



Backwater, Sewage & Sump Pump Specialty Valves



ENGINEERING GUIDE

Contact Spears® for any Information not found.



Sewer Disconnect

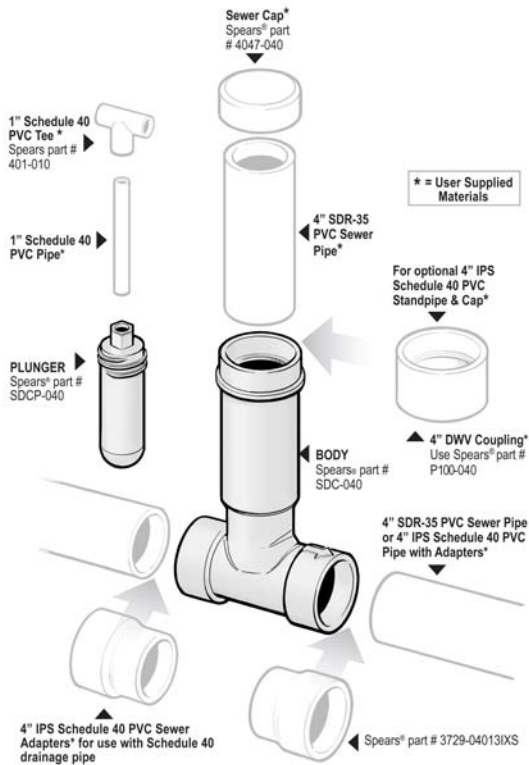
Spears® Sewer Disconnect functions as both cleanout and disconnect device, plus helps prevent sewage backup during hurricanes and floods. Complete unit consists of body and plunger (sold separately - both parts are required for proper use). The plunger can be screwed into the body to block solids waste flow. The plunger should be removed from the body and stored when not in use to prevent accidental closing (i.e., from ground vibration, etc.).



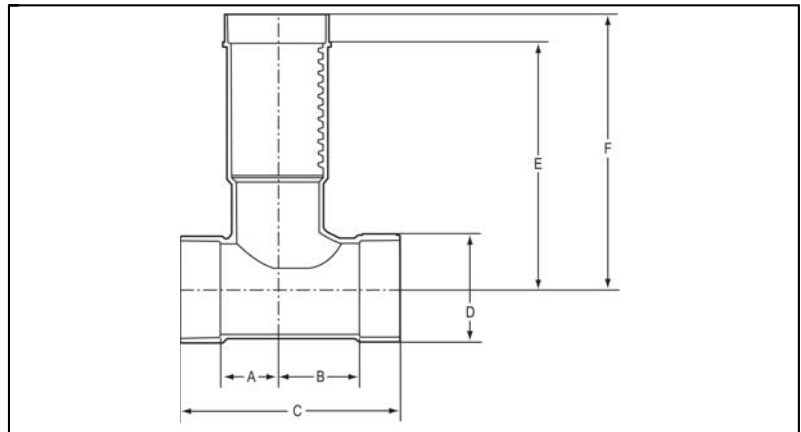
- Connects directly to 4" or 6" SDR-35 (or any ASTM D3034/D2729)PVC Sewer Pipe.
- Easily adapted to 4" or 6" Schedule 40 PVC Drainage Pipe with addition of IPS x Sewer Adapters, Socket x Spigot, Spears® part no. 3729-04013IXS for 4" or 3729-06013IXS for 6".
- User-supplied standpipe can be installed to grade using PVC Sewer Pipe connected to the body branch socket and a Sewer Cap to close off (Spears® part no. 4047-040 for 4" or 4047-060 for 6"). Optionally, user-supplied Schedule 40 Pipe can be used for standpipe with addition of a Schedule 40 DWV Socket Coupling (Spears® part no. P100-040 for 4" or P100-060 for 6") and Cap (Spears® part no. P116-040 for 4" or P116-060 for 6").
- T-handle for Plunger operation can be easily fabricated from user-supplied 1"

Note - the unit restricts flow by approximately 85%. As a result, the unit must be located in the sewer line where solids are present. Full disconnect is not achieved without solids in the flow.

