General Data

Advanced manufacturing techniques and equipment, a continuing program of engineering research and product development, skilled craftsman, and over twelve decades of experience in flow control are behind the quality and dependability built into every Jenkins product.

This catalog presents some of these products, namely: Jenkins line of industrial iron gate, globe and check valves. The information is presented in a comprehensive manner and includes material, construction, rating, principal dimension, and weight data.

Hydrostatic and Shock Working Pressures

Jenkins valves are suitable for liquid working pressures specified on catalog pages only when used in hydraulic installations in which shock is absent or negligible. The sudden closure of a valve in a hydraulic system causes the body of liquid, which may be moving at a rate generally in excess of one foot per second, to stop instantaneously. As liquids are relatively incompressible, the sudden cessation of flow effects a rise in pressure considerably greater than the static working pressure. This pressure increase is termed “SHOCK” and may, in some cases, be sufficient to cause valves or piping to fail.

Pressure increase due to shock is not dependent upon the working pressure in the system but upon the velocity at which the liquid is flowing. This pressure surge, or shock, severely limits design velocities...a fact readily understandable if it is remembered that pressure rise resulting from arrest of flow may be as high as 60 psi for each foot per second initial velocity. For example, installations of 100 psi and 1000 psi working pressures, with the same initial velocity of 10 feet per second, will be subject to the same increase in pressure (approximately 600 psi) due to instantaneous closure of a valve.

Shock generally prevails in lines equipped with check or quick-closing valves, or in lines supplied by reciprocating pumps. It may also be produced, top a lesser degree, by rapid closure of gate and globe valves. Therefore, care should be exercised when closing valves installed in liquid lines.

Where shock is likely to occur, the maximum shock pressure should be added to the working pressure of the line to determine working pressure of products in the line...also, hydraulic installations should be equipped with air chambers or other types of shock absorbers to eliminate, as much as possible, increase in pressure due to shock.

Testing

Iron valves described in this section meet or exceed the MSS SP-82, MSS SP-70, MSS SP-71 and MSS SP-85 specifications for testing.

Materials

The selection of materials for components of Jenkins valves is based upon expert metallurgical, engineering, foundry and fabrication knowledge as well as on many years of usage experience. Considerations affecting materials of parts which come in contact with the conveyed fluid include pressure, temperature and chemical composition of the fluid. The materials of moving parts that are subject to rubbing contact are selected on the basis of their resistance to wear, corrosion, seizing or galling, and on their frictional characteristics.

Utilization of materials to their full capability is assured by the use of stress analysis techniques that include extensive laboratory testing as well as the application of analytical theory. Stress levels for all materials used are maintained within the levels established by applicable codes, standards and specifications.

Metrication

This catalogue shows equivalent metric values to the customary imperial units. The “soft” conversion was arrived at by following MSS SP-86 guidelines.

Illustrations , Weights and Material & Designs

Illustrations – Catalogue illustrations are intended to show the basic concept only and are representative of a certain size of each line of product, not necessarily all sizes in all details.

Material & Design – We reserve the right to institute changes in materials, designs, dimensions and specifications without notice in keeping with our policy of continuing product development.

Weights – shown are approximate and are not guaranteed. They represent the average weight of Jenkins ‘Valves’ products as made from patterns in use at time weights were complied.

Jenkins Iron Alloys

Cast Iron

Used primarily for valve pressure retaining parts.
Recommended to 450 °F (232 °C).
ASTM A126, Class B

Chemical Requirements		**Minimum**	**Maximum**
Sulphur	%	–	0.15
Phosphorus	%	–	0.75
Tensile Requirements		**Minimum**	**Maximum**
Tensile Strength, psi		31,000	–
Transverse Strength, lbs.		3,300	–
Deflection @ Center, in.		0.12	–

3% Nickel Iron

Tensile strength comparable to ASTM A126, Class B, but is used for corrosive service where ordinary grey iron is not adequate. Castings are marked “3Ni”.

