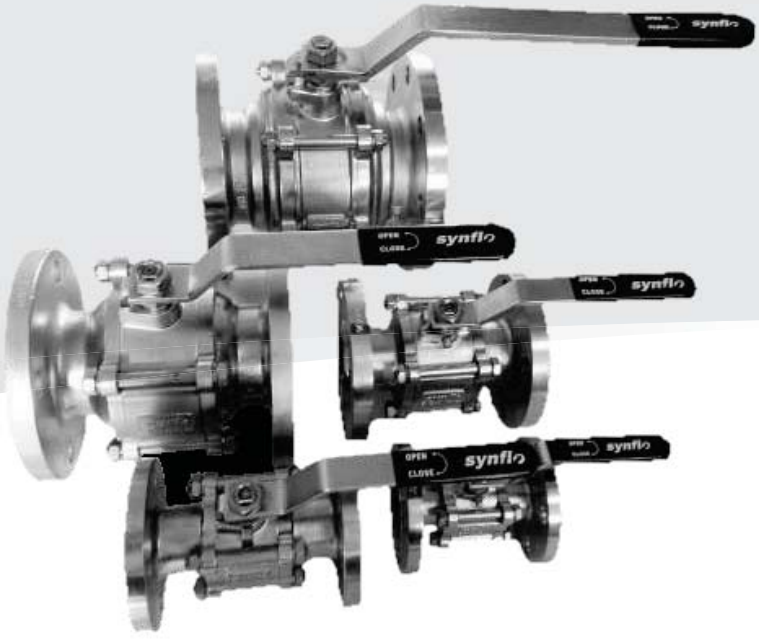
synflo

Innovation | High end technology | World class performance ...

Technical Brochure

Floating Ball Valves



ASME CLASS 150-300-600

15 mm – 250 mm (1/2” to 10”)

www.synflovalves.in

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Company Profile

Synflo Valves Pvt. Ltd., promoted by a group of young technocrats, is a leading industrial valve manufacturer, with a strong presence in domestic and overseas markets. **Synflo is a brand synonymous with innovation, high end technology and world class performance.**

Synflo valves are manufactured to the latest international designs, using advanced manufacturing technologies and stringent quality checks. All valves are designed and manufactured with **"quality"** as top most priority, and incorporate many unique design features for world class environmentally friendly performance, simple maintenance and reliable service.

Synflo's comprehensive product line consists of a wide range of cast and forged Ball-Gate-Globe-Check Valves and Strainers across all major industrial applications.

Synflo's inhouse design and development centre with advanced engineering capabilities and innovative work strategies results in creating hard working valves that meet critical industrial needs in the areas of pharmaceutical and chemicals, petrochemicals and refineries, power generation, oil and gas, pulp and paper, mining, cryogenic and ship building industries.

Quality Policy

Synflo Valves Pvt. Ltd. aims to deliver world class industrial valves through integration of innovation, high end advanced manufacturing technologies and compliance to international codes and standards.

To maintain our status as a dynamic, respected, innovative and customer focused market leader, we are committed to

- Execute projects, particularly large scale, in a consistent and timely manner, thereby building long term relationships with our clients
- Adopt highest standards of business ethics blended with quality, integrity and excellence in all areas of business
- Continual improvement and upgradation in designs, processes and products

PRODUCT RANGE, AT A GLANCE

Floating Ball Valves

Floating Ball valves are a universal choice for most process and utility applications. Synflo manufactures Single piece / Two piece / Three piece designs in floating ball valve product range.