Auxiliary Components (Purchased Separately)



Standard Valve Dimensions



Size	A	B	C	D	E	F
4	2-1/2	3-1/2	9-1/2	4-21/32	10-3/4	12
6	3-5/8	5-1/16	14-11/16	6-15/16	14	16

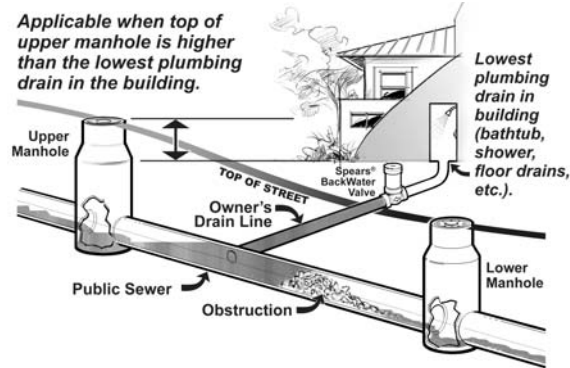


Valves Technical Utility Backwater Valve

Introduction to Backwater Valves

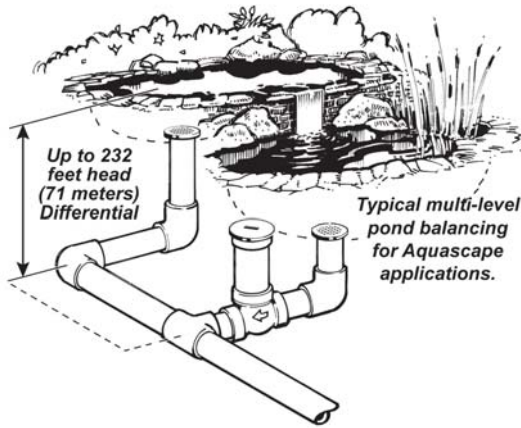
A Backwater Valve is designed to function as a check valve in a drainage pipe to prevent flowing liquid, such as sewage, from reversing its direction. There are other applications for Backwater Valves, such as multi-level pond balancing for Aquascape applications or for storage tank balancing for industrial and agricultural applications. Backwater Valves should not be confused with Backflow Preventers which are used in potable water supply systems.

Backwater valves are most important if you are on a public sewer system, especially if you are the lowest home on the line where you could have everyone's sewage above you flow into your home if there is a stoppage in the mainline after your connection. Some jurisdictions require Backwater Valves on new construction:

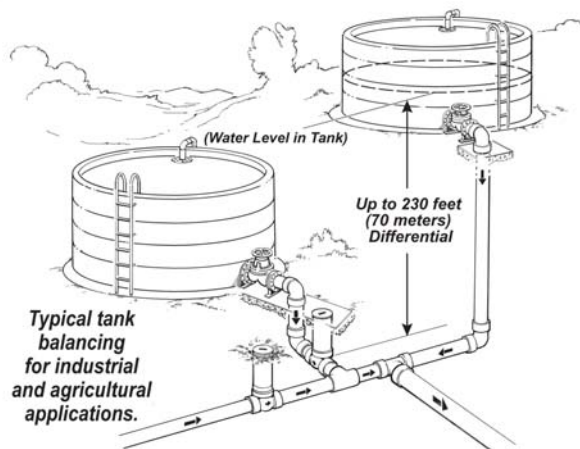


TYPICAL SITUATION WHERE A BACKWATER VALVE IS NECESSARY.
Sewage Application Diagram

Backwater Valves are excellent for maintaining equal water levels in multi-level ponds and storage tanks:



Pond Application Diagram



Storage Tank Application Diagram

Spears® Backwater Valves are offered in an economical Utility Backwater Valve or the full featured Industrial Backwater Valve designs, in a variety of sizes and pressure handling capacities.



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Backwater valves are most important if you are on a public sewer system, especially if you are the lowest home on the line where you could have everyone's sewage above you flow into your home if there is a stoppage in the mainline after your connection. Some jurisdictions require Backwater Valves on new construction.

Spears® Utility Backwater Valves feature an easily serviceable and replaceable Flapper Assembly with extendable access using standard piping components. Designed for direct solvent cement connection to ASTM D 2665 DWV drainage pipe or any other IPS size pipe. Spears® IPS x Sewer adapters easily convert valve to ASTM D 3034 SDR 35 Sewer Pipe. Backwater Valves conform to requirements of ASME/ANSI A112.14.1 Utility Backwater Valves are designed to prevent backflow in numerous applications where easy service access for maintenance and cleaning is needed.