Chemical Requirements		**Minimum**	**Maximum**
Nickel	%	2.75	3.25
Sulphur	%	–	0.12
Phosphorus	%	–	0.40
Tensile Requirements		**Minimum**	**Maximum**
Tensile Strength, psi		31,000	–
Transverse Strength, lbs.		3,300	–
Deflection @ Center, in.		0.12	–

NI–Resist Iron

A copper-free alloy used where physical properties of cast iron suffice but where greater corrosion resistance is required. Castings are marked “2NR.”
Ni-Resist is a registered trademark of the International Nickel Company, Inc.
ASTM A436, Type 2

Chemical Requirements		**Minimum**	**Maximum**
Carbon	%	–	3.00
Manganese	%	0.50	1.50
Sulphur	%	–	0.12
Silicon	%	1.00	2.80
Chromium	%	1.50	2.50
Nickel	%	18.00	22.00
Copper	%	–	0.50
Iron	%	remainder	
Tensile Requirements		**Minimum**	**Maximum**
Tensile Strength, psi		25,000	–
Brinell Hardness (3000 Kg)		118	174

Malleable Iron

Used for valves subjected to expansion and contraction stresses and shock.
ASTM A338. Supplementary: ASTM A47, Grade 32510

Tensile Requirements	**Minimum**	**Maximum**
Tensile Strength, psi	50,000	–
Yield Point, psi	32,500	–
elongation in 2 inches, %	10	–

Iron Valve Ratings

Introduction to Rating

The pressure-temperature ratings shown below apply to class 125 and 250 iron valves covered in this catalogue.

A. Ratings for Class 125 and 250 iron valves are indicated on the relevant catalog page in this manner:

... PSI Steam, Basic Rating: i.e.: is the nominal steam rated pressure of the valve.
...Cold Working Pressure: where “Cold Working Pressure” is the maximum rated pressure of the valve at a temperature up to 150 °F (65 °C).

The full range of allowable pressure and temperature is determined by referring to the main pressure-temperature chart below.

B. Ratings for iron valves falling outside Class 125 and 250 are indicated in various ways on the relevant catalog page.

All ratings represent the maximum allowable non-shock pressure at the indicated temperature. If the temperature is different from indicated, the allowable pressure may be interpolated.

The operating temperature of the valve is considered as the temperature of the media flowing through it. This temperature must not exceed the maximum allowable temperature as stated in the pressure-temperature chart below.

Pressure-Temperature Ratings

Jenkins Cast Iron Gate, Globe, Angle and Check Valves

Imperial Units					
Class	125			250	
Temp. °F	Non-Shock-PSI				
	NPS 2"-12"	NPS 14"-24"	NPS 30"-48"	NPS 2"-12"	NPS 14"-24"
-20 to 150	200	150	150	500	300
200	190	135	115	460	280
225	180	130	100	440	270
250	175	125	85	415	260
275	170	120	65	395	250
300	165	110	50	375	240
325	155	105	–	355	230
350	150	100	–	335	220
375	145	–	–	315	210
400	140	–	–	290	200
425	130	–	–	270	–
450	125	–	–	250	–

Metric Units					
Class	125			250	
Temp. °C	Non-Shock-kPa				
	NPS 2"-12"	NPS 14"-24"	NPS 30"-48"	NPS 2"-12"	NPS 14"-24"
-29 to 66	1380	1030	1030	3480	2070
90	1310	930	790	3170	1930
110	1240	900	670	3030	1860
120	1210	860	570	2860	1790
140	1170	830	450	2720	1720
150	1140	760	340	2590	1650
160	1070	720	–	2450	1590
180	1030	690	–	2310	1520
190	1000	–	–	2170	1450
200	970	–	–	2000	1380
220	900	–	–	1860	–
230	860	–	–	1720	–

Manufacturers Standardization Society (MSS)
Standard Practice SP-70, SP-71, SP-85

Iron Globe and Angle Valve Features

Jenkins globe and angle valves are highly efficient for throttling service because disc and seat designs provide flow characteristics with proportionate relationships between valve lift and flow rate. This assures accurate regulated flow control. The additional advantage of an angle valve is that it provides a 90° turn in piping so fewer joints are required and make-up time and labor are reduced.

