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# BYV Series Butterfly Valve Product Guide

FLOW CONTROL

define  
design

deliver

WORKING PRESSURE (PSI)

TEMPERATURE

PVC

**NEW**

## BYV Series Butterfly Valve

PVC, CPVC AND GFPP

The Revolutionary and patent-pending BYV Series Butterfly Valve from Hayward features the most advanced thermoplastic design and construction in the industry today.

Available in multiple thermoplastic materials from 2" through 12", the BYV has an extremely robust body construction while lighter weight than a metal equivalent. The revolutionary hand lever design features a 72 spline interlock mechanism allowing for 19 stopping positions every 5 degrees. Additionally, the hand lever material incorporates a UV inhibitor for enhanced performance in outdoor applications. The BYV features reinforced lug holes and can be ordered with overmolded 316 stainless steel lugs for dead end service needs.

Designed for global use, the BYV is available in ANSI and DIN/EN flange patterns with a pressure rating of 150 PSI / 10 Bar across all sizes and materials. Finally, the BYV Series is Made by Hayward in the USA!

### KEY FEATURES, BENEFITS AND ADVANTAGES

- One Piece Body and Disc in PVC, CPVC and GFPP Materials
- Revolutionary Hand Lever with 19 Lockable Stop Positions and 360° Interlock
- External Disc Position and Flow Indication
- Hydro-dynamic Centric Disc Design for Increased Flow Performance
- Over-Sized Liner Face Maximizes Surface Contact with Flanges
- EPDM, Viton® or Nitrile Liners
- 1-Piece 316 Stainless Steel Stem with Threaded Retaining Gland
- Stem Bearing and Seal Retainer for Absolute Stem Positioning and Sealing
- ISO 5211 Top Flange and Stem Drive
- All Sizes Meet ANSI B16.10 / ISO 5752 Narrow Face-to-Face Dimensions
- Pressure Rated at 150 PSI / 10 Bar in All Sizes @ 70°F Non-Shock

### OPTIONS

- Over-Molded or Field Mountable 316 Stainless Steel Lugs
- Gear Operators
- Complete Range of Pneumatic or Electric Actuators
- Stem Extensions
- 2" Square Operating Nut
- Chain Operator for Gear Box

### TYPICAL APPLICATIONS

- Water and Wastewater Treatment
- Aquatic and Animal Life Support Systems
- Chemical Processing and Handling
- Marine and Corrosive Environments
- Mining
- Metal Plating and Surface Finishing
- Landfills / Environmental Infrastructure
- Water / Theme Parks

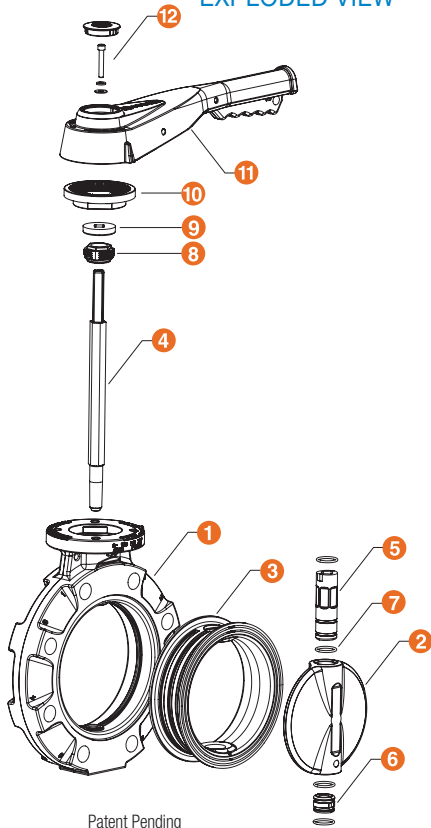
### MATERIALS

- PVC per ASTM D1784 Cell Class 12454
- CPVC per ASTM D1784 Cell Class 23447
- GFPP per ASTM D4101 Cell Class 85580
- EPDM, Viton® and Nitrile Liners