Features

- Replaceable internal flapper assembly
- Vertical 3-Way or Horizontal Design
- Extension Kit Adapter components allow easy construction of a valve extension with user supplied pipe cut to desired length
- Direct Valve Connection to ASTM D 2665 PVC DWV or other IPS size pipe. Spears® IPS DWV x Sewer & Drain Adapter Bushings are available for connection to ASTM D 3034 & ASTM D 2729 Sewer pipe
- Standard Valve Adapters Pressure Rated to 50 psi (115 feet of head) @ 73°F (23°C) - Optional 100 psi Adapter (232 feet of head) available
- Conforms to ASME/ANSI A112.14.1 for Backwater Valves

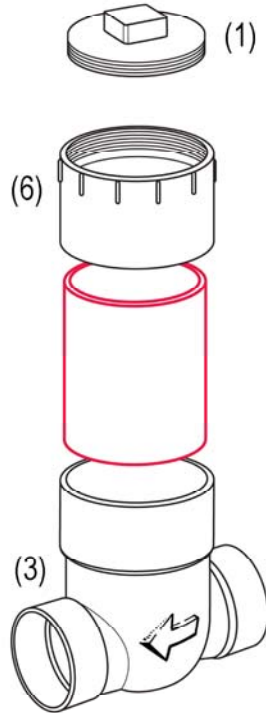


Valves Technical Utility Backwater Valve

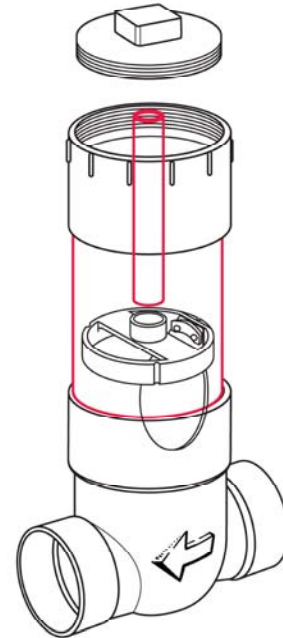
Spears® Utility Backwater Valve has been engineered for easier installation with included Extension Kit Adapter components for use with User-Supplied Schedule 40 Class 125 Extension Riser pipe cut to desired length. Utility Backwater Valve package comes with 50 psi (115 feet of head) rated Extension Adapters. Optional Adapter Kits available in 100 psi (232 feet of head) rating. Can also use User-supplied equivalent adapter components..

1. Access Plug
2. Flapper
3. Valve Body
4. User Supplied 6" Riser Extension Pipe (SCH 40 or Class 125 - do not use SCH 80 pipe)
5. Collar
6. DWV Cleanout Adapter
7. User Supplied 1" or 1-1/4" Internal Extension Pipe (for lifting Flapper Assembly to service)

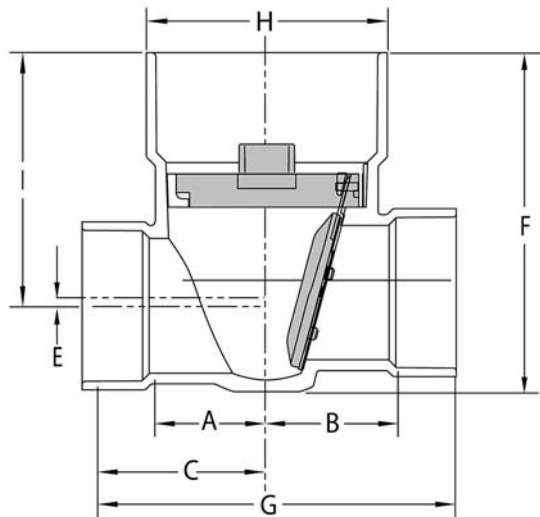
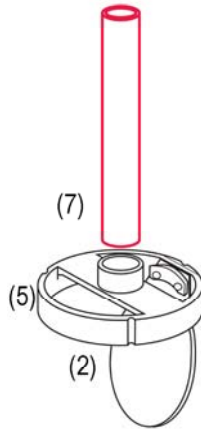
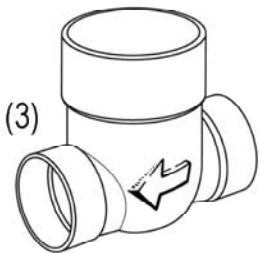
Extension Kit



