

# Conval<sup>INC.</sup>

## High Performance Valves for the World's Most Demanding Applications

- *High Pressure*
- *High Temperature*
- *Ball*
- *Bellows*
- *Check*
- *Gate*
- *Globe*
- *Throttling*
- *Urea Service*



# WELCOME TO *Gonval* INC.

Conval has designed and manufactured high-pressure, high-temperature forged steel valves for the world's most **demanding** applications for over 45 years. One of Conval's guiding principles is selecting, cultivating, and serving the needs of our markets with innovative and technologically-advanced products. In order to achieve this high degree of excellence, we have set up a Quality System that ensures compliance to requirements. Conval was ISO 9001 Certified on Sept. 11, 1992. We also comply to Appendix B of 10 CFR 50, the Crosby Quality program, N-stamp certifications, the European PED, IBR and many other standards.

Conval valves and accessories are in service with customers around the world. That's why Conval has stocking representatives on every continent. For your convenience, there is a complete, up-to-date list of representatives and regional managers on our website, Conval.com. We look forward to being of service to you soon.



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## Why CLAMPSEAL® Valves are Top Performers in Their Class



### ***Versatility***

CLAMPSEAL® valves are tailored to the exact requirements of our customers. No other premium forged valve offers so many options. Conval provides three body styles in various pressure classes and five standard materials. Other materials are available to meet customer needs. The easy interchangeability of parts means that an entire plant installation can be supported with a very low parts inventory.

### ***Performance***

Our customers demand a valve that does the job well with little attention. The CLAMPSEAL® valve is that valve. Over 45 years of service in the most demanding applications have established the CLAMPSEAL® valve as the top performer in its class and the easiest to service.

### ***Valve Quality***

The cost of plant shutdown time to repair or replace valves far exceeds the cost of equipment. Features such as electroless nickel plated finish and complete material traceability of all wetted parts and yoke instantly establish the quality of the CLAMPSEAL® valve. In fact, parts for valves built 45 years ago are interchangeable with parts built today.

### ***Service***

The CLAMPSEAL® valve is only part of the service program which attends to the continued needs of our valued customers. Conval representatives and regional managers are selected and trained to provide the necessary support to assure complete satisfaction. Seminars are available at your plant at no cost.

### ***Total Life Cycle Value***

Based on user experience, most OEM valves simply cannot perform in highly demanding circumstances. Time and experience have shown that these inferior valves only last 4-5 years or less. By comparison, where Convals were specified and installed, typical valve life is five to ten times longer. Conval is the smartest, most economical valve choice from a total life cycle standpoint.

### ***Two-Year Warranty***

Conval is committed to unsurpassed quality. We are so confident of the quality of our product, that we offer a two-year warranty.

## A Wide Conval Product Line

### Standard Sizes

1/2" through 3" (4" reduced port)

Valves may also be supplied to metric dimensions.

### Pressure Ratings(ASME)

Nominal: 900/1500/2500/4500

Intermediate: 1195/2155/3045

### Blowdown / Letdown Valves

Five styles include single orifice continuous blowdown, unit tandem blowdown, Whisperjet blowdown, dual range valve for greater turndown and variable trim for fine control. Valves suitable for steam drains or any high pressure letdown service.

### Gate Valves

Unique Swivldisc flex wedge gate for positive seat tightness. Anti-galling gate guiding, pressure seal bonnet, one piece gland with integral gland wrench.

### Strainers

Simple and rugged with wide range of strainer element hole sizes. Socket blowoff connection or integral blowoff valve option available on all sizes.

### Optional Valves

Adaptable to many on-line serviceable variations, including 3-way service, cryogenic service, bellows stem seal or leakoff features.

### Standard Accessories

Actuators - electric, pneumatic or hydraulic

Locking Device - open, closed, or both

Limit Switch - single or dual

Stem Shroud

Position Indicator

*Globe, Piston Check and Stop Check valves, Y, Angle and T pattern body styles all feature forged body and yoke; pressure seal bonnets with integral backseat and cartridge packing chambers; one piece packing gland with integral gland wrench; solid Stellite™ seat and disc/piston; and Electroless Nickel plate finish on Carbon Steel and Low Alloy valves.*

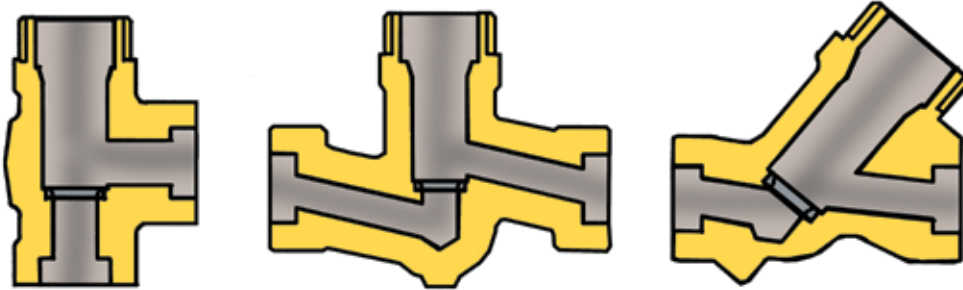
#### End Prep

Type	Standard	Special
Sockets Weld	1/2" - 2"	2 1/2"
Butt Weld	2 1/2" - 4"	1/2" - 2"
Threaded	1/2" - 1"	1 1/2" - 2"
Clamp	1/2" - 3"	4"
Flanges		All Sizes

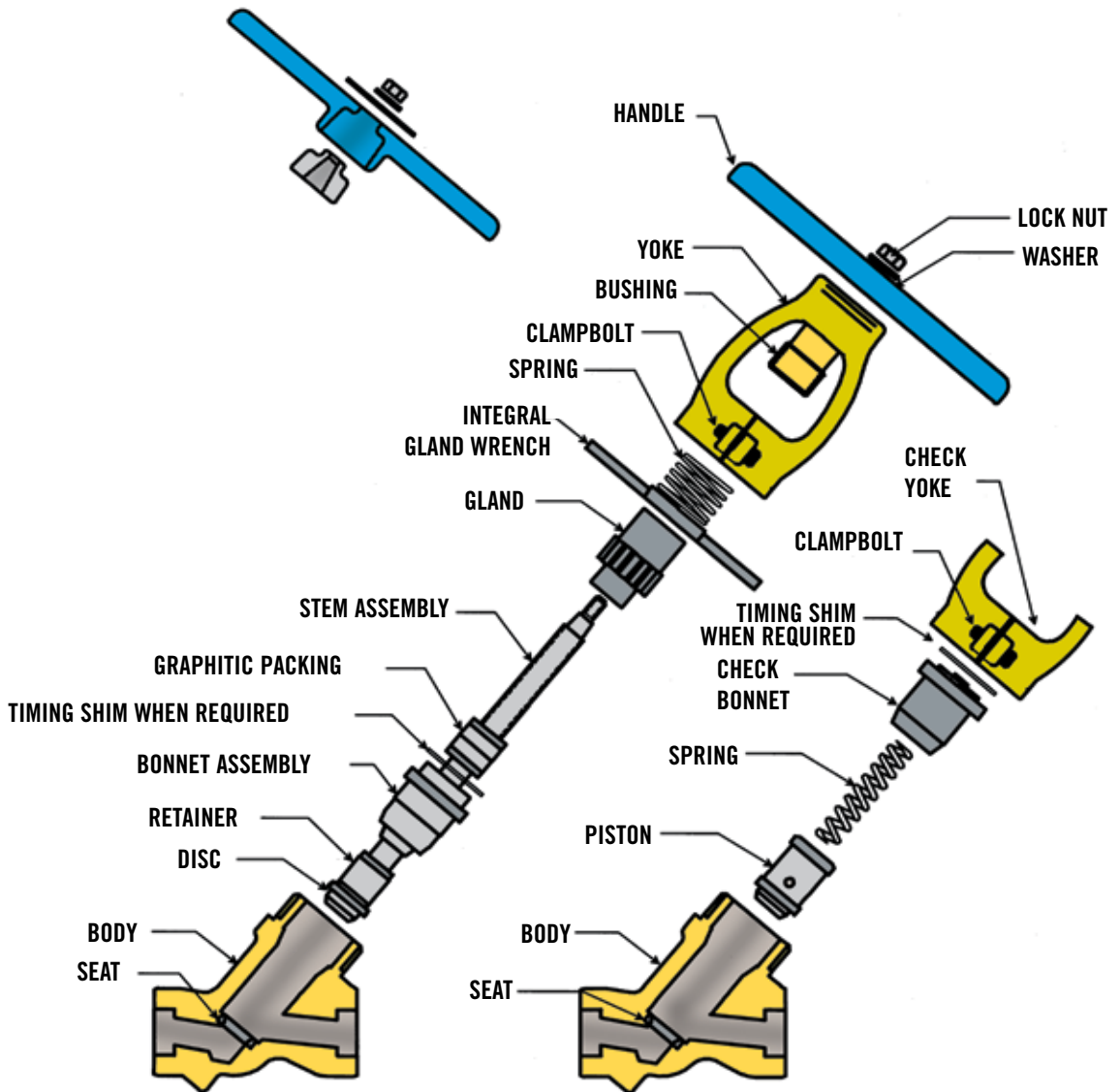
#### Materials (Body and Yoke)

Type	Standard	Special
Carbon Steel	SA 105 WCB (Gate Valve)	A350-LF2
Low Alloy	S182-F22 WC9 (Gate Valve) SA182-F91 C12A (Gate Valve)	SA182-F5 SA182-F11
Stainless	SA182-F316 SA182-F316L CF8M (Gate Valve)	SA182-F347
Other		Monel™ 400 Inconel™ 600

# Exploded View of CLAMPSEAL® Valve



VALVES WITH SIZE CODE 8, 9 or 10  
HAVE HANDWHEEL & ADAPTOR (IMPACT HANDWHEEL)



# The Most Advanced Forged Steel Valve Available



## ***Axial Design***

The axial design of CLAMPSEAL® valves ensures tight concentricity. This feature is critical for superior valve performance. Concentricity eliminates side loading of the packing and minimizes wear forces on the trim components.

## ***High Performance Packing System***

The CLAMPSEAL® packing system incorporates corrosion-inhibited, high density graphitic packing. An optional LIVE LOADED GLAND system maintains packing loads for long periods without routine maintenance adjustments. Uniform loading from the axial one-piece gland and the highly polished stainless steel stem and stuffing box ensure a tight seal between packing material and sealing surfaces.

## ***Integral Gland Wrench – I.G.W.***

The Integral Gland Wrench makes packing adjustments simple, no tools required.

## ***Clampseal® Bonnet/Chamber***

A secure, leak proof bonnet allows rapid access to valve trim for inspection and maintenance. The pressure boundary is sealed at the smallest diameter possible to ensure maximum strength, low stress and minimum weight.

## ***Pressure Actuated Backseat***

The pressure actuated backseat provides maximum valve integrity by ensuring a positive internal stop for the valve stem and disc assembly while extending packing life by securely isolating the packing from line pressure when the valve is fully open.

## ***Modular Body Styles***

Three interchangeable body styles, Y, ANGLE and T-PATTERN use identical replacement trim parts to lessen your tool and inventory costs. Solid cobalt alloy seats provide high erosion resistance and repeatable in-line resurfacing (Cobalt free alloys are also available).

## ***Rapid In-Line Repairability***

The CLAMPSEAL® Valve line provides a modular solution to rising maintenance expense. Rapid, reliable in-line repairs make for less down time. This feature cuts man hours and man-REM exposure in nuclear environments.

# Conval Packing System

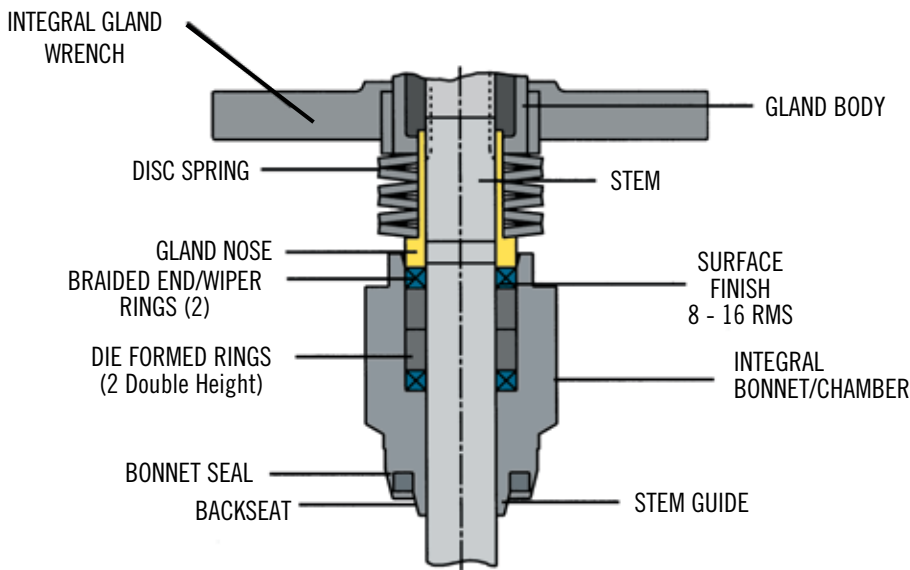
The CLAMPSEAL® packing system utilizes proven, corrosion-inhibited, graphite packing. The packing is uniformly loaded with a one-piece gland. The stuffing box and stem are burnished stainless steel to ensure a tight seal between the system fluids and sealing surfaces.

The packing seal in any valve is inherently vulnerable. Normal packing shrinkage, frictional and pressure forces, and improper or neglected adjustment all contribute to packing deterioration. In an effort to maximize packing life, several innovative features have been incorporated in the CLAMPSEAL® design.

- **Single Piece Gland** insures uniform packing compression and eliminates the potential for stem damage from gland cocking.

- **Surface Finishes and Close Tolerances** of stem and chamber provide optimal sealing surfaces and minimize wear.
- **Narrow Packing Rings** reduce the effect of packing shrinkage, thereby reducing the frequency of packing gland adjustment. Since force = pressure x area ( $F = P \times A$ ), by keeping the packing area to a minimum, there is less force being exerted by the system fluid, making it easier to contain.
- **Integral Gland Wrench**, standard on all CLAMPSEAL® globe and gate valves, provides immediate gland/packing adjustment capability.

- **Pressure Seal Backseat** increases packing life and provides maximum valve integrity by ensuring a positive internal stop for the valve stem and disc assembly, securely isolating packing from line pressure when valve is fully open.
- **Cartridge Type Packing Chamber** with secure, leak-proof bonnet allows rapid access to valve trim for inspection and maintenance. Pressure boundary is sealed at the smallest diameter possible to ensure maximum strength and low stress.
- **Thermal Isolation** of the packing chamber increases packing life. The Stainless Steel packing chamber is a separate unit from the body and therefore, eliminates the need to remove or change packing after stress relieving.



Optional Live Loaded Gland feature shown with the CLAMPSEAL® valve.



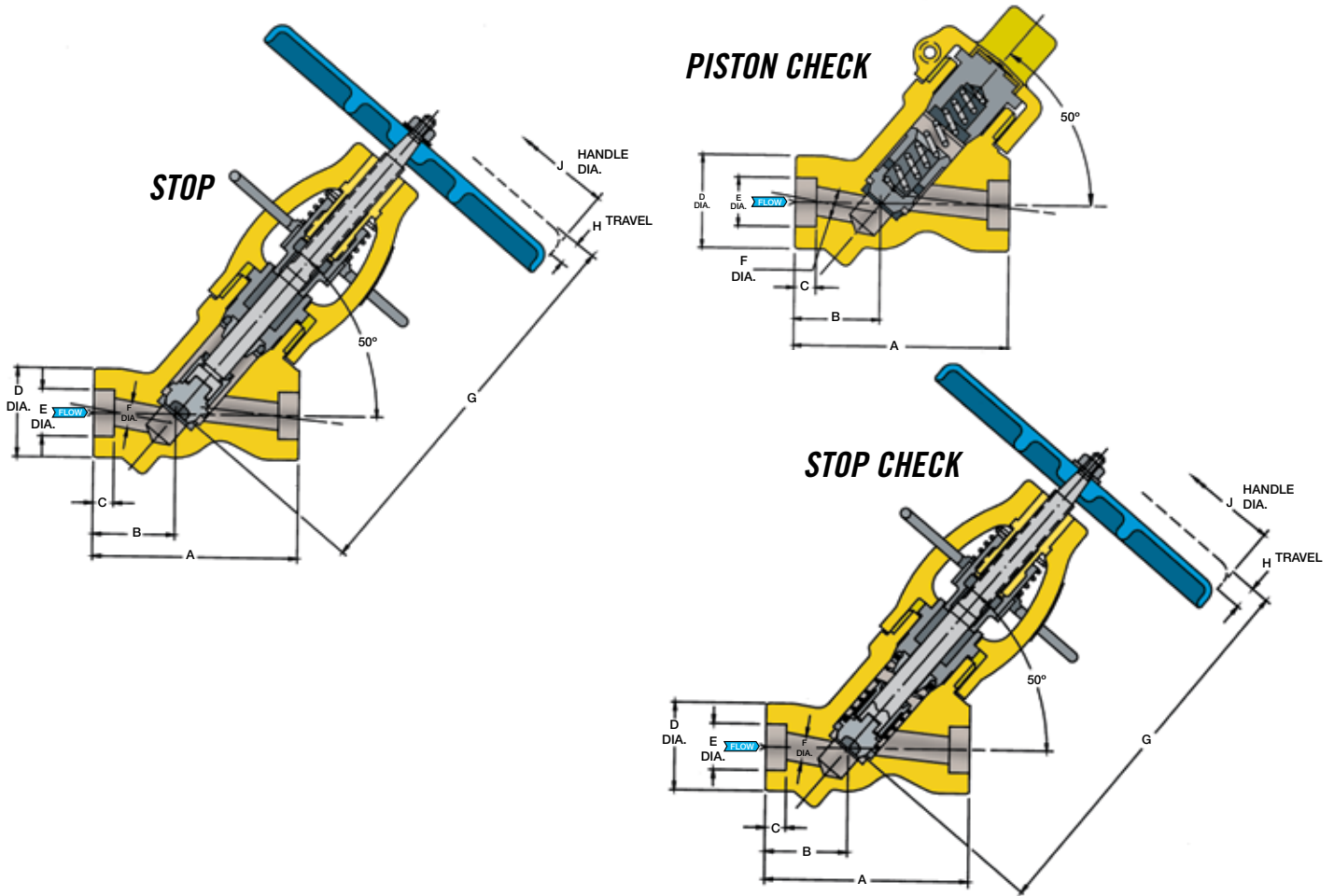
**NOTE:** TO ENSURE PROPER PACKING INTEGRITY, REFER TO CONVAL SERVICING INSTRUCTIONS FOR APPROPRIATE GLAND TORQUES BEFORE INSTALLING A REPAIRED VALVE IN-LINE.



*See product brochure for more details.*

# Y-Globe Stop, Check and Stop Check Valves

Y-pattern globe valves provide the maximum Cv possible in a globe valve. All Y-pattern valves are rodable. Available in 1/2" to 4"; ASME pressure classes through 4500; A105, F22, F91, F316, F347, Inconel™, Monel™ and other materials.



