

VKD SERIES BALL VALVES

Submittal Data Sheet



Job or Customer:

Engineer:

Contractor:

Submitted by: Date

Approved by: Date

Order No: Date

Specification:

< STANDARDS >



ASTM D1784 ASTM D4101
 ASTM D2464 ASTM F437
 ASTM D2466 ASTM F439
 ASTM D2467 ASTM F1498



ANSI B1.20.1



ISO 11922-1



Certified to
 NSF/ANSI 61-G

IPEX VKD Series Ball Valves offer a variety of advanced features such as the patented seat stop carrier, a high quality stem and ball support system, and a multifunctional locking handle. The new DUAL BLOCK[®] system locks the union nuts preventing back-off due to vibration or thermal cycling. Deep grooves, thick o-rings, and cushioned Teflon[®] seats contribute to strong seals at pressures up to 232 PSI while an integral mounting flange and support bracketing combine for simple adaptation for actuation and anchoring. VKD Series Ball Valves are part of our complete systems of pipe, valves, and fittings, engineered and manufactured to our strict quality, performance, and dimensional standards.

VALVE AVAILABILITY

BODY MATERIAL	PVC, CPVC, PP
SIZE RANGE	1/2" through 4"
PRESSURE	up to 232 PSI, 150 PSI (PP)
SEATS	Teflon [®] (PTFE)
SEALS	EPDM or FPM
END CONNECTIONS	Socket (IPS), Threaded (FNPT) Socket (Metric)

Note: PVDF valves available on request

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Valve Selection

Size (inches)	Body Material	Seal Material	IPEX Part Number		Pressure Rating
			IPS Socket	FNPT Threaded	
3/8	PVC	EPDM	253067		232 psi for PVC and CPVC socket or threaded
		FPM	253068		
		EPDM	253069		
	CPVC	FPM	253070		
		EPDM	-	-	
		FPM	-	-	
1/2	PVC	EPDM	053461		232 psi for PVC and CPVC socket or threaded
		FPM	053467		
		EPDM	053473		
	CPVC	FPM	253008		
		EPDM	053513*	053519*	
		FPM	053525*	253002*	
3/4	PVC	EPDM	053462		232 psi for PVC and CPVC socket or threaded
		FPM	053468		
		EPDM	053474		
	CPVC	FPM	253009		
		EPDM	053614*	053520*	
		FPM	053526*	253003*	
1	PVC	EPDM	053463		232 psi for PVC and CPVC socket or threaded
		FPM	053469		
		EPDM	053475		
	CPVC	FPM	253010		
		EPDM	053515*	053521*	
		FPM	053527*	253004*	
1-1/4	PVC	EPDM	053464		232 psi for PVC and CPVC socket or threaded
		FPM	053470		
		EPDM	253476		
	CPVC	FPM	253011		
		EPDM	053516*	053522*	
		FPM	053528*	253005*	
1-1/2	PVC	EPDM	053465		232 psi for PVC and CPVC socket or threaded
		FPM	053471		
		EPDM	053477		
	CPVC	FPM	253012		
		EPDM	053517*	053523*	
		FPM	053529*	253006*	
2	PVC	EPDM	053466		150 psi for PP socket or threaded
		FPM	053472		
		EPDM	053478		
	CPVC	FPM	253013		
		EPDM	053518*	053524*	
		FPM	053530*	253007*	
2-1/2	PVC	EPDM	053539		150 psi for PP socket or threaded
		FPM	053542		
		EPDM	053545		
	CPVC	FPM	053548		
		EPDM	053540		
		FPM	053543		
3	PVC	EPDM	053540		150 psi for PP socket or threaded
		FPM	053543		
		EPDM	053546		
	CPVC	FPM	053549		
		EPDM	053541		
		FPM	053544		
4	PVC	EPDM	053541		150 psi for PP socket or threaded
		FPM	053544		
		EPDM	053547		
	CPVC	FPM	053550		
		EPDM	053547		
		FPM	053550		

Body Material:

- PVC CPVC
 PP PVDF

Size (inches):

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

Seals:

- EPDM
 FPM

End Connections:

- Socket (IPS)
 Threaded (FNPT)
 Flanged (ANSI 150)
 Socket (Metric)

IPEX Part Number:

* Socket (Metric)

Flanged valves available on request

2-1/2" - 4" threaded valves available on request

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Valve Selection – Vented

Vented ball valves are used with volatile liquids such as Hydrogen Peroxide (H₂O₂) and sodium hypochlorite (NaClO) to relieve a potentially dangerous pressure build-up in the ball cavity, when the valve is closed.