Assembly



Valve



VALVE DIMENSIONS

Size	A	B	C	E	F	G	H	I
3"	3-5/8	3-13/16	5-3/16	7/16	7-5/8	10-5/8	7-1/4	9-5/8
4"	3-3/4	3-3/16	5-1/2	3/8	7-9/16	11-1/4	7-1/4	10-1/8
6"	4-15/16	4-15/16	8	1/2	9-15/16	15-15/16	9-3/8	13-9/16



Basic Valve

- All PVC Construction with EPDM Flapper Seal
- Threaded Top Plug for Convenient Service
- Simple Snap-In Internal Flapper Assembly for Easy Replacement
- Optional Factory Assembled Service-Access Extension Kits - External Housing with Internal Extension for Convenient Removal, Inspection or Replacement
- Optional Extension Components Kits for Assembly with User-Supplied Pipe
- Available in Sizes 2", 3", 4" and 6" with Socket Ends
- Direct Connection to ASTM D 2665 PVC DWV or other IPS size pipe. Spears® IPS x Sewer Adapters available for Connection to ASTM 3034 Sewer
- Conforms to ASME/ANSI A112.14.1 for Backwater Valves
- Pressure Rated to 43 psi (100 feet of head) @ 73°F

Sample Engineering Specification

All thermoplastic valves shall be Backwater type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454. All Valve Seats shall be EPDM. All valves shall have external Arrow Flow Indicator. All valves shall be pressure rated to 43 psi (100 feet of Head) for water @ 73°F as manufactured by Spears® Manufacturing Company.

Quick-View Backwater Valve Selection Chart, Standard Valve

Valve Size	Seat Material	PVC Material	Pressure Rating
		Socket	
2	EPDM	S275P	43 psi (100 feet of Head)
3	EPDM	S375P	
4	EPDM	S475P	
6	EPDM	S675P	

Features - PVC Gray

Backwater Valves are designed to prevent backflow in numerous applications where easy service access for maintenance and cleaning is needed. Excellent for use in sanitary or storm sewer drainage systems to prevent waste back up due to inadequate drainage, for balancing multi-level ponds, aquaculture features or storage tank systems, and many other applications. Spears® Backwater Valve has been engineered for improved function and easier service, especially in buried service with use of optional Service-Access Extension Kit.



Valve with Extension Kit

PVC Service-Access Extension Kit Options:

Available as a complete unit, with or without valve, factory assembled to internal flap assembly, extension pipe, and external extension housing with top access adapter in convenient increments of 12", 16", 20", 24", 36", and 48" (measured from top of valve to top of extension). All extension kits can be cut shorter in the field for custom fits. Also available as Extension Components Kits, with or without valve for assembly with user-supplied Class 125 or Schedule 40 pipe. Kits without valve require use of existing valve top Access Plug, all kits require solvent cement assembly to valve. Contact Spears® for MSRP on custom cut lengths.

Quick View Extension Components Kit Options

Extension Adapters and Flap Assembly with or without valve. Must be assembled with user-supplied Class 125 or Schedule 40 Pipe.

Valve Size	Socket Valve With Extension Component Kit	Extension Component Kit Only	Pressure Rating
2	S275P-AK	S275P-ECK	43 psi (100 feet of head)
3	S375P-AK	S375P-ECK	
4	S475P-AK	S475P-ECK	
6	S675P-AK	S675P-ECK	



Valves Technical Industrial Backwater Valves

Quick-View Backwater Valves with Extension Kit to Premade Lengths

Socket Valve with complete Extension Assembly in precut lengths.

Valve x Extension Size ¹	Socket Valve With Extension	Valve x Extension Size ¹	Socket Valve With Extension	Pressure Rating
2 x 12HT	S275P-120	4 x 12HT	S475P-120	43 psi (100 feet of head)
2 x 16HT	S273P-160	4 x 16HT	S473P-160	
2 x 20HT	S275P-200	4 x 20HT	S475P-200	
2 x 24HT	S275P-240	4 x 24HT	S475P-240	
2 x 36HT	S275P-360	4 x 36HT	S475P-360	
2 x 48HT	S275P-480	4 x 48HT	S475P-480	
3 x 12HT	S375P-120	6 x 12HT	S675P-120	
3 x 16HT	S373P-160	6 x 16HT	S673P-160	
3 x 20HT	S375P-200	6 x 20HT	S675P-200	
3 x 24HT	S375P-240	6 x 24HT	S675P-240	
3 x 36HT	S375P-360	6 x 36HT	S675P-360	
3 x 48HT	S375P-480	6 x 48HT	S675P-480	

¹ - Size designates nominal valve size x extension height (HT-top of valve to top of extension, inches).

