

PRATT

Henry Pratt Company

BF Series Wafer/Lug Butterfly Valves



**Engineering Creative Solutions
for Fluid Systems Since 1901**

A Tradition of Excellence

With the development of the first rubber seated butterfly valve more than 70 years ago, the Henry Pratt Company became a trusted name in the flow control industry, setting the standard for product quality and customer service. Today Pratt provides the following range of superior products to the water, wastewater and power generation industries.

Butterfly Valves: from 3" to 162"

Rectangular Valves: 1' x 1' to 14' x 16'

Ball Valves –

Rubber Seated: from 4" to 60"

Metal Seated: from 6" to 48"

Plug Valves: from 1/2" to 72", 100% port available up to 48", 3 ways

Air Valves for Water and Wastewater: from 1/2" to 20"

Hydraulic Control Systems

Valve Controls

Energy Dissipating Valves and Fixed Energy Dissipaters

Cone Valves

Check Valves

Plunger Valves

A Commitment to Meeting The Customers' Needs

Henry Pratt valves represent a long-term commitment to both the customer and to a tradition of product excellence. This commitment is evident in the number of innovations we have brought to the industries we serve. In fact, the Henry Pratt Company was the first to introduce many of the flow control products in use today, including the first rubber seated butterfly valve, one of the first nuclear N-Stamp valves, and the bonded seat butterfly valve.

Innovative Products For Unique Applications

Though many of the standard valves we produce are used in water filtration and distribution applications, Pratt has built a reputation on the ability to develop specialized products that help customers to meet their individual operational challenges.

Creative Engineering for Fluid Systems

Pratt's ability to provide practical solutions to complex issues is demonstrated by the following case histories.

Earthquake Proof Valves

Pratt designed and manufactured hydraulically actuated valves for a water storage application so that the valves would automatically operate in the event of earthquakes. This led to the development of a valve that will withstand acceleration forces of up to 6gs.

Custom Actuation/Isolation Valves

Pratt has designed and manufactured nuclear quality quarter-turn valves and parts since the first nuclear-powered generating plants were built. Our custom valves are able to close in a millisecond, using specially designed Pratt electro-pneumatic actuators.

Valves Designed for Harsh Environments

Pratt designed and manufactured a 144" diameter butterfly valve for the emergency cooling system at a jet engine test facility. The valve was designed to supply water to help dissipate the tremendous heat generated by the engines during testing.



PRATT
Henry Pratt Company

Through experience, commitment and creative engineering, Pratt is uniquely suited to provide superior products for our customers' special needs. For more information, contact our corporate headquarters in Aurora, Illinois.

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Construction Specification: Pratt BF Series Butterfly Valves



Valve with Electric Operator



Valve with Gear Operator

Sizes: 2" through 48"

Body: Ductile Iron (65-45-12)

Disc: Ductile Iron Nickel Plated, Ductile Iron Nylon 11,
CF8M Stainless Steel, Aluminum Bronze