Size (inches)	Body Material	Seal Material	IPEX Part Number		Pressure Rating	
			IPS Socket	FNPT Threaded		
3/8	PVC	FPM	353028		232 psi for socket or threaded	
	CPVC		353000			
1/2	PVC		353083			
	CPVC		353021			
3/4	PVC		353084			
	CPVC		353022			
1	PVC		353085			
	PP		353023			
1-1/4	PVC		053503			
	CPVC		353024			
1-1/2	PVC		053504			
	CPVC		353025			
2	PVC		053505			
	CPVC		353026			
2-1/2	PVC		053506	-		
	CPVC		353027	-		
3	PVC	353086	-			
	CPVC	353029	-			
4	PVC	053562	-			
	CPVC	353030	-			

Flanged valves available on request
 2-1/2" – 4" threaded valves available on request

Body Material:

- PVC CPVC

Size (inches):

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

Seals:

- FPM

End Connections:

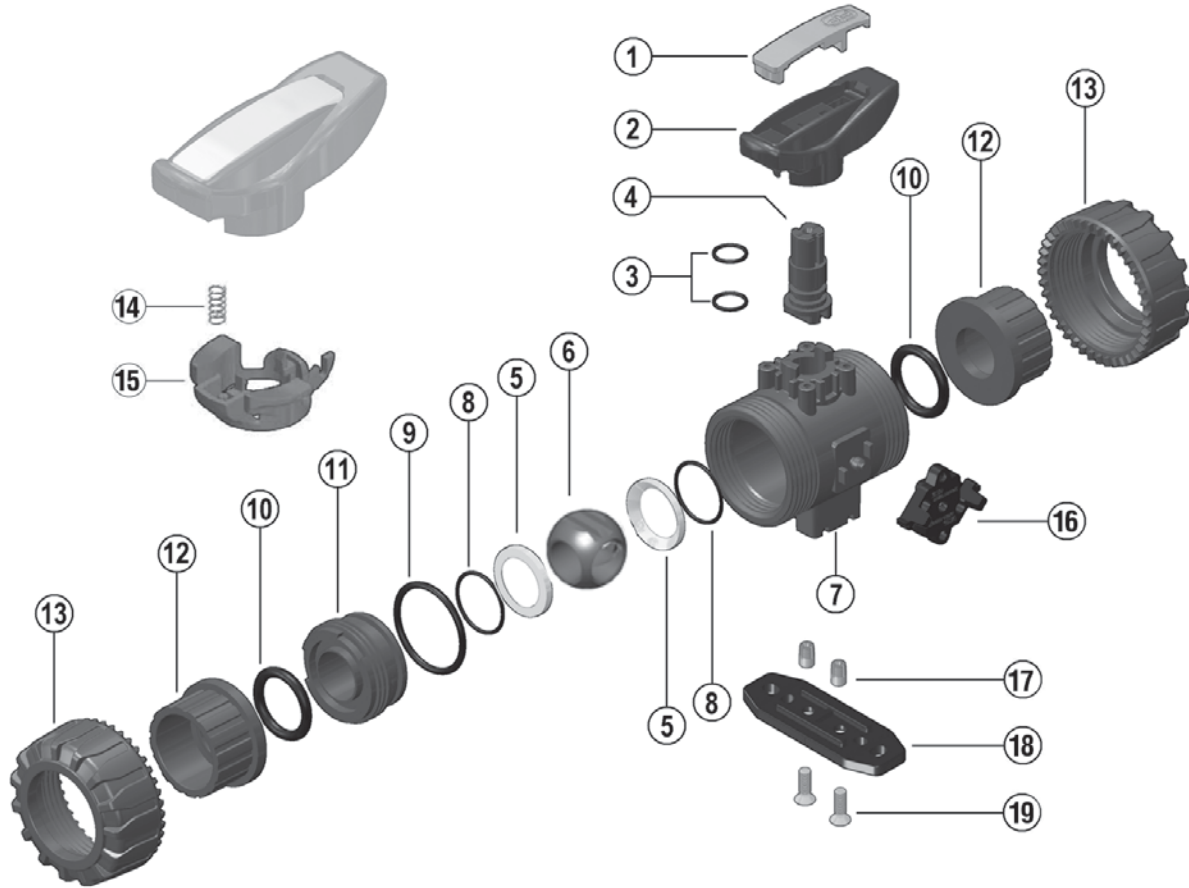
- Socket (IPS)
 Threaded (FNPT)
 Flanged (ANSI 150)