# Y-Globe Stop, Check and Stop Check Valves

PRESSURE CLASS	Size Code	Pipe Size	A SW	BW	B SW	BW	C*	D	E*	F	G	H	J	Stop Cv/Kv	Check & Stop Chk Cv/Kv	Stop & Stop Chk Wgt	Check Wgt
900	3D	1/2	3 3/4 95	3 3/4 95	1 1/2 38	1 1/2 38	3/8 10	1 5/8 41	0.860 21.8	1/2 13	7 3/8 190	9/16 14	6 1/2 165	6 5	5 4	5 2	4 2
	5E	3/4	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.070 27.2	5/8 16	8 13/16 224	11/16 17	8 203	9 8	8 7	11 5	8 4
	5F	1	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.335 33.9	13/16 21	8 15/16 227	3/4 19	8 203	15 13	13 11	10 5	8 4
	5G	1 1/4	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.680 42.7	1 25	9 7/16 240	1 1/4 32	8 203	24 21	21 18	9 4	6 3
	6H	1 1/2	5 1/2 140	6 1/8 156	2 1/8 54	2 7/16 62	1/2 13	2 11/16 68	1.920 48.8	1 1/4 32	9 13/16 249	1 3/16 30	8 203	36 31	31 27	14 6	11 5
1195	7J	2	6 1/4 158	6 1/2 165	2 9/16 65	2 9/16 65	5/8 16	3 1/4 83	2.411 61.2	1 1/2 38	12 7/8 327	1 1/4 32	12 305	61 53	53 46	21 10	21 10
	8K	2 1/2	7 1/4 184	7 1/4 184	2 11/16 68	2 11/16 68	5/8 16	3 15/16 100	2.914 74.0	1 7/8 48	14 11/16 373	1 3/4 44	12 305	86 74	75 65	43 20	26 12
INTER	9L	3	- 80	9 5/8 244	- -	3 5/8 92	- -	4 3/8 111	- -	2 1/4 57	16 13/16 427	2 7/32 56	14 356	122 106	106 92	71 32	37 17
	10M	4	- 100	12 305	- -	5 5/16 135	- -	4 7/8 124	- -	2 5/8 67	19 1/16 484	2 1/2 64	18 457	170 147	157 136	110 50	77 35

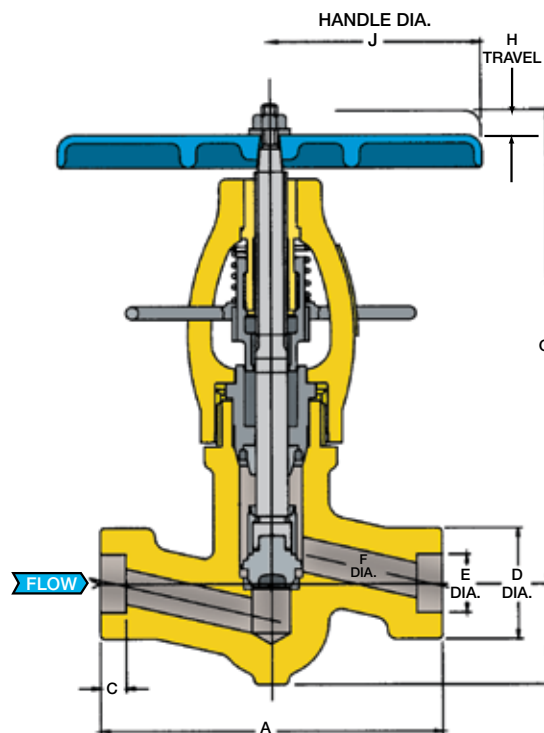
\* Socket Weld dimensions shown; Consult factory for Butt Weld dimensions.  
 Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.  
 Threaded end valves are nominal ASME B16.34 rated. Consult factory for other ratings.  
 NOTE: All weights are approximate for shipping purposes only. Information on Figure Number Variations can be found on page 29.



PRESSURE CLASS	Size Code	Pipe Size	A SW	A BW	B SW	B BW	C*	D	E*	F	G	H	J	Stop Cv/Kv	Check & Stop Chk Cv/Kv	Stop & Stop Chk Wgt	Check Wgt	
1500	NOMINAL	3D	1/2 15	3 3/4 95	3 3/4 95	1 1/2 38	1 1/2 38	3/8 10	1 5/8 41	0.860 21.8	1/2 13	7 1/2 190	9/16 14	6 1/2 165	5 4	5 4	5 2	3 1
		5E	3/4 20	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.070 27.2	5/8 16	8 13/16 224	11/16 17	8 203	9 8	8 7	11 5	8 4
	INTER	5F	1 25	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.335 33.9	13/16 21	9 229	3/4 19	8 203	15 13	13 11	10 5	7 3
		6G	1 1/4 32	5 1/2 140	6 1/8 156	2 1/8 54	2 7/16 62	1/2 13	2 11/16 68	1.680 42.7	1 25	9 13/16 249	1 3/16 30	8 203	24 21	21 18	15 7	11 5
		7H	1 1/2 40	6 1/4 159	6 1/2 165	2 9/16 65	2 9/16 65	1/2 13	3 1/4 83	1.920 48.8	1 1/4 32	12 3/4 324	1 3/16 30	12 305	38 33	33 29	22 10	16 7
2155	NOMINAL	8J	2 50	7 1/4 184	7 1/4 184	2 11/16 68	2 11/16 68	5/8 16	3 15/16 100	2.411 61.2	1 1/2 38	14 11/16 373	1 5/8 41	12 305	62 54	54 47	45 20	32 15
		9K	2 1/2 65	9 229	9 5/8 244	3 5/16 84	3 5/8 92	5/8 16	4 3/8 111	2.914 74.0	1 7/8 48	16 3/4 425	2 3/16 56	14 356	86 74	75 65	71 32	39 18
	INTER	10L	3 80	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 57	2 1/4 57	18 1/2 470	2 3/16 56	18 457	122 106	106 92	110 50	80 36
		10L	4 100	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 57	2 1/4 57	18 1/2 470	2 3/16 56	18 457	122 106	106 92	110 50	80 36
		3C	1/2 15	3 3/4 95	3 3/4 95	1 1/2 38	1 1/2 38	3/8 10	1 5/8 41	0.860 21.8	7/16 11	7 5/16 186	1/2 13	6 1/2 165	4 3	3 3	5 2	3 1
2500	NOMINAL	5E	3/4 20	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.070 27.2	5/8 16	8 13/16 224	11/16 17	8 203	9 8	8 7	11 5	8 4
		5E	1 25	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.335 33.9	5/8 16	8 13/16 224	11/16 17	8 203	9 8	8 7	11 5	8 4
	INTER	7G	1 1/4 32	6 1/4 159	6 1/2 165	2 9/16 65	2 9/16 65	1/2 13	3 1/4 83	1.680 42.7	1 25	12 3/4 324	1 3/16 30	12 305	24 21	21 18	23 10	17 8
		7G	1 1/2 40	6 1/4 159	6 1/2 165	2 9/16 65	2 9/16 65	1/2 13	3 1/4 83	1.920 48.8	1 25	12 3/4 324	1 3/16 30	12 305	24 21	21 18	23 10	17 8
		8H	2 50	7 1/4 184	7 1/4 184	2 11/16 68	2 11/16 68	5/8 16	3 15/16 100	2.411 61.2	1 1/4 32	14 1/4 362	1 5/16 33	12 305	38 33	33 29	47 21	27 12
3045	9J	2 1/2 65	- 244	9 5/8 244	- 92	5 5/16 135	- 111	4 3/8 111	- 38	1 1/2 38	16 3/8 416	1 5/8 41	14 356	62 54	54 47	74 34	42 19	
	10K	2 1/2 65	12 305	12 305	5 5/16 135	5 5/16 135	5/8 16	4 7/8 124	2.914 74.0	1 7/8 48	18 15/16 469	2 1/8 54	18 457	88 76	77 67	114 52	82 37	
	10K	3 80	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 48	1 7/8 48	18 15/16 469	2 1/8 54	18 457	88 76	77 67	114 52	82 37	
10K	4 100	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 48	1 7/8 48	18 15/16 469	2 1/8 54	18 457	88 76	77 67	114 52	82 37		
3500	NOMINAL	5D	1/2 15	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	3/8 10	2 5/16 59	0.860 21.8	1/2 13	8 11/16 221	5/8 16	6 1/2 165	5 4	5 4	10 5	10 4
		5D	3/4 20	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	1/2 13	2 5/16 59	1.070 27.2	1/2 13	8 11/16 221	5/8 16	6 1/2 165	5 4	5 4	10 5	10 4
		6E	1 25	5 1/2 140	6 1/8 156	2 1/8 54	2 7/16 62	1/2 13	2 11/16 68	1.335 33.9	5/8 16	9 5/8 244	11/16 17	8 203	10 9	9 8	16 7	12 5
	INTER	7F	1 1/4 32	6 1/4 159	6 1/2 165	2 9/16 65	2 9/16 65	1/2 13	3 1/4 83	1.680 42.7	13/16 21	12 15/32 317	7/8 22	12 305	16 14	14 12	24 11	18 8
		8G	1 1/2 40	7 1/4 184	7 1/4 184	2 11/16 68	2 11/16 68	1/2 13	3 15/16 100	1.920 48.8	1 25	14 1/4 362	1 3/16 30	12 305	24 21	21 18	50 23	29 13
		8G	2 50	- 184	7 1/4 184	- 68	2 11/16 68	- 100	3 15/16 100	- 25	1 362	14 1/4 362	1 3/16 30	12 305	24 21	21 18	50 23	29 13
		9H	2 50	9 229	- 84	3 5/16 84	- 16	5/8 16	4 3/8 111	2.411 61.2	1 1/4 32	15 15/16 405	1 7/16 37	12 305	39 34	34 29	68 31	43 20
	4095	9H	2 1/2 65	- 244	9 5/8 244	- 92	5 5/16 135	- 111	4 3/8 111	- 32	1 1/4 32	15 15/16 405	1 7/16 37	12 305	39 34	34 29	68 31	43 20
		10J	3 80	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 38	1 1/2 38	18 3/16 462	1 13/16 46	14 356	62 54	54 47	112 51	85 39
		10J	4 100	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 38	1 1/2 38	18 3/16 462	1 15/16 49	14 356	62 54	54 47	112 51	85 39
4500	NOMINAL	5C	1/2 15	4 1/2 114	4 3/4 121	1 3/4 44	1 3/4 44	3/8 10	2 5/16 59	0.860 21.8	7/16 11	8 3/4 222	11/16 17	6 1/2 165	4 3	3 3	12 5	11 5
		6E	3/4 20	5 1/2 140	6 1/8 156	2 1/8 54	2 7/16 62	1/2 13	2 11/16 68	1.070 27.2	5/8 16	9 9/16 243	11/16 17	8 203	10 9	9 8	16 7	12 5
	INTER	6E	1 25	- 156	6 1/8 156	- 62	2 7/16 62	- 68	2 11/16 68	- 16	5/8 16	9 9/16 243	11/16 17	8 203	10 9	9 8	16 7	12 5
		7E	1 25	6 1/4 159	6 1/2 165	2 9/16 65	- 62	1/2 13	3 1/4 83	1.335 33.9	5/8 16	12 1/8 308	7/8 22	12 305	10 9	9 8	25 11	19 9
		7E	1 1/2 40	- 165	6 1/2 165	- 65	2 9/16 65	- 83	3 1/4 83	- 16	5/8 16	12 1/8 308	7/8 22	12 305	10 9	9 8	25 11	19 9
		8F	1 1/2 40	7 1/4 184	- 68	2 11/16 68	- 100	1/2 13	3 15/16 100	1.920 48.8	13/16 21	13 9/16 344	1 25	12 305	16 14	14 12	38 17	31 14
		8F	2 50	- 184	7 1/4 184	- 68	2 11/16 68	- 100	3 15/16 100	- 21	13/16 21	13 9/16 344	1 25	12 305	16 14	14 12	38 17	31 14
		9G	2 1/2 65	- 244	9 5/8 244	- 92	5 5/16 135	- 111	4 3/8 111	- 25	1 402	15 13/16 402	1 3/8 35	12 305	24 21	21 18	67 30	53 24
		10H	3 80	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 32	1 1/4 32	17 3/4 451	1 7/16 37	12 305	39 34	34 29	110 50	89 40
		10H	4 100	- 305	12 305	- 135	5 5/16 135	- 124	4 7/8 124	- 32	1 1/4 32	17 3/4 451	1 7/16 37	12 305	39 34	34 29	110 50	89 40

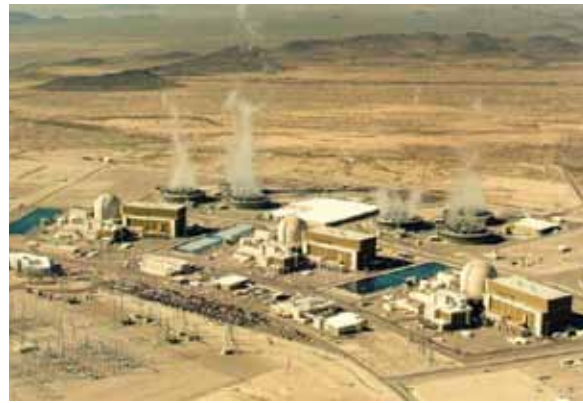
# T-Pattern Stop Valves, Also Available in Check and Stop Check Valves

T-pattern, vertical stem globe valves provide easily accessible stems and extensions for remote manual operation. Available in 1/2" to 3"; ASME pressure classes through 4500; A105, F22, F91, F316, F347, Inconel™, Monel™ and other materials.



PRESSURE CLASS	Size Code	Pipe Size	SW	A	BW	B	C*	D	E*	F	G	H	J	Cv	Kv	Wgt
900	3D	1/2	5	5	1 1/2	3/8	1 5/8	0.860	1/2	7 11/32	9/16	6 1/2	4	6		
		15	127	127	38	10	41	21.8	13	187	14	165	4	3		
	5E	3/4	6 1/2	6 1/2	1 7/8	1/2	2 3/8	1.070	5/8	8 13/16	11/16	8	6	13		
		20	165	165	48	13	60	27.2	16	224	17	203	5	6		
1195	5F	1	6 1/2	6 1/2	1 7/8	1/2	2 3/8	1.335	13/16	9	3/4	8	9	12		
		25	165	165	48	13	60	33.9	21	229	19	203	8	5		
	7G	1 1/4	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.680	1	12 11/16	1 3/16	12	14	25		
		32	216	216	79	13	83	42.7	25	322	30	305	12	11		
2155	7H	1 1/2	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.920	1 1/4	12 11/16	1 3/16	12	22	24		
		40	216	216	79	13	83	48.8	32	322	30	305	19	11		
	8J	2	10	10	3 3/4	5/8	3 7/8	2.411	1 1/2	15	1 9/16	12	32	55		
		50	254	254	95	16	98	61.2	38	381	40	305	28	25		
1500	8J	2 1/2	10	10	3 3/4	5/8	3 7/8	1.420	1 1/2	15	1 9/16	12	32	55		
		65	254	254	95	16	98	48.8	38	381	40	305	28	25		
	8J	3	-	10	3 3/4	-	3 7/8	-	1 1/2	15	1 9/16	12	32	55		
		80	-	254	95	-	98	-	38	381	40	305	28	25		
NOMINAL	3D	1/2	5	5	1 1/2	3/8	1 5/8	0.860	1/2	7 7/16	9/16	6 1/2	4	6		
		15	127	127	38	10	41	21.8	13	189	14	165	4	3		
	5E	3/4	6 1/2	6 1/2	1 7/8	1/2	2 3/8	1.070	5/8	8 13/16	11/16	8	6	13		
		20	165	165	48	13	60	27.2	16	224	17	203	5	6		
2155	5F	1	6 1/2	6 1/2	1 7/8	1/2	2 3/8	1.335	13/16	9	3/4	8	9	12		
		25	165	165	48	13	60	33.9	21	229	19	203	8	5		
	7G	1 1/4	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.680	1	12 11/16	1 3/16	12	14	25		
		32	216	216	79	13	83	42.7	25	322	30	305	12	11		
NOMINAL	7H	1 1/2	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.920	1 1/4	12 11/16	1 3/16	12	22	24		
		40	216	216	79	13	83	48.8	32	322	30	305	19	11		
	8J	2	10	10	3 3/4	5/8	3 7/8	2.411	1 1/2	15	1 9/16	12	32	55		
		50	254	254	95	16	98	61.2	38	381	40	305	28	25		
NOMINAL	8J	2 1/2	-	10	3 3/4	-	3 7/8	-	1 1/2	15	1 9/16	12	32	55		
		65	-	254	95	-	98	-	38	381	40	305	28	25		
	8J	3	-	10	3 3/4	-	3 7/8	-	1 1/2	15	1 9/16	12	32	55		
		80	-	254	95	-	98	-	38	381	40	305	28	25		

\* Socket Weld dimensions shown; Consult factory for Butt Weld dimensions.  
 Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.  
 Threaded end valves are nominal ASME B16.34 rated. Consult factory for other ratings.  
 NOTE: All weights are approximate for shipping purposes only. Information on Figure Number Variations can be found on page 29.



Conval valves are being specified and installed for vents, drains, shut-off and blowdown service all over the world on power plants ranging from clean coal, combined cycle, solar to nuclear.

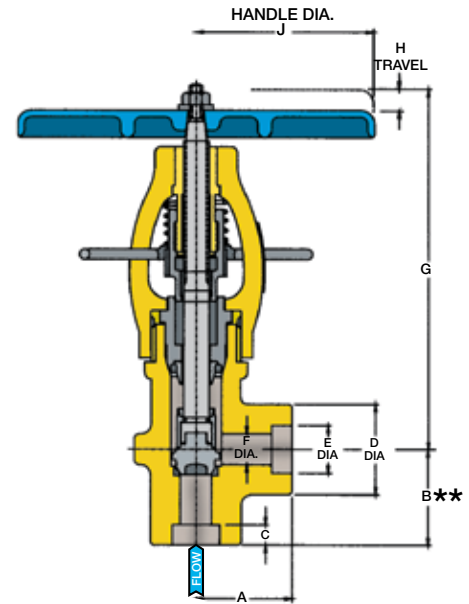
PRESSURE CLASS	Size Code	Pipe Size	A SW	BW	B	C*	D	E*	F	G	H	J	Cv Kv	Wgt	
2500	NOMINAL	3C	1/2	5	5	1 1/2	3/8	1 5/8	0.860	7/16	7 3/16	1/2	6 1/2	3	7
		15	127	127	38	10	41	21.8	11	183	13	165	3	3	
	INTERMEDIATE	5E	3/4	6 1/2	6 1/2	1 7/8	1/2	2 3/8	1.070	5/8	8 13/16	11/16	8	6	13
		20	165	165	48	13	60	27.2	16	224	17	203	5	6	
	INTERMEDIATE	5E	1	6 1/2	6 1/2	1 7/8	1/2	2 3/8	1.335	5/8	8 13/16	11/16	8	6	13
		25	165	165	48	13	60	33.9	16	224	17	203	5	6	
	INTERMEDIATE	7G	1 1/4	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.680	1	12 11/16	1 3/16	12	14	25
		32	216	216	79	13	83	42.7	25	322	30	305	12	11	
	INTERMEDIATE	7G	1 1/2	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.920	1	12 11/16	1 3/16	12	14	25
		40	216	216	79	13	83	48.8	25	322	30	305	12	11	
	3045	8H	2	10	10	3 3/4	5/8	3 7/8	2.411	1 1/4	14 5/8	1 1/4	12	22	55
		50	254	254	95	16	98	61.2	32	371	32	305	19	25	
3045	8H	2 1/2	-	10	3 3/4	-	3 7/8	-	1 1/4	14 5/8	1 1/4	12	22	55	
	65	-	254	95	-	98	-	32	371	32	305	19	25		
3045	8H	3	-	10	3 3/4	-	3 7/8	-	1 1/4	14 5/8	1 1/4	12	22	55	
	80	-	254	95	-	98	-	32	371	32	305	19	25		
3500	NOMINAL	5D	1/2	6 1/2	6 1/2	1 7/8	3/8	2 3/8	0.860	1/2	8 3/4	5/8	6 1/2	4	14
		15	165	165	48	10	60	21.8	13	220	16	165	4	6	
	NOMINAL	5D	3/4	6 1/2	6 1/2	1 7/8	1/2	2 3/8	1.070	1/2	8 3/4	5/8	6 1/2	4	14
		20	165	165	48	13	60	27.2	13	220	16	165	4	6	
	INTERMEDIATE	7F	1	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.335	13/16	12 3/8	7/8	12	9	26
		25	216	216	79	13	83	33.9	21	314	22	305	8	12	
	INTERMEDIATE	7F	1 1/4	-	8 1/2	3 1/8	-	3 1/4	-	13/16	12 3/8	7/8	12	9	26
		32	-	216	79	-	83	-	21	314	22	305	8	12	
	INTERMEDIATE	7F	1 1/2	-	8 1/2	3 1/8	-	3 1/4	-	13/16	12 3/8	7/8	12	9	26
		40	-	216	79	-	83	-	21	314	22	305	8	12	
	4095	8G	1 1/4	10	-	3 3/4	1/2	3 7/8	1.680	1	14 5/8	1 3/16	12	14	49
		32	254	-	95	13	98	42.7	25	371	30	305	12	22	
4095	8G	1 1/2	10	-	3 3/4	1/2	3 7/8	1.920	1	14 5/8	1 3/16	12	14	49	
	40	254	-	95	13	98	48.8	25	371	30	305	12	22		
4095	8G	2	-	10	3 3/4	-	3 7/8	-	1	14 5/8	1 3/16	12	14	49	
	50	-	254	95	-	98	-	25	371	30	305	12	22		
4095	8G	2 1/2	-	10	3 3/4	-	3 7/8	-	1	14 5/8	1 3/16	12	14	49	
	65	-	254	95	-	98	-	25	371	30	305	12	22		
4095	8G	3	-	10	3 3/4	-	3 7/8	-	1	14 5/8	1 3/16	12	14	49	
	80	-	254	95	-	98	-	25	371	30	305	12	22		
4500	NOMINAL	5C	1/2	6 1/2	6 1/2	1 7/8	3/8	2 3/8	0.860	7/16	8 3/16	11/16	6 1/2	5	11
		15	165	165	48	10	60	21.8	11	208	17	165	4	5	
	INTERMEDIATE	7E	1	8 1/2	8 1/2	3 1/8	1/2	3 1/4	1.335	5/8	11 7/8	7/8	8	9	24
		25	216	216	79	13	83	33.9	16	302	22	203	8	11	
	INTERMEDIATE	7E	1 1/2	-	8 1/2	3 1/8	-	3 1/4	-	5/8	11 7/8	7/8	8	9	24
40		-	216	79	-	83	-	16	302	22	203	8	11		
INTERMEDIATE	8F	1 1/2	10	-	3 3/4	1/2	3 7/8	1.920	13/16	13 5/8	1	12	16	48	
	40	254	-	95	13	98	48.8	21	346	25	305	14	22		
INTERMEDIATE	8F	2	-	10	3 3/4	-	3 7/8	-	13/16	13 5/8	1	12	16	48	
	50	-	254	95	-	98	-	21	346	25	305	14	22		

\* Socket Weld dimensions shown; Consult factory for Butt Weld dimensions.  
 Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.  
 Threaded end valves are nominal ASME B16.34 rated. Consult factory for other ratings.  
 NOTE: All weights are approximate for shipping purposes only. Information on Figure Number Variations can be found on page 29.

