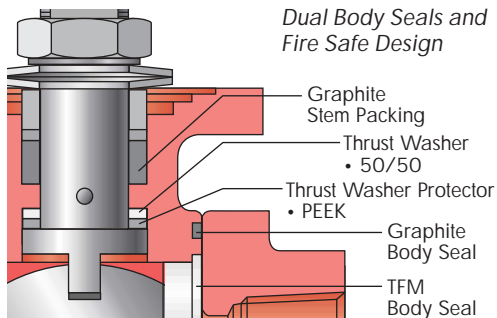
Stem Seals The Thrust Washer of 50% Stainless Steel /50% PTFE and the Thrust Washer Protector of PEEK combine to provide the primary seal. An adjustable Stem Packing and an additional PEEK Packing Protector create a multiple secondary seal between the stem and body. The stem packing is composed of graphite providing fire safe protection and a very high cycle life. This dual stem seal arrangement is a Flow-Tek exclusive.

Anti-Static Protection Triad Series valves feature anti-static grounding devices as standard. These devices ensure electrical continuity between valve ball, stem and body, eliminating the possibility of static electrical charges creating sparks within the valve.

Features

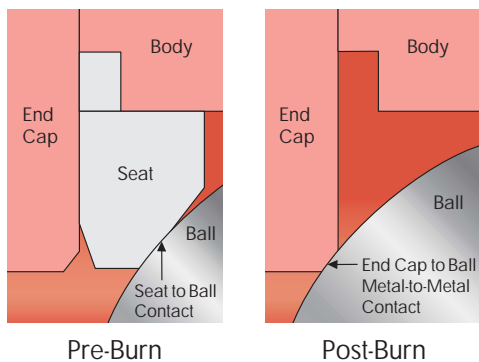
Dual Body Seals

Flow-Tek's Triad Series valves utilize a dual body seal system to provide added protection against external leakage. The inner primary seal is TFM material. The secondary seal is graphite. Utilizing TFM as the inner seal minimizes the possibility of color contamination of the process media. Both body seals are securely retained in grooves machined into the body. These grooves reduce seal movement and cold flow. Therefore, constant compression is maintained even under extreme conditions.

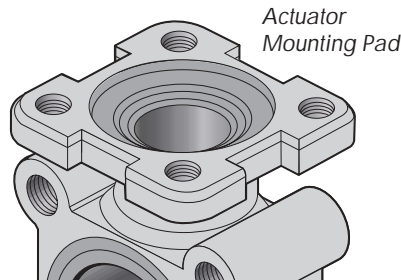


Fire Safe: API 607-4 Certified

Flow-Tek's dual body seals, Smart Stem with graphite stem packing, and metal-to-metal contact of ball to body combine to produce a valve that meets the highest fire safety standards under extreme conditions. In the event of a fire, if excess heat destroys the resilient seat materials, the metal ball makes contact with the metal body. Graphite secondary body seals prevent external leakage, and the live-loaded graphite stem packing prevents stem leakage.



Secure Mount A unique standard feature of the Triad Series is an integrally cast top flange that ensures positive actuator mounting. This actuator mounting pad eliminates unwanted actuator movement during high cycle or continuous duty applications. Actuation equipment can be easily and safely removed while the valve is under full line pressure. The actuator mounting pad is in compliance with ISO 5211 bolting pattern standards.



Automated Valves

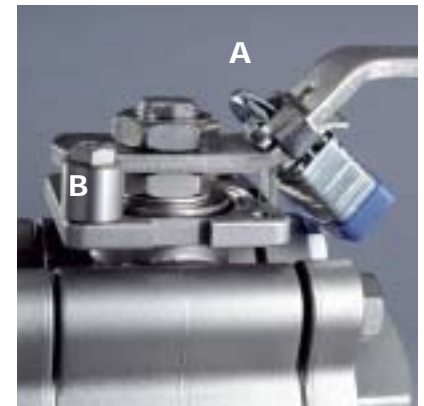


Additionally, the mounting pad allows for ease of field assembly of Flow-Tek's Media Containment Unit. This unit, combined with the double body seals, makes this the ideal valve for severe service, elevated and semi-cryogenic temperatures and high cycle applications.

