



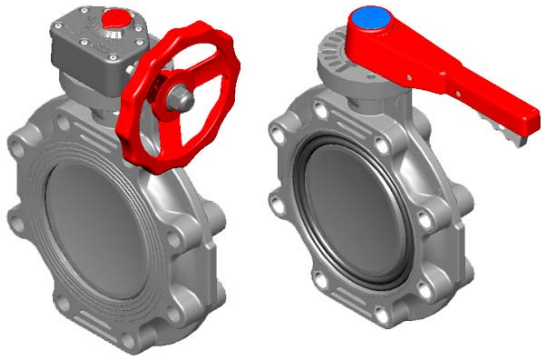
Butterfly Valves



ENGINEERING GUIDE

Contact Spears® for any Information not found.

Innovation, Versatility & High Performance Technology



Spears® innovative design departs from traditional liner-seat type valves to eliminate seat creep, reduce operating torque and provide positive seal off. Ideally suited for flow control or throttling, this high performance valve is offered with a full variety of options for greater application versatility. Standard valves are produced from PVC or high temperature CPVC in IPS sizes 1-1/2" through 14". PVC and CPVC True Lug valves are produced in sizes 1-1/2" through 12".

Special Offset Disc

Lifts quickly from single contact sealing surface to reduce seat wear and lower operating torque, with bubble-tight seal off. Suitable for vacuum service.

Limited Contact Interference Seat Design

Sealing contact between disc and seat takes place only at close of valve, allowing free travel through full range of valve opening. Eliminates seat creep, extrusion and wear typical with conventional liner-type seats. Exclusive design interlocks seat and body to prevent wash-out or blow-out.

Field Replaceable Seat — Choice of Buna-N, FKM, or NSF® Certified EPDM

Replace seat without full valve disassembly using convenient Seat & Seal Carrier Replacement Kit or Full Valve Overhaul Kit. Choice of Buna-N, EPDM or FKM seats and seals. EPDM valves are NSF® Certified for use with potable water.

Solid, Chemical & Corrosion Resistant 316 Stainless Steel Stem — Fully Isolated

Heavy blow-out proof 316 stainless steel stem is standard on all valves. Fully isolated (dry stem) eliminates contact with process fluid.

Rugged PVC or CPVC Body & Disc

Computer engineered design places strength where needed most. PVC or high temperature handling CPVC materials provide exceptional chemical and corrosion resistance. Integrally molded actuation mounting pad and lug receptacles for field installable lug sets.

Full 150 psi Pressure Rating (Sizes 1-1/2"-12")

Pressure rated to a maximum internal pressure of 150 psi at 73°F — including Dead-End Service.

Low Profile Submersible Gear Operator (IPx7)

Standard on 10" and larger sizes, utilizes high efficiency Acme screw with PVC or CPVC housing with high impact polypropylene handwheel and built in position indicator. Available as an option on smaller valves. Special order gear operators are available for a variety of applications.

Field Installable Lug Inserts or Factory Installed True Lug Valves (Sizes 1-1/2" - 12")

Standard valve body accepts optional field installable lug insert sets for easy single-sided installation and system add-on. True Lug valve comes with factory installed lugs for total versatility, including disconnection from either side while under pressure. Both styles suitable for full pressure dead-end service. Choice of stainless or zinc plated steel lugs.

Exclusive Factory Reconditioning Program

Spears® will factory recondition originally purchased Butterfly Valve to full working order — regardless of condition. Contact Spears® Technical Services Department for details and pricing.

High Impact Polypropylene Lever Handle

Standard on 1-1/2" through 8" sizes, provides quick selection from any one of seven stop positions, with built-in lockout capability. Reversible 180° for either right or left side operation.

Polypropylene & PTFE Lined Valves

High performance Butterfly Valves are available in Polypropylene 1-1/2" through 60". See publication PPBFV-2 for additional details. Plus, unique PTFE lined valve design custom manufactured for high purity systems. Contact Spears® Technical Services for additional information.

Sample Engineering Specification

All thermoplastic valves shall be Butterfly type constructed from PVC Type I Cell Classification 12454 or CPVC Type IV Cell Classification 23447. All valve seats and O-rings shall be Buna-N, EPDM or FKM. Seat shall be a non-liner type interlocked to valve body. Bolt hole patterns shall conform to ANSI/ASME B16.5 CL150. Disc shall be offset design with Type 316 stainless steel stem. Lever operated valves shall be equipped with high impact polypropylene handle having built-in lockout capability. Gear operated valves shall be equipped with position indicator and high impact polypropylene handwheel. Valves through size 12" shall accept field installable lug inserts or shall be factory installed True Lug type. Lugs shall be stainless steel or zinc plated steel. Valves shall be pressure rated at 150 psi for water at 73°F, as manufactured by Spears® Manufacturing Company.



Valves Technical

Butterfly Valves Overview

Basic Valve Options

Butterfly Valves can be purchased with any combination of the following options:

- Lever Handle Valve (through 8" only)
- Gear Operated Valve
- Valve Only (no handle/operator)
- True Lug Valves
 - Stainless Steel Lugs
 - Zinc Plated Steel Lugs
- Buna-N Seats
- EPDM Seats
- FKM Seats
- PTFE Sleeved Seats

Valve Repair & Accessory Kits

- Lever Handle Kits
- Gear Operator Kits
- Chainwheel Operator Kits
- Lug Insert Sets (for standard valve)
 - Stainless Steel
 - Zinc Plated Steel
- 2" Square / T-Style Gear Operator Nuts
- Seat & Seal Carrier Replacement Kits
- Valve Overhaul Kits
- Stem Extension Kits

Cv Values & Operating Torque

Valve Size	Cv Degrees Open						Operating Torque (in.-lbs.)
	15°	30°	45°	60°	75°	90°	
1-1/2	2	8	20	36	61	81	100
2	3	11	27	49	82	109	110
2-1/2	5	19	48	86	144	192	206
3	9	35	86	155	259	345	360
4	10	41	103	185	308	411	420
6	28	113	281	506	844	1125	720
8	56	225	562	1012	1687	2249	1200
10	111	444	1110	1998	3330	4440	1320
12	158	631	1577	2839	4732	6309	1920
14	176	705	1762	3172	5286	7048	See Note

Note: Operating torque for large diameter valves varies significantly with system operating pressure, flow direction and velocity. Contact Spears® for torque requirement based on application.

SPEARS® Butterfly Valves are designed for installation with user supplied full-face, 1/8" thick Neoprene (or desired elastomer) gaskets, hex bolts, nuts, and washers. True Lug Valves may be installed for flow in either direction. Standard Valves may be installed for flow in either direction in a dual flange (flange each side) installation, but require attention to direction of flow when installed in a single-side (flange one-side only) application for dead-end service. Consult installation instructions for details of single-side installation and special instructions for use of lug-insert option.

General Conformance Specifications

Material — ASTM D1784 (PVC Cell Classification 12454, CPVC Cell Classification 23447); Certified by NSF International for potable water service.

Bolt Hole Pattern — ANSI/ASME B16.5; Class 150

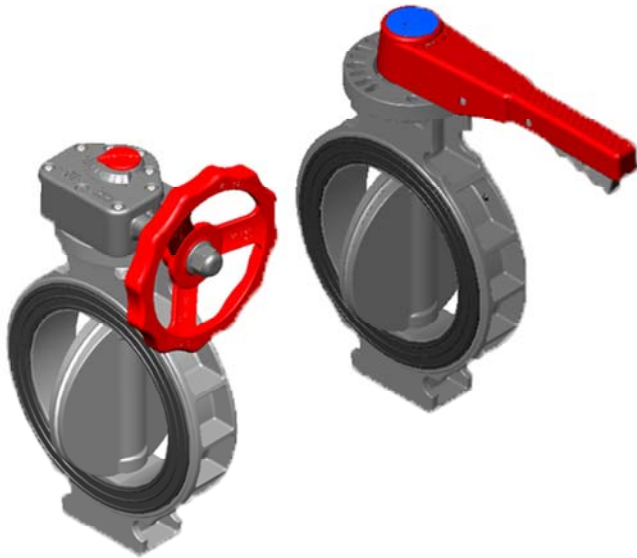
Laying Length (Standard valve ONLY) — AWWA C504 (wafer valve); MSS SP-67

Pressure Class — 150B, AWWA C504

Hydrostatic Pressure Test — AWWA C504, ASTM D1599

SUITABILITY OF VALVE AND VALVE COMPONENTS FOR APPLICATION AND OPERATING ENVIRONMENT IS AT USER'S DISCRETION AND RESPONSIBILITY.

Valves Technical Wafer Butterfly Valves



Sample Engineering Specification

All thermoplastic valves shall be Wafer Butterfly type constructed from PVC Type I Cell Classification 12454 or CPVC Type IV Cell Classification 23447. All valve seats and O-rings shall be Buna-N, EPDM or FKM. Seat shall be a non-liner type mounted to the valve disc. All valves shall have built-in Santoprene™ Thermoplastic Elastomer (TPE) flange gaskets. Wafer style valves shall be for mounting between two flanges having bolt hole pattern that conform to ANSI/ASME B16.5 CL150. Disc shall be centered with Type 316L Stainless Steel Stem. Stem shall be isolated from the process medium for dry operation. Lever operated valves shall be equipped with high impact polypropylene handle having 7-position stops and built-in lockout capability. Gear operated valves shall be equipped with position indicator and high impact polypropylene handwheel. Valves shall be pressure rated at 150 psi for water at 73°F, as manufactured by Spears® Manufacturing Company.

