A
Bray
High
Performance
Company

Flow-Tek

A Subsidiary of BRAY INTERNATIONAL, Inc.

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 with 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 thoroughly 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 which complies with ISO 5211 standards.

End Connections
- Threaded
- Socket Weld
- Extended Butt Weld
- Custom

Pressure Ratings
Model FP: 2200 psi WOG
Model SP: 1500 psi WOG

Features

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 temperture and thermal cycling applications. Less bolt 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. 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, extended butt-weld 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.

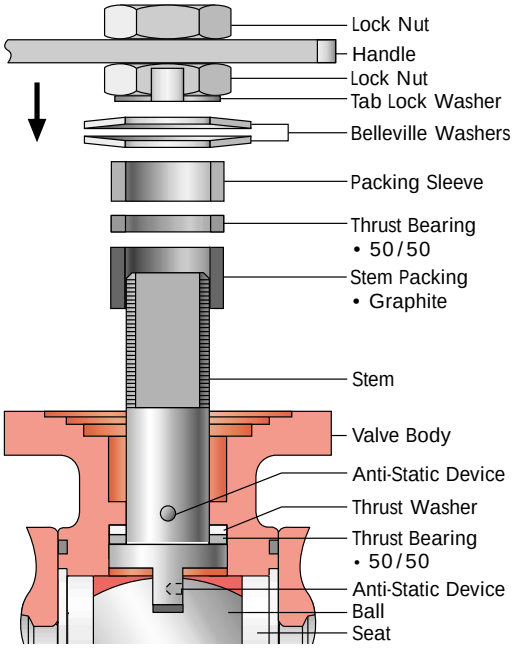
Anti-Static Protection Triad Series valves feature anti-static grounding devices as standard. These devices ensure electrical continuity between valve ball, stem and body, thus eliminating the possibility of static electrical charges creating sparks within the valve.

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.

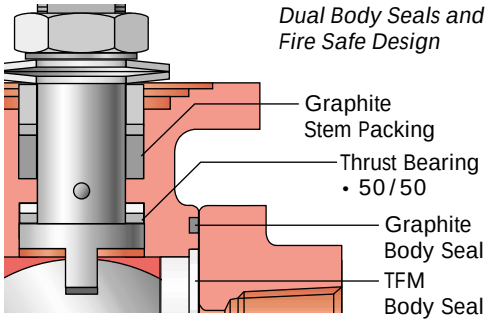


Stem Seals The Thrust Bearing of 50% Stainless Steel / 50% PTFE and the Thrust Washer of 15% RPTFE combine to provide the primary seal. An adjustable Stem Packing and an additional 50/50 thrust bearing create a multiple secondary seal between the stem and body. The stem packing is composed of graphite providing fire safe protection and a very high cycle life. This dual stem seal arrangement is a Flow-Tek exclusive.

Features

Dual Body Seals

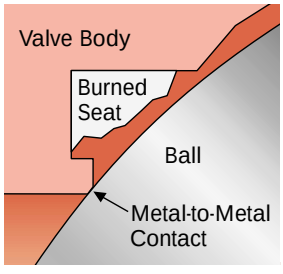
Flow-Tek's Triad Series valves utilize a dual body seal system to provide added protection against external leakage. The inner primary seal is TFM material. The secondary seal is graphite. Utilizing TFM as the inner seal minimizes the possibility of color contamination of the process media. Both body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



Dual Body Seals and Fire Safe Design

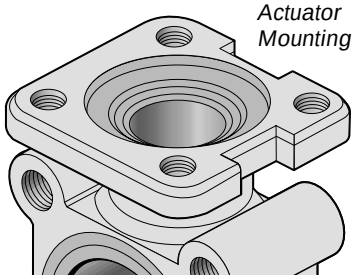
Fire Safe: API 607-4 Certified

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 seal prevents stem leakage.



Automated Valves

Secure Mount A unique standard feature of the Triad Series is an integrally cast top flange that ensures positive actuator mounting. Flow-Tek's Secure Mount 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 Secure Mount is in compliance with ISO 5211 bolting pattern standards.