Manual Operated Valves

Flow-Tek handles feature a Safety Trigger to prevent accidental movement of ball position. The trigger locks the handle in the open or closed position. The handle lock can be bypassed, if needed, with a small bolt through the handle in the release position.

A **Padlock (A)** can be added to secure the handle in position, preventing unwanted access. A **Travel Stop (B)** limits the movement of handle to set 90° intervals, preventing over travel of the ball.



Seat Selection

A wide range of seat materials are available to meet most applications. The standard seat is RPTFE. Options include Stainless Steel/PTFE, UHMWPE, Virgin PTFE, TFM, PEEK, Tek-Fil® (carbon/graphite filled TFM), full metal seats and Cavity Fillers. PEEK seats offer high pressure/temperature capability. Tek-Fil seats offer reduced torque in high temperature, high cycle, and steam service applications.

Specifications

Valve Sizes 1/4" through 2-1/2"

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.

Flanged End Connections meet

ASME/ANSI Class 600,

ASME/ANSI B16.10 and B16.5.

All Triad Series valves are designed to meet ASME/ANSI B16.34 class 600 specifications and can be certified as such upon request at order submittal.

All valves are Fire Safe and certified to API 607 4th Edition.

Valves meet NACE MR0175.

Valve body and end connections are high quality investment cast and solution annealed/normalized.

All valves are hydrostatically shell tested to 1.5 x rating. All valves 100% air tested under water at 80–100 psi.

Pressure Ratings

Threaded, Socket Weld and Butt Weld:

Model FP 2200 psi WOG

Model SP 2200 psi WOG

Flanged: per flange rating, consult factory

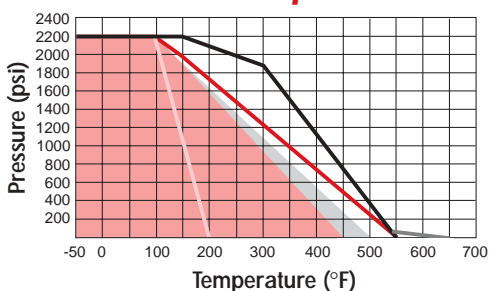
Steam Service:

Valve Size ins	Tek-Fil® Seats		PEEK Seats	
	PSIG (WSP)	°F	PSIG (WSP)	°F
1/4 - 1	425	455	500	470
1 1/4 - 1 1/2	350	435	500	470
2 - 2 1/2	300	421	500	470

UHMWPE seats are not recommended for steam.

Vacuum Service: To 29 inches Hg.

Pressure / Temperature



- RPTFE/TFM: 1/4" - 2-1/2" Valves
- Tek-Fil®: 1/4" - 2-1/2" Valves
- PEEK: 1/4" - 2-1/2" Valves
- UHMWPE: 1/4" - 2-1/2" Valves
- 50/50: 1/4" - 2-1/2" Valves
- Tek-Fil in Clean Hot Oil Service