IPEX Part Number:

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Components: Sizes 1/2" to 2"



#	Component	Material	Qty
1	insert	PVC / CPVC / PP	1
2	handle	PVC / CPVC / PP	1
3	stem o-ring	EPDM / FPM	2
4	stem	PVC / CPVC / PP	1
5	ball seat	PTFE	2
6	ball	PVC / CPVC / PP	1
7	body	PVC / CPVC / PP	1
8	ball seat o-ring	EPDM / FPM	2
9	body o-ring	EPDM / FPM	1
10	socket o-ring	EPDM / FPM	2

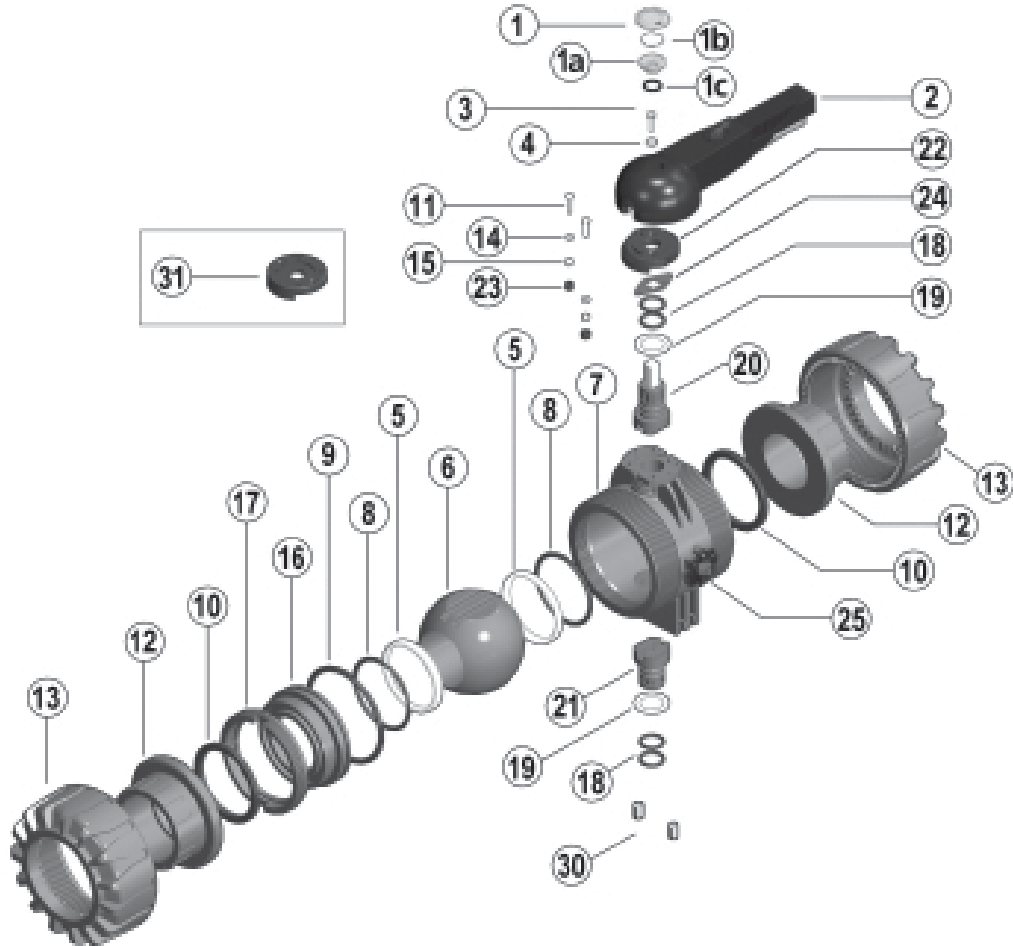
#	Component	Material	Qty
11	carrier with stop ring	PVC / CPVC / PP	1
12	end connector	PVC / CPVC / PP	2
13	union nut	PVC / CPVC / PP	2
14*	spring	SS	1
15*	handle lock	GRPP	1
16	DUAL BLOCK®	POM	1
17*	bracket bushing	SS / brass	2
18*	mounting plate	GRPP	1
19*	screw	SS	2

