

COOPER[®]

Valves

The Complete Catalog



Table of Contents

COOPER[®] Valves Company Information	3
Our History.....	3
Our Mission Statement.....	3
Our Products.....	4
Typical Applications	4
COOPER Features and Benefits	4
Industries COOPER Valves Serves.....	5
Available Inventory for Quick Delivery.....	5
Why should you consider COOPER [®] Valves?	5
Certifications.....	5
Services	6
Manual Operations	6
Valve Modification.....	6
Testing	6
Valve Automation.....	6
Body and Bonnet Materials	7
Gate Valves - Cast and Forged	8
Gate Valve Expanded View	9
Cast Full Port Gate Valves - Class 150.....	11
Cast Full Port Gate Valves - Class 300.....	12
Cast Full Port Gate Valves - Class 600.....	13
Cast Full Port Gate Valves - Class 900.....	14
Forged Regular Port Gate Valves - Class 800-1500	15
Globe Valves - Cast and Forged	16
Globe Valve Expanded View	17
Cast Full Port Globe Valves - Class 150.....	19
Cast Full Port Globe Valves - Class 300.....	20
Cast Full Port Globe Valves - Class 600.....	21
Cryogenic Cast Full Port Globe Valves - Class 150-600.....	22
Forged Regular Port Globe Valves - Class 800-1500.....	23
Check Valves - Cast and Forged	24
Cast Valve Expanded View.....	25
Cast Full Port Swing Check Valves - Class 150-600	26
Cast Full Port Threaded Swing Check Valves - Class 150-600.....	27
Cast Full Port Lift Check Valves - Class 150-600.....	28
Cast Full Port Threaded Lift Check Valve - Class 150-600.....	29
Cryogenic Cast Full Port Check Valve - Class 150-600.....	30
Forged Regular Port Swing Check Valves- Class 800 & 1500	31
Forged Regular Port Lift Check Valves- Class 800 & 1500.....	32
Ball Valves - Soft Seated - 2-Piece & 3-Piece	34
Ball Valve Expanded View - 2-Piece	35
Cast Full Port 2-Piece Ball Valve - Class 150-600.....	37
Cast Full Port 2-Piece Ball Valve - Top Work Design - Class 150-600	38
Cast Full Port 2-Piece Ball Valve - Top Work Design - Class 150-600	39
Ball Valve Expanded View - 3-Piece	41

Cast 3-Piece Ball Valve - Class 1500 PSI/WOG 43

Special Application Ball Valves - Class 1500 PSI/WOG..... 44

COOPER® Figure Number Guide..... 46

Ball Valves - Metal Seated 47

Accuseal® Steam Power Valves (SPBV) 48

SPBV Features and Benefits 49

 Accuseal® Steam Power Ball Valve - Class 150-1500 LTD 52

 Accuseal® Steam Power Ball Valve - Class 3200 LTD..... 53

 Accuseal® Steam Power Ball Valve - Class 4500 LTD..... 54

Critical Service Valves (CSBV)..... 56

 Accuseal® Critical Service Ball Valves Expanded View..... 57

 Accuseal® Critical Service Ball Valve - Class 150-600..... 59

 Accuseal® Critical Service Ball Valve - Class 900-2500..... 60

Automatic Relief Valves (ARBV)..... 61

 Accuseal® Automated Relief Ball Valve Expanded View 62

Flange Dimensions..... 64

Valve and Name Plate Overview..... 65

Limited Warranty 66

Terms and Conditions..... 67

Incoterms 2010..... 70



COOPER[®] Valves Company Information



Our History

COOPER[®] Valves was founded in 1930 and in 1934 COOPER's foundry developed the first successful technique to pour 304 stainless steel. Since then COOPER has become a well-respected and approved valve manufacturer that specializes in exotic alloys valves, serving the downstream and mid-stream chemical, petrochemical, oil and gas, water, power, mining and refining industries for over 80 years. COOPER's success is derived from its dedication to building dependable valves through advanced engineering, experienced personnel, controlled manufacturing processes, and a wide level of end-users approvals. In 2013 COOPER Valves expanded its product offering and acquired industry leading metal-seated ball valve manufacturer Accuseal.

Our Mission Statement

To manufacture and deliver to our customers the finest valves in the world.

Our motto is "Quality without Compromise". We strive to make every valve we produce "bullet proof" because we know that our quality directly impacts our end users, our community, and our environment.

Cooper's vision is to grow and maintain our market position as the leading manufacturer and supplier of high alloy and nickel valves in a global market, still proudly made in the USA.

We believe through hard work, intelligent decision making and effective management we can deliver the highest quality, shortest lead delivery products to our client base at a fair price.

We believe that our employees and their dedication to preserving and protecting our core values will be our basis for success. We are all like-minded people with shared beliefs in striving to always do the best.

Our Products

COOPER® Valves manufactures a complete line of Gate, Globe, Check and Ball valves from small diameter investment castings to large diameter sand castings, sizes 1/4" thru 24", ASME Class 150 thru 4500, in stainless steel or exotic alloys, or special design upon application. COOPER valves are manufactured to applicable sections of ASME and API standards and are used in almost every critical and severe service application.

COOPER specializes in the manufacture of high and exotic alloy valves featuring a complete product offering of multi-turn gate, globe and check valves and quarter turn floating type ball valves incorporating both resilient and metal seated designs.

Accuseal® is the newest addition to the COOPER Valves lineup. The Accuseal® product line consists of metal-seated ball valves designed for critical and severe service applications. The valve currently offered are Accuseal® Steam Power Ball Valves (SPBV), Accuseal® Critical Service Ball Valves (CSBV), and Accuseal® Automated Relief Ball Valves (ARBV).



Typical Applications

The attention to detail we put into our products ensures a higher standard of dependability. This dependability allows COOPER® Valves to be installed in a wide range of applications and various service extremes.

High Temperature (+1100°F)
Cryogenic Service (-320°F)
Corrosive/Erosive
Toxic/Lethal

Fugitive Emissions
Abrasive/Slurry
Special/Severe
(Autoclave Process-Gold/Nickel Mining)

COOPER Features and Benefits

- Largest Offering of Nickel Alloy Materials
- Wide Range of Severe Service Applications
- Material Test Reports
- International Organization for Standardization (ISO 9001)
- Traceability / Serial Numbers
- RFID Enabled with IDS Tracelt+
- API-591 Tested
- API-598 Tested
- Major End-User Approvals
- Extensive Engineering Capabilities
- Excellent Customer Service
- Extended Warranty Program
- Quick Deliveries & Stock
- Recognized Highest Industry Quality
- Extensive NDE Availability
- Tested for Low Fugitive Emissions

Why should you consider COOPER Valves?

- Highest Quality Products Available
- Friendly and Educated Staff
- Fast and Reliable Service
- Short Lead Times
- Still Proudly Made in the USA

Industries COOPER Valves serves

- Chemical/Petrochemical
- Refining
- Mining
- Slurry/Autoclave
- Power

Available Inventory for Quick Delivery

COOPER maintains an inventory that is ever changing based upon market conditions. If you have any quick delivery or inventory needs please contact the factory at 1-800-480-0832 or sales@coopervalves.com
Quality and Customer Specified Tests

Certifications

ISO 9001:2008



CE/PED



CRN



Services

Manual Operations

- Worm Gears, Spur Gears, Bevel Gears, and Reach Rods
- Table Stands, Extension Systems, and Brackets
- Shop Installation Services

Valve Automation

- Electric, Hydraulic, and Pneumatic Automation
- Multi-turn, Quarter-turn, and Linear
- New Applications

Valve Modification

- By Passes, Bore Changes, Mounting Plates, Stem Extensions, Limit Switches, Trim Changes, etc.

Testing

- Radiography Testing
- Dye Penetrant Testing
- Ferrite Content Testing
- Hardness Testing
- Corrosion Evaluation Testing
- Chlorine Cleaning
- Oxygen Cleaning
- Phosgene Cleaning



Body and Bonnet Materials

COOPER® Valves are available in a wide range of body/bonnet and trim materials. Listed below are some of the more popular materials. Additional materials are available upon request. Please contact COOPER Valves or your local distributor for details.

Cast ASTM's	Wrought Designations -- Cast Designations					
A351 A743 A744	303 SS	CF16F	310 SS	CK20	317L SS	CG3M
	304 SS	CF8	316 SS	CF8M	347 SS	CF8C
	304H SS	CF10	316L SS	CF3M	Alloy 20	CN7M
	304L SS	CF3	317 SS	CG8M	-	-
A351 A494	254 SMO	CK3MCuN	Hastelloy C	CW12MW	Hastelloy C22	CX2MW
	AL6XN	CN3MN	Hastelloy B	N12MV	Inconel 600	CY40-1
	Incoloy 800	CT15C	Hastelloy B2	N7M	Nickel 200	CZ100
	Monel 400	M35-1	Hastelloy C4	CW2M	Inconel 625	CW6MC
	-	-	-	-	Incoloy 825	CU5MCuC
A890 A995	Duplex 2505	CD4MCu**	GR.1A	Duplex 2507	CE3MN	GR.5A
		CD4MCuN	GR.1B		CD3MWCuN	GR.6A
	Duplex 2205	CD3MN	GR.4A	-		
A990	Modified Alloy 20	CN3MCu				
B367	Titanium GR.2			Titanium GR.7B		
	Titanium GR.3			Titanium GR.12		
B752	Zirconium GR.702C					
	Zirconium GR.705C					
Forged ASTM's	Wrought Designations -- Forged Designations					
A182	F316L	F316	F316H	Dual Certification (L)		
	F304L	F304	F304H	Dual Certification (L)		
	-	F347	F347H	Dual Certification (H)		
	-	F317	F317H	-		
	F321L	F321	F321H	Dual Certification (H)		
	F51	F53	F55	-		
B462	N08020					
B564	N04400					
	N10276					
	N06625					
	N08825					
	N06600					

* Limitations are per 2004 Edition of ASME B16.34.

** Per 2007 Edition of ASTM A890

Note: Trim materials are typically same as body/bonnet materials unless requested otherwise.

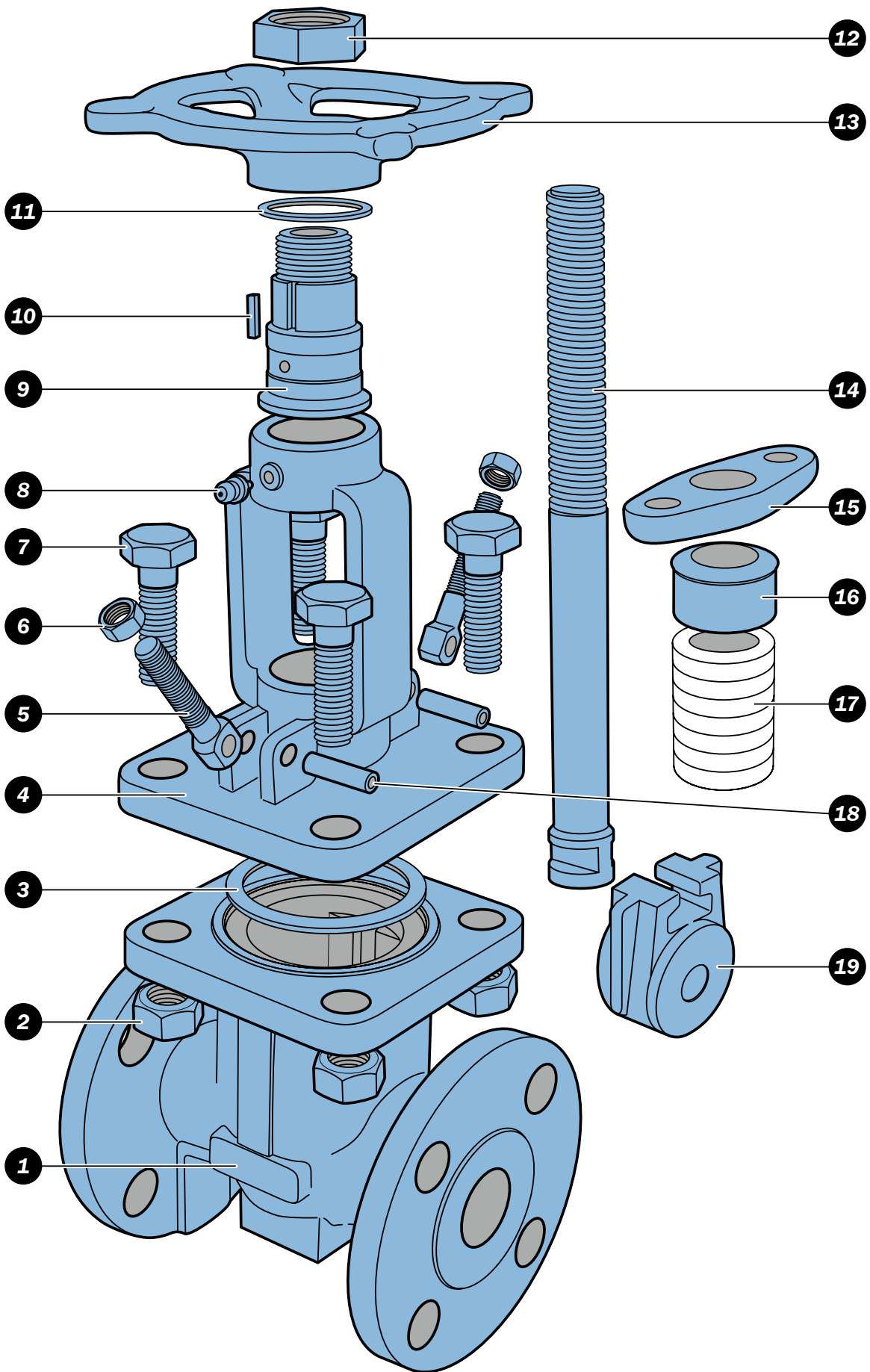
Gate Valves

Cast and Forged



Typical Cooper Cast Gate Valve Expanded View

1. **Body:** Cooper nickel alloy bodies with integral seats provide optimum strength and corrosion resistance.
 2. & 7. **Bonnet Bolting:** The bonnet bolts and nuts secure the bonnet to the body.
 3. **Bonnet Gasket:** The bonnet gasket creates a leak-proof seal between the bonnet and body.
 4. **Bonnet & Yoke:** The Cooper bonnet and yoke assemblies are built to the same standards as the bodies. Larger size gate valves utilize a multi-piece bonnet design. Bonnet has integral back seat.
 5. & 6. **Gland Bolt and Nut:** The gland bolts and nuts allow easy adjustment for packing compression.
 8. **Grease Fitting:** The grease fitting allows easy stem lubrication.
 9. **Stem Nut:** The stem nut provides a precision guide for proper stem alignment.
 10. **Key:** The key helps prevent the handwheel from slipping.
 11. **Thrust Bearing:** The thrust bearing prevents metal to metal wear and galling.
 12. **Handwheel Nut:** The handwheel nut secures the handwheel to the bonnet assembly.
 13. **Handwheel:** The handwheel cycles the valve.
 14. **Stem:** The stem is precision machined and inserts into the horizontal channel in the disc.
 15. **Gland Flange:** The gland flange applies pressure to the gland for accurate packing adjustments.
 16. **Gland:** The gland (same as body material) compresses the packing to create a stem seal above the back seat, between the bonnet and stem.
 17. **Packing:** The packing creates a seal above the back seat, between the bonnet and stem.
 18. **Gland Bolt Pin:** This pin secures the gland bolts to the yoke and bonnet.
 19. **Wedge:** Cooper's wedge is machined to the tightest tolerances to ensure trouble free shutoff and cycling.
- Integral Back Seat:** (not shown) The integral back seat, when engaged with the stem head, provides a stable shutoff to the stuffing box which isolates the packing from flow exposure.

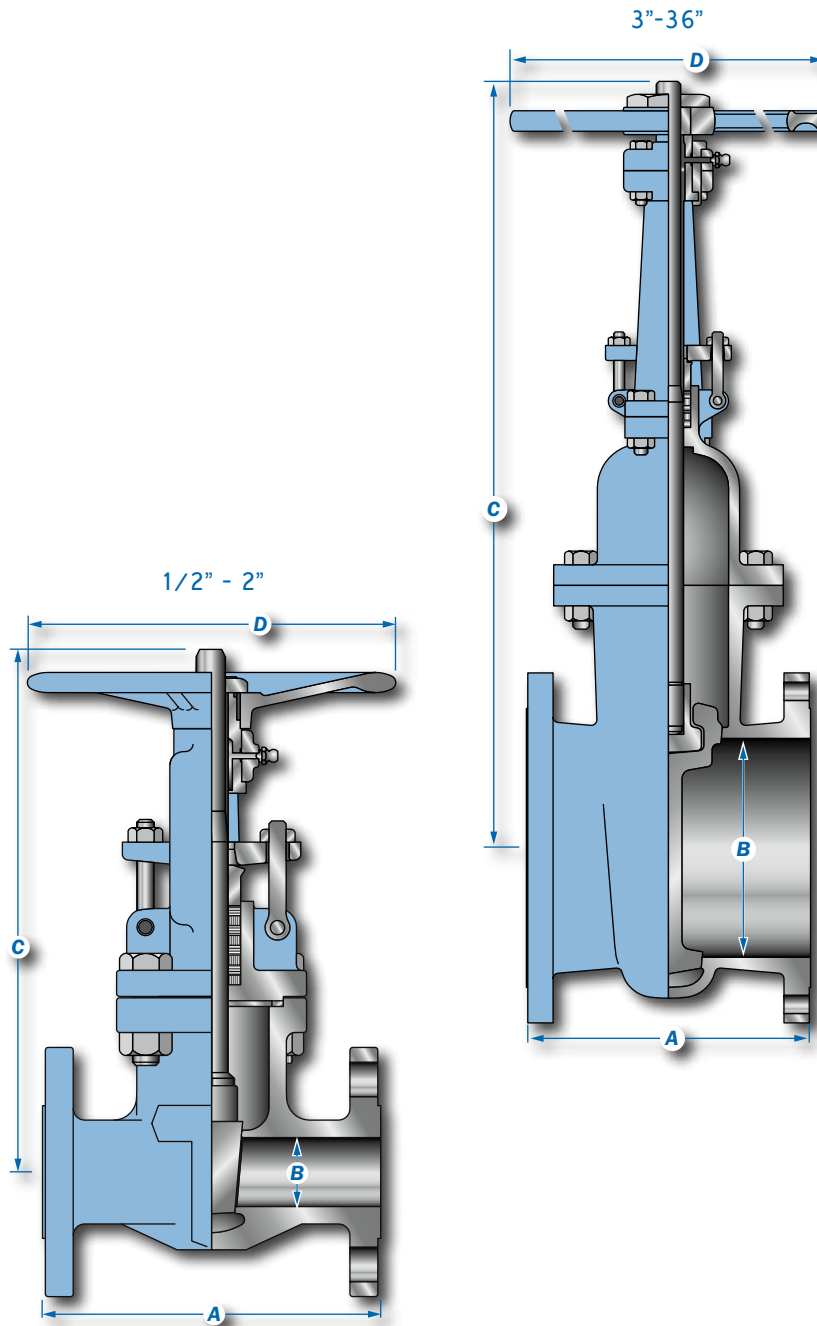


Cast Full Port Gate Valve

Model: GA015 RF/RTJ/BW
 Class: 150
 Sizes: 1/2" thru 36"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 150 Model GA015					
Size	A	B	C	D	Wt.
1/2	4.63	0.50	8.75	4.00	9
15	118	15	222	102	4
3/4	4.36	0.75	8.75	4.00	10
20	111	20	222	102	5
1	5.00	1.00	9.63	4.00	18
25	127	25	246	102	8
1-1/2	6.50	1.50	13.06	8.00	22
40	165	40	332	204	10
2	7.00	2.00	14.69	8.00	30
50	178	50	373	204	13
3	8.00	3.00	16.38	8.00	57
80	203	76	416	204	26
4	9.00	4.00	20.75	10.00	84
100	229	102	527	254	38
6	10.50	6.00	27.44	12.00	170
150	267	152	697	305	77
8	11.50	8.00	39.38	16.00	289
200	292	203	1000	406	131
10	13.00	10.00	46.94	22.00	435
250	330	254	1192	559	198
12	14.00	12.00	56.81	22.00	640
300	356	305	1443	559	291
14	15.00	14.00	65.63	22.00	925
350	381	356	1667	559	420
16	16.00	16.00	73.44	26.00	1300
400	406	406	1865	660	591
18	17.00	18.00	82.69	28.00	1478
450	432	457	2100	711	672
20	18.00	20.00	90.75	28.00	1786
500	457	508	2305	711	812
24	20.00	24.00	100.31	28.00	2602
600	508	610	2548	711	1183
30	24	30	126.3	39.4	4488.5
762	610	762	3400	1000	2189
36	28	36	140	39.4	6849.9
914	711	914	3700	1000	3113.6

Note: "C" numbers represent valve in fully open position.

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Cast Full Port Gate Valves

Model: GAO30 RF/RTJ/BW
 Class: 300
 Sizes: 1/2' thru 36"

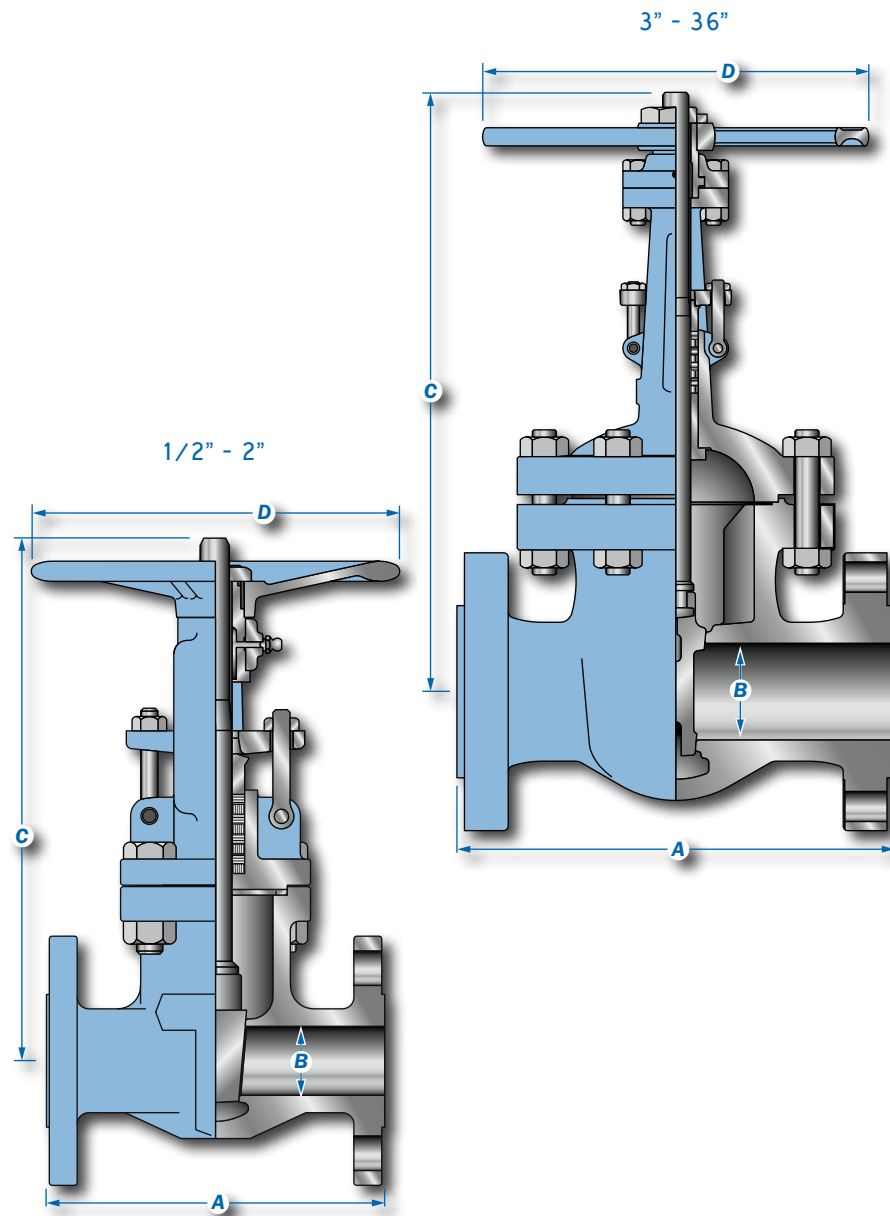
Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598

**Class 300
 Model GAO30**

Size IN MM	A	B	C	D	Wt.
1/2	5.50	0.50	8.75	4.00	13
15	140	15	222	102	6
3/4	6.00	0.75	8.75	4.00	16
20	152	20	222	102	7
1	6.50	1.00	9.63	4.00	24
25	165	25	245	102	11
1-1/2	7.50	1.50	13.06	8.00	39
40	191	40	332	203	18
2	8.50	2.00	14.69	8.00	53
50	216	50	373	203	24
3	11.13	3.00	22.94	10.00	100
80	283	76	583	254	45
4	12.00	4.00	26.44	12.00	171
100	305	102	672	305	78
6	15.88	6.00	34.56	16.00	305
150	403	152	878	406	139
8	16.50	8.00	46.06	22.00	540
200	419	203	1170	559	245
10	18.00	10.00	55.56	22.00	823
250	457	254	1411	559	374
12	19.75	12.00	65.00	22.00	1250
300	502	305	1651	559	568
14	30	14	62.5	22	1650
750	762	750	1588	560	750
16	33	16	68.7	29.5	2096.6
955	838	955	1744	750	953
18	36	18	76	29.5	2579.3
1170	914	1170	1930	750	1170
20	39	20	83.9	29.5	3300
1500	991	1500	2130	750	1500
24	45	24	99.8	39.4	4998.4
2325	1143	2325	2520	1000	2272
30	55	30	148.5	39.4	5119
3781	1397	3781	3772	1000	2322
36	68	36	159	39.4	8318.2
7150	1774	7150	3989	1000	3781

Note: "C" numbers represent valve in fully open position.



Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

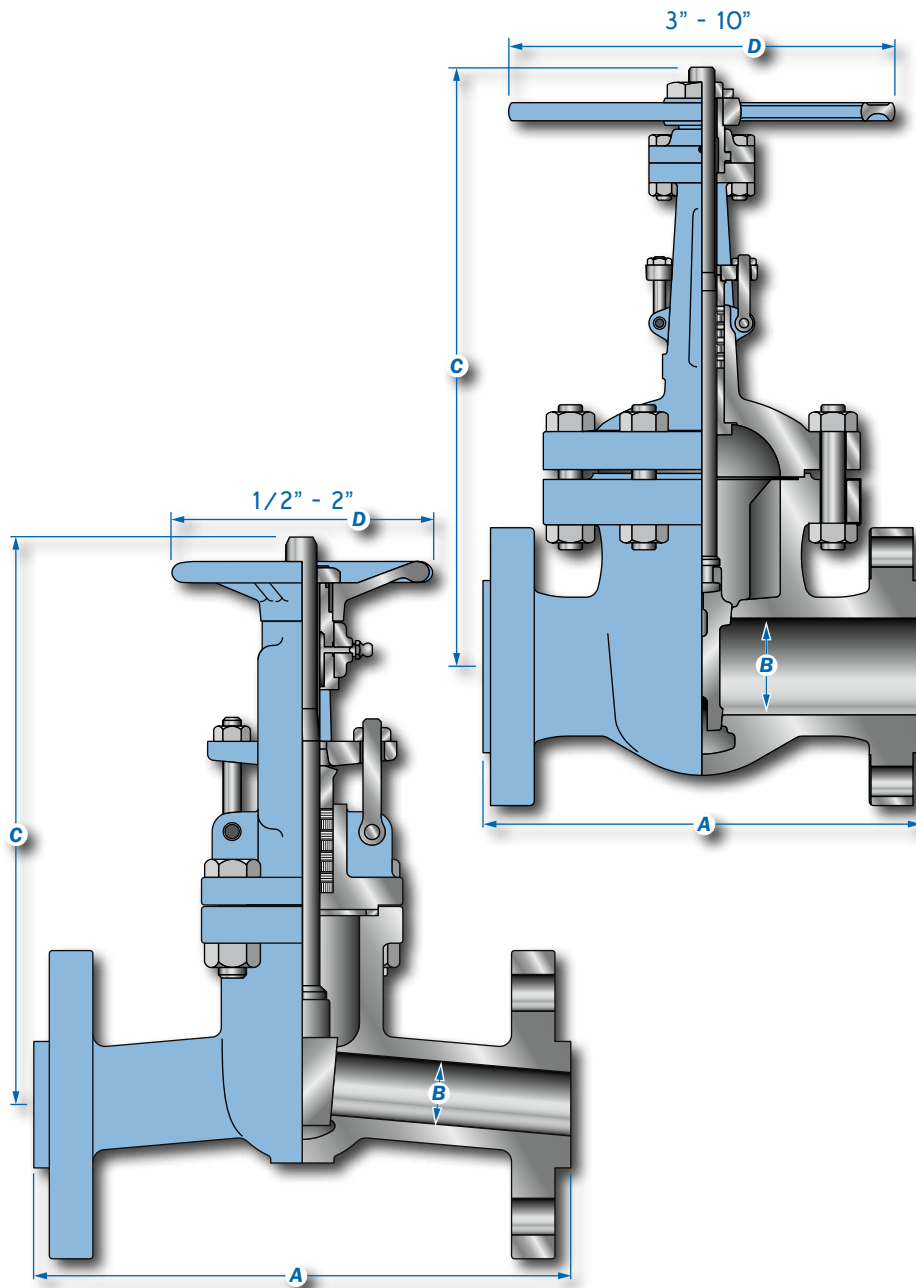
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Cast Full Port Gate Valves

Model: GAO60 RF/RTJ/BW
 Class: 600
 Sizes: 1/2" thru 10"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 600 Model GAO60					
Size	A	B	C	D	Wt.
1/2	6.50	0.50	8.75	4.00	17
15	165	15	222	102	7
3/4	7.50	0.75	8.75	4.00	19
20	191	20	222	102	8
1	8.50	1.00	9.63	4.00	21
25	216	25	245	102	10
1-1/2	9.50	1.50	13.00	8.00	45
40	241	40	330	203	20
2	11.50	2.00	14.63	8.00	119
50	292	50	372	203	54
3	14.00	3.00	23.75	10.00	171
80	356	76	603	254	78
4	17.00	4.00	29.38	14.00	323
100	432	102	746	356	147
6	22.00	6.00	39.63	22.00	500
150	559	152	1007	559	227
8	26.00	8.00	48.69	22.00	1220
200	660	203	1237	559	555
10	31.00	10.00	56.00	28.00	1967
250	787	254	1422	711	894

Note: "C" numbers represent valve in fully open position.
 Above 10" Available Upon Request

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

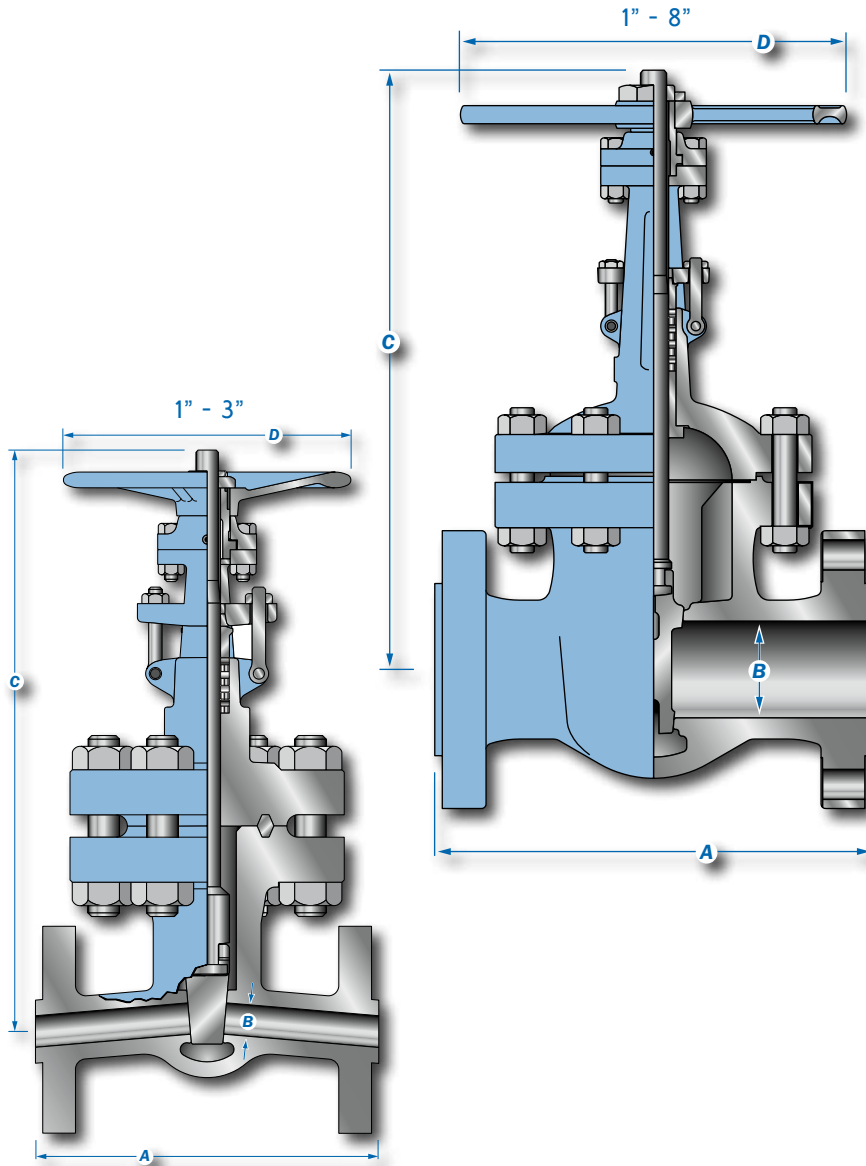
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.