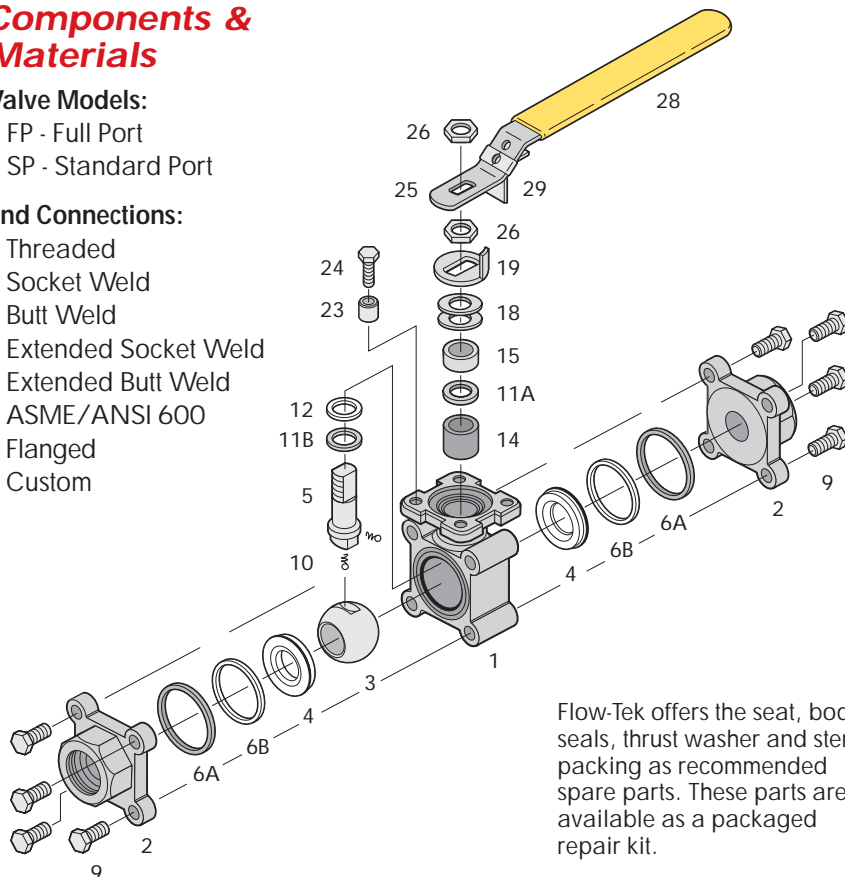
Components & Materials

Valve Models:

- FP - Full Port
- SP - Standard Port

End Connections:

- Threaded
- Socket Weld
- Butt Weld
- Extended Socket Weld
- Extended Butt Weld
- ASME/ANSI 600 Flanged
- Custom



Flow-Tek offers the seat, body seals, thrust washer and stem packing as recommended spare parts. These parts are available as a packaged repair kit.

Item	Name	Stainless Steel	Carbon Steel	Qty.
1	Body	ASTM A351 Gr CF8M	ASTM A216 Gr WCB	1
2	End Cap*	ASTM A351 Gr CF8M*	ASTM A216 Gr WCB	2
3	Ball	ASTM A351 Gr CF8M	ASTM A351 Gr CF8M	1
4	Seat	15% RPTFE	15% RPTFE	2
5	Stem	ASTM A479 Type316	ASTM A479 Type316	1
6-A	Body Seal	Graphite	Graphite	2
6-B	Body Seal	TFM	TFM	2
9	Body Bolt	SS304, ASTM A193 B8 [†]	SS304, ASTM A193 B8 [†]	8 ^{††}
10	Anti-Static Device	SS316	SS316	2
11-A	Packing Protector	PEEK	PEEK	1
11-B	Thrust Washer Protector	PEEK	PEEK	1
12	Thrust Washer	50% SS316 + 50% PTFE	50% SS316 + 50% PTFE	1
14	Stem Packing	Graphite	Graphite	1
15	Packing Gland Sleeve	SS304	SS304	1
18	Belleville Washer	SS301	SS301	2
19	Tab Lock Washer	SS300	SS300	1
23	Travel Stop Set Sleeve	SS304	SS304	1
24	Travel Stop Bolt	SS300	SS300	1
25	Handle	SS304	SS304	1
26	Lock Nut	SS304	SS304	2
28	Handle Sleeve	Vinyl	Vinyl	1
29	Locking Device	SS304	SS304	1

Weld Ends use CF3M.

[†] Consult factory for B8 bolting.

^{††} 12 for 2" FP and 2-1/2" SP.

Note: Carbon Steel valves are limited to -20° F.