Type of Design	Compliance	Body / Connector Materials **	End Connections	Valve Size (mm)										
				15	20	25	40	50	65	80	100	150	200	250
Single Piece Design	BS 5159 / BS 5351	WCB,CF8,CF8M, CF3, CF3M, CN7M	Flanged 150# / 300#	•	•	•	•	••	••	••	••	••	••	
Single Piece Design	BS 5159	WCB,CF8,CF8M, CF3, CF3M, CN7M	Screwed	•	•	•	•	•						
Two Piece Design	BS 5159 / BS 5351	WCB,CF8,CF8M, CF3, CF3M, CN7M	Flanged 150# / 300#	•	•	•	•	•	•	•	•	•	•	•
Three Piece Design	BS 5159 / BS 5351	WCB,CF8,CF8M, CF3, CF3M, CN7M	Flanged 150# / 300#	•	•	•	•	•	•	•	•	•	•	•
Three Piece Design	BS 5159 / BS 5351	WCB,CF8,CF8M, CF3, CF3M, CN7M	Screwed	•	•	•	•	•						

NOTES

•• indicates Reduced Bore

** Trim and seat materials shall be consistent with Body / Connector Materials. For specific details consult factory.

Fire safe design valves are available on request.
Special seat materials like Glass filled PTFE, PEEK, Graphite, etc. are available on request.
For special applications & services, pls consult factory.

HOW TO ORDER

Valve Series	Valve Size (mm)	Pressure Class #	Body / Ball MOC	Seat	End Connections	Port Type	Operation	Fire Safe
E1S	15	150#-A	WCB-1	PTFE-T	Screwed BSP-BS	Reduced Port-R	Bare Strem-B	Fire Safe-X
E3S	20	300#-B	CF8-2	Reinf. PTFE-R	Screwed NPT-NP	Full Port-F	Hand Lever-L	
E1F	25	600#-C	CF8M-3	Peek-P	Socketweld-SW		Gear Operated-G	
E2F	40	800#-D	CF3-4	Metallic-M	Flanged-RF		Actuated-A	
E3F	50		CF3M-5					
	65		CN7M-6					
	80		LCB-7					
	100		A105-8					
	150							
	200							
	250							

Example

E3F 50 B 3 R RF F L X

Indicates

3 pc design, 50mm Ball Valve, 300#, SS 316 Body and Ball, Glass-filled PTFE Seats, Flanged ends, Full Port, Hand lever operated, Fire Safe Design

DESIGN TYPES

Screwed / Socket Weld Valves

Synflo manufactures screwed / socketweld end valves in one piece and three piece designs in sizes from 15 mm to 50 mm. These valves are available in standard BSP / NPT threads. All valves comply to the requirements of BS 5159 / BS 5351.

Three piece screwed ends

Single piece screwed ends

Flanged End Ball Valves

Single Piece Design

Single piece floating design Ball valves are high performance valves, which come with a one-piece integrally flanged body, in sizes upto 200 mm-reduced bore & 40 mm–full bore. These valves are available in ANSI Class 150 and Class 300 ratings. This design offers the unique advantage of eliminating the possibility of external leakage to the atmosphere through bolted body parts. Single piece design valves are preferred in critical applications, where the media is expensive, volatile or toxic, and where external leakage or wastage is unacceptable. All valves comply to the requirements of BS 5159 / BS 5351.

Two Piece Design / Three Piece Design

Synflo manufactures two piece / three piece floating design ball valves in sizes from 15 mm to 250 mm. These valves are available in ANSI Class 150 and Class 300 ratings. All valves comply to the requirements of BS 5159 /BS 5351.

DESIGN FEATURES

Synflo Flanged Ball valves provide simple, compact, economical solutions to the majority of flow control applications. These end entry valves offer important advantages, including quick turn operation, minimum pressure drop, two way flow, plus preloaded seats for positive, leak tight closure.

Superior Sealing

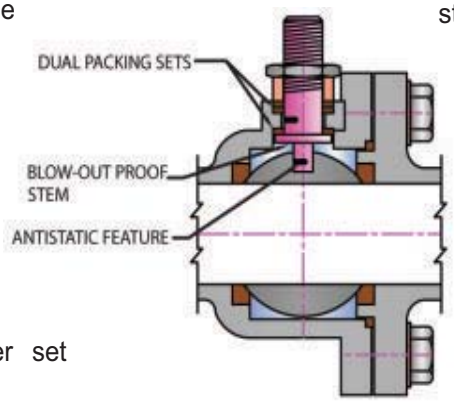
Synflo Flanged ball valves size 1'' and larger, are designed with encapsulated seats in machined body recesses, to control seat movement and increase seat life. The seats greatly reduce erosive effects of abrasive slurries, thus enhancing seat life and avoiding costly maintenance.