Features — PVC, CPVC

Spears® Wafer Butterfly Valve is a multi-featured design incorporating laying lengths that allow direct replacement of common Cast Iron valves such as Keystone Model 228 and Bray Series 30 Butterfly Valves. Wafer Valves feature built-in Santoprene™ Thermoplastic Elastomer (TPE) flange gaskets, easy operating disc-mounted seat, and fully isolated stem design. Available in sizes 2" through 12", with choice of Buna-N, EPDM or FKM Seats on PVC Valves, EPDM or FKM on CPVC Valves.

- Chemical & Corrosion Resistant PVC or CPVC Construction
- Special Designed Laying Lengths for Direct Replacement of Common Cast Iron Butterfly Valves
- Built-in Santoprene™ Thermoplastic Elastomer (TPE) Gaskets on Valve Flange Faces
- Easy Operating Disc Mounted Seat in Choice of Buna-N, EPDM, or FKM
- Fully Isolated (Dry) Solid Type 316L Stainless Steel Stem
- Reversible High Impact Polypropylene Lever Handle with 7-Position Stops and Built-in Lockout Capability
- Optional Low Profile Submersible Gear Operator. Utilizes high efficiency Acme screw with PVC or CPVC housing with high impact polypropylene handwheel and built in position indicator.
- Compatible with ANSI/ASME B16.5 Class 150 Bolt Pattern Flanges
- Pressure Rated to 150 psi for water @ 73°F (23°C)

PVC Quick-View Valve Selection Chart

Valve Size	O-ring Material	STANDARD VALVE DESIGN			Pressure Rating
		PVC Part Number ¹			
		w/Lever Handle	w/Gear Operator	Valve Only	
2	Buna-N	751311-020	751321-020	751301-020	150 psi Non-Shock Water @ 73°F
	EPDM	752311-020	752321-020	752301-020	
	FKM	753311-020	753321-020	753301-020	
2-1/2	Buna-N	751311-025	751321-025	751301-020	
	EPDM	752311-025	752321-025	752301-025	
	FKM	753311-025	753321-025	753301-025	
3	Buna-N	751311-030	751321-030	751301-030	
	EPDM	752311-030	752321-030	752301-030	
	FKM	753311-030	753321-030	753301-030	
4	Buna-N	751311-040	751321-040	751301-040	
	EPDM	752311-040	752321-040	752301-040	
	FKM	753311-040	753321-040	753301-040	
6	Buna-N	751311-060	751321-060	751301-060	
	EPDM	752311-060	752321-060	752301-060	
	FKM	753311-060	753321-060	753301-060	
8	Buna-N	751311-080	751321-080	751301-080	
	EPDM	752311-080	752321-080	752301-080	
	FKM	753311-080	753321-080	753301-080	
10	Buna-N	10" AND LARGER NOT AVAILABLE WITH LEVER HANDLE	751321-100	751301-100	
	EPDM		752321-100	752301-100	
	FKM		753321-100	753301-100	
12	Buna-N		751321-120	751301-120	
	EPDM		752321-120	752301-120	
	FKM		753321-120	753301-120	

1: For CPVC EPDM & FKM valves, add the letter "C" to part numbers listed (e.g., 752311-030C).

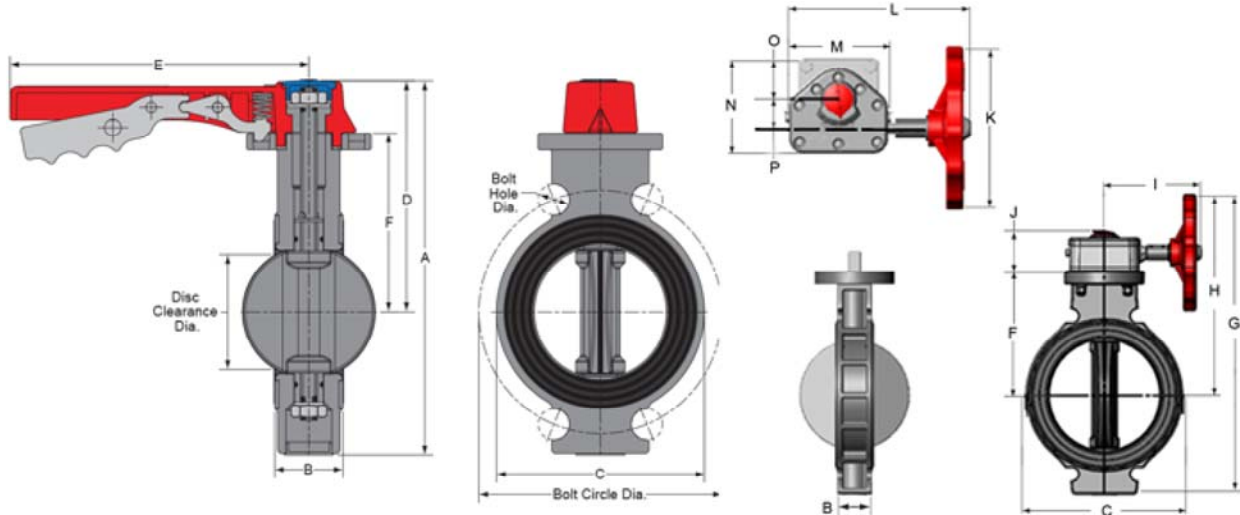
General Installation Information

Spears® Wafer Butterfly Valves are designed for system connections between two flanges having ANSI B16.5 Class 150 bolt hole patterns. The valve handle (or gear operator) is reversible 180° for either left or right side operation. Wafer Butterfly Valves have built-in flange gaskets and are designed for installation with user supplied hex bolts, nuts and flat washers. The valve must be positioned with gasket areas evenly located between mating flange sealing surfaces. Valve Bolt Specification bolt lengths in table below are minimums based on use of two (2) Spears® flanges, Valve with built-in gaskets, standard S.A.E. hex bolts and Standard Plate "W" Series flat washers.

Caution: Spears® Wafer Butterfly Valves are designed for use with flanges or flanged equipment having minimum waterway inside diameter no less than that of Schedule 80 PVC pipe (ASTM D 1785). **Use of smaller inside diameter flange connections may result in obstruction and damage to the valve disc and seat.**



Valves Technical Wafer Butterfly Valves



PVC & CPVC Wafer Butterfly Valve Bolt Specifications & Dimensions

Valve Size	Bolt Diameter (in.)	Bolt Length (in.)	No. of Bolt Holes
2	5/8	4-1/2	4
2-1/2	5/8	5	4
3	5/8	5	4
4	5/8	5-1/2	4
6	3/4	6	4
8	3/4	6-1/2	4
10	7/8	7	4
12	7/8	7-1/2	4

Size	A	B	C	D	E	F	Bolt Circle Diameter ²			No. of Bolts ³	Bolt Hole Dia.	Disc Clearance Dia.
							ANSI	PN16 (mm)	PN10 ISO DIN (mm)			
2	8-9/16	1-11/16	3-3/4	5-9/16	9	4	4-3/4	125	125	4	13/16	1-1/2
2-1/2	9-9/16	1-13/16	4-1/2	6-1/16	9	4-1/2	5-1/2	145	145	4	13/16	1-15/16
3	10-1/8	1-13/16	5	6-7/16	9	4-7/8	6	160	160	4	7/8	2-3/4
4	11-3/16	2-1/16	6-1/4	6-15/16	9	5-3/8	7-1/2	180	180	4 (8)	15/16	3-7/16
6	14-3/4	2-1/4	8-9/16	9-1/4	12	7-1/16	9-1/2	240	240	4 (8)	7/8	5-7/16
8	17-1/2	2-5/8	10-3/4	10-11/16	13-15/16	8-3/8	11-3/4	NA	295	4 (8)	15/16	7-3/16
10 ¹	NA	2-9/16	12-7/8	NA	NA	10-11/16	14-1/4	355	350	4 (12)	1-1/8	9-3/16
12 ¹	NA	3-1/16	15-9/16	NA	NA	11-11/16	17	410	400	4 (12)	1-1/2	11-1/8

1: 10" and 12" valves are only available with gear operator.

2: Holes are oversized to accommodate different bolt patterns — ASME/ANSI B16.1 — Cast Iron Pipe Flanges and Flanged Fittings - Class 150 Bolt Patterns; PN10 & PN16 = BS4504 — Circular Flanges for Pipes, Valves and Fittings (PN - Designated); DIN = DIN8063 Part 4 — Pipe Joint Assemblies and Fittings for Unplasticized Polyvinyl Chloride (PVC-U) Pressure Pipe.

3: Valve is positioned with 4 of 8 required Flange Bolts in sizes 4 to 8 inches and 4 of 12 in sizes 10 and 12 inches.