# Angle Stop Valves, Also Available in Check and Stop Check Valves

Angle pattern globe valves economically eliminate the need for separate valves and 90° joints. They also reduce the number of installation welds.

Available in 1/2" to 4"; ASME pressure classes through 4500; A105, F22, F91, F316, F347, Inconel™, Monel™ and other materials.



PRESSURE CLASS	Size Code	Pipe Size	A	BW	B	C*	D	E*	F	G	H	J	Cv	Kv	Wgt
900	3D	1/2	1 3/4	1 3/4	1 3/4	3/8	1 11/16	0.860	9/16	6 7/8	9/16	6 1/2	7	5	
		15	44	44	44	10	43	21.8	14	175	14	165	6	2	
	5E**	3/4	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.070	11/16	8 3/16	11/16	8	9	11	
		20	59	59	59	13	59	27.2	17	208	17	203	8	5	
1195	5F**	1	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.335	27/32	8 1/4	3/4	8	16	10	
		25	59	59	59	13	59	33.9	21	210	19	203	14	5	
	5G**	1 1/4	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.680	1 1/16	8 1/4	3/4	8	23	9	
		32	59	59	59	13	59	42.7	27	210	19	203	20	4	
1500	7H	1 1/2	2 3/4	2 3/4	4 1/4	1/2	3 1/4	1.920	1 9/32	11 7/8	1 3/16	12	38	21	
		40	70	70	108	13	83	48.8	33	302	30	305	33	10	
	7J	2	-	2 3/4	4 1/4	-	3 1/4	-	1 9/16	12 1/8	1 1/4	12	54	20	
		50	-	70	108	-	83	-	40	308	32	305	47	9	
2155	7J	2 1/2	-	2 3/4	4 1/4	-	3 1/4	-	1 9/16	12 1/8	1 1/4	12	54	20	
		65	-	70	108	-	83	-	40	308	32	305	47	9	
	8J	2	3	-	4 1/2	5/8	3 15/16	2.411	1 9/16	14	1 9/16	12	57	42	
		50	76	-	114	16	100	61.2	40	356	40	305	49	19	
4500	8K	2 1/2	3	3	4 1/2	5/8	3 15/16	2.914	1 7/8	13 11/16	1 3/4	12	74	39	
		65	76	76	114	16	100	74.0	48	348	44	305	64	18	
	10M	2 1/2	5	-	6	5/8	4 7/8	2.914	2 5/8	15 1/4	2 1/2	18	165	106	
		65	127	-	152	16	124	74.0	67	387	64	457	143	48	
900	10M	3	-	5	6	-	4 7/8	-	2 5/8	15 1/4	2 1/2	18	165	106	
		80	-	127	152	-	124	-	67	387	64	457	143	48	
	10M	4	-	5	6	-	4 7/8	-	2 5/8	15 1/4	2 1/2	18	165	106	
		100	-	127	152	-	124	-	67	387	64	457	143	48	
1500	3D	1/2	1 3/4	1 3/4	1 3/4	3/8	1 11/16	0.860	9/16	6 7/8	9/16	6 1/2	7	5	
		15	44	44	44	10	43	21.8	14	175	14	165	6	2	
	5E	3/4	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.070	11/16	8 3/16	11/16	8	9	11	
		20	59	59	59	13	59	27.2	17	208	17	203	8	5	
2155	5F	1	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.335	27/32	8 1/4	3/4	8	16	10	
		25	59	59	59	13	59	33.9	21	210	19	203	14	5	
	7G	1 1/4	2 3/4	2 3/4	4 1/4	1/2	3 1/4	1.680	1 1/16	11 7/8	1 3/16	12	23	23	
		32	70	70	108	13	83	42.7	27	302	30	305	20	10	
4500	7H	1 1/2	2 3/4	2 3/4	4 1/4	1/2	3 1/4	1.920	1 9/32	11 7/8	1 3/16	12	38	21	
		40	70	70	108	13	83	48.8	33	302	30	305	33	10	
	8J	2	3	3	4 1/2	5/8	3 15/16	2.411	1 9/16	14	1 9/16	12	57	42	
		50	76	76	114	16	100	61.2	40	356	40	305	49	19	
900	8J	2 1/2	-	3	4 1/2	-	3 15/16	-	1 9/16	14	1 9/16	12	57	42	
		65	-	76	114	-	100	-	40	356	40	305	49	19	
	10L	2 1/2	5	-	6	5/8	4 7/8	2.914	2 1/4	15 1/4	2 1/8	18	124	107	
		65	127	-	152	16	124	74.0	57	387	54	457	107	49	
1500	10L	3	-	5	6	-	4 7/8	-	2 1/4	15 1/4	2 1/8	18	124	107	
		80	-	127	152	-	124	-	57	387	54	457	107	49	
	10L	4	-	5	6	-	4 7/8	-	2 1/4	15 1/4	2 1/8	18	124	107	
		100	-	127	152	-	124	-	57	387	54	457	107	49	

\* Socket Weld dimensions shown; Consult factory for Butt Weld dimensions.

\*\* End to end may vary.

Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.

Threaded end valves are nominal ASME B16.34 rated. Consult factory for other ratings.

NOTE: All weights are approximate for shipping purposes only. Information on Figure Number Variations can be found on page 29.

PRESSURE CLASS	Size Code	Pipe Size	A		B	C*	D	E*	F	G	H	J	Cv Kv	Wgt	
			SW	BW											
2500	3C	1/2	1 3/4	1 3/4	1 3/4	3/8	1 11/16	0.860	7/16	6 3/4	1/2	6 1/2	5	6	
		15	44	44	44	10	43	21.8	11	171	13	165	4	3	
	5E**	3/4	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.070	11/16	8 3/16	11/16	8	9	11	
		20	59	59	59	13	59	27.2	17	208	17	203	8	5	
	5E**	1	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.335	11/16	8 3/16	11/16	8	9	11	
		25	59	59	59	13	59	33.9	17	208	17	203	8	5	
	7G**	1 1/4	2 3/4	2 3/4	4 1/4	1/2	3 1/4	1.680	1 1/16	11 7/8	1 3/16	12	23	23	
		32	70	70	108	13	83	42.7	27	302	30	305	20	10	
	7G**	1 1/2	-	2 3/4	4 1/4	-	3 1/4	-	1 1/16	11 7/8	1 3/16	12	23	23	
		40	-	70	108	-	83	-	27	302	30	305	20	10	
3045	8H	1 1/2	3	-	4 1/2	1/2	3 15/16	1.920	1 9/32	13 5/8	1 1/4	12	38	42	
		40	76	-	114	13	100	48.8	33	346	32	305	33	19	
	8H	2	3	3	4 1/2	5/8	3 15/16	2.411	1 9/32	13 5/8	1 1/4	12	38	42	
		50	76	76	114	16	100	61.2	33	346	32	305	33	19	
	8H	2 1/2	-	3	4 1/2	-	3 15/16	-	1 9/32	13 5/8	1 1/4	12	38	42	
		65	-	76	114	-	100	-	33	346	32	305	33	19	
10K	2 1/2	5	-	6	5/8	4 7/8	2.914	1 7/8	15 1/4	1 13/16	18	74	108		
10K	65	127	-	152	16	124	74.0	48	387	46	457	64	49		
	3	-	5	6	-	4 7/8	-	1 7/8	15 1/4	1 13/16	18	74	108		
	80	-	127	152	-	124	-	48	387	46	457	64	49		
	4	-	5	6	-	4 7/8	-	1 7/8	15 1/4	1 13/16	18	74	108		
100	-	127	152	-	124	-	48	387	46	457	64	49			
3500	5D**	1/2	2 5/16	2 5/16	2 5/16	3/8	2 5/16	0.860	9/16	8 1/8	5/8	6 1/2	7	11	
		15	59	59	59	10	59	21.8	14	206	16	165	6	5	
	5D**	3/4	2 5/16	2 5/16	2 5/16	1/2	2 5/16	1.070	9/16	8 1/8	5/8	6 1/2	7	11	
		20	59	59	59	13	59	27.2	14	206	16	165	6	5	
	7F**	1	2 3/4	2 3/4	4 1/4	1/2	3 1/4	1.335	27/32	11 3/8	7/8	12	16	24	
		25	70	70	108	13	83	33.9	21	289	22	305	14	11	
	7F**	1 1/4	-	2 3/4	4 1/4	-	3 1/4	-	27/32	11 3/8	7/8	12	16	24	
		32	-	70	108	-	83	-	21	289	22	305	14	11	
	4095	8G	1 1/4	3	-	4 1/2	1/2	3 15/16	1.680	1 1/16	13 1/4	1 3/16	12	27	45
			32	76	-	114	13	100	42.7	27	337	30	305	23	20
8G		1 1/2	3	3	4 1/2	1/2	3 15/16	1.920	1 1/16	13 1/4	1 3/16	12	27	45	
		40	76	76	114	13	100	48.8	27	337	30	305	23	20	
8G		2	-	3	4 1/2	-	3 15/16	-	1 1/16	13 1/4	1 3/16	12	27	45	
		50	-	76	114	-	100	-	27	337	30	305	23	20	
8G	2 1/2	-	3	4 1/2	-	3 15/16	-	1 1/16	13 1/4	1 3/16	12	27	45		
65	-	76	114	-	100	-	27	337	30	305	23	20			
10J	2 1/2	5	-	6	5/8	4 7/8	2.914	1 1/2	15 1/4	1 13/16	14	52	103		
	65	127	-	152	16	124	74.0	38	387	46	356	45	47		
	3	-	5	6	-	4 7/8	-	1 1/2	15 1/4	1 13/16	14	52	103		
	80	-	127	152	-	124	-	38	387	46	356	45	47		
10J	4	-	5	6	-	4 7/8	-	1 1/2	15 1/4	1 13/16	14	52	103		
100	-	127	152	-	124	-	38	387	46	356	45	47			
4500	5C**	1/2	2 5/16	2 5/16	2 5/16	3/8	2 5/16	0.860	7/16	8 3/16	11/16	6 1/2	5	11	
		15	59	59	59	10	59	21.8	11	208	17	165	4	5	
	7E**	1	2 3/4	2 3/4	4 1/4	1/2	3 1/4	1.335	11/16	11 7/8	7/8	8	9	24	
		25	70	70	108	13	83	33.9	17	302	22	203	8	11	
	7E**	1 1/2	-	2 3/4	4 1/4	-	3 1/4	-	11/16	11 7/8	7/8	8	9	24	
		40	-	70	108	-	83	-	17	302	22	203	8	11	
	8F	1 1/2	3	-	4 1/2	1/2	3 15/16	1.920	27/32	13 5/8	1	12	16	48	
		40	76	-	114	13	100	48.8	21	346	25	305	14	22	
	8F	2	-	3	4 1/2	-	3 15/16	-	27/32	13 5/8	1	12	16	48	
		50	-	76	114	-	100	-	21	346	25	305	14	22	
10H	2 1/2	5	5	6	5/8	4 7/8	2.914	1 9/32	17 3/4	1 7/16	12	39	100		
	65	127	127	152	16	124	74.0	33	450	37	305	34	45		
10H	3	-	5	6	-	4 7/8	-	1 9/32	17 3/4	1 7/16	12	39	100		
	80	-	127	152	-	124	-	33	450	37	305	34	45		
10H	4	-	5	6	-	4 7/8	-	1 9/32	17 3/4	1 7/16	12	39	100		
	100	-	127	152	-	124	-	33	450	37	305	34	45		

\* Socket Weld dimensions shown; Consult factory for Butt Weld dimensions.

\*\* End to end may vary.

Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.

Threaded end valves are nominal ASME B16.34 rated. Consult factory for other ratings.

NOTE: All weights are approximate for shipping purposes only. Information on Figure Number Variations can be found on page 29.

# Throttling Valve

## Pressure Class

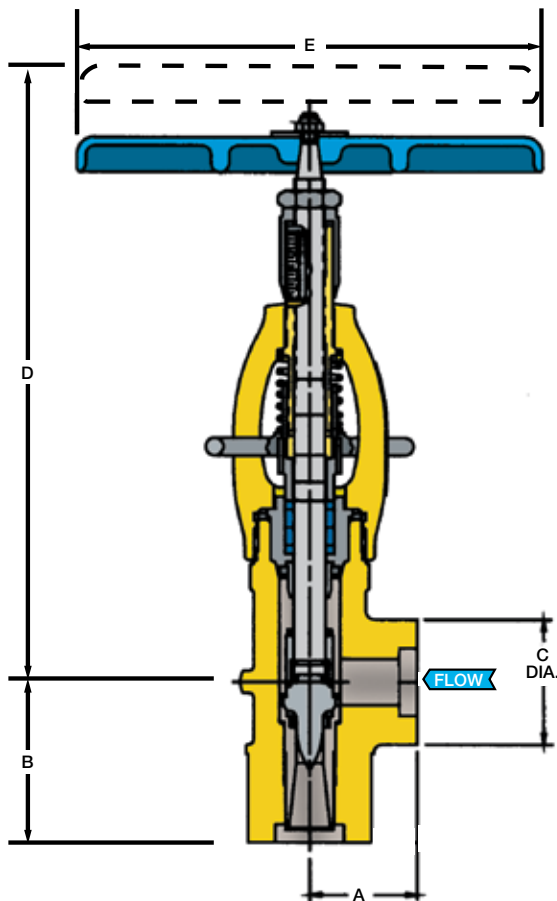
Full ASME rated through 3045. Higher intermediate and limited class ratings are available. Consult factory.

## Features

- Replaceable 440C SS Seat/Venturi
- Low Velocity Across the Main Seat
- Precise Flow Control
- Position Indicator
- Pressure Seal Bonnet
- Superior Control Micrometer Dial
- Ease of Actuation:  
Air Motor Hydraulic

## To Specify

- 1.) Use "U" as the valve design modifier in the figure number. (e.g. 1.50-13U2J-F22)
- 2.) Indicate orifice size or inlet pressure and temperature and required maximum flow.

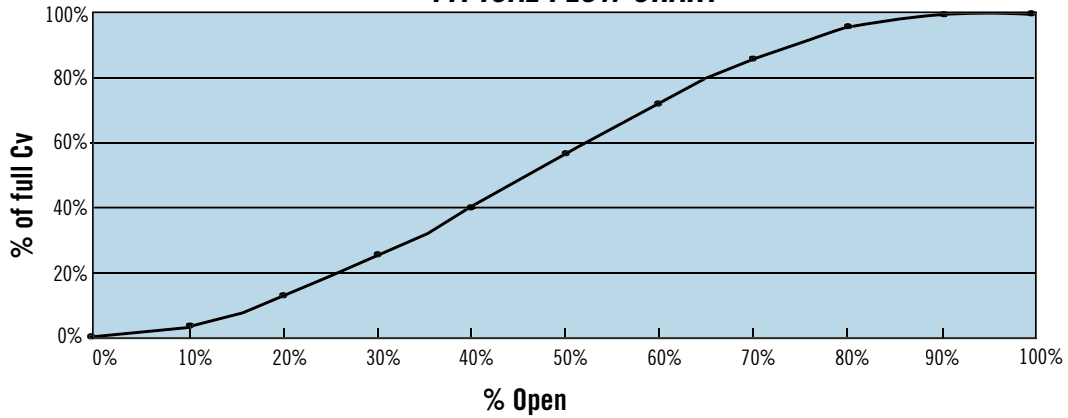


PRESSURE CLASS	Size Code	Pipe Size	A	B	C	D	E	Wgt	
NOMINAL 900	5E	1/2	2 5/16	4	2 5/16	10 1/4	8	13	
			15	59	102	59	260	203	
	5E	3/4	2 5/16	4	2 5/16	10 1/4	8	13	
			20	59	102	59	260	203	
	5E	1	2 5/16	4	2 5/16	10 1/4	8	13	
			25	59	102	59	260	203	
	7G	1 1/4	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			25	70	108	83	370	305	
	7G	1 1/2	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			32	70	108	83	370	305	
	7G	1 1/2	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			40	70	108	83	370	305	
INTERMEDIATE 1195	7G	1 1/2	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			40	70	108	83	370	305	
	7G	2	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			50	70	108	83	370	305	
	8H	2	3	4 1/2	3 15/16	16 1/2	12	42	
			50	76	114	100	419	305	
	8H	2 1/2	3	4 1/2	3 15/16	16 1/2	12	42	
			65	76	114	100	419	305	
	10K	3	5	6	4 7/8	20 1/16	18	86	
			80	127	152	124	510	457	
	10K	4	5	6	4 7/8	20 1/16	18	86	
			100	127	152	124	510	457	
NOMINAL 1500	5E	1/2	2 5/16	4	2 5/16	10 1/4	8	13	
			15	59	102	59	260	203	
	5E	3/4	2 5/16	4	2 5/16	10 1/4	8	13	
			20	59	102	59	260	203	
	5E	1	2 5/16	4	2 5/16	10 1/4	8	13	
			25	59	102	59	260	203	
	7G	1 1/4	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			25	70	108	83	370	305	
	7G	1 1/4	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			32	70	108	83	370	305	
	7G	1 1/2	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			40	70	108	83	370	305	
INTERMEDIATE 2155	7G	1 1/2	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			40	70	108	83	370	305	
	8H	1 1/4	3	4 1/2	3 15/16	16 1/2	12	42	
			32	76	114	100	419	305	
	8H	1 1/2	3	4 1/2	4 7/8	16 1/2	12	42	
			40	76	114	124	419	305	
	8H	2	3	4 1/2	4 7/8	16 1/2	12	42	
			50	76	114	124	419	305	
	10K	2 1/2	5	6	4 7/8	20 1/16	18	86	
			65	127	152	124	510	457	
	10K	3	5	6	4 7/8	20 1/16	18	86	
			80	127	152	124	510	457	
10K	4	5	6	4 7/8	20 1/16	18	86		
		100	127	152	124	510	457		
NOMINAL 2500	5E	1/2	2 5/16	4	2 5/16	10 1/4	8	13	
			15	59	102	59	260	203	
	5E	3/4	2 5/16	4	2 5/16	10 1/4	8	13	
			20	59	102	59	260	203	
	5E	1	2 5/16	4	2 5/16	10 1/4	8	13	
			25	59	102	59	260	203	
	7G	1 1/4	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			32	70	108	83	370	305	
	7G	1 1/2	2 3/4	4 1/4	3 1/4	14 9/16	12	26	
			40	70	108	83	370	305	
	INTERMEDIATE 3045	7G	1 1/2	2 3/4	4 1/4	3 1/4	14 9/16	12	26
				40	70	108	83	370	305
8H		1 1/4	3	4 1/2	3 15/16	16 1/2	12	42	
			32	76	114	100	419	305	
8H		1 1/2	3	4 1/2	3 15/16	16 1/2	12	42	
			40	76	114	100	419	305	
8H		2	3	4 1/2	3 15/16	16 1/2	12	42	
			50	76	114	100	419	305	
10K		2	5	6	4 7/8	20 1/16	18	86	
			50	127	152	124	510	457	
10K		2 1/2	5	6	4 7/8	20 1/16	18	86	
			65	127	152	124	510	457	
10K	3	5	6	4 7/8	20 1/16	18	86		
		80	127	152	124	510	457		

\* Socket Weld dimensions shown; Consult factory for Butt Weld dimensions.  
 Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.  
 Butt Weld dimensions determined by pipe schedule.  
 NOTE: All weights are approximate for shipping purposes only. Information on Figure Number Variations can be found on page 29.

