

TKD SERIES 3-WAY BALL VALVES

Submittal Data Sheet



Job or Customer:

Engineer:

Contractor:

Submitted by: Date

Approved by: Date

Order No: Date

Specification:

< STANDARDS >



- ASTM D1784
- ASTM D2466
- ASTM D2467
- ASTM D2464
- ASTM F437
- ASTM F439
- ASTM F1498



ANSI B1.20.1



IPEX TKD Series 3-Way Ball Valves can be used for flow diverting, mixing, or on/off isolation. They will replace a Tee + 2 valve linkage assembly at reduced cost and space, along with shorter installation and maintenance time. The patented seat stop carrier allows for in-line microadjustment of the ball seating, and features o-ring cushioning to minimize wear and prevent seizing. The TKD also includes our patented DUAL BLOCK® locking union nut system, which ensures the nuts are held in position even under severe service conditions such as high vibration or thermal expansion. Integral mounting flange and bracketing allows for direct actuation and simple support, while a locking handle can prevent improper positioning. TKD Series 3-Way Ball Valves are part of our complete Xirtec® PVC systems of pipe, valves and fittings, engineered and manufactured to our strict quality, performance, and dimensional standards.

VALVE AVAILABILITY

Body Material:	PVC, CPVC
Size Range:	1/2" through 2"
Port Configuration:	Full port with T or L flow pattern
Pressure:	232psi
Seats:	Teflon® (PTFE)
Seals:	EPDM or FPM
End Connections:	Socket (IPS), Threaded (FNPT)

TKD SERIES 3-WAY BALL VALVES

Submittal Data Sheet

Valve Selection

Size (inches)	Body Material	Port Style	O-ring Material	IPEX Part Number			Pressure Rating @ 73°F
				IPS	Socket	FNPT Threaded	
1/2	PVC	T	EPDM			253850	232 psi
			FPM			253862	
		L	EPDM			253844	
			FPM			253856	
	CPVC	T	EPDM			253899	
			FPM			253907	
3/4	PVC	T	EPDM			253851	
			FPM			253863	
		L	EPDM			253845	
			FPM			253857	
	CPVC	T	EPDM			253900	
			FPM			253908	
1	PVC	T	EPDM			253852	
			FPM			253864	
		L	EPDM			253846	
			FPM			253858	
	CPVC	T	EPDM			253901	
			FPM			253909	
1-1/4	PVC	T	EPDM			253853	
			FPM			253865	
		L	EPDM			253847	
			FPM			253859	
	CPVC	T	EPDM			253902	
			FPM			253910	
1-1/2	PVC	T	EPDM			253854	
			FPM			253866	
		L	EPDM			253848	
			FPM			253860	
	CPVC	T	EPDM			253903	
			FPM			253911	
2	PVC	T	EPDM			253855	
			FPM			253867	
		L	EPDM			253849	
			FPM			253861	
	CPVC	T	EPDM			253904	
			FPM			253912	
CPVC	L	EPDM			253898		
		FPM			253925		

Material:

PVC CPVC

Port:

T L

Size (inches):

1/2 1-1/4
 3/4 1-1/2
 1 2

Seals:

EPDM
 FPM

End Connections:

Socket (IPS)
 Threaded (FNPT)

