

VV Series Ball Valves

Product Data Sheet



< STANDARDS >



ASTM D1784
ASTM D2466
ASTM D2467
ASTM D2464



ANSI B1.20.1
ANSI B16.5

The VV Series Angle Seat Valve is designed for economical throttling of flow, and is particularly suitable for on-off service of clean fluids. The 45° angle seat (Y-pattern) design allows for the valve to be installed in both vertical and horizontal orientations and for simple top-entry maintenance while the valve is installed in line. The VV Series Angle Seat Valve is available in a True Union body design, in PVC with EPDM seals and PTFE gland packing. VV Series Angle Seat 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
Size Range:	1/2" through 2"
Pressure:	232 psi (1/2" to 1"), 150 psi (1-1/4" to 2")
Seals:	EPDM
End Connections:	Socket (IPS), Threaded (FNPT)

ipexna.com
Toll Free: 800 463-9572



1.0 Check Valves – VV

1.1 Material

- The valve body, end connectors, and unions shall be made of PVC compound which shall meet or exceed the requirements of cell classification 12454 according to ASTM D1784.
- This compound shall comply with standards that are equivalent to NSF Standard 61 for potable water.

1.2 Gland Packing

- The gland packing shall be made of PTFE which shall comply with standards that are equivalent to NSF Standard 61 for potable water.

1.3 Seals

- The o-ring seals and shutter shall be made of EPDM which shall comply with standards that are equivalent to NSF Standard 61 for potable water.

- 1.4 All other wetted and non-wetted parts of the valves shall comply with standards that are equivalent to NSF Standard 61 for potable water.

2.0 Connections

2.1 Socket Style

- The IPS socket PVC end connectors shall conform to the dimensional standards ASTM D2466 and ASTM D2467.

2.2 Threaded Style

- The female NPT threaded PVC end connectors shall conform to the dimensional standards ASTM D2464, ASTM F1498, and ANSI B1.20.1.

3.0 Design Features

- All valves shall have true union ends.
- All valves shall be y-pattern style in design.
- The valve shall function in both horizontal and vertical lines.
- Servicing of the valves shall be possible without removal from the line.

VV Series Ball Valves

Sample Specification (cont'd)

3.1 Pressure Rating

- Valve sizes 1/2" through 1" shall be rated at 232 psi at 73°F.
- Valve sizes 1-1/4" through 2" shall be rated at 150 psi at 73°F.

3.2 Markings

- All valves shall be marked to indicate size, material designation, and manufacturers name or trade mark.

3.3 Color Coding

- All PVC valves shall be color-coded dark gray.

4.0 All valves shall be Xirtec® PVC by IPEX or approved equal.

VV Series Ball Valves

Valve Selection

Size (inches)	Body Material	O-ring Material	IPEX Part Number		Pressure Rating
			IPS Socket	FNPT Threaded	
1/2	PVC	EPDM	253869		232 psi
3/4	PVC	EPDM	253870		
1	PVC	EPDM	253871		
1-1/4	PVC	EPDM	253872		150 psi
1-1/2	PVC	EPDM	253873		
2	PVC	EPDM	253874		

Size (inches):

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

Seals:

- EPDM

End Connections:

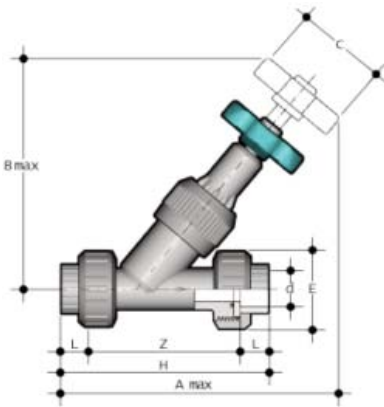
- Socket (IPS)
- Threaded (FNPT)

IPEX Part Number:

VV Series Ball Valves

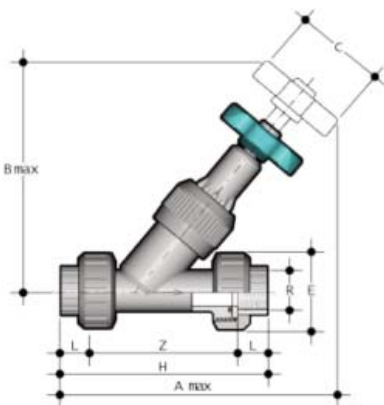
Technical Data

dimensions



IPS Socket Connections – Dimension (inches)