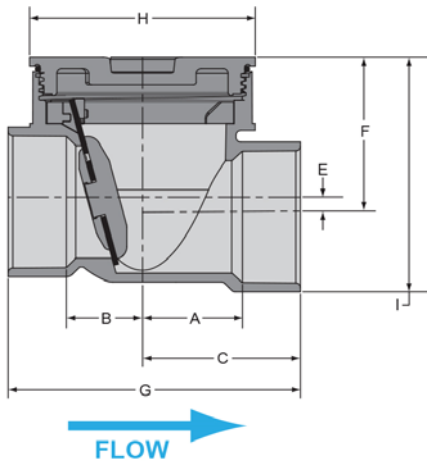
Quick-View Service Access Extension Kit Only In Premade Lengths

(valve not included)
Extension Assembly in precut lengths. Use existing valve top Access Plug.

Size ¹	Premade Extension	Size ¹	Premade Extension	Pressure Rating
2 x 12HT	SAEK-020-120	4 x 12HT	SAEK-040-120	43 psi (100 feet of head)
2 x 16HT	SAEK-020-160	4 x 16HT	SAEK-040-160	
2 x 20HT	SAEK-020-200	4 x 20HT	SAEK-040-200	
2 x 24HT	SAEK-020-240	4 x 24HT	SAEK-040-240	
2 x 36HT	SAEK-020-360	4 x 36HT	SAEK-040-360	
2 x 48HT	SAEK-020-480	4 x 48HT	SAEK-040-480	
3 x 12HT	SAEK-030-120	6 x 12HT	SAEK-060-120	
3 x 16HT	SAEK-030-160	6 x 16HT	SAEK-060-160	
3 x 20HT	SAEK-030-200	6 x 20HT	SAEK-060-200	
3 x 24HT	SAEK-030-240	6 x 24HT	SAEK-060-240	
3 x 36HT	SAEK-030-360	6 x 36HT	SAEK-060-360	
3 x 48HT	SAEK-030-480	6 x 48HT	SAEK-060-480	

¹ - Size designates nominal valve size x extension height (HT-top of valve to top of extension, inches). All extension kits can be cut shorter in the field for custom fits.

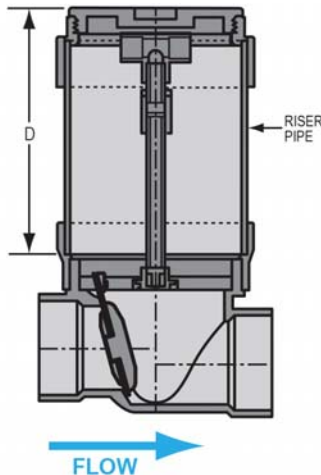
STANDARD VALVE



Standard Valve Dimensions

Size	A	B	C	E	F	G	H	I
2	1-13/16	1-3/4	2-5/8	5/16	3-1/4	5-9/32	4-3/16	4-9/16
3	2-5/8	2	4-3/16	13/32	4-1/8	7-3/4	6	6-1/8
4	3-5/8	3-3/4	5-7/16	23/32	5-7/16	10-15/16	8-1/4	7-15/16
6	4-3/4	4-5/8	7-3/4	13/16	7-3/16	15-3/8	11-1/4	10-13/16

VALVE WITH EXTENSION KIT



Valve with Extension Kit Dimensions (Inches)

HEIGHT-D
12
16
20
24
36
48
D = Top of plug Standard Valve to top of plug with Extension