* Optional Accessories

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Components: Sizes 2-1/2" to 4"



#	Component	Material	Qty
1 a,b,c	transparent service plug	PE	1
2	handle	PVC	1
3	bolt	SS	1
4	washer	SS	1
5	ball seat	PTFE	2
6	ball	PVC / CPVC	1
7	body	PVC / CPVC	1
8	ball seat o-ring	EPDM / FPM	2
9	body o-ring	EPDM / FPM	1
10	socket seal	EPDM / FPM	2
11	bolt	SS	2
12	end connector	PVC / CPVC	2
13	union nut	PVC / CPVC	2
14	washer	SS	2
15	nut	SS	2
16	carrier	PVC / CPVC	1

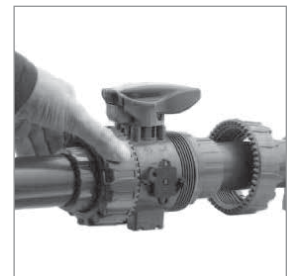
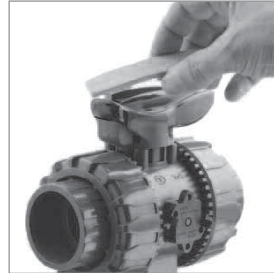
#	Component	Material	Qty
17	stop ring	PVC / CPVC	1
18	stem o-ring	EPDM / FPM	4
19	bushing	PTFE	2
20	upper stem	PVC / CPVC & SS	1
21	lower stem	PVC / CPVC	1
22	pad	GRPP	1
23	protective cap	PE	2
24	spring	SS	2
25	nut block	GRPP	2
26	cover	PP	1
27	nut block button	GRPP	1
28	protective cap	PE	1
29	screw	nylon	2
30	bracket bushing	brass	2
31	actuation pad	GRPP	1

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Installation Procedures

1. Remove the union nuts (part #13 on previous pages) and slide them onto the pipe.
2. Please refer to the appropriate connection style sub-section:
 - a. For socket style, solvent cement or fuse the end connectors (12) onto the pipe ends. For correct solvent cementing 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 (12) 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".
3. Open and close the valve to ensure that the carrier (11 or 16) is at the desired adjustment. If adjustment is required, ensure that the valve is in the closed position then remove the insert tool (1) from the handle (2). For sizes 2-1/2" to 4", use the tool that accompanies the valve. Line up the moldings on the tool with the slots in the carrier. Tighten or loosen to the desired position then replace the tool on the handle.
4. Ensure that the valve is in the closed position, and that the socket o-rings (10) are properly fitted in their grooves. If anchoring is required, insert the bracket bushings (17) into the bottom of the valve (sizes 1/2" to 2" only). Carefully place the valve in the system between the two end connections and fix if necessary.
5. Tighten the union nut on the side opposite to that which is marked "ADJUST". 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. Tighten the union nut on the side marked "ADJUST". Tightening the union nuts in this order results in the best possible valve performance due to optimum positioning and sealing of the ball and seat support system.
7. Open and close the valve to again ensure that the cycling performance is adequate. If adjustment is required, place the valve in the closed position, loosen the union nuts, remove the valve from the system, and then continue from Step 3.
8. Engage the Dual Block® system by affixing the molded piece (16, sizes 1/2" to 2") to the side of the valve body or by turning the red knob (27, sizes 2-1/2" to 4") to the locked position. This feature will prevent back-off of the union nuts during operation.