Size	G	H	I	J	K	L	M	N	O	P
2	12-1/8	9-1/16	6-9/16	2-1/4	8	8-7/8	4-3/8	4-3/8	2	2-3/8
2-1/2	13-1/8	9-9/16	6-9/16	2-1/4	8	8-7/8	4-3/8	4-3/8	2	2-3/8
3	13-29/32	10-1/4	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
4	15	10-23/32	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
6	18	12-1/2	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
8	20-1/2	13-5/8	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
10	24-1/2	16-3/8	7-7/16	3-5/8	7-15/16	10-7/8	6-13/16	6-5/16	2-3/8	2-1/8
12	26-7/8	17-3/8	7-7/16	3-5/8	7-15/16	10-7/8	6-13/16	6-5/16	2-3/8	2-1/8

Temperature Pressure Rating

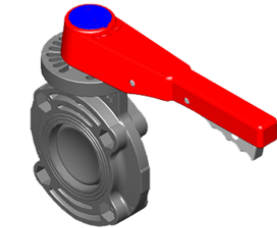
System Operating Temperature °F (°C)		100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
Valve Pressure Rating psi (MPa)	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
	CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.76)	100 (.70)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)

Valves Technical

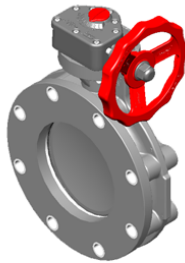
Butterfly Valves - Standard, Lug Insert & True-Lug Styles



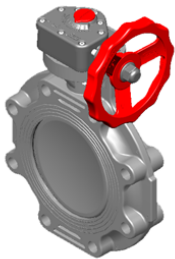
Standard & True Lug Design



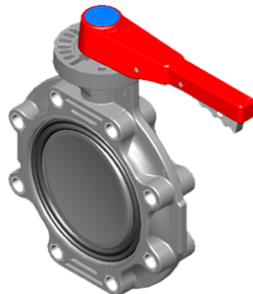
Lever Handle



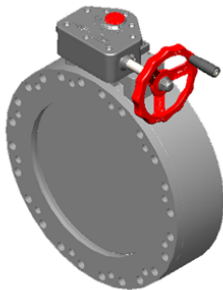
True Lug



Gear Operating



Lug Insert Style



14" & 16" Standard
PVC & CPVC
Butterfly Valves

Features – PVC, CPVC

Spears® patented Butterfly Valve design departs from traditional liner-seat type valve to eliminate seat creep, reduce operating torque and provide positive seal-off. Ideally suited for flow control or throttling, this high-performance valve is offered with a full variety of options for greater application versatility in industrial and chemical processing applications. Available in IPS sizes 1-1/2" – 16" in Standard or 1-1/2" – 12" True Lug (factory installed lugs) style.

- Special off-set Disc lifts quickly from seat to reduce wear and reduce operating torque.
- Patented Limited Contact Seat design provides free travel - eliminates seat creep, extrusion and wear. Field replaceable without full valve disassembly.
- Interlocking Body & Seat prevents wash-out or blow-out.
- Buna-N, EPDM or FKM Seat & Seals
- Fully Isolated Solid Type 316L Stainless Steel Stem
- Reversible High Impact Polypropylene Lever Handle with 7-Position stops & Built-in Lockout (standard handle on 1-1/2" – 8" valves; not available on 10" & larger valves)
- Low Profile Submersible Gear Operator Standard on 10" and larger sizes, utilizes high efficiency Acme screw with PVC or CPVC housing with high impact polypropylene handwheel and built in position indicator. Available as an option on smaller valves. Special order gear operators are available for a variety of applications.
- Lug Insert Style valve through 12" has factory installed SS316 or zinc plated steel lug inserts.
- Standard valve through 12" accepts field-installable Lug Inserts Set option
- True Lug design has factory installed zinc plated or SS 316 lugs and is specially designed for connection to either side of valve.
- Pressure Rated to 150 psi @ 73°F including Dead-End Service through 12", 14" to 100 psi, 16" to 85 psi.
- ANSI/ASME B16.5 Class 150 Bolt Pattern
- Valves with EPDM Seals & Seats are NSF® Certified for Potable water use.

Sample Engineering Specification

All thermoplastic valves shall be Butterfly type constructed from PVC Type I Cell Classification 12454 or CPVC Type IV Cell Classification 23447. All valve seats and O-rings shall be Buna-N, EPDM or FKM. Seat shall be a non-liner type interlocked to valve body. Bolt hole patterns shall conform to ANSI/ASME B16.5 Class 150. Disc shall be offset design with fully isolated Type 316L stainless steel stem and Type 316 stainless steel hardware. Lever operated valves shall be equipped with high impact polypropylene handle having built-in lockout capability. Gear operated valves shall be equipped with position indicator and high impact polypropylene handwheel. Valves through size 12" shall accept field installable lug inserts or shall be factory installed lug inserts, or be True Lug type. Lugs shall be stainless steel or zinc plated steel. Valves shall be pressure rated at 150 psi for water at 73°F through 12", 14" to 100 psi and 16" to 85 psi as manufactured by Spears® Manufacturing Company.

Optional Accessories

- PTFE Coated Stem
- Stem Extension Kit
- PTFE Seat Sleeve
- Lever Handle Kit (standard on 1-1/2" – 8" valves)
- Gear Operator Kit (standard on 10" & larger valves)
- T-Handle Kit
- Field Installable Lug Insert Sets (for Standard valve)
- Speed Handle (for gear operated valves)
- Chainwheel Operator Kit (for gear operated valves)
- Positive Stem Stop (for gear operated valves)

* See "BUTTERFLY VALVE ACCESSORIES" section for details of individual products.



Valves Technical

Butterfly Valves - Standard, Lug Insert & True-Lug Styles

Standard & Lug Insert Style Quick-View Valve Selection Chart

Valve Size	O-ring Material	STANDARD VALVE DESIGN			LUG INSERT VALVE DESIGN			Pressure Rating
		PVC Part Number ¹			PVC Part Number ¹ Installed with 316 Stainless Steel Lug Inserts ^{2,3,4}			
		w/Lever Handle	w/Gear Operator	Valve Only	w/Lever Handle	w/Gear Operator	Valve Only	
1-1/2	Buna-N	721311-015	721321-015	721301-015	721311G-015	721321G-015	721301G-015	150 psi Non-Shock Water @ 73°F
	EPDM	722311-015	722321-015	722301-015	722311G-015	722321G-015	722301G-015	
	FKM	723311-015	723321-015	723301-015	723311G-015	723321G-015	723301G-015	
2	Buna-N	721311-020	721321-020	721301-020	721311G-020	721321G-020	721301G-020	
	EPDM	722311-020	722321-020	722301-020	722311G-020	722321G-020	722301G-020	
	FKM	723311-020	723321-020	723301-020	723311G-020	723321G-020	723301G-020	
2-1/2	Buna-N	721311-025	721321-025	721301-025	721311G-025	721321G-025	721301G-025	
	EPDM	722311-025	722321-025	722301-025	722311G-025	722321G-025	722301G-025	
	FKM	723311-025	723321-025	723301-025	723311G-025	723321G-025	723301G-025	
3	Buna-N	721311-030	721321-030	721301-030	721311G-030	721321G-030	721301G-030	
	EPDM	722311-030	722321-030	722301-030	722311G-030	722321G-030	722301G-030	
	FKM	723311-030	723321-030	723301-030	723311G-030	723321G-030	723301G-030	
4	Buna-N	721311-040	721321-040	721301-040	721311G-040	721321G-040	721301G-040	
	EPDM	722311-040	722321-040	722301-040	722311G-040	722321G-040	722301G-040	
	FKM	723311-040	723321-040	723301-040	723311G-040	723321G-040	723301G-040	
6	Buna-N	721311-060	721321-060	721301-060	721311G-060	721321G-060	721301G-060	
	EPDM	722311-060	722321-060	722301-060	722311G-060	722321G-060	722301G-060	
	FKM	723311-060	723321-060	723301-060	723311G-060	723321G-060	723301G-060	
8	Buna-N	721311-080	721321-080	721301-080	721311G-080	721321G-080	721301G-080	
	EPDM	722311-080	722321-080	722301-080	722311G-080	722321G-080	722301G-080	
	FKM	723311-080	723321-080	723301-080	723311G-080	723321G-080	723301G-080	
10	Buna-N	10" AND LARGER NOT AVAILABLE WITH LEVER HANDLE	721321-100	721301-100	10" AND LARGER NOT AVAILABLE WITH LEVER HANDLE	721321G-100	721301G-100	
	EPDM		722321-100	722301-100		722321G-100	722301G-100	
	FKM		723321-100	723301-100		723321G-100	723301G-100	
12	Buna-N		721321-120	721301-120		721321G-120	721301G-120	
	EPDM		722321-120	722301-120		722321G-120	722301G-120	
	FKM		723321-120	723301-120		723321G-120	723301G-120	
14	EPDM		722321-140	722301-140		--	--	100 psi @ 73°F
	FKM		723321-140	723301-140		--	--	
16	EPDM		722321-160	722301-160		--	--	85 psi @ 73°F
	FKM		723321-160	723301-160		--	--	

1: For CPVC valves, add the letter "C" to part numbers listed (e.g., 722311-030C).

2: For factory installed Lug Insert Valve through 12" with zinc plated Lugs, substitute the letter "G" with the letter "K" (e.g. 721311K-030)

3: For True Lug Design Valve through 12" with Stainless Steel Lugs, substitute the letter "G" with the letter "L" (e.g. 721311L-030).

4: For True Lug Design Valve through 12" with Zinc Plated Steel Lugs, substitute the letter "G" with the letter "Z" (e.g. 721311Z-030).

Note: Optional BFV with submersible gear operators available, inquire with Spears®.