Sump Pump Swing Check Valves



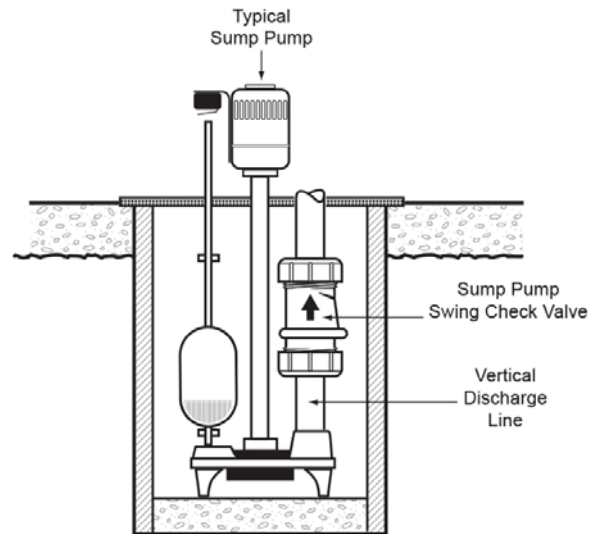
Features - PVC White & PVC Clear

Spears® Sump Pump Swing Check Valves provide a high performance specialty valve engineered for use on sump pump discharge lines, as illustrated. This compact valve is a maintenance free sealed Check Valve featuring long-life EPDM elastomer seats and weighted disc for full-flow with minimal restriction and positive shutoff. Produced in PVC White with compression type end connectors. Dual-fit design is available with Buna-N Gaskets for both 1-1/4" and 1-1/2" pipe.

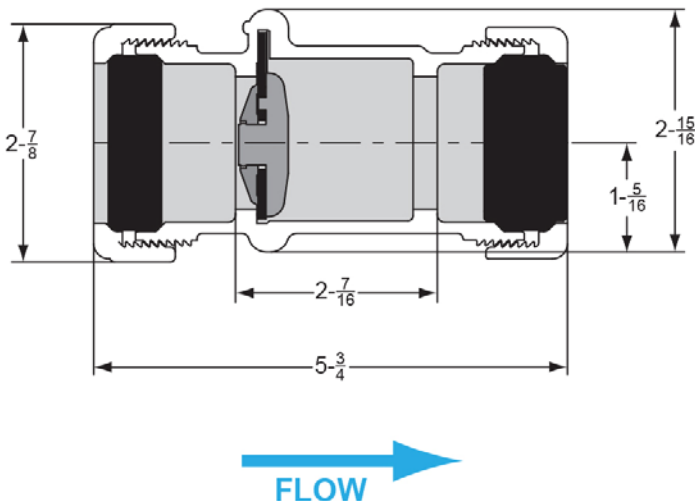
- All Plastic Construction with Elastomer Seals — No Metal Parts
- Includes Compression End Connectors with Buna-N Gaskets for Use on Either 1-1/4" or 1-1/2" Pipe
- Angled Seat and Weighted Flapper for Low-Pressure Seal
- Pressure Rated to 150 psi @ 73°F Full-Flow (open) and 75 psi @ 73°F Back Pressure (closed)
- Suitable for Vertical Up-flow or Horizontal Installations

Sample Engineering Specification

All thermoplastic check valves shall be Sump Pump Swing Check type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454. All valves shall be maintenance free seal unit construction with EPDM seat and weighted disc. All valves shall have external flow arrow direction designation. All valves shall be dual-fit design with Buna-N Compression Gaskets for use with either IPS sizes 1-1/4" or 1-1/2" pipe. All valves shall be pressure rated to 150 psi for water @ 73°F in full flow (open) position and to 75 psi @ 73°F back pressure (closed), as manufactured by Spears® Manufacturing Company.



Dimensions



General Installation Information: Sump Pump Swing Check Valves may be installed in either vertical up-flow (see illustration) or horizontal positions on pump discharge line. Check valves **MUST** be installed with the valve's **FLOW** arrow pointing in the direction of the flow. In horizontal installations, the designated side must be positioned "up". Do Not install Check Valve upside down.

Quick-View Sump Pump Swing Check Valve Selection Chart

Valve Size	Seat Material	PVC Material ¹	Pressure Rating
		Socket	
1-1/4 & 1-1/2	EPDM	S1400-15	150 psi @ 73°F Full Flow (Open) 75 psi Back Pressure (Closed)

¹: For PVC Clear Sump Pump, replace dash (-) separator with the letter "C" in the part number (e.g., S1400C15)