Stem: 416 S.S. Heat Treated

Resilient Seat: EPDM, Buna-N, Viton

Actuation Options: Worm Gear, Lever,
Pneumatic, Electric

Pressure Ratings: 2" – 12" 230psi
14" – 48" 150psi

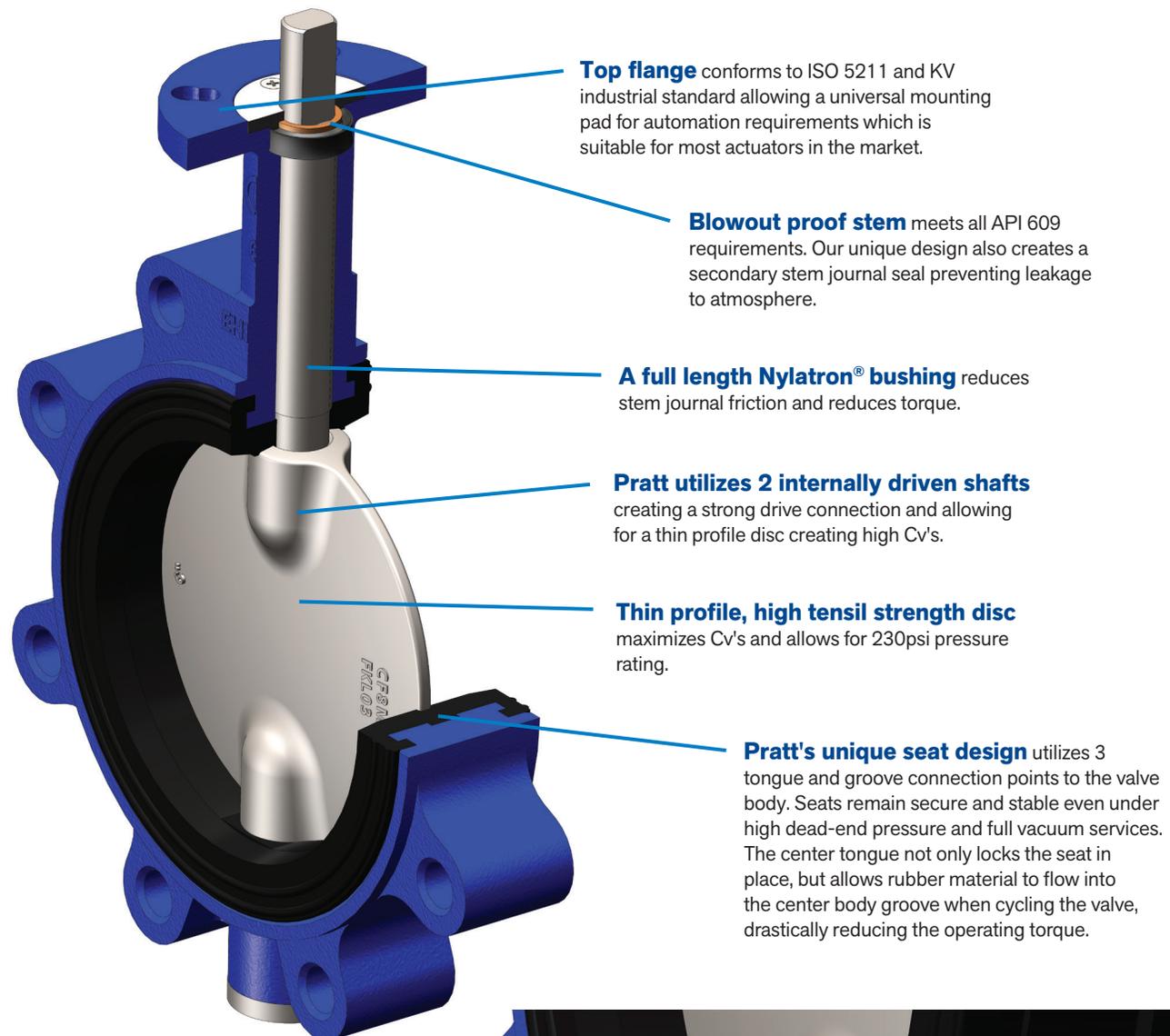
* For installation between ANSI 125/150

** Substitute material may result in pressure
rating change. Contact factory for details.

Features:

- Innovative 3 point connection, tongue and groove seat allows for higher pressure rating and full Vacuum service
- Unique secondary shaft seals prevent leakage from shaft.
- Our two piece shaft design provides maximum strength and a high flow characteristic disc.

Pratt BF Series Butterfly Valve Design Details: Butterfly Valve, sizes 2" through 48" 2"-12" 230psi, 14"-48" 150psi



Top flange conforms to ISO 5211 and KV industrial standard allowing a universal mounting pad for automation requirements which is suitable for most actuators in the market.

Blowout proof stem meets all API 609 requirements. Our unique design also creates a secondary stem journal seal preventing leakage to atmosphere.

A full length Nylatron® bushing reduces stem journal friction and reduces torque.

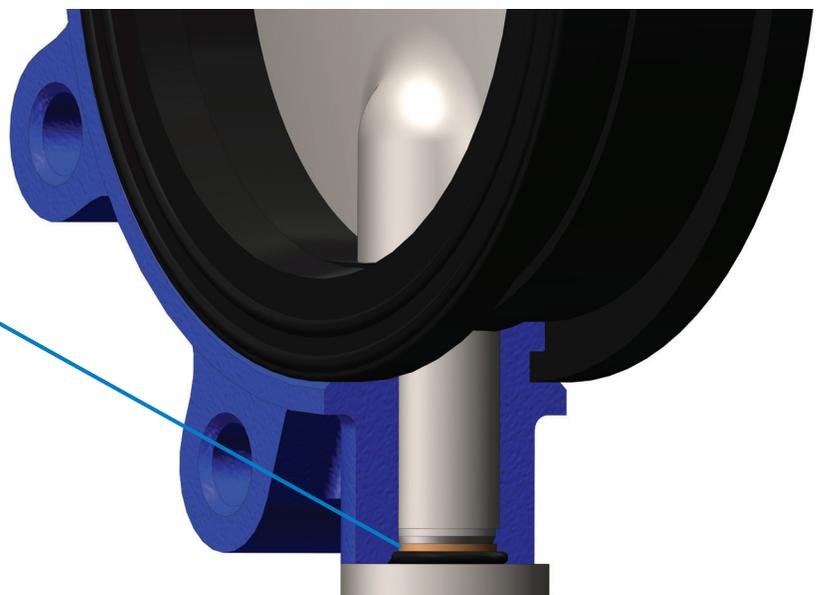
Pratt utilizes 2 internally driven shafts creating a strong drive connection and allowing for a thin profile disc creating high Cv's.