Temperature Pressure Rating

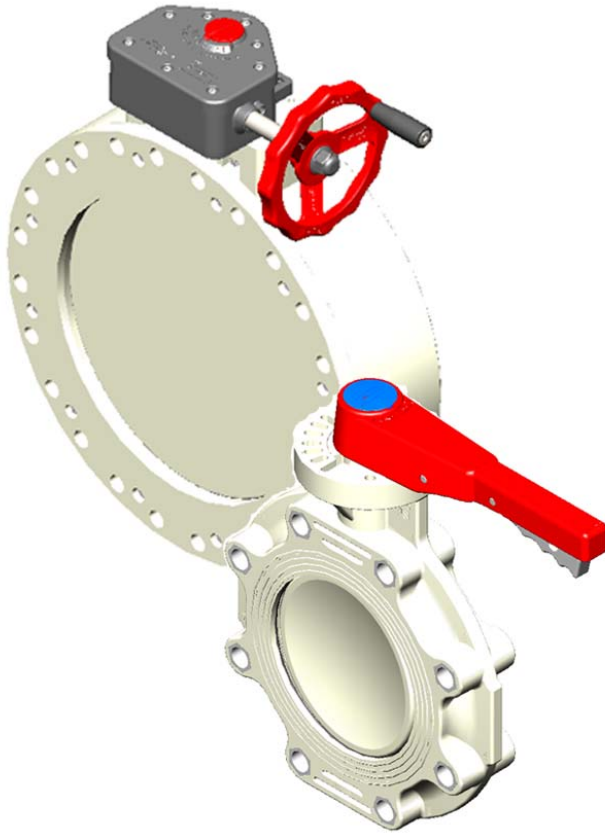
System Operating Temperature °F (°C)		100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
Valve Pressure Rating psi (MPa)	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
	CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.76)	100 (.70)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)

See dimensions and additional Technical Information on following pages

Valves Technical
Polypropylene Butterfly Valves



Polypropylene



Features

Spears® patented Butterfly Valve design departs from traditional liner-seat type valve to eliminate seat creep, reduce operating torque and provide positive seal-off. Broad range of chemical resistance makes Polypropylene well suited for industrial and chemical processing applications. Designed for flow control or throttling, this high-performance valve is offered with a full variety of options for greater application versatility. Available in IPS sizes 1-1/2" – 24" with custom produced 30" to 60" valves available.

- UV Stabilized Polypropylene Construction
- Special off-set Disc lifts quickly from seat to reduce wear and reduce operating torque.
- Patented Limited Contact Seat design provides free travel - eliminates seat creep, extrusion and wear. Field replaceable without full valve disassembly.
- Interlocking Body & Seat prevents wash-out or blow-out.
- Buna-N, EPDM or FKM Seat & Seals
- Solid Type 316L Stainless Steel Stem, fully isolated from process fluids
- Reversible High Impact Polypropylene Lever Handle with 7-Position stops & Built-in Lockout (standard handle on 1-1/2" – 8" valves; not available on 10" & larger valves)
- Low Profile Submersible Gear Operator Standard on 10" and larger sizes, utilizes high efficiency Acme screw with PVC or CPVC housing with high impact polypropylene handwheel and built in position indicator. Available as on option on smaller valves. Special order gear operators are available for a variety of applications.
- Pressure ratings include Dead-End Service (See Chart).
- ANSI/ASME B16.5 Class 150 Bolt Pattern

Sample Engineering Specification

All thermoplastic valves shall be Butterfly type constructed from Polypropylene, ASTM D4101. All valve seats and O-rings shall be Buna-N, EPDM or FKM. Seat shall be a non-liner type interlocked to valve body. Bolt hole pattern shall conform to ANSI/ASME B16.5 Class 150. Disc shall be offset design with fully isolated, Type 316L stainless steel stem and Type 316 stainless steel hardware. Lever operated valves shall be equipped with high impact polypropylene handle having built-in lockout capability. Gear operated valves shall be equipped with position indicator and high impact polypropylene handwheel. Valves shall be pressure rated at [see table] for water at 73°F, as manufactured by Spears® Manufacturing Company.

Optional Accessories

- PTFE Coated Stem
- Stem Extension Kit
- PTFE Seat Sleeve (through 12" size)
- Lever Handle Kit (standard on 1-1/2" – 8" valves)
- Gear Operator Kit (standard on 10" & larger valves)
- T-Handle Kit
- Speed Handle (for gear operated valves)
- Chainwheel Operator Kit (for gear operated valves)
- Positive Stem Stop (for gear operated valves)

* See "BUTTERFLY VALVE ACCESSORIES" section for details of individual products.

Material Note: UV Stabilized Polypropylene with beige pigment sizes 1-1/2" – 12" are glass reinforced, sizes 14" – 24" are not.



Valves Technical

Polypropylene Butterfly Valves

Polypropylene Quick-View Valve Selection Chart

Valve Size	O-ring Material	w/Lever Handle	w/Gear Operator	Valve Only	Pressure Rating
1-1/2	Buna-N	721311-015P	Special Order	721301-015P	150 psi Non-Shock Water @ 73°F
	EPDM	722311-015P	Special Order	722301-015P	
	FKM	723311-015P	Special Order	723301-015P	
2	Buna-N	721311-020P	721321-020P	721301-020P	
	EPDM	722311-020P	722321-020P	722301-020P	
	FKM	723311-020P	723321-020P	723301-020P	
2-1/2	Buna-N	721311-025P	721321-025P	721301-025P	
	EPDM	722311-025P	722321-025P	722301-025P	
	FKM	723311-025P	723321-025P	723301-025P	
3	Buna-N	721311-030P	721321-030P	721301-030P	
	EPDM	722311-030P	722321-030P	722301-030P	
	FKM	723311-030P	723321-030P	723301-030P	
4	Buna-N	721311-040P	721321-040P	721301-040P	
	EPDM	722311-040P	722321-040P	722301-040P	
	FKM	723311-040P	723321-040P	723301-040P	
6	Buna-N	721311-060P	721321-060P	721301-060P	
	EPDM	722311-060P	722321-060P	722301-060P	
	FKM	723311-060P	723321-060P	723301-060P	
8	Buna-N	721311-080P	721321-080P	721301-080P	
	EPDM	722311-080P	722321-080P	722301-080P	
	FKM	723311-080P	723321-080P	723301-080P	
10	Buna-N	10" and Larger not available with Lever Handle	721321-100P	721301-100P	
	EPDM		722321-100P	722301-100P	
	FKM		723321-100P	723301-100P	
12	Buna-N		721321-120P	721301-120P	
	EPDM		722321-120P	722301-120P	
	FKM		723321-120P	723301-120P	
14	Buna-N		—	—	100 psi Non-Shock Water @ 73°F
	EPDM		722321-140P	722301-140P	
	FKM		723321-140P	723301-140P	
18	Buna-N		—	—	70 psi Non-Shock Water @ 73°F
	EPDM		722321-180P	722301-180P	
	FKM		723321-180P	723301-180P	
20	Buna-N		—	—	50 psi Non-Shock Water @ 73°F
	EPDM		722321-200P	722301-200P	
	FKM		723321-200P	723301-200P	
24	Buna-N		—	—	
	EPDM		722321-240P	722301-240P	
	FKM		723321-240P	723301-240P	

Note: 30" - 60" Polypropylene Butterfly Valves produced to order.

Temperature Pressure Rating

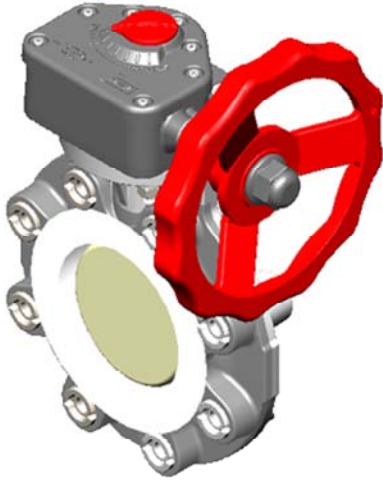
System Operating Temperature °F (°C)		100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)
Valve Pressure Rating psi (MPa)	1-1/2"-12"	150 (1.03)	105 (.72)	90 (.62)	80 (.55)	65 (.45)	50 (.34)	45 (.31)	30 (.21)	20 (.14)	-0-
	14"	100 (.69)	70 (.48)	60 (.41)	53 (.37)	43 (.26)	33 (.23)	30 (.21)	20 (.14)	13 (.09)	-0-
	18"	70 (.48)	49 (.34)	42 (.29)	37 (.26)	30 (.21)	23 (.16)	21 (.14)	14 (.10)	9 (.06)	-0-
	20"-24"	50 (.34)	35 (.24)	30 (.21)	27 (.19)	22 (.15)	17 (.12)	15 (.10)	10 (.07)	7 (.05)	-0-

Valves Technical

High Purity Butterfly Valves



High Purity TFM Lined Features - CPVC



This advanced technology TFM Lined valve is specially designed and produced for applications requiring high purity and maximum chemical resistance. Spears® exclusive component-interface seal fully isolates process media to disc and liner contact only. Custom produced in sizes 2" through 6".

- Direct disc-to-liner seal between ECTFE fluoropolymer disc and TFM liner for positive shut-off. Specially designed offset disc lifts quickly from sealing surface to minimize wear and reduce operating torque.
- Special disc-to-liner interface isolates valve components from process media. Eliminates stem and elastomer backing seal contact with process fluids. In the unlikely event of seal failure, leakage is expelled externally to protect process integrity. TFM skirt is integrally formed as part of the liner to isolate the CPVC body.
- Solid, fully isolated type 316 stainless steel stem is additionally PTFE coated as a safeguard.
- Lug style, chemical and corrosion resistant CPVC body features integrally molded actuation mounting pad and provides increased temperature handling capability to 200°F.
- 316 stainless steel Lug Inserts provide quick single-side valve installation and easy system add-on.
- Low Profile Submersible Gear Operator Standard on 10" and larger sizes, utilizes high efficiency Acme screw with PVC or CPVC housing with high impact polypropylene handwheel and built in position indicator. Available as an option on smaller valves. Special order gear operators are available for a variety of applications.
- 150 psi Maximum Internal Pressure rating at 73°F.

Sample Engineering Specification

All thermoplastic Butterfly Valves shall be constructed from CPVC Type IV Cell Classification 23447 with TFM liner and ECTFE disc. Disc and liner interface shall isolate valve components and elastomeric seals from process media. Valve Stem shall be PTFE coated type 316 stainless steel. Body shall be lug style with 18-8 stainless steel or type 316 stainless steel lugs. Bolt hole patterns shall conform to ANSI/ASME B16.5 Class 150. Valve shall be gear operated with PVC or CPVC housing, position indicator, and high impact polypropylene handwheel. Valve shall be pressure rated at 150 psi for water at 73°F as manufactured by Spears® Manufacturing Company.