Cast Full Port Gate Valves

Model: GA090 RF/RTJ/BW
 Class: 900
 Sizes: 1/2" thru 8"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 900 Model GA090					
Size IN MM	A	B	C	D	Wt.
1	10.00	1.00	14.00	8.00	55
25	254	25	356	203	25
1-1/2	12.00	1.50	15.56	9.00	70
40	305	40	395	229	32
2	14.50	2.00	17.44	10.00	125
50	368	50	443	254	57
3	15.00	3.00	28.25	14.00	202
80	381	76	716	356	92
4	18.00	4.00	32.50	17.00	380
100	457	102	826	432	173
6	24.30	6.00	39.90	20.00	807
150	617	152	991	508	367
8	29.13	8.00	51.90	36.00	1465
200	740	203	1318	914	666

Note: "C" numbers represent valve in fully open position.
 Above 8" Available Upon Request

Class 1500 Model GA150					
Size IN MM	A	B	C	D	Wt.
1	10.00	1.00	14.00	8.00	60
25	254	25	356	203	27
1-1/2	12.00	1.50	15.56	9.00	75
40	305	40	395	229	34
2	14.50	2.00	17.44	10.00	150
50	368	50	443	254	68
3	18.50	3.00	27.00	16.00	230
80	470	76	686	406	105

Note: "C" numbers represent valve in fully open position.
 Above 3" Available Upon Request

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

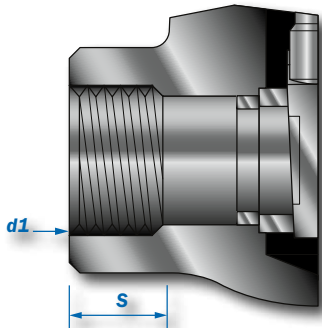
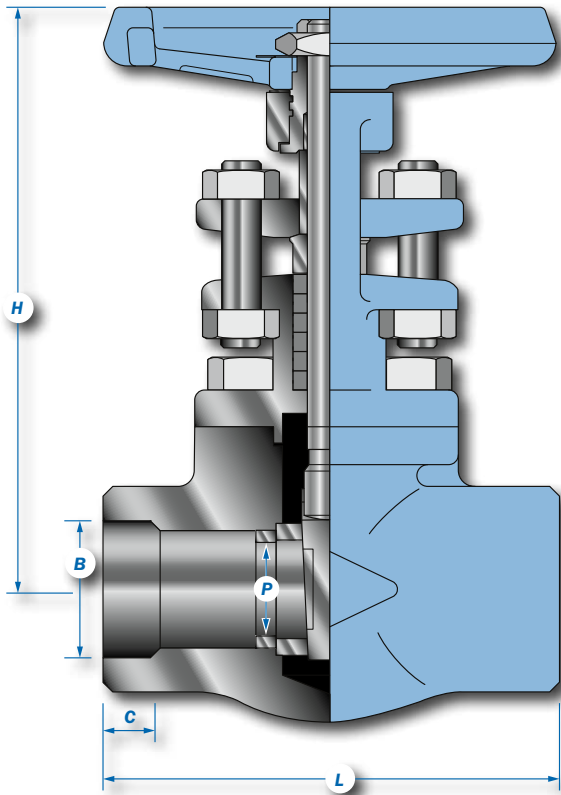
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Forged Regular Port Gate Valves

Model: GA080 and GA150 SE/SW/TS
 Socket Weld & Threaded
 Class: 800 & 1500
 Sizes: 1/4" thru 2"

Design and Manufacturing Standards

Valve Design: API 602 & B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding & Threaded: ASME B16.11
Tested in Accordance with: API 598



Class 800 GA080									
Size IN MM	H	L	W	P	End				Wt.
					B	C	d1	S	
1/4*	5.43	2.99	3.35	0.25	0.56	0.38	-	-	3.3
6*	138	76	85	6	14	10	-	-	1.5
3/8*	5.43	2.99	3.35	0.38	0.69	0.38	-	-	3.3
10*	138	76	85	10	18	10	-	-	1.5
1/2	5.43	2.99	3.35	0.38	0.86	0.38	1/2	0.54	3.3
15	138	76	85	10	22	10		13.7	1.5
3/4	5.79	3.62	3.82	0.50	1.07	0.50	3/4	0.54	4.6
20	147	92	97	13	27	13		13.7	2.1
1	6.85	4.09	3.82	0.71	1.33	0.50	1	0.69	6.2
25	174	104	97	18	34	13		17.52	2.8
1-1/4	8.54	4.53	5.39	1.13	1.68	0.50	1-1/4	0.71	10.6
30	217	115	137	29	43	13		18.0	4.8
1-1/2	8.54	4.53	5.39	1.13	1.92	0.50	1-1/2	0.72	10.6
40	217	115	137	29	49	13		18.3	4.8
2	10.28	5.75	6.18	1.46	2.41	0.62	2	0.76	18.0
50	261	146	157	37	61	16		19.3	8.2

* = Size available in Socket Weld design only.

Class 1500 GA150									
Size IN MM	H	L	W	P	End				Wt.
					B	C	d1	S	
1/2	5.79	3.62	3.82	0.38	0.86	0.38	1/2	0.54	4.6
15	147	92	97	10	22	10		13.7	2.1
3/4	6.14	4.09	3.82	0.50	1.07	0.50	3/4	0.54	6.4
20	156	104	97	13	27	13		13.7	2.9
1	8.15	4.53	5.39	0.71	1.33	0.50	1	0.69	11.0
25	207	115	137	18	34	13		17.52	5.0
1-1/4	9.69	5.75	6.18	1.13	1.68	0.50	1-1/4	0.71	18.0
30	246	146	157	29	43	13		18.0	8.2
1-1/2	9.69	5.75	6.18	1.13	1.92	0.50	1-1/2	0.72	18.0
40	246	146	157	29	49	13		18.3	8.2
2	11.93	8.27	6.18	1.48	2.41	0.62	2	0.76	26.2
50	303	210	157	38	61	16		19.3	11.9

Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld

Note: Pipe threads, general purpose, inch: B1.20.1. Socket welding and thread: B16.11
 Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

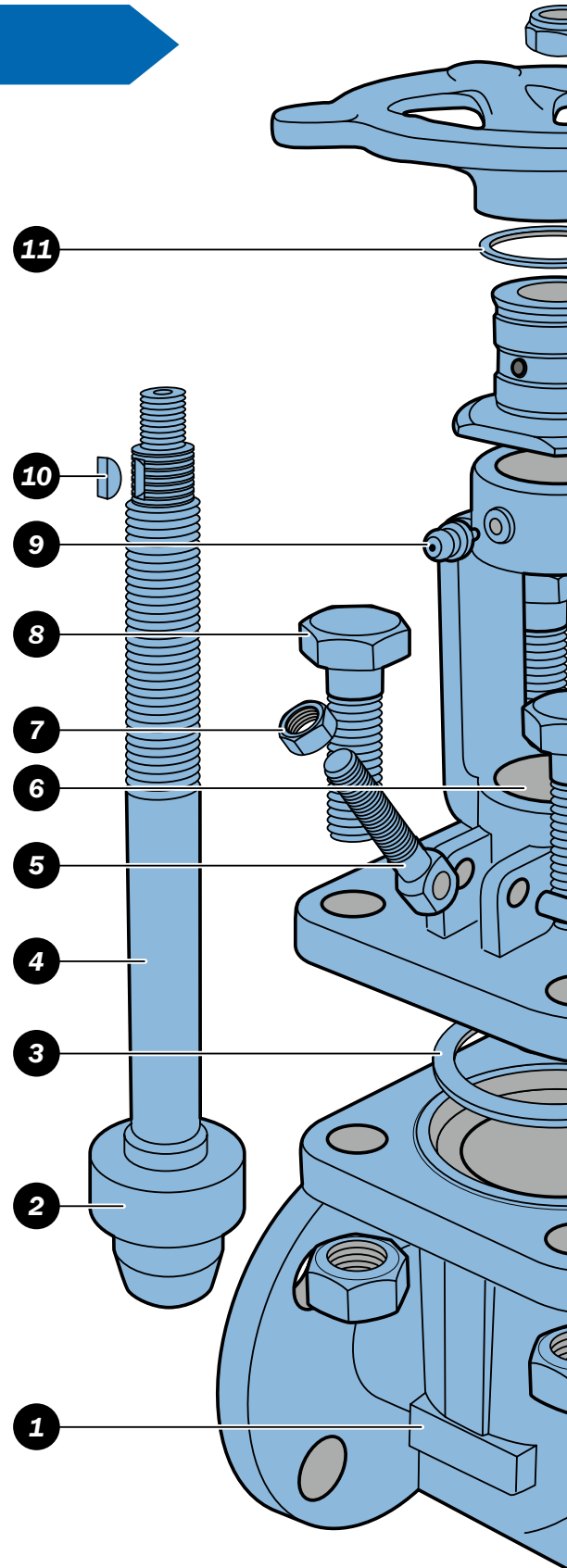
Globe Valves

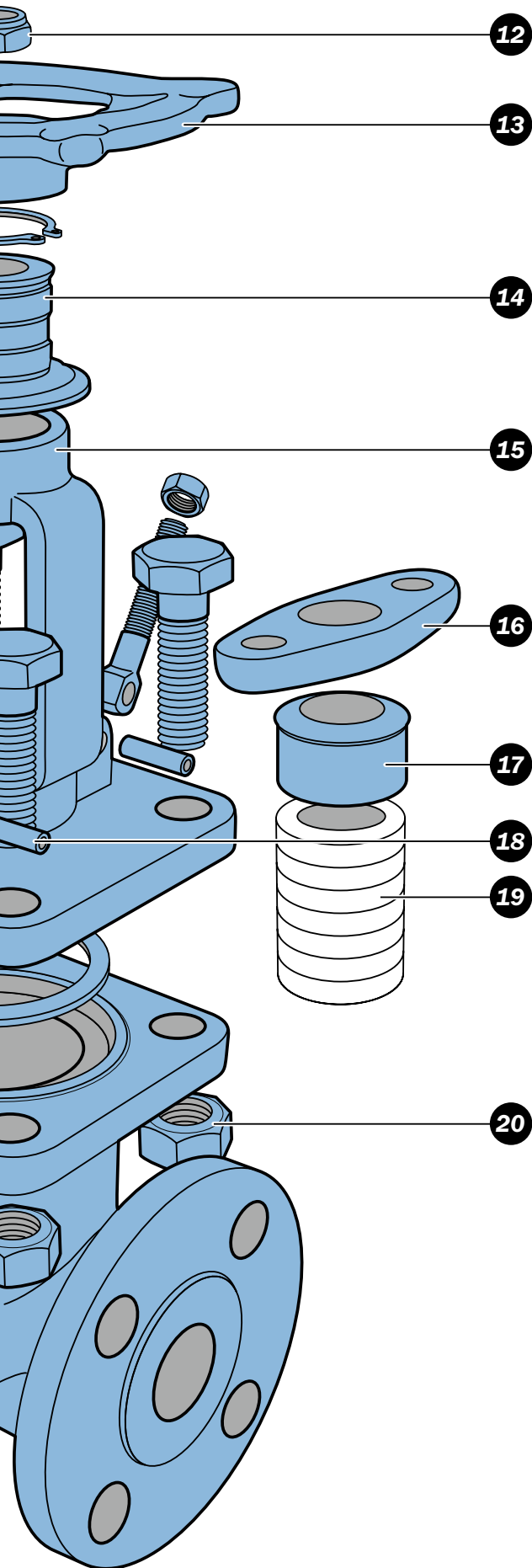
Cast and Forged



Typical Cooper Cast Globe Valve Expanded View

1. **Body:** Cooper nickel alloy bodies with integral seat provide optimum strength and corrosion resistance.
2. **Plug:** Cooper's plug type disc is machined to the tightest tolerances to ensure trouble free shutoff and cycling.
3. **Gasket:** The bonnet gasket creates a leak-proof seal between the bonnet and body.
4. **Stem:** The stem inserts vertically into the disc.
5. & 7. **Gland Bolts and Nuts:** Allows easy adjustment for packing and compression.
6. **Stuffing Box:** The stuffing box contains the packing.
8. & 20. **Bonnet Bolting:** The bonnet bolts and nuts secures the cover to the body.
9. **Grease Fitting:** The grease fitting allows for easy stem lubrication.
10. **Key:** The key helps prevent handwheel from slipping.
11. **Snap Ring:** The snap ring helps to prevent loosening and distributes pressure evenly.





12

13

14

15

16

17

18

19

20

12. Handwheel Nut: The handwheel nut secures the handwheel to the bonnet assembly.

13. Handwheel: The handwheel cycles the valve.

14. Stem Nut: The stem nut provides a precision guide for proper stem alignment.

15. Bonnet: Cooper bonnet assemblies are built to the same standards as the bodies.

16. Gland Flange: The gland flange applies pressure to the gland for proper packing and compression.

17. Gland: The gland (same as body material) compresses the packing to create a stem seal above the back seat, between the bonnet and the stem.

18. Gland Bolt Pin: This pin secures the gland bolts to the yoke and bonnet.

19. Packing: The packing creates a seal above the back seat, between the bonnet and the stem.

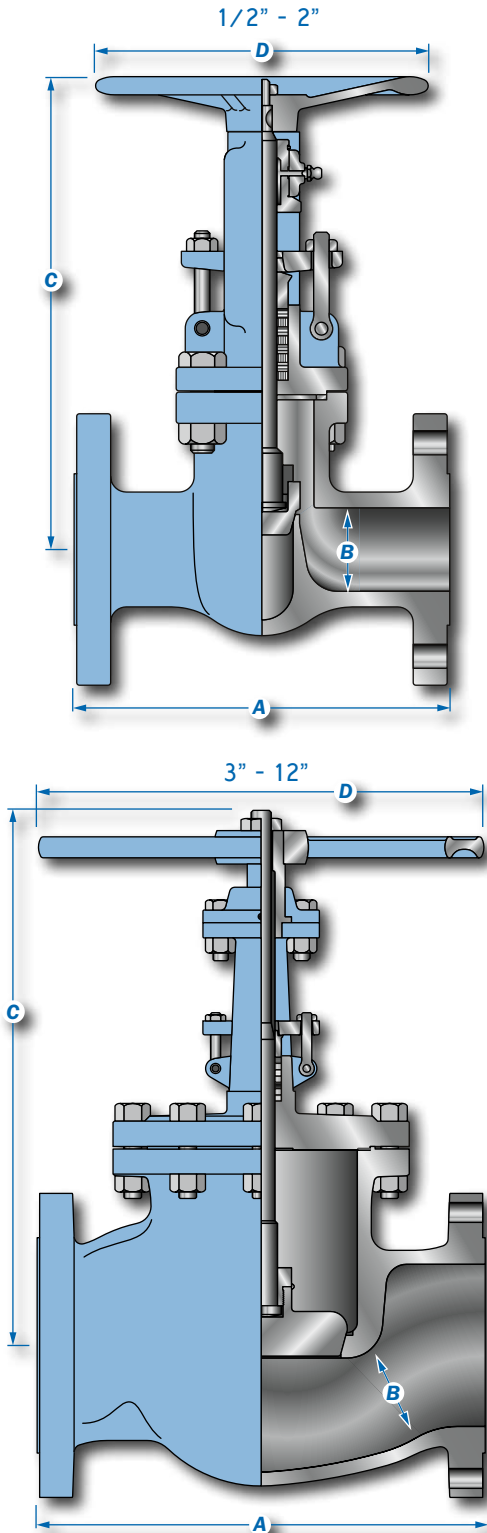
Integral Back Seat: (not shown) The back seat, when engaged with the stem head, provides a stable shut-off to the stuffing box which isolates the packing from flow exposure.

Cast Full Port Globe Valves

Model: GL015 RF/RTJ/BW
 Class: 150
 Sizes: 1/2" thru 12"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 150 Model GL015					
Size	A	B	C	D	Wt.
1/2	4.25	0.50	8.38	4.00	6
15	108	15	213	102	3
3/4	4.63	0.75	8.38	4.00	7
20	118	20	213	102	3
1	5.00	1.00	9.31	4.00	8
25	127	25	236	102	4
1-1/2	6.50	1.50	13.25	8.00	15
40	165	40	337	203	7
2	8.00	2.00	14.38	8.00	23
50	203	50	365	203	10
3	9.50	3.00	14.50	12.00	56
80	241	76	368	304	25
4	11.50	4.00	15.88	12.00	74
100	292	102	403	305	34
6	16.00	6.00	20.63	16.00	145
150	406	152	524	406	66
8	19.50	8.00	24.50	16.00	246
200	495	203	622	406	112
10	24.5	10	25.6	17.7	574.2
250	622	250	650	450	261
12	87.5	12	27.5	29.5	1097.8
300	698	300	736	750	499

Note: "C" numbers represent valve in fully open position.

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

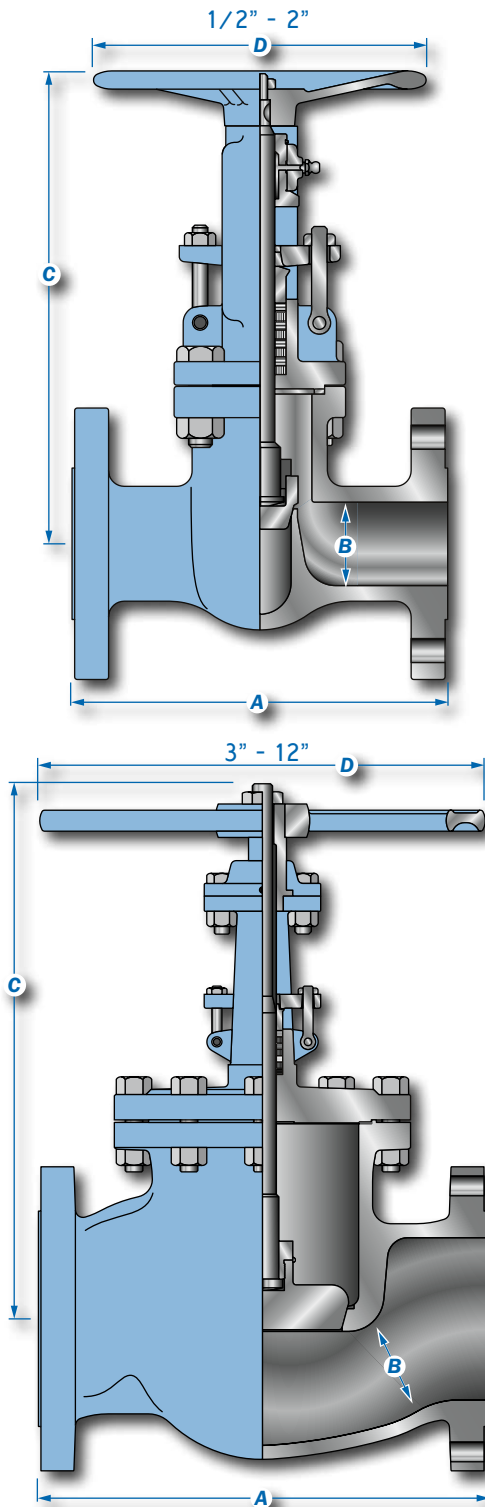
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.

Cast Full Port Globe Valves

Model: GLO30 RF/RTJ/BW
 Class: 300
 Sizes: 1/2" thru 10"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 300 Model GLO30					
Size	A	B	C	D	Wt.
1/2	6.00	0.50	8.38	4.00	13
15	152	15	213	102	6
3/4	7.00	0.75	8.38	4.00	17
20	178	20	213	102	8
1	8.00	1.00	9.31	4.00	25
25	203	25	236	102	11
1-1/2	9.00	1.50	13.25	8.00	36
40	229	40	337	203	16
2	10.50	2.00	14.19	8.00	54
50	267	50	360	203	25
3	12.50	3.00	19.50	12.00	92
80	318	76	495	305	42
4	14.00	4.00	22.19	12.00	147
100	356	102	564	305	67
6	17.50	6.00	26.69	16.00	280
150	445	152	678	406	127
8	22.00	8.00	40.00	22.00	566
200	559	203	1016	559	257
10	24.5	10	31.5	17.7	827.2
250	622	250	800	450	376

Note: "C" numbers represent valve in fully open position.

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

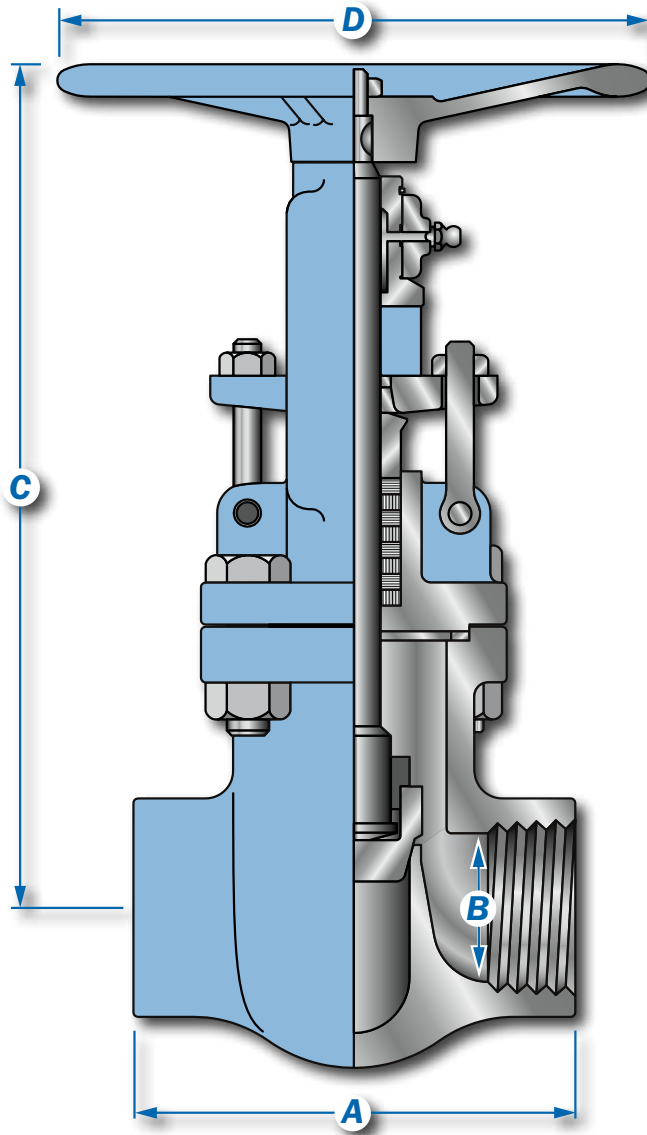
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.
 Dimensions are subject to change without notice.

Cast Full Port Threaded Globe Valves

Model: GL015/O30/O60 SE/SW/ST
 Class: 600
 Sizes: 1/2" thru 6"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 150 Model GL015					
Size	A	B	C	D	Wt.
1/2	3.44	0.50	8.38	4.00	5
15	87	15	213	102	2
3/4	3.44	0.75	8.38	4.00	5
20	87	20	213	102	2
1	4.06	1.00	9.31	4.00	7
25	103	25	236	102	3
1-1/2	5.44	1.50	13.25	8.00	12
40	138	40	337	203	5
2	5.94	2.00	14.19	8.00	17
50	151	50	360	203	8

Class 300 Model GLO30					
Size	A	B	C	D	Wt.
1/2	3.44	0.50	8.38	4.00	5
15	87	15	213	102	2
3/4	3.44	0.75	8.38	4.00	5
20	87	20	213	102	2
1	4.06	1.00	9.31	4.00	7
25	103	25	236	102	3
1-1/2	5.44	1.50	13.25	8.00	12
40	138	40	337	203	5
2	5.94	2.00	14.19	8.00	17
50	151	50	360	203	8

Class 600 Model GLO60					
Size	A	B	C	D	Wt.
1/2	3.44	0.50	8.38	4.00	5
15	87	15	213	102	2
3/4	3.44	0.75	8.38	4.00	5
20	87	20	213	102	2
1	4.06	1.00	9.31	4.00	7
25	103	25	236	102	3
1-1/2	9.50	1.50	16.44	8.00	29
40	241	40	418	203	13
2	11.50	2.00	18.38	10.00	39
50	292	50	467	254	18

Note: "C" numbers represent valve in fully open position.

Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld

Note: Pipe threads, general purpose, inch: B1.20.1. Socket welding and thread: B16.11

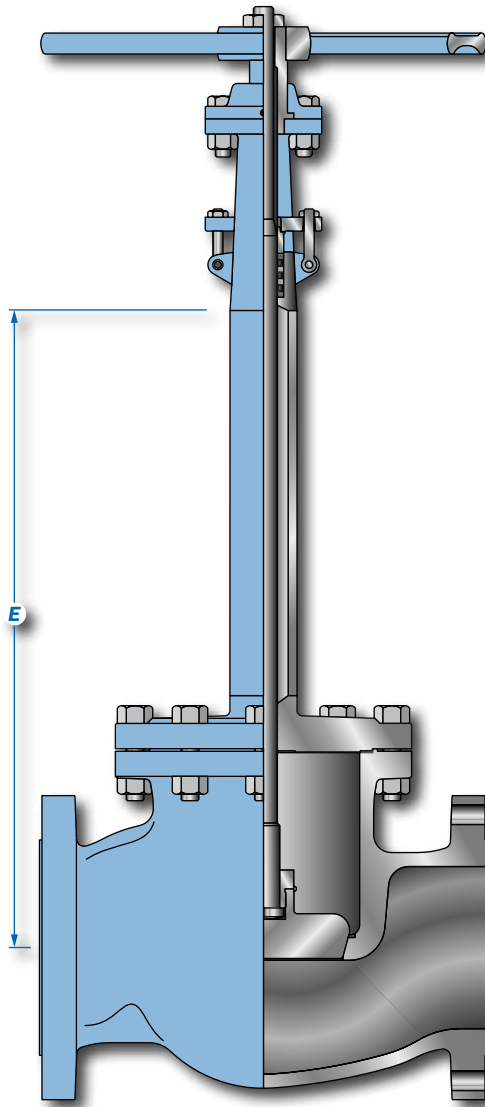
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Cryogenic Cast Full Port Globe Valves

Class: 150, 300 & 600
 Sizes: 1/2" thru 8"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Extended Bonnet Dimensions for Globe Valves

Size	Pressure Class		
	150	300	600
IN			
MM			
1/2	13.50	13.50	13.50
15	343	343	343
3/4	13.50	13.50	13.50
20	343	343	343
1	15.25	15.25	15.25
25	387	387	387
1-1/2	18.00	18.00	18.00
40	457	457	457
2	18.50	18.50	18.50
50	470	470	470
3	18.50	21.88	ON
80	470	556	REQUEST
4	20.38	24.00	ON
100	518	610	REQUEST
6	24.00	30.31	ON
150	610	770	REQUEST
8	30.31	34.31	ON
200	770	871	REQUEST

"E" dimension shown above is standard minimum length.