Thin profile, high tensil strength disc maximizes Cv's and allows for 230psi pressure rating.

Pratt's unique seat design utilizes 3 tongue and groove connection points to the valve body. Seats remain secure and stable even under high dead-end pressure and full vacuum services. The center tongue not only locks the seat in place, but allows rubber material to flow into the center body groove when cycling the valve, drastically reducing the operating torque.

Pratt's BF Series bottom cap provides lower stem retention and also creates a secondary stem journal seal preventing external leakage to atmosphere. 2"-12" lower shafts ride on a precision wear guide reducing shaft drag.

14" and larger utilizes an axial bearing to support the weight of the shaft and disc, providing a close to friction-free movement.



Suggested Specifications: Pratt BF Series Wafer/Lug Butterfly Valve, Sizes 2" through 48" 2"-12" 230psi, 14"-48" 150psi

General

Valves shall be of the Wafer or Lug design for installation between ANSI 125/150 flanges. All valves shall be capable of bi-directional, end of line, bubble tight service to rated pressure. Valves are also rated to full vacuum service. Design Standards: API 608 category A.

Pressure Rating

2" – 12" – 230psi to fit between ANSI 125/150 flanges

14" – 48" – 150psi to fit between ANSI 125/250 flanges

Body

Valve body shall be a 1 piece Ductile Iron ASTM A-536 (65-45-12) construction with a laying length conforming to the latest revision of ISO 5752 and a flange connection B16.1/B16.5.

Disc

Valve disc shall be Ductile iron ASTM A-536 Grade 65-45-12 with ENP plating or Nylon 11 coating, CF8M Stainless Steel, or Aluminum Bronze. Disc shall be designed to accommodate an upper and lower shaft with a thin center profile giving higher Cv values combined with strength.

Shaft

Valve shaft shall be constructed of Heat Treated 416 Stainless Steel. Valve shall be designed to accommodate (2) shafts (1 upper and 1 lower). The upper shaft shall have a positive engagement in the disc utilizing an internal square drive and shall be retained by the body Top Cap and End Cap.

Seat

Seat shall be EPDM, Buna-N or Viton. Seat design shall consist of 3 Tongues (2 located on the side walls and 1 located in the center bore) that engage into 3 grooves in the body. These 3 tongue and groove connection points prevent seat movement in a radial and axial direction. Seats shall be field replaceable.

Shaft Seals

Upper Shaft Seal shall be self-adjusting V-type and shall be suitable for Pressure or Vacuum service. Packing shall be located above the bushing and shall create a positive seal against the Top Cap. Bottom end cap contains a captive o-ring creating a positive seal against external leakage.

Bushings

Valve shall consist of (2) full length Nylatron® bushings (upper and lower) offering superior protection against friction, corrosion and impacts. Pratt's unique bushings design provide protection against shaft side loading.

Testing

All valves shall be leak tested in the factory at their rated pressure per API 598.