Dimensions

FULL PORT Model FP

Size ins mm	A1 Threaded, Socket, Butt W	A2 Extended Butt Weld	A3 Extended Socket Weld	A4 Cl. 600 Flanged	øB	C	C1	D	E1	E2	F1	F2	F3	G	G1	G2	H1	H2	Cv	Torque lbs-in Nm	Weight lbs. kg.
1/4 6	2.99 76	8.98 228	9.98 253.4	—	0.46 11.6	2.83 72	1.45 36.9	6.50 165	0.55 14	0.36 9.25	1.10 28	0.54 13.72	1.10 28	1.01 25.6	4.50 114.3	—	0.63 16	0.50 12.7	8	70 7.9	2.3 1
3/8 10	2.99 76	8.98 228	9.98 253.4	—	0.50 12.7	2.83 72	1.45 36.9	6.50 165	0.69 17.5	0.49 12.52	1.10 28	0.68 17.15	1.10 28	1.01 25.6	4.50 114.3	—	0.63 16	0.50 12.7	8	70 7.9	2.3 1
1/2 15	2.99 76	8.98 228	9.98 253.4	6.50 165.1	0.56 14.2	2.83 72	1.45 36.9	6.50 165	0.85 21.7	0.62 15.8	1.26 32	0.84 21.34	1.18 29.92	1.01 25.6	4.50 114.3	2.76 70.2	0.71 18	0.50 12.7	30	70 7.9	2.3 1
3/4 20	3.31 84	9.24 234.7	10.37 263.3	7.50 190.5	0.81 20.5	3.03 77	1.63 41.5	6.50 165	1.07 27.1	0.82 20.93	1.50 38	1.05 26.67	1.41 35.74	1.03 26.25	4.56 115.9	3.13 79.5	0.73 18.5	0.56 14.3	55	130 14.7	3.4 1.54
1 25	3.94 100	9.62 244.4	10.87 276.2	8.50 215.9	1.00 25.4	3.82 97	2.18 55.3	9.84 250	1.33 33.8	1.05 26.64	1.89 48	1.31 33.4	1.73 43.96	1.16 29.4	4.63 117.5	3.44 87.4	0.87 22	0.63 15.9	105	180 20.3	6.2 2.81
1¼ 32	4.33 110	9.91 251.6	11.28 286.6	9.00 228.6	1.26 32	4.02 102	2.36 60	9.84 250	1.68 42.6	1.38 35.05	2.20 56	1.66 42.16	2.10 53.36	1.21 30.8	4.69 119.1	3.55 90.1	0.91 23	0.69 17.5	200	310 35	8.7 3.95
1½ 40	5.04 128	10.22 259.6	11.72 297.8	9.50 241.3	1.50 38	4.29 109	2.68 68	10.43 265	1.91 48.6	1.61 40.89	2.48 63	1.90 48.26	2.36 59.88	1.41 35.8	4.75 120.7	3.64 92.5	0.96 24.5	0.75 19.1	275	400 45.2	12 5.44
2 50	5.71 145	10.76 273.2	12.50 317.6	11.50 292.1	2.00 50.8	4.65 118	3.03 77	10.43 265	2.41 61.1	2.07 52.5	2.99 76	2.38 60.33	2.91 73.9	1.48 37.5	4.87 123.8	4.37 111.1	1.00 25.5	0.87 22.2	500	570 64.4	17.8 8.07