Dimension E shown is from centerline of bore to top of stuffing box. Longer E dimension is optional. Contact Cooper.

OPTIONS:

- Renewable disc with Teflon insert good to -100°F.
- Renewable disc with KEL-F insert good to -325°F.
- Pressure relief vent hole.

Cooper Cryogenic Globe Valves are available in ASME pressure classes 150, 300 and 600 with OS&Y extended bolted bonnet and metal plug or renewable disc.

Class 150: Flanged or butt weld 1/2 thru 8".* Threaded, socket weld, NPS 1/2 thru 2".
 Class 300: Flanged or butt weld 1/2 thru 8".* Threaded, socket weld, NPS 1/2 thru 2".
 Class 600: Flanged or butt weld 1/2 thru 8".* Threaded, socket weld, NPS 1/2 thru 2".

Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Connection Suffix

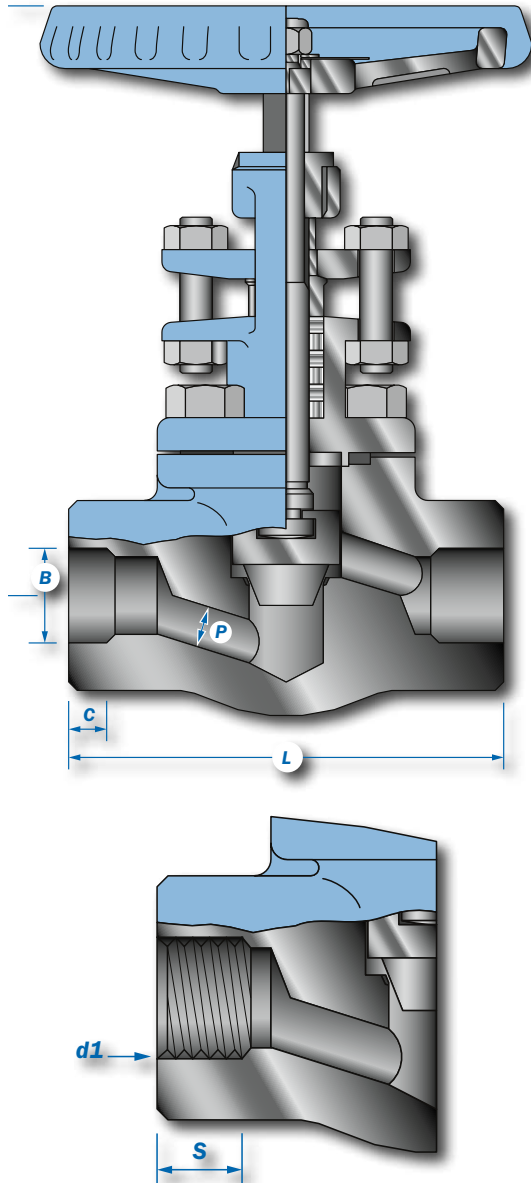
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

Forged Regular Port Globe Valves

Model: GL080 and GL150 SE/SW/TS
 Socket Weld & Threaded
 Class: 800 & 1500
 Sizes: 1/2" Thru 2"

Design and Manufacturing Standards

Valve Design: API 602 & B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding & Threaded: ASME B16.11
Tested in Accordance with: API 598



Class 800 GL080									
Size IN MM	H	L	W	P	End				Wt.
					B	C	d1 (NPT)	S	
1/2	5.67	2.99	3.35	0.37	0.86	0.38	1/2	0.54	3.3
15	144.0	76	85	9.40	22	10		13.7	1.5
3/4	6.06	3.62	3.82	0.50	1.07	0.50	3/4	0.54	4.8
20	153.9	92	97	12.7	27	13		13.7	2.1
1	6.97	4.09	3.82	0.69	1.33	0.50	1	0.69	6.2
25	177.0	104	97	17.5	34	13		17.52	2.8
1-1/4	8.86	5.51	5.39	1.16	1.68	0.50	1-1/4	0.71	12.3
30	225.0	140	137	29.5	43	13		18.0	5.6
1-1/2	8.86	5.51	5.39	1.16	1.92	0.50	1-1/2	0.72	12.3
40	225.0	140	137	29.5	49	13		18.3	5.6
2	10.00	5.75	6.18	1.38	2.41	0.62	2	0.76	18.7
50	254.0	146	157	35.1	61	16		19.3	8.5

Class 1500 GL150									
Size IN MM	H	L	W	P	End				Wt.
					B	C	d1 (NPT)	S	
1/2	5.91	3.62	3.82	0.37	0.86	0.38	1/2	0.54	5.1
15	150	92	97	9.40	22	10		13.7	2.3
3/4	7.05	4.09	3.82	0.50	1.07	0.50	3/4	0.54	7.0
20	179	104	97	12.7	27	13		13.7	3.2
1	9.09	5.51	5.39	0.63	1.33	0.50	1	0.69	13.4
25	231	140	137	16.0	34	13		17.52	6.1
1-1/4	10.16	5.75	6.18	1.06	1.68	0.50	1-1/4	0.71	23.1
30	258	146	157	26.9	43	13		18.0	10.5
1-1/2	10.16	5.75	6.18	1.06	1.92	0.50	1-1/2	0.72	23.1
40	258	146	157	26.9	49	13		18.3	10.5
2	11.85	8.27	6.18	1.38	2.41	0.62	2	0.76	28.6
50	301	210	157	35.1	61	16		19.3	13.0

Note: Pipe threads, general purpose, inch: B1.20.1. Socket welding and thread: B16.11
 Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld

Check Valves

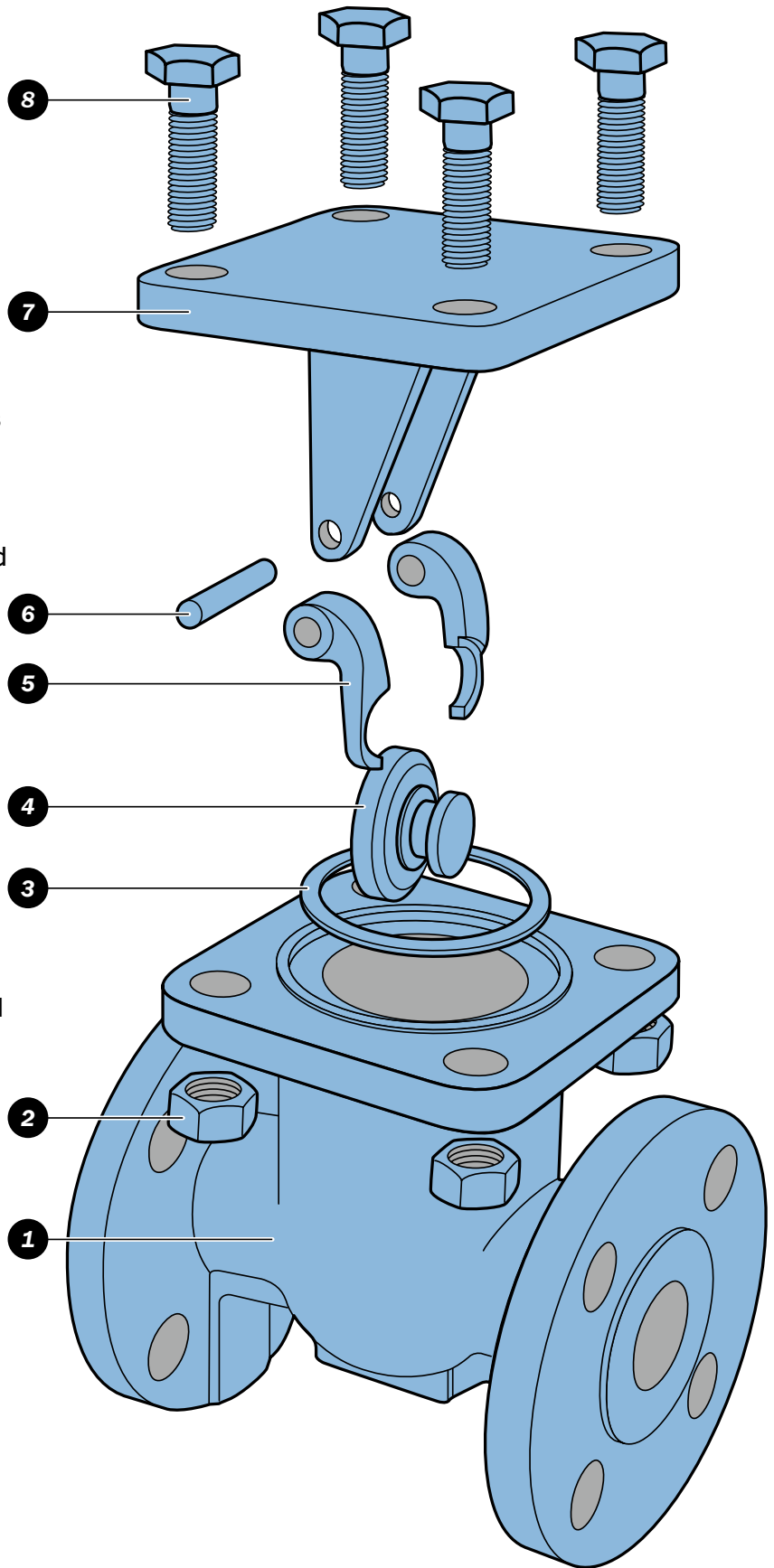
Cast and Forged



Typical Cooper Cast Check Valve Expanded View

- 1. **Body:** The Cooper nickel alloy bodies with integral seat provide optimum strength and corrosion resistance.
- 2. & 8. **Bonnet Bolting:** The bonnet bolts and nuts secure the bonnet to the body.
- 3. **Cover Gasket:** The cover gasket creates a leakproof seal between the cover and the body.
- 4. **Disc:** The disc allows unidirectional flow and restricts back flow with trouble-free shutoff.
- 5. **Swing Arm(s):** The swing arm(s) allow the disc to open and close.
- 6. **Hinge Pin:** The hinge pin provides a stable mechanism for the swing arm(s) to function.
- 7. **Cover:** The cover seals the valve and allows access to the internal components.

Integral Seat: (not shown) Cooper's integral seat ensures a stable shutoff, the integral seat is precision machined for optimal seating.

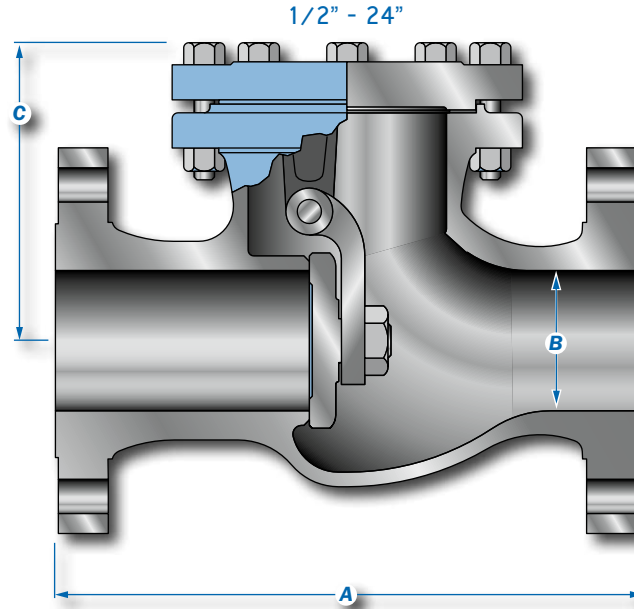


Cast Full Port Swing Checks

Model: SC015/O30/O60 RF/RTJ/BW
 Class: 150, 300, 600
 Sizes: 1/2" thru 24"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 150 Model SC015				
Size	A	B	C	Wt.
IN				
MM				
1/2	4.25	0.50	3.19	6
15	108	15	81	3
3/4	4.63	0.75	3.19	7
20	118	20	81	3
1	5.00	1.00	3.69	8
25	127	25	94	4
1-1/2	6.50	1.50	4.81	15
40	165	40	122	7
2	8.00	2.00	5.75	23
50	203	50	146	10
3	9.50	3.00	5.00	56
80	241	76	127	25
4	11.50	4.00	7.44	74
100	292	102	189	34
6	14.00	6.00	9.31	145
150	356	152	236	66
8	19.50	8.00	10.25	246
200	495	203	260	112
10	24.50	10.00	11.63	420
250	622	254	295	191
12	27.50	12.00	14.13	635
300	699	305	359	289

Class 300 Model SC030				
Size	A	B	C	Wt.
IN				
DN				
1/2	6.00	0.50	3.19	16
15	152	15	81	7
3/4	7.00	0.75	3.19	18
20	178	20	81	8
1	8.50	1.00	3.69	21
25	216	25	94	10
1-1/2	9.50	1.50	4.81	30
40	241	40	122	14
2	10.50	2.00	5.75	60
50	268	50	146	27
3	12.50	3.00	6.25	115
80	318	76	159	52
4	14.00	4.00	7.63	185
100	356	102	194	84
6	17.50	6.00	11.13	230
150	445	152	283	105
8	21.00	8.00	10.75	620
200	422	203	273	282
10	24.50	10.00	14.38	800
250	511	254	365	364

Class 600 Model SC060				
Size	A	B	C	Wt.
IN				
DN				
1/2	6.50	0.50	3.19	16
15	165	15	81	7
3/4	7.50	0.75	3.19	19
20	191	20	81	9
1	8.50	1.00	3.69	21
25	216	25	94	10
1-1/2	9.50	1.50	6.63	50
40	241	40	168	23
2	11.50	2.00	7.00	70
50	292	50	178	32
3	14.00	3.00	8.75	135
80	356	76	222	61
4	17.00	4.00	10.25	255
100	432	102	260	116
6	22.00	6.00	12.63	530
150	559	152	321	241

Class 900 & 1500 are available upon request

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

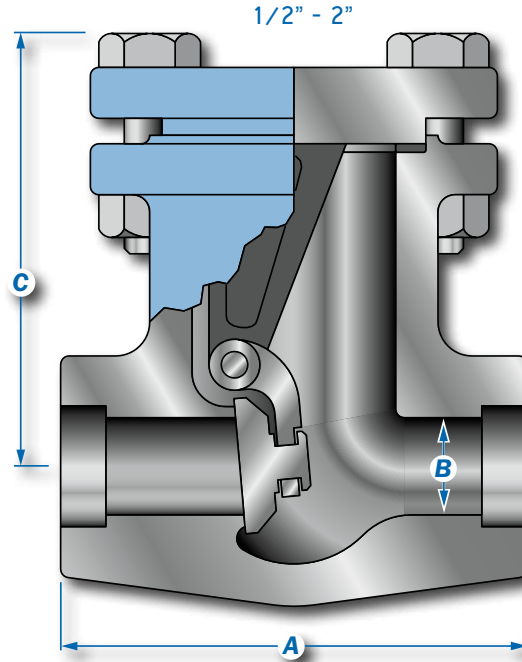
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.

Cast Full Port Threaded Swing Check Valves

Model: SC015/O30/O60 SE/TS/SW
 Class: 150, 300, 600
 Sizes: 1/2" thru 2"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 150 Model SC015				
Size	A	B	C	Wt.
1/2	3.44	0.50	3.19	5
15	87	15	81	2
3/4	3.44	0.75	3.19	5
20	87	20	81	2
1	3.81	1.00	3.69	7
25	97	25	94	3
1-1/2	5.44	1.50	4.19	12
40	138	40	106	5
2	5.94	2.00	5.75	17
50	151	50	146	8

Class 300 Model SC030				
Size	A	B	C	Wt.
1/2	3.44	0.50	3.19	5
15	87	15	81	2
3/4	3.44	0.75	3.19	5
20	87	20	81	2
1	3.81	1.00	3.69	7
25	97	25	94	3
1-1/2	5.44	1.50	4.19	12
40	138	40	106	5
2	5.94	2.00	5.75	17
50	151	50	146	8

Class 600 Model SC060				
Size	A	B	C	Wt.
1/2	3.44	0.50	3.19	5
15	87	15	81	2
3/4	3.44	0.75	3.19	5
20	87	20	81	2
1	3.81	1.00	3.69	7
25	97	25	94	3
1-1/2	6.00	1.50	7.00	29
40	152	40	178	13
2	7.00	2.00	7.00	36
50	178	50	178	16

Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.

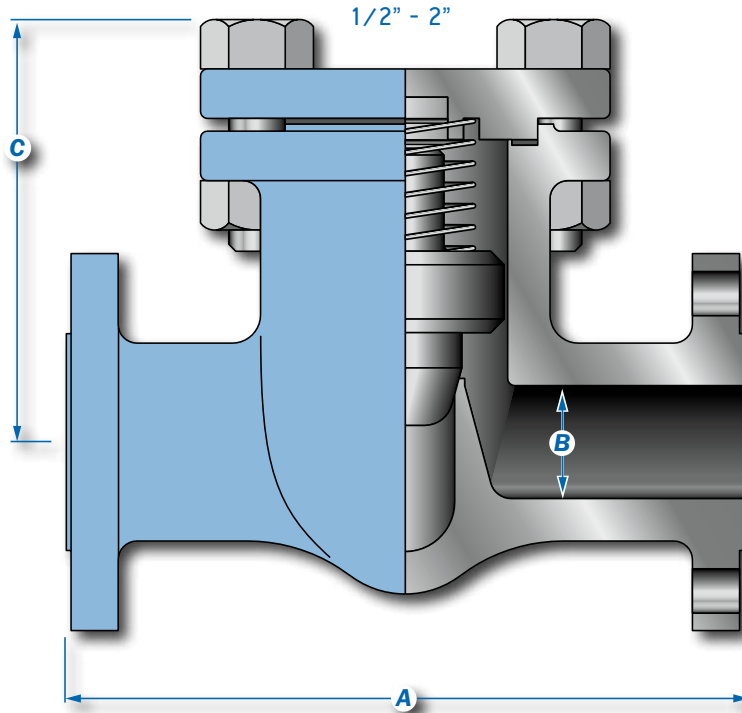
Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld

Cast Full Port Lift Check Valves

Model: LC015/030/060 RF/RTJ/BW
 Class: 150, 300 & 600
 Sizes: 1/2" thru 3"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 150 Model LC015				
IN	A	B	C	Wt.
1/2	4.25	0.50	3.19	6
15	108	15	81	3
3/4	4.63	0.75	3.19	7
20	118	20	81	3
1	5.00	1.00	3.69	11
25	127	25	94	5
1-1/2	6.50	1.50	4.81	15
40	165	40	122	7
2	8.00	2.00	5.75	23
50	203	50	146	10
3	9.50	3.00	6.13	65
80	241	76	156	30

Class 300 Model LC030				
IN	A	B	C	Wt.
1/2	6.00	0.50	3.19	13
15	152	15	81	6
3/4	7.00	0.75	3.19	17
20	178	20	81	8
1	8.00	1.00	3.69	25
25	203	25	94	11
1-1/2	9.00	1.50	4.81	36
40	229	40	122	16
2	10.50	2.00	5.75	54
50	267	50	146	25
3	12.50	3.00	8.13	135
80	318	76	207	61

Class 600 Model LC060				
IN	A	B	C	Wt.
1/2	6.50	0.50	3.19	14
15	165	15	81	6
3/4	7.50	0.75	3.19	16
20	191	20	81	7
1	8.50	1.00	3.69	26
25	216	25	94	12
1-1/2	9.50	1.50	6.63	60
40	241	40	168	27
2	11.50	2.00	7.00	95
50	292	50	178	43

COOPER® Lift Checks are supplied with an Inconel X-750 spring for extra strength and corrosion resistance. Cooper Lift Checks have a low differential pressure seal with a cracking pressure of 5 to 10 PSI. They can be supplied with a renewable disc with a Teflon insert good for -100°F or KEL-F insert good for -325°F.

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW	Butt Weld

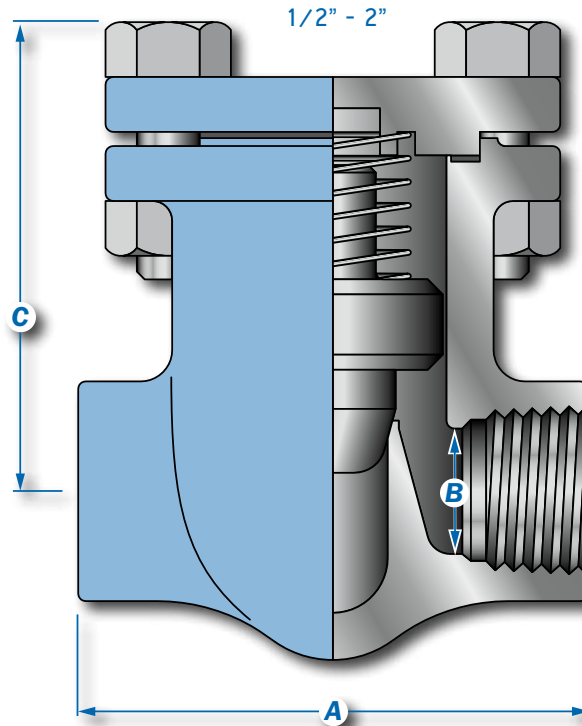
Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Cast Full Port Threaded Lift Check Valves

Model: LC015/O30/O60 SE/TS/SW
 Class: 150, 300 & 600
 Sizes: 1/2" thru 2"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598



Class 150 Model LC015				
IN	A	B	C	Wt.
1/2	3.44	0.50	3.19	5
15	87	15	81	2
3/4	3.44	0.75	3.19	5
20	87	20	81	2
1	4.06	1.00	3.69	7
25	103	25	94	3
1-1/2	5.44	1.50	4.19	12
40	138	40	106	5
2	5.94	2.00	5.75	17
50	151	50	146	8

Class 300 Model LC030				
IN	A	B	C	Wt.
1/2	3.44	0.50	3.19	5
15	87	15	81	2
3/4	3.44	0.75	3.19	5
20	87	20	81	2
1	4.06	1.00	3.69	7
25	103	25	94	3
1-1/2	5.44	1.50	4.19	12
40	138	40	106	5
2	5.94	2.00	5.75	17
50	151	50	146	8

Class 600 Model LC060				
IN	A	B	C	Wt.
1/2	3.44	0.50	3.19	5
15	87	15	81	2
3/4	3.44	0.75	3.19	5
20	87	20	81	2
1	4.06	1.00	3.69	7
25	103	25	94	3
1-1/2	5.44	1.50	7.00	29
40	138	40	178	13
2	5.94	2.00	7.00	39
50	151	50	178	18

COOPER® Lift Checks are supplied with an Inconel X-750 spring for extra strength and corrosion resistance. Cooper Lift Checks have a low differential pressure seal with a cracking pressure of 5 to 10 PSI. They can be supplied with a renewable disc with a Teflon insert good for -100°F or KEL-F insert good for -325°F.

Note: Pipe threads, general purpose, inch: B1.20.1. Socket welding and thread: B16.11
 Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms.
 Dimensions are subject to change without notice.

Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld

Cryogenic Cast Full Port Check Valves

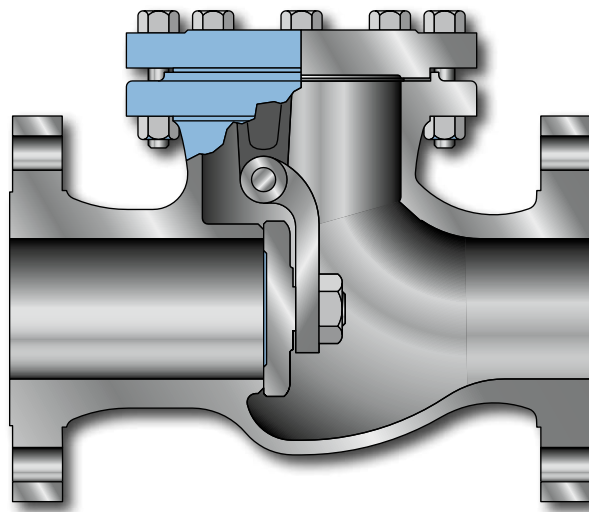
Class: 150, 300 & 600
Sizes: 1/2" thru 12"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598

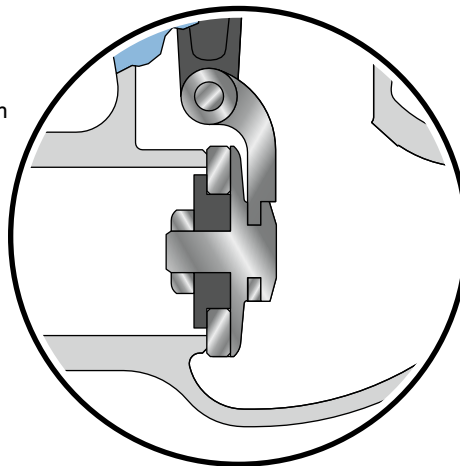
Cooper Cryogenic Swing Check Valves are available in ASME pressure classes 150, 300 and 600 with bolted cover and metal or renewable disc.

Class 150: Flanged or buttweld 1/2 thru 12".* Threaded, socketweld, NPS 1/2 thru 2".
Class 300: Flanged or buttweld 1/2 thru 10".* Threaded, socketweld, NPS 1/2 thru 2".
Class 600: Flanged or buttweld 1/2 thru 6".* Threaded, socketweld, NPS 1/2 thru 2".



Renewable Disc

Renewable discs available with virgin Teflon or KEL-F inserts



OPTIONS:

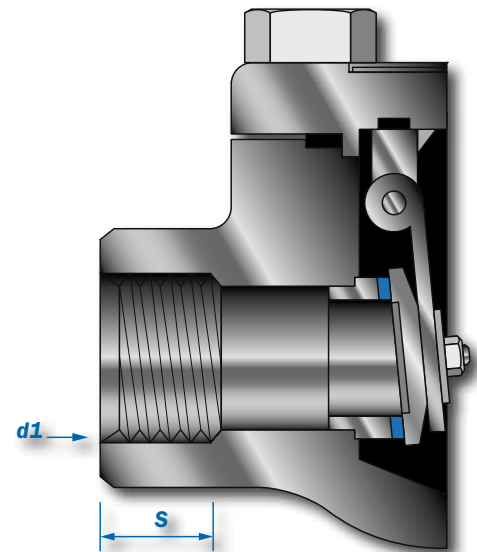
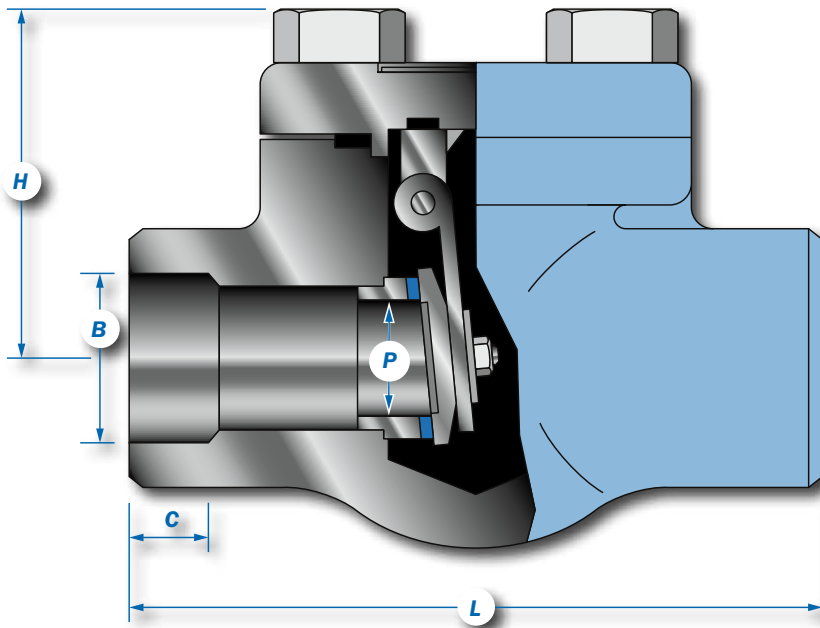
- Renewable disc with Teflon insert good to -100°F.
- Renewable disc with KEL-F insert good to -325°F.
- Pressure relief vent hole.