CV Flow Data: BF Series BFV

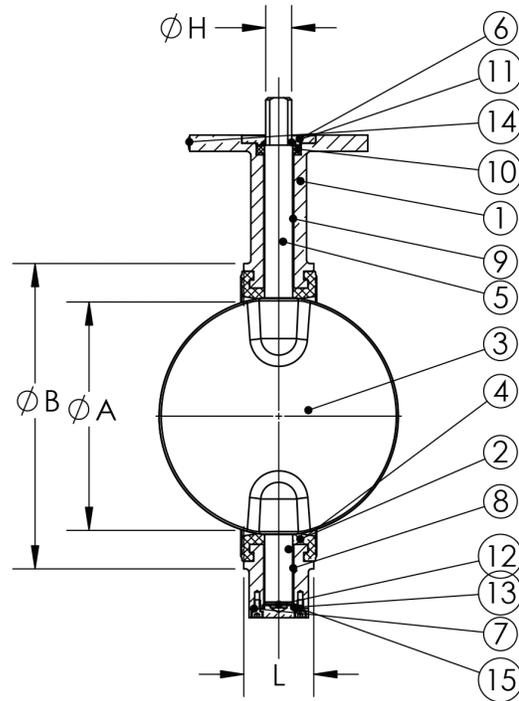
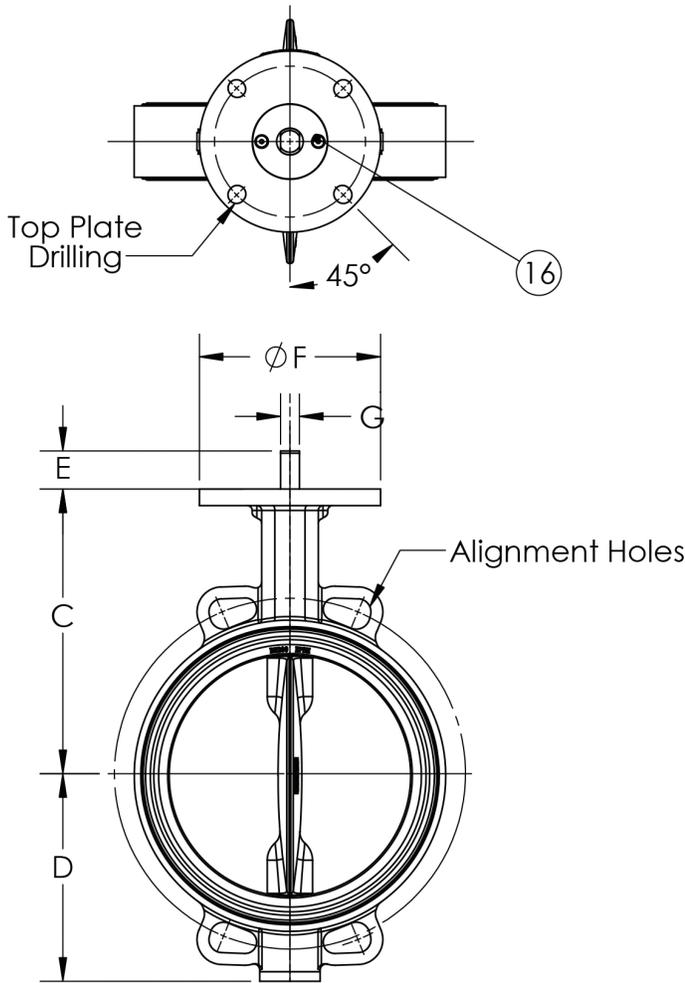
During its product development phase, the BF Series Wafer/Lug Butterfly Valve was tested to ensure that it met our own rigorous standards for flow capacity. Throughout testing, the BF Series valve has consistently produced high Cv values which translates to lower flow resistance, and in turn, lowering system operating costs to the user over the life of the valve. The following Cv chart represents the flow characteristics for all sizes available.

Valve Opening (deg)	Cv by Valve Size													
	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
10	1	2	3.5	6	8.5	14	18	28.1	40.5	55.1	72	91.1	112.5	162
20	1.8	2.9	4.1	7.4	11.5	16.5	29.4	185.5	267.1	363.6	474.9	601.1	742.1	1069
30	10.8	16.9	24.3	43.2	67.5	97.1	172.7	381.5	549.4	747.8	976.7	1236	1526	2198
40	22.1	34.5	49.7	88.4	138.1	198.8	353.4	683.1	983.6	1339	1749	2213	2732	3935
50	38.5	60.2	86.7	154.2	240.9	346.9	616.8	1161	1671	2275	2971	3761	4643	6685
60	65.3	102	146.9	261.1	408	587.6	1045	1944	2799	3810	4976	6298	7775	11196
70	111	173.5	249.8	444.1	693.9	999.2	1776	3232	4654	6335	8274	10472	12928	18617
80	176.2	275.2	396.3	704.6	1101	1585	2818	6215	8950	12182	15911	20138	24862	35801
90	206.4	322.5	464.4	825.6	1290	1858	3302	6420	9245	12583	16435	20801	25680	36979

BF Series Wafer / Lug Butterfly Valves being tested at an independent research laboratory