Size	d	Bmax	C	E	L	Z	H	Amax
1/2"	0.84	4.88	2.36	2.17	0.89	4.45	6.23	6.69
3/4"	1.05	5.75	2.36	2.6	1	5.02	7.02	7.76
1"	1.32	6.81	2.76	2.95	1.13	5.7	7.96	8.78
1-1/4"	1.66	7.68	3.35	3.43	1.26	6.74	9.26	10.16
1-1/2"	1.9	8.74	4.13	3.94	1.38	7.57	10.33	11.61
2"	2.38	10.59	5.12	4.72	1.5	9.2	12.2	14.13



Female NPT Threaded Connections – Dimension (inches)

Size	R	Bmax	C	E	L	Z	H	Amax
1/2"	1/2" NPT	4.88	2.36	2.17	0.7	4.45	5.85	6.69
3/4"	3/4" NPT	5.75	2.36	2.6	0.71	5.02	6.44	7.76
1"	1" NPT	6.81	2.76	2.95	0.89	5.7	7.48	8.78
1-1/4"	1-1/4" NPT	7.68	3.35	3.43	0.99	6.74	8.72	10.16
1-1/2"	1-1/2" NPT	8.74	4.13	3.94	0.97	7.57	9.51	11.61
2"	2" NPT	10.59	5.12	4.72	1.17	9.2	11.54	14.13

VV Series Ball Valves

Technical Data (cont'd)

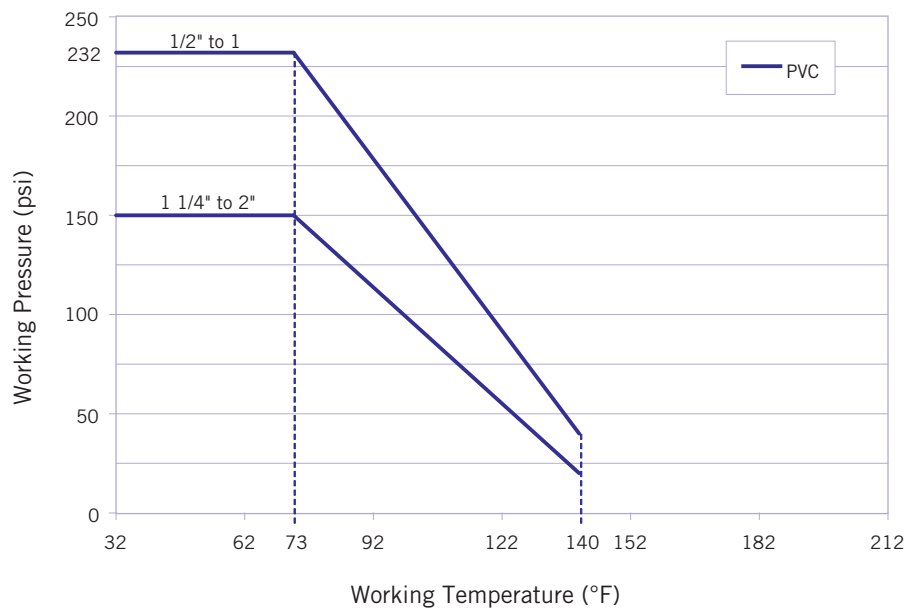
weights



Approximate Weight (lbs)

Size	IPS Socket	FNPT Threaded
1/2	0.55	0.55
3/4	0.91	0.91
1	1.37	1.37
1-1/4	1.99	1.99
1-1/2	2.91	2.91
2	4.93	4.93

pressure – temperature ratings



VV Series Ball Valves

Technical Data (cont'd)

flow coefficients



The flow coefficient (CV) represents the flow rate in gallons per minute (GPM) at 68°F for which there is a 1 psi pressure drop across the valve in the fully open position. These values are determined from an industry standard testing procedure which uses water as the flowing media (specific gravity of 1.0). To determine specific flow rate and pressure loss scenarios, one can use the following formula:

Size	CV
1/2	7.70
3/4	14.4
1	26.3
1-1/4	39.2
1-1/2	58.5
2	91.0

$$f = sg \times \left(\frac{Q}{C_v} \right)^2$$

Where,

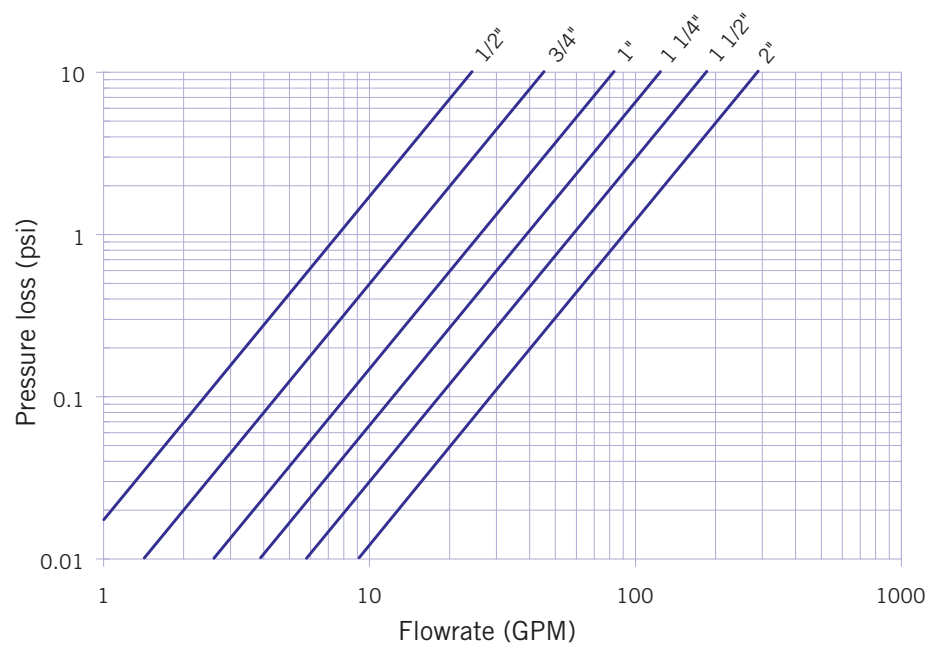
f is the pressure drop (friction loss) in psi,

sg is the specific gravity of the fluid,

Q is the flow rate in GPM,

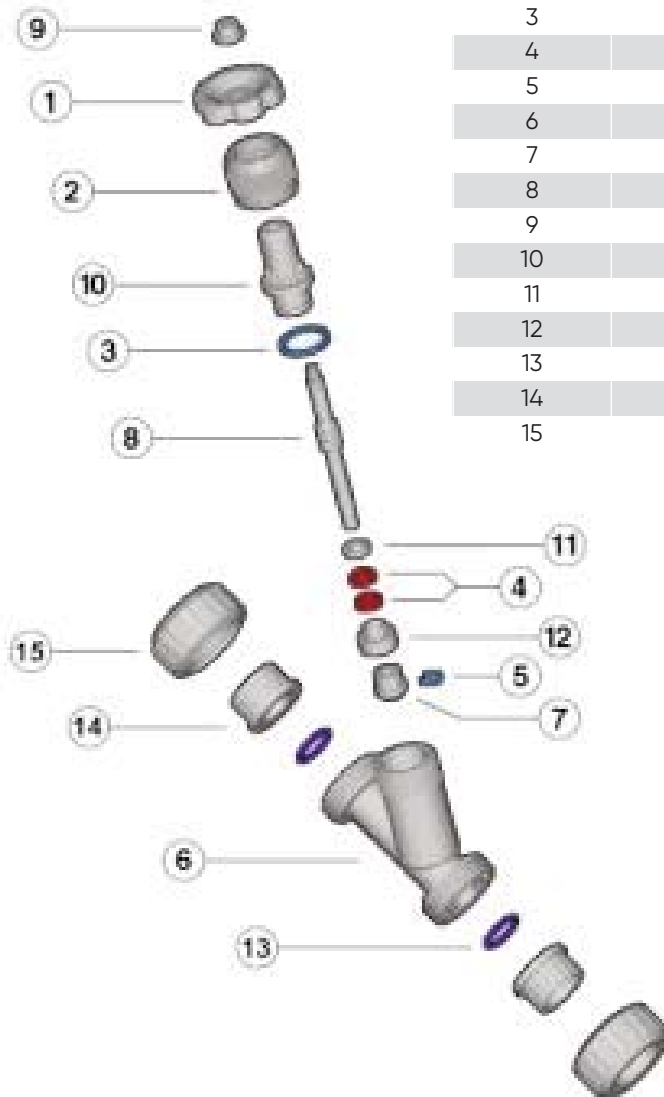
C_v is the flow coefficient.