Valves Technical Swing Check Ball Valves



Features - PVC White

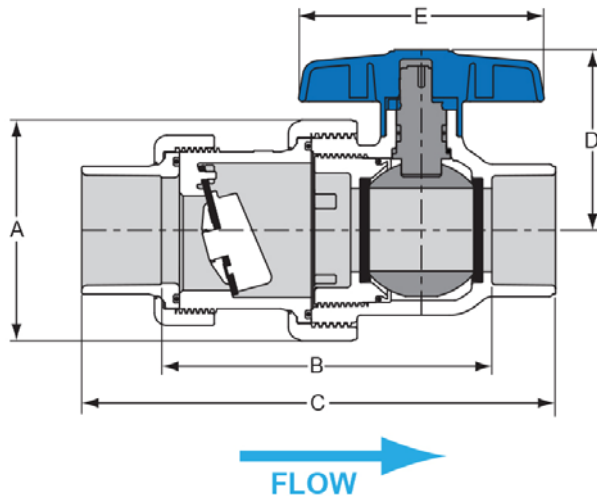
Spears® Swing Check Ball Valve offers a compact, high performance one-piece combination valve for applications requiring an in-line Ball Valve and Check Valve. This space, time and labor saving valve is designed for general purpose use and in wastewater pumping applications, such as ejector pits. Provides quick shut-off for easy pump or equipment servicing. Fully serviceable Ball Valve with replaceable, maintenance free sealed Check Valve Cartridge featuring long-life EPDM elastomer seats and weighted disc for full-flow with minimal restriction and positive shutoff. Produced in PVC White with socket end connectors. Available in IPS sizes 1-1/2" and 2".

- Compact, Space-Saving Design
- Union Design Allows Easy Service and Cleaning
- High Grade EPDM Seals
- Replaceable PTFE/HDPE Ball Valve Seats
- Safe-T-Blocked® Seal Carrier on Ball Valve with Safe-T-Shear® Stem and High Impact Polypropylene Handle
- Replaceable Sealed Check Valve Cartridge with Weighted EPDM Seat
- Pressure Rated to 150 psi @ 73°F Full-Flow (open) and 75 psi @ 73°F Back Pressure (closed)
- Suitable for Horizontal or Vertical Up-flow Installations

Sample Engineering Specification

All thermoplastic check valves shall be Swing Check Ball Valve combination type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454. All Ball Valve units shall have Safe-T-Shear® stem, Safe-T-Blocked® Seal Carrier and double stop Polypropylene handle. All valve components shall be replaceable. All Swing Check Units shall be maintenance free seal unit construction with EPDM seat and weighted disc. All valves shall have external flow arrow direction designation. All valves shall be pressure rated to 150 psi for water @73°F in full flow (open) position and to 75 psi @ 73°F back pressure (closed), as manufactured by Spears® Manufacturing Company.

General Installation Information: Swing Check Ball Valves are designed for horizontal installations, but may be installed in up-flow only vertical position. The Check Valve portion **MUST** be installed with the valve's **FLOW** arrow pointing in the direction of flow and with the designated side up in horizontal installations. Do Not install Check Valve upside down. The Ball Valve portion may be rotated and installed in any position. Flow velocity should not exceed 5 ft./sec. Minimum opening pressure is less than 0.5 psi.



Quick-View Swing Check Ball Valve Selection Chart

Valve Size	Seat Material	PVC Material	Pressure Rating
		Socket	
1-1/2	EPDM	7622-015	150 psi @ 73°F Full Flow (Open)
2	EPDM	7622-020	75 psi Back Pressure (Closed)

Dimensions

Size	A	B	C	D	E
1-1/2	3-7/8	5-3/4	8-1/4	3-3/16	4-1/4
2	4-7/16	6-11/16	9-3/8	3-7/8	5-1/16