BYV Series  
with Gear Operator

### EXPLODED VIEW



Patent Pending



Engineered Hand Lever Design for Enhanced Strength and UV Performance



Ergonomic Grip and Lockouts



72-Spline Interlocking Throttle Plate with 19 Locking Positions

1-pc Stem with Threaded Retaining Gland for Positive Stem Retention

High Visibility Disc Position and Flow Rate Indication

ISO 5211 Top Flange and Stem Drive for Ease of Actuation

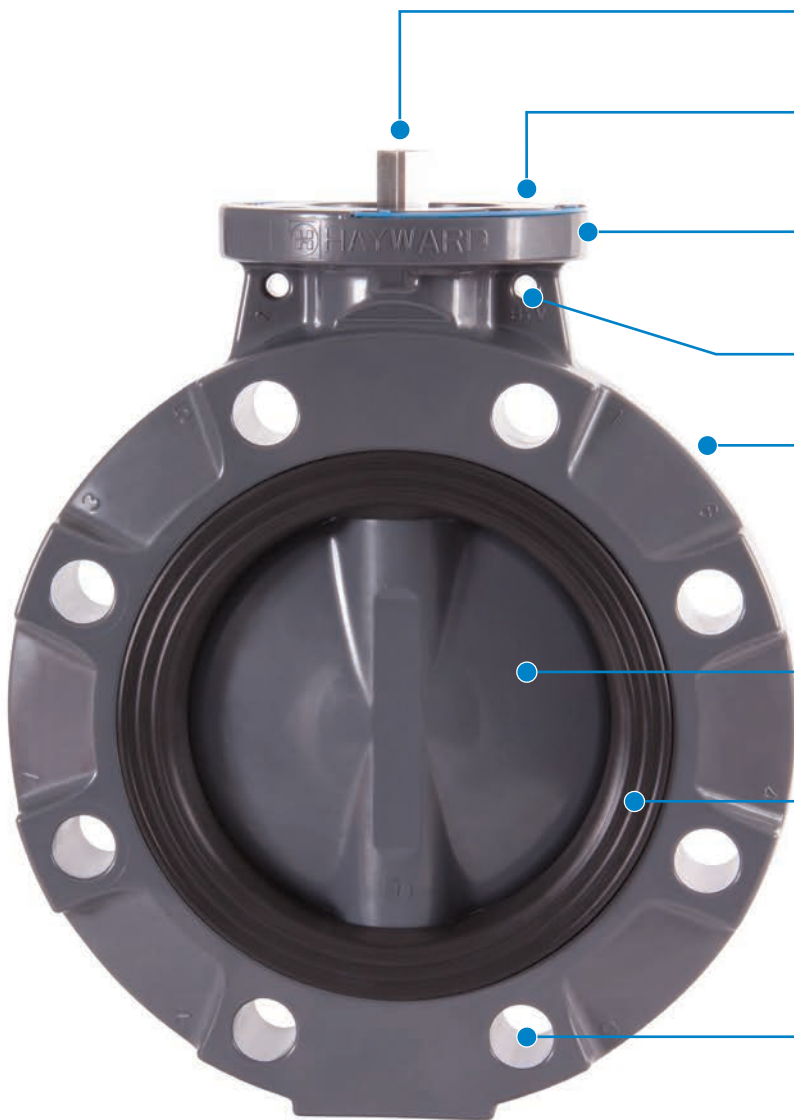
Molded-In Hang Tag Holes

Robust 1-Piece Valve Body Construction in PVC, CPVC or GFPP Materials

Hydro-dynamic Disc for Increased Flow Performance

Over-sized Liner Face Maximizes Flange Surface Contact

Reinforced Lug Holes Standard. Overmolded or Field Mounted 316 Stainless Steel Lugs Available



# BYV Series Key Features and Advantages

## Engineered Hand Lever for Enhanced Strength

- Ergonomic grip for ease of use
- Form fitting under grip for all hand sizes
- Lockout and tag-out holes molded into grip
- Made from GFPP with UV Inhibitor for superior outdoor performance
- Exceeds industry standards for strength requirements



## 19 Position Throttle Plate with 72 Interlocking Splines

- Made from Ultem® material for superior strength, temperature and corrosion resistance
- Provides locking positions every 5 degrees
- Insures absolute control and positioning of disc
- Easy operation with a smooth drive



## High Visibility Disc and Flow Indicators

- Allows for exact positioning of the disc to meet flow requirements
- Shows degrees Open and Cv percentage
- High contrast permanent markings
- Made from PP material



## Overmolded or Field Mountable Lug Option

- Threaded lugs made from 316 Stainless Steel
- Full width of the valve body for maximum engagement with bolt threads
- Allows for dead end service (Hayward recommends the use of a downstream flange)
- Does not require a different valve body or change of body materials to support threaded lugs



## Hydro-dynamic Disc Design

- Contoured shape for increased flow performance and high Cv
- Minimizes turbulence due to reduction of flow
- Allows for maximum flow through valve port
- Centric seat design for bubble tight seal
- One Piece Stem with upper bearing seal and lower seal carrier