Forged Regular Port Swing Check Valves

Model: SC080 and SC150 SE/SW/TS
 Socket Weld & Threaded
 Class: 800 & 1500
 Sizes: 1/2" thru 2"

Design and Manufacturing Standards

Valve Design: API 602 & B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding & Threaded: ASME B16.11
Tested in Accordance with: API 598



Class 800 SC080									
IN	H	L	P	End				Wt.	
				B	C	d1 (NPT)	S		
1/2	1.81	2.99	0.38	0.86	0.38	1/2	0.54	2.2	
15	46	76	10	22	10		14	1.0	
3/4	2.20	3.62	0.50	1.07	0.50	3/4	0.54	3.3	
20	56	92	13	27	13		14	1.5	
1	2.56	4.09	0.71	1.33	0.50	1	0.69	4.4	
25	65	104	18	34	13		18	2.0	
1-1/4	2.95	4.53	1.13	1.68	0.50	1-1/4	0.71	9.0	
30	75	115	29	43	13		18	4.1	
1-1/2	2.95	4.53	1.13	1.92	0.50	1-1/2	0.72	9.0	
40	75	115	29	49	13		18	4.1	
2	3.94	5.75	1.46	2.41	0.62	2	0.76	14.1	
50	100	146	37	61	16		19	6.4	

Class 1500 SC150									
IN	H	L	P	End				Wt.	
				B	C	d1 (NPT)	S		
1/2	2.20	3.62	0.38	0.86	0.38	1/2	0.54	3.3	
15	56	92	10	22	10		14	1.5	
3/4	2.56	4.09	0.50	1.07	0.50	3/4	0.54	4.4	
20	65	104	13	27	13		14	2.0	
1	2.95	4.53	0.71	1.33	0.50	1	0.69	9.0	
25	75	115	18	34	13		18	4.1	
1-1/4	3.94	5.75	1.13	1.68	0.50	1-1/4	0.71	14.1	
30	100	146	29	43	13		18	6.4	
1-1/2	3.94	5.75	1.13	1.92	0.50	1-1/2	0.72	14.1	
40	100	146	29	49	13		18	6.4	
2	4.92	8.27	1.46	2.41	0.62	2	0.76	21.6	
50	125	210	37	61	16		19	9.8	

Note: Pipe threads, general purpose, inch: B1.20.1. Socket welding and thread: B16.11
 Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

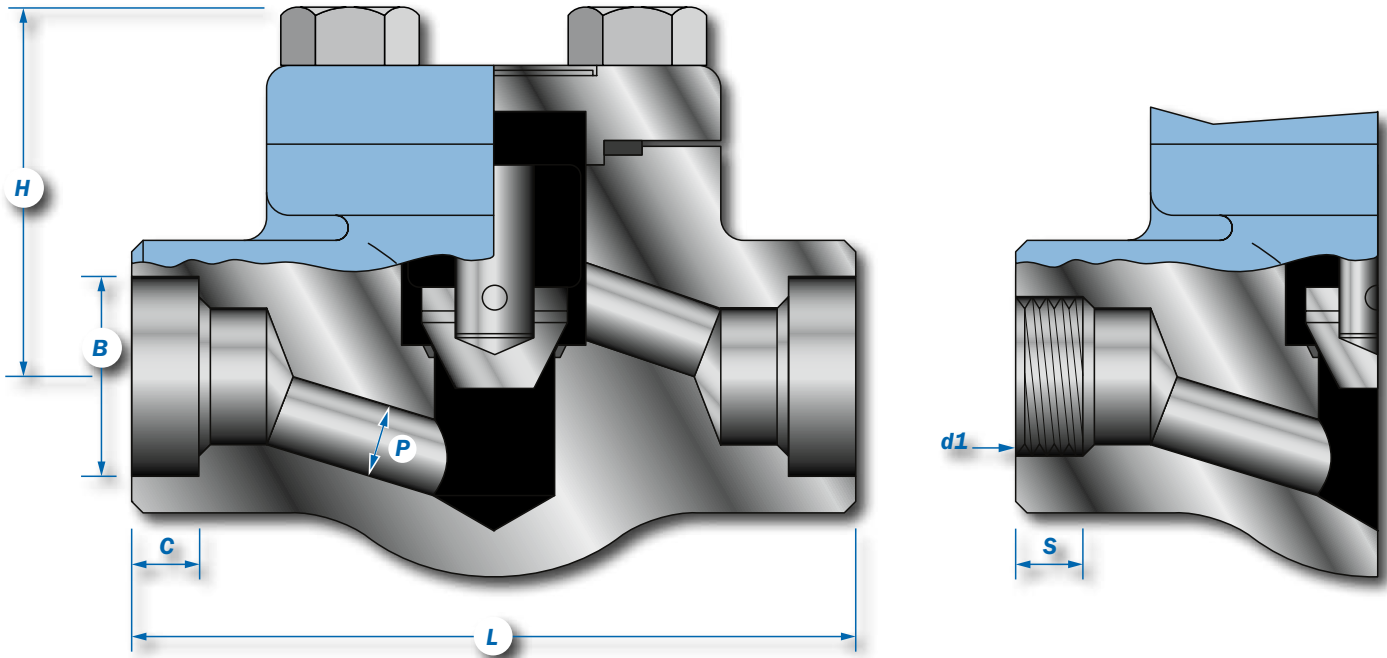
Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld

Forged Regular Port Lift Check Valves

Model: LC080 and LC 150 SE/SW/TS
 Socket Weld & Threaded
 Class: 800 & 1500
 Sizes: 1/2" thru 2"

Design and Manufacturing Standards

Valve Design: API 602 & B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding & Threaded: ASME B16.11
Tested in Accordance with: API 598



Class 800 LC080									
IN	H	L	P	End				Wt.	
				B	C	d1 (NPT)	S		
1/2	1.81	2.99	0.38	0.86	0.38	1/2	0.54	2.2	
15	46	76	10	22	10		14	1.0	
3/4	2.20	3.62	0.50	1.07	0.50	3/4	0.54	3.3	
20	56	92	13	27	13		14	1.5	
1	2.56	4.09	0.69	1.33	0.50	1	0.69	4.4	
25	65	104	17.5	34	13		18	2.0	
1-1/4	2.95	5.51	1.16	1.68	0.50	1-1/4	0.71	9.0	
30	75	140	29.5	43	13		18	4.1	
1-1/2	2.95	5.51	1.16	1.92	0.50	1-1/2	0.72	9.0	
40	75	140	29.5	49	13		18	4.1	
2	3.94	5.75	1.38	2.41	0.62	2	0.76	14.1	
50	100	146	35.1	61	16		19	6.4	

Class 1500 LC150									
IN	H	L	P	End				Wt.	
				B	C	d1 (NPT)	S		
1/2	2.20	3.62	0.37	0.86	0.38	1/2	0.54	3.3	
15	56	92	9.40	22	10		14	1.5	
3/4	2.56	4.09	0.50	1.07	0.50	3/4	0.54	4.4	
20	65	104	12.7	27	13		14	2.0	
1	2.95	5.51	0.63	1.33	0.50	1	0.69	9.0	
25	75	140	16.0	34	13		18	4.1	
1-1/4	3.94	5.75	1.06	1.68	0.50	1-1/4	0.71	14.1	
30	100	146	26.9	43	13		18	6.4	
1-1/2	3.94	5.75	1.06	1.92	0.50	1-1/2	0.72	14.1	
40	100	146	26.9	49	13		18	6.4	
2	4.92	8.27	1.38	2.41	0.62	2	0.76	21.6	
50	125	210	35.1	61	16		19	9.8	

Note: Pipe threads, general purpose, inch: B1.20.1. Socket welding and thread: B16.11
 Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Dimensions are subject to change without notice.

Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld

They said manufacturing left the U.S.A.
We Never Did.

COOPER®
Valves

**Manufacturing Exotic and Nickel Alloy
valves since before you were born.**

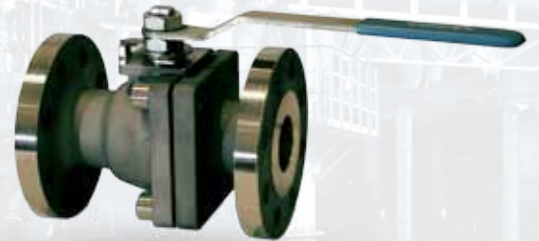


Est. 1934

www.coopervalves.com | sales@coopervalves.com | +1.800.480.0832

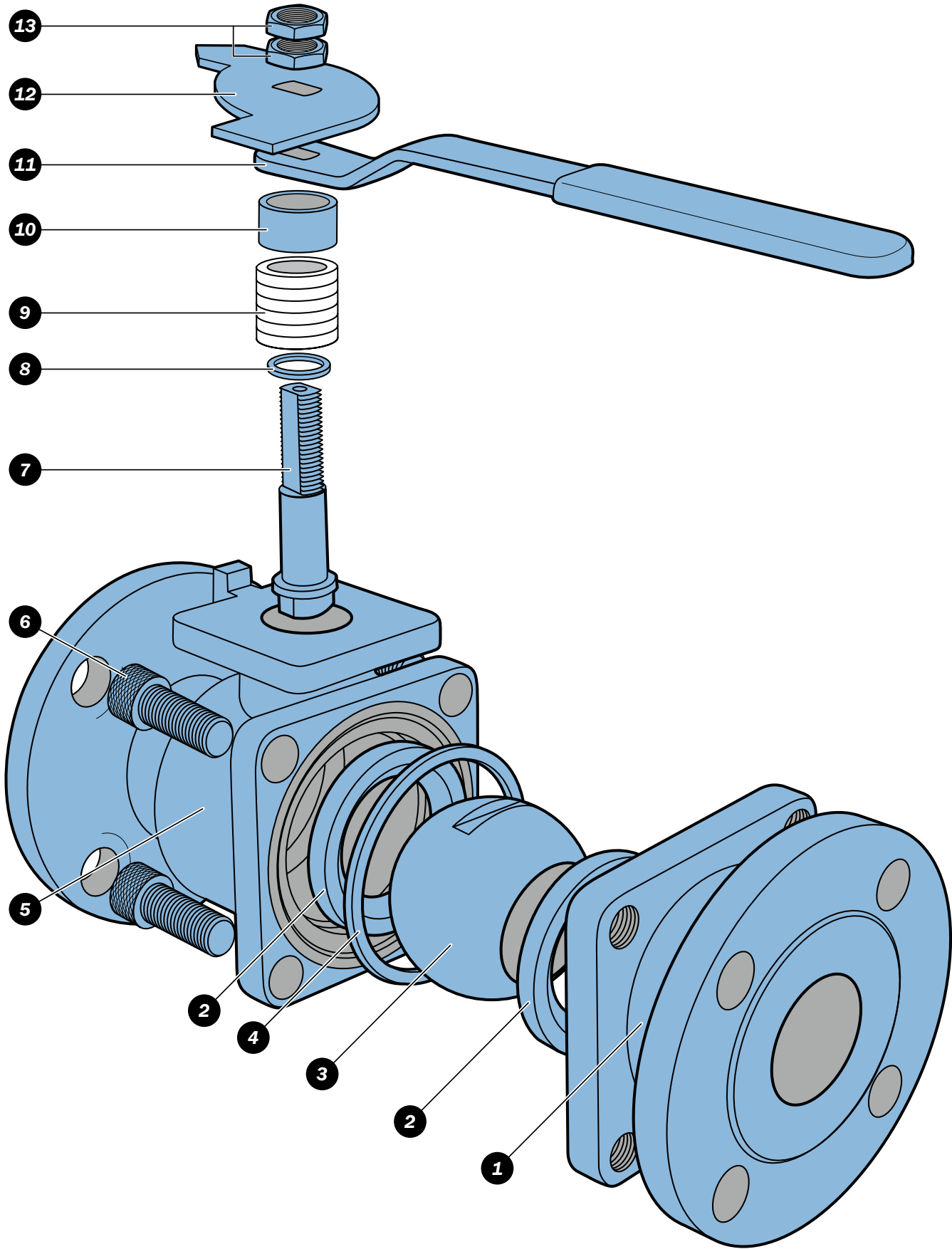
RFID Enabled by:  www.idstags.com

Soft Seated Ball Valves



Typical Cooper 2-Piece Cast Ball Valve Expanded View

1. **End Piece:** The end piece is built to the same standards as the bodies.
 2. **Seat:** The seat ensures positive shutoff for pressure or vacuum services.
 3. **Ball:** Cooper's ball is machined to the tightest tolerances to ensure trouble free shutoff and cycling.
 4. **Body Seal:** The body seal creates a leakproof seal between the body and end piece.
 5. **Body:** Cooper nickel alloy bodies provide optimum strength and corrosion resistance.
 6. **Body & End Piece Bolting:** The body and end piece bolting secures the body to the end piece.
 7. **Stem:** Blow-out proof stem ensures the valve stem cannot be blown out of the body under pressure.
 8. **Thrust Bearing:** The thrust bearing provides back seating, protection, and reduces friction and loading.
 9. **Packing:** The packing creates a seal above the back seat, between the bonnet and the stem.
 10. **Stem Bushing:** Compresses the packing and thrust bearing to create a stem seal. Stem Bushing is same as body material.
 11. **Lever:** Cycles the valve.
 12. **Stop Plate:** The stop plate prevents the stem turning past 90°.
 13. **Handle Nuts:** These secure the lever to the stem.
- Anti Static Spring:** (not shown) Ensures electrical continuity between the body, ball, and stem.

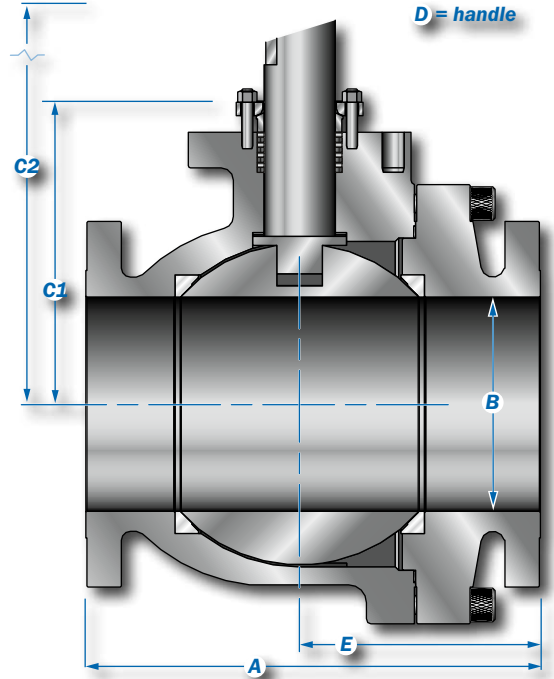
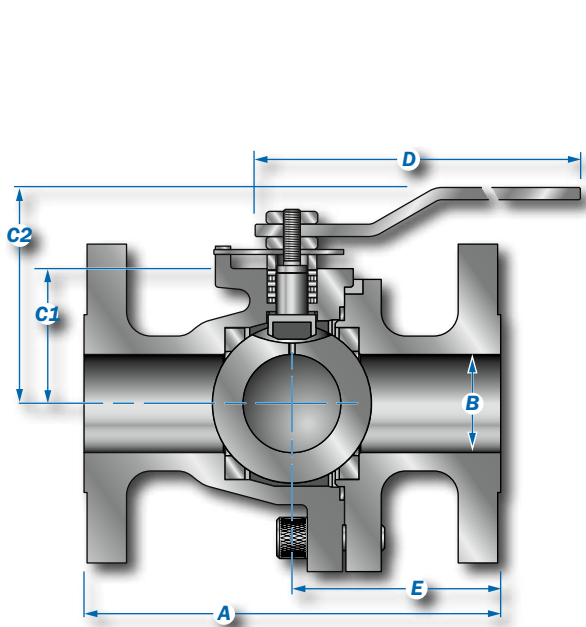


Cast Full Port 2-Piece Ball Valves

Model: 2B015, 2B030, 2B060
 Class: 150, 300, 600
 Sizes: 1/2" thru 12"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598
API 607 Rev 4*



Class 150 Model 2B015							
IN	A	B	C1	C2	D	E	Wt.
MM							
1/2	4.25	0.50	1.38	3.00	7.31	2.13	5
15	108	15	35	76	186	54	
3/4	4.63	0.75	1.63	3.38	7.31	2.31	7
20	118	20	41	86	186	59	3
1	5.00	1.00	1.69	2.88	7.34	2.50	8
25	127	25	43	73	186	64	4
1-1/2	6.50	1.50	2.56	3.94	9.47	3.25	15
40	165	40	65	10	241	83	7
2	7.00	2.00	2.75	4.44	13.56	3.50	25
50	178	50	70	113	344	89	11
3	8.00	3.00	4.13	6.75	20.00	4.00	48
80	203	76	105	171	508	102	22
4	9.00	4.00	5.00	7.56	20.00	4.63	83
100	229	102	127	192	508	118	38
6	10.50	6.00	6.69	10.00	30.00	5.44	125
150	267	152	170	254	762	138	57
8	18.00	8.00	8.34	-	-	9.03	225
200	457	203	212	-	-	229	102
10	21.00	10.00	12.00	-	-	10.50	350
250	533	254	305	-	-	267	159
12	24.00	12.00	15.25	-	-	12.00	530
300	610	305	387	-	-	305	241

Class 300 Model 2B030							
IN	A	B	C1	C2	D	E	Wt.
MM							
1/2	5.50	0.50	1.38	3.00	7.31	2.75	6
15	140	15	35	76	186	70	3
3/4	6.00	0.75	1.63	3.38	7.31	3.00	9
20	152	20	41	86	186	76	4
1	6.50	1.00	2.25	3.41	7.34	3.25	10
25	165	25	57	87	186	83	5
1-1/2	7.50	1.50	2.56	3.94	9.47	3.75	22
40	191	40	65	100	241	95	10
2	8.50	2.00	2.75	4.48	13.56	4.25	28
50	216	50	70	114	344	108	13
3	11.13	3.00	4.13	6.88	20.00	6.69	60
80	283	76	105	175	508	170	27
4	12.00	4.00	5.34	8.03	20.00	6.00	110
100	305	102	136	204	508	152	50
6	15.88	6.00	7.56	12.50	30.00	7.91	195
150	403	152	192	318	762	201	
8	19.75	8.00	9.44	-	-	9.19	325
200	502	203	240	-	-	233	148
10	22.38	10.00	13.63	-	-	11.63	470
250	568	254	346	-	-	295	214
12	25.50	12.00	-	-	-	13.50	765
300	648	305	-	-	-	343	348

Class 600 Model 2B060							
IN	A	B	C1	C2	D	E	Wt.
MM							
1/2	6.50	0.50	1.38	3.13	7.31	3.50	7
15	165	15	35	80	186	89	3
3/4	7.50	0.75	1.63	3.50	7.31	4.25	10
20	191	20	41	89	186	108	5
1	8.50	1.00	2.25	3.41	7.34	5.00	12
25	216	25	57	87	186	127	5
1-1/2	9.50	1.50	2.81	4.19	9.47	5.38	25
40	241	40	71	106	241	137	11
2	11.50	2.00	3.00	4.94	13.06	6.88	33
50	292	50	76	125	332	175	15
3	14.00	3.00	4.13	6.88	20.00	9.19	80
80	356	76	105	175	508	233	36
4	17.00	4.00	5.34	8.88	30.00	10.53	135
100	432	102	136	226	762	267	61
6	22.00	6.00	7.56	12.50	30.00	13.34	235
150	559	152	192	318	762	339	107
8	-	-	-	-	-	-	-
200	-	-	-	-	-	-	-
10	31.00	10.00	12.31	-	-	18.60	1108
250	787	254	313	-	-	472	504

Class 900 & 1500 are available upon request

Connection Suffix	
Valve Model Suffix	Connection
RF	Raised Face
RTJ	Ring Type Joint
BW*	Butt Weld

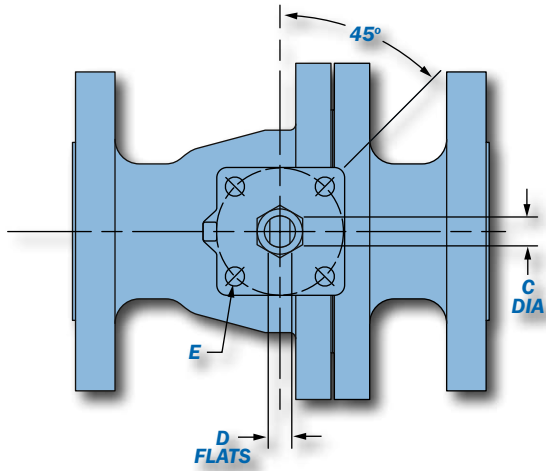
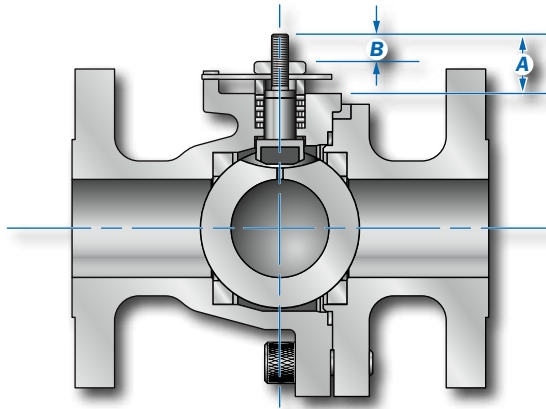
*BW Available Upon Request

Cast Full Port 2-Piece Ball Valves - Top Work Design

Model: 2B015, 2B030, 2B060
 Class: 150, 300, 600
 Sizes: 1/2" thru 2"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598
API 607 Rev 4*



Class 150 Model 2B015					
IN	Approximate Dimensions				
MM	A	B	C	D	E
1/2	0.56	0.41	.373/.366	.215/.213	1/4-28 UNF (thru) on a 1.781 DIA. B. C.
15	14	10	9	5	
3/4	0.75	0.44	.374/.367	.215/.213	1/4-28 UNF (thru) on a 1.945 DIA. B. C.
20	19	11	9	5	
1	1.06	0.63	.436/.428	.295/.292	1/4-28 UNF (thru) on a 1.943 DIA. B. C.
25	27	16	11	7	
1-1/2	1.31	0.75	.561/.553	.340/.338	3/8-24 UNF (thru) on a 2.475 DIA. B. C.
40	33	19	14	9	
2	1.19	0.56	.625/.616	.343/.340	3/8-24 UNF (thru) on a 2.500 DIA. B. C.
50	30	14	16	9	

Class 300 Model 2B030					
IN	Approximate Dimensions				
MM	A	B	C	D	E
1/2	0.56	0.41	.373/.366	.215/.213	1/4-28 UNF (thru) on a 1.781 DIA. B. C.
15	14	10	9	5	
3/4	0.75	0.44	.374/.367	.215/.213	1/4-28 UNF (thru) on a 1.945 DIA. B. C.
20	19	11	9	5	
1	0.84	0.38	.436/.428	.295/.292	1/4-28 UNF (thru) on a 1.969 DIA. B. C.
25	21	10	11	7	
1-1/2	1.31	0.75	.561/.553	.340/.338	3/8-24 UNF (thru) on a 2.457 DIA. B. C.
40	33	19	14	9	
2	1.19	0.56	.625/.616	.343/.340	3/8-24 UNF (thru) on a 2.500 DIA. B. C.
50	30	14	16	9	

Class 600 Model 2B060					
IN	Approximate Dimensions				
MM	A	B	C	D	E
1/2	0.56	0.31	.373/.366	.215/.213	1/4-28 UNF (thru) on a 1.781 DIA. B. C.
15	14	8	9	5	
3/4	0.75	0.34	.374/.367	.215/.213	1/4-28 UNF (thru) on a 1.945 DIA. B. C.
20	19	9	9	5	
1	0.84	0.36	.436/.428	.295/.292	1/4-28 UNF (thru) on a 1.944 DIA. B. C.
25	21	9	11	7	
1-1/2	1.31	0.53	.561/.553	.340/.338	3/8-24 UNF (thru) on a 2.500 DIA. B. C.
40	33	13	14	9	
2	1.72	0.91	.874/.865	.500/.497	3/8-24 UNF (thru) on a 2.500 DIA. B. C.
50	44	23	22	13	

Class 900 & 1500 are available upon request

Cast Full Port 2-Piece Ball Valves - Top Work Design

Model: 2B015, 2B030, 2B060
 Class: 150, 300, 600
 Sizes: 3" thru 12"

Design and Manufacturing Standards

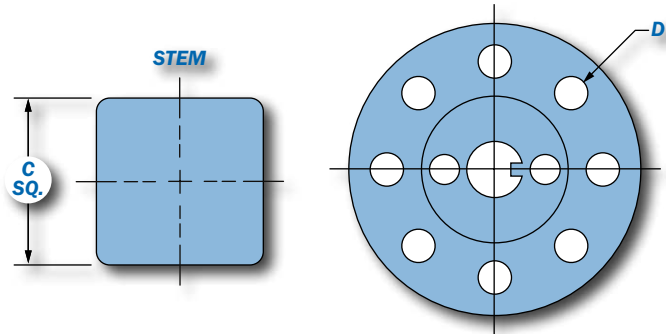
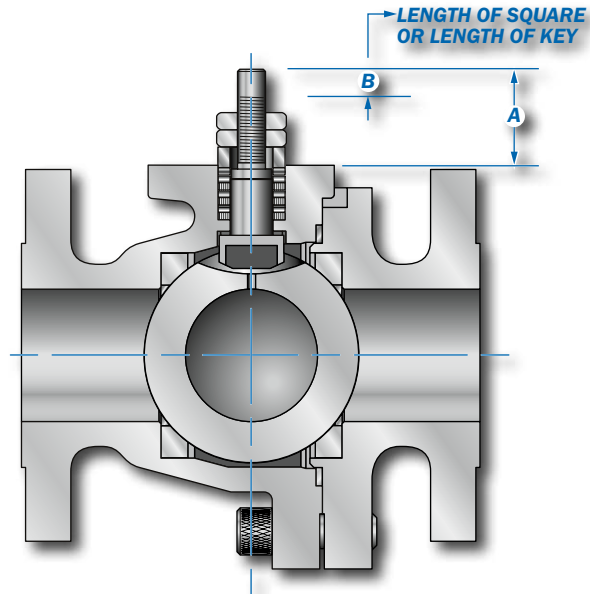
Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598
API 607 Rev 4*

Class 150 Model 2B015				
IN	Approximate Dimensions			
MM	A	B	C	D
3	2.69	1.03	.874/.872	3/8-24 UNF (thru) on a 3.375 DIA. B. C.
80	68	26	22	
4	2.63	1.03	.874/.872	3/8-24 UNF (thru) on a 3.890 DIA. B. C.
100	67	26	22	
6	3.00	1.25	1.128/1.126	1/2-20 UNF (thru) on a 4.596 DIA. B. C.
150	76	32	29	
8	3.25	1.25	1.38	1/2-20 UNF (thru) 1/2" DP, on a 6" DIA. B. C.
200	83	32	35	
10	5.69	3.75	0.50	11/16 DIA (thru) on a 8" DIA. B. C.
250	145	95	13	
12	8.69	4.50	1.00	3/4-10 UNF (thru) on a 10.25 DIA. B. C.
300	221	114	25	

Class 300 Model 2B030				
IN	Approximate Dimensions			
MM	A	B	C	D
3	2.69	1.03	.874/.872	3/8-24 UNF (thru) on a 3.375 DIA. B. C.
80	68	26	22	
4	2.59	1.03	.874/.872	3/8-24 UNF, 3/4 DP, on a 3.889 DIA. B. C.
100	66	26	22	
6	3.94	1.75	1.749/1.746	1/2-20 UNF (thru), 3/4 DP, on a 4.594 DIA. B. C.
150	100	44	44	
8	12.75	4.50	0.63	3/4-10 UNF, 1-1/8 DP, on a 7.00 DIA. B. C.
200	324	114	16	
10	7.44	5.00	0.75	3/4-10 UNF, 7/8 DP, on a 10.50 DIA. B. C.
250	189	127	19	
12	10.03	5.63	1.25	1-1/4-8 UNF, 1-3/4 DP, on a 10.50 DIA. B. C.
300	255	143	32	

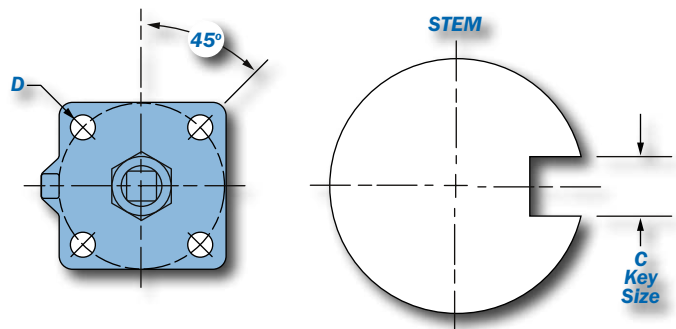
Class 600 Model 2B060				
IN	Approximate Dimensions			
MM	A	B	C	D
3	2.69	1.03	.874/.872	3/8-24 UNF, 1/2 DP, on a 3.375 DIA. B. C.
80	68	26	22	
4	3.09	1.25	1.128/1.126	3/8-24 UNF, 3/4 DP, on a 3.890 DIA. B. C.
100	78	32	29	
6	3.94	1.75	1.749/1.746	5/8-11 UNF, 3/4 DP, on a 4.594 DIA. B. C.
150	100	44	44	

Class 900 & 1500 are available upon request



3" THRU 6" - 150#, 300#, 600#
8" - 150#

10" - 300#
12" - 150# + 300#



3" THRU 6" - 150#, 300#, 600#
8" - 150#, 300#
10" - 150#

10" - 300#
12" - 150#
8" THRU 12" - 300#

Extreme Valve

Extreme Service

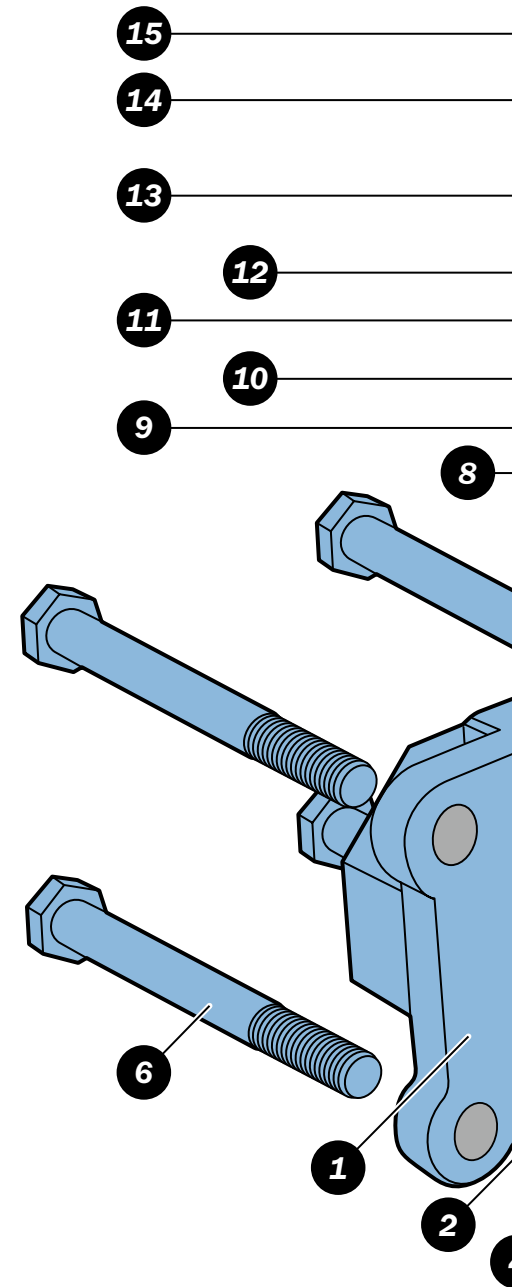


COOPER[®]
Valves

www.coopervalves.com | +1.800.480.0832

Typical Cooper Cast 3-Piece Ball Valve Expanded View

1. **End Pieces:** The end pieces are built to the same high standards as the bodies.
2. **Seat:** The seat ensures positive shutoff for pressure or vacuum services.
3. **Ball:** Cooper's ball is machined to the tightest tolerances to ensure trouble free shutoff and cycling.
4. **Body Seal:** The body seal creates a leakproof seal between the body and end piece.
5. **Body:** Cooper nickel alloy bodies provide optimum strength and corrosion resistance.
6. **Body & End Pieces Bolting:** The body and end piece bolting secures the body to the end piece.
7. **Stem:** Blow-out proof stem ensures the valve stem cannot be blown out of the body under pressure.
8. **Thrust Bearing:** The thrust bearing provides back seating, protection, and reduces friction and loading.
9. **Packing:** The packing creates a seal above the back seat, between the bonnet and the stem.
10. **Stem Bushing:** Compresses the packing and thrust bearing to create a stem seal. Stem Bushing is same as body material.
11. **Belleville Washer:** Releases stored compression energy for automatic compensation of seals due to wear and tear.
12. **Stem Nut:** Compresses the center stem system to enable blocking of leakage.
13. **Stop Plate:** Prevents the stem turning past 90°.
14. **Lever:** Cycles the valve.
15. **Handle Nut:** Secures the lever to the stem.