Valves Technical
Quiet Check Valves



**Eliminates Noise in Sump Pump and Sewage Ejector
Check Valve Operation**

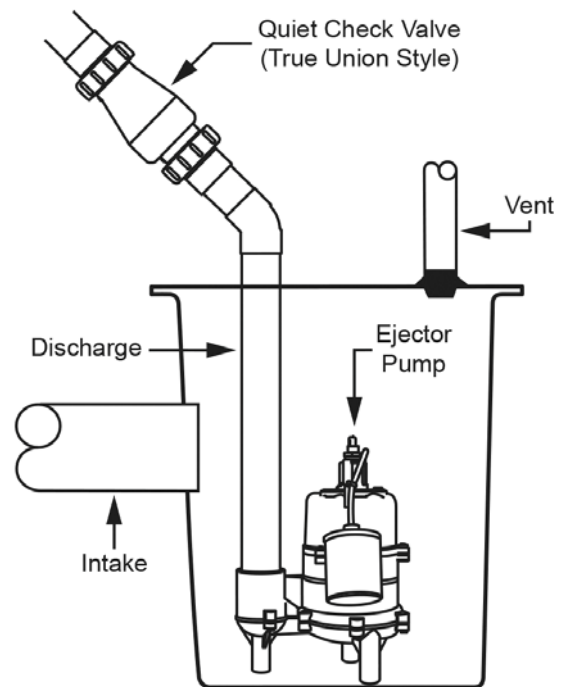


Spears® Quiet Check Valve has been designed to provide quiet operation in sump pump or sewage ejector pump systems typically found in home basements. The back flow of the water column in the discharge pipe can slam conventional check valves closed, producing a disturbing "thump" when the pump shuts off. The Quiet Check Valve uses a spring controlled rate of closing to prevent slamming and eliminates the noise.

Each Spears® Quiet Check Valve contains both regular socket ends for direct solvent cement connection of the valve and True Union style end connectors for easy valve removal or replacement.

Produced in both 1-1/2" and 2" nominal sizes, the 2" size is the minimum recommended for a sewage discharge system (i.e., sewage ejector pump) while the 1-1/2" size can be used in an effluent system (i.e., sump pump) discharge line to prevent back flow of liquid into sump basin.

Pressure Rating @ 73°F (23°C), Water
Full Flow (open) 150 psi
Back Pressure (closed) 75 psi
Maximum Service Temperature
140°F (60°C)
Temperature/Pressure De-ratings Apply

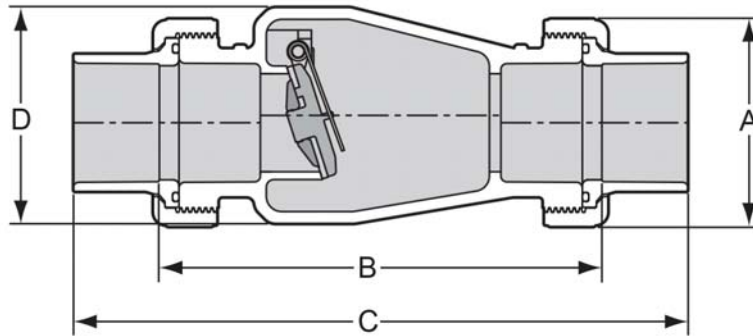


Typical Application

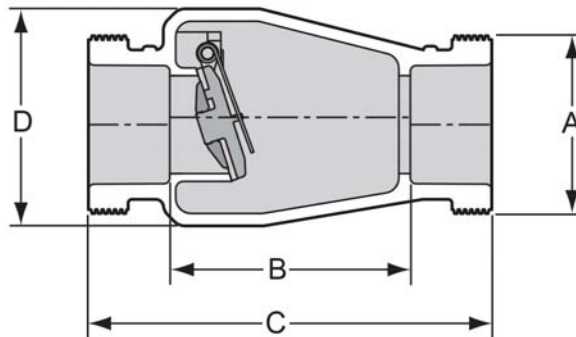


Valves Technical Quiet Check Valves

Technical Information



True Union Socket Connection



Direct Socket Connection



True Union Socket Connection

Part Number	Size	A	B	C	D
8622-015	1-1/2	3-3/8	7-1/8	9-15/16	3-1/2
8622-020	2	3-3/4	8-3/4	11-13/16	4-1/2

Direct Socket Connection

Part Number	Size	A	B	C	D
8622-015	1-1/2	2-3/4	3-13/16	6-1/2	3-1/2
8622-020	2	3-3/8	5-3/16	8	4-1/2

Note: Includes Both True Union Sockets for Easy Servicing and Direct Socket Connection for Installation in Confined Space

The check valve should be installed 12–18" above the pump discharge, or as recommended by the pump system manufacturer. Be sure check valve installation complies with local codes.

The Quiet Check Valve may be installed in either horizontal or vertical position. Check pump system manufacturer's recommendations for horizontal, vertical or angled positioning of check valve in discharge line. In horizontal installations, orient valve according to "This Side Up" marking for best operation. In all installations, valve **MUST** be installed in proper flow direction as indicated by the flow arrow on body.