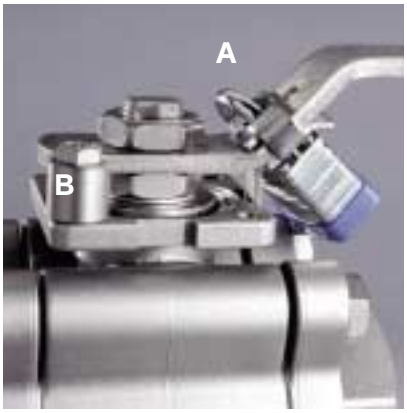
Actuator Mounting Pad

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 is available to meet most applications. The standard seat is RPTFE. Options include Stainless Steel/PTFE, UHMWPE, Virgin PTFE, full metal seats and Cavity fillers. Also available are Peek and Tek-fil (Carbon graphite filled TFM) seats. Peek seats offer high pressure/temperature capability. Tek-fil seats offer reduced torque in high temperature, higher cycle, and steam service applications.

Specifications

Valve Sizes 1/4" through 2-1/2"
Threaded End Connections meet ANSI B1.20.1 NPT.
Socket Weld End Connections meet ANSI B16.11.
Butt Weld End Connections meet MSS SP72.

All Triad Series valves are designed to meet 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 WW-V-35C Type II and 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.

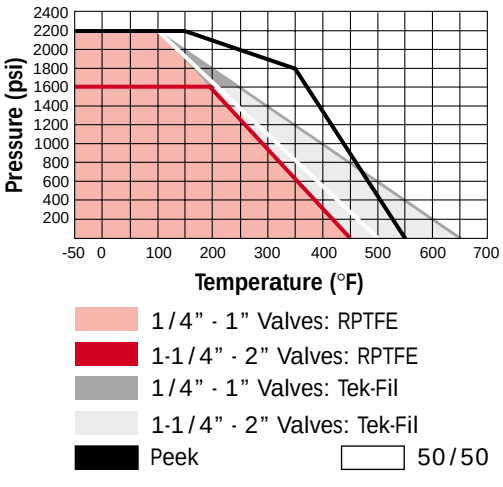
Pressure Ratings

Threaded, Socket Weld and Butt Weld:
Model FP ..... 2200 psi WOG
Model SP ..... 1500 psi WOG

Steam Service: Tek-fil Seats
1/4"–3/4" Valves ... 425 psi at 455°F
1" Valves ..... 400 psi at 447°F
1-1/4" Valves ..... 350 psi at 435°F
1-1/2" Valves ..... 325 psi at 428°F
2" Valves ..... 300 psi at 424°F
UHMWPE & PTFE seats are not recommended for steam.