Factory Reconditioning

In the event of damage, this maintenance-free valve can be factory reconditioned in order to maintain optimum serviceability and assure proper component isolation function. Valve reconditioning is made on an exchange basis with original limited warranty. Contact Spears® Technical Services for additional information.

Material Specifications

Media Contact Components:

Liner/seal Disc TFM (Hostafion® — modified - PTFE)
ECTFE (HALAR® ethylene chlorotrifluoroethylene)

No Media-Contact Components:

Body CPVC (chlorinated polyvinylchloride)
Stem Type 316 Stainless Steel, PTFE coated
O-ring Backing Bushings FKM (fluorocarbon)
Glass Reinforced Polypropylene blend/Polyurethane
Gear Operator PVC or CPVC
Handwheel Polypropylene

Quick-View Valve Selection Chart

Valve Size	Part Number	Pressure Rating
2	253322-020	150 psi Non-Shock Water @ 73°F
3	253322-030	
4	253322-040	
6	253322-060	

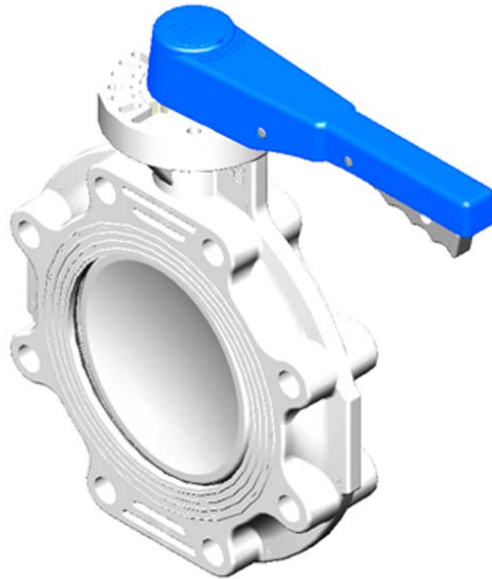
Note: High Purity TFM Lined Butterfly Valve has the same basic dimensions as Spears® Standard Butterfly Valve.

HALAR® is a registered trademark of Ausimont, Inc.
Hostafion® is a registered trademark of Hoechst Celanese Corporation.



Valves Technical Pool Butterfly Valves

PVC Pool Butterfly Valves



Sample Engineering Specification

All Pool Butterfly Valves shall be constructed from PVC with EPDM seals suitable for chlorinated water applications. Valve body shall be white (gray disc) with blue handle for application identification. All handles shall be high impact polypropylene. Lever handles shall have built-in lockout capability. Stem shall be Type 316L stainless steel and non-wetted. Valve bodies shall have ANSI/ASME B16.5 bolt patterns and accept optional field installable lug inserts. Valves shall be pressure rated at 150 psi for water at 73°F as manufactured by Spears® Manufacturing Company.

Quick-View Valve Selection Chart

PVC Lever Handle with EPDM Seat		
Size	Part Number	Pressure Rating
1-1/2	682311-015	150 psi Non-Shock Water @ 73°F
2	682311-020	
2-1/2	682311-025	
3	682311-030	
4	682311-040	
6	682311-060	
8	682311-080	
PVC Gear Operated with EPDM Seat		
Size	Part Number	Pressure Rating
1-1/2	682321-015	150 psi Non-Shock Water @ 73°F
2	682321-020	
2-1/2	682321-025	
3	682321-030	
4	682321-040	
6	682321-060	
8	682321-080	
10	682321-100	
12	682321-120	

Features - PVC White

Distinct White Body with Blue Handle readily identifies this high quality PVC Butterfly Valve specifically designed for chlorinated water applications such as swimming pools. Fully isolated, non-wetted stainless steel stem with limited-contact EPDM seat provides maximum resistance to chlorinated water with superior ease of operation. Available in IPS sizes 1-1/2" through 12".

- White PVC Valve with Blue PP Handle provides easy application identification for chlorinated water
- Type 316L non-wetted stainless steel stem is fully isolated from system fluid, but still compatible with chlorinated water
- Patented limited-contact seat is field replaceable
- High-grade EPDM seat & seals
- Blue polypropylene lever handle with built-in lockout (10" & 12" valves are gear operated only)
- Low Profile Submersible Gear Operator Standard on 10" and larger sizes, utilizes high efficiency Acme screw with PVC or CPVC housing with high impact blue polypropylene handwheel and built in position indicator. Available as an option on smaller valves. Special order gear operators are available for a variety of applications.
- ANSI/ASME B16.5 Class 150 bolt pattern flange connection
- All sizes pressure rated to 150 psi @ 73°F
- Optional SS 316 field-installable Lug Inserts sets
- Pneumatic or electric actuation available

CAUTION: THE POOL BUTTERFLY VALVE IS
NEITHER INTENDED NOR WARRANTED
FOR INDUSTRIAL OR CHEMICAL PROCESSING
APPLICATIONS



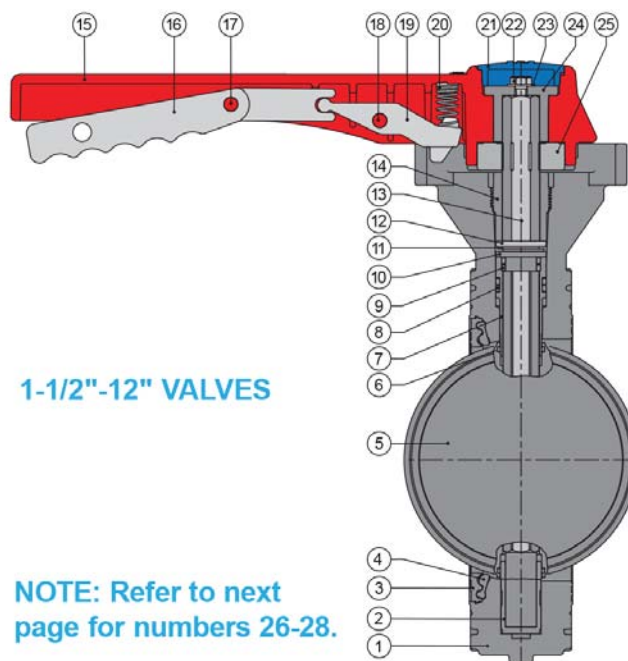
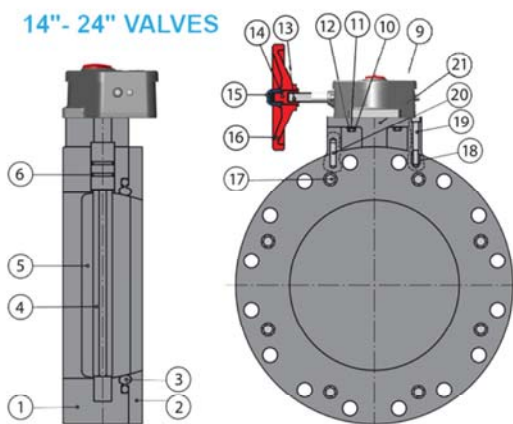
Replacement Parts for 1-1/2" - 12" PVC & CPVC Standard, True Lug and Polypropylene Valves

No	Component	Qty.	Material
1	Body	1	PVC/CPVC/PP
2	Stem Bearing	1	PTFE/GFPP
3	Seal Carrier	1	PVC/CPVC/PP
4	Seat	1	Buna-N, EPDM, FKM
5	Disc	1	PVC/CPVC/PP
6	Disc O-ring	2	Buna-N, EPDM, FKM
7	Stem Bushing	1	PTFE/GFPP
8	Stem Bushing O-ring	2	Buna-N, EPDM, FKM
9	Stem O-ring	2	Buna-N, EPDM, FKM
10	Stem Washer - Hex	1	PTFE
11	Stem Washer - Slot*	1-2	SS 316
12	Stem Washer - Round	1	PTFE/GFPP
13	Stem	1	SS 316
14	Stem Nut	1	PVC/CPVC
15	Handle Body	1	PP
16	Handle Grip	1	GFPVC
17	Grip Pin	1	PP
18	Lock Pin	1	PP
19	Handle Lock	1	GFPVC
20	Handle Spring	1	SS 316
21	Handle Cover	1	PP
22	Hex Bolt	1	SS 316
23	Flat Washer	1	SS 316
24	Handle Bushing	1	GFPVC
25	Disc Timing Stop	1	CPVC
26	Lug Insert	4-12	SS/Zinc Plated Steel
27	Gear Operator Assembly	1	Cast Aluminum
28	Hand Wheel	1	PP
True Lug Only (not shown):			
	Seal Carrier Flange Plate	1	PVC/CPVC
	Lug & Nut	4-12	SS/Zinc Plated Steel
	Plate O-ring	1	Buna-N, EPDM, FKM