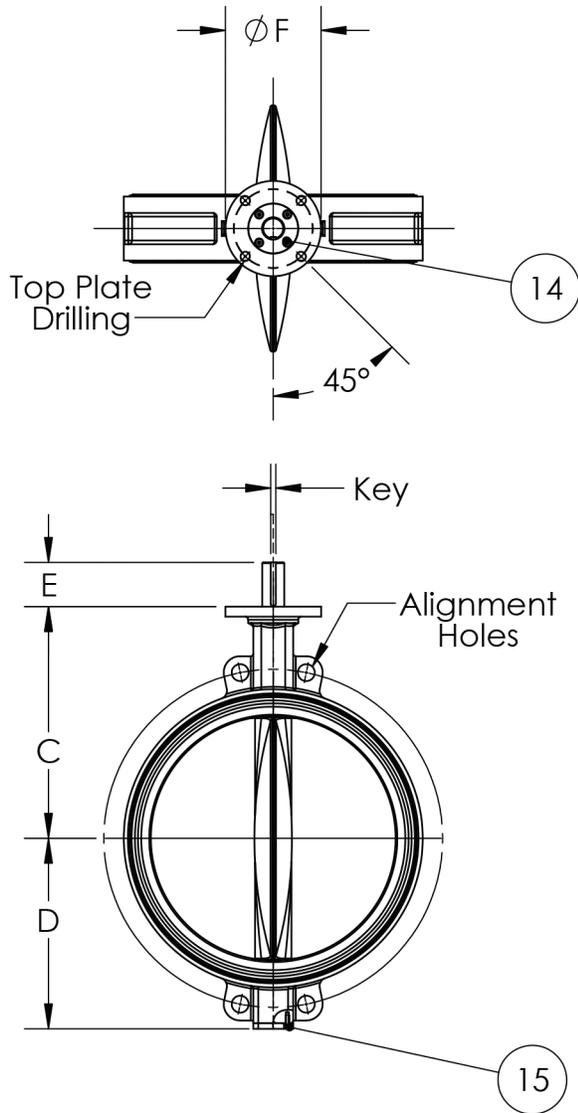


Dimensional Data: BF Series BFV, Wafer

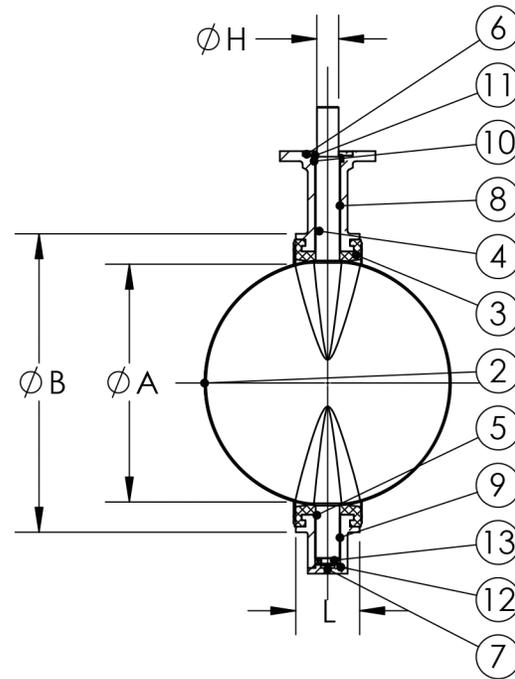


Part No.	Part Name	Material	Qty.
1	Wafer Body	DI	1
2	Seat	EPDM/NBR/Viton	1
3	Disc	SS316/DI/C954/Nylon 11	1
4	Lower Stem	SS416/SS316/SS630	1
5	Upper Stem	SS416/SS316/SS630	1
6	Top Cap	1020 Steel	1
7	End Cap	1020 Steel	1
8	Lower Bushing	Nylatron®	1
9	Upper Bushing	Nylatron®	1
10	V-packing	NBR	1
11	Washer	SS304	1
12	Wear Shim	SS304	1
13	O-ring	NBR	1
14	Data Plate	SS304	1
15	End Cap Bolt	SS304	2
16	Top Cap Bolt	SS304	2

Size	lbs	Pratt Standard Top Plate Drilling										ISO 5211 Top Plate Drilling			Alignment Holes					
		ΦA	ΦB	C	D	E	ΦF	G	ΦH	L	Key	Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Hole Dia.
2"	5.51	1.079	3.500	5.000	2.579	1.260	4.000	0.375	0.563	1.693	-	3.25	4	0.437	2.760	4	0.402	4.75	4	0.75
2.5"	6.39	1.862	4.094	5.500	2.854	1.260	4.000	0.375	0.563	1.811	-	3.25	4	0.437	2.760	4	0.402	5.5	4	0.75
3"	7.49	2.429	4.646	5.709	3.642	1.260	4.000	0.375	0.563	1.811	-	3.25	4	0.437	2.760	4	0.402	6	4	0.75
4"	10.58	3.500	5.827	6.496	4.429	1.260	4.000	0.437	0.625	2.047	-	3.25	4	0.437	2.760	4	0.402	7.5	4	0.75
5"	15.65	4.567	7.205	7.500	4.921	1.260	4.000	0.500	0.750	2.205	-	3.25	4	0.437	2.760	4	0.402	8.5	4	0.88
6"	17.63	5.433	7.992	7.874	5.433	1.260	4.000	0.500	0.750	2.205	-	3.25	4	0.437	2.760	4	0.402	9.5	4	0.88
8"	31.52	7.744	10.315	9.500	6.811	1.260	6.000	0.625	0.875	2.362	-	5	4	0.563	4.921	4	0.563	11.75	4	0.88
10"	50.03	9.646	12.598	10.866	8.110	2.000	6.000	-	1.125	2.677	1/4" * 1/4"	5	4	0.563	4.921	4	0.563	14.25	4	1
12"	67.00	11.339	14.567	12.205	9.713	2.000	6.000	-	1.125	3.071	1/4" * 1/4"	5	4	0.563	4.921	4	0.563	17	4	1