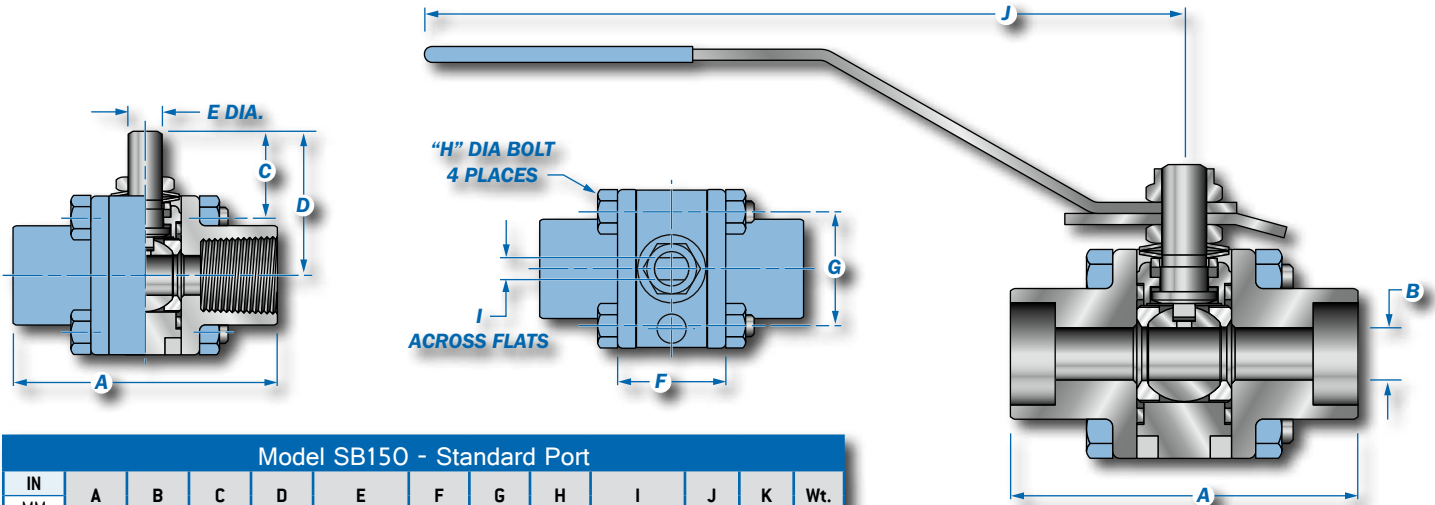


Cast 3-Piece Ball Valve

Model: 3B150 SE/TS/SW
 Standard & Full Port: 1500 PSI/WOG
 Sizes: 1/4" thru 3"

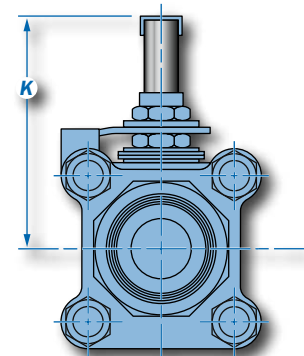
Design and Manufacturing Standards

Valve Design: B16.34
Pipe Threads, General Purpose, Inch: ASME B1.20.1
Socket Welding & Threaded: ASME B16.11
Tested in Accordance with: API 598



Model SB150 - Standard Port												
IN MM	A	B	C	D	E	F	G	H	I	J	K	Wt.
1/4	2.91	0.44	1.06	1.59	.374/.367	1.19	1.25	0.25	.215/.213	4.75	1.94	2
5	74	11	27	40	9	30	32	6	5	121	49	1
3/8	2.91	0.44	1.06	1.59	.374/.367	1.19	1.25	0.25	.215/.213	4.75	1.94	2
10	74	11	27	40	9	30	32	6	5	121	49	1
1/2	2.91	0.44	1.06	1.59	.374/.367	1.19	1.25	0.25	.215/.213	4.75	1.94	2
15	74	11	27	40	9	30	32	6	5	121	49	1
3/4	3.09	0.56	1.03	1.69	.374/.367	1.44	1.50	0.25	.215/.213	4.75	2.00	2.5
20	78	14	26	43	9	37	38	6	5	121	51	1
1	3.75	0.81	1.31	2.19	.436/.428	1.88	1.75	0.31	.295/.292	5.88	2.25	3.5
25	95	21	33	56	11	48	44	8	7	149	57	2
1-1/4	4.16	1.00	1.38	2.38	.436/.428	2.41	2.00	0.31	.295/.292	5.88	2.50	5
30	106	25	35	60	11	61	51	8	7	149	64	2
1-1/2	4.53	1.25	1.75	2.88	.561/.552	2.69	2.25	0.38	.340/.338	7.63	3.00	7
40	115	32	44	73	14	68	57	10	9	194	76	3
2	5.00	1.50	1.78	3.09	.561/.552	3.13	2.63	0.38	.340/.338	7.63	3.25	10
50	127	38	45	78	14	80	67	10	9	194	83	5
3	7.25	2.50	2.81	4.94	.874/.872	5.00	4.22	0.75	.500/.497	9.50	6.00	35
80	184	64	71	125	22	127	107	19	13	241	152	16

Model SB150 - Full Port												
IN MM	A	B	C	D	E	F	G	H	I	J	K	Wt.
1/4	2.91	0.25	1.06	1.59	.374/.367	1.19	1.25	0.25	.215/.213	4.75	1.94	2
5	74	6	27	40	9	30	32	6	5	121	49	1
3/8	2.91	0.38	1.06	1.59	.374/.367	1.19	1.25	0.25	.215/.213	4.75	1.94	2
10	74	10	27	40	9	30	32	6	5	121	49	1
1/2	3.09	0.50	1.03	1.69	.374/.367	1.44	1.50	0.25	.215/.213	4.75	2.00	2
15	78	13	26	43	9	37	38	6	5	121	51	1
3/4	3.75	0.75	1.31	2.19	.374/.367	1.88	1.75	0.31	.215/.213	5.88	2.25	3
20	95	19	33	56	9	48	44	8	5	149	57	1
1	4.16	1.00	1.38	2.38	.436/.428	2.41	2.00	0.31	.295/.292	5.88	2.50	5
25	106	25	35	60	11	61	51	8	7	149	64	2
1-1/4	4.53	1.25	1.75	2.88	.436/.428	2.69	2.25	0.38	.295/.292	7.63	3.00	6.5
30	115	32	44	73	11	68	57	10	7	194	76	3
1-1/2	5.00	1.50	1.78	3.09	.561/.552	3.13	2.63	0.38	.340/.338	7.63	3.25	8
40	127	38	45	78	14	80	67	10	9	194	83	4
2	5.94	2.00	2.09	3.75	.561/.552	3.88	3.31	0.63	.340/.338	9.50	4.00	16.5
50	151	51	53	95	14	99	84	16	9	241	102	8
3	7.25	3.00	4.44	6.88	.874/.872	5.50	4.84	0.88	.874/.872	10.00	7.00	40
80	184	76	113	175	22	140	123	22	22	254	178	18



Connection Suffix	
Valve Model Suffix	Connection
SE	Screwed End
SW	Socket Weld
TS	Thread by Socket Weld
BW	Butt Weld
TE	Tube End

Note: Pipe threads, general purpose, inch: B1.20.1. Socket welding and thread: B16.11
 Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.

Special Application Ball Valves

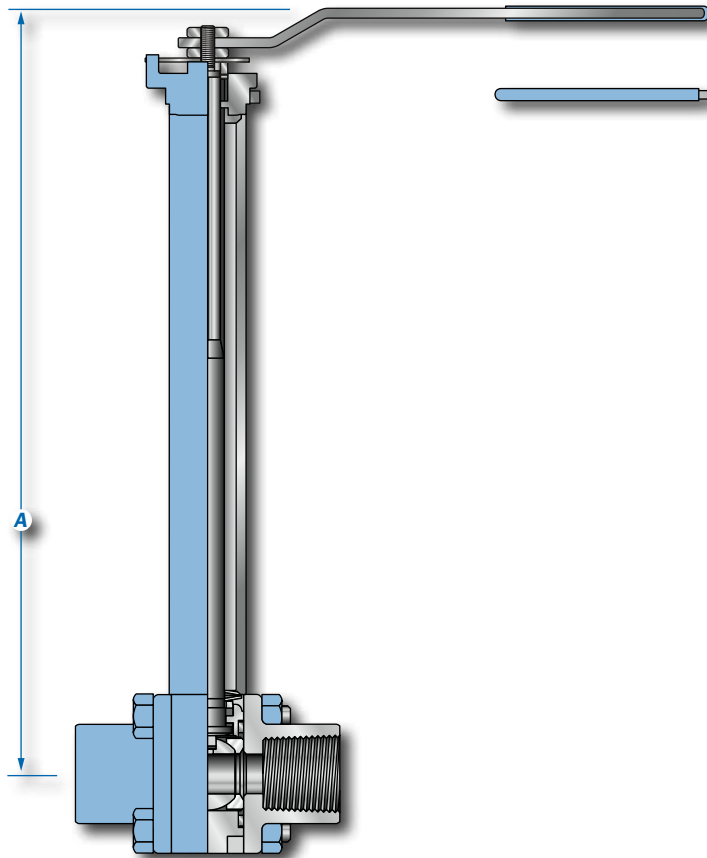
Cryogenic & Extended Stem
1500 PSI/WOG
Sizes: 1/4" thru 3"

Design and Manufacturing Standards

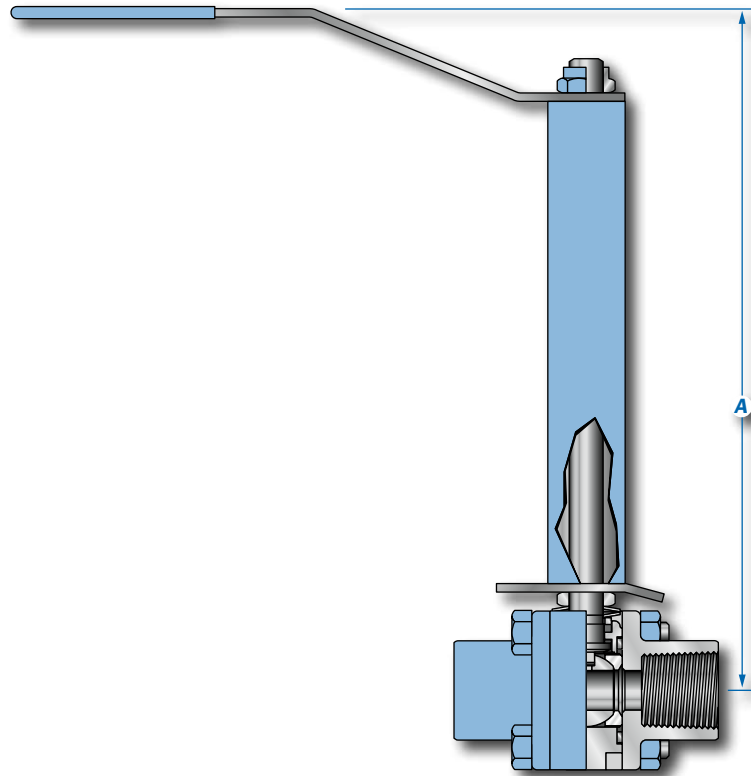
Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: API 598

Special Advantages

- Reinforced TFE seats and seals
- Secondary metal-to-metal seat
- Self-adjusting packing
- Blowout-proof stem
- Three (3) piece design metal seated
- Three (3) piece design bar stock
- 1/4" thru 3" standard and full port
- Cooperfill™ 133 thrust bearing – exceptionally long life
- Pressures: vacuum to 1500 PSI
- Ends: threaded, socketweld, buttweld & sanitary
- Materials: cast stainless steel & exotic alloy
- All valves hydrostatically tested to ASME, MSS, or API specifications
- All valves serialized – full traceability of materials
- Flexible manufacturing facility – widest choice of special applications in the industry



Standard extended bonnet "A" dimension available in 3", 4", 6" & 8" lengths. Other lengths available on request.



Standard extended stem "A" dimension available in 3", 4", 6" & 8" lengths. Other lengths available on request.

COOPER® Valves

First Seven Digits to Appear on Valve Tag Only

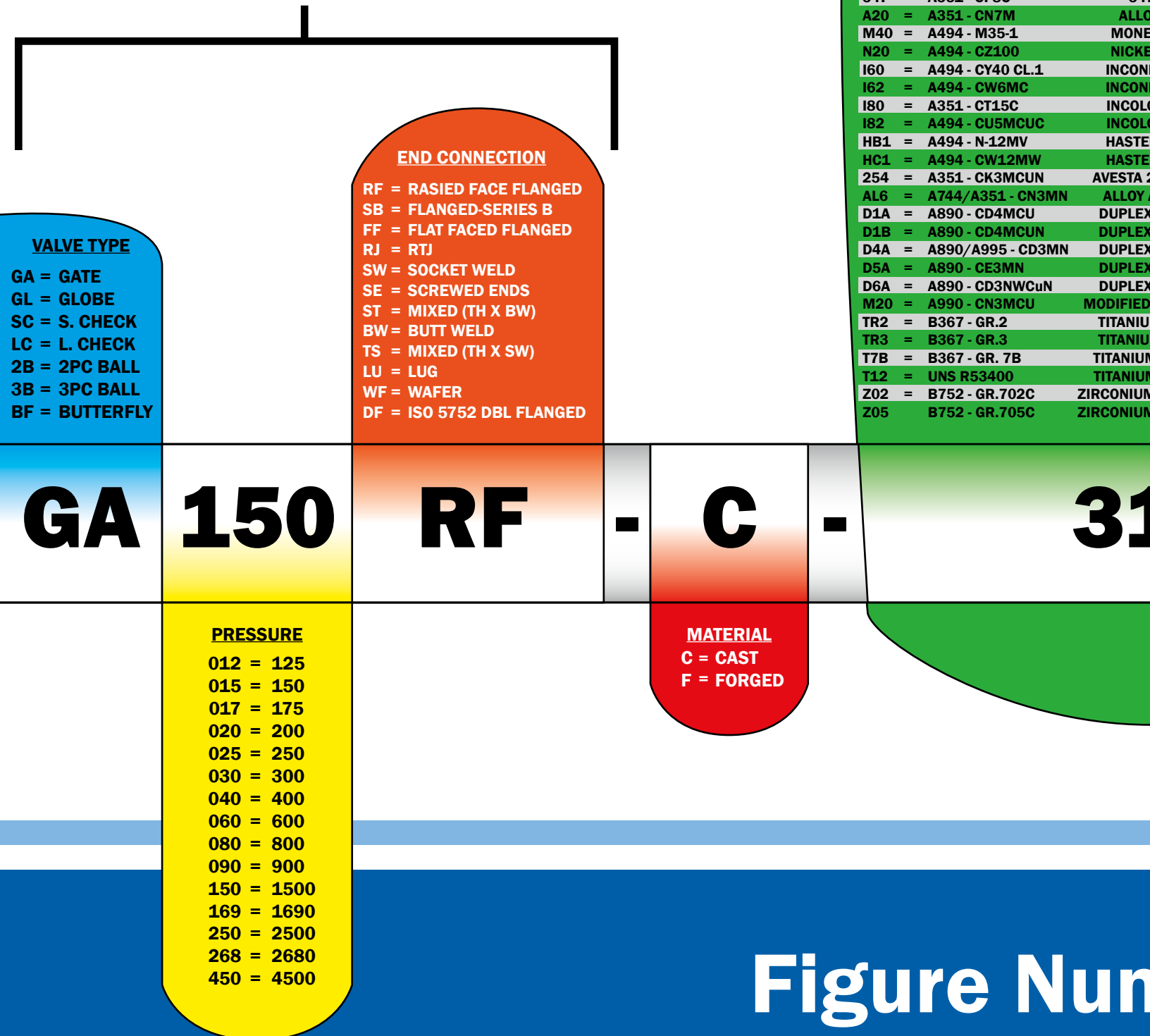


Figure Number

MATERIAL

FORGED

SS	304	=	A182 - F304
SS	34L	=	A182 - F304L
SS	316	=	A182 - F316
SS	36L	=	A182 - F316L
SS	317	=	A182 - F317
7L	37L	=	A182-317L
SS	347	=	A182 - F347
Y 20	A20	=	ALLOY 20
L 400	M40	=	MONEL 400
L 200	N20	=	NICKEL 200
L 600	I60	=	INCONEL 600
L 625	I62	=	INCONEL 625
Y 800	I80	=	INCOLOY 800
Y 825	I82	=	INCOLOY 825
ALLOY B			
ALLOY C	HC1	=	HASTELLOY C
254 SMO			
AG-6XN			
GR. 1A			
GR. 1B			
GR. 4A	D4A	=	A182 - F51
GR. 5A	D5A	=	A182 - F53
GR. 6A			
ALLOY 20			
M GR. 2			
M GR. 3			
M GR. 7B			
M GR. 12			
M GR. 702C			
M GR. 705C			

SPECIAL CODE

- CR = CRYOGENIC
- EX = STEM EXTENSION
- HS = HALF STELLITE
- FS = FULL STELLITE
- SP = SPECIAL
- NC = NACE
- MV = MODIFIED VALVE

PORT

- F = FULL
- R = REDUCED

L6

/

10

-

F

H

SP

TRIM MATERIAL

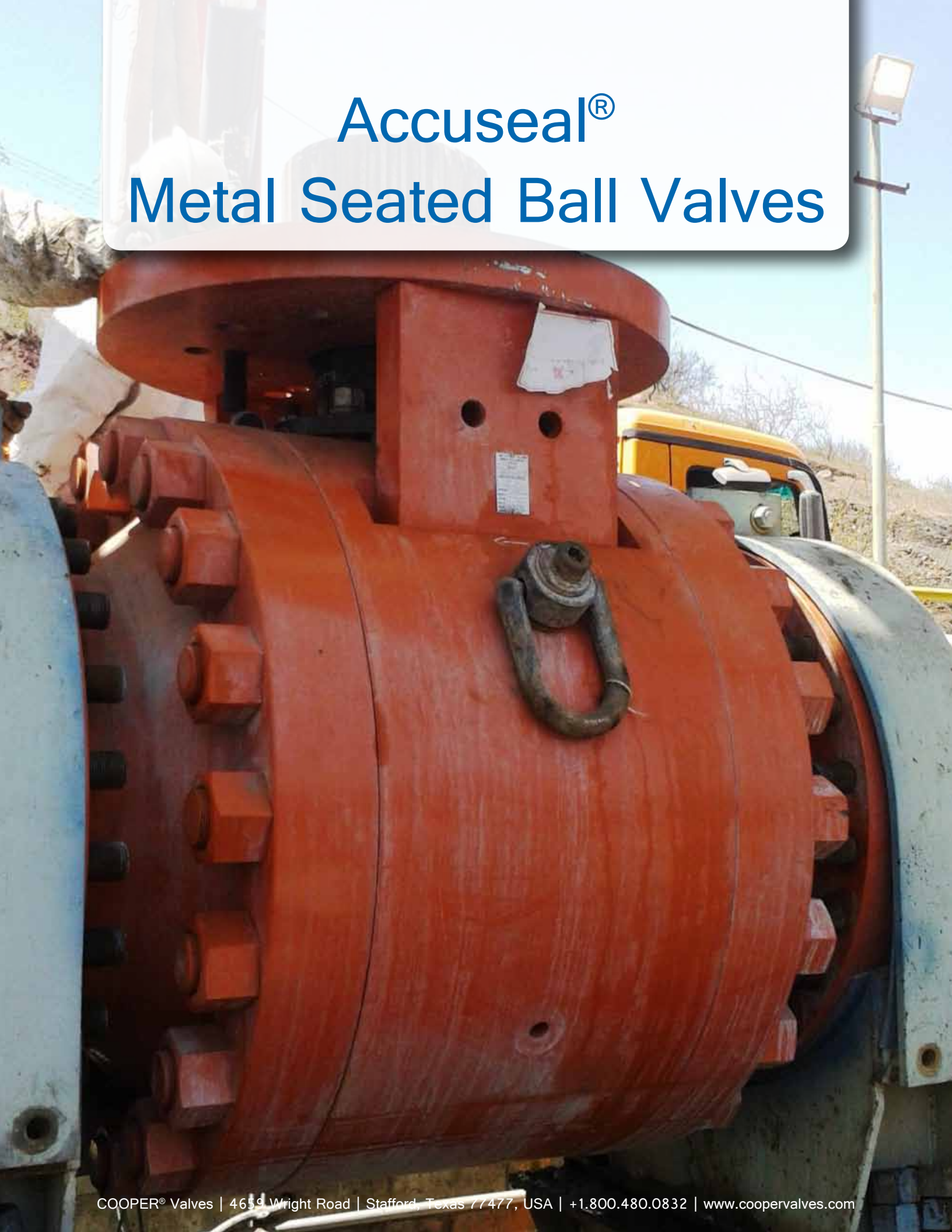
- 00 = SAME AS BODY
- 01 = F6A (13% CR) - API TRIM 1
- 05 = 13% CR - FULL STELLITE - API TRIM 5
- 08 = 13% CR - 1/2 STELLITE - API TRIM 8
- 10 = 316 SS - API TRIM 10
- 12 = 316 - 1/2 STELLITE - API TRIM 12
- 13 = ALLOY 20 - API TRIM 13
- 16 = 316 - FULL STELLITE - API TRIM 16
- SP = SPECIAL

TYPE OPERATION

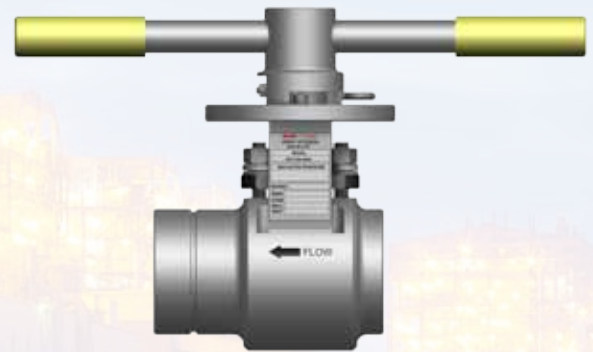
- A = BEVEL GEAR
- B = CHAIN WHEEL
- C = BARE STEM
- D = MOUNTING PAD ONLY
- E = LEVER & WEIGHTS
- F = PNEUMATIC OPER.
- G = WORM GEAR
- H = HAND OPER.
- O = OTHER
- X = NO OPERATOR (CHECK)

Number Guide

Accuseal[®] Metal Seated Ball Valves



Accuseal[®] Steam Power Ball Valves

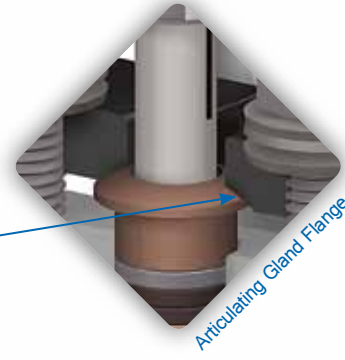
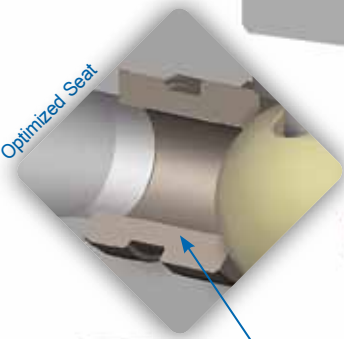
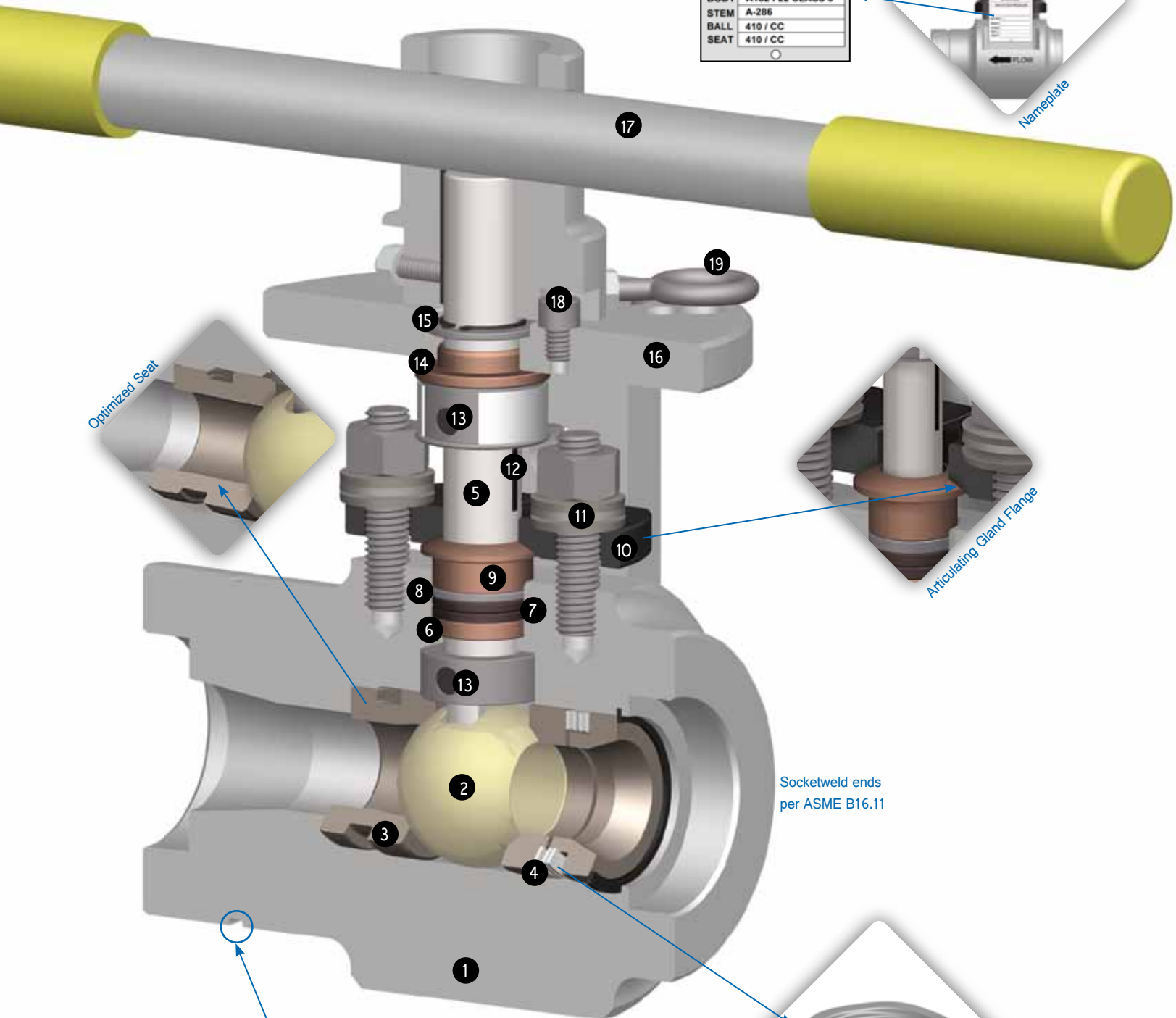