pressure loss chart



VV Series Ball Valves

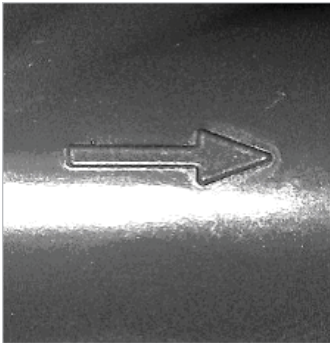
Components



#	Component	Material	Qty
1	Hand-wheel	PVC	1
2	Union nut	PVC	1
3	O-Ring	EPDM	1
4	Gland packing	PTFE	2
5	Fork	PVC	1
6	Body	PVC	1
7	Swivel Plug	PVC	1
8	Stem	PVC	1
9	Lock Nut	PVC	1
10	Bonnet	PVC	1
11	Bottom bushing	PVC	1
12	Gland	PVC	1
13	Socket seal O-Ring	EPDM	2
14	End connector	PVC	2
15	Union-nut	PVC	2

VV Series Ball Valves

Installation Procedures



True Union Style

1. For socket and threaded style connections, remove the union nuts (part #15 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 the end connectors (14) 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 (14) 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. Ensure that the valve is in the correct orientation, and that the socket o-rings (13) are properly fitted in their grooves. Carefully place the valve in the system between the two end connections.
4. Tighten both union nuts and the unin nut (2). 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 nut, and may even cause the nut to crack.**

VV Series Ball Valves

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. Loosen both union nuts (15) and drop the valve out of the line. If retaining the socket o-rings (13), take care that they are not lost when removing the valve from the line.
3. Unscrew the lock nut (2) and remove the entire valve mechanism from the body (6)
4. Remove the fork (5) and release the swivel plug (7)
5. Remove the gland (12)
6. Unscrew the hand-wheel lock nut (9) and remove the han-wheel (1) and body lock nut (2)
7. Unscrew the stem (8) clock wise until it comes out of the bonnet (10). The gland packing (4), bottom bushing (11), and the o-ring (3) are now accessible and may be easily removed.

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. Insert the stem (8) into the bonnet (10) and screw down until the base of the threads has entered the body housing
2. Place the o-ring (3), the bottom bushing (11) and the gland packing (4) onto the stem. Rotate the stem until the square portion has completely emerged from the top of the bonnet taking care to spread a thin film of compatible, water based lubricant on the thread
3. Place the body union nut (2) over the bonnet (10) and fit the handwheel (1) over the square section of the stem. Screw the hand wheel lock nut (9) onto the stem, inserting the fork (5) to retain it.
4. Insert the assembly into the valve body, taking care that the locating plug on the valve bonnet fits into the notch on the body.
5. Ensure that the socket o-rings (13) are properly fitted in their grooves, place the end connectors into the union nuts (15), then tighten onto the valve body.

VV Series Ball Valves

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.

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

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the world's largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Electrical systems
- Telecommunications and utility piping systems
- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems
- PVC, CPVC, PP, PVCO, ABS, FR-PVDF, NFRPP, FRPP, PVDF and PE pipe and fittings (1/2" to 60")

Xirtec® is a registered trademark of IPEX Branding Inc.

This literature is published in good faith and is believed to be reliable. However, it does not represent and/or warrant in any manner the information and suggestions contained in this brochure. Data presented is the result of laboratory tests and field experience.

A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.