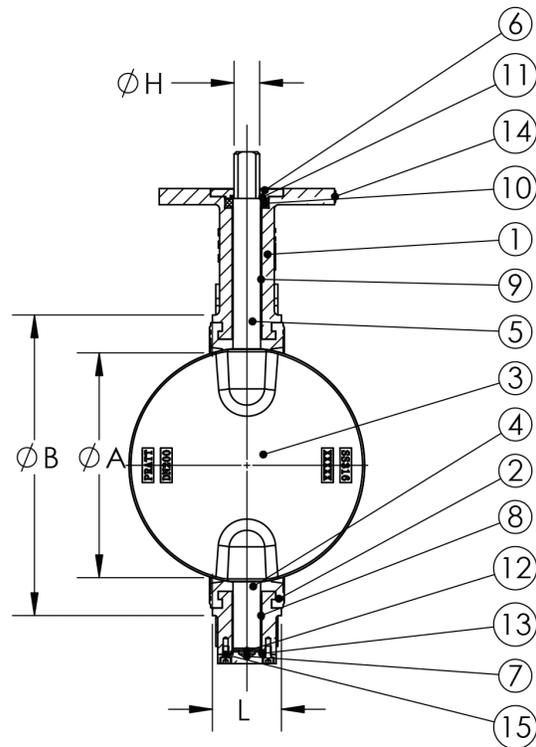
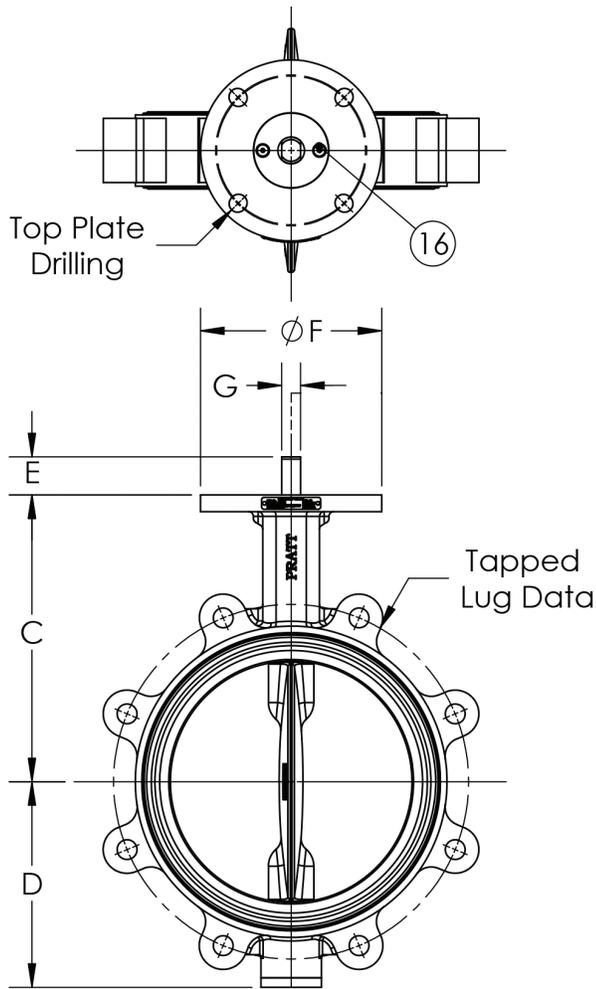
SECTION B-B



Part No.	Part Name	Material	Qty.
1	Wafer Body	DI	1
2	Disc	SS316/DI/C954/Nylon 11	1
3	Seat	EPDM/NBR/Viton	1
4	Upper Stem	SS416/SS316/SS630	1
5	Lower Stem	SS416/SS316/SS630	1
6	Top Cap	1020 Steel	1
7	End Cap	1020 Steel	1
8	Upper Bushing	Nylatron®	1
9	Lower Bushing	Nylatron®	1
10	V-packing	NBR	1
11	Washer	SS304	1
12	O-ring	NBR	1
13	Bearing	Steel	1
14	Top Cap Bolt	SS304	4
15	End Cap Bolt	SS304	4