Accuseal[®] SPBV Features and Benefits

1. **Body** – one-piece machined forged bar stock
 - Mechanical and chemical integrity ensured — NO body leaks
 - Extended integral end-connect protects during Post Weld Heat Treat (PWHT)
2. **Ball** – OMNI-LAP 360[°]™
 - Optimized roundedness
 - 100% seal eliminates leak path
3. **Seat**
 - Optimized seat geometry maintains maximum seal, even during thermal transience
 - Ball and seat are same material ensuring matched thermal expansion rates
4. **Wave Spring**
 - Superior performance to Belleville springs
 - More predictable force on ball to seat seal—even at low pressure
 - Longer spring life means longer valve life
5. **Stem** – One piece with surface hardening
 - Eliminates galling potential between rotating parts
 - Stem standard ASME keyed for reliable adaption
6. **Packing Bushing**
 - Prevents packing intrusion into body
 - Eliminates lateral stem motion
 - Most secure stem seal — regardless of orientation
7. **Grafoil Packing Rings**
 - Premium die-formed
 - Pre-stressed to a specific density
 - Optimal packing resiliency for extended life
8. **Grafoil Anti-extrusion Ring**
 - Die-formed with skive-cut Inconel wire reinforcement
 - Prevents packing extrusion
9. **Packing Follower**
 - Thermally matched to the stem material
 - Prevents galling and contains upper packing
10. **Articulating Gland Flange**
 - Spherically engages with packing follower
 - Prevents stem binding and galling during adjustments
11. **Live Loaded Packing**
 - Standard with Belleville spring washers
 - Eliminates routine gland adjustments
 - Reduces maintenance
 - Guarantees zero stem emissions
12. **Open/Closed Indicator**
 - Scribed lines on stem and articulating gland flange
 - Ensures proper ball to seat alignment
 - Positive Open/Closed indicator
13. **Dual Inconel 718 Pins**
 - Oversized pins contained in thrust collars
 - Blow-out proof stem to ASME B16.34
14. **Outboard Guide Bearing**
 - Provides positive stem alignment
 - Prevents lateral stem motion
15. **External Stem Retaining Ring**
 - Prevents ball misalignment during actuator installation
 - Stem cannot be forced into ball stem slot
16. **Mounting Flange**
 - Precision machined to ISO 5211
 - External mounting flange provides rigid mounting for ease of actuation
 - Direct mounting option reduces hysteresis and stem deflection
17. **Handle** – T-handle style
 - Adjusts for clearance in either direction
18. **Precision Mechanical Stop**
 - Prevents over-travel
 - Both lever-operated and automated valves are positively aligned
19. **Lockout Standard**
 - Fulfills Open/Closed lockout requirements



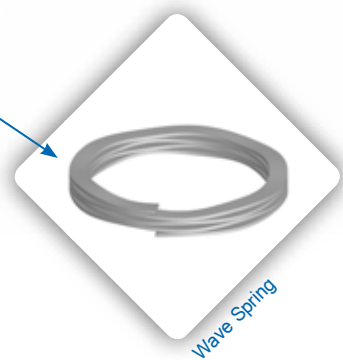
← FLOW	
COOPER ACCUSEAL B16.34 LTD	
MODEL	2.00-SPV106-3200
MAX RATED PRESSURE	8000 PSIG @38°C (100°F)
RATING	3200#
BODY	A182 F22 CLASS 3
STEM	A-286
BALL	410 / CC
SEAT	410 / CC
○	



Socketweld ends
per ASME B16.11



1 ring = F22 2 rings = A105 3 rings = F91
PWHT guide line per ASME B31.1





**Dependable ball valves for
the most severe service.**

COOPER[®]  **ACCUSEAL**
a COOPER[®] Valves brand.

www.coopervalves.com | +1-800-480-0832

COOPER[®]
Valves

Accuseal[®] Steam Power Ball Valves

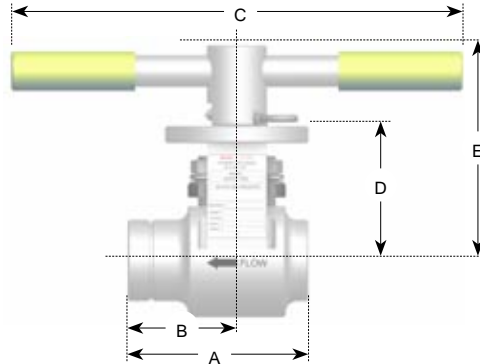
Model: SPBV055, SPBV072, SPBV106,
SPBV134
Class: 150 thru 1500 LTD
Sizes: 1/2" thru 2.5"

Design and Manufacturing Standards

Valve Design: B16.34

Socket Weld Dimensions: B16.11

Tested in Accordance with: B16.34, MSS SP-61, and
FCI 70-2 Class VI



Cv – ASME 600, 900, 1500 Limited Class

Bore (inches)	Pipe Size (inches) / Schedule											
	0.50 SCH 80	0.50 SCH 160	0.75 SCH 80	0.75 SCH 160	1.00 SCH 80	1.00 SCH 160	1.50 SCH 80	1.50 SCH 160	2.00 SCH 80	2.00 SCH 160	2.50 SCH 80	2.50 SCH 160
0.55	6	7	15	16	12	13	-	-	-	-	-	-
0.72	-	-	-	-	24	23	21	22	-	-	-	-
1.06	-	-	-	-	-	-	51	69	45	56	-	-
1.34	-	-	-	-	-	-	-	-	100	121	82	91

Dimension – ASME 600, 900, 1500 Limited Class

Model	Bore	Class	SW End	A		B		C		D		E		Weight	
				in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
SPBV055	0.55	1500	0.50	7.51	190.75	4.00	101.60	15.00	381.00	4.45	113.03	7.15	181.61	19	8.61
	0.55	1500	0.75	6.00	152.40	4.00	101.60	15.00	381.00	4.45	113.03	7.15	181.61	19	8.61
	0.55	1500	1.00	6.00	152.40	4.00	101.60	15.00	381.00	4.45	113.03	7.15	181.61	20	9.07
SPBV072	0.72	1500	1.00	6.00	152.40	3.63	92.08	15.00	381.00	4.45	113.03	7.15	181.61	19	8.61
	0.72	1500	1.50	6.00	152.40	3.63	92.08	15.00	381.00	4.45	113.03	7.15	181.61	20	9.07
SPBV106	1.06	1500	1.50	7.25	184.15	4.63	117.48	18.00	457.20	5.24	133.10	7.94	201.68	31	14.06
	1.06	1500	2.00	7.25	184.15	4.63	117.48	18.00	457.20	5.24	133.10	7.94	201.68	34	15.42
SPBV134	1.34	1500	2.00	8.25	209.55	5.13	130.18	18.00	457.20	5.63	143.00	8.73	221.74	45	20.41
	1.34	1500	2.50	8.25	209.55	5.13	130.18	18.00	457.20	5.63	143.00	8.73	221.74	47	21.31

Limited Class Pressure Rating vs. Temperature (ASME B16.34)

	Temp (°F)	-20° to 100°	200°	300°	400°	500°	600°	650°	700°	750°	800°	850°	900°	950°	1000°	1050°	1100°
	Temp (°C)	-29° to 38°	93°	149°	204°	260°	316°	343°	371°	399°	427°	454°	482°	510°	538°	566°	593°
ASME 600 LTD	A 105 (1)	1500	1500	1480	1465	1465	1465	1430	1380	1270	1030	N/A	N/A	N/A	N/A	N/A	N/A
	A 182 Gr. F11 Cl.2 (2)	1500	1500	1500	1500	1500	1500	1500	1465	1460	1440	1355	1175	801	554	369	246
	A 182 Gr. F22 Cl.3 (2)	1500	1500	1480	1455	1450	1440	1430	1415	1415	1415	1355	1200	953	687	446	282
	A 182 Gr. F91	1500	1500	1500	1500	1500	1500	1500	1465	1460	1440	1355	1200	953	862	862	774
ASME 900 LTD	A 105 (1)	2250	2250	2220	2200	2200	2200	2145	2075	1905	1545	N/A	N/A	N/A	N/A	N/A	N/A
	A 182 Gr. F11 Cl.2 (2)	2250	2250	2250	2250	2250	2250	2250	2200	2185	2160	2030	1760	1210	842	561	374
	A 182 Gr. F22 Cl.3 (2)	2250	2250	2220	2185	2175	2165	2145	2120	2120	2120	2030	1800	1433	1045	681	426
	A 182 Gr. F91	2250	2250	2250	2250	2250	2250	2250	2200	2185	2160	2030	1800	1433	1310	1310	1175
ASME 1500 LTD	A 105 (1)	3750	3750	3700	3665	3665	3665	3575	3455	3170	2570	N/A	N/A	N/A	N/A	N/A	N/A
	A 182 Gr. F11 Cl.2 (2)	3750	3750	3750	3750	3750	3750	3750	3665	3645	3600	3385	2935	2038	1442	961	641
	A 182 Gr. F22 Cl.3 (2)	3750	3750	3695	3640	3620	3605	3580	3535	3535	3535	3385	3000	2411	1784	1170	732
	A 182 Gr. F91	3750	3750	3750	3750	3750	3750	3750	3750	3665	3645	3600	3385	3000	2411	2249	2249

NOTE: MAXIMUM differential pressure across valve = 2500 psig

(1) Not recommended for prolonged use above 800°F / 427°C

(2) Not recommended for prolonged use above 1100°F / 593°C

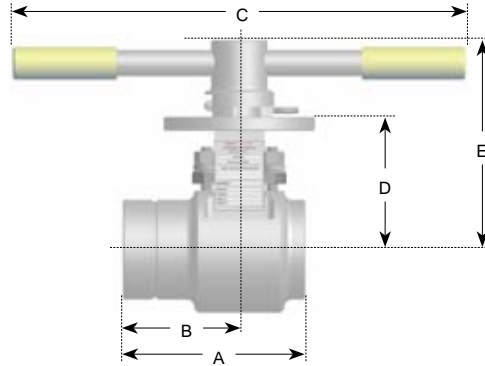
Contact COOPER Valves for pressure classes not listed.

Accuseal[®] Steam Power Ball Valves

Model: SPBV055, SPBV072, SPBV106,
SPBV134
Class: 3200 LTD
Sizes: 1/2" thru 2.5"

Design and Manufacturing Standards

Valve Design: B16.34
Socket Weld Dimensions: B16.11
Tested in Accordance with: B16.34, MSS SP-61, and FCI 70-2 Class VI



Cv – ASME 3200 Limited Class

Bore (inches)	Pipe Size (inches) / Schedule											
	0.50	0.50	0.75	0.75	1.00	1.00	1.50	1.50	2.00	2.00	2.50	2.50
	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS
0.55	7	1	16	6	13	15	-	-	-	-	-	-
0.72	-	-	-	-	23	10	26	34	-	-	-	-
1.06	-	-	-	-	-	-	69	56	59	66	-	-
1.34	-	-	-	-	-	-	-	-	144	103	90	95

Dimension – ASME 3200 Limited Class

Model	Bore	Class	SW End	A		B		C		D		E		Weight	
				in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
SPBV055	0.55	3200	0.50	7.51	190.75	4.00	101.60	15.00	381.00	4.45	113.03	7.15	181.61	19	8.61
	0.55	3200	0.75	6.00	152.40	4.00	101.60	15.00	381.00	4.45	113.03	7.15	181.61	19	8.61
	0.55	3200	1.00	6.00	152.40	4.00	101.60	15.00	381.00	4.45	113.03	7.15	181.61	20	9.07
SPBV072	0.72	3200	1.00	6.00	152.40	3.62	91.95	15.00	381.00	4.54	115.32	7.24	183.90	21	9.52
	0.72	3200	1.50	6.00	152.40	3.62	91.95	15.00	381.00	4.54	115.32	7.24	183.90	24	10.88
SPBV106	1.06	3200	1.50	7.25	184.15	4.63	117.48	18.00	457.20	5.27	133.86	8.27	210.06	36	16.32
	1.06	3200	2.00	7.25	184.15	4.63	117.48	18.00	457.20	5.27	133.86	8.27	210.06	40	18.14
SPBV134	1.34	3200	2.00	8.25	209.55	5.13	130.18	18.00	457.20	6.25	158.75	9.25	234.95	56	25.40
	1.34	3200	2.50	8.25	209.55	5.13	130.18	18.00	457.20	6.25	158.75	9.25	234.95	61	27.66

Limited Class Pressure Rating vs. Temperature (ASME B16.34)

	Temp (°F)	-20° to 100°	200°	300°	400°	500°	600°	650°	700°	750°	800°	850°	900°	950°	1000°	1050°	1100°
	Temp (°C)	-29° to 38°	93°	149°	204°	260°	316°	343°	371°	399°	427°	454°	482°	510°	538°	566°	593°
ASME 3200 LTD	A 105 [1]	8000	8000	7896	7818	7818	7818	7629	7370	6765	5485	N/A	N/A	N/A	N/A	N/A	N/A
	A 182 Gr. F11 Cl.2 [2]	8000	8000	8000	8000	8000	8000	8000	7818	7773	7680	7224	6261	4456	3337	2225	1483
	A 182 Gr. F22 Cl.3 [2]	8000	8000	7885	7762	7725	7690	7634	7541	7541	7541	7224	6400	5269	4131	2703	1693
	A 182 Gr. F91	8000	8000	8000	8000	8000	8000	8000	7818	7773	7680	7224	6400	5269	5200	5200	4660

NOTE: MAXIMUM differential pressure across valve = 4500 psig

(1) Not recommended for prolonged use above 800°F / 427°C

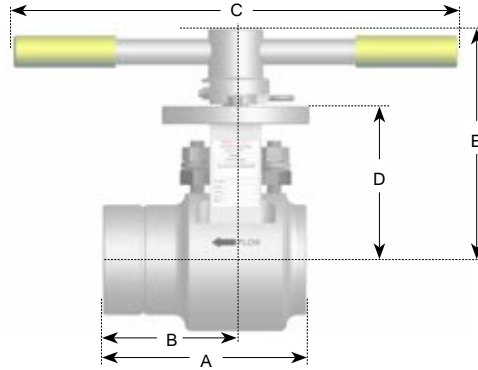
(2) Not recommended for prolonged use above 1100°F / 593°C

Accuseal[®] Steam Power Ball Valves

Model: SPBV066, SPBV100
 Class: 4500 LTD
 Sizes: 1/2" thru 2.5"

Design and Manufacturing Standards

Valve Design: B16.34
Socket Weld Dimensions: B16.11
Tested in Accordance with: B16.34, MSS SP-61, and FCI 70-2 Class VI



Cv – ASME 4500 Limited Class												
Bore (inches)	Pipe Size (inches) / Schedule											
	0.50	0.50	0.75	0.75	1.00	1.00	1.50	1.50	2.00	2.00	2.50	2.50
	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS	SCH 160	SCH XXS
0.66	-	-	12	5	21	14	21	21	-	-	-	-
1.00	-	-	-	-	-	-	49	50	48	54	44	48

Dimension – ASME 4500 Limited Class															
Model	Bore	Class	SW End	A		B		C		D		E		Weight	
				in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
SPBV066	0.66	4500	0.75	8.50	215.90	4.75	120.65	18.00	457.20	5.09	129.29	7.79	197.87	31	14.06
	0.66	4500	1.00	7.25	184.15	4.75	120.65	18.00	457.20	5.09	129.29	7.79	197.87	30	13.60
	0.66	4500	1.50	7.25	184.15	4.75	120.65	18.00	457.20	5.09	129.29	7.79	197.87	35	15.87
SPBV100	1.00	4500	1.50	8.25	209.55	5.38	136.53	18.00	457.20	6.25	158.75	9.35	237.49	54	24.49
	1.00	4500	2.00	8.25	209.55	5.38	136.53	18.00	457.20	6.25	158.75	9.35	237.49	60	27.21
	1.00	4500	2.50	8.25	209.55	5.38	136.53	18.00	457.20	6.25	158.75	9.35	237.49	63	28.57

Limited Class Pressure Rating vs. Temperature (ASME B16.34)																	
	Temp (°F)	-20° to 100°	200°	300°	400°	500°	600°	650°	700°	750°	800°	850°	900°	950°	1000°	1050°	1100°
	Temp (°C)	-29° to 38°	93°	149°	204°	260°	316°	343°	371°	399°	427°	454°	482°	510°	538°	566°	593°
ASME 4500 LTD	A 105 (1)	11250	11250	11105	10995	10995	10995	10730	10365	9515	7715	N/A	N/A	N/A	N/A	N/A	N/A
	A 182 Gr. F11 Cl.2 (2)	11250	11250	11250	11250	11250	11250	11250	10995	10930	10800	10160	8805	6390	5017	3345	2230
	A 182 Gr. F22 Cl.3 (2)	11250	11250	11090	10915	10865	10815	10735	10605	10605	10605	10160	9000	7555	6213	4063	2546
	A 182 Gr. F91	11250	11250	11250	11250	11250	11250	11250	10995	10930	10800	10160	9000	7555	7555	7555	7006

NOTE: MAXIMUM differential pressure across valve = 6000 psig

(1) Not recommended for prolonged use above 800°F / 427°C (2) Not recommended for prolonged use above 1100°F / 593°C



Class VI Zero Leakage. Standard.

The first severe service ball valve
that lets you sleep like a baby.

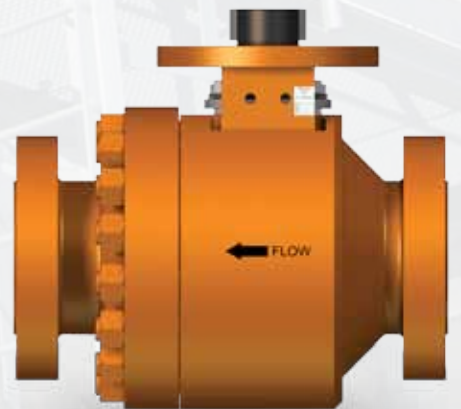


www.coopervalves.com | +1-800-480-0832



Accuseal®

Critical Service Ball Valves



Accuseal[®] CSBV - Expanded View

1. Body/End Connection

- Machined from forgings for material structural integrity.
- End Connections: RFF- raised face flange – Standard.
- Options available on request: BW-Butt Weld, SW-Socket Weld, RTJ, Hub Connectors, Threaded, Lens Joint, Wafer, etc.
- Weld overlay of wetted surfaces to protect from corrosion and erosion – available upon request.

2 & 3. Ball + Seats = the sealing assembly

- OMNI-LAP 360[°]™ optimizes the matched roundness of the ball and seat for 100% seal, regardless of positioning. The sealing surface is maximized, providing the widest metal to metal seal possible. The seal is consistently reliable.
- Corrosion resistant materials with matched rates of thermal expansion are used on the sealing components to maintain seal integrity and reliability.
- Coatings are robotically applied with HP-HVOF (high velocity oxygen fueled) or Spray and Fuse processes for uniform surface thickness, coating density and maximum metallurgical bond to withstand extreme service conditions.
- Self-cleaning – the seats remove all debris from the ball with every on/off cycle, extending valve life.
- Field repair is simpler and faster, when required. The ball and seat assembly is vacuum seal verified at the factory and easily replaced on site.

4. Dual Belleville Springs

- Angled relief cut to prevent packing
- Energizes ball into sealing seat
- Mitigates differences in thermal expansion

5. Stem

- Surface modification eliminates galling with rotation.
- Blow-out proof per ASME B16.34.

6. Inner Stem Seal

- Provides primary metal-to-metal stem seal.

7. Packing Bushing

- Prevents stem packing intrusion into body
- Works with stem bearing to prevent lateral stem motion.

8. Packing Rings

- Reinforced graphite.

9. Anti-extrusion Rings

- Prevents packing extrusion.

10. Packing Follower

- Thermally matched to stem material
- Prevents galling and contains upper packing.

11. Articulating Gland Flange

- Spherically engages the packing follower to prevent stem binding and galling during adjustments.

12. Belleville Springs

- Live load on the bolted joint eliminates routine gland adjustments.
- Reduces maintenance.

13. Stem Retaining Ring

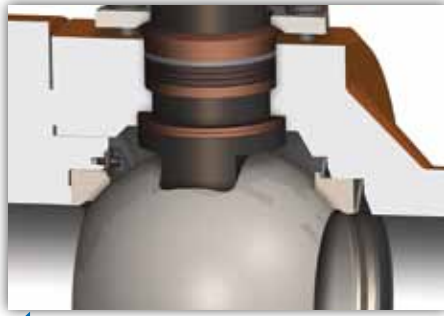
- Prevents stem misalignment during actuator installation.
- Stem cannot be forced into ball stem slot.

14. Mounting Flange

- Precision machined to ISO 5211.
- External mounting flange provides rigid mounting for ease of adjustment.
- Direct mounting option reduces hysteresis and stem deflection.

15. Body Gasket

- Engineered body seal
- External mounting flange provides rigid mounting for ease of actuation
- Direct mounting option reduces hysteresis and stem deflection



Unidirectional flow

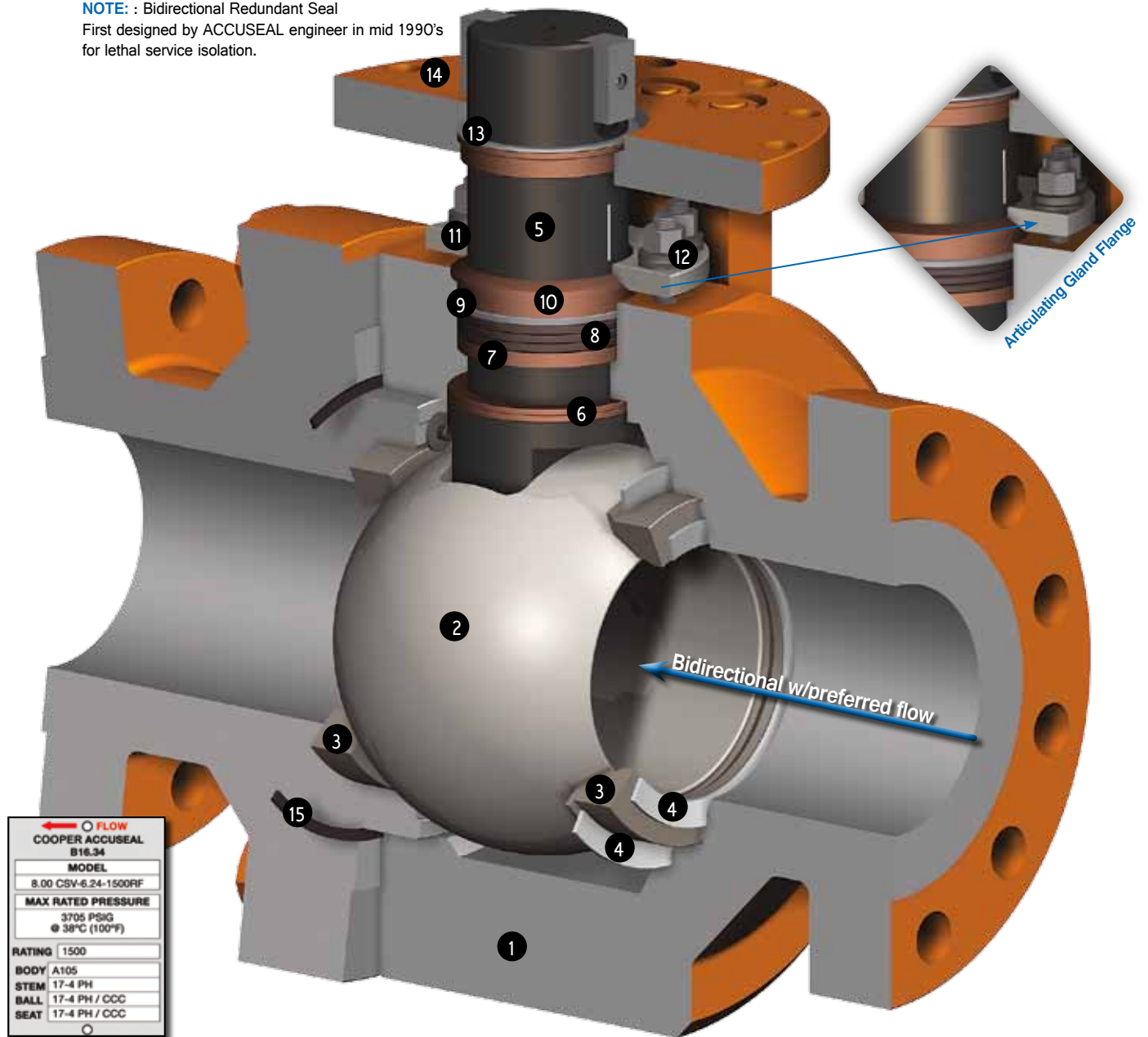
- Locked-in downstream seat
- Dual Belleville load springs provide effective particulate exclusion of critical annular area between load ring and body



Bidirectional

- Fully bidirectional - completely independent of flow direction
- Redundant isolating seats - both upstream and downstream seat are in continuous sealing engagement with ball.
- Dual Belleville load springs provide effective particulate exclusion and protect elastomeric/polymeric seal at the O.D. of each seat ring.

NOTE: Bidirectional Redundant Seal
 First designed by ACCUSEAL engineer in mid 1990's for lethal service isolation.



← FLOW
COOPER ACCUSEAL B16.34
MODEL
8.00 CSV-6.24-1500RF
MAX RATED PRESSURE
3705 PSIG @ 38°C (100°F)
RATING 1500
BODY A105
STEM 17-4 PH
BALL 17-4 PH / CCC
SEAT 17-4 PH / CCC
○

Nameplate

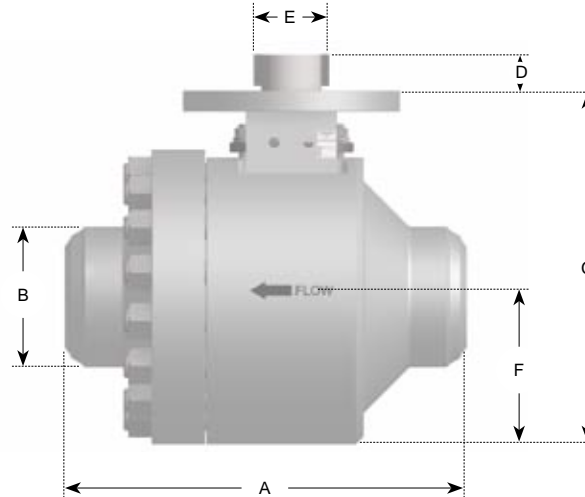
- LOCKED-IN DOWNSTREAM SEAT
- DUAL SPRING + LAPPED SEAT LANDING UPSTREAM

Accuseal[®] Critical Service Ball Valves

Class: 150 thru 600
 Sizes: 1/2" thru 12"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: B16.34, MSS SP-61, and FCI 702 Class VI



CSBV 0.5" - 12" Dimensions								
	Size (inches)	Bore	A	B	C	D	E	F
ASME 150	0.5	0.55	4.25	0.90	4.17	1.10	0.50	1.88
	0.75	0.72	4.62	1.18	4.87	1.10	0.50	2.09
	1	1.06	5.00	1.50	5.24	1.31	0.75	2.44
	1.5	1.50	6.50	2.09	5.64	1.63	0.88	2.75
	2	2.00	7.00	2.57	5.87	1.31	0.75	3.00
	2.5	2.50	7.50	3.00	6.12	1.66	1.19	3.50
	3	3.00	8.00	3.63	5.56	1.18	0.88	3.75
	4	4.00	9.00	4.59	7.29	2.02	1.38	5.00
	6	6.00	15.50	6.73	9.92	2.59	2.25	7.00
	8	8.00	18.00	8.68	11.51	2.03	2.50	8.13
10	10.00	21.00	10.75	13.86	2.68	2.75	10.50	
12	12.00	24.00	12.82	15.68	2.50	3.00	12.00	
ASME 300	0.5	0.55	5.50	0.94	4.36	1.10	0.50	1.88
	0.75	0.72	6.00	1.22	4.87	1.10	0.50	2.09
	1	1.06	6.50	1.56	5.24	1.31	0.75	2.44
	1.5	1.50	7.50	1.94	5.98	1.63	0.88	2.75
	2	2.00	8.50	2.63	5.97	1.66	1.06	3.25
	2.5	2.50	9.50	3.06	6.12	1.66	1.19	3.50
	3	3.00	8.00	3.63	5.56	1.18	0.88	3.75
	4	4.00	9.00	4.59	7.29	2.02	1.38	5.00
	6	6.00	15.50	6.73	9.92	2.59	2.25	7.00
	8	8.00	18.00	8.68	11.51	2.03	2.50	8.13
10	10.00	21.00	10.75	13.86	2.68	2.75	10.50	
12	12.00	24.00	12.82	15.68	2.50	3.00	12.00	
ASME 600	0.5	0.55	6.50	0.94	4.36	1.10	0.50	1.88
	0.75	0.72	7.50	1.18	5.13	1.10	0.50	2.09
	1	1.06	8.50	1.56	5.24	1.31	0.75	2.44
	1.5	1.50	9.50	2.00	5.98	1.63	0.88	2.75
	2	2.00	11.50	2.56	6.25	1.66	1.06	3.25
	2.5	2.50	13.00	3.12	6.25	1.87	1.50	3.75
	3	3.00	14.00	3.69	7.31	1.27	1.38	4.13
	4	4.00	17.00	4.82	7.83	3.00	2.06	5.75
	6	6.00	22.00	7.06	10.66	2.38	2.50	7.25
	8	7.87	26.00	9.17	13.92	2.72	3.25	8.44
10	9.75	31.00	11.31	17.32	4.50	4.00	11.63	
12	11.75	33.00	13.63	20.40	4.00	5.00	12.75	

CSBV Cv - Full Bore							
Valve Size (inches)	150	300	600	900	1500	2500	4500
0.5	25	22	21	18	18	16	Note 1
0.75	54	48	43	39	39	36	Note 1
1	144	126	110	102	102	92	Note 1
1.5	270	251	223	198	198	83	Note 1
2	549	498	429	382	382	163	Note 1
2.5	948	842	720	421	421	236	Note 1
3	1474	1250	1114	1076	682	438	Note 1
4	2932	2539	2134	1600	1283	919	Note 1
6	6393	6316	5366	4101	3281	2482	Note 1
8	12497	11931	9966	7468	6106	5508	Note 1
10	20612	19966	15889	12737	9933	8772	Note 1
12	30897	29974	24953	18475	14641	13051	Note 1

CSBV - Bore							
NPS (inches)	150	300	600	900	1500	2500	4500
0.5	0.55	0.55	0.55	0.55	0.55	0.55	Note 1
0.75	0.72	0.72	0.72	0.72	0.72	0.72	Note 1
1	1.06	1.06	1.06	1.06	1.06	1.06	Note 1
1.5	1.50	1.50	1.50	1.50	1.50	1.06	Note 1
2	2.00	2.00	2.00	2.00	2.00	1.50	Note 1
2.5	2.50	2.50	2.50	2.13	2.13	1.77	Note 1
3	3.00	3.00	3.00	3.00	2.62	2.30	Note 1
4	4.00	4.00	4.00	3.62	3.44	3.15	Note 1
6	6.00	6.00	6.00	5.50	5.19	4.90	Note 1
8	8.00	8.00	7.87	7.19	6.81	6.81	Note 1
10	10.00	10.00	9.75	9.06	8.50	8.50	Note 1
12	12.00	12.00	11.75	10.75	10.13	10.13	Note 1

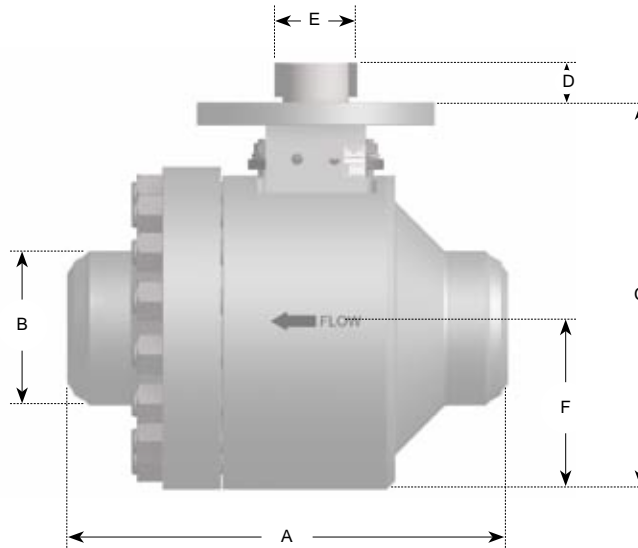
1. ASME 4500 pressure class bore / Cv varies according to application (values determined based on customer needs). Contact COOPER[®] for sizes and pressure classes not listed.