Mirror-Finished, Hard Chrome SS Balls

All Synflo Valves feature precision machined, mirror finished Stainless Steel Balls to lower operating torque and to reduce seat wear and tear. Hard Chrome Balls are standard in all Synflo Valves for superior performance and better life. Moreover, balls are drilled through the stem slot to avoid thermal expansion damage with the valve in the open position. This drilling does not cause the valve to become unidirectional.

Dual Packing Sets

Dual packing sets maximize seal integrity. The lower seat set is the first line of defense against leakage. The upper set is adjusted by tightening the adjusting nut. This upper set backs up the lower set, and also cushions the lower set when subjected to high line temperatures. As line temperatures increase, the lower seal expands in its cavity. This expansion forces the stem shoulder downwards and the upper set cushions its movement.



Antistatic Feature

Constant rubbing of ball against PTFE seats causes static electricity build-up, which is a potential fire hazard, particularly while handling inflammable fluids. To provide electrical continuity, spring loaded plungers are provided between the stem and the ball for sizes 40 mm and above. For smaller sizes, this is achieved through 35% Carbon filled PTFE stem seals.

Blow-Out Proof Stem

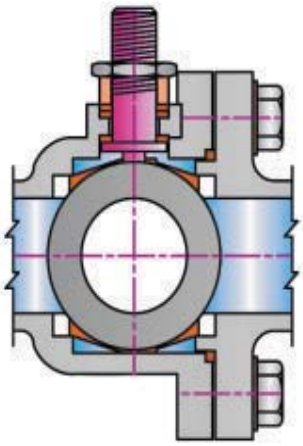
All Synflo Ball valves have a bottom-entry "blow-out proof" stem design. An integral shoulder on the stem sits against the shoulder in the body, giving it blow-proof integrity. Thus, higher the line pressure, the tighter the seal.

DESIGN FEATURES

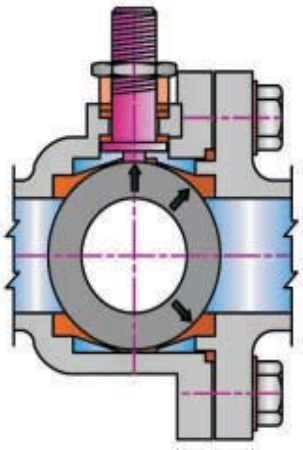
Fire-Safe Design

Designed and tested to the exacting requirements of API 607, all fire-safe design valves feature a secondary metal-to-metal seat which renders the valves fire-safe. An integral metal lip in the body and the configuration of the soft seat are designed to prevent the softening downstream seat from being forced into the port in the event of fire. When the seat is totally sublimated in a fire, the ball moves and rests against the lip, forming a metal to metal seat, thus ensuring leak-tightness.

Before Fire



After Fire



Fire safe design meets API 607 requirements.

- Metal seat at the port opening provides line seal in the event the PTFE seat burns away in a fire
- Stem moves up to make a metal-to-metal seal

- Ball moves downstream to seal on metal seat

Interchangeability of Components

For inventory economy and convenience, all two piece and three piece valves have interchangeable internal parts. This also enhances prompt shipments from the factory.

Actuator Mounting Flange

All single piece ball valves have an integral ISO 5211 compliant actuator mounting pad that assures easy, low cost automation.

SEAT MATERIALS

Ball Valve Seats

Synflo Ball Valves can be supplied in a highly versatile range of body, seat and trim combinations to suit wide range of services. Details of various types of seats that can be offered and its characteristics / applications and Pressure Temperature curves are shown below.