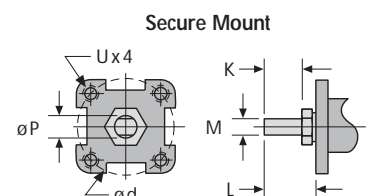
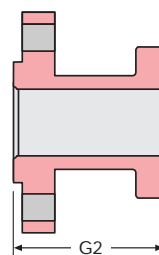
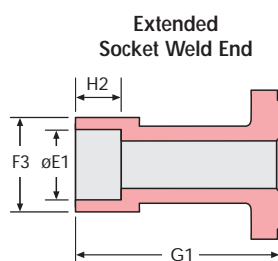
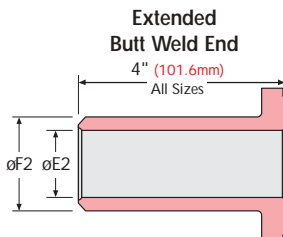
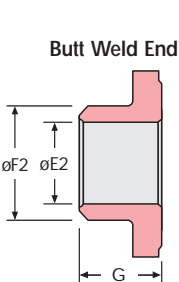
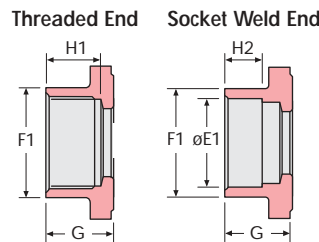
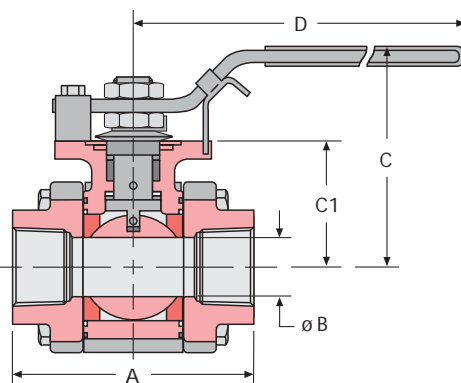
Torque at maximum rated pressure, clean water, RPTFE seats. Refer to Technical Bulletin 1005 for complete torque information. Weights are based on valves with Threaded End Connections.

STANDARD PORT Model SP

Size ins mm	A1 Threaded, Socket, Butt W	A2 Extended Butt Weld	A3 Extended Socket Weld	øB	C	C1	D	E1	E2	F1	F2	F3	G	G1	H1	H2	Cv	Torque lbs-in Nm	Weight lbs. kg.
3/4 20	2.99 76	8.98 228	10.10 256.6	0.56 14.2	2.83 72	1.45 36.9	6.50 165	1.07 27.1	0.82 20.93	1.50 38	1.05 26.67	1.41 35.74	1.01 25.6	4.56 115.9	0.71 18	0.56 14.3	12	70 7.9	2.3 1
1 25	3.31 84	9.24 234.7	10.49 266.5	0.81 20.5	3.03 77	1.63 41.5	6.50 165	1.33 33.8	1.05 26.64	1.89 48	1.31 33.4	1.73 43.96	1.03 26.25	4.63 117.5	0.73 18.5	0.63 15.9	32	130 14.7	3.4 1.54
1¼ 32	3.94 100	9.62 244.4	11.00 279.4	1.00 25.4	3.82 97	2.18 55.3	9.84 250	1.68 42.6	1.38 35.05	2.20 56	1.66 42.16	2.10 53.36	1.16 29.4	4.69 119.1	0.87 22	0.69 17.5	46	180 20.3	6.2 2.81
1½ 40	4.33 110	9.91 251.6	11.41 289.8	1.26 32	4.02 102	2.36 60	9.84 250	1.91 48.6	1.61 40.89	2.48 63	1.90 48.26	2.36 59.88	1.21 30.8	4.75 120.7	0.91 23	0.75 19.1	82	310 35	8.7 3.95
2 50	5.04 128	10.22 259.6	11.97 304	1.50 38	4.29 109	2.68 68	10.43 265	2.41 61.1	2.07 52.5	2.99 76	2.38 60.33	2.91 73.9	1.41 35.8	4.87 123.8	0.96 24.5	0.87 22.2	120	400 45.2	12 5.44
2½ 65	6.06 154	10.76 273.2	12.72 323.2	2.00 50.8	4.65 118	3.03 77	10.43 265	2.91 73.8	2.47 62.71	3.46 88	2.88 73.03	3.51 89.14	1.65 42	4.98 126.6	1.18 30	0.98 25	240	570 64.4	17.8 8.07

SECURE MOUNT

FP Size ins mm	SP Size ins mm	ød	K	L	M	øP	U UNC
1/4-1/2 6-15	3/4 20	1.654 42	0.315 8	0.551 14	0.250 6.35	0.374 9.5	#10-24 -
3/4 20	1 25	1.654 42	0.315 8	0.551 14	0.250 6.35	0.374 9.5	#10-24 -
1 25	1¼ 32	2.756 70	0.512 13	0.910 23	0.374 9.5	0.622 15.8	5/16-18 -
1¼ 32	1½ 40	2.756 70	0.551 14	0.952 23.5	0.374 9.5	0.622 15.8	5/16-18 -
1½ 40	2 50	2.756 70	0.670 17	1.043 26.5	0.472 12	0.748 19	5/16-18 -
2 50	2½ 65	2.756 70	0.728 18.5	1.102 28	0.472 12	0.748 19	5/16-18 -



Extended end connections allow for welding the valve in the piping system without valve disassembly.