Body and Bonnet are cast with rigorous control to ASTM A126 Class B Specification for cast-iron.

Bolted Bonnet is used because there is practically no limitation on size. Multiple bolting permits equalized sealing pressure on the gasket against the highest pressures encountered in iron globe and angle valve applications. All bolted bonnet valves in this section comply with MSS SP-85 standard practice.

Disc is fully guided throughout its travel, minimizing vibration of internal parts and assuring true seating. The disc stem connection is designed to securely hold the disc yet permit swivel action. Disc materials are bronze or iron faced with bronze.

Seats are screwed in and can be reground or replaced whenever necessary.

Stem material is matched to service recommendations for improved operating dependability and life.

Packing is non-asbestos rings.

Backseating: Rising stem valves are equipped with backseats. It is recommended that the backseat be used as a means for determining the full open valve position. For normal operation in the open position, the stem should be backed off so that the backseat is not in contact. This permits the stem packing to assume its intended sealing function and not conceal unsatisfactory stem packing. In the event of stem packing leakage, the backseat can be used to stop stem leakage until circumstances permit a system shutdown and time for packing replacement. Stem packing replacement with the valve under pressure and backseated represents a hazard and should not be undertaken. The hazard is magnified as fluid pressure or temperature increases or when the fluid is toxic.

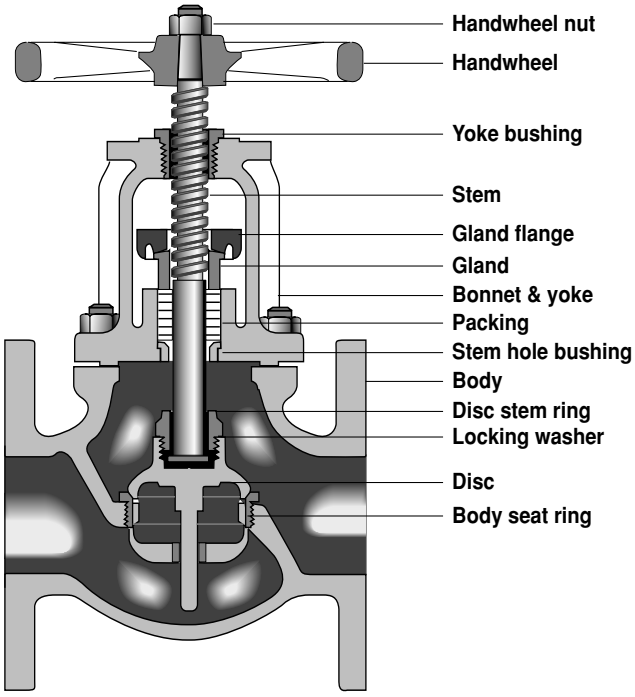
Handwheels are furnished on all valves. Manual gear, hydraulic or motor operators and chainwheels can be supplied when specified.

Face-to-Face Dimensions of flanged end valves conform to ANSI B16.10 in their pressure class. Flanged end valves adhere to ASME (ANSI) specification B16.1 for their pressure class.

All Valves are clearly identified and marked to MSS SP-25 Specification.

Flanged End Valves adhere to ASME(ANSI) B16.1 for their pressure classes.

Each valve in this section is identified by its pressure rating. All valves designated as Class 125 and 250 comply with MSS SP-85 Standard Practice.