Seat Material	Characteristics and Applications
PTFE	The most common seat material, suitable for almost all media, as it possesses excellent corrosion resistance
15% Glass-Filled (Reinforced) PTFE	Stronger than PTFE seats and has higher temperature / pressure ratings
Special Filled PTFE	Carbon, Glass and Graphite-filled PTFE – suited for steam and thermal resistance and has good abrasion resistance. Good for high cycle applications
Metal Seats	Made of SS 316 and hard faced for superior performance in high temperature applications
PEEK	Demonstrates outstanding pressure capabilities at elevated temperatures – has excellent chemical and abrasion resistance

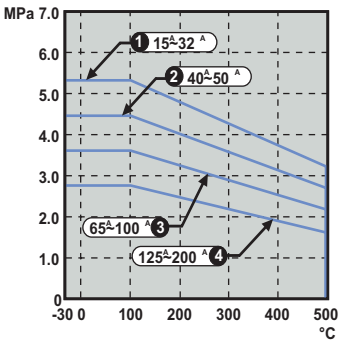
Metal Seat <Hard faced metal seat>

The ball and ball seat surfaces are hard faced by thermal-spraying with nickel and chrome alloys, which enables valves to be used at a temperature of 500°C.

Valves with the metal seats are excellent in high abrasion and high temperature services so that they can be used for fluids including foreign particles and application of heated steam.

- **Pressure-Temperature Ratings**

Maximum Service Temperature: 500°C

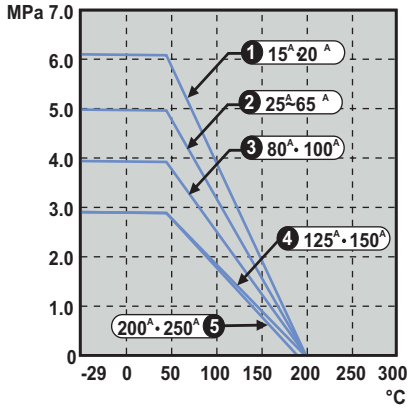


PTFE <Polytetrafluoroethylene resin>

PTFE seats possess high chemical resistance and excellent sealing performance.

- **Pressure-Temperature Ratings**

Maximum Service Temperature: 200°C

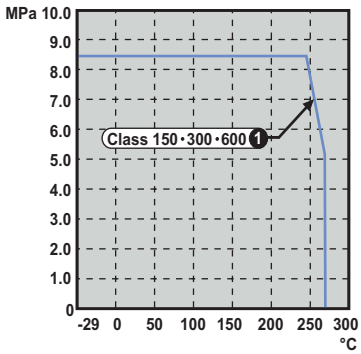


PEEK Seat <Polyetheretherketoneresin>

- PEEK seats have high mechanical strength at a wide range of temperatures.
- The seat has excellent heat and chemical resistance.

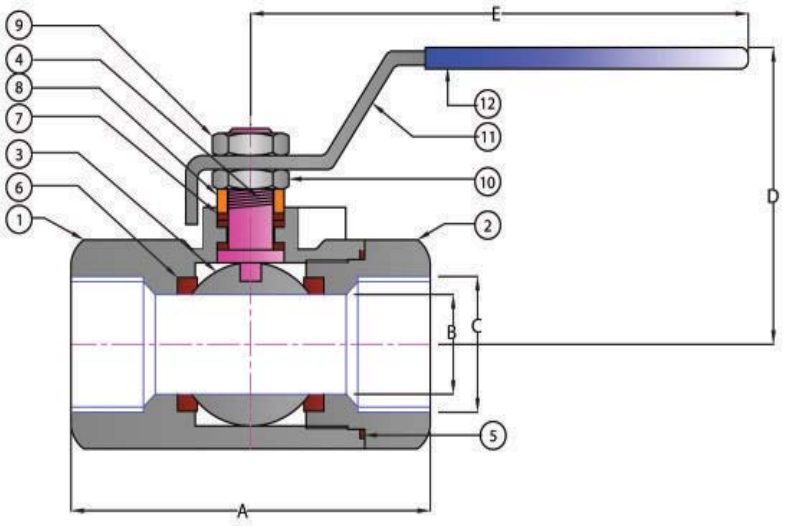
- **Pressure-Temperature Ratings**

Maximum Service Temperature: 270°C



Single Piece Design, Screwed Ends
SERIES E1S

A = Face to Face
B = Port Diameter
C = End Connection
D = Centre to top of lever
E = Lever length