Flanged End
Class 600 lb.



Selection / Service

Ordering Information

Item	Selection	Code
1. Body Style:	Standard Bore Port	SP
	Full Bore Port	FP
2. Body Material:	Stainless Steel (A351 Gr CF8M)	3
	Carbon Steel (A216 Gr WCB)	2
3. End Connection:	Threaded (NPT)	1
	Socket Weld	2
	Extended Butt Weld	3
	Butt Weld	4
	Extended Socket Weld	5
	ASME/ANSI 600 Flanged	6
4. Valve Size:	1/4" = 01, 3/8" = 02, 1/2" = 03, 3/4" = 04 1" = 05, 1 1/4" = 06, 1 1/2" = 07, 2" = 08 2 1/2" = 09	
5. Ball and Stem:	316 Stainless Steel	3
6. Seat:	RPTFE	R
	PEEK	P
	Tek-Fil® (Carbon Graphite/TFM)	I
	TFM	J
	Virgin PTFE	T
	Stainless Steel Filled PTFE	S
	UHMWPE	U
	Stellite® - Metal	M
Cavity Fillers (PTFE is Standard)	F	
7. Stem Seal:	Graphite	G
8. Operator:	Manual Locking Handle	L
	Oval Locking Handle	O/L
	Double Acting Actuator	DA
	Spring Return Actuator	SR
	Electric Actuator	EL
9. Options:	Special Feature	SF

Ordering Example:

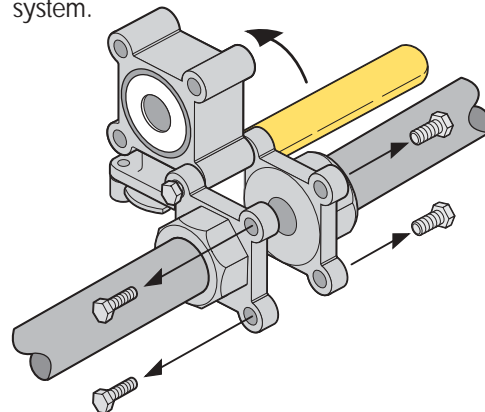
Body Style	Material (316)	Connection (NPT)	Size (1")	Ball/Stem (316)	Seat (PEEK)	Stem Seal (Graphite)	Operator Handle
FP	3	1	05	3	P	G	L

Tek-Fil® is a registered trademark of Flow-Tek, Inc.
Stellite® is a registered trademark of Cabot Corporation.

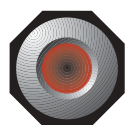
3 Piece Valve Body Design

The 3 piece body design of the Triad Series offers many advantages, including installation flexibility, elimination of the need for two sets of flanges, and ease of in line and out of line servicing. These time saving features are a big plus for process industries, automated valves and welded piping systems by reducing costly downtime. During maintenance, the actuator and accessories can remain mounted on the valve body. The entire valve and actuator assembly is easily reinstalled with no need for recalibration of the unit.

In Line Servicing To perform in line maintenance, remove 6 of the body bolts on opposing sides of the center body, loosen the remaining 2 bolts and swing the body up. The valve can swing to the left or right depending on which bolts are removed. All body components can be serviced in this position without disturbing the piping system.



Out of Line Servicing For complete removal of valve from the line, remove all body bolts, then lift the valve body out of the pipeline. The removed body can then be serviced or replaced, then reinstalled without needing to realign the end connections or the piping system.



Flow-Tek

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