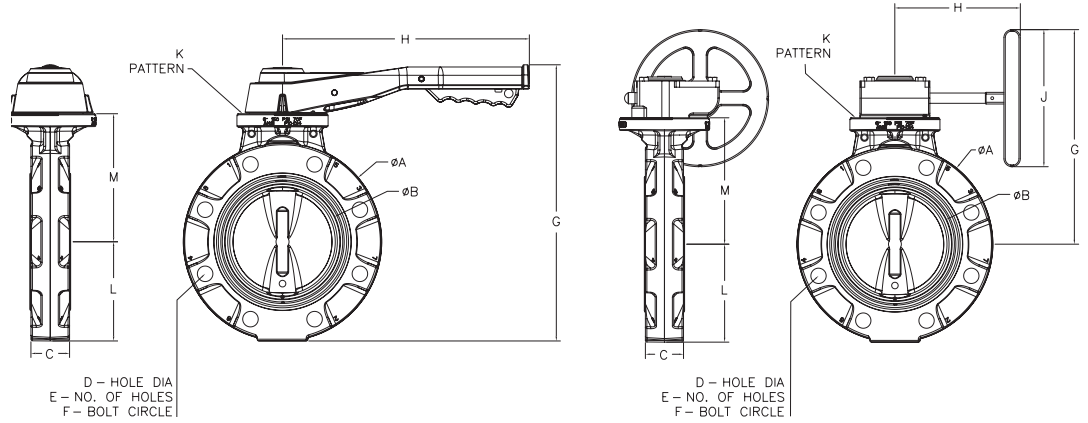


# BYV Series Butterfly Valve

## TECHNICAL INFORMATION

### PARTS LIST / 2D DRAWINGS

1. Body
2. Disc
3. Liner
4. Stem
5. Upper Stem Bearings
6. Seal Retainer
7. O-Rings (4)
8. Threaded Retaining Gland
9. Weather Seal
10. Splined Throttle Plate (Ultem®)
11. Hand Lever Assembly
12. Bezel, Washers, Socket Head Cap Screw



### DIMENSIONS – INCHES / MILLIMETERS

SIZE	A	B	C (1)	D, ANSI (2)	D, DIN (3)	E	F, ANSI (2)	F, DIN (3)	G	H	J	K (4)	L	M	WEIGHT w LEVER	WEIGHT w GEAR		
inches / DN	in / mm	in / mm	in / mm	in / mm	in / mm	ANSI / DIN	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	lbs / Kg	lbs / Kg		
2 / 50	6.12 / 155	2.03 / 52	1.69 / 43	0.75 / 19	0.71 / 18	4 / 4	4.75 / 121	4.92 / 125	7.53 / 191	6.25 / 159	4.75 / 121	10.5 / 267	5 / 125	F07-D11	3.17 / 81	3.97 / 101	4.0 / 1.8	5.8 / 2.6
2.5 / 65	7.25 / 184	2.50 / 64	1.81 / 46	0.75 / 19	0.71 / 18	4 / 4	5.50 / 140	5.71 / 145	7.96 / 202	6.67 / 169	4.75 / 121	10.5 / 267	5 / 125	F07-D11	3.63 / 92	4.40 / 112	4.9 / 2.2	6.7 / 3.0
3 / 80	7.75 / 197	3.25 / 83	1.81 / 46	0.75 / 19	0.71 / 18	4 / 8	6.00 / 152	6.30 / 160	8.31 / 211	7.00 / 178	4.75 / 121	10.5 / 267	5 / 125	F07-D11	3.88 / 99	4.75 / 121	5.2 / 2.4	7.0 / 3.2
4 / 100	9.13 / 232	4.12 / 105	2.06 / 52	0.75 / 19	0.71 / 18	8 / 8	7.50 / 191	7.09 / 180	9.29 / 236	8.00 / 203	7.28 / 185	12.00 / 305	5 / 125	F07-D14	4.57 / 116	5.69 / 145	7.7 / 3.5	11.1 / 5
6 / 150	11.25 / 286	5.98 / 152	2.19 / 56	0.88 / 22	0.87 / 22	8 / 8	9.50 / 241	9.45 / 240	12.35 / 314	10.00 / 254	7.75 / 197	14.00 / 356	8 / 200	F10-D14	5.63 / 143	7.25 / 184	12.7 / 5.8	16.2 / 7.4
8 / 200	13.75 / 349	7.75 / 197	2.38 / 60	0.88 / 22	0.87 / 22	8 / 8	11.75 / 298	11.61 / 295	13.48 / 342	11.18 / 284	7.75 / 197	16.00 / 406	8 / 200	F10-D17	6.88 / 175	8.38 / 213	18.5 / 8.4	21.9 / 10.0
10 / 250	16.13 / 410	9.63 / 245	2.69 / 68	1.00 / 25	0.87 / 22	12 / 12	14.25 / 362	13.78 / 350	16.37 / 416	N/A	9.00 / 229	N/A	8 / 200	F12-V28	8.06 / 205	10.88 / 276	N/A	34.2 / 15.5
12 / 300	19.13 / 486	11.37 / 289	3.06 / 78	1.00 / 25	0.87 / 22	12 / 12	17.00 / 432	15.75 / 400	17.87 / 454	N/A	9.00 / 229	N/A	8 / 200	F12-V36	9.56 / 243	12.38 / 314	N/A	50.4 / 22.9