Sr.	Part Description	Carbon Steel	Stainless Steel 304	Stainless Steel 316
1	Body	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
2	End Cap	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
3	Ball	AISI 304	AISI 304	AISI 316
4	Stem	AISI 304	AISI 304	AISI 316
5	Body Seat	PTFE	PTFE	PTFE
6	Ball Seat	PTFE	PTFE	PTFE
7	Gland Packing	PTFE	PTFE	PTFE
8	Gland Sleeve	AISI 304	AISI 304	AISI 316
9	Lever Nut	Stainless Steel	Stainless Steel	Stainless Steel
10	Gland Nut	Stainless Steel	Stainless Steel	Stainless Steel
11	Lever	MS	Stainless Steel	Stainless Steel
12	Lever Sleeve	Special PVC	Special PVC	Special PVC

Dimensions and Weight

Size (mm)	Dimensions (mm)					Weight (kg)
	A	B	C	D	E	
15	65	12.5	19	50	112	0.37
20	78	19	24.5	63	132	0.54
25	85	25	30.7	68	150	0.95
40	103	35	45	91	210	1.85
50	125	46	57	105	210	3.35

Specifications

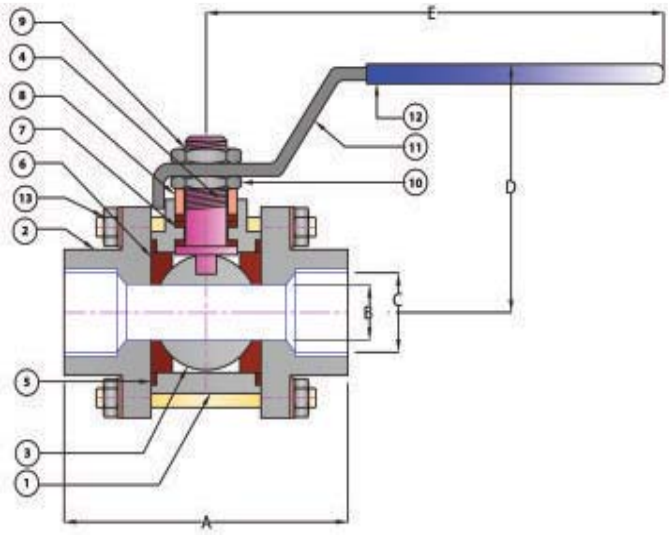
Valve Design	API 6D / BS 5159
Testing Standard	API 598 / BS 5146
End Connection Threads	BSP / NPT

Pressure Testing

Shell	Hydrostatic	70 kg/cm^2
Seat	Air	5.6 kg/cm^2

Three Piece Design, Screwed/Socketweld Ends
SERIES E3S

A = Face to Face
B = Port Diameter
C = End Connection
D = Centre to top of lever
E = Lever length



Sr.	Part Description	Carbon Steel	Stainless Steel 304	Stainless Steel 316
1	Body	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
2	Body Connectors	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
3	Ball	AISI 304	AISI 304	AISI 316
4	Stem	AISI 304	AISI 304	AISI 316
5	Body Seat	PTFE	PTFE	PTFE
6	Ball Seat	PTFE	PTFE	PTFE
7	Gland Packing	PTFE	PTFE	PTFE
8	Gland Sleeve	AISI 304	AISI 304	AISI 316
9	Lever Nut	Stainless Steel	Stainless Steel	Stainless Steel
10	Gland Nut	Stainless Steel	Stainless Steel	Stainless Steel
11	Lever	MS	Stainless Steel	Stainless Steel
12	Lever Sleeve	Special PVC	Special PVC	Special PVC
13	Body Stud & Nuts	ASTM A193 Gr. B7 / 2H	Stainless Steel	Stainless Steel

Dimensions and Weight

Size (mm)	Dimensions (mm)					Weight (kg)
	A	B	C	D	E	
15	72	12.7	19	63	132	0.71
20	73	19	24.5	68	132	0.76
25	95	25	30.7	72	150	1.20
40	112	39	45	95	210	2.40
50	125	50	57	108	210	3.40