# Throttling Valve

**TYPICAL FLOW CHART**



## SPECIFICATIONS

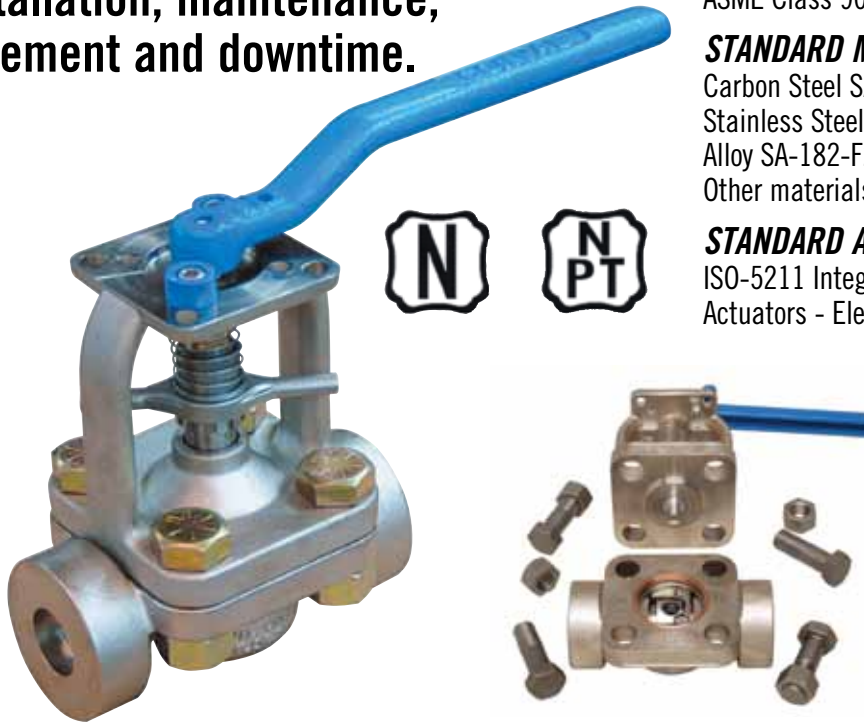
Size Code	Pipe Size	Cv/Kv																					
		Standard Orifice Size																					
		1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/8	1 3/16	1 1/4	1 3/8	1 1/2	
5E	1/2	15																					
	3/4	20	0.42	1.1	2.4																		
	1	25	0.36	1.0	2.0																		
7G	1	25																					
	1 1/4	32	0.5	1.1	2.1	3	5	7	9	11													
	1 1/2	40	0.4	1.0	1.8	3	4	6	8	10													
	2	50																					
8H	1 1/4	32																					
	1 1/2	40																					
	2	50																					
10K	2	50																					
	2 1/2	65																					
	3	80																					
	4	100																					

Numbers shown in black indicate dimensions in inches/Cv. Numbers shown in blue indicate dimensions in mm/Kv.



See product brochure for more details.

# Camseal® Cartridge-style, Top Entry Zero Leakage Ball Valves save significant time and money on installation, maintenance, replacement and downtime.



## STANDARD SIZES

1/2" through 4" Top Entry  
SW, BW, FNPT and a variety of ends

## PRESSURE RATING

ASME Class 900 through 4500

## STANDARD MATERIALS

Carbon Steel SA-105  
Stainless Steel SA-182-F316/F316L  
Alloy SA-182-F22 Cl.3, SA-182-F91  
Other materials available upon request

## STANDARD ACCESSORIES

ISO-5211 Integral Mounting Pad  
Actuators - Electric, Pneumatic or Hydraulic



See product brochure for more details.

## DESIGN FEATURES

### Conval Camseal Ball Valve Provides Zero Leakage

**Zero Body Leakage:** The body/bonnet joint is not subject to pipeline stresses. There is no in-line body bolting to loosen and fatigue, so the body remains leak-free.

**Zero Seat Leakage:** All valves are capable of meeting zero bubbles for 4 minutes @ 50 psi and 1,000 psi Nitrogen at final factory hydrotest, after field in-line welding, following post-weld heat treat, during and after process thermal excursions including thermal shocks. Modular internals isolate critical seal surfaces from thermal effects..

**Zero Stem Seal Leakage:** Conval's exclusive Integral Gland Wrench concentrically loads the stem packing without tools, eliminating stem leaks and extending packing life. Live loading is available as an option.

### Cartridge-style Top Entry

With top entry access, maintenance and replacement of the cartridge internals are very convenient, with no effect on existing piping and welds. A window shows the exact position of the ball when actuated.

### Robust Stem-Ball Engagement

Reliable, accurate ball alignment is achieved due to the robust engagement between the one-piece stem and the ball.

### Superior Bearing Support

Superior bearing support of the blowout-proof stem ensures proper axial alignment and Zero Seat Leakage even on actuated valves.

### Chrome Carbide Coating System

Conval's highly-engineered flame spray Chrome Carbide coating system has superior bond

strength and coating density to provide long-life, leak-free performance even in high pressure drop applications.

### In-line Servicing

In-line renewability can be accomplished in 30 minutes and restores Zero Leakage performance in the event of process application abuse.

### Integral Mounting Pad

An ISO-5211 integral mounting pad facilitates error-free, air, motor and gear operator actuation due to superior rigidity, precise alignment and a fully-guided stem bearing system. Lockout capability is standard.

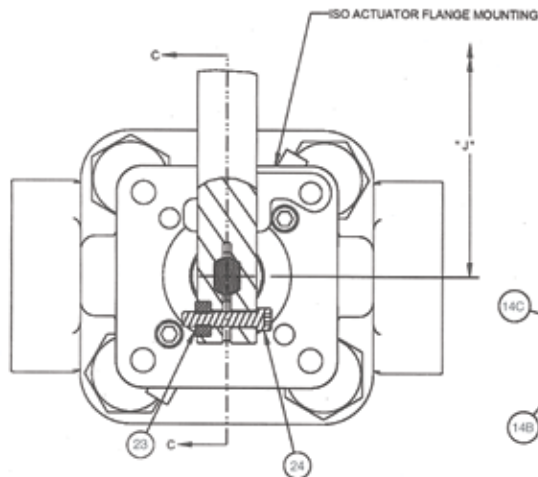
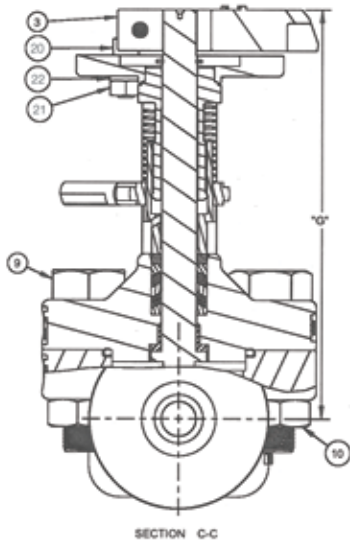
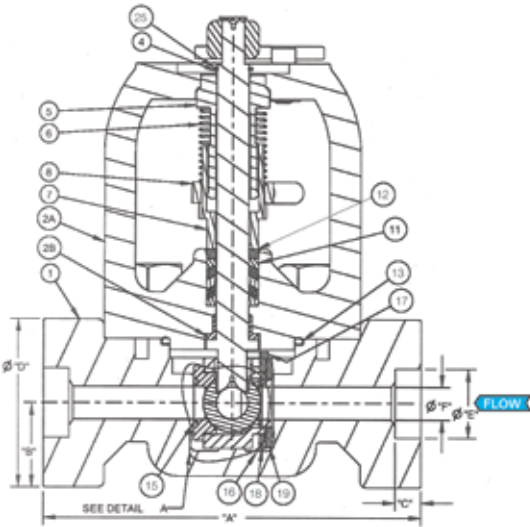
### Two-Year Warranty

Conval is committed to unsurpassed quality. We are so confident of the quality of our product, that we offer a two-year warranty.



# CAMSEAL® BALL VALVE

## LIST OF MATERIALS



LIST OF MATERIALS FOR 1700# AND 3100# VALVES

NO.	NAME	QTY	MATERIAL			
1	BODY	1	ASME-SA-105	ASME-SA-182-F22	ASME-SA-182-F91	ASME-SA-182-F316
2	BONNET ASSEMBLY	1				
2A	BONNET	1	ASME-SA-216 Gr. WCB	ASME-SA-217 Gr. WC9	ASME-SA-217 Gr. C12A	ASME-SA-351-CF3M
2B	BONNET STEM BEARING	1	ASME-SA479 TYPE 410	ASME SA479 TYPE 410	ASME SA479 TYPE 410	ASME SA479 TYPE 316
3	HANDLE	1	SME-SA-216 Gr. WCB			
4	STEM	1	ASTM A582 TYPE 416	ASME SA479 UNS S20910	ASME SA479 UNS S20910	ASME SA479 UNS S20910
5	BUSHING	1	ASME SB150			
6	IGW SPRING	1	MFR STD STAINLESS			
7	GLAND	1	ASTM A582 TYPE 416	ASTM A582 TYPE 416	ASTM A582 TYPE 416	ASME SA479 TYPE 316
8	IGW	1	MFR STD STAINLESS			
9	BODY BOLT	SD	ASME SA193 B16	ASME SA193 B16	ASME SA193 B16	ASME SA193 B8M
10	BODY FLANGE NUT	SD	ASME SA194 GR 4	ASME SA194 GR 4	ASME SA194 GR 4	ASME SA194 GR 8M
11	PACKING SET	1	FLEXIBLE GRAPHITE			
12	PACKING SPACER	1	ASME SA479 UNS S21800			
13	C-RING BONNET/BODY	1	ASTM B670			
14	CARTRIDGE ASSY	1				
14A	CARTRIDGE	1	ASME SA479 TYPE 410	ASME SA479 TYPE 410	ASME SA479 TYPE 410	ASME SA479 TYPE 316
14B	COATED SEAT	1	ASME SA479 TYPE 410	ASME SB637 UNS N07718	ASME SB637 UNS N07718	ASME SB637 UNS N07718
14C	COATED BALL	1	ASME SA479 TYPE 410	ASME SB637 UNS N07718	ASME SB637 UNS N07718	ASME SB637 UNS N07718
14D	UPSTREAM SEAT	1	ASME SA479 TYPE 410	ASME SA479 TYPE 410	ASME SA479 TYPE 410	AMS 5387
14E	UPSTREAM SEAT BELLEVILLE	1	ASME SB637 UNS N07718			
15	C-RING SEAT TO BODY	1	ASTM B670			
16	CAM	2	ASME SA479 TYPE 410	ASME SA479 TYPE 410	ASME SA479 TYPE 410	ASME SA479 UNS S2019
17	CAM LOCK	1	ASME SA240 TYPE 316			
18	SPACER	1	ASME SB637 UNS N07718			
19	CAM BELLEVILLE	SD	ASME SB637 UNS N07718			
20	STOP BOLT	2	MFR STD STAINLESS			
21	STOP NUT	2	MFR STD STAINLESS			
22	STOP LOCK WASHER	2	MFR STD STAINLESS			
23	HANDLE NUT	1	MFR STD STAINLESS			
24	HANDLE BOLT	1	MFR STD STAINLESS			
25	SNAP RING STEM RETAINER	1	MFR STD			

Note: Stainless Steel Item 23 – key material shown (Nitronic 50) supplied for Inconel 718 stems. Key material not shown (Nitronic 60) supplied for Nitronic 50 stems. SD= Size Dependent

LIST OF MATERIALS FOR 4500# VALVES

NO.	NAME	QTY	MATERIAL			
1	BODY	1	ASME-SA-105	ASME-SA-182-F22	ASME-SA-182-F91	ASME-SA-182-F316
EXCEPT FOR THE FOLLOWING COMPONENTS MATERIALS ARE THE SAME AS 1700# AND 3100# VALVES						
4	STEM	1	ASTM B-637, UNS N07718			
13B	COATED SEAT	1	ASTM B-637, UNS N07718	-	-	-
13C	COATED BALL	1	ASTM B-637, UNS N07718	-	-	-

PIPE SIZE	ASME CODE	ASME CLASS	INCHES							LBS. WEIGHT	CV	
			A	B	C	D	E	F	G			J
1/2 THRU 1 1/2	5E	1700# 3100#	7 1/4	1 5/8		3 1/4	-	5/8	7 3/8	15 3/16	30 1/4	14-42*
1/2 THRU 1 1/4	7E	4500#	9 1/4	2		4	-	5/8	10 5/32	24 3/16	60	
2 THRU 2 1/2	7H	1700# 3100#	9 1/4	2		4	-	1 1/16	10 5/32	24 3/16	62	37-71*
1 1/2 THRU 4	9H	4500#	11	2 11/32	-	4 11/16	-	1 1/16	11 1/2	32	100	
3 THRU 4 (BW ONLY)	9J	1700# 3100#	11	2 11/32		4 11/16		1 1/2	11 1/2	32	112	69-107*

PIPE SIZE	ASME CODE	ASME CLASS	MILLIMETERS							KG WEIGHT	KV	
			A	B	C	D	E	F	G			J
DN15 THRU DN40	5E	1700# 3100#	184	41	-	83	-	16	187	386	13.7	12-36*
DN15 THRU DN32	7E	4500#	235	51	-	102	-	16	258	614	27.2	
DN50 THRU DN65	7H	1700# 3100#	235	51	-	102	-	27	258	614	28.1	32-61*
DN40 THRU DN100	9H	4500#	279	60	-	119	-	27	292	813	45.4	
DN80 THRU DN100 (BW ONLY)	9J	1700# 3100#	279	60	-	119	-	38	292	813	50.8	60-93*

\*CV varies depending on I.D. of mating pipe. CV's in chart indicate min.-max. range.

## CLAMPSEAL SWIVLDISC GATE VALVE

- Integral Gland Wrench
- In Line Repairable
- Adaptable for Air or Motor Actuators

The Conval CLAMPSEAL® Swivldisc Gate Valve delivers performance at the standard set by the legendary CLAMPSEAL® Globe Valve.

The Swivldisc wedge gate design employs a flexible disc face which permits the seating surfaces to achieve perfect alignment, establishing a leak tight seal not possible with standard wedge gates.

The simple and effective CLAMPSEAL® pressure seal bonnet provides ready access for servicing with no welds to cut or seal rings or gaskets to replace. The body-to-bonnet joint integrity is maintained through countless thermal cycles.

The Conval packing system delivers the best performance available. The one-piece gland with integral gland wrench is readily adjustable at anytime. Repacking can be accomplished by swapping the bonnet-chamber with the fresh pre-packed unit. The fine finish of the stem and chamber combines with high performance graphite packing to ensure long packing service life.

Selection of the CLAMPSEAL® Swivldisc is a commitment to quality and best value.

Conval's Swivldisc is the gate valve of choice when performance must be assured in the most demanding services.



Based on real-life experience, more HRSG maintenance supervisors and planners are choosing to replace original lower-quality, foreign-made valves with new Conval valves, including Swivldisc gate valves. If the original valves are actuated, Conval can match the footprint of the actuator for easy replacement.

### *Swivldisc Gate Valve with bypass*

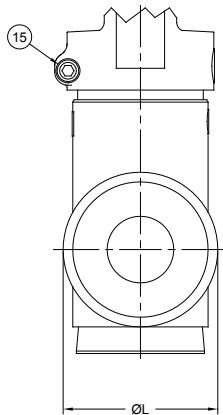
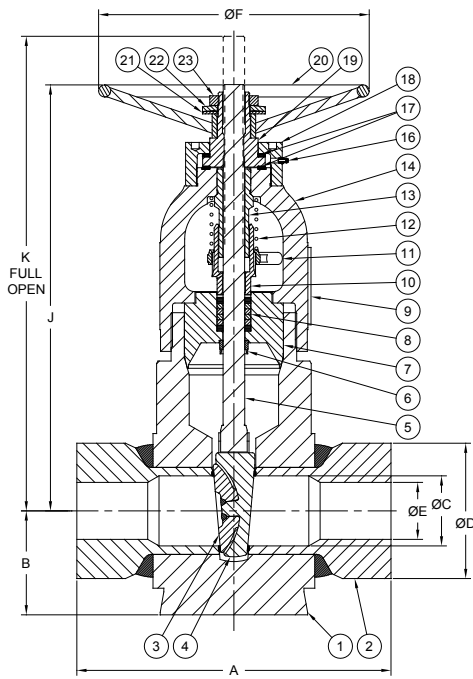


- **Swivldisc gate**
- **Pressure Seal Bonnet**
- **High Performance Graphite Packing**
- **One Piece Gland**
- **Unobstructed, Full Port Flow**



**See product brochure  
for more details.**

# Materials List & Dimensions



NO.	NAME	QTY	MATERIALS			
1	BODY	1	ASME SA-216 Gr. WCB	ASME SA-217 Gr. WC9	ASTM A217 Gr. C12A	ASME SA-351 Gr. CF8M
2	HUB	2	ASME SA-696 Gr. C	ASME SA-182 Gr. F22 Class 3	ASME SA-182 Gr. F91	ASME SA-479 Type 316
SEAT OVERLAY ON ALL HUBS: COBALT ALLOY #6						
3	DISC	1	UNS R31233	UNS R31233	UNS R31233	ASME SA-479 Type 316
4	GATE	1	UNS R31233	UNS R31233	UNS R31233	ASME SA-351 Gr. CF8M
5	STEM	1	ASME SA-479 Type XM-19H			
6	BONNET BACKSEAT	1	UNS S21800			
7	BONNET CHAMBER	1	ASME SA-479 Type 410	ASME SA-479 Type 410	ASME SA-479 Type 410	ASME SA-479 Type XM-19H
8	PACKING SET	1	HIGH DENSITY GRAPHITE			
9	NAME PLATE	1	ASME SA-240 Type 304			
10	GLAND	1	ASTM A582 Type 416	ASTM A582 Type 416	ASTM A582 Type 416	ASME SA-479 Type 316
11	GLAND WRENCH	1	ASME 5360			
12	SPRING	1	MFG. STANDARD			
13	YOKE BUSHING	1	ASME SB-150			
14	YOKE	1	ASME SA-216 Gr. WCB Or ASME SA-105	ASME SA-217 Gr. WC9 Or ASME SA-182 Gr. F22 Class 3	ASME SA-217 Gr. WC9 Or ASME SA-182 Gr. F22 Class 3	ASME SA-351 Gr. CF8M Or ASME SA-182 Gr. F316
15	CLAMP BOLT	1	ASME SA-193 Gr. B8M			
16	GREASE FITTING	1	Commercial			
17	BEARING SET	2	Commercial			
18	BEARING CAP	1	MFG. STANDARD	MFG. STANDARD	MFG. STANDARD	ASME SA-479 Type 316
19	STEM NUT	1	ASME SB-150			
20	PAINTED HANDWHEEL	1	MFG. STANDARD			
21	FLAT WASHER	1	MFG. STANDARD			
22	SPRING WASHER	1	Commercial			
23	JAM NUT	1	MFG. STANDARD	MFG. STANDARD	MFG. STANDARD	ASME SA-479 Type 316

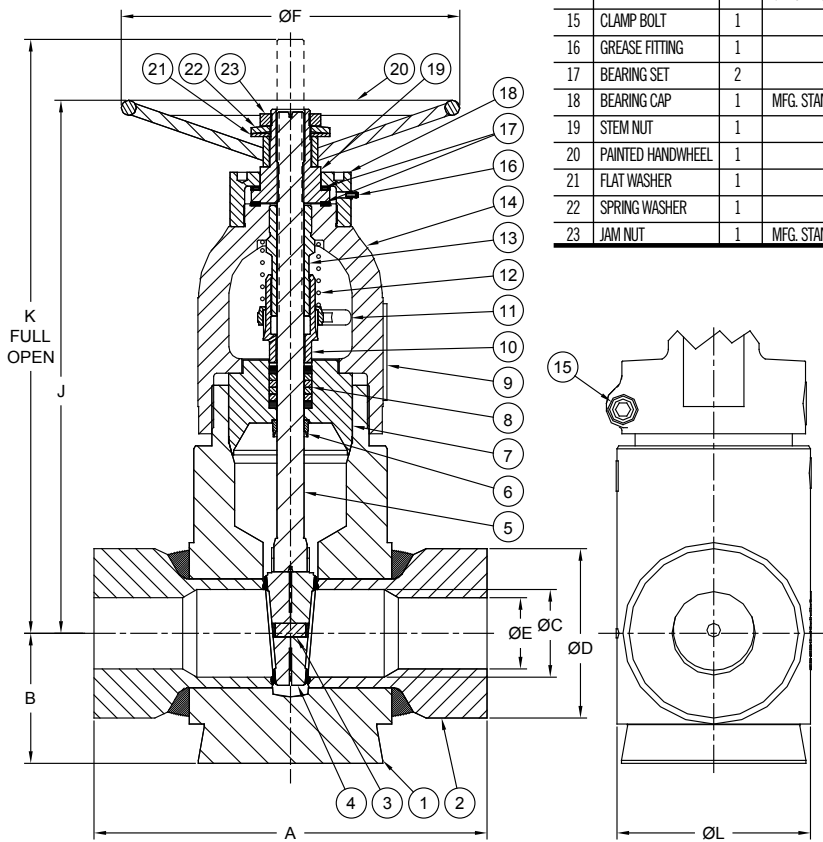
## OTHER MATERIALS AVAILABLE UPON REQUEST