Bolted Bonnet, Flanged-End
Iron Globe Valve

Iron Body Globe Valve

Figure 2342J

Class 125 • Outside Screw & Yoke • Rising Stem

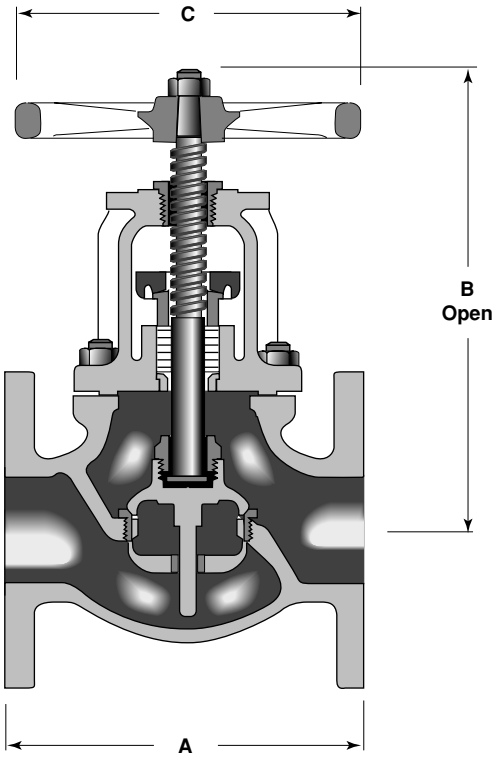


Figure 2342J

Flanged with Bronze Trim

Size Range:

2 through 10 inches

Working Pressures Non-Shock

125 psi Steam, Basic Rating

200 psi Cold Working Pressure

Features

- Integral Yoke Bonnet with upper bronze bushing provides for centering of internal parts
- Non Galling Two-Piece Packing Gland
- Valves are provided with a Back Seat
- Renewable - Regrindable Screwed-in Seat Ring
- Bottom Guided Disc
- Manganese Bronze Stem
- Non-Asbestos Packing & Gasket
- Solid Bronze Disc 6" and smaller
- ASME (ANSI) B16.1, ASME (ANSI) B16.10
- MSS-SP-85 Type 1

For more detailed features, refer to page 16.

Principal Parts & Materials

Fig. No.	Size	Stem	Seating
2342J	2" - 10"	Bronze	Bronze

Dimensions and Weights

Inches (millimeters) - pounds (kilograms)

Valves	2 (50)	2 1/2 (65)	3 (80)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)
A	8.00 (203)	8.50 (216)	9.50 (241)	11.50 (292)	13.00 (330)	14.00 (356)	19.50 (495)	24.50 (622)
B	11.12 (282)	11.50 (292)	13.25 (337)	15.50 (394)	17.50 (445)	19.50 (495)	25.00 (635)	30.50 (775)
C	8.00 (203)	8.00 (203)	9.00 (229)	10.00 (254)	10.00 (254)	12.00 (305)	16.00 (406)	18.00 (508)
Wt.	34 (15)	40 (18)	57 (26)	95 (43)	126 (57)	176 (80)	344 (156)	570 (259)

Iron Body Angle Valve

Figure 2344J

Class 125 • Outside Screw & Yoke • Rising Stem

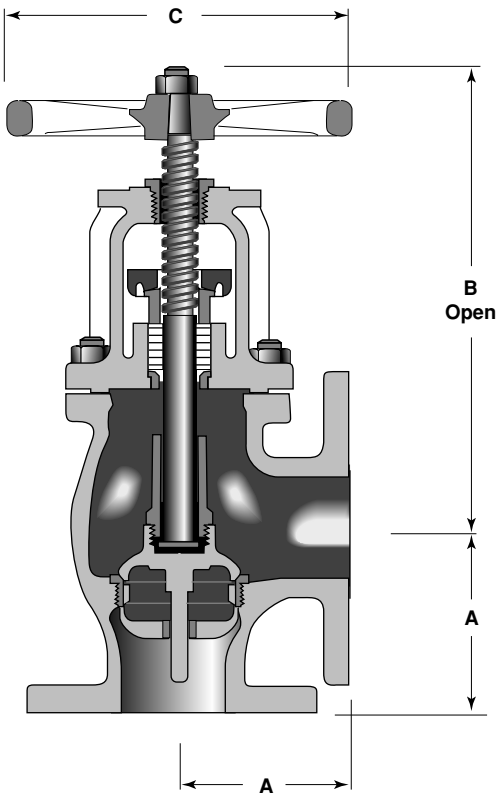


Figure 2344J
Flanged - Bronze Trim

Size Range:
2 through 6 inches

Working Pressures Non-Shock
125 psi Steam, Basic Rating
200 psi Cold Working Pressure

Features

- Integral Yoke Bonnet with upper bronze bushing provides for centering of internal parts
- Non Galling Two-Piece Packing Gland
- Valves are provided with a Back Seat
- Renewable - Regrindable Screwed-in Seat Ring
- Bottom Guided Disc
- Manganese Bronze Stem
- Non-Asbestos Packing & Gasket
- Solid Bronze Disc 6" and smaller
- ASME (ANSI) B16.1, ASME (ANSI) B16.10
- MSS-SP-85 Type 2

For more detailed features, refer to page 16.