Specifications

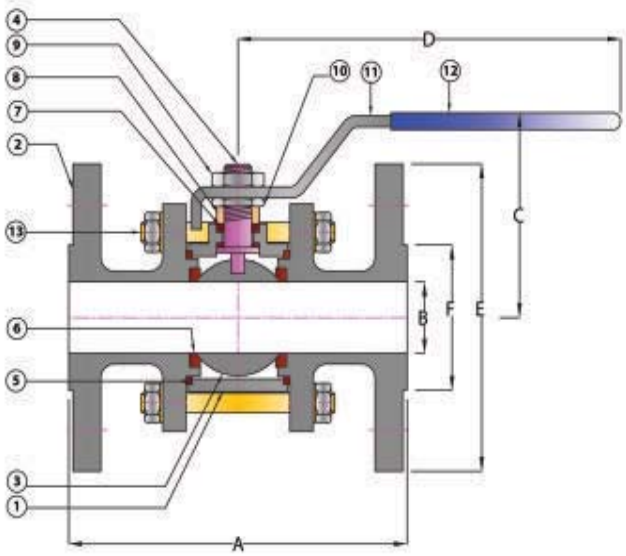
Valve Design	API 6D / BS 5159
Testing Standard	API 598 / BS 5146
End Connection Threads	BSP / NPT

Pressure Testing

Shell	Hydrostatic	70 kg/cm^2
Seat	Air	5.6 kg/cm^2

Three Piece Design, Flanged Ends
SERIES E3F
ANSI Class 150
ANSI Class 300

A = Face to Face
B = Port Diameter
C = Centre to top of lever
D = Lever length
E = Flange Diameter
F = Raised Face
G = Flange PCD
H = Hole Diameter
I = No. of Holes
For G, H & I, pls refer table below



Sr.	Part Description	Carbon Steel	Stainless Steel 304	Stainless Steel 316
1	Body	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
2	Body Connectors	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
3	Ball	AISI 304	AISI 304	AISI 316
4	Stem	AISI 304	AISI 304	AISI 316
5	Body Seat	PTFE	PTFE	PTFE
6	Ball Seat	PTFE	PTFE	PTFE
7	Gland Packing	PTFE	PTFE	PTFE
8	Gland Sleeve	AISI 304	AISI 304	AISI 316
9	Lever Nut	Stainless Steel	Stainless Steel	Stainless Steel
10	Gland Nut	Stainless Steel	Stainless Steel	Stainless Steel
11	Lever	MS	Stainless Steel	Stainless Steel
12	Lever Sleeve	Special PVC	Special PVC	Special PVC
13	Body Stud & Nuts	ASTM A193 Gr. B7 / 2H	Stainless Steel	Stainless Steel

Dimensions and Weight

ANSI Class 150

Size (mm)	Dimensions (mm)									Weight (kg)
	A	B	C	D	E	F	G	H	I	
15	108	12.7	63	130	88.9	34.9	60.3	16	4	1.5
20	117	19	68	130	98.4	42.9	69.8	16	4	1.8
25	127	25	72	150	107.9	50.8	79.4	16	4	2.6
40	165	39	95	210	127	73	98.4	16	4	4.6
50	178	50	108	210	152.4	92.1	120.6	19	4	7.1
65	191	63	132	275	177.6	104.8	139.7	19	4	10.6
80	203	75	132	275	190.5	127	152.4	19	4	13.9
100	229	100	183	388	228.6	157.2	190.5	19	8	23

Specifications

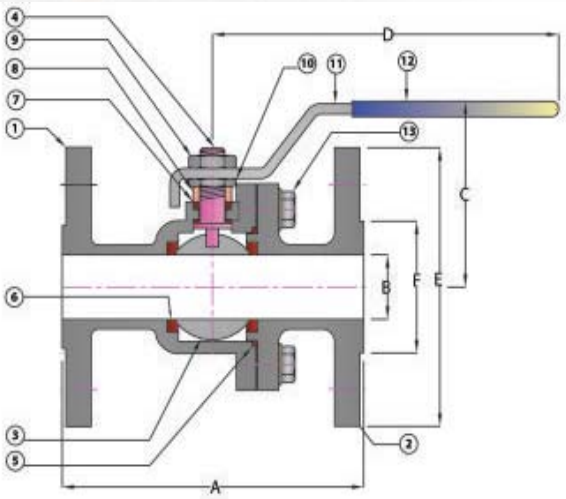
Valve Design	API 6D / BS 5351
Fire Test	API 607
Testing Standard	API 598
Face to Face Dimensions	ASME B16.10
End Flange Dimensions	ASME B16.5 Class 150 RF Class 300 RF