Pressure Class	Size Code	Pipe Size	Valve Outline Dimensions									Cv	Kv	WT
			A	B	C	D	E	F	J	K	L			
1500	2E	1/2	5 1/2	1 3/4	0.815	2 1/16	0.466	6	10 1/16	11	2 7/8	15	15	
		15	140	44	21	52	12	152	44	256	274	13	6.8	
	2E	3/4	5 1/2	1 3/4	0.815	2 1/16	0.612	6	10 1/16	11	2 7/8	25	15	
		20	140	44	21	52	16	152	256	274	73	22	6.8	
	2E	1	5 1/2	1 3/4	0.815	2 1/16	0.815	6	10 1/16	11	2 7/8	45	15	
		25	140	44	21	52	21	152	256	274	73	39	6.8	
2500	3G	1 1/2	7	2 1/8	1.338	3	1.338	8	13 5/8	15 3/16	3 1/2	124	48	
		40	178	54	34	76	34	203	397	386	95	107	21.8	
	4J	2	8 1/2	2 7/8	1.689	3 3/4	1.689	10	16 5/8	18 3/8	4 3/4	200	62	
		50	216	73	43	95	43	254	422	467	120	173	28.1	
	6N	3	12	4	2.624	5 1/4	2.624	14	19 5/8	22 3/4	7	535	150	
		80	305	102	67	133	67	356	498	578	178	463	68	
4095	2D	1/2	7 5/16	1 3/4	0.599	2 5/32	0.252	6	7 15/16	10 13/16	2 7/8	4	18	
		15	186	44	15	55	6	152	202	275	73	4	8.2	
	2D	3/4	7 5/16	1 3/4	0.599	2 5/32	0.434	6	7 15/16	10 13/16	2 7/8	12	18	
		20	186	44	15	55	11	152	202	275	73	10	8.2	
	2D	1	7 5/16	1 3/4	0.599	2 5/32	0.599	6	7 15/16	10 13/16	2 7/8	23	18	
		25	186	44	15	55	15	152	202	275	73	20	8.2	
4095	3F	1 1/2	9 1/8	2 1/8	1.100	3	1.100	8	11 5/16	14 13/16	3 1/2	81	38	
		40	232	54	28	76	28	203	287	376	89	70	17.2	
	4H	2	11	2 7/8	1.503	3 3/4	1.503	10	16 1/4	18 1/8	4 3/4	157	65	
		50	279	73	38	95	38	254	413	460	121	136	29.5	
	5K	2 1/2	13	4	2.300	5 1/8	1.771	14	19 3/16	22 7/16	7	225	120	
		65	330	102	58	130	45	356	487	570	178	195	54.4	
4095	6M	3	14 1/2	4	2.300	5 1/8	2.300	14	19 3/16	22 7/16	7	405	170	
		80	368	102	58	130	58	356	487	570	178	350	77.1	
4095	8M	4	18	5 3/8	2.302	7 1/4	1.580	14	22 9/16	25 3/8	8	400	400	
		100	457	137	58	184	40	356	573	645	203	346	181	

Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm.

# Materials List & Dimensions

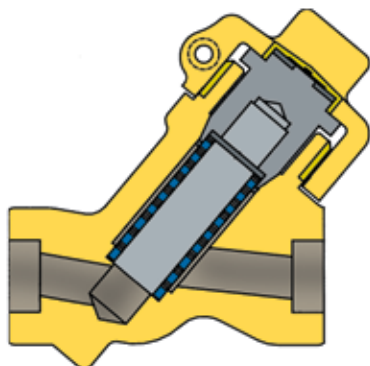
NO.	NAME	QTY	MATERIALS			
1	BODY	1	ASME SA-216 Gr. WCB	ASME SA-217 Gr. WC9	ASTM A217 Gr. C12A	ASME SA-351 Gr. CF8M
2	HUB	2	ASME SA-696 Gr. C	ASME SA-182 Gr. F22 Class 3	ASME SA-182 Gr. F91	ASME SA-479 Type 316
			SEAT OVERLAY ON ALL HUBS: COBALT ALLOY #6			
3	PIN	1	ASME SA-696 Gr. C	ASME SA-182 Gr. F22 Class 3	ASME SA-182 Gr. F91	ASME SA-479 Type 316
4	GATE HALF	2	ASME SA-216 Gr. WCB	ASME SA-217 Gr. WC9	ASME SA-217 Gr. WC9	ASME SA-240 Type 316
			OVERLAY ON EACH GATE HALF: COBALT ALLOY #6			
5	STEM	1	ASME SA-479 Type XM-19H			
6	BONNET BACKSEAT	1	UNS S21800			
7	BONNET CHAMBER	1	ASME SA-479 Type 410	ASME SA-479 Type 410	ASME SA-479 Type 410	ASME SA-479 Type XM-19H
8	PACKING SET	1	HIGH DENSITY GRAPHITE			
9	NAME PLATE	1	ASME SA-240 Type 304			
10	GLAND	1	ASTM A582 Type 416	ASTM A582 Type 416	ASTM A582 Type 416	ASME SA-479 Type 316
11	GLAND WRENCH	1	ASME 5360			
12	SPRING	1	MFG. STANDARD			
13	YOKE BUSHING	1	ASME SB-150			
14	YOKE	1	ASME SA-216 Gr. WCB	ASME SA-217 Gr. WC9 Or	ASME SA-217 Gr. WC9 Or	ASME SA-351 Gr. CF8M
			Or ASME SA-105	ASME SA-182 Gr. F22 Class 3	ASME SA-182 Gr. F22 Class 3	Or ASME SA-182 Gr. F316
15	CLAMP BOLT	1	ASME SA-193 Gr. B8M			
16	GREASE FITTING	1	Commercial			
17	BEARING SET	2	Commercial			
18	BEARING CAP	1	MFG. STANDARD	MFG. STANDARD	MFG. STANDARD	ASME SA-479 Type 316
19	STEM NUT	1	ASME SB-150			
20	PAINTED HANDWHEEL	1	MFG. STANDARD			
21	FLAT WASHER	1	MFG. STANDARD			
22	SPRING WASHER	1	Commercial			
23	JAM NUT	1	MFG. STANDARD	MFG. STANDARD	MFG. STANDARD	ASME SA-479 Type 316



Pressure Class	Size Code	Pipe Size	Valve Outline Dimensions									Cv	Kv	WT
			A	B	C	D	E	F	J	K	L			
1500	8R	4	16	5 3/8	3.438	6 3/4	3.438	14	21 9/16	26	7 1/2	958	220	
		100	406	137	87	171	87	356	548	660	191	829	100	
3500	8N	4	16	5 3/8	2.875	7 1/2	1.500	14	21 11/16	24 9/16	8	530	540	
		100	406	137	73	190	38	356	551	624	203	459	245	

# Strainers

The CLAMPSEAL® design is available in a variety of in-line strainer configurations. Supplied as either a simple strainer with blowoff socket connection or strainer with integral blowoff valve, the CLAMPSEAL® is easily disassembled for element cleaning or changeout. The CLAMPSEAL® offers a versatile economical alternative for strainer requirements.



## **CLAMPSEAL® Strainer**

### **Specifications:**

Size:	1/2" - 4"	
Class:	600 - 4500	
Material:	SA	105
	SA	182-F22
	SA	182-F91
	SA	182-F316

Standard Strainer

Element Hole Sizes: 1/32, 3/64, 1/16, 3/32, 1/8

Options: Mesh Lined Strainer Elements

Example: 0.75-11Y4-F22

## **CLAMPSEAL® Strainer W/Blowoff Valve**

### **Specifications:**

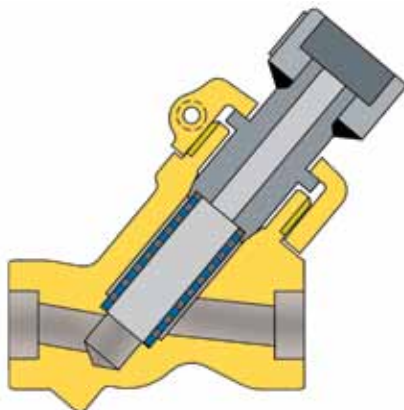
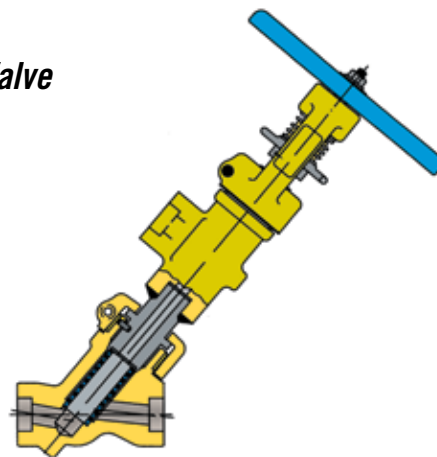
Size:	1/2" - 4"	
Class:	600 - 4500	
Material:	SA	105
	SA	182-F22
	SA	182-F91
	SA	182-F316

Standard Strainer

Element Hole Sizes: 1/32, 3/64, 1/16, 3/32, 1/8

Options: Mesh Lined Strainer Elements

Example: 0.50-13W2J-316



## **CLAMPSEAL® Strainer w/Blowoff Fitting**

### **Specifications:**

Size:	1/2" - 4"	
Class:	600 - 4500	
Material:	SA	105
	SA	182-F22
	SA	182-F91
	SA	182-F316

Standard Strainer

Element Hole Sizes: 1/32, 3/64, 1/16, 3/32, 1/8

Options: Mesh Lined Strainer Elements

Example: 0.50-13X2-316

Blowoff bonnet enables use of any CLAMPSEAL® Valve as a flush point.

# Whisperjets

High pressure drops can introduce severe erosion and wear. The Conval Whisperjet receives the high pressure inlet stream and discharges it through a series of multi pressure reduction stages called Whisperjets. Each Whisperjet section has four or six orifices around its perimeter. The orifices discharge inwardly, allowing the flow streams to impinge on each other rather than on the valve or sections themselves. These Whisperjets are designed to prevent sonic flow and critical pressure drops from occurring. By reducing the pressure in stages, cavitation, erosion, fluid velocity and sound level are minimized.

Many power plants have replaced competitors' pump recirculation control valves with Conval valves equipped with custom-engineered Whisperjets. Why?

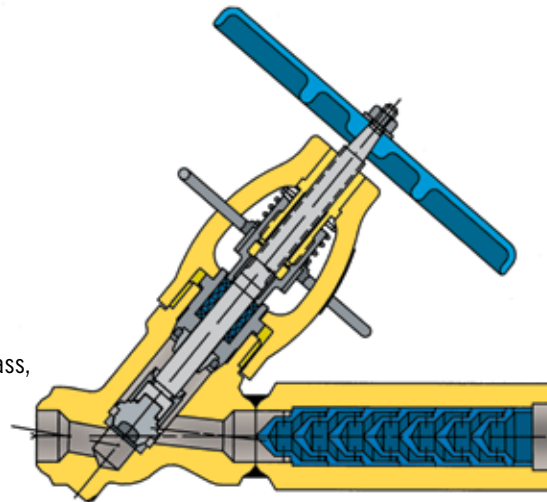


Because the competitor valves' control velocity type trim limited mass flow and was causing the feed pumps to overheat. Today, the Clampseal/Whisperjet valves are still operating flawlessly and are regarded as excellent, reliable products in what all agree is a difficult situation.

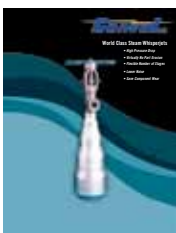
## Water

### Specifications:

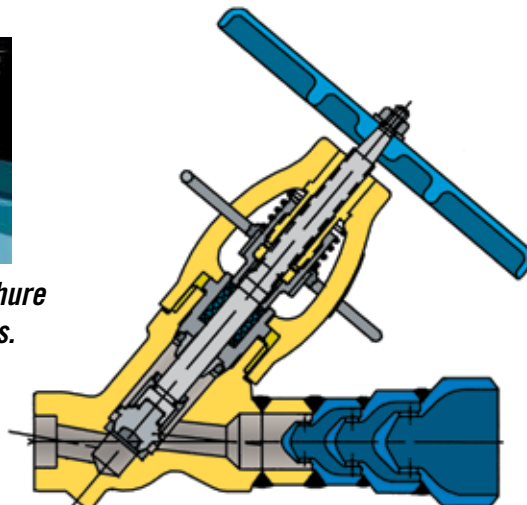
- Type: Angle, Y or T-pattern
- Size: 1/2" thru 12"
- Class: ASME to 4500
- End: Socket Weld, Butt Weld
- Material: SA 182-F22, SA 182-F91, SA 105
- Actuation: Air, Motor, Manual
- Applications: Feedwater Pump Recirculation Bypass, Steel Mill Descaling Processes
- Example: 1.00-22G2J-105



*See product brochure for more details.*



*See product brochure for more details.*



## Steam

### Specifications:

- Type: Angle, Y or T-pattern
- Size: 1/2" thru 12"
- Class: ASME to 4500
- End: Socket Weld, Butt Weld
- Material: SA 182-F22, SA 182-F91, SA 105
- Actuation: Air, Motor, Manual
- Applications: Blowdown, Flash Tank Protection, Vents
- Example: 1.50-23G2J-F22

Whisperjets provide for the progressive increase in specific volume as pressure drops.

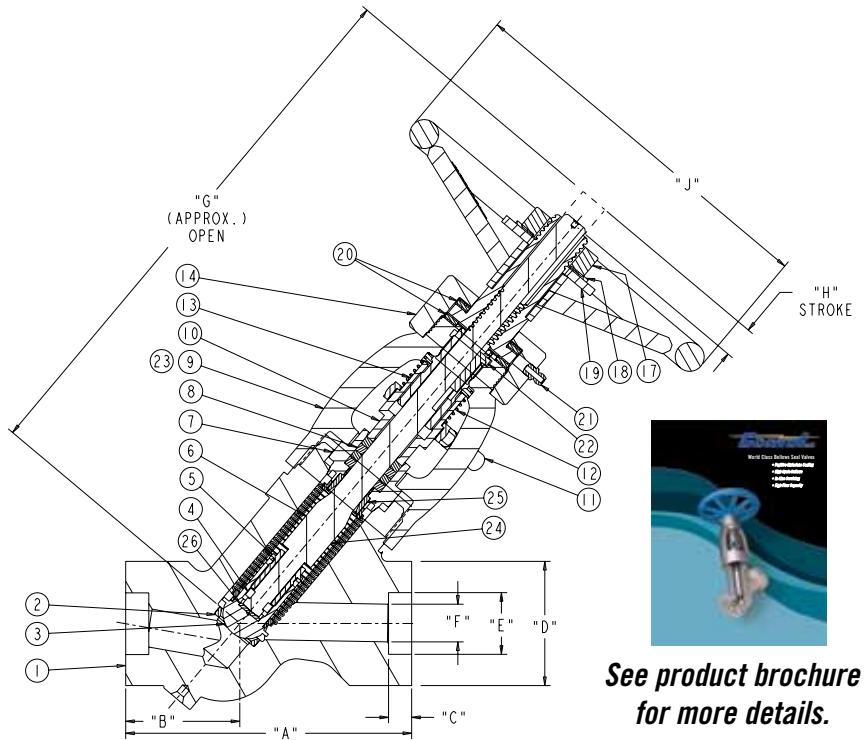
# Bellows Seal Valve

Packed valves require two different seals: a 360° seal on the stem and a 360° seal on the stuffing box. The Conval Bellows Seal Valve removes these two leak paths.

Conval Bellows Seal Valves are used when packed valves may not reliably contain light gases or hazardous system fluids. The multi-ply Inconel™ static bellows stem seal is more reliable in most applications than sliding stem seals.

Conval Bellows Seal Valves have two back-up stem seals, a graphite packing and a pressure actuated backseat to contain system fluids in the unlikely event of a Bellows rupture.

Meets all the requirements of MSS-SP117.



See product brochure for more details.

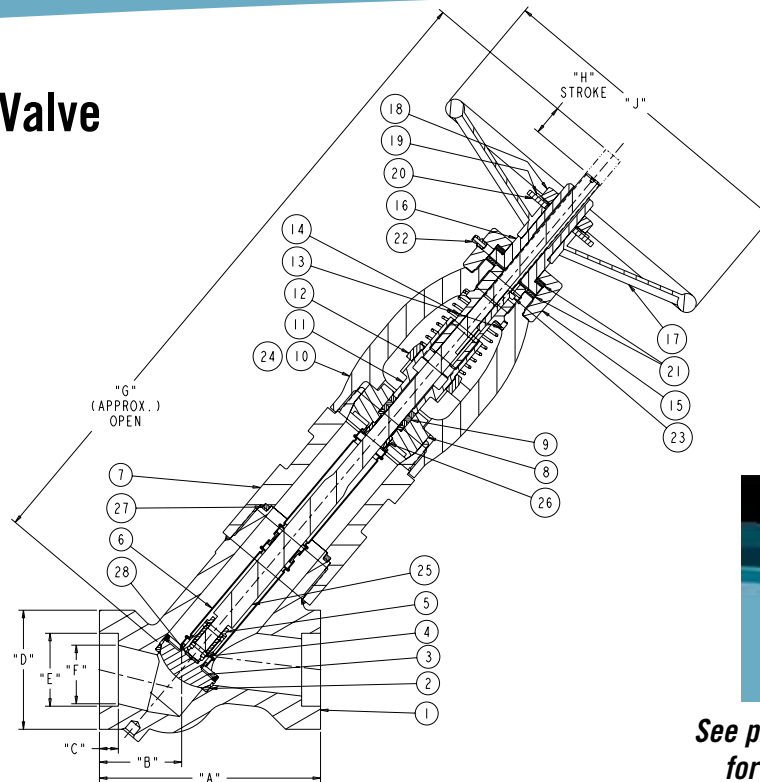
## SINGLE

PRESSURE CLASS	Size CODE	Pipe Size	A	B	C	D	E	F	G	H	J	Cv Kv	Wgt. (LBs.)/(kgs)
1500	6E	1/2	6 1/8 15	2 7/16 62	3/8 10	2 11/16 68	0.860 21.8	5/8 16	11 7/8 302	0.563 14.3	8 203	7 6	23 10
	6E	3/4	6 1/8 20	2 7/16 62	1/2 13	2 11/16 68	1.070 27.2	5/8 16	11 7/8 302	0.563 14.3	8 203	7 6	23 10
	6G	1	6 1/8 25	2 7/16 62	1/2 13	2 11/16 68	1.335 33.9	1 25	11 7/8 302	0.563 14.3	8 203	14 12	21 10
	6G	1 1/4	6 1/8 32	2 7/16 62	1/2 13	2 11/16 68	1.680 42.7	1 25	11 7/8 302	0.563 14.3	8 203	14 12	21 10
	8J	1 1/2	7 1/4 40	2 11/16 68	1/2 13	3 15/16 100	1.920 48.8	1 1/2 38	16 5/16 414	0.774 19.7	10 254	31 27	40 18
	8J	2	7 1/4 50	2 11/16 68	5/8 16	3 15/16 100	2.411 61.2	1 1/2 38	16 5/16 414	0.774 19.7	10 254	31 27	40 18
	10L	2 1/2	12 65	5 5/16 135	5/8 16	4 7/8 124	2.914 74.0	2 1/4 57	20 3/16 513	0.911 23.1	14 356	55 48	96 44
	10L	3	12 80	5 5/16 135	*	4 7/8 124	*	2 1/4 57	20 3/16 513	0.911 23.1	14 356	55 48	96 44
	10L	4	12 100	5 5/16 135	*	4 7/8 124	*	2 1/4 57	20 3/16 513	0.911 23.1	14 356	55 48	96 44
	2500	6E	1/2	6 1/8 15	2-7/16 62	3/8 10	2 11/16 68	0.860 21.8	5/8 16	11 5/8 295	0.350 8.9	8 203	5 4
6E		3/4	6 1/8 20	2 7/16 62	1/2 13	2 11/16 68	1.070 27.2	5/8 16	11 5/8 295	0.350 8.9	8 203	5 4	23 10
6F		1	6 1/8 25	2 7/16 62	1/2 13	2 11/16 68	1.335 33.9	13/16 21	11 5/8 295	0.350 8.9	8 203	7 6	22 10
6F		1 1/4	6 1/8 32	2 7/16 62	1/2 13	2 11/16 68	1.680 42.7	13/16 21	11 5/8 295	0.350 8.9	8 203	7 6	22 10
8H		1 1/2	7 1/4 40	2 11/16 68	1/2 13	3 15/16 100	1.920 48.8	1 1/4 32	16 406	0.481 12.2	10 254	19 16	42 19
8H		2	7 1/4 50	2 11/16 68	5/8 16	3 15/16 100	2.411 61.2	1 1/4 32	16 406	0.481 12.2	10 254	19 16	42 19
10K		2 1/2	12 65	5 5/16 135	5/8 16	4 7/8 124	2.914 74.0	1 7/8 48	19 13/16 503	0.583 14.8	14 356	30 26	105 48
10K		3	12 80	5 5/16 135	*	4 7/8 124	*	1 7/8 48	19 13/16 503	0.583 14.8	14 356	30 26	105 48
10K		4	12 100	5 5/16 135	*	4 7/8 124	*	1 7/8 48	19 13/16 503	0.583 14.8	14 356	30 26	105 48

BW dimensions supplied per customer requests. \* All weights are approximate for shipping purposes only. Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.