Vacuum Service: To less than 20 micron

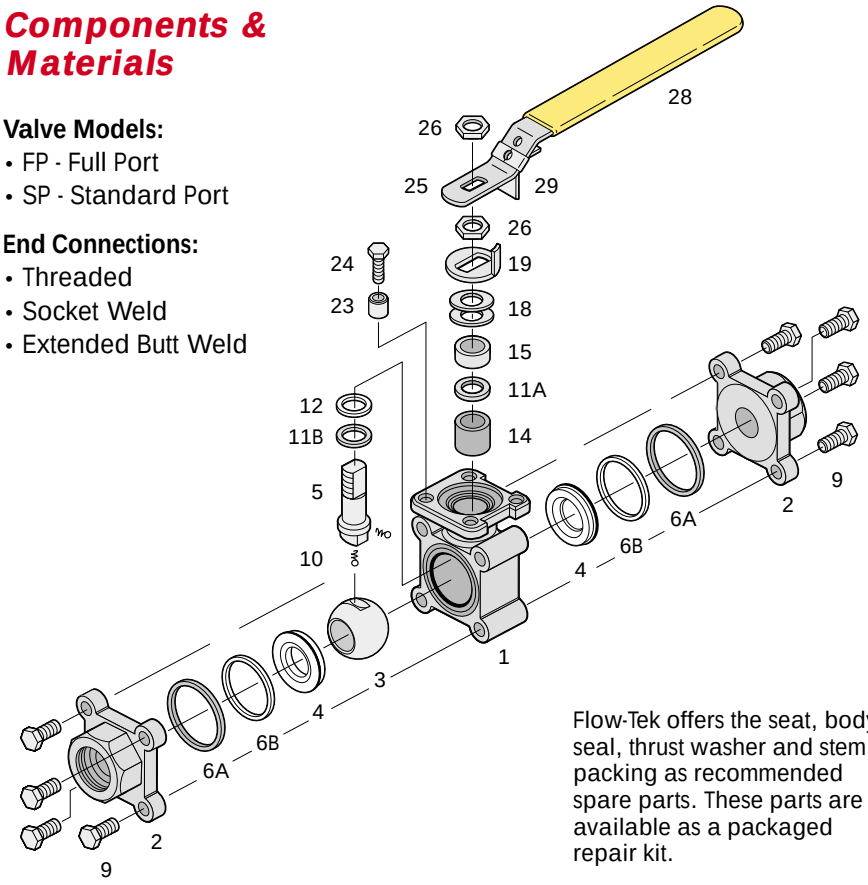
Pressure / Temperature



Components & Materials

Valve Models:
- FP - Full Port
- SP - Standard Port

End Connections:
- Threaded
- Socket Weld
- Extended Butt Weld



Flow-Tek offers the seat, body seal, 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 B7†	8††
10	Anti-Static Device	SS316	SS316	2
11-A	Thrust Bearing	50% SS316 + 50% PTFE	50% SS316 + 50% PTFE	1
11-B	Thrust Bearing	50% SS316 + 50% PTFE	50% SS316 + 50% PTFE	1
12	Thrust Washer	15% RPTFE	15% RPTFE	1
14	Stem Packing	Graphite	Graphite	1
15	Packing Gland Sleeve	SS304	SS304	1
18	Belleville Washer	SS301	SS301	2
19	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 and B7 bolting.

†† 12 for 2" FP and 2-1/2" SP.

Dimensions

FULL PORT Model FP

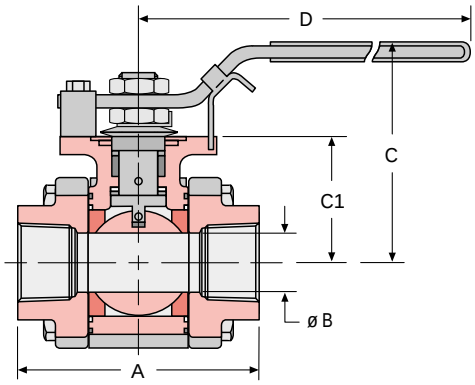
Size ins mm	A THREADED & SOCKET WELD	A EXTENDED BUTT WELD	øB	C	C1	D	E1	E2	F1	F2	G	H1	H2	C_V	Torque lbs-in kgf-cm	Weight lbs. kg.
1/4 6	2.992 76	8.976 228	0.457 11.6	2.835 72	1.453 36.9	6.496 165	0.551 14	0.364 9.25	1.102 28	0.540 13.72	1.008 25.6	0.630 16	0.500 12.7	18 -	70 80	2.3 1.00
3/8 10	2.992 76	8.976 228	0.500 12.7	2.835 72	1.453 36.9	6.496 165	0.689 17.5	0.493 12.52	1.102 28	0.675 17.15	1.008 25.6	0.630 16	0.500 12.7	18 -	70 80	2.3 1.00
1/2 15	2.992 76	8.976 228	0.559 14.2	2.835 72	1.453 36.9	6.496 165	0.854 21.7	0.622 15.8	1.260 32	0.840 21.34	1.008 25.6	0.709 18	0.500 12.7	18 -	70 80	2.3 1.10
3/4 20	3.307 84	9.240 234.7	0.807 20.5	3.031 77	1.634 41.5	6.496 165	1.067 27.1	0.824 20.93	1.496 38	1.050 26.67	1.033 26.25	0.728 16.5	0.563 14.3	40 -	130 150	3.4 1.54
1 25	3.937 100	9.622 244.4	1.000 25.4	3.819 97	2.177 55.3	9.843 250	1.331 33.8	1.049 26.64	1.890 48	1.354 34.4	1.157 29.4	0.866 22	0.626 15.9	70 -	180 200	6.2 2.81
1 1/4 32	4.331 110	9.906 251.6	1.260 32	4.016 102	2.362 60	9.843 250	1.677 42.6	1.380 35.05	2.205 56	1.660 46.26	1.213 30.8	0.906 23	0.689 17.5	120 -	310 350	8.7 3.95
1 1/2 40	5.039 128	10.220 259.6	1.496 38	4.291 109	2.677 68	10.433 265	1.913 46.6	1.610 40.89	2.480 63	1.900 48.26	1.409 35.8	0.965 24.5	0.752 19.1	200 -	400 450	12.0 5.44
2 50	5.709 145	10.756 273.2	2.000 50.8	4.646 118	3.031 77	10.433 265	2.406 61.1	2.067 52.5	2.992 75	2.375 60.33	1.476 37.5	1.004 25.5	0.874 22.2	340 -	570 650	17.8 8.07

Weights are based on valves with Threaded End Connections.