Accuseal[®] Critical Service Ball Valves

Class: 900 thru 2500
 Sizes: 1/2" thru 12"

Design and Manufacturing Standards

Valve Design: B16.34
Flange Dimensions: B16.5
Face to Face Dimensions: B16.10
Tested in Accordance with: B16.34, MSS SP-61, and FCI 702 Class VI



CSBV 0.5" - 12" Dimensions								
	Size (inches)	Bore	A	B	C	D	E	F
ASME 900	0.5	0.55	8.50	4.75	4.17	0.50	1.10	2.25
	0.75	0.72	9.00	5.12	4.89	0.50	1.10	2.25
	1	1.06	10.00	5.88	5.62	0.75	1.31	2.94
	1.5	1.50	12.00	7.00	7.22	1.06	1.66	3.50
	2	2.00	14.50	8.50	6.38	1.19	1.66	3.50
	2.5	2.13	16.50	9.63	6.53	1.50	1.87	3.75
	3	3.00	15.00	3.90	8.32	2.50	1.50	4.25
	4	3.62	18.00	4.64	10.46	3.00	2.06	5.75
	6	5.50	24.00	7.00	11.13	2.25	3.00	7.50
	8	7.19	29.00	8.97	12.96	2.94	3.63	9.25
ASME 1500	0.5	0.55	8.50	4.75	4.17	0.50	1.10	2.25
	0.75	0.72	9.00	5.12	4.89	0.50	1.10	2.25
	1	1.06	10.00	5.88	5.62	0.75	1.31	2.94
	1.5	1.50	12.00	7.00	7.22	1.06	1.66	3.50
	2	2.00	14.50	8.50	6.38	1.19	1.66	3.50
	2.5	2.13	16.50	9.63	6.53	1.50	1.87	3.75
	3	2.62	18.50	3.92	9.28	2.50	1.75	4.50
	4	3.44	21.50	5.00	9.10	2.84	2.50	6.12
	6	5.19	27.75	7.43	13.04	3.00	3.38	7.75
	8	6.81	32.75	9.69	16.49	5.00	4.00	9.50
ASME 2500	0.5	0.55	10.38	1.20	5.25	1.10	0.50	2.50
	0.75	0.72	10.75	1.60	6.13	1.31	0.69	2.75
	1	1.06	12.12	2.18	6.67	1.63	0.88	3.00
	1.5	1.06	15.12	2.80	6.67	1.66	1.19	3.00
	2	1.50	17.75	3.64	6.49	2.63	1.75	3.50
	2.5	1.77	20.00	3.33	9.24	2.82	1.63	4.25
	3	2.30	22.75	4.26	10.42	1.81	1.75	4.50
	4	3.15	26.50	5.79	11.44	2.84	2.50	6.50
	6	4.90	36.00	8.58	13.21	6.80	3.38	8.50
	8	6.81	40.25	11.89	16.80	5.00	5.25	9.75
10	8.50	50.00	14.62	17.66	6.50	7.50	11.75	
12	10.13	56.00	17.47	18.88	6.50	8.00	13.50	

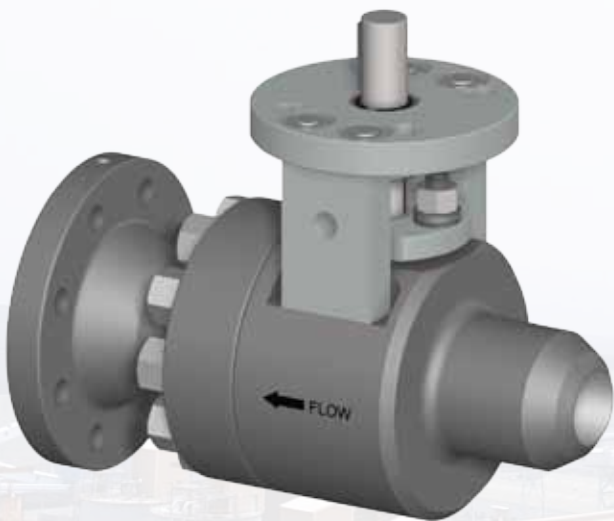
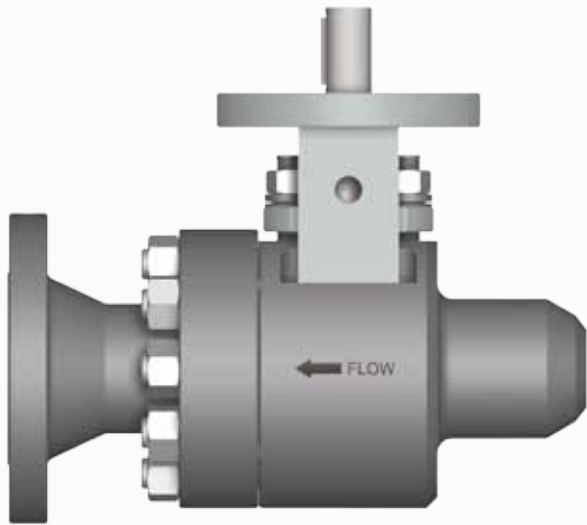
CSBV Cv - Full Bore							
Valve Size (inches)	150	300	600	900	1500	2500	4500
0.5	25	22	21	18	18	16	Note 1
0.75	54	48	43	39	39	36	Note 1
1	144	126	110	102	102	92	Note 1
1.5	270	251	223	198	198	83	Note 1
2	549	498	429	382	382	163	Note 1
2.5	948	842	720	421	421	236	Note 1
3	1474	1250	1114	1076	682	438	Note 1
4	2932	2539	2134	1600	1283	919	Note 1
6	6393	6316	5366	4101	3281	2482	Note 1
8	12497	11931	9966	7468	6106	5508	Note 1
10	20612	19966	15889	12737	9933	8772	Note 1
12	30897	29974	24953	18475	14641	13051	Note 1

CSBV - Bore							
NPS (inches)	150	300	600	900	1500	2500	4500
0.5	0.55	0.55	0.55	0.55	0.55	0.55	Note 1
0.75	0.72	0.72	0.72	0.72	0.72	0.72	Note 1
1	1.06	1.06	1.06	1.06	1.06	1.06	Note 1
1.5	1.50	1.50	1.50	1.50	1.50	1.06	Note 1
2	2.00	2.00	2.00	2.00	2.00	1.50	Note 1
2.5	2.50	2.50	2.50	2.13	2.13	1.77	Note 1
3	3.00	3.00	3.00	3.00	2.62	2.30	Note 1
4	4.00	4.00	4.00	3.62	3.44	3.15	Note 1
6	6.00	6.00	6.00	5.50	5.19	4.90	Note 1
8	8.00	8.00	7.87	7.19	6.81	6.81	Note 1
10	10.00	10.00	9.75	9.06	8.50	8.50	Note 1
12	12.00	12.00	11.75	10.75	10.13	10.13	Note 1

1. ASME 4500 pressure class bore / Cv varies according to application (values determined based on customer needs). Contact COOPER[®] for sizes and pressure classes not listed.

Accuseal[®]

Automated Relief Ball Valves



Accuseal® ARBV Expanded View

Applications

- Steam overpressure protection boiler systems
- Venting assistance for start-up and shut-down

Inlet Size

1½", 2", 2½"

Bore Size

1.00, 1.75, 2.00

Orifice Size

0.56" – 2"

Outlet Size

3" 300, 4" 300 ASME Standard Class
Other options available upon request

ASME Pressure Class

1500, 2500, 3100 LTD, 4500 LTD

End Connections

- BW
- RFF

Per customer specifications

Features and Benefits

- Reduces maintenance and increases boiler efficiency by operating at lower pressure than spring-loaded safety valves
- Omni-Lap 360°™ ball and seat assemblies
- Optimized flanged seat geometry maintains maximum seal, even during thermal transience
- True field repairability with ball and seat kit
- Vacuum tested ball and seat ensure Class VI shut-off prior to valve assembly
- Wave spring maximizes thermal cycling strength for longer life

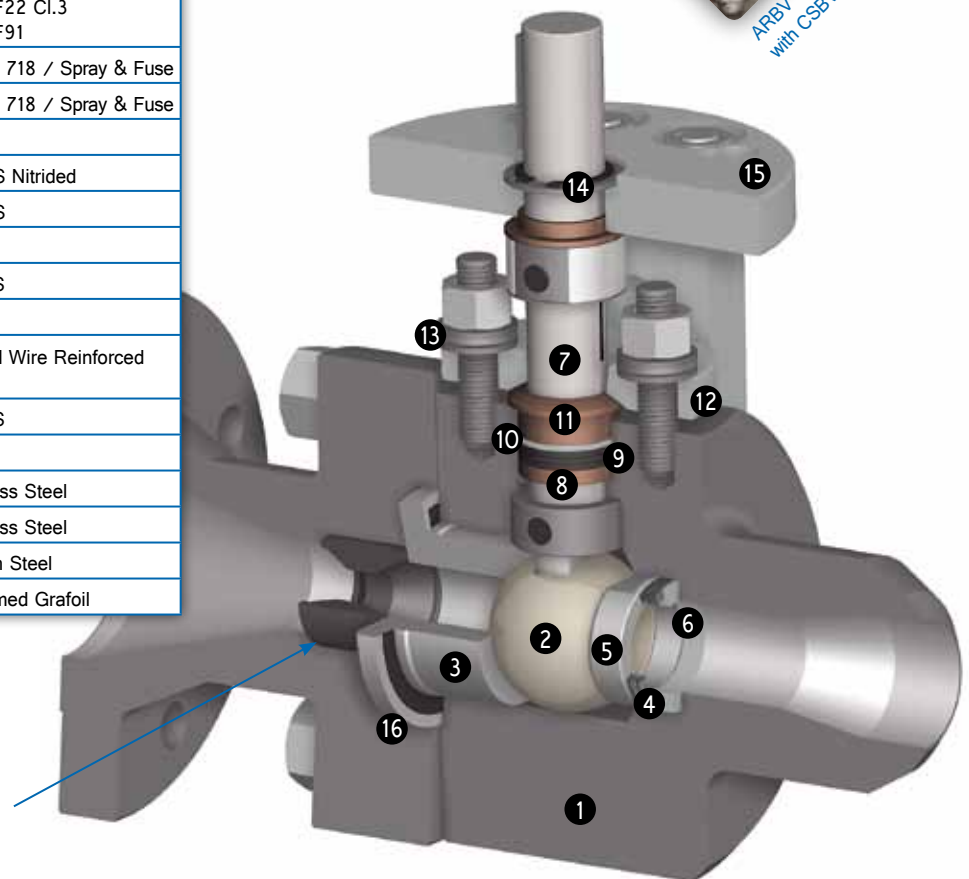
1 year warranty standard (contact COOPER® Valves for details)



ARBV 2.5" x 1.75" 3100 with CSBV isolation

Bill of Materials - ARBV		
ITEM	DESCRIPTION	MATERIAL (Typical)
1	Body	A182 F22 Cl.3 A182 F91
2	Ball	Inconel 718 / Spray & Fuse
3	Seat	Inconel 718 / Spray & Fuse
4	Wave Spring	A-286
5	Load Ring	410 SS Nitrided
6	Spacer	410 SS
7	Stem	A-286
8	Packing Bushing	316 SS
9	Packing Rings	Grafoil
10	Anti-Extrusion Rings	Inconel Wire Reinforced Grafoil
11	Packing Follower	316 SS
12	Articulating Gland Flange	4130
13	Live Loading Belleville Springs	Stainless Steel
14	Stem Retaining Ring	Stainless Steel
15	Mounting Flange	Carbon Steel
16	Body Gasket	Dieformed Grafoil

Special alloys and coatings available upon request.



Application specified orifice

The Accuseal® ARBV design provides automatic or manual over pressure protection for steam boiler systems. Operation at lower pressure set point than spring-loaded safety valve reduces lifts, maintenance and increases boiler efficiency.

Control Package Includes

- Pressure switch
- Solenoid
- Limit switch
- Control station

Operates in less than two seconds increasing sealing component life.

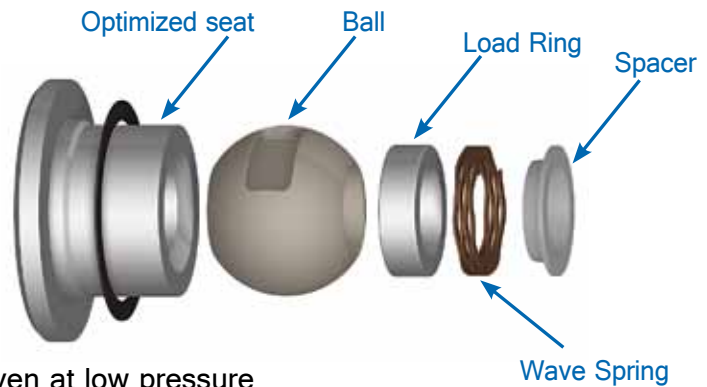
Field Repair Kit

Ball & Seat

- Inconel 718 ball and seat
- Fused carbide coating
- Omni-Lap 360°™
- Computer optimized sealing geometry

Wave Spring

- Superior performance to Belleville springs
- More predictable force on ball to seat seal—even at low pressure
- Longer spring life means longer valve life

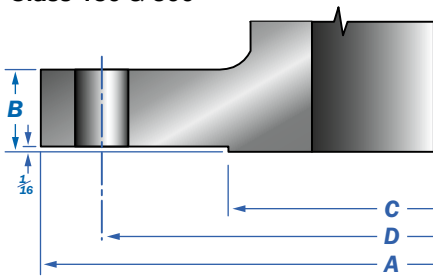


Standard Class Pressure Rating vs. Temperature (ASME B16.34)																
	Temp (°F)	800°	850°	900°	950°	1000°	1010°	1020°	1030°	1040°	1050°	1060°	1070°	1080°	1090°	1100°
	Temp (°C)	427°	454°	482°	510°	538°	543°	549°	554°	560°	566°	571°	577°	582°	588°	593°
ASME 1500	A 182 Gr. F22 Cl.3 (1) (2)	2500	2435	2245	1930	1335	1243	1151	1059	967	875	810	745	680	615	550
	A 182 Gr. F91(2)	2500	2435	2245	1930	1820	1816	1812	1808	1804	1800	1742	1684	1626	1568	1510
ASME 2500	A 182 Gr. F22 Cl.3 (1) (2)	2500	2500	2500	2500	2230	2075	1920	1765	1610	1455	1347	1239	1131	1023	915
	A 182 Gr. F91(2)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500

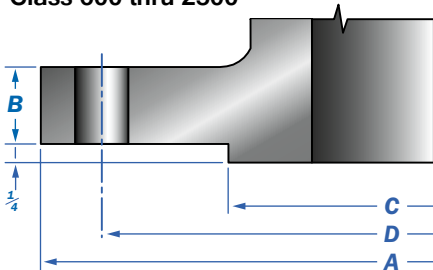
Limited Class Pressure Rating vs. Temperature (ASME B16.34)																
	Temp (°F)	800°	850°	900°	950°	1000°	1010°	1020°	1030°	1040°	1050°	1060°	1070°	1080°	1090°	1100°
	Temp (°C)	427°	454°	482°	510°	538°	543°	549°	554°	560°	566°	571°	577°	582°	588°	593°
ASME 3100 LTD	A 182 Gr. F22 Cl.3 (1) (2)	3000	3000	3000	3000	3000	3000	3000	3000	2879	2603	2410	2216	2022	1828	1635
	A 182 Gr. F91(2)	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
ASME 4500 LTD	A 182 Gr. F22 Cl.3 (1) (2)	4500	4500	4500	4500	4500	4500	4500	4500	4493	4063	3760	3456	3153	2849	2546
	A 182 Gr. F91(2)	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500

NOTES: (1) Permissible, but not recommended for prolonged use above 1100°F / 593°C
 (2) Flanged-end valve ratings terminate at 1000°F / 538°C

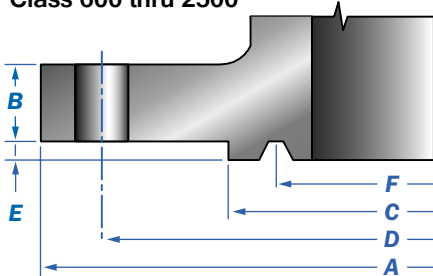
**Raised Face
Class 150 & 300**



**Raised Face
Class 600 thru 2500**



**RTJ
Class 600 thru 2500**



Flange Dimensions in Inches

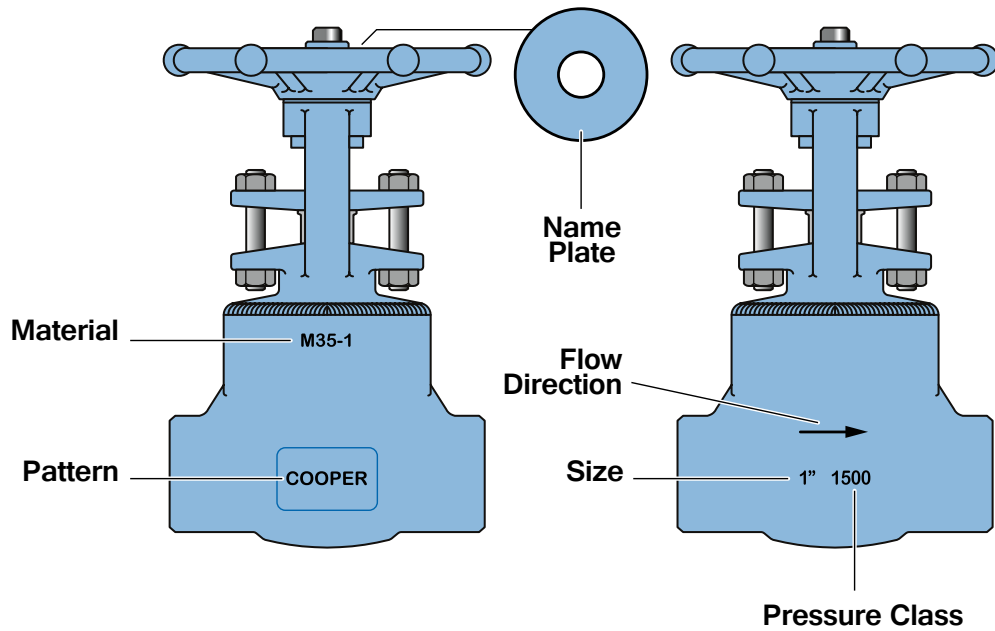
Class	IN MM	A	B	C	D	Ring Joint Facing			Ring No.	Bolt Holes	
						C	F	E		Size	No.
150	1/2	3.5	0.44	1.38	2.38	-	-	-	-	0.62	4
	15	89	11.58	34.9	60.3	-	-	-	-	16	4
	3/4	3.88	0.5	1.69	2.75	-	-	-	-	0.62	4
	20	98	13	42.9	69	-	-	-	-	16	4
	1	4.25	0.55	2	3.12	-	-	-	-	0.62	4
	25	108	14.5	50.8	79.4	-	-	-	-	16	4
	1-1/4	4.62	0.62	2.5	3.5	-	-	-	-	0.62	4
	32	117	16	68.5	88.9	-	-	-	-	16	4
	1-1/2	5	0.69	2.88	3.88	-	-	-	-	0.62	4
	40	127	17.5	73	98.4	-	-	-	-	16	4
300	2	6	0.75	3.62	4.75	-	-	-	-	0.75	4
	50	152	19.5	92.1	120.6	-	-	-	-	19	4
	1/2	3.75	0.56	1.38	2.62	-	-	-	-	0.62	4
	15	95	14.5	34.9	66.7	-	-	-	-	16	4
	3/4	4.62	0.62	1.69	3.25	-	-	-	-	0.75	4
	20	117	16	42.9	82.5	-	-	-	-	19	4
	1	4.88	0.69	2	3.5	-	-	-	-	0.75	4
	25	124	17.5	50.8	88.9	-	-	-	-	19	4
	1-1/4	5.25	0.75	2.5	3.88	-	-	-	-	0.75	4
	32	133	19.5	68.5	98.4	-	-	-	-	19	4
600	1-1/2	6.12	0.81	2.88	4.5	-	-	-	-	0.88	4
	40	156	21	73	114.3	-	-	-	-	22.5	4
	2	6.5	0.88	3.62	5	-	-	-	-	0.75	8
	50	165	22.5	92.1	127	-	-	-	-	19	8
	1/2	3.75	0.56	1.38	2.62	2	1.34	0.22	R 11	0.62	4
	15	95	14.5	34.9	66.7	51	34.14	5.6	R 11	16	4
	3/4	4.62	0.62	1.69	3.25	2.5	1.68	0.25	R 13	0.75	4
	20	117	16	42.9	82.5	63.5	42.88	6.3	R 13	19	4
	1	4.88	0.69	2	3.5	2.75	2	0.25	R 16	0.75	4
	25	124	17.5	50.8	88.9	70	50.8	6.3	R 16	19	4
1500	1-1/4	5.25	0.81	2.5	3.88	3.12	2.38	0.25	R 18	0.75	4
	32	133	21	63.5	98.4	79.5	60.32	6.3	R 18	19	4
	1-1/2	6.12	0.88	2.88	4.5	3.56	2.69	0.25	R 20	0.88	4
	40	156	22.5	73	114.3	90.5	68.28	6.3	R 20	22.5	4
	2	6.5	1	3.62	5	4.25	3.25	0.31	R 23	0.75	8
	50	165	25.5	92.1	127	108	82.55	7.9	R 23	19	8
	1/2	4.75	0.88	1.38	3.25	2.38	1.56	0.25	R 12	0.88	4
	15	121	22.5	34.9	82.5	60.5	39.67	6.3	R 12	22.5	4
	3/4	5.12	1	1.69	3.5	2.62	1.75	0.25	R 14	0.88	4
	20	130	22.5	42.9	88.9	66.5	44.45	6.3	R 14	22.5	4
300	1	5.88	1.12	2	4	2.81	2	0.25	R 16	1	4
	25	149	29	50.8	101.6	71.5	50.8	6.3	R 16	25.5	4
	1-1/4	6.25	1.12	2.5	4.38	3.19	2.37	0.25	R 18	1	4
	32	159	29	63.5	111.1	81	60.32	6.3	R 18	25.5	4
	1-1/2	7	1.25	2.88	4.88	3.62	2.68	0.25	R 20	1.12	4
	40	178	32	73	123.8	92	68.28	6.3	R 20	28.5	4
	2	8.5	1.5	3.62	6.5	4.88	3.75	0.31	R 24	1	8
	50	216	38.5	92.1	165.1	124	95.25	7.9	R 24	25.5	8
	1/2	5.25	1.19	1.38	3.5	2.56	1.68	0.25	R 13	0.88	4
	15	133.5	30.5	34.9	88.9	65	42.88	6.3	R 13	22.5	4
600	3/4	5.5	1.25	1.69	3.75	2.88	2	0.25	R 16	0.88	4
	20	139.5	32	42.9	95.3	73.2	50.8	6.3	R 16	22.5	4
	1	6.25	1.38	2	4.25	3.25	2.37	0.25	R 18	1	4
	25	159	35	50.8	108	82.5	60.32	6.3	R 18	25.5	4
	1-1/4	7.25	1.5	2.5	5.12	4	2.84	0.31	R 21	1.12	4
	32	184	38.5	63.5	130.2	101.6	72.24	7.9	R 21	28.5	4
	1-1/2	8	1.75	2.88	5.75	4.5	3.25	0.31	R 23	1.25	4
	40	203	44.5	73	146.1	114.3	82.55	7.9	R 23	32	4
	2	9.25	2	3.62	6.75	5.25	4	0.31	R 26	1.12	8
	50	235	51	92.1	171.5	133.4	101.6	7.9	R 26	28.5	8

Valve & Name Plate Overview

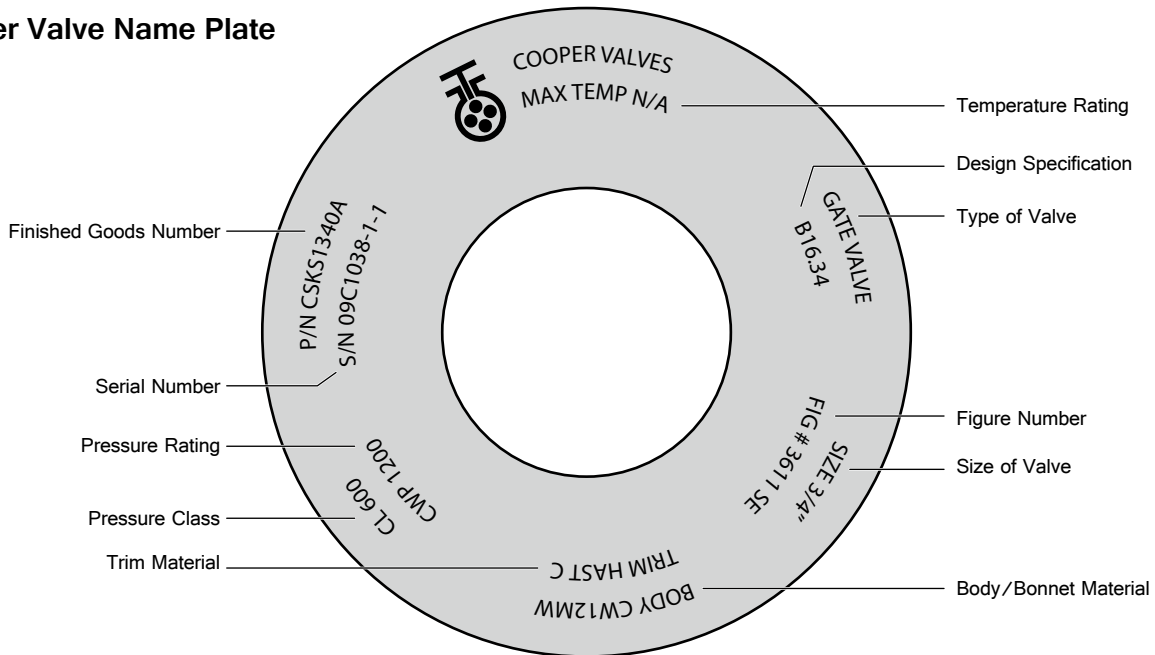
The name plate displays all construction and tracking data regarding the respective valve on which it is attached. Below is a general overview of the identification tag components.

Name Plates are securely fastened to the valve.

Globe and Check Valves will have a flow direction arrow on body for proper installation.



Cooper Valve Name Plate



Cooper warrants to the original purchaser, for a period of one year from the date of delivery to the original customer that its products will be free from defects in workmanship, not caused or resulting from improper usage or application, improper installation, improper maintenance, repair modification or alterations.

In the event the original purchaser shall determine that a product purchased from Cooper shall be defective in workmanship or materials, the customer shall notify the Cooper Warranty Representative by telephone (+1-800-480-4950) within 24 hrs from such determination, followed by written notice within 7 days therefrom, addressed to:

**COOPER Valves
4659 Wright Road
Stafford, Texas 77477 USA**

In the event Cooper shall determine that the product is defective as a result of factory workmanship, based upon such examination of the product which Cooper may deem appropriate, Cooper shall thereupon, at its sole option and discretion do one of the following:

- (a) Cause the defective product to be repaired, or
- (b) Replaced with a substantially identical product, or
- (c) Accept the return of the defective product and refund the purchasing price to the original purchaser.

Cooper shall bear all normal surface transportation costs to the original purchaser for all products determined to have been defective. But shall in no event bear any installation, de-installation, re-installation, engineering, consequential/incidental/liquidated damages, loss of profit, damages or harm to property or personnel, etc or any other costs or loss incurred in connection with repair or replacement.

The selection, suitability, installation, and fitness for purpose of all products sold by Cooper shall be deemed to have been determined by and within the sole discretion of the Purchaser. Accordingly, Cooper disclaims any obligation, warranty or guarantee in any manner relating to or resulting from the selection, application, suitability, and fitness for purpose or installation of its products.

The foregoing constitutes sole obligation of Cooper with respect to defective products purchased from it and in no manner shall Cooper assume or be liable for any other expenses, incidental, or consequential or liquidated damages, losses, lost profits, down time, harm to personnel, damage to property whatsoever, whether directly or indirectly suffered or in any other manner relating to or as the result of any defect or failure of any products that it may sell.