# Double Bellows Seal Valve

Meets all the requirements of MSS-SP117.



See product brochure for more details.

## DOUBLE

PRESSURE CLASS	Size CODE	Pipe Size	A	B	C	D	E	F	G	H	J	Cv Kv	Wgt. (LBs.)/(kgs)
1500	6E	1/2	6 1/8	2 7/16	3/8	2 11/16	0.860	5/8	15 7/8	1.126	8	8	28
		15	156	62	10	68	21.8	16	403	28.6	203	7	13
	6E	3/4	6 1/8	2 7/16	1/2	2 11/16	1.070	5/8	15 7/8	1.126	8	8	28
		20	156	62	13	68	27.2	16	403	28.6	203	7	13
	6G	1	6 1/8	2 7/16	1/2	2 11/16	1.335	1	15 7/8	1.126	8	18	26
		25	156	62	13	68	33.9	25	403	28.6	203	16	12
	6G	1 1/4	6 1/8	2 7/16	1/2	2 11/16	1.680	1	15 7/8	1.126	8	18	26
		32	156	62	13	68	42.7	25	403	28.6	203	16	12
	8J	1 1/2	7 1/4	2 11/16	1/2	3 15/16	1.920	1 1/2	20 13/16	1.548	10	39	54
		40	184	68	13	100	48.8	38	529	39.3	254	34	24
8J	2	7 1/4	2 11/16	5/8	3 15/16	2.411	1 1/2	20 13/16	1.548	10	39	54	
	50	184	68	16	100	61.2	38	529	39.3	254	34	24	
10L	2 1/2	12	5 5/16	5/8	4 7/8	2.914	2 1/4	27 9/16	1.822	14	110	125	
	65	305	135	16	124	74.0	57	700	46.3	356	95	57	
10L	3	12	5 5/16	*	4 7/8	*	2 1/4	27 9/16	1.822	14	110	125	
	80	305	135	*	124	*	57	700	46.3	356	95	57	
10L	4	12	5 5/16	*	4 7/8	*	2 1/4	27 9/16	1.822	14	110	125	
	100	305	135	*	124	*	57	700	46.3	356	95	57	
2500	6E	1/2	6 1/8	2-7/16	3/8	2 11/16	0.860	5/8	15 5/8	0.700	8	7	28
		15	156	62	10	68	21.8	16	397	17.8	203	6	13
	6E	3/4	6 1/8	2 7/16	1/2	2 11/16	1.070	5/8	15 5/8	0.700	8	7	28
		20	156	62	13	68	27.2	16	397	17.8	203	6	13
	6F	1	6 1/8	2 7/16	1/2	2 11/16	1.335	13/16	15 5/8	0.700	8	12	27
		25	156	62	13	68	33.9	21	397	17.8	203	10	12
	6F	1 1/4	6 1/8	2 7/16	1/2	2 11/16	1.680	13/16	15 5/8	0.700	8	12	27
		32	156	62	13	68	42.7	21	397	17.8	203	10	12
	8H	1 1/2	7 1/4	2 11/16	1/2	3 15/16	1.920	1 1/4	20 13/16	0.962	10	30	57
		40	184	68	13	100	48.8	32	529	24.4	254	26	26
	8H	2	7 1/4	2 11/16	5/8	3 15/16	2.411	1 1/4	20 13/16	0.962	10	30	57
		50	184	68	16	100	61.2	32	529	24.4	254	26	26
10K	2 1/2	12	5 5/16	5/8	4 7/8	2.914	1 7/8	27 1/4	1.166	14	59	138	
	65	305	135	16	124	74.0	48	692	29.6	356	51	63	
10K	3	12	5 5/16	*	4 7/8	*	1 7/8	27 1/4	1.166	14	59	138	
	80	305	135	*	124	*	48	692	29.6	356	51	63	
10K	4	12	5 5/16	*	4 7/8	*	1 7/8	27 1/4	1.166	14	59	138	
	100	305	135	*	124	*	48	692	29.6	356	51	63	

BW dimensions supplied per customer requests. \* All weights are approximate for shipping purposes only.

Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.



## Special Application Valves

The CLAMPSEAL® design is uniquely suited to a number of special applications where service demands require rugged construction while retaining easy in-line serviceability. No other forged valve offers this variety of applications.



### **Tandem Blowdown**

Traditional bottom blowdown service requires a tandem valve. Unlike older massive designs with limited serviceability, the CLAMPSEAL® unit tandem valve offers compactness, lighter weight and easy maintainability as well as longevity of service.

**Specifications:**

Size/Style: 1" - 2 1/2"

Class: ASME to 4500

End: Socket Weld, Butt Weld, Clamp Connector

Material: SA 105

SA 182-F22

Example: 1.00-12B8HJ-105



### **Cryogenic Service**

High pressure cryogenic service demands special attention to design and quality of material and fabrication. The CLAMPSEAL® delivers tight shutoff and operability through a wide temperature range and meets ANSI B 31.3 requirements.

**Specifications:**

Size: 1/2" - 4"

Class: ASME 1500 and 2500

Temperature: To -320°F

Material: SA 182-316

Example: 1.00-12J2J-316



### **Fire-Safe Service**

Fire-safe service is ideal for refining and chemical plants where fire safety is a major concern. CLAMPSEAL® globe valves may be retrofitted with this fire-safe capability, which meets API Standard 6FA.

**Specifications:**

Size: 1/2" - 4"

Class: ASME/ANSI Class 900-2500

Temp. To 1800°F

Material: A105, F22, F91, F316, F347,  
Inconel, Monel

Example: 1.50-13C8J-A105



### **Three-Way Service**

Conval has responded to the need for a high pressure, high temperature 3-way valve with easy serviceability for both seats. Excellent service history and versatility make the CLAMPSEAL® valve the choice for 3-way service.

**Specifications:**

Size: 1 1/2" - 3"

Class: ASME to 2500

End: Socket Weld, Butt Weld, Flanged, Clamp Connector

Material: Carbon Steel: (WCB)

Low Alloy: (WC9)

Stainless: (CF8M)

Example: 1.50-13Z4J-316

## Special Application Valves

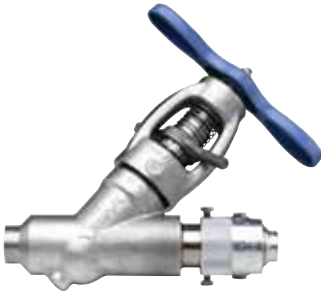


### **Naval Boiler Blowdown**

The CLAMPSEAL® Naval Boiler Blowdown valve meets the requirements of MIL-V-17737 and other applicable specifications.

#### **Specifications:**

Size:	1 1/2"	Material:	Carbon Steel or Alloy Steel
Type:	I (Handwheel) or II (T-handle)	Example:	1.50-12G8CJ-N05
Class:	1 (600 lb) or 2 (1500 lb)	NSN:	4820-01-124-3694, 4820-01-140-4834 4820-01-018-3780, 4820-01-018-3781
Style:	Straightaway (Y) or Angle		



### **SaVD Series Safe Vent Drain**

Now you can add a simple, single-weld, dual sealing system to Clampseal Y-pattern valves to enhance leak-free performance and allow for fast, safe, environmentally-friendly venting and draining of piping systems.

#### **Specifications:**

Size:	1/2" - 2"	Material:	Stainless Steel A479-F316, A105, F22 and other materials upon request.
Type:	Y-Pattern; NPT, BW, SW Ends	Options:	Securing Chain, Rodable Cap
Class:	Thru ASME 2500#		



### **Urea Service**

Urea Service is designed for high-pressure piping of urea reactors, strippers and condensers. Ideal for use with ammonium carbonate, nitric acid, and urea process fluids.

#### **Specifications:**

Size:	1/2" - 4"	Material:	Forged Stainless Steel
Type:	Y-Pattern; NPT, BW, SW Ends	Example:	2.00-12A0Z-252
Class:	ASME Class 900-2500		

## Actuators

Conval CLAMPSEAL® valves are easily adapted to electric motor or pneumatic actuation. Valves ordered with actuators are assembled, functionally tested at Conval and shipped ready for installation. Where customers have existing actuators, the CLAMPSEAL® valve is provided with appropriate yoke flange and stem adaptor. All actuated valves are furnished with an integral gland wrench.



### **Electric Motor Actuated**

#### **Specifications:**

Size:	1/2" - 4"
Class:	thru 4500
Material:	SA 105 SA 182-F22 SA 182-F91 SA 182-F316
Actuator:	<b>Limitorque</b> Rotork EIM AUMA
Options:	Local Position Indicator



### **Pneumatic Actuated**

#### **Specifications:**

Size:	1/2" - 4"
Class:	thru 4500
Material:	SA 105 SA 182-F22 SA 182-F91 SA 182-F316
Actuator:	<b>Fisher</b> Copes-Vulcan Valtek
Options:	Fail Open/Fail Closed Manual Override Limit Switches AC or DC Solenoid

See Page 29 for Figure Number OPTION selection

## World Class Clampseal® and Camseal® Automated Valves

- *Automate Precise Closure*
- *Eliminate Excessive Steam Dumping*
- *Reduce Treated Water Replacement*
- *Monitor and Control Remotely*
- *Extend Product Life*
- *Reduce Labor Costs*



*See product brochure  
for more details.*

# Automated Valves

## DESIGN FEATURES

### *Automates Closure*

Significant savings in labor costs are realized by fully automating the operation of the valves. Automated closure also assures consistent, precise closure. Actuators will apply the proper force to close valves every time, for tight shut-off and long valve life.

### *Saves Steam*

Any number of valves can be opened or closed at one time, to eliminate excessive steam dumping.

### *Reduces Treated Water Replacement*

With automated vents and drains, there is less of a need to replace treated water, as less steam or water is evacuated from the system.

### *Evacuates Condensate*

Steam trap condensate evacuation is accomplished by programming the open/close cycle on regular intervals to suit the application. Fully automated sensing and draining of condensate can be offered if required.

### *Signals Open/Closed Position in Control Room*

Automated valves can be easily instrumented for control room indication.

### *Integrates with Computerized Plant Operations*

The process can be fully automated and integrated with plant hardware/software.

## Actuated Clampseal® Globe Valves



Automated globe valves are available in angle, Y, and T-pattern configurations. Valves are repairable in-line, with no welds to remove and replace. A complete line of tools for repair are available. Seats may be cut, ground and lapped. Disc can be turned or replaced, and lapped to the seat. Valves can be programmed to close, partially open, then close for seat cleansing, assuring tight shut-off. Thermal growth is accommodated by the air actuator and by an optional spring pack with the electric actuator.



## Actuated Camseal® Ball Valves

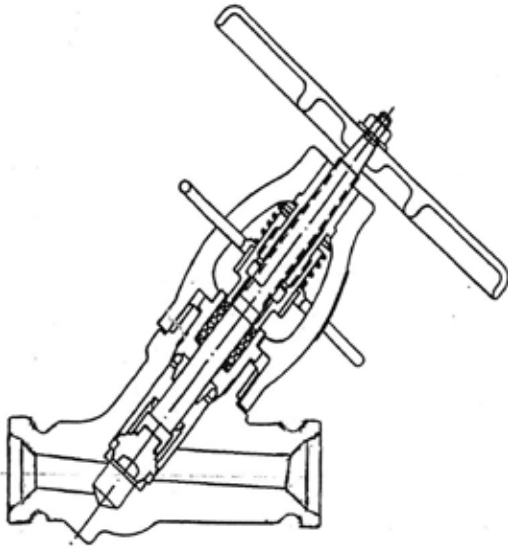


Top entry ball valves feature in-line replaceable cartridge. Cartridge with new seat and ball is fully factory-tested to assure tight shut-off. Valve has indicator window and marked stem, to assure proper in-line ball alignment in open and closed positions. Integral ISO mounting flange supplied as standard.

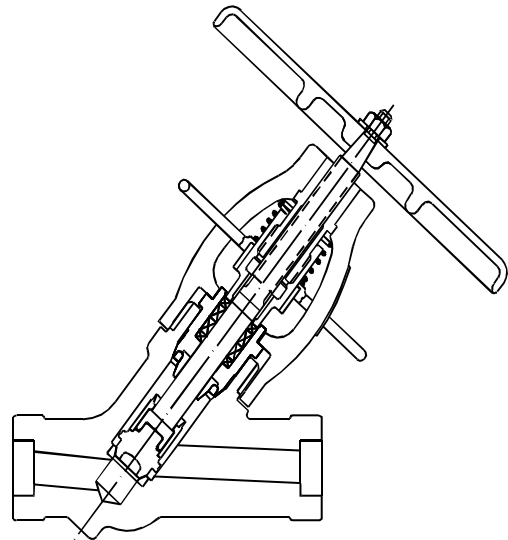
Globe and ball valves are available with air or electric actuation. Conval also offers air actuators with direct mount for solenoids.

# CLAMPSEAL® Extended End Valve & Clamp Connector Ends

Whenever replacements of any manufacturer's Y-Pattern valve are made, Conval now provides a couple of options to simplify the replacement. Depending upon the particular replacement needs, Conval can supply an Extended Body Valve or a Valve with Extensions. Under normal circumstances, the Extended Body Valve will have sufficient end-to-end length to allow replacement of an existing valve without adding material. If further end-to-end length is required, the Valve with Extensions would be recommended.



**Clamp Connector End**



**Extended Y-Pattern Body Valve**

Socket Weld shown, Butt Weld also available

Pressure Class	Size Code	Pipe Size	Conval Extended Y-Pattern Body Valve	Conval Extended Y Pattern Body Valve with Pipe Extensions	Competitor A	Competitor B	Competitor C
K	5	3/4 - 1	7.50	10.50	6.00	4.375 - 5.00	4.375 - 5.00
		20 - 25	190	267	152	111 - 127	111 - 127
	7	3/4 - 1	7.50	10.50	6.00	5.00	4.375 - 5.00
		20 - 25	190	267	152	127	111 - 127
	8	1/2	7.50	10.50	8.20	7.25	5.75
		13	190	267	208	184	146
	8	1 1/2	9.50	12.00	6.70	6.25	7.25
		40	241	305	170	159	184
	8	1 1/4 - 1 1/2	9.50	12.00	6.70	7.25	7.25
		32 - 40	241	305	170	184	184
	8	1 - 1 1/2	9.50	12.00	8.20	7.25 - 9.625	12.00
		25 - 40	241	305	208	184 - 244	305
8	2	11.00	13.50	8.20	7.25	10.13	
	50	279	343	208	184	257	
8	2	11.00	13.50	10.70	9.63	10.13	
	50	279	343	272	244	257	
8	2	11.00	13.50	12.80	9.63	12.00	
	50	279	343	325	244	305	

Numbers shown in Black indicate dimensions in inches, weight in pounds. Numbers shown in blue indicate dimensions in mm.

## Service Tool Cross Reference

Size Code	Tool Kit	Stop	Lapping Tools Check	Bonnet	Repack Tool	Yoke Wrench*	Gland Torque Wrench	Refacing Tool
3C	TK3C-C-S-1	T3C-L	T3C-LC	T3C-LB-1	T3-RP-1	T3/6-YW-1	T3-GTW-1	T3C-R
3D	TK3D-C-S-1	T3D-L	T3D-LC	T3D-LB-1	T3-RP-1	T3/6-YW-1	T3-GTW-1	T3D-R
5C	TK5C-C-S-1	T5C-L	T5C-LC	T5C-LB-1	T3-RP-1	T3/6-YW-1	T3-GTW-1	T5C-R
5D	TK5D-C-S-1	T5D-L	T5D-LC	T5C-LB-1	T3-RP-1	T3/6-YW-1	T3-GTW-1	T5D-R
5E	TK5E-C-S-1	T5EF-L	T5EF-LC	T5EF-LB-1	T5-RP-1	T3/6-YW-1	T5-GTW-1	T5E-R
5F	TK5F-C-S-1	T5EF-L	T5EF-LC	T5EF-LB-1	T5-RP-1	T3/6-YW-1	T5-GTW-1	T5F-R
5G	TK5G-C-S-1	T5G-L	T5G-LC	T5G-LB-1	T5-RP-1	T3/6-YW-1	T5-GTW-1	T5G-R
6E	TK6E-C-S-1	T6E-L	T6E-LC	T6E-LB-1	T5-RP-1	T3/6-YW-1	T5-GTW-1	T6E-R
6G	TK6G-C-S-1	T6GH-L	T6GH-LC	T6GH-LB-1	T5-RP-1	T3/6-YW-1	T5-GTW-1	T6G-R
6H	TK6H-C-S-1	T6GH-L	T6GH-LC	T6GH-LB-1	T5-RP-1	T3/6-YW-1	T5-GTW-1	T6H-R
7E	TK7E-C-S-1	T7E-L	T7E-LC	T7E-LB-1	T5-RP-1	T7/10-YW-1	T5-GTW-1	T7E-R
7F	TK7F-C-S-1	T7F-L	T7F-LC	T7F-LB-1	T7-RP-1	T7/10-YW-1	T7-GTW-1	T7F-R
7G	TK7G-C-S-1	T7GH-L	T7GH-LC	T7GH-LB-1	T7-RP-1	T7/10-YW-1	T7-GTW-1	T7G-R
7H	TK7H-C-S-1	T7GH-L	T7GH-LC	T7GH-LB-1	T7-RP-1	T7/10-YW-1	T7-GTW-1	T7H-R
7J	TK7J-C-S-1	T7J-L	T7J-LC	T7J-LB-1	T7-RP-1	T7/10-YW-1	T7-GTW-1	T7J-R
8F	TK8F-C-S-1	T8F-L	T8F-LC	T8F-LB-1	T7-RP-1	T7/10-YW-1	T7-GTW-1	T8F-R
8G	TK8G-C-S-1	T8G-L	T8G-LC	T8G-LB-1	T8-RP-1	T7/10-YW-1	T8-GTW-1	T8G-R
8H	TK8H-C-S-1	T8HJ-L	T8HJ-LC	T8HJ-LB-1	T8-RP-1	T7/10-YW-1	T8-GTW-1	T8H-R
8J	TK8J-C-S-1	T8HJ-L	T8HJ-LC	T8HJ-LB-1	T8-RP-1	T7/10-YW-1	T8-GTW-1	T8J-R
8K	TK8K-C-S-1	T8K-L	T8K-LC	T8K-LB-1	T8-RP-1	T7/10-YW-1	T8-GTW-1	T8K-R
9G	TK9G-C-S-1	T9G-L	T9G-LC	T9G-LB-1	T8-RP-1	T7/10-YW-1	T8-GTW-1	T9G-R
9H	TK9H-C-S-1	T9H-L	T9H-LC	T9H-LB-1	T8-RP-1	T7/10-YW-1	T8-GTW-1	T9H-R
9J	TK9J-C-S-1	T9JK-L	T9JK-LC	T9JK-LB-1	T9-RP-1	T7/10-YW-1	T9-GTW-1	T9J-R
9K	TK9K-C-S-1	T9JK-L	T9JK-LC	T9JK-LB-1	T9-RP-1	T7/10-YW-1	T9-GTW-1	T9K-R
9L	TK9L-C-S-1	T9L-L	T9L-LC	T9L-LB-1	T9-RP-1	T7/10-YW-1	T9-GTW-1	T9L-R
10H	TK10H-C-S-1	T10H-L	T10H-LC	T10H-LB-1	T8-RP-1	T7/10-YW-1	T8-GTW-1	T10H-R
10J	TK10J-C-S-1	T10J-L	T10J-LC	T10J-LB-1	T9-RP-1	T7/10-YW-1	T9-GTW-1	T10J-R
10K	TK10K-C-S-1	T10KL-L	T10KL-LC	T10KL-LB-1	T10-RP-1	T7/10-YW-1	T10-GTW-1	T10K-R
10L	TK10L-C-S-1	T10KL-L	T10KL-LC	T10KL-LB-1	T10-RP-1	T7/10-YW-1	T10-GTW-1	T10L-R
10M	TK10M-C-S-1	T10M-L	T10M-LC	T10M-LB-1	T10-RP-1	T7/10-YW-1	T10-GTW-1	T10M-R



\* Optional snap-on torque handle available through SNAP-ON™.