Note: *2-Slotted washers used on 6" & larger

1: See 14"-24" PP valve illustration for Gear Operator Components, No. 8 - 16

14" - 24" VALVES

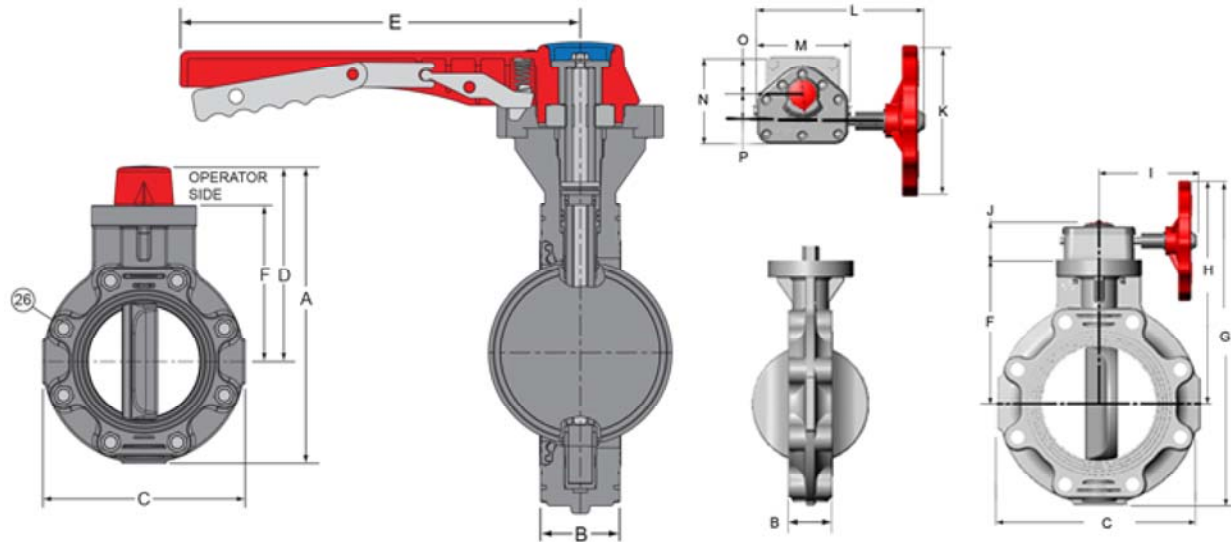


1-1/2" - 12" VALVES

NOTE: Refer to next page for numbers 26-28.

Replacement Parts for 14" - 24" Polypropylene Valves

No.	Component	Qty	Material
1	Body	1	PP
2	Seal Carrier	1	PP
3	Seat	1	EPDM/FKM
4	Stem	1	SS 316L
5	Disc	1	PP
6	Stem O-ring	2	EPDM/FKM
9	Gear Operator	1	PVC
10	Flat Washer	4	SS 316
11	Lock Washer	4	SS 316
12	Hex Head Cap Screw	4	SS 316
13	Handwheel Pin	1	SS 316
14	Handwheel Adapter	1	GFPVC
15	Handwheel Nut	1	PP
16	Handwheel	1	PP
17	Hex Bolts	6-12	Nylon
18	Thread Insert	2	Steel
19	Hex Head Cap Screws	2	SS 316
20	Dowel Pin	1	Steel
21	Tower	1	PP

**Butterfly Valve Dimensions & Operational Information****Standard, True Lug & Polypropylene****Dimensions**

Nominal Size	Pressure Rating ¹ (psi)	A	B Standard Lug Mount	C	D	E	F	G	Approx. Wt. (lbs)
1-1/2	150	8-3/16	1-9/16	5	5-11/16	9	4-1/8	11-31/32	2.59
2	150	9-5/16	1-15/16	6	6-5/16	9	4-3/4	12-13/16	3.33
2-1/2	150	9-15/16	2-1/16	6-3/4	6-9/16	9	5	13-7/16	4.10
3	150	11-1/2	2-3/16	7-1/2	7-3/4	12	5-1/2	14-21/32	6.28
4	150	13	2-5/16	9	8-1/2	12	6-1/4	15-15/16	7.90
6	150	16-3/8	2-13/16	11	10-7/8	13-15/16	8-9/16	19-9/16	13.20
8	150	18-5/8	3	13-1/2	11-7/8	13-15/16	9-9/16	20-9/16	19.64
10	150	N/A	3-5/16	16	N/A	N/A	11	24-11/16	33.42
12	150	N/A	3-9/16	19	N/A	N/A	12	27-3/16	46.53

Nominal Size	H	I	J	K	L	M	N	O	P
1-1/2	9-3/16	6-9/16	2-1/4	8	8-7/8	4-3/8	4-3/8	2	2-3/8
2	9-13/16	6-9/16	2-1/4	8	8-7/8	4-3/8	4-3/8	2	2-3/8
2-1/2	10-1/32	6-9/16	2-1/4	8	8-7/8	4-3/8	4-3/8	2	2-3/8
3	10-7/8	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
4	11-7/16	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
6	14	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
8	13-23/32	6-5/8	2-3/4	8	9-1/4	4-7/8	4-11/16	2	2-11/16
10	16-11/16	7-7/16	3-5/8	7-15/16	10-7/8	6-13/16	6-5/16	2-3/8	2-1/8
12	17-11/16	7-7/16	3-5/8	7-15/16	10-7/8	6-13/16	6-5/16	2-3/8	2-1/8

1: Maximum Internal Pressure Rating @ 73°F

Valves Technical

Butterfly Valve Dimensions & Operational Information



Cv Values & Operating Torque

Valve Size	Cv ¹ Degrees Open						Operating ² Torque (in.-lbs.)
	15°	30°	45°	60°	75°	90°	
1-1/2	2	8	20	36	61	81	100
2	3	11	27	49	82	109	110
2-1/2	5	19	48	86	144	192	206
3	9	35	86	155	259	345	360
4	10	41	103	185	308	411	420
6	28	113	281	506	844	1125	720
8	56	225	562	1012	1687	2249	1200
10	111	444	1110	1998	3330	4440	1320
12	158	631	1577	2839	4732	6309	1920
14	176	705	1762	3172	5286	7048	See Notes
16	211	846	2114	3805	6341	8455	
18	273	1092	2730	4914	8190	10920	
20	355	1418	3545	6381	10635	14180	
24	467	1866	4665	8397	13995	18660	

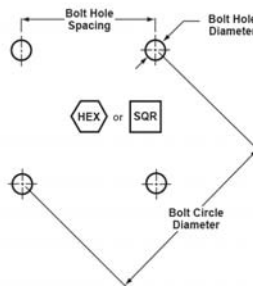
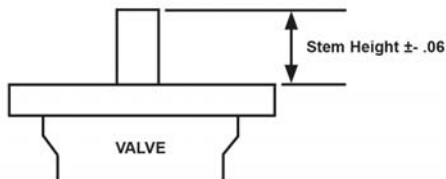
1: Gallons per minute at 1 psi pressure drop.

2: Operating torque for large diameter valves varies significantly with system operating pressure, flow direction and velocity.
Contact Spears® for torque requirement based on application.

Actuator Mounting Dimensions For Custom Actuation

Size	Bolt Hole Spacing		Bolt Hole Diameter		Bolt Circle Diameter		Hex	Square	Stem Height	
	Standard	Wafer	Standard	Wafer	Standard	Wafer	+ .000 - .006	+ .000 - .002	Standard	Wafer
1-1/2	1.95	N/A	.34	N/A	2.75	N/A	.375	N/A	.75	N/A
2	1.95	2.47	.34	.40	2.75	3.50	.500	.375	.75	1.30
2-1/2	1.95	2.47	.34	.40	2.75	3.50	.500	.375	.75	1.34
3	2.65	2.47	.41	.40	3.75	3.50	.563	.500	1.00	1.34
4	2.65	2.47	.41	.40	3.75	3.50	.625	.500	1.04	1.37
6	3.17	2.83	.41	.40	4.48	4.00	.875	.750	1.27	1.80
8	3.17	3.17	.41	.40	4.48	4.48	1.000	.875	1.29	1.96
10	3.54	3.54	.41	.41	5.00	5.00	1.125	1.000	1.38	1.38
12	3.54	3.54	.41	.41	5.00	5.00	1.250	1.000	1.38	1.38
14	3.54	N/A	.41	N/A	5.00	N/A	1.250	N/A	1.62	N/A
16	3.54	N/A	.41	N/A	5.00	N/A	1.250	N/A	1.75	N/A
18	3.54	N/A	.41	N/A	5.00	N/A	1.250	N/A	1.75	N/A
20	3.93	N/A	.41	N/A	5.56	N/A	1.250	N/A	1.75	N/A
24	4.33	N/A	.41	N/A	6.12	N/A	1.250	N/A	1.75	N/A

Note: Standard = Standard, Lug & True Lug Style Valves
Wafer = Wafer Style Valves





Butterfly Valve Dimensions & Operational Information

General Installation Information

Spears® Butterfly Valves are designed for system connections either between two flanges or with single-side (flange one-side only) connection for dead-end service using lug style valves. Lug Insert Valves require attention to flow direction, True Lug valves may be installed either direction. The valve handle (or gear operator) is reversible 180° for either left or right side operation. Spears® Butterfly Valves are designed for installation with user supplied 1/8" full-faced gaskets, hex bolts, nuts and flat washers.