1/2" – 2" Dual Block® Mechanism

2-1/2" – 4" Dual Block® Mechanism



FREE



LOCK

Valve Maintenance

Disassembly

1. If removing the valve from an operating system, isolate the valve from the rest of the line. **Be sure to depressurize and drain the valve and isolated branch.**
2. If necessary, detach the valve from the support structure by disassembling the connections to the optional bracket on the bottom of the valve body (7).
3. Unlock the Dual Block® system by compressing the two ends of the molded piece (16, sizes 1/2" to 2") or by turning the red knob (27, sizes 2-1/2" to 4") to the unlocked position. Loosen both union nuts (13) and drop the valve out of the line. If retaining the socket o-rings (10), take care that they are not lost when removing the valve from the line.
4. Place the valve in the open position then line up the moldings on the wrench tool (1, sizes 1/2" to 2") with the slots in the carrier (found on the side marked "ADJUST"). Loosen and remove the carrier (11 or 16).
5. Carefully press the ball (6) out of the valve body, taking care not to score or damage the outer surface.
6. Remove the handle (2) by pulling upwards (sizes 1/2" to 2") or by removing transparent service plug (1 a,b,c), bolt (3) and washer (4) (sizes 2-1/2" to 4").
7. On sizes 2-1/2" to 4", remove the throttling pad (22) by loosening and removing the bolts (11), washers (14), nuts (15), and caps (23).
8. Press the stem (4 or 20) into the valve body from above. On sizes 2-1/2" to 4", remove the lower stem (21) by pushing it into the valve body from below.
9. The stem o-rings (3 or 18), body o-ring (9), ball seats (5), ball seat o-rings (8), and bushings (19, sizes 2-1/2" to 4") can now be removed and/or replaced.

Note: It is not typically necessary to disassemble the Dual Block® components.

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. Replace the stem o-rings (3 or 18), body o-ring (9), ball seat o-rings (8), ball seats (5), and bushings (19, sizes 2-1/2" to 4") in their proper positions.
2. Insert the stem (4 or 20) into position from inside the valve body (7). On sizes 2-1/2" to 4", insert the lower stem (21) as well.
3. On sizes 2-1/2" to 4", replace the throttling pad (22) and affix in position using the bolts (11), washers (14), and nuts (15). Replace the caps (23) over the nuts.
4. Replace the handle (2). On sizes 2-1/2" to 4", affix using the bolt (3) and washer (4), then replace the transparent service plug (1 a,b,c).
5. Carefully insert the ball (6) into the valve body, taking care not to score or damage the outer surface. **Ensure that the valve handle and ball position correspond to the same operating position.**
6. Insert the threaded carrier (11 or 16) and tighten into the valve body. Use the wrench tool to sufficiently tighten.
7. Place the end connectors (12) into the union nuts (13), then thread onto the valve body taking care that the socket o-rings remain properly fitted in their grooves.
8. Engage the Dual Block® system by affixing the molded piece (16, sizes 1/2" to 2") to the side of the valve body or by turning the red knob (27, sizes 2-1/2" to 4") to the locked position.



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Testing & Operation

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:

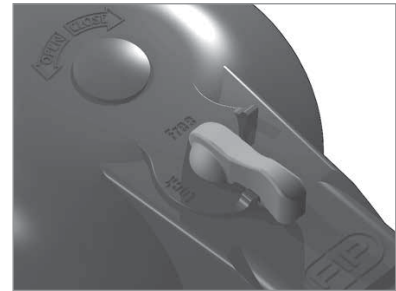
- Never test thermoplastic piping systems with compressed air or other gases including air-over-water boosters.
- When testing, do not exceed the rated maximum operating pressure of the valve.
- Avoid the rapid closure of valves to eliminate the possibility of water hammer which may cause damage to the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

For safety reasons, please contact IPEX customer service and technical support when using volatile liquids such as hydrogen peroxide (H₂O₂) and sodium hypochlorite (NaClO). These liquids may vaporize causing a potentially dangerous pressure increase in the dead space between the ball and the valve body. Special VKD ball valves are available for these types of critical applications.

Note: The VKD handle incorporates a locking mechanism that prevents unintentional rotation. When engaged, the spring-loaded handle release is locked and the valve cannot be cycled. A padlock can be installed through this portion of 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.

Size 2-1/2"

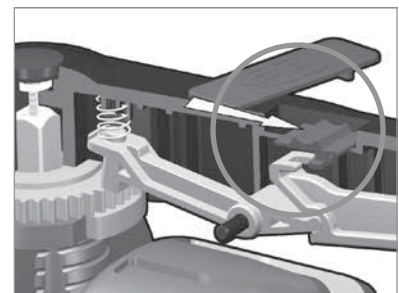


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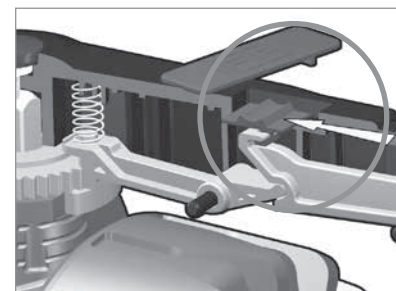


LOCK

Size 3" - 4"



FREE



LOCK

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- Electrical systems
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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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