## Conval Tool Kits

CLAMPSEAL® valves are designed to provide years of dependable service and to allow rapid in-line repair. Quick disconnect yoke and bonnet design provide fast access to valve trim for inspection and repair.

Conval's seat refacing tools cut through all types of seat damage leaving a smooth seat finish in minutes. Solid seats allow for repeated resurfacing.

Typical repair operations can be completed in under one hour making repair much more economical than replacement.

### ***Conval's Tool Kits consist of:***

- 1 Disk to Seat Mate Lapping Tool
- 2 Bonnet Lapping Tool
- 3 (2) Allen Wrenches
- 4 Seat Refacing Tool
- 5 Lapping Compound
- 6 High Spot Blue No. 107
- 7 Gland Wrench
- 8 Repacking Tool
- 9 Yoke Wrench
- 10 Servicing Instructions

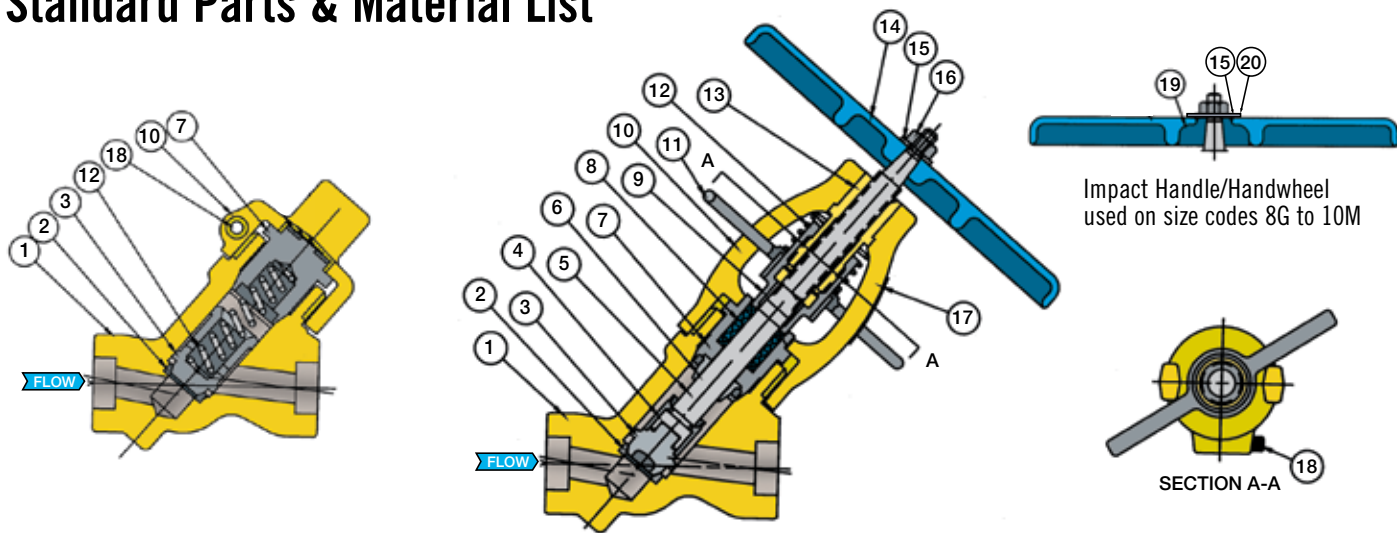


***Servicing Instruction videos are available on CD or DVD and online at [Conval.com](http://Conval.com).***



***A Typical Conval Tool Kit***

# Standard Parts & Material List



Impact Handle/Handwheel used on size codes 8G to 10M

## Globe Valve

NO.	NAME	Carbon Steel	Low Alloy	Stainless
1	Body	SA-105	SA-182 F22 or SA-182 F91	SA-182 F316
2	Seat	Cobalt Alloy-AMS 5387	Cobalt Alloy-AMS 5387	ASTM A732 GR21
3	Disc	Cobalt Alloy-AMS 5387	Cobalt Alloy-AMS 5387	Cobalt Alloy-AMS 538
4	Retainer	ASTM A 582 416	ASTM A 582 416	SA-479 316
5	Stern	ASTM A 582 416	ASTM A 582 416	SA479-UNS S20910
6	Stem Guide	ASTM A 732 GR21	ASTM- A732-GR21	ASTM A732 GR21
7	Bonnet/Chamber	SA479-410	SA479-410	SA479-TYPE 316
8	Packing Set	Flexible Graphite	Flexible Graphite	Flexible Graphite
		Die Formed Packing Rings	Die Formed Packing Rings	Die Formed Packing Rings
		Braided Carbon Yarn Wiper Rings	Braided Carbon Yarn Wiper Rings	Braided Carbon Yarn Wiper Rings
9	Gland	ASTM A 582 416	ASTM A 582 416	ASME SA-479 316
10	Yoke	SA-105	SA-182 F22	SA-182 F316
11	I.G.W.1	AMS 5370	AMS 5370	AMS 5370
12	Spring	Stainless	Stainless	Stainless
13	Bushing	ASME SB-150-C64200	ASME SB-150-C64200	ASME SB-150-C64200
14	Handle/Handwheel	Malleable Iron	Malleable Iron	Malleable Iron
15	Washer <sup>2</sup>	Steel	Steel	Stainless
16	Locknut	Steel	Steel	Steel
17	ID Plate	Stainless Steel	Stainless Steel	Stainless Steel
18	Clampbolt	Stainless	Stainless	Stainless
19	Impact Adaptor	Malleable Iron	Malleable Iron	Malleable Iron
20	Retainer Washer	Steel	Steel	Steel

<sup>1</sup> Integral Gland Wrench

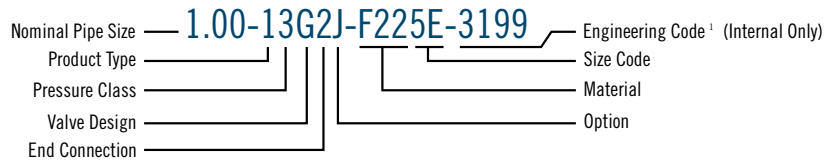
<sup>2</sup> Retainer Washer required with sizes 8, 9 and 10

## Check Valve

NO.	NAME	Carbon Steel	Low Alloy	Stainless
1 1	Body	SA-105	SA-182 F22, SA-182 F91	SA-182 F316
2	Seat	Cobalt Alloy-AMS 5387	Cobalt Alloy-AMS 5387	ASTM A732 GR21
3	Piston	Cobalt Alloy-AMS 5387	Cobalt Alloy-AMS 5387	Cobalt Alloy-AMS 538
4	Spring	Inconel X No. 1 Temper	Inconel X No. 1 Temper	Inconel X No. 1 Temper
5	Clampbolt	Stainless	Stainless	Stainless
6	Yoke	SA-105	SA-182 F22	SA-182 F316
7	Bonnet	SA479-UNS S20910	SA479-UNS S20910	SA479-316/ASTM A732 GR21
8	ID Plate	Stainless Steel	Stainless Steel	Stainless Steel



# Clampseal Figure Number Description



<sup>1</sup> Engineering Code assigned by Conval is a key to Engineering Bill of Material and will appear on all packing lists and invoices. This code need not be supplied when ordering unless a specific configuration is being reordered.

- 1 Globe Valve
- 2 Whisperjet
- 3 Y-Body - Extended Body
- 4 Desuperheater
- 5 Gate

## ASME PRESSURE CLASS

Nominal	Intermediate
0 Under 900	
1 900	1195
2 1500	2155
3 2500	3045
4 3500	4095
8 4500	

## VALVE DESIGN

- A Angle Pattern Stop
- B Tandem Blowdown:  
2 Angle Bodies
- C Y-Pattern Check
- D Angle Pattern Check
- E T-Pattern Check
- F Gate
- G Y-Pattern Stop
- H Bellows Seal
- J Cryogenic
- K Tandem Blowdown:  
1 Angle Body, 1 Y-Pattern
- L Leak Off
- N Continuous Blowdown
- P T-Pattern Stop

- R Y-Pattern Stop Check
- S Angle Pattern Stop Check
- T T-Pattern Stop Check
- U Throttling
- V Tandem Blowdown:  
2 Y-Pattern Bodies
- W Strainer W/Blowoff Valve
- X Strainer W/Blowoff Fitting
- Y Strainer
- Z 3-Way
- 2 Tandem Blowdown:  
1- Ball Valve  
1-Throttling Valve

## END CONNECTIONS

- 1 Threaded
- 2 Socket Weld Full Port
- 3 Socket Weld Reduced Port
- 4 Butt Weld Full Port
- 5 Butt Weld Reduced Port
- 6 But Weld Double Reduced Port
- 7 Clamp Connector
- 8 Flanged - Standard
- 9 Flanged - Special
- 0 Other

## OPTIONS

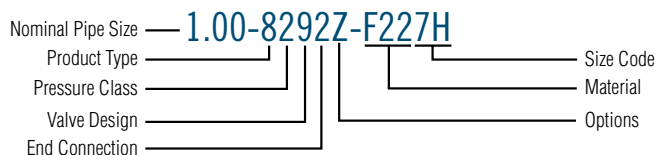
- |                   |                       |                      |
|-------------------|-----------------------|----------------------|
| A AUMA Actuator   | J I.G.W.              | S Single Limitswitch |
| B EIM Actuator    | K Drain Connection    | T Ball Check         |
| C Handwheel       | L Locking Handle      | U Double Limitswitch |
| D Fisher Actuator | M Stem Shroud         | V Valtek Actuator    |
| E Orifice Port    | N Copes Actuator      | W Needle Disc        |
| F Micrometer Dial | P Limitorque Actuator | X Chain Wheel        |
| G Bendix Actuator | Q L.L.G. W/I.G.W.     | Y Conval Actuator    |
| H Spinner Handle  | R Rotork Actuator     | Z Other              |

## MATERIAL

Carbon	Alloy	Stainless
105 Standard	F22 Standard	316 Standard
A05 Stainless Steel	F91 Standard	B16 Ductile Iron Bushing
Internals	A22 Stainless Steel	D16 316 Body Only
B05 Ductile Iron Bushing	Internals	E16 Monel Trim
C05 17-4 PH Stem	B22 Ductile Iron Bushing	L16 316L Body
E05 Monel Trim	C22 F22 Body /A105 Yoke	N16 Navy Special
N05 Navy Special	E22 Monel Trim	S16 Cobalt Free
S05 Cobalt Free	N22 Navy Special	P16 Polymer Trim
P05 Polymer Trim	S22 Cobalt Free	R16 N60 Bushing
R05 N60 Bushing	P22 Polymer Trim	
	R22 N60 Bushing	

## PRODUCT TYPE

# Camseal Figure Number System



## PRODUCT TYPE

- 8 Ball

## ASME PRESSURE CLASS

2 1700
3 3100
4 4500

## VALVE DESIGN

- 9 Camseal

## END CONNECTIONS

- 1 Threaded
- 2 Socket Weld Full Port
- 3 Socket Weld Reduced Port
- 4 Butt Weld Full Port
- 5 Butt Weld Reduced Port
- 6 Butt Weld Double Reduced Port
- 7 Clamp Connector
- 8 Flanged - Standard
- 9 Flanged - Special
- 0 Other

## OPTIONS

- A AUMA Actuator
- B EIM Actuator
- P Limitorque Actuator
- R Rotork Actuator
- Z Other

## MATERIAL

Carbon	Stainless
SA-105	SA-182-F316/F316L
Alloy	
SA-182-F22 Cl.3	
SA-182-F91	

# Working Pressure by Class, PSIG

NOMINAL	STANDARD CLASS					SPECIAL CLASS <sup>1</sup>					LIMITED CLASS				
	1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>				
INTERMEDIATE	900	1500	2500	3500	4500	900	1500	2500	3500	4500	900	1500	2500	3500	4500
SA182-F22 Cl.3 FORGINGS, AND SA 217-WC9 CASTINGS															
TEMP °F															
-20 TO 100	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
200	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
300	2900	5232	7393	9942	10925	2945	5310	7503	10092	11090	2945	5310	7503	10092	11090
400	2811	5069	7162	9632	10585	2900	5228	7387	9933	10915	2900	5228	7387	9933	10915
500	2649	4776	6746	9069	9965	2885	5202	7351	9887	10865	2885	5202	7351	9887	10865
600	2410	4345	6138	8254	9070	2873	5180	7319	9842	10815	2873	5180	7319	9842	10815
650	2343	4227	5973	8031	8825	2851	5142	7265	9769	10735	2851	5142	7265	9769	10735
700	2263	4078	5761	7749	8515	2816	5081	7178	9651	10605	2816	5081	7178	9651	10605
750	2119	3819	5395	7253	7970	2816	5081	7178	9651	10605	2816	5081	7178	9651	10605
800	2024	3647	5151	6926	7610	2816	5081	7178	9651	10605	2816	5081	7178	9651	10605
850	1939	3499	4944	6648	7305	2696	4865	6875	9246	10160	2696	4865	6875	9246	10160
900	1790	3228	4561	6134	6740	2390	4310	6090	8190	9000	2390	4310	6090	8190	9000
950	1539	2775	3922	5274	5795	1880	3388	4786	6434	7070	1914	3502	5024	6851	7556
1000	1063	1921	2715	3650	4010	1332	2400	3393	4563	5015	1409	2659	3962	5587	6213
1050	697	1255	1774	2388	2625	871	1570	2218	2984	3280	922	1739	2590	3654	4064
1100	438	789	1114	1497	1645	545	986	1393	1871	2055	577	1093	1627	2290	2546
1150	274	492	695	937	1030	341	617	870	1170	1285	361	683	1016	1432	1592
1200	164	297	419	560	615	204	370	523	701	770	216	409	610	858	954

F22 NOT RECOMMENDED FOR PROLONGED USE ABOVE 1100 °F.

WC9; NORMALIZED AND TEMPERED MATERIAL ONLY, NOT TO BE USED OVER 1100 °F.

NOMINAL	STANDARD CLASS					SPECIAL CLASS <sup>1</sup>					LIMITED CLASS				
	1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>				
INTERMEDIATE	900	1500	2500	3500	4500	900	1500	2500	3500	4500	900	1500	2500	3500	4500
SA105 FORGINGS, AND SA 216-WCB CASTINGS															
TEMP °F															
-20 TO 100	2950	5320	7516	10110	11110	2988	5388	7613	10238	11250	1844	5388	7613	10238	11250
200	2704	4875	6889	9268	10185	2988	5388	7613	10238	11250	1844	5388	7613	10238	11250
300	2607	4698	6639	8931	9815	2948	5318	7515	10106	11105	1819	5318	7515	10106	11105
400	2524	4552	6431	8649	9505	2920	5263	7438	10005	10995	1802	5263	7438	10005	10995
500	2402	4332	6119	8227	9040	2920	5263	7438	10005	10995	1802	5263	7438	10005	10995
600	2263	4078	5761	7749	8515	2920	5263	7438	10005	10995	1802	5263	7438	10005	10995
650	2188	3944	5574	7498	8240	2848	5137	7260	9764	10730	1758	5137	7260	9764	10730
700	2119	3818	5388	7244	7960	2754	4965	7015	9432	10365	1699	4965	7015	9432	10365
750	2019	3645	5151	6926	7610	2527	4555	6438	8658	9515	1559	4555	6438	8658	9515
800	1638	2956	4177	5615	6170	2049	3693	5220	7020	7715	1264	3693	5220	7020	7715

A105 NOT RECOMMENDED FOR PROLONGED USE ABOVE 800 °F.

NOMINAL	STANDARD CLASS					SPECIAL CLASS <sup>1</sup>					LIMITED CLASS				
	1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>				
INTERMEDIATE	900	1500	2500	3500	4500	900	1500	2500	3500	4500	900	1500	2500	3500	4500
SA182-F316 FORGINGS, AND SA SA351-F8M CASTINGS															
TEMP °F															
-20 TO 100	2868	5172	7308	9828	10800	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
200	2467	4448	6285	8454	9290	2754	4965	7015	9432	10365	2754	4965	7015	9432	10365
300	2228	4017	5676	7635	8390	2485	4482	6334	8518	9360	2485	4482	6334	8518	9360
400	2046	3690	5213	7011	7705	2283	4116	5817	7825	8600	2283	4116	5817	7825	8600
500	1905	3431	4848	6520	7165	2124	3828	5409	7275	7995	2124	3828	5409	7275	7995
600	1798	3241	4580	6160	6770	2007	3617	5111	6875	7555	2007	3617	5111	6875	7555
650	1760	3173	4483	6029	6625	1964	3539	5002	6729	7395	1964	3539	5002	6729	7395
700	1730	3120	4409	5929	6515	1932	3483	4920	6616	7270	1932	3483	4920	6616	7270
750	1700	3068	4337	5833	6410	1900	3426	4840	6507	7150	1900	3426	4840	6507	7150
800	1680	3034	4287	5765	6335	1877	3387	4786	6434	7070	1877	3387	4786	6434	7070
850	1666	3000	4239	5701	6265	1857	3349	4731	6361	6990	1857	3349	4731	6361	6990
900	1653	2982	4215	5669	6230	1845	3327	4702	6324	6950	1845	3327	4702	6324	6950
950	1539	2775	3922	5274	5795	1825	3289	4647	6251	6870	1825	3289	4647	6251	6870
1000	1449	2613	3689	4960	5450	1675	3022	4269	5742	6310	1675	3022	4269	5742	6310
1050	1434	2586	3654	4914	5400	1675	3022	4269	5742	6310	1675	3022	4269	5742	6310
1100	1215	2193	3098	4164	4575	1519	2740	3872	5206	5720	1547	2832	4065	5543	6113
1150	944	1699	2401	3230	3550	1178	2125	3002	4036	4435	1246	2354	3506	4941	5495
1200	737	1331	1880	2526	2775	921	1663	2350	3158	3470	974	1842	2744	3866	4299

ABOVE 1000 °F, CONSULT FACTORY

FOR SERVICES OVER 1000 °F, 316H REQUIRED (MINIMUM CARBON CONTENT 0.4%).

1 REFER TO CLASS DESCRIPTIONS FOR OTHER APPLICATIONS.

FLANGED, THREADED, AND GATE VALVES ARE NOMINALLY RATED.

2 SOCKET WELD SIZES DO NOT GO OVER 2 1/2"

FLANGED END VALVES MAY ONLY BE STANDARD CLASS, AND NOMINALLY RATED.

3 NDE IS REQUIRED FOR SPECIAL CLASS RATINGS.

THREADED END VALVE RATINGS TERMINATE AT 1000 °F AND AT 2500 CLASS.

BASED ON ASME B16.34-2013 APPENDIX VII TABLES, AND WHERE APPLICABLE V-2.1.3 OF APPENDIX V

# Working Pressure by Class, BARS

TEMP °C	STANDARD CLASS 1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					SPECIAL CLASS <sup>1</sup> 1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					LIMITED CLASS 1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>					
	NOMINAL	PN150	PN260	PN420	PN590	PN760	PN150	PN260	PN420	PN590	PN760	PN150	PN260	PN420	PN590	PN760
	INTERMEDIATE	PN204	PN365	PN513	PN691		PN204	PN365	PN513	PN691		PN204	PN365	PN513	PN691	
SA182-F22 Cl.3 FORGINGS, AND SA 217-WC9 CASTINGS																
-29 TO 38	206	372	525	706	776	206	372	525	706	776	206	372	525	706	776	
93	206	372	525	706	776	206	372	525	706	776	206	372	525	706	776	
149	200	361	510	685	753	203	366	518	696	765	203	366	518	696	765	
204	194	350	494	664	730	200	361	510	685	753	200	361	510	685	753	
260	183	329	465	625	687	199	359	507	682	749	199	359	507	682	749	
316	166	300	423	569	625	198	357	505	678	746	198	357	505	678	746	
343	161	292	412	554	608	196	355	501	673	740	196	355	501	673	740	
371	156	281	398	534	587	194	351	495	665	731	194	351	495	665	731	
399	146	263	372	500	550	194	351	495	665	731	194	351	495	665	731	
427	139	252	355	477	525	194	351	495	665	731	194	351	495	665	731	
454	134	241	341	458	504	186	336	474	637	701	186	336	474	637	701	
482	123	223	315	423	465	165	297	420	565	621	165	297	420	565	621	
510	106	191	271	364	400	130	234	330	444	487	132	334	449	501	521	
538	73	133	187	252	276	92	166	234	315	346	97	183	273	385	428	
566	48	87	122	165	181	60	108	153	206	226	64	120	179	252	280	
593	30	54	77	103	113	38	68	96	129	142	40	75	112	158	176	
621	19	34	48	65	71	24	43	60	81	89	25	47	70	99	110	
649	11	20	29	39	42	14	25	36	48	53	15	28	42	59	66	

F22 NOT RECOMMENDED FOR PROLONGED USE ABOVE 593 °C.