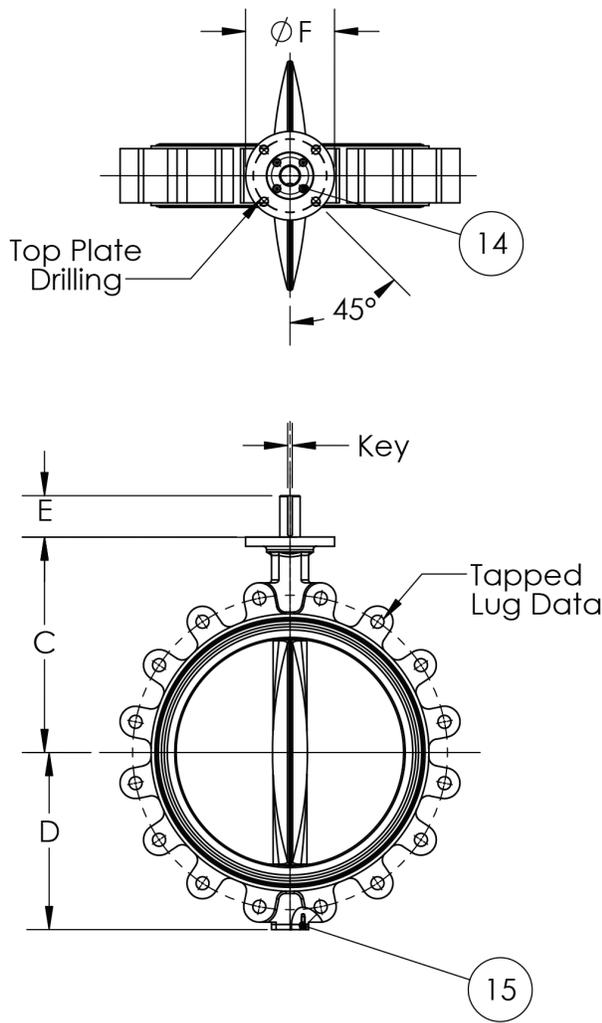
Size	Lbs	ϕA	ϕB	C	D	E	ϕF	ϕH	L	Key	Pratt Standard Top Plate Drilling			ISO 5211 Top Plate Drilling			Alignment Holes		
											Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Hole Dia.
14"	80.01	12.677	16.772	12.992	10.984	2.760	6.000	1.374	3.071	5/16" * 5/16"	5	4	0.563	4.92	4	0.563	18.75	4	1.122
16"	110.20	14.921	18.748	14.567	11.969	2.760	6.000	1.374	4.016	5/16" * 5/16"	5	4	0.563	4.92	4	0.563	21.25	4	1.122
18"	160.89	16.693	20.945	15.551	13.189	3.000	8.000	1.626	4.488	3/8" * 3/8"	6.5	4	0.811	6.5	4	0.811	22.75	4	1.26
20"	207.18	18.504	23.189	16.850	14.528	3.500	8.000	1.874	5.000	1/2" * 1/2"	6.5	4	0.811	6.5	4	0.811	25	4	1.26
24"	317.38	22.480	27.008	19.685	16.693	3.500	8.000	1.874	6.063	1/2" * 1/2"	6.5	4	0.811	6.5	4	0.811	29.5	4	1.378

Dimensional Data: BF Series BFV, Lug

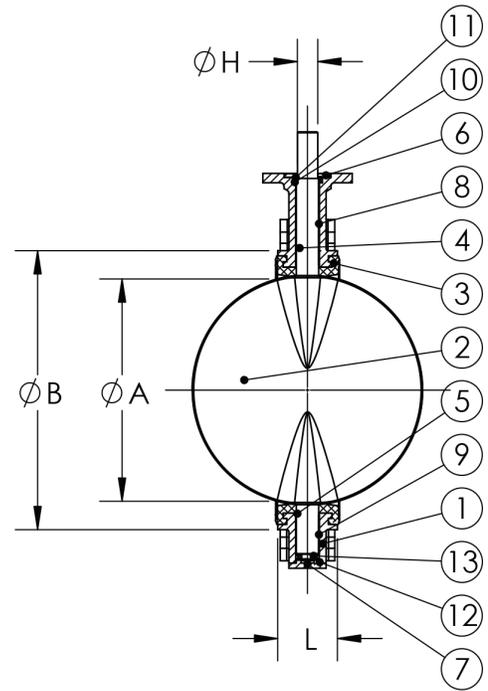


Part No.	Part Name	Material	Qty.
1	Lug Body	DI	1
2	Seat	EPDM/NBR/Viton	1
3	Disc	SS316/DI/C954/Nylon 11	1
4	Lower Stem	SS416/SS316/SS630	1
5	Upper Stem	SS416/SS316/SS630	1
6	Top Cap	1020 Steel	1
7	End Cap	1020 Steel	1
8	Lower Bushing	Nylatron®	1
9	Upper Bushing	Nylatron®	1
10	V-packing	NBR	1
11	Washer	SS304	1
12	Wear Shim	SS304	1
13	O-ring	NBR	1
14	Data Plate	SS304	1
15	End Cap Bolt	SS304	2
16	Top Cap Bolt	SS304	2