Pressure Testing

Shell	Class 150 (Hydrostatic)	31.5 kg/cm^2
	Class 300 (Hydrostatic)	79.0 kg/cm^2
Seat	Air	5.6 kg/cm^2

Two Piece Design, Flanged Ends
SERIES E2F
ANSI Class 150
ANSI Class 300

A = Face to Face
B = Port Diameter
C = Centre to top of lever
D = Lever length
E = Flange Diameter
F = Raised Face
G = Flange PCD
H = Hole Diameter
I = No. of Holes
For G, H & I, pls refer table below



Sr.	Part Description	Carbon Steel	Stainless Steel 304	Stainless Steel 316
1	Body	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
2	Body Connectors	ASTM A216 Gr. WCB	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M
3	Ball	AISI 304	AISI 304	AISI 316
4	Stem	AISI 304	AISI 304	AISI 316
5	Body Seat	PTFE	PTFE	PTFE
6	Ball Seat	PTFE	PTFE	PTFE
7	Gland Packing	PTFE	PTFE	PTFE
8	Gland Sleeve	AISI 304	AISI 304	AISI 316
9	Lever Nut	Stainless Steel	Stainless Steel	Stainless Steel
10	Gland Nut	Stainless Steel	Stainless Steel	Stainless Steel
11	Lever	MS	Stainless Steel	Stainless Steel
12	Lever Sleeve	Special PVC	Special PVC	Special PVC
13	Body Stud & Nuts	ASTM A193 Gr. B7 / 2H	Stainless Steel	Stainless Steel

Dimensions and Weight

ANSI Class 150

Size (mm)	Dimensions (mm)									Weight (kg)
	A	B	C	D	E	F	G	H	I	
15	108	12.7	63	130	88.9	34.9	60.3	16	4	1.5
20	117	19	68	130	98.4	42.9	69.8	16	4	1.8
25	127	25	72	150	107.9	50.8	79.4	16	4	2.6
40	165	39	95	210	127	73	98.4	16	4	4.6
50	178	50	108	210	152.4	92.1	120.6	19	4	7.1
65	191	63	132	275	177.6	104.8	139.7	19	4	10.6
80	203	75	132	275	190.5	127	152.4	19	4	13.9
100	229	100	183	388	228.6	157.2	190.5	19	8	24
150	267	150	295	285	279.4	215.9	241.3	22.2	8	63
200	292	200	335	305	342.9	269.9	298.4	22.2	8	125
250	330	250	390	320	406.3	323.8	361.9	25.4	12	-

Specifications

Valve Design	API 6D / BS 5351
Fire Test	API 607
Testing Standard	API 598
Face to Face Dimensions	ASME B16.10
End Flange Dimensions	ASME B16.5 Class 150 RF Class 300 RF

Pressure Testing

Shell	Class 150 (Hydrostatic)	31.5 kg/cm^2
	Class 300 (Hydrostatic)	79.0 kg/cm^2
Seat	Air	5.6 kg/cm^2

CONTACT

Synflo does not assume any responsibility for the data and specifications given in this brochure, although it is believed to be accurate. When properly selected, Intelflo valves are designed to perform its intended function safely during its useful life. However, the purchaser / user of Synflo valves should be aware that the valves are used in numerous applications under a wide variety of industrial service conditions.

The purchaser/user must therefore assume the ultimate responsibility of for the proper sizing and selection, installation, operation and maintenance of Intelflo products.

Synflo reserves the right, without notice, to alter, improve and upgrade its product designs, specifications and dimensions described herein.

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Represented by