Caution: Spears® Butterfly Valves are designed for use with flanges or flanged equipment having minimum waterway inside diameter no less than that of Schedule 80 PVC pipe (ASTM D 1785). *Use of smaller inside diameter flange connections may result in obstruction and damage to the valve disc.*

PVC & CPVC Butterfly Valve Torque and Hardware Requirements

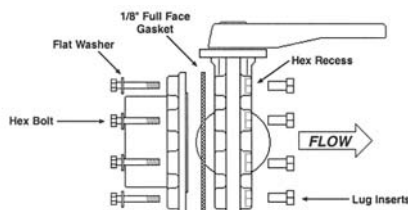
Valve Size (in.)	No. of Bolt Holes	Bolt Torque (ft.-lb.)	Standard Valve					Valve with Lug Inserts					True Lug Valve			
			Bolt Lengths ¹ (in.)		Bolt Diameter (in.)	Bolt Threads per inch	Flat Washer O.D. (in.)	Bolt Lengths ¹ (in.)		Bolt Diameter (in.)	Lug Threads per inch	Flat Washer O.D. (in.)	Bolt Lengths ² (in.)	Bolt Diameter (in.)	Lug Threads per inch	Flat Washer O.D. (in.)
			Single Side	Dual Flange ³				Single Side	2nd Flange ²							
1-1/2	4	12	3-1/4	4-1/4	1/2	13	1-3/8	1-3/4	1-1/2	1/2	13	1-3/8	1-1/2	7/16	14	1-1/4
2	4	25	3-3/4	4-3/4	5/8	11	1-3/4	2	1-3/4	5/8	11	1-3/4	1-1/2	1/2	13	1-3/8
2-1/2	4	25	4-1/4	5-1/4	5/8	11	1-3/4	2-1/4	2	5/8	11	1-3/4	1-3/4	1/2	13	1-3/8
3	4	25	4-1/4	5-1/2	5/8	11	1-3/4	2-1/4	2	5/8	11	1-3/4	2	1/2	13	1-3/8
4	8	25	4-1/2	5-3/4	5/8	11	1-3/4	2-1/2	2	5/8	11	1-3/4	2	1/2	13	1-3/8
6	8	40	5-1/4	6-3/4	3/4	10	2	3-1/4	2-1/4	3/4	10	2	2-1/4	5/8	11	1-3/4
8	8	40	5-3/4	7-1/4	3/4	10	2	3-3/4	2-1/4	3/4	10	2	2-1/4	5/8	11	1-3/4
10	12	64	6-1/2	8-1/4	7/8	9	2-1/4	4	3	7/8	9	2-1/4	2-3/4	3/4	10	2
12	12	95	6-3/4	8-1/2	7/8	9	2-1/4	4-1/4	3	7/8	9	2-1/4	2-3/4	3/4	10	2

1: Minimum bolt lengths based on use of Spears® flanges, 1/8" full faced gaskets, standard S.A.E. hex bolts and Standard Plate Series flat washers.

2: Specified bolt lengths are maximum allowable for maintaining proper clearance in initial Single-Side installation with Lugs where anticipated 2nd Flange installation option is to be retained without removal of valve.

3: Minimum bolt length through 2-flanges, 2-gaskets, 2-flat washers and 1-valve body.

Single-Side (flange one side) Installation Using Standard Valve with Lug Inserts (for field installable Insert Sets or valves with factory installed Lug Inserts)



CAUTION: Flange must be installed on side of valve **opposite** the hex nut recesses for Single-Side Installation as illustrated.

(Flange, bolts, nuts, washers and gaskets not included.
Lug inserts may be ordered separately.)

Polypropylene Butterfly Valve Torque and Hardware Requirements

Valve Size	No. of Bolt Holes	Bolt Diameter (in.)	Bolt Torque (ft.-lb.)	Bolt Lengths	Valve Lay Length
1-1/2	4	1/2	12	<p>Bolt lengths will vary according to thickness of valve, mating flanges, nuts and gaskets used.</p> <p>The following formula may be use to calculate bolt length for installation with mating flange each side.</p> $L = V + 2 (F + G + W) + N$ <p>Where: L = Minimum Bolt Length V = Valve Lay Length F = Flange Thickness G = Gasket Thickness W = Washer Thickness N = Nut Thickness</p>	1-9/16
2	4	5/8	25		1-7/8
2-1/2	4	5/8	25		2-1/16
3	4	5/8	25		2-1/8
4	8	5/8	25		2-5/16
6	8	3/4	40		2-3/4
8	8	3/4	40		3
10	12	7/8	64		3-1/4
12	12	7/8	95		3-1/2
14	12	1	110		6-1/4
16	16	1	110		6-3/4
18	16	1-1/8	110		7-1/8
20	20	1-1/8	110		7-3/4
24	20	1-1/4	110		8-1/2

Valves Technical Butterfly Valve Accessories



Lug Insert Sets

- Field installable lugs for all Spears® PVC & CPVC Standard Butterfly Valves only.
- Allows easy single-side installation to mating flange.
- Choice of high corrosion resistant 316 stainless steel or zinc plated steel construction.

Valve Size	316 Stainless Steel Part Number	Zinc Plated Steel Part Number
1-1/2	LUG1-015	LUG2-015
2 & 2-1/2	LUG1-020	LUG2-020
3	LUG1-030	LUG2-030
4	LUG1-040	LUG2-040
6 & 8	LUG1-080	LUG2-080
10 & 12	LUG1-120	LUG2-120



Lever Handle Kits

- Exact replacement or conversion handle for Spears® 1-1/2" through 8" Butterfly Valves.
- High impact polypropylene construction featuring quick-action reinforced polymer position stop and grip with built-in lock-out capability.
- Includes all components and hardware assembled for quick installation.

Valve Size	Part Number
1-1/2	BFH-015
2 & 2-1/2	BFH-020
3	BFH-030
4	BFH-040
6	BFH-060
8	BFH-080



T-Handle Kits

- Specialty Handle for minimum space requirements.
- High impact polypropylene construction featuring quick-action reinforced polymer position stop and grip with built-in lock-out capability.

Valve Size	Part Number
1-1/2	BFTH-015
2 and 2-1/2	BFTH-020
3	BFTH-030
4	BFTH-040



Speed Handle for Gear Operator

- Quickly attaches to Spears® Gear Operator Handle to allow rapid opening or closing of valve.

Valve Size	Part Number
1-1/2 - 12	SH-120



Positive Stem Stop for Butterfly Valve with Gear Operator

- Provides positive stop for Gear Operator shaft to avoid changes in the degree of opening for varying flow conditions.
- Fits previous metal-housed gear operator only. Contact Technical Service Department for more information.

Valve Size	Part Number
1-1/2 - 12	PSS-120



2" Square / T-Style Operator Nuts

- Allows operation with conventional 2" Square or T-Style handle wrenches.
- Fits All Spears® Butterfly Valve Gear Operators. (NOT FOR USE ON VALVE STEM)

Valve Size	Part Number
1-1/2 - 24	GTN-040



Valves Technical

Butterfly Valve Accessories



Gear Operator Kits

For Wafer Style Butterfly Valves, replace the "GO" prefix with "GOW" in the part number.

- Bolt-on conversion or replacement unit for all Spears® Butterfly Valves.
- Low Profile Submersible Gear Operator Standard on 1-1/2" and larger sizes, utilizes high efficiency Acme screw with PVC or CPVC housing with high impact red polypropylene handwheel and built in position indicator.
- Includes all components and hardware for direct mount
- IPx7

Gear Operator Kits

Valve Size	1-1/2	2	2-1/2	3	4	6	8	10	12	14
Part Number	SGOP1-015	SGOP1-020	SGOP1-025	SGOP1-030	SGOP1-040	SGOP1-060	SGOP1-080	SGOP1-100	SGOP1-120	SGOP1-140

Extended Chemical Resistance Options

Spears® offers several options for extended chemical resistance in PVC, CPVC and Polypropylene Butterfly Valves, including those listed below. Contact Spears® for additional ordering information.

PTFE Seat Sleeves

- PTFE envelope-type sleeve encases and isolates Spears® standard elastomer seat for extended chemical resistance while maintaining resiliency and sealing capability.
- Available for valve sizes 1-1/2" - 12"
- Sold factory-installed in PVC, CPVC or PP valve

PTFE Coated Valve Stems

- Durable, bonded PTFE coating over standard SS 316L stem for extended chemical resistance.
- Viable alternative to more costly special alloy stems.
- Available for all valve sizes.
- Sold factory installed in PVC, CPVC or PP valves.

True-Lug Butterfly Valve Bolt Kit

Connects 1-Side of True-Lug Valve to 1-Spears® Flange Includes Bolts & Flat Washers
Use 2-Kits For Dual Spears® Flanges

Size	Part Number		
	Zinc Plated	SS316	SS304
1-1/2	BFHKL-015	BFHKL1-015	BFHKL2-015
2	BFHKL-020	BFHKL1-020	BFHKL2-020
2-1/2	BFHKL-025	BFHKL1-025	BFHKL2-025
3	BFHKL-030	BFHKL1-030	BFHKL2-030
4	BFHKL-040	BFHKL1-040	BFHKL2-040
6 & 8	BFHKL-080	BFHKL1-080	BFHKL2-080
10 & 12	BFHKL-120	BFHKL1-120	BFHKL2-120

Valves Technical Butterfly Valve Accessories



Chainwheel Operator Kits



For Wafer Style Butterfly Valves replace the "CO" prefix with "COW" in the part number.

- Bolt-on conversion unit for all Spears® Butterfly Valves. Includes all hardware for direct mount to valve.
- Enables operation of Spears® Butterfly Valves in high, normally out of reach locations. Makes valve opening or closing easy by means of a slight pull on the sprocket chain.
- Unit consists of Cast Aluminum high efficiency Gear Operator with Aluminum Alloy Sprocket Rim and Chain Guide.
- Chain options provide choice of 316 Stainless Steel, Hot-Dipped Galvanized. Order separately to desired length.

Note: In horizontal system installations, Chainwheel Operators should be generally mounted with operator below valve (inverted valve) to maintain clearance between chain and system piping. Check for adequate clearance before installing an operator in a top-mount position.

(VALVE NOT INCLUDED)

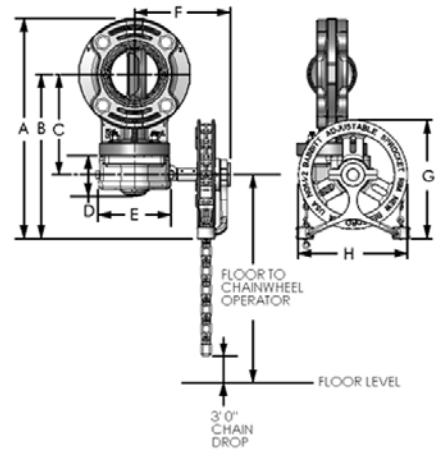
Valve Size	Part Number
2	CO-020
2-1/2	CO-025
3	CO-030
4	CO-040
6	CO-060
8	CO-080
10	CO-100
12	CO-120
14-24	CO-140

2-1/2" and smaller kits available on special order basis.