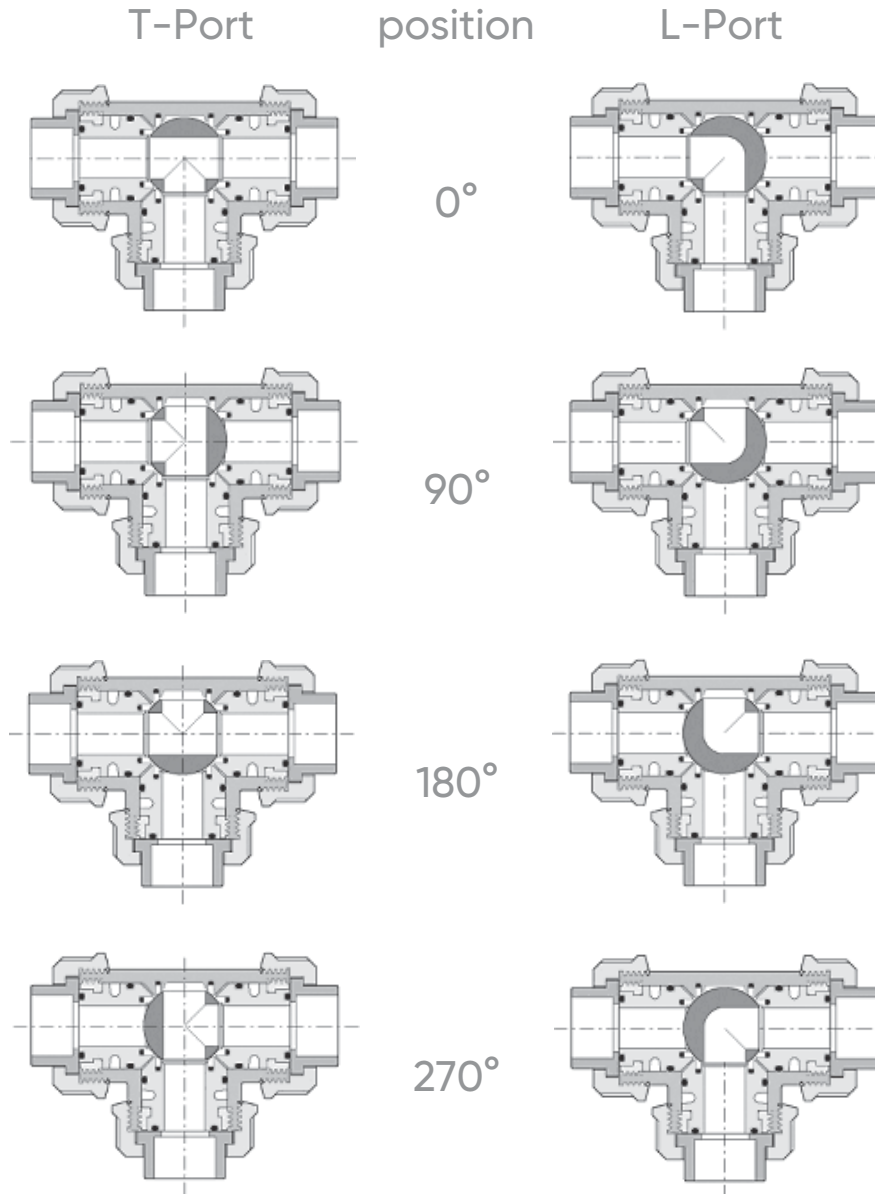
IPEX Part Number:

Note: Flanged valves available upon request.