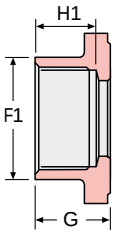
STANDARD PORT Model SP

Size ins mm	A THREADED & SOCKET WELD	øB	C	C1	D	E1	F1	G	H1	H2	C_V	Torque lbs-in kgf-cm	Weight lbs. kg.
3/4 20	2.992 76	0.559 14.2	2.835 72	1.453 36.9	6.496 165	1.067 27.1	1.496 38	1.008 25.6	0.709 18	0.563 14.3	30 -	70 80	2.3 1.10
1 25	3.307 84	0.807 20.5	3.031 77	1.634 41.5	6.496 165	1.331 33.8	1.890 48	1.033 26.25	0.728 18.5	0.626 15.9	42 -	130 150	3.4 1.54
1 1/4 32	3.937 100	1.000 25.4	3.819 97	2.177 55.3	9.843 250	1.677 42.6	2.205 56	1.157 29.4	0.866 22	0.689 17.5	50 -	180 200	6.2 2.81
1 1/2 40	4.331 110	1.260 32	4.016 102	2.362 60	9.843 250	1.913 48.6	2.480 63	1.213 30.8	0.906 23	0.752 19.1	75 -	310 350	8.7 3.95
2 50	5.039 128	1.496 38	4.291 109	2.677 68	10.433 265	2.406 61.1	2.992 76	1.409 35.8	0.965 24.5	0.874 22.2	112 -	400 450	12.0 5.44
2 1/2 65	6.063 154	2.000 50.8	4.646 118	3.031 77	10.433 265	- -	3.465 88	1.654 42	1.181 30	- -	180 -	570 650	17.8 8.07

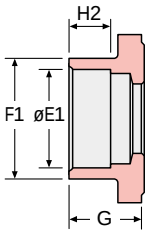
Extended Butt Weld end connections allow for welding the valve in the piping system without valve disassembly.



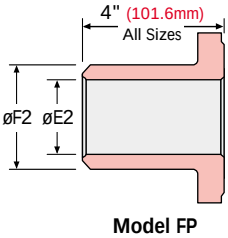
Threaded End



Socket Weld End



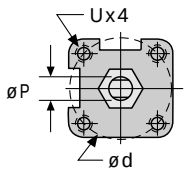
Extended Butt Weld End

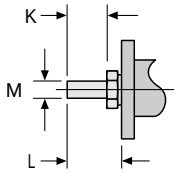


Model FP Only

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	1 1/4 32	2.756 70	0.512 13	0.910 23	0.374 9.5	0.622 15.8	5/16-18 -
1 1/4 32	1 1/2 40	2.756 70	0.551 14	0.952 23.5	0.374 9.5	0.622 15.8	5/16-18 -
1 1/2 40	2 50	2.756 70	0.670 17	1.043 26.5	0.472 12	0.748 19	5/16-18 -
2 50	2 1/2 65	2.756 70	0.728 18.5	1.102 28	0.472 12	0.748 19	5/16-18 -





Ordering Information

Item	Selection	Code
1. Body Style:	Standard Bore Port	SP
	Full Bore Port	FP
2. Body Material:	316 Stainless Steel (CF8M)	3
	WCB Carbon Steel (A216)	2
3. End Connection:	Threaded (NPT)	1
	Socket Weld	2
	Extended Butt Weld	3
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)	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**

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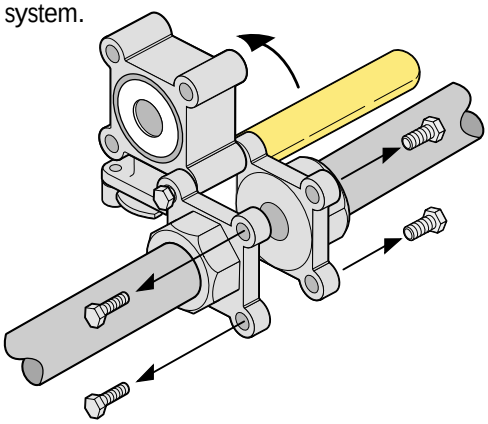
3 Piece Valve Body Design

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 mounting assemblies remain on the valve body. The entire valve and actuator assembly is easily reinstalled. No adjustment or reattachment is necessary.

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.

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