Catalog illustrations are representations of products of a certain size, type, material however; in no way shall they be used to determine final design selection. Cooper reserves the right to modify, change, delete, or expand catalog illustrations without notice. Buyer is cautioned to seek engineered drawings for final approval of selection of product for exact product specifications and product details. Except as otherwise provided herein, COOPER MAKES NO WARRANTIES OR REPRESENTATIONS, WHETHER EXPRESSED OR IMPLIED OF ANY KIND WHATSOEVER AND WITH RESPECT TO GOODS AND PRODUCTS SOLD BY IT, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO PERSON IS AUTHORIZED TO GRANT OR EXTEND ANY WARRANTY OR REPRESENTATION ON BEHALF OF COOPER OTHER THAN AS SET FORTH HEREIN.

Terms & Conditions

Definitions

1) Supplier

"Supplier" refers to Cooper Valves LLC, a Texas (USA) limited liability company, and all of its affiliated or related entities, including, but not limited to, its parent, subsidiary, affiliated companies, their officers, directors, employees and agents, individually and collectively.

2) Customer

"Customer," refers to all of the following:

- a) Any party acting as agent for the customer, the party ordering goods or services on behalf of himself, herself or itself and others;
- b) The person signing Supplier's credit application, service order, bill of lading, delivery receipt or ticket;
- c) The store, factory, warehouse, shipping company, accepting agent, contractor or subcontractor of the job site, store, warehouse, transportation company, accepting agent;
- d) The person accepting and/or ordering Supplier's goods and services acknowledges that he or she has the actual and apparent agency authority to bind the customer and owner of the property the product will improve, to the terms and conditions of this agreement, all of whom are included in the term "Customer"; and
- e) The person paying the invoices of Supplier, signing Supplier's service orders, delivery tickets, bills of lading or other Supplier contracts, acknowledges that he or she is the agent of the customer and/or any entity who is benefited by the Supplier's product, and that they are said person's agent.

3) Equipment

"Equipment" refers to any goods and service, item of supply or equipment or property ordered or purchased by Customer or the Customer's agent from Supplier or provided by Supplier, including, but not limited to: valves, pipe, fittings, product or general equipment, supplies, parts, materials, supplies and/or merchandise sold by Supplier or provided in connection with Supplier's provider capabilities or needed by Supplier to assist Supplier in the performance and delivery of its product to Customer, but "Equipment" excludes "Services" as defined below.

4) Service(s)

"Services" refers to all employees or agents furnished by Supplier as consultants and/or to perform any function, including the operation of equipment which performs any function, trucks or other merchandise necessary to perform any function when operated by Customer's employees or agents or the Supplier's employees or agents on Customer's job or to satisfy the Customer's order or orders.

5) Claims

"Claim(s)" refers to all of the following:

- a) any liability of Supplier to Customer; b) loss of equipment, time, money, or profit of Supplier; and c) claim, demand, cause of action, proceeding, damage to person, damage to personal or real property, damage and penalty, including attorney's fees, costs and expenses.

6) Price & Credit Application

Customer agrees to be bound by all relevant provisions of the following:

- a) Prices quoted on inquiry including notation that prices may vary from actual quoted prices due to volatile nickel market conditions. However, Cooper will make all attempts to maintain prices and protection for client thru validity of quotation. Customer agrees to be bound by such terms and conditions, procedures; and understands and accepts.
- b) „Suppliers Credit Application and "Credit Application" refer to any application or request by Supplier for the purpose of seeking the extension of credit by Supplier and which may contain the Supplier's Terms & Conditions all of which shall be binding on the Customer.

General Terms & Conditions

Customer acknowledges that it has reviewed and agrees to be bound by the above and following (Definitions, Terms and Conditions and all of the language contained herein and in related documents described elsewhere herein) whenever it or its employees, transportation and/or warehouse company, its customer or end user, and/or agent either: i) accepts the Equipment or Services of Supplier; or ii) signs a Credit Application, service order, delivery ticket, bill of lading or contract for goods or services; or iii) receives an invoice from Supplier and/or orders more Equipment or Services from Supplier.

1) Entire Contract

The Terms and Conditions herein, in the invoice, acknowledgement or acceptance of customer's Purchase Order, Cooper Sales Order and Credit Application as defined above and elsewhere herein, the other documents aforementioned, all of which are incorporated herein by reference for all purposes, constitute the entire contract ("Contract") between the parties and may not be amended except in writing signed by Supplier's authorized representative.

2) Controlling Terms and Conditions

Equipment or Services furnished to Customer by Supplier or its agents will be controlled only by the Terms and Conditions contained herein and contained in the

other documents of Supplier mentioned herein and these are the only terms and conditions to which these parties shall be bound. In the event that Customer writes any letters or uses any other document generated by Customer to order or accept Supplier's Equipment or Services, the Terms and Conditions contained herein shall control and this document does hereby serve as an objection thereto.

3) Failure of Any Party to Enforce

The failure of either party to enforce any provision hereof will not constitute a waiver or preclude subsequent enforcement thereof.

4) Invalidity of Any Term or Condition Contained Herein

No partial invalidity of this Contract will affect the remainder. In the event that any term or condition contained herein is found to be invalid, the parties agree that the remainder of Supplier's contract shall remain valid.

5) Jurisdiction and Venue; Construction of Terms and Conditions

The Parties hereto agree that the terms and conditions of Supplier's documents mentioned herein and the Terms and Conditions of this document shall be construed in accordance with the laws of the State of Texas or, if offshore, in accordance with General Maritime Law of the United States, without giving effect to respective conflicts of law principals, or Supplier at its exclusive option may choose the Jurisdiction to interpret the terms and conditions contained herein and in the other documents mentioned herein. In the event of litigation between Customer and Supplier, Customer hereby waives any claim it may have to any jurisdiction and venue other than that chosen by Supplier. Customer agrees that it is to perform its obligations herein in Houston, Harris County, Texas, and/or Fort Bend, Texas, non-exclusively to include payment. The choice of either of these venues to be the sole discretion of the supplier.

Canada: Whenever the facts of a particular contract would in the sole opinion of the Supplier be best litigated in Canada, the parties agree that Supplier can choose that jurisdiction and that Supplier can choose any venue it deems appropriate in Canada. All the other terms and conditions contained in this document shall then apply in Canada as if this agreement was in the United States of America.

6) Credit

Supplier's Credit Application" and "Credit Application" refer to any application or request submitted by Customer to Supplier for the purpose of seeking the extension of credit by Supplier and which may contain the Supplier's terms and conditions all of which shall be binding on the Customer. Until notified otherwise by Cooper Valve's Credit Dept, all products are offered for sale as Cash In Advance prior to establishment of actual credit limits with Cooper Valve.

- a) If credit is approved, customer must maintain credit satisfactory to Supplier. When Customer or its agent signs any of Supplier's documents in the process of ordering or receiving Equipment or Services from Supplier, it states for Supplier's reliance that it has the current ability to pay for the Equipment or Services ordered or accepted and it further agrees that Supplier reserves the right to require Customer to furnish security for performance of Customer's obligations.

- b) Standard Payments shall be made in U.S. Dollars net 30 days at Supplier's address in Stafford, Fort Bend County, Texas. However, Supplier reserves the right to offer alternate credit terms and/or no allowable credit terms. If credit terms are not met or Customer otherwise fails to follow the Terms and Conditions contained herein, in addition to its other legal rights, Supplier may and Customer hereby authorizes Supplier to:

- i) defer or cancel further shipments of Equipment or Services and/or otherwise decline to provide its product to Customer;
- ii) enter upon any property or job site on which the Equipment of Supplier is located by taking any necessary action, including, but not limited to, opening gates, cutting locks, cutting chains;
- iii) authorize any other company to remove its equipment from any location, to the extent needed for Supplier to be able to remove its equipment, and said company moving its equipment shall send its bill for the same to Customer or Supplier may pay said bill and include the same in its bill to Customer; d) take any action needed to remove its equipment from the job site;
- iv) act as stated herein at the expense of Customer and Customer hereby indemnifies and holds harmless Supplier from any harm arising from said actions, including, but not limited to, environmental harm, harm to the real property and personal property and harm to the real and personal property of any third party; and
- v) charge Customer interest on any unpaid balance at the lesser of:

1. Eighteen percent (18%) per annum, or
2. The maximum rate permitted by applicable law.

7) Taxes

Customer shall be responsible for all customs fees, duties, and foreign, federal, state or local taxes (including, sales, use, excise or similar taxes and foreign withholding taxes).

8) Transportation

For Equipment sold, Customer may arrange shipment and will pay all crating, handling and shipping costs. Risk of loss passes to Customer at the time Customer

and/or any carrier takes possession of the Equipment from Supplier. For Equipment sold where Customer does not timely furnish shipping instructions or requests that Supplier arrange shipment, such transportation shall be in a commercially reasonable manner at Customer's risk and invoiced to Customer at current freight rates, plus all handling incurred, or at the prevailing mileage rate for any vehicles used by Supplier's personnel. Risk of loss will then pass to Customer at the time the Equipment leaves Supplier's premises, warehouse or store. All claims for shortages, damages, corrections or deductions must be made in writing within 10 days from receipt of goods and if shipper fails to comply, it waives its right to make a claim.

9) CONSEQUENTIAL AND INCIDENTAL AND LIQUIDATED DAMAGES: SUPPLIER WILL NOT BE RESPONSIBLE FOR CONSEQUENTIAL OR INCIDENTAL OR LIQUIDATED DAMAGES OF ANY KIND, WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF PROFITS, USE OR BUSINESS OPPORTUNITY, DAMAGES FOR FAILURE TO MEET DEADLINES, POLLUTION DAMAGE AND/OR WRECK OR DEBRIS REMOVAL EXPENSE AND CUSTOMER HOLDS HARMLESS AND INDEMNIFIES SUPPLIER FROM ALL HARM ARISING FROM ANY CLAIMS MADE AGAINST SUPPLIER FROM OUT OF ANY OF THESE THINGS.

10) Force Majeure

Supplier will not be liable for any damages, INCLUDING special and consequential and liquidated damages, as stated above, caused by events of force majeure or any other occurrences beyond Supplier's reasonable control subject to all of the limitations contained herein. In such event, the time for performance will be extended automatically for such reasonable time as is necessary to permit performance hereof.

11) DISCLAIMER OF ALL WARRANTIES EXCEPT THOSE SPECIFICALLY GRANTED HEREIN:

SUPPLIER HEREBY DISCLAIMS ALL WARRANTIES EXCEPT THOSE SPECIFICALLY GRANTED AND STATES AS FOLLOWS:

a) SUPPLIER MAKES NO WARRANTIES OF ANY KIND REGARDING ITS EQUIPMENT AND/OR SERVICES;

b) TECHNICAL INFORMATION AND ANY ASSISTANCE IN EQUIPMENT INSTALLATION OR TECHNICAL OR ENGINEERING INFORMATION CONCERNING EQUIPMENT OR SERVICES PROVIDED BY SUPPLIER WILL BE ADVISORY ONLY, AT CUSTOMER'S SOLE COST AND ON AN "AS IS" BASIS;

c) NO WARRANTY IS GIVEN WITH RESPECT TO SUCH SERVICES OR INFORMATION AND SUPPLIER WILL NOT BE LIABLE FOR ANY CLAIMS ARISING FROM ITS FURNISHING OR CUSTOMER'S USE OF SUCH ASSISTANCE OR INFORMATION;

d) NO WARRANTY IS GIVEN IN RESPECT FOR APPLICATION. CORRECT APPLICATION OF PRODUCT IS EXCLUSIVE RESPONSIBILITY OF USER. MIS-APPLICATION OF PRODUCT WILL NOT CONSTITUTE A FAILURE OF PRODUCT QUALITY.

e) SUPPLIER SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES, THE WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY THAT THE EQUIPMENT OR SERVICE PROVIDED BY SUPPLIER WILL ACTUALLY ACCOMPLISH THE GOAL(S) DESIRED BY CUSTOMER. SUPPLIER GRANTS TO CUSTOMER ONLY A LIMITED WARRANTY AS FOLLOWS: SUPPLIER GRANTS ONLY TO CUSTOMER ONLY A 1-YEAR WARRANTY ON MATERIAL AND WORKMANSHIP ON ITS NEW PRODUCTS COMMENCING AT DATE OF SHIPMENT UNLESS OTHERWISE SPECIFIED AND AGREED TO AT TIME OF ORDER ACCEPTANCE BY SUPPLIER.

12) Insurance

The parties agree that the indemnities provided by Customer to Supplier herein shall be supported either by available insurance or that Customer shall voluntarily become self-insured, in whole or part and upon request of Supplier prove that Customer is good for the loss and that Customer is sufficiently self-insured. In addition, Customer shall, at its expense, maintain adequate insurance to fully protect any Equipment or Services or personnel supplied by Supplier and shall supply to Supplier, upon request, satisfactory evidence of sufficient insurance coverage to protect Supplier, Supplier's property, Supplier's personnel and Supplier's liability.

13) Prices

All of Supplier's, terms, conditions, prices, rates and charges are subject to change without notice.

a) All prices are F.O.B. Supplier's warehouse or manufacturing facility – unless specifically stated and agreed to at time of quotation and order entry.

b) All prices quoted are valid for 30 days unless stated otherwise at time of quotation or unless revoked by Supplier prior to order acceptance (see 6.(a) above).

14) Assignment

Customer may not assign any rights or obligations hereunder, without Supplier's prior written consent.

15) Amendment of Indemnities to Conform to Law

The indemnities provided by Customer herein shall be limited to the extent necessary for compliance with applicable state and federal laws.

16) Termination/Cancellation

Unless provided otherwise in writing herein, Customer cannot terminate or cancel any order once Supplier has accepted the order. No termination shall relieve Customer of any liability incurred and Customer's obligations shall survive such termina-

tion, including all hold harmless and all indemnities and all warranties & non-warranties contained herein which are made expressly for the benefit of Supplier.

a) **Termination Policy:** No goods or products supplied pursuant hereto maybe returned without Supplier's written permission. Supplier assumes no responsibility without Supplier's written permission. All returns shall be made freight prepaid. Supplier will charge to Customer a Min. 25% Restocking Charge upon the return of goods by Customer.

b) **Special Orders:** A special order is an order for any product of Supplier or which comes from Supplier's sources which is non-standard requiring separate/additional manufacturing, engineering, modification, tooling and machining and is a non-stock item or above stocking levels requirements in qty by Cooper Valves. If Supplier agrees in writing that a Special Order can be terminated, Special Orders cannot be cancelled unless customer agrees in writing to pay for all work including engineering completed up to the time of cancellation. Otherwise, all special orders are non-cancellable, non-returnable.

17) Default

If Customer ever defaults on or breaches any Term or Condition contained herein or in any other document of Supplier mentioned above, all charges for all Equipment and Services provided by Supplier for Customer's benefit shall automatically accelerate and shall immediately become due and payable, notwithstanding any other provision which would afford Customer, under normal circumstances, any stated amount of time in which to pay for said charges. In addition, all discounts which may have been offered to Customer shall automatically and immediately be revoked and become fully due and owing with no action or notice from Supplier, notwithstanding any other provision to the contrary. If Customer ever disputes any charges of Supplier, Customer shall tender to Supplier all amounts for all charges which are not disputed by Customer.

a) Customer hereby indemnifies and holds Supplier harmless for and agrees to reimburse Supplier for all costs of collections, including, but not limited to, actual attorney's fees and costs incurred in connection with the collection of past due amounts and defending against any counterclaims. Notwithstanding any other provision in this document or any other document or check, Customer agrees that all payments received by Supplier on Customer's account may be applied first to all outstanding interest and then to the oldest amounts owed by Customer to Supplier, and this provision is not waived by Supplier by accepting any check from Customer containing contrary language.

18) Customer Holds Harmless and Indemnifies Supplier

CUSTOMER SHALL HOLD HARMLESS, DEFEND, INDEMNIFY, RELEASE AND HOLD SUPPLIER HARMLESS FROM AND AGAINST ANY AND ALL CLAIMS BY CUSTOMER, CUSTOMER'S CUSTOMER, OWNER, OR ANY OTHER PERSON OR ENTITY AGAINST SUPPLIER OF EVERY KIND OR CHARACTER, WHATSOEVER, WHETHER SUCH CLAIMS ARE BASED ON THEORIES OF CONTRACT LAW, TORT LAW, OR OTHERWISE, DIRECT OR INDIRECT, INCLUDING INCIDENTAL, SPECIAL AND CONSEQUENTIAL DAMAGES CAUSED BY SUPPLIER ARISING OUT OF DELIVERY, PICK-UP, REPAIR, USE OR OPERATION OF EQUIPMENT OR SERVICES RELATING TO EXECUTION, COMPLETION OR TERMINATION OF THIS CONTRACT OR ON ACCOUNT OF BODILY INJURY OR DEATH OR PROPERTY DAMAGE, DESTRUCTION OR ECONOMIC LOSS (INCLUDING, BUT NOT LIMITED TO RELEASE OF RADIOACTIVE MATERIALS, CONTAMINATION OR DAMAGE TO REAL PROPERTY OR PERSONAL PROPERTY, LAND, BUILDINGS, VEHICLES, OR PROPERTY RIGHTS) BECAUSE OF PURCHASE, DELIVERY, INSTALLATION, POSSESSION, OPERATION, USE, CONDITION OR RETURN OF GOODS, PEOPLE, SERVICES AND/OR EQUIPMENT USED, PURCHASED, OR USED DURING THE TERM OF THIS CONTRACT, OR ON ACCOUNT OF INFRINGEMENT OF ANY PATENT, DESIGN, COPYRIGHT, OR TRADE NAME OR MARK, WHETHER BY SUPPLIER, CUSTOMER OR OTHERWISE, IRRESPECTIVE OF WHETHER SUPPLIER WAS CONCURRENTLY NEGLIGENT OR AT FAULT FOR ANY SUCH CLAIMS WHERE THE DAMAGE, INJURY OR DEATH WAS CAUSED BY THE SOLE OR PARTIAL NEGLIGENCE OF SUPPLIER.

19) Inspection

Customer's acceptance of delivery and signature of its representative on any delivery tickets or other Supplier documents is conclusive evidence that Customer found the Equipment to be suitable for its needs and in good condition and that the signor was the agent for Customer or Customer's Customer, building or land owner, contractor, sub-contractor and operator. Customer also has a duty to inspect Equipment prior to use and to notify Supplier immediately of any defects and before use of the Supplier's product.

20) Sale Terms

The following are in addition to and a part of all other Terms and Conditions provided for herein.

1) LIMITED LIABILITY/DISCLAIMER:

a) Supplier does warrant Equipment sold by Supplier to Customer to be free from defects in material or workmanship.

b) In the event that a court finds that Supplier is liable for any breach of contract or any breach of warranty, Supplier's liability for said breach is expressly limited to the repair or replacement, at its sole option, of any Equipment which

proves to be defective during any period declared by the court to be a period of warranty. All such Equipment shall be repaired or replaced F.O.B. Supplier's plant, warehouse, store or premises.

c) IN THE EVENT THAT A COURT FINDS THAT SUPPLIER HAS AN OBLIGATION TO REPAIR OR REPLACE EQUIPMENT, SAID REPAIR OR REPLACEMENT CONSTITUTES AGREED AND LIQUIDATED DAMAGES FOR ANY BREACH OF SUPPLIER'S ACTUAL OR COURT-DECLARED WARRANTY.

d) THE REMEDIES STATED ABOVE FOR ANY SUCH BREACH THEREOF, SHALL BE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ALL OTHER WARRANTIES FOR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WHICH SUPPLIER HAS SPECIFICALLY DISCLAIMED HEREIN, AND IN LIEU OF LIABILITY FOR SUPPLIER'S NEGLIGENCE OR FAULT AND CUSTOMER'S RIGHTS AND REMEDIES UNDER THE TEXAS DECEPTIVE TRADE PRACTICES CONSUMER PROTECTION ACT (CHAPTER 17, TEXAS BUSINESS AND COMMERCE CODE)

2) PRICES

a) Prices for standard equipment will be the sales price shown on Supplier's current product sales price list ("Price List"), F.O.B. Supplier's plant, warehouse, district stock points, or premises or as offered by Supplier on quotation for same (POA).

b) Requests for quotations for non-standard Equipment should be sent to the appropriate Supplier office. Quoted prices are valid for 30 days after the date of the quotation, unless otherwise noted on the quotation or unless canceled by Supplier prior to Customer's acceptance.

c) Cost of additional labor, materials or outside services for modification of such procedures or specifications requested by Customer will be charged to Customer at Supplier's prevailing rate.

d) Costs for any additional test, inspection, etc requested by Buyer shall be done prior to shipment and all costs shall be charged to Buyer.

e) Costs of any special packing, crating, shipping, handling etc shall be charged to Buyer.

22) Delivery/Disclaimer

a) Supplier will use its best efforts to have Equipment ready for shipment, subject to receipt of all necessary Customer information, including approved drawings. HOWEVER, SUPPLIER ASSUMES NO LIABILITY FOR DAMAGES INCURRED AS A RESULT OF ITS LATE DELIVERY OF EQUIPMENT, SUPPLIES, PRODUCT, PERSONAL PROPERTY, REGARDLESS OF CAUSE.

b) Title and risk of loss will pass to Customer upon delivery of Equipment, F.O.B. Supplier's plant, warehouse or premises.

c) If unable to deliver, Supplier may charge Customer its customary storage rates and Customer will maintain all-risk property insurance on Equipment, at its replacement value. Supplier will not be liable for deterioration of Equipment, personal property, product resulting from atmospheric conditions, acts of God, or other events regardless of whether they are within Supplier's reasonable control while in Supplier's possession or in transit to Customer's destination or location.

Service Terms

The following are in addition to and a part of all other Terms and Conditions provided for herein.

1) Limited Liability/Disclaimer

a) Supplier will use its best efforts to ensure that all personnel furnished are competent and that Equipment, supplies, personal property or product furnished is in good condition; however, Customer agrees that the Equipment and personnel come without warranty or guarantee of any kind whatsoever except as provided herein.

b) Supplier's personnel will attempt to perform the work requested by Customer; however, because of the nature of the work to be accomplished and because of the unpredictable conditions which always exist, such results as required by Customer or Customer's Customer cannot be and are not guaranteed or warranted and Customer agrees that Supplier makes no warranties of any kind and that Supplier does not guarantee any particular result as from furnishing people, goods, product, personal property, equipment or services.

c) Supplier reserves the right not to do work if, in its sole discretion, job conditions render such action inadvisable for any reason or unsafe for any reason.

d) Customer agrees that any employee(s) furnished by Supplier shall not be responsible for any final decision made on any job. Rather, Customer shall retain complete control and supervision of the job, building site, project and performance of operations in and about the job site.

e) Customer shall pay Supplier for Equipment and Services regardless of whether the desired results are achieved without any deduction or offset of any kind, irrespective of any Claims which Customer may assert or allege against Supplier or any supplier and/or manufacturer of Equipment and/or Services, at the rates indicated in the Customer's document, manual, delivery documents or Price Book in effect at the time of delivery.

f) Customer will be invoiced at the sales rate or service rates in effect at the beginning of the invoice period.

g) SUPPLIER MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, AS TO THE QUALITY, PERFORMANCE OR

FUNCTION OF ITS PEOPLE, AS TO THE DESIGN, OPERATION, CONDITION OR QUALITY OF THE MATERIAL OR WORKMANSHIP OF EQUIPMENT OR PERFORMANCE OF EQUIPMENT DELIVERED TO CUSTOMER, IT BEING AGREED THAT ALL SUCH RISKS AS BETWEEN SUPPLIER AND CUSTOMER ARE TO BE BORNE BY CUSTOMER, REGARDLESS OF WHETHER SUCH EQUIPMENT IS OPERATED UNDER SUPPLIER'S SUPERVISION, AND ALL EQUIPMENT, SERVICES AND PEOPLE ARE ACCEPTED BY CUSTOMER "AS IS" except as provided elsewhere herein. CUSTOMERS DESIRING DIFFERENT STANDARDS THAN THOSE CONTAINED HEREIN SHOULD, AT CUSTOMER'S EXPENSE, OBTAIN AN INSPECTION OF GOODS, SERVICES, EQUIPMENT AND PEOPLE PRIOR TO USE AND THE BENEFITS OF ANY AND ALL IMPLIED WARRANTIES OF SUPPLIER ARE HEREBY WAIVED BY CUSTOMER except as elsewhere provided herein.

2) Charges

All charges are on a daily basis for a 24-hour day or any part stated therein.

a) Services

i) all Services are on a daily or hourly basis, subject to any minimum charge, all of which are specified by Supplier in Supplier's documents mentioned herein;

ii) charges begin when each Service person departs Supplier's store location where said person or Equipment is based and the charges shall continue until return to that store location;

iii) Customer shall furnish quarters and meals for Supplier's personnel or reimburse Supplier for reasonable living expenses incurred at the prevailing rate from the time each Service person leaves the supplier's location until return to supplier's location;

iv) If personnel and/or Equipment are dispatched at Customer's request, but are later canceled, Customer will be invoiced

v) for a "dead call" as provided in the Price Book or other Supplier documents mentioned herein.

vi) Call outs will require a written purchase order to Supplier.

vii) If any call out for service is NOT warranty related or found to be the fault of the user, the Supplier reserves the right to charge in full for all associated costs with such a Service Call.

b) Standby Charges: Standby rates may be applied under conditions specified in the Price Book.

3) Trade Discount

Trade discounts, if any, apply only to Equipment, goods, or services which are paid for within 30 days of the invoice date. In the event payment is not timely made, with time being deemed to be of the absolute essence, all discounts granted are automatically revoked and reversed on Customer's account and are fully due and owing.

4) Export Compliance

Cooper Valve, LP and its products are subject to US Export Administration Regulations (EAR). In accordance with EAR, Cooper reserves the right not to supply product to any customer that cannot or will not advise in writing the end user, service condition and ultimate destination for any of its products. Furthermore, this order (if exported) may be subject to USA Export Licensing requirements. This may affect both order fulfillment as well as delivery time due to this additional requirement. Buyer is hereby notified of such and accepts this term and condition as part of the order process. More information may be found at: <http://www.bis.doc.gov/licensing/exportingbasics.htm>

		Rules for any Mode or Modes of Transport					Rules for Sea and Inland Waterway Transport				
Incoterm Abbreviation	Ex Works	Free Carrier	Carriage Paid To	Carriage & Insurance Paid To	Delivered at Terminal	Delivered at Place	Delivered Duty Paid	Free Alongside Ship	Free on Board	Cost & Freight	Cost, Insurance & Freight
	EXW	FCA	CPT	CIP	DAT	DAP	DDP	FAS	FOB	CFR	CIF
Seller Responsibility	Seller is only responsible for making the goods available at seller's premises	Seller is responsible for delivery to the custody of the carrier, which is provided by the buyer	Seller delivers the goods to the carrier at an agreed place of delivery and pays for transport to the named destination	Seller delivers the goods to the carrier at an agreed place of delivery and pays for transport and insurance to the named destination	Seller delivers the goods unloaded at a specified place inside the agreed terminal	Seller delivers the goods to the disposal of the buyer on the arriving means of transport at the agreed place	Seller is responsible for bringing the goods to the destination, paying any duty and making the goods available to the buyer	Seller is responsible for delivery of the goods at the quay alongside the ship	Seller is responsible for delivery of the goods loaded on board the ship	Seller covers cost of freight, duty unpaid, to the named port of destination	Seller covers cost of insurance and freight, duty unpaid, to the named port of destination
Transfer of Risk	Buyer bears full risk from warehouse to destination	Risk is transferred upon loading	Risk is transferred at place of delivery, whereas seller pays for transport to the destination	Risk is transferred at place of delivery, whereas seller pays for transport and insurance to the destination	Risk is transferred as soon as goods have been unloaded	Seller assumes the risk until the goods are made ready for unloading from the arriving means of transport	Risk is transferred as soon as the buyer has access to the goods ready for unloading at the agreed destination	Risk transferred when shipside at the port	Risk transferred as soon as goods set down inside the ship	Risk transferred as soon as goods set down inside the ship	Risk transferred as soon as goods set down inside the ship
Services	Who Pays	Who Pays	Who Pays	Who Pays	Who Pays	Who Pays	Who Pays	Who Pays	Who Pays	Who Pays	Who Pays
Export Packing	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller
Marking & Labeling	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller
Block and Brace	1	1	1	1	1	1	1	1	1	1	1
Export Clearance (License, EE/AES)	Buyer	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller
Freight Forwarder Documentation Fees	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Buyer	Buyer	Seller	Seller
Inland Freight to Main Carrier	Buyer	2	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller
Origin Terminal Charges	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller
Vessel Loading Charges	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Buyer	Seller	Seller	Seller
Ocean Freight/Air Freight	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Buyer	Buyer	Seller	Seller
Nominate Export Forwarder	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Buyer	Buyer	Seller	Seller
Marine Insurance	3	3	3	Seller	3	3	3	3	3	3	Seller
Unload Main Carrier Charges	Buyer	Buyer	4	4	Seller	Seller	Seller	Buyer	Buyer	4	4
Destination Terminal Charges	Buyer	Buyer	4	4	4	Seller	Seller	Buyer	Buyer	4	4
Nominate On-Carrier	Buyer	Buyer	5	5	5	5	Seller	Buyer	Buyer	Buyer	Buyer
Security Information Requirements	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
Customs Broker Clearance Fees	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
Duty, Customs Fees, Taxes	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
Delivery to Buyer Destination	Buyer	Buyer	5	5	5	5	Seller	Buyer	Buyer	Buyer	Buyer
Delivering Carrier Unloading	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer

1 – Incoterms® 2010 do not deal with the parties' obligations for stowage within a container and therefore, where relevant, the parties should deal with this in the sales contract.
 2 – FCA Seller's Facility – Buyer pays inland freight; other FCA qualifiers. Seller arranges and loads pre-carriage carrier and pays inland freight to the "F" delivery place
 3 – Incoterms® 2010 does not obligate the buyer nor must the seller to insure the goods, therefore this issue be addressed elsewhere in the sales contract.
 4 – Charges paid by Buyer or Seller depending on contract of carriage.
 5 – Charges paid by Seller if through Bill of Lading or door-to-door rate to Buyer's destination



**We are building valves you can depend on.
Every day.**

COOPER[®]
Valves