Principal Parts & Materials

Fig. No.	Size	Stem	Seating
2344J	2" - 6"	Bronze	Bronze

Dimensions and Weights
Inches (millimeters) - pounds (kilograms)

Valves	2 (50)	2 1/2 (65)	3 (80)	4 (100)	6 (150)
A	4.00 (102)	4.25 (109)	4.75 (121)	5.75 (146)	7.00 (178)
B	11.00 (279)	11.50 (292)	12.75 (324)	15.00 (381)	19.50 (495)
C	8.00 (203)	8.00 (203)	9.00 (229)	10.00 (254)	12.00 (304)
Wt.	32 (15)	38 (17)	54 (25)	88 (40)	158 (72)

Iron Body Globe Valve

Figure 162J

Class 250 • Outside Screw & Yoke • Rising Stem

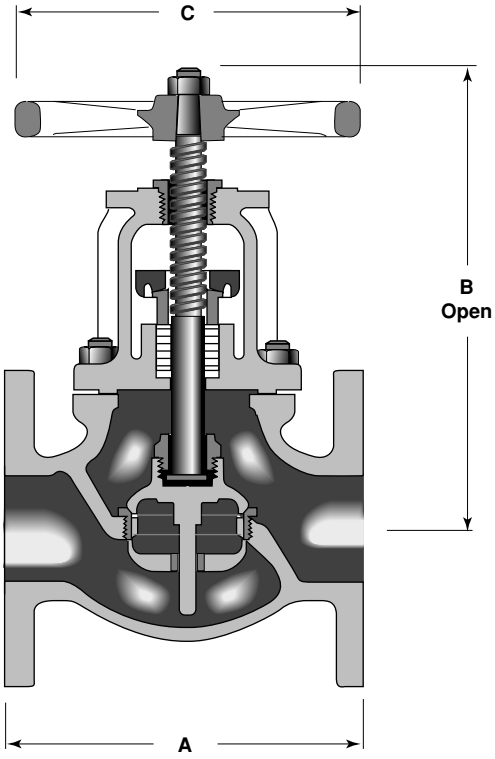


Figure 162J
Flanged - Bronze Trim

Size Range:
2 through 8 inches

Working Pressures Non-Shock
250 psi Steam, Basic Rating
500 psi Cold Working Pressure

Features

- Integral Yoke Bonnet
- Non-galling, Two-piece Packing Gland
- Bronze Seat Ring, ASTM B61
- Disc Stem Ring
- Manganese Bronze Stem
- Non-Asbestos Packing and Gasket
- Valves are provided with a Back Seat
- Renewable - Regrindable, Screwed-in Seat Ring
- Bottom Guided Disc
- ASME (ANSI) B16.1, ASME (ANSI) B16.10
- MSS-SP-85 Type 1
- SolidBronze Discc, ASTM B61-3" and smaller, 4" and larger Castiron with Bronze Facing, ASTM B61

For more detailed features, refer to page 16.

Principal Parts & Materials

Fig. No.	Size	Stem	Seating
162J	2" - 8"	Bronze	Bronze

Dimensions and Weights
Inches (millimeters) - pounds (kilograms)

Valves	2 (50)	2 1/2 (65)	3 (80)	4 (100)	6 (150)	8 (200)
A	10.50 (267)	11.50 (292)	12.50 (318)	14.00 (356)	17.50 (445)	21.00 (533)
B	13.75 (349)	14.75 (375)	16.50 (419)	18.50 (470)	23.25 (591)	28.50 (724)
C	9.00 (229)	10.00 (254)	10.00 (254)	12.00 (305)	16.00 (406)	20.00 (508)
Wt.	62 (28)	82 (37)	118 (54)	167 (76)	320 (145)	570 (259)