Size	Lbs	ϕA	ϕB	C	D	E	ϕF	G	ϕH	L	Key	Pratt Standard Top Plate Drilling			ISO 5211 Top Plate Drilling			Tapped Lug Data		
												Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Tapped
2"	7.05	1.079	3.500	5.000	2.579	1.260	4.000	0.375	0.563	1.693	-	3.25	4	0.437	2.760	4	0.402	4.75	4	5/8"
2.5"	8.15	1.862	4.094	5.500	2.854	1.260	4.000	0.375	0.563	1.811	-	3.25	4	0.437	2.760	4	0.402	5.5	4	5/8"
3"	11.24	2.429	4.646	5.709	3.642	1.260	4.000	0.375	0.563	1.811	-	3.25	4	0.437	2.760	4	0.402	6	4	5/8"
4"	14.55	3.500	5.827	6.496	4.429	1.260	4.000	0.437	0.625	2.047	-	3.25	4	0.437	2.760	4	0.402	7.5	8	5/8"
5"	20.72	4.567	7.205	7.500	4.921	1.260	4.000	0.500	0.750	2.205	-	3.25	4	0.437	2.760	4	0.402	8.5	8	3/4"
6"	22.92	5.433	7.992	7.874	5.433	1.260	4.000	0.500	0.750	2.205	-	3.25	4	0.437	2.760	4	0.402	9.5	8	3/4"
8"	38.35	7.744	10.315	9.500	6.811	1.260	6.000	0.625	0.875	2.362	-	5	4	0.563	4.921	4	0.563	11.75	8	3/4"
10"	62.59	9.646	12.598	10.866	8.110	2.000	6.000	-	1.125	2.677	1/4" * 1/4"	5	4	0.563	4.921	4	0.563	14.25	12	7/8"
12"	83.53	11.339	14.567	12.205	9.713	2.000	6.000	-	1.125	3.071	1/4" * 1/4"	5	4	0.563	4.921	4	0.563	17	12	7/8"



SECTION A-A



Part No.	Part Name	Material	Qty.
1	Lug Body	DI	1
2	Disc	SS316/DI/C954/Nylon 11	1
3	Seat	EPDM/NBR/Viton	1
4	Upper Stem	SS416/SS316/SS630	1
5	Lower Stem	SS416/SS316/SS630	1
6	Top Cap	1020 Steel	1
7	End Cap	1020 Steel	1
8	Upper Bushing	Nylatron®	1
9	Lower Bushing	Nylatron®	1
10	V-packing	NBR	1
11	Washer	SS304	1
12	O-ring	NBR	1
13	Bearing	Steel	1
14	Top Cap Bolt	SS304	4
15	End Cap Bolt	SS304	4

Size	Lbs	phi A	phi B	C	D	E	phi F	phi H	L	Key	Pratt Standard Top Plate Drilling			ISO 5211 Top Plate Drilling			Tapped Lug Data		
											Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Hole Dia.	Bolt Circle	No. of Holes	Tapped
14"	110.20	12.677	16.772	12.992	10.984	2.760	6.000	1.374	3.071	5/16" * 5/16"	5	4	0.563	4.92	4	0.563	18.75	12	1"
16"	160.89	14.921	18.748	14.567	11.969	2.760	6.000	1.374	4.016	5/16" * 5/16"	5	4	0.563	4.92	4	0.563	21.25	16	1"
18"	222.60	16.693	20.945	15.551	13.189	3.000	8.000	1.626	4.488	3/8" * 3/8"	6.5	4	0.811	6.5	4	0.811	22.75	16	1 1/8"
20"	275.50	18.504	23.189	16.850	14.528	3.500	8.000	1.874	5.000	1/2" * 1/2"	6.5	4	0.811	6.5	4	0.811	25	20	1 1/8"
24"	407.74	22.480	27.008	19.685	16.693	3.500	8.000	1.874	6.063	1/2" * 1/2"	6.5	4	0.811	6.5	4	0.811	29.5	20	1 1/4"

PRATT PRODUCT GUIDE



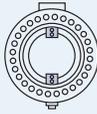
**Model
2FII**



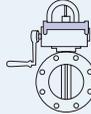
**Monoflange
MKII**



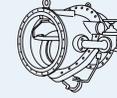
**Plug
Valve**



**Triton®
XR70**



**Indicating Butterfly Valve
UL & FM approved**



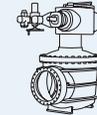
**Tilting Disc
Check Valve**



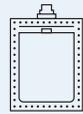
**Triton®
XL**



**N-Stamp Nuclear
Butterfly Valve**



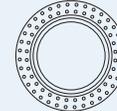
**Cone
Valve**



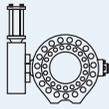
Rectangular



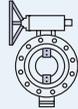
**PIVA Post Indicating Valve Assembly
UL & FM approved**



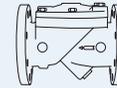
**Sleeve
Valve**



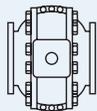
**Rubber Seated
Ball Valve**



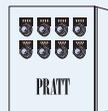
**Triton®
HP250**



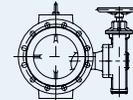
**Check
Valve**



**Metal Seated
Ball Valve**

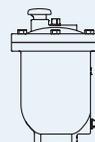


**Control
Systems**



Plunger Valve

PRATT



Air Valve

Henry Pratt Company

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