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Operating Positions

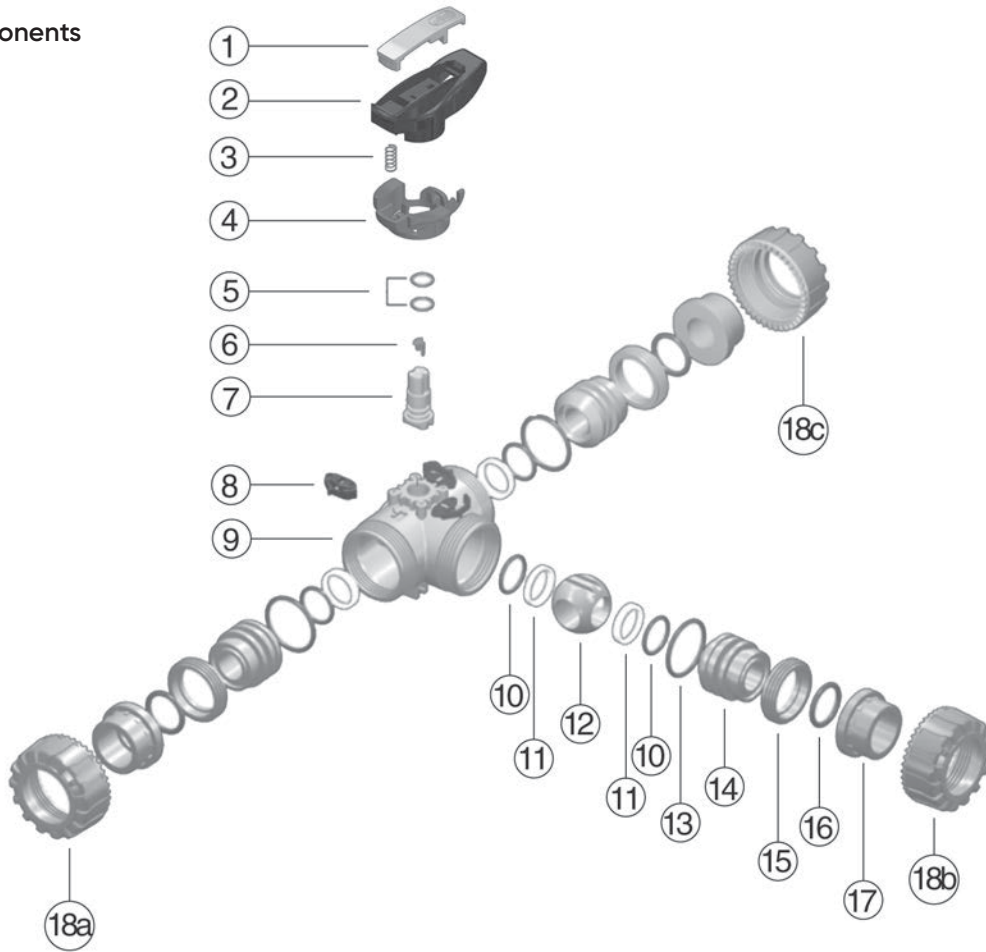


Position	T-Port	L-Port
0°	mixing	diverting
90°	diverting	closed
180°	straight flow	closed
270°	diverting	diverting

TKD SERIES 3-WAY BALL VALVES

Submittal Data Sheet

Components



#	Component	Material	Qty
1	insert	PVC	1
2	handle	HI-PVC	1
3	spring (SHKD)	Stainless Steel	1
** 4	safety handle block (SHKD)	PP-GR	1
* 5	stem o-rings	EPDM / FPM	2
6	position indicator	POM	1
7	stem	PVC / CPVC	1
8	Dual Block®	POM	3
9	body	PVC / CPVC	1
* 10	support o-ring for ball seat	EPDM / FPM	4
* 11	ball seat	PTFE	4
12	ball	PVC / CPVC	1
13	radial seal o-ring	EPDM / FPM	3
14	support for ball seat	PVC / CPVC	3
15	stop ring	PVC / CPVC	3
* 16	socket seal o-ring	EPDM / FPM	3
* 17	end connector	PVC / CPVC	3
18abc	union nuts	PVC / CPVC	3

* Spare parts available

** Optional feature

TKD SERIES 3-WAY BALL VALVES

Submittal Data Sheet

Installation Procedures

1. For socket and threaded style connections, remove the union nuts (part #18 on previous page) and slide them onto the pipe. For flanged connections, remove the union nut / flange assemblies from the valve.
2. Please refer to the appropriate connection style sub-section:
 - a. For socket style, solvent cement the end connectors (17) onto the pipe ends. For correct joining procedure, please refer to the section entitled, "Joining Methods – Solvent Cementing" in the IPEX Industrial Technical Manual Series, "Volume I: Vinyl Process Piping Systems". **Be sure to allow sufficient cure time before continuing with the valve installation.**
 - b. For threaded style, thread the end connectors (17) onto the pipe ends. For correct joining procedure, please refer to the section entitled, "Joining Methods – Threading" in the IPEX Industrial Technical Manual Series, "Volume I: Vinyl Process Piping Systems".
 - c. For flanged style, join the union nut / flange assemblies to the pipe flanges. For correct joining procedure, please refer to the section entitled, "Joining Methods – Flanging" in the IPEX Industrial Technical Manual Series, "Volume I: Vinyl Process Piping Systems".
3. Open and close the valve to ensure that the seat supports (14) are at the desired adjustment. If adjustment is required, remove the insert tool (1) from the handle (2). Line up the moldings on the tool with the slots in the seat supports. Tighten or loosen to the desired position then replace the tool on the handle. **For correct alignment of the ball and seat support system, adjustment should begin with the center port.**
4. Ensure that the socket o-rings (16) are properly fitted in their grooves then carefully place the valve in the system between the end connections. If anchoring is required, fix the valve to the supporting structure via the integral mounting flange on the bottom of the valve body (9).
5. Tighten the three union nuts. Hand tightening is typically sufficient to maintain a seal for the maximum working pressure. **Over-tightening may damage the threads on the valve body and/or the union nut, and may even cause the union nut to crack.**
6. Check the installation of the dedicated lock nut device DUAL BLOCK® (8) on the valve body.
7. Open and close the valve to ensure that the cycling performance is adequate. If adjustment is required, loosen the union nuts, remove the valve from the system, and then continue from Step 3.