LOCK-LINK CHAIN OPTIONS	Part Number
Hot-Dip Galvanized	GC-1
Stainless Steel	SC-1
Brass	BC-1

Determining Floor-to-Chainwheel Height

Typical orientation is shown for valve in horizontal piping system installation. Floor-to-Chainwheel height is determined by subtracting the specified "C" dimension from the system centerline height (add "C" dimension if used with top-mount orientation). In vertical piping system installations, the Floor-to-Chainwheel height is the same as that for the centerline location of the valve in the system.



How to Order Chain

Required chain length is based on chain drop at 3 ft. from floor.

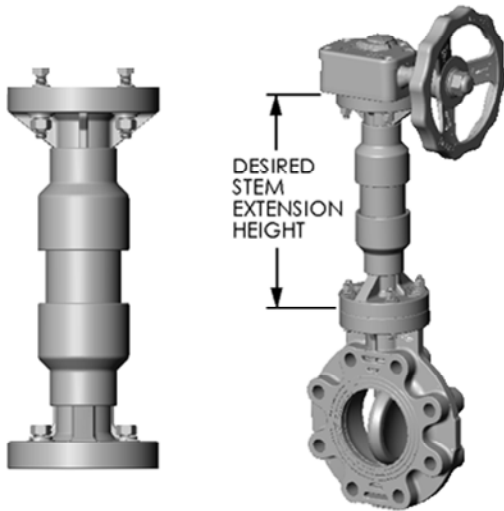
Floor-to-Chainwheel Height	7'	8'	9'	10'	11'	12'	13'	14'	15'
Required Chain Length	10'	12'	14'	16'	18'	20'	22'	24'	26'

Chainwheel Operator Dimensions (Note: w denotes Wafer Style Butterfly Valve Dimensions)

Valve Size	A	A w	B	B w	C	C w	D	D w	E	E w	F	F w	G	G w	H	H w
2	12-13/16	12-1/16	9-13/16	9-1/16	5-3/4	5	2-1/4	2-1/4	4-3/8	4-3/8	6-3/8	6-3/8	7-3/4	7-3/4	7-3/8	7-3/8
2-1/2	13-7/16	13-1/16	10-1/16	9-1/16	6	5-1/2	2-1/4	2-1/4	4-3/8	4-3/8	6-3/8	6-3/8	7-3/4	7-3/4	7-3/8	7-3/8
3	14-9/16	13-7/8	10-13/16	10-1/4	6-3/4	6-3/16	2-3/4	2-3/4	4-11/16	4-11/16	6-1/2	6-1/2	7-3/4	7-3/4	7-3/8	7-3/8
4	16-1/16	14-15/16	11-9/16	10-11/16	7-1/2	6-5/8	2-3/4	2-3/4	4-11/16	4-11/16	6-1/2	6-1/2	7-3/4	7-3/4	7-3/8	7-3/8
6	19-7/16	17-15/16	13-15/16	12-7/16	9-7/8	8-3/8	2-3/4	2-3/4	4-11/16	4-11/16	6-1/2	6-1/2	7-3/4	7-3/4	7-3/8	7-3/8
8	21-11/16	20-1/2	14-15/16	13-3/4	10-7/8	9-11/16	2-3/4	2-3/4	4-11/16	4-11/16	6-1/2	6-1/2	7-3/4	7-3/4	7-3/8	7-3/8
10	24-13/16	24-5/8	16-13/16	16-1/2	12-3/4	12-7/16	3-11/16	3-11/16	6-13/16	6-13/16	9-5/8	9-5/8	7-3/4	7-3/4	7-3/8	7-3/8
12	27-5/16	27	17-13/16	17-1/2	13-3/4	13-7/16	3-11/16	3-11/16	6-13/16	6-13/16	9-5/8	9-5/8	7-3/4	7-3/4	7-3/8	7-3/8
14	31-3/16	-	20-11/16	-	14-15/16	-	3-15/16	-	7-27/32	-	8-7/8	-	10-1/4	-	9	-
16	33-3/4	-	22	-	16-1/4	-	3-15/16	-	7-27/32	-	8-7/8	-	10-1/4	-	9	-
18	34-15/16	-	22-7/16	-	16-11/16	-	3-1/2	-	6-1/2	-	8-7/8	-	10-1/4	-	9	-
20	37-7/16	-	23-11/16	-	17-15/16	-	3-1/2	-	6-1/2	-	8-7/8	-	10-1/4	-	9	-
24	41-15/16	-	25-15/16	-	20-1/8	-	3-1/3	-	6-1/2	-	8-7/8	-	10-1/4	-	9	-



Valves Technical Butterfly Valve Accessories



Stem Extensions

For Wafer Style Butterfly Valves replace the "BFSE" prefix with "BFSEW" in the part number.

- Designed for use on Spears® Butterfly Valves.
- Corrosion Resistant PVC Housing.
- Stainless Steel Internal Extension Shaft.
- All Mounting Hardware Included.
- Detailed Instructions for Quick Assembly.
- Fabricated to Order in Standard 6" Increments.

*Typical Application (VALVE NOT INCLUDED)
Gear Operator (shown) or Lever Handle Sold with Valve*

Stem Extension Height	Valve Size						
	1-1/2	2 & 2-1/2	3	4	6	8	10
24	BFSE-015-240	BFSE-020-240	BFSE-030-240	BFSE-040-240	BFSE-060-240	BFSE-080-240	BFSE-100-240
30	BFSE-015-300	BFSE-020-300	BFSE-030-300	BFSE-040-300	BFSE-060-300	BFSE-080-300	BFSE-100-300
36	BFSE-015-360	BFSE-020-360	BFSE-030-360	BFSE-040-360	BFSE-060-360	BFSE-080-360	BFSE-100-360
42	BFSE-015-420	BFSE-020-420	BFSE-030-420	BFSE-040-420	BFSE-060-420	BFSE-080-420	BFSE-100-420
48	BFSE-015-480	BFSE-020-480	BFSE-030-480	BFSE-040-480	BFSE-060-480	BFSE-080-480	BFSE-100-480
54	BFSE-015-540	BFSE-020-540	BFSE-030-540	BFSE-040-540	BFSE-060-540	BFSE-080-540	BFSE-100-540
60	BFSE-015-600	BFSE-020-600	BFSE-030-600	BFSE-040-600	BFSE-060-600	BFSE-080-600	BFSE-100-600
66	BFSE-015-660	BFSE-020-660	BFSE-030-660	BFSE-040-660	BFSE-060-660	BFSE-080-660	BFSE-100-660
72	BFSE-015-720	BFSE-020-720	BFSE-030-720	BFSE-040-720	BFSE-060-720	BFSE-080-720	BFSE-100-720
78	BFSE-015-780	BFSE-020-780	BFSE-030-780	BFSE-040-780	BFSE-060-780	BFSE-080-780	BFSE-100-780
84	BFSE-015-840	BFSE-020-840	BFSE-030-840	BFSE-040-840	BFSE-060-840	BFSE-080-840	BFSE-100-840
90	BFSE-015-900	BFSE-020-900	BFSE-030-900	BFSE-040-900	BFSE-060-900	BFSE-080-900	BFSE-100-900
96	BFSE-015-960	BFSE-020-960	BFSE-030-960	BFSE-040-960	BFSE-060-960	BFSE-080-960	BFSE-100-960
102	BFSE-015-1020	BFSE-020-1020	BFSE-030-1020	BFSE-040-1020	BFSE-060-1020	BFSE-080-1020	BFSE-100-1020
108	BFSE-015-1080	BFSE-020-1080	BFSE-030-1080	BFSE-040-1080	BFSE-060-1080	BFSE-080-1080	BFSE-100-1080
114	BFSE-015-1140	BFSE-020-1140	BFSE-030-1140	BFSE-040-1140	BFSE-060-1140	BFSE-080-1140	BFSE-100-1140
120	BFSE-015-1200	BFSE-020-1200	BFSE-030-1200	BFSE-040-1200	BFSE-060-1200	BFSE-080-1200	BFSE-100-1200

Stem Extension Height	Valve Size	
	12	14 - 24
24	BFSE-120-240	BFSE-140-240
30	BFSE-120-300	BFSE-140-300
36	BFSE-120-360	BFSE-140-360
42	BFSE-120-420	BFSE-140-420
48	BFSE-120-480	BFSE-140-480
54	BFSE-120-540	BFSE-140-540
60	BFSE-120-600	BFSE-140-600
66	BFSE-120-660	BFSE-140-660
72	BFSE-120-720	BFSE-140-720
78	BFSE-120-780	BFSE-140-780
84	BFSE-120-840	BFSE-140-840
90	BFSE-120-900	BFSE-140-900
96	BFSE-120-960	BFSE-140-960
102	BFSE-120-1020	BFSE-140-1020
108	BFSE-120-1080	BFSE-140-1080
114	BFSE-120-1140	BFSE-140-1140
120	BFSE-120-1200	BFSE-140-1200

Basic Stem Extension height is 24" and is manufactured in standard 6" increments. Intermediate Stem Extension heights are available and are priced to the next full 6" increment. For heights over 120", please contact your servicing Spears® Regional Distribution Center. 14"-24" Valves Stem Extensions use the same 14" part number.

Suitable for Oil-Free air handling to 25 psi, not for distribution of compressed air or gas

See Spears® Product Sourcebook for product offerings

Spears® Manufacturing Company