- 1) Dimension per ASME B16.10 Class 150, Steel, Narrow
- 2) ANSI dimension per ASME B16.5, Class 150
- 3) Dimension per DIN 2501, PN10
- 4) ISO 5211 Flange and Drive

### CV VALUES

SIZE in / DN	FULL OPEN POSITION
2 / 50	125
2-1/2 / 65	190
3 / 80	280
4 / 100	600
6 / 150	1300
8 / 200	2500
10 / 250	4700
12 / 300	7100

### PRESSURE LOSS CALCULATION FORMULA

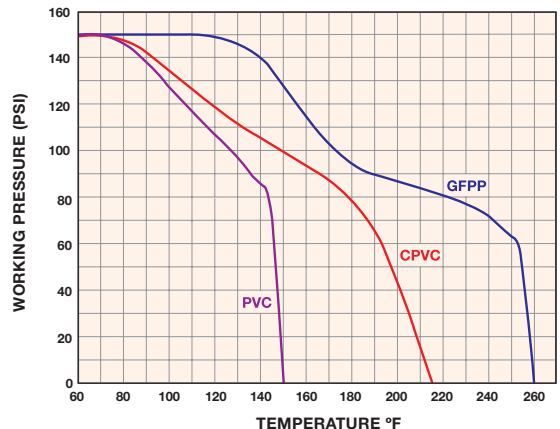
$$\Delta P = \left[ \frac{Q}{Cv} \right]^2$$

$\Delta P$  = Pressure Drop

Q = Flow in GPM

Cv = Flow Coefficient

### PRESSURE / TEMPERATURE CHART



### SAMPLE SPECIFICATION

All thermoplastic wafer-style butterfly valves shall be manufactured from PVC Type 1, Grade 1 (ASTM D1784, Cell Classification 12454), CPVC (ASTM D1784, Cell Classification 23447) or glass filled Polypropylene (ASTM D4101, Cell Classification 85580). All valve bodies shall contain integral top mounting flange with dimensions and bolt circles conforming to ISO 5211. Bodies shall contain fully-supported flange bolt holes, be one piece construction and meet ANSI B16.10 narrow face-to-face dimensions in all sizes. If LUGGED butterfly valves are required, lugs shall be over-molded, 316 stainless steel and be the full width of the body. Liners shall be EPDM, Viton® or Nitrile. Liner shall be FULL BOOT design, and shall be retained in the body via rib and groove engagement. Liner shall serve as primary disc seal and face seals for mating flanges. Secondary upper bearing and lower seal retainer o-ring seals to be EPDM or FPM. Stem shall be 316 stainless steel, non-wetted and provide full engagement over length of disc. Stem shall have position retention design.

Lever handle shall be trigger-style with 360° interlocking splines allowing the handle to position the disc in 5° increments. Mounting of stop plate for lever handle shall be non-invasive to the valve body and shall not incorporate self tapping screws or other fasteners that connect directly to the valve body. Trigger shall contain hole for padlock, as well as slot for cable tie, to lockout valve. Lever handle material to be 30% glass filled Polypropylene with UV Inhibitor.

Sizes 2" through 8" will be lever-operated as standard, and sizes 10" and 12" will be gear-operated as standard. Gear operators will be available for all sizes of valves as needed. All sizes of butterfly valves (2" through 12") shall be pressure-rated for 150 PSI at 70°F non-shock.

All butterfly valves shall carry a two-year warranty, and shall be manufactured by Hayward Flow Control products in the USA.

### PART NUMBER MATRIX

A		B		C		M		E		F		G		H		I				
BYV		1		1		040A		0		E		L		I		00				
VALVE SERIES	SUFFIX A	BODY MATERIAL	SUFFIX B	DISC MATERIAL	SUFFIX C	SIZE	SUFFIX M	STEM MATERIAL	SUFFIX E	LINER MATERIAL	SUFFIX F	METHOD OF OPERATION	SUFFIX G	LUG OPTION	SUFFIX H	OPTIONS	SUFFIX I			
BYV Butterfly	BYV	PVC	1	PVC	1	2"	020A	316	0	Viton®	V	Lever	L	none	0	none	00			
		CPVC	2	CPVC	2	2-1/2"	025A			EPDM	E	Gear	G	316SS	I	PER PO	##			
		GFPP	4	GFPP	4	3"	030A			Nitrile	N	Bare Stem	K							
						4"	040A													
						6"	060A													
						8"	080A													
						10"	100A													
						12"	120A													
						DN50	050M													
						DN65	065M													
						DN80	080M													
						DN100	100M													
						DN150	150M													
						DN200	200M													
				DN250	250M															
				DN300	300M															

Inch Size valves have an ANSI flange pattern  
Metric Size valves have a DIN flange pattern  
Please see table of dimensions for further data.