TKD SERIES 3-WAY BALL VALVES

Submittal Data Sheet

Valve Maintenance

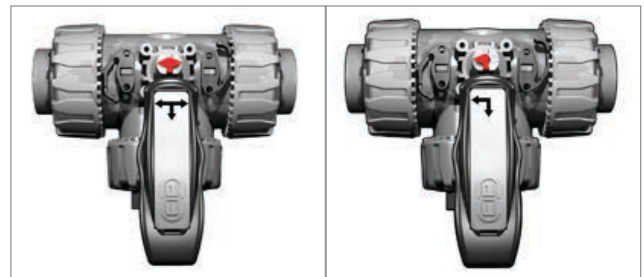
Disassembly

1. If removing the valve from an operating system, isolate the valve from the rest of the system. **Be sure to depressurize and drain the isolated branch and valve before continuing.**
2. Unlock the Dual Block® system by compressing the lever (8). Loosen the three union nuts (18) and drop the valve out of the line. If retaining the socket o-rings (16), take care that they are not lost when removing the valve from the line.
3. To disassemble, rotate the handle (2) to the following position:
 - a. For T-Port valves, the three arrows must line up with the three valve ports (The valve must be open at all three ports).
 - b. For L-Port valves, the two arrows must line up with ports "a" and "b" (see component diagram).
4. Remove the insert tool (1) from the handle then line up the moldings on the tool with the slots in the seat supports (14). Loosen and remove all three seat supports from the valve body (9).
5. Remove the ball (12) from the valve body while taking care not to score or damage the outer surface.
6. Remove the handle from the stem (7) by pulling upwards. To remove the stem, push it into the valve body from above.
7. Remove the seats (11), backing o-rings (10), and body o-rings (13) from the seat supports.
8. Remove the seat and backing o-ring from the inside of the valve body.
9. Remove the stem o-rings (5).
10. The valve components can now be checked for problems and/or replaced.

Assembly

Note: Before assembling the valve components, it is advisable to lubricate the o-rings with a water soluble lubricant. **Be sure to consult the "IPEX Chemical Resistance Guide" and/or other trusted resources to determine specific lubricant-rubber compatibilities.**

1. Properly fit the stem o-rings (5) in the grooves on the stem (7), then insert the stem from the inside of the valve body (9).
2. Line up the markings on the stem with the ports in the valve body.
3. Replace the backing o-ring (10) and seat (11) at the back of the valve body.
4. Insert the ball (12) into the valve body while ensuring that the ports line up with the markings on the stem.
5. Ensure that all body o-rings (13), backing o-rings, and seats are properly fitted on the three seat supports (14). Starting with the center port, tighten each support into the valve body using the insert tool (1).
6. Replace the handle (2) on the stem while ensuring that the position markings on the handle line up with those on the stem. Replace the insert tool on the handle.
7. Properly fit the socket o-rings (16) in their respective grooves.
8. Place the end connectors (17) into the union nuts (18), then thread onto the valve body taking care that the socket o-rings remain properly fitted in their grooves.



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Testing and Operating

The purpose of system testing is to assess the quality of all joints and fittings to ensure that they will withstand the design working pressure, plus a safety margin, without loss of pressure or fluid. Typically, the system will be tested and assessed in sub-sections as this allows for improved isolation and remediation of potential problems. With this in mind, the testing of a specific installed valve is achieved while carrying out a test of the overall system.

An onsite pressure test procedure is outlined in the IPEX Industrial Technical Manual Series, "Volume I: Vinyl Process Piping Systems" under the section entitled, "Testing". The use of this procedure should be sufficient to assess the quality of a valve installation. In any test or operating condition, it is important to never exceed the pressure rating of the lowest rated appurtenance in the system.

Important points:

- Never test thermoplastic piping systems with compressed air or other gases including air-over-water boosters.
- When testing, do not exceed the rated maximum operating pressure of the valve.
- Avoid the rapid closure of valves to eliminate the possibility of water hammer which may cause damage to the pipeline or the valve.

The TKD offers an optional locking mechanism that prevents unintentional rotation. A padlock can be installed through the handle as an additional safety precaution.

Please contact IPEX customer service and technical support with regard to any concern not addressed in this data sheet or the technical manual.



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- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems
- PVC, CPVC, PP, PVDF, PE, ABS, and PEX pipe and fittings

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