WC9; NORMALIZED AND TEMPERED MATERIAL ONLY, NOT TO BE USED OVER 593 °C.

TEMP °C	STANDARD CLASS 1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					SPECIAL CLASS <sup>1</sup> 1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					LIMITED CLASS 1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>					
	NOMINAL	900	1500	2500	3500	4500	900	1500	2500	3500	4500	900	1500	2500	3500	4500
	INTERMEDIATE	1195	2155	3045	4095		1195	2155	3045	4095		1195	2155	3045	4095	
SA105 FORGINGS, AND SA 216-WCB CASTINGS																
-29 TO 38	203	367	519	697	766	206	372	525	706	776	206	372	525	706	776	
93	186	336	475	639	702	206	372	525	706	776	206	372	525	706	776	
149	180	324	458	616	677	203	367	518	697	766	203	367	518	697	766	
204	174	314	444	596	655	201	363	513	690	758	201	363	513	690	758	
260	166	299	422	567	623	201	363	513	690	758	201	363	513	690	758	
316	156	281	398	534	587	201	363	513	690	758	201	363	513	690	758	
343	151	272	385	517	568	196	354	501	673	740	196	354	501	673	740	
371	146	263	372	499	549	190	343	484	650	715	190	343	484	650	715	
399	139	251	355	477	525	174	314	444	597	656	174	314	444	597	656	
427	113	204	288	387	425	141	255	360	484	532	141	255	360	484	532	

A105 NOT RECOMMENDED FOR PROLONGED USE ABOVE 427 °C.

A105 NOT RECOMMENDED FOR PROLONGED USE ABOVE 800 °F.

TEMP °C	STANDARD CLASS 1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					SPECIAL CLASS <sup>1</sup> 1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					LIMITED CLASS 1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>					
	NOMINAL	900	1500	2500	3500	4500	900	1500	2500	3500	4500	900	1500	2500	3500	4500
	INTERMEDIATE	1195	2155	3045	4095		1195	2155	3045	4095		1195	2155	3045	4095	
SA182-F316 FORGINGS, AND SA SA351-CF8M CASTINGS																
-29 TO 38	198	357	504	677	745	206	372	525	706	776	206	372	525	706	776	
93	170	307	434	583	641	190	343	484	650	715	190	343	484	650	715	
149	154	277	392	526	578	171	309	437	587	645	171	309	437	587	645	
204	141	255	360	483	531	157	284	401	539	593	157	284	401	539	593	
260	131	237	334	449	494	146	264	373	501	551	146	264	373	501	551	
316	124	224	316	425	467	138	250	353	474	521	138	250	353	474	521	
343	121	219	309	416	457	135	244	345	464	510	135	244	345	464	510	
371	119	215	304	409	449	133	240	339	456	501	133	240	339	456	501	
399	117	212	299	402	442	131	236	334	449	493	131	236	334	449	493	
427	116	209	296	397	437	129	234	330	444	487	129	234	330	444	487	
454	115	207	292	393	432	128	231	326	438	482	128	231	326	438	482	
482	114	206	291	391	430	127	230	324	436	479	127	230	324	436	479	
510	106	191	271	364	400	126	227	321	431	474	126	227	321	431	474	
538	100	180	255	342	376	115	208	295	396	435	115	208	295	396	435	
566	99	178	252	339	372	115	208	295	396	435	115	208	295	396	435	
593	84	151	214	287	315	105	189	267	359	394	107	195	280	382	421	
621	65	117	166	223	245	81	147	207	278	306	86	162	242	341	379	
649	51	92	130	174	191	63	115	162	218	239	67	127	189	267	296	

ABOVE 538 °C, CONSULT FACTORY

FOR SERVICES OVER 538 °C, 316H REQUIRED (MINIMUM CARBON CONTENT 0.4%).

1 REFER TO CLASS DESCRIPTIONS FOR OTHER APPLICATIONS.

FLANGED, THREADED, AND GATE VALVES ARE NOMINALLY RATED.

2 SOCKET WELD SIZES DO NOT GO OVER 2 1/2"

FLANGED END VALVES MAY ONLY BE STANDARD CLASS, AND NOMINALLY RATED.

3 NDE IS REQUIRED FOR SPECIAL CLASS RATINGS.

THREADED END VALVE RATINGS TERMINATE AT 538 °C AND AT PN420 CLASS.

BASED ON ASME B16.34-2013 APPENDIX VII TABLES, AND WHERE APPLICABLE V-2.1.3 OF APPENDIX V

# Working Pressure by Class, PSIG

NOMINAL	STANDARD CLASS					SPECIAL CLASS <sup>3</sup>					LIMITED CLASS				
	1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>					1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>				
INTERMEDIATE	900	1500	2500	3500	4500	900	1500	2500	3500	4500	900	1500	2500	3500	4500
<b>SA182-F91 FORGINGS, AND SA 217-C12A CASTINGS</b>															
TEMP °F															
-20 TO 100	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
200	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
250	2944	5310	7503	10090	11088	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
300	2900	5232	7393	9942	10925	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
350	2856	5150	7278	9787	10755	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
400	2811	5069	7162	9632	10585	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
450	2730	4923	6954	9351	10275	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
500	2649	4776	6746	9069	9965	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
550	2529	4560	6442	8661	9518	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
600	2410	4345	6138	8254	9070	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
650	2343	4227	5973	8031	8825	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
675	2303	4153	5867	7890	8670	2954	5327	7527	10122	11123	2954	5327	7527	10122	11123
700	2263	4078	5761	7749	8515	2920	5266	7441	10006	10995	2920	5266	7441	10006	10995
725	2191	3949	5578	7501	8243	2912	5250	7418	9976	10963	2912	5250	7418	9976	10963
750	2119	3819	5395	7253	7970	2903	5233	7394	9946	10930	2903	5233	7394	9946	10930
775	2071	3733	5273	7089	7790	2885	5203	7351	9887	10865	2885	5203	7351	9887	10865
800	2024	3647	5151	6926	7610	2868	5172	7308	9828	10800	2868	5172	7308	9828	10800
825	1982	3573	5048	6787	7458	2782	5019	7092	9537	10480	2782	5019	7092	9537	10480
850	1939	3499	4944	6648	7305	2696	4865	6875	9246	10160	2696	4865	6875	9246	10160
875	1865	3363	4753	6391	7023	2543	4588	6483	8718	9580	2543	4588	6483	8718	9580
900	1790	3228	4561	6134	6740	2390	4310	6090	8190	9000	2390	4310	6090	8190	9000
925	1664	3001	4241	5704	6268	2135	3849	5438	7312	8035	2152	3906	5557	7520	8278
950	1539	2775	3922	5274	5795	1880	3388	4786	6434	7070	1914	3502	5024	6851	7556
975	1494	2694	3806	5117	5623	1778	3205	4528	6088	6690	1843	3424	4969	6836	7556
1000	1449	2613	3689	4960	5450	1675	3022	4269	5742	6310	1772	3347	4915	6821	7556
1025	1441	2599	3672	4937	5425	1675	3022	4269	5742	6310	1772	3347	4915	6821	7556
1050	1434	2586	3654	4914	5400	1675	3022	4269	5742	6310	1772	3347	4915	6821	7556
1075	1318	2377	3358	4516	4963	1588	2866	4049	5444	5983	1680	3175	4693	6561	7281
1100	1202	2168	3063	4118	4525	1501	2710	3829	5147	5655	1588	3002	4472	6301	7006
1125	1046	1884	2662	3581	3935	1306	2356	3328	4475	4918	1381	2609	3887	5478	6092
1150	889	1600	2261	3043	3345	1110	2001	2827	3803	4180	1174	2216	3302	4656	5179
1175	731	1317	1861	2504	2753	914	1647	2327	3130	3440	966	1824	2718	3832	4262
1200	573	1034	1462	1966	2160	717	1293	1827	2457	2700	758	1432	2134	3008	3345
<b>SA182-F92 FORGINGS</b>															
TEMP °F															
-20 TO 100	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
200	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
250	2944	5310	7503	10090	11088	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
300	2900	5232	7393	9942	10925	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
350	2856	5150	7278	9787	10755	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
400	2811	5069	7162	9632	10585	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
450	2730	4923	6954	9351	10275	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
500	2649	4776	6746	9069	9965	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
550	2529	4560	6442	8661	9518	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
600	2410	4345	6138	8254	9070	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
650	2343	4227	5973	8031	8825	2988	5388	7613	10238	11250	2988	5388	7613	10238	11250
675	2303	4153	5867	7890	8670	2954	5327	7527	10122	11123	2954	5327	7527	10122	11123
700	2263	4078	5761	7749	8515	2920	5266	7441	10006	10995	2920	5266	7441	10006	10995
725	2191	3949	5578	7501	8243	2912	5250	7418	9976	10963	2912	5250	7418	9976	10963
750	2119	3819	5395	7253	7970	2903	5233	7394	9946	10930	2903	5233	7394	9946	10930
775	2071	3733	5273	7089	7790	2885	5203	7351	9887	10865	2948	5247	7351	9887	10865
800	2024	3647	5151	6926	7610	2868	5172	7308	9828	10800	2868	5172	7308	9828	10800
825	1982	3573	5048	6787	7458	2782	5019	7092	9537	10480	2909	5107	7092	9537	10480
850	1939	3499	4944	6648	7305	2696	4865	6875	9246	10160	2696	4865	6875	9246	10160
875	1865	3363	4753	6391	7023	2543	4588	6483	8718	9580	2817	4780	6483	8718	9580
900	1790	3228	4561	6134	6740	2390	4310	6090	8190	9000	2390	4310	6090	8190	9000
925	1664	3001	4241	5704	6268	2135	3849	5438	7312	8035	2666	4266	5557	7520	8278
950	1539	2775	3922	5274	5795	1880	3388	4786	6434	7070	1914	3502	5024	6851	7556
975	1494	2694	3806	5117	5623	1778	3205	4528	6088	6690	2541	3914	4969	6836	7556
1000	1449	2613	3689	4960	5450	1675	3022	4269	5742	6310	1772	3347	4915	6821	7556
1025	1441	2599	3672	4937	5425	1675	3022	4269	5742	6310	2510	3865	4915	6821	7556
1050	1434	2586	3654	4914	5400	1675	3022	4269	5742	6310	1772	3347	4915	6821	7556
1075	1358	2450	3462	4657	5118	1641	2959	4181	5622	6178	2497	3812	4847	6778	7523
1100	1282	2314	3271	4400	4835	1606	2896	4092	5501	6045	1699	3208	4779	6735	7489
1125	1188	2142	3027	4072	4475	1486	2680	3787	5092	5595	2436	3575	4423	6234	6932
1150	1093	1969	2784	3744	4115	1367	2465	3483	4682	5145	1446	2730	4067	5732	6374

1 REFER TO CLASS DESCRIPTIONS FOR OTHER APPLICATIONS.  
 2 SOCKET WELD SIZES DO NOT GO OVER 2 1/2"  
 3 NDE IS REQUIRED FOR SPECIAL CLASS RATINGS.

FLANGED, THREADED, AND GATE VALVES ARE NOMINALLY RATED.  
 FLANGED END VALVES MAY ONLY BE STANDARD CLASS, AND NOMINALLY RATED.  
 THREADED END VALVE RATINGS TERMINATE AT 1000 °F AND AT 2500 CLASS.

BASED ON ASME B16.34-2013 APPENDIX VII TABLES, AND WHERE APPLICABLE V-2.1.3 OF APPENDIX V

# Working Pressure by Class, BARS

NOMINAL	STANDARD CLASS					SPECIAL CLASS <sup>3</sup>					LIMITED CLASS					
	1/2" - 4" Socket Weld, Butt Weld <sup>1,2</sup>										1/2" - 2 1/2" Socket Weld, Butt Weld <sup>1,2</sup>					
	PN150	PN260	PN420	PN590	PN760	PN150	PN260	PN420	PN590	PN760	PN150	PN260	PN420	PN590	PN760	
INTERMEDIATE	PN204	PN365	PN513	PN691	PN204	PN365	PN513	PN691	PN204	PN365	PN513	PN691	PN204	PN365	PN513	PN691
<b>SA182-F91 FORGINGS, AND SA 217-C12A CASTINGS</b>																
<b>TEMP °C</b>																
-29 TO 38	206	372	525	706	776	206	372	525	706	776	206	372	525	706	776	
93	206	372	525	706	776	206	372	525	706	776	206	372	525	706	776	
121	203	366	518	696	764	206	372	525	706	776	206	372	525	706	776	
149	200	361	510	685	753	206	372	525	706	776	206	372	525	706	776	
177	197	355	502	675	742	206	372	525	706	776	206	372	525	706	776	
204	194	350	494	664	730	206	372	525	706	776	206	372	525	706	776	
232	188	340	480	645	708	206	372	525	706	776	206	372	525	706	776	
260	183	329	465	625	687	206	372	525	706	776	206	372	525	706	776	
288	174	315	444	597	656	206	372	525	706	776	206	372	525	706	776	
316	166	300	423	569	625	206	372	525	706	776	206	372	525	706	776	
343	161	292	412	554	608	206	372	525	706	776	206	372	525	706	776	
357	159	286	405	544	598	204	367	519	698	767	204	367	519	698	767	
371	156	281	398	534	587	201	363	513	690	758	201	363	513	690	758	
385	151	272	385	517	568	201	362	512	688	756	201	362	512	688	756	
399	146	263	372	500	550	200	361	510	686	754	200	361	510	686	754	
413	143	258	364	489	537	199	359	507	682	749	199	359	507	682	749	
427	139	252	355	477	525	198	357	504	677	745	198	357	504	677	745	
441	137	247	348	468	514	192	346	489	657	723	192	346	489	657	723	
454	134	241	341	458	504	186	336	474	637	701	186	336	474	637	701	
468	129	232	328	441	484	175	316	447	601	661	175	316	447	601	661	
482	123	223	315	423	465	165	297	420	565	621	165	297	420	565	621	
496	115	207	293	393	432	147	266	375	504	554	148	269	383	518	571	
510	106	191	271	364	400	130	234	330	444	487	132	242	347	472	521	
524	103	186	263	353	388	123	221	312	420	461	127	236	345	478	530	
538	100	180	255	342	376	115	208	295	396	435	122	231	344	485	539	
552	99	179	253	340	374	115	208	295	396	435	122	231	344	485	539	
566	99	178	252	339	372	115	208	295	396	435	122	231	344	485	539	
579	91	164	232	311	342	109	198	279	375	412	116	219	326	459	511	
593	83	150	211	284	312	103	187	264	355	390	109	207	309	434	483	
607	72	130	184	247	271	90	163	230	308	339	95	180	268	378	420	
621	61	110	156	210	231	77	138	195	262	288	81	153	228	321	357	
635	50	91	128	173	190	63	114	161	216	237	67	126	188	264	294	
649	39	71	101	135	149	49	89	126	169	186	52	99	147	207	231	

<b>SA182-F92 FORGINGS</b>																
<b>TEMP °F</b>																
-29 TO 38	206	372	525	706	776	206	372	525	706	776	206	372	525	706	776	
93	206	372	525	706	776	206	372	525	706	776	206	372	525	706	776	
121	203	366	518	696	764	206	372	525	706	776	206	372	525	706	776	
149	200	361	510	685	753	206	372	525	706	776	206	372	525	706	776	
177	197	355	502	675	742	206	372	525	706	776	206	372	525	706	776	
204	194	350	494	664	730	206	372	525	706	776	206	372	525	706	776	
232	188	340	480	645	708	206	372	525	706	776	206	372	525	706	776	
260	183	329	465	625	687	206	372	525	706	776	206	372	525	706	776	
288	174	315	444	597	656	206	372	525	706	776	206	372	525	706	776	
316	166	300	423	569	625	206	372	525	706	776	206	372	525	706	776	
343	161	292	412	554	608	206	372	525	706	776	206	372	525	706	776	
357	159	286	405	544	598	204	367	519	698	767	204	367	519	698	767	
371	156	281	398	534	587	201	363	513	690	758	201	363	513	690	758	
385	151	272	385	517	568	201	362	512	688	756	201	362	512	688	756	
399	146	263	372	500	550	200	361	510	686	754	200	361	510	686	754	
413	143	258	364	489	537	199	359	507	682	749	199	359	507	682	749	
427	139	252	355	477	525	198	357	504	677	745	198	357	504	677	745	
441	137	247	348	468	514	192	346	489	657	723	192	346	489	657	723	
454	134	241	341	458	504	186	336	474	637	701	186	336	474	637	701	
468	129	232	328	441	484	175	316	447	601	661	175	316	447	601	661	
482	123	223	315	423	465	165	297	420	565	621	165	297	420	565	621	
496	115	207	293	393	432	147	266	375	504	554	148	269	383	518	571	
510	106	191	271	364	400	130	234	330	444	487	132	242	347	472	521	
524	103	186	263	353	388	123	221	312	420	461	127	236	345	478	530	
538	100	180	255	342	376	115	208	295	396	435	122	231	344	485	539	
552	99	179	253	340	374	115	208	295	396	435	122	231	344	485	539	
566	99	178	252	339	372	115	208	295	396	435	122	231	344	485	539	
579	94	169	239	321	353	113	204	288	388	426	120	226	337	474	528	
593	88	160	226	303	333	111	200	282	379	417	117	221	330	464	516	
607	82	148	209	281	309	102	185	261	351	386	108	205	305	430	478	
621	75	136	192	258	284	94	170	240	323	355	100	188	281	395	439	

ABOVE 620 °C IS LIMITED TO MAXIMUM OUTSIDE DIAMETERS OF 88.9MM

- 1 REFER TO CLASS DESCRIPTIONS FOR OTHER APPLICATIONS.
- 2 SOCKET WELD SIZES DO NOT GO OVER 2 1/2"
- 3 NDE IS REQUIRED FOR SPECIAL CLASS RATINGS.

FLANGED, THREADED, AND GATE VALVES ARE NOMINALLY RATED.  
 FLANGED END VALVES MAY ONLY BE STANDARD CLASS, AND NOMINALLY RATED.  
 THREADED END VALVE RATINGS TERMINATE AT 538 °C AND AT PN420 CLASS.  
 BASED ON ASME B16.34-2013 APPENDIX VII TABLES, AND WHERE APPLICABLE V-2.1.3 OF APPENDIX V

## ASME Class and Ratings

ASME B16.34 incorporates socket weld end valves and butt weld end valves with Limited Class ratings. Conval offers the industry's finest forged steel globe valve with the highest ratings available. ASME Limited Class Rating applies to 2 1/2" and smaller valves only and allows use of ASME Special Class Tables without NDE.

### **Standard Class**

Standard class is a general use classification which uses the ASME Standard Class pressure temperature tables from B16.34. No NDE or special analysis is required. Standard Class provides the lowest (most conservative) ratings.

- Application: Socket Weld, Butt Weld, Threaded End & Flanged valves (Flanged and Threaded End ratings terminate at 1000°F).
  - NPS 1/2 to 4"
  - No NDE Required
- Valve Marking: B16.34 STD

### **Limited Class**

Limited class is a rating which allows small (NPS 2 1/2" or smaller) socket weld valves to be rated to the higher ASME Special Class pressure-temperature tables as well as Annex G from B16.34.

No NDE is required but special engineering analysis must be completed prior to assigning this rating (This has been completed for all CLAMPSEAL® valves). Limited Class provides ratings which are much higher than Standard Class, and in some cases above 900°F are slightly higher than Special Class ratings.

- Application: Socket Weld and Butt Weld End Valves
  - NPS 1/2 to 2 1/2"
  - No NDE Required
- Valve Marking: B16.34 LTD

### **Special Class**

Special class ratings using the tables from ASME B16.34 can be applied to any forged steel valve.

- Application: Socket Weld, Butt Weld, and Threaded End valves
  - NPS 1/2 to 4"
- NDE Requirements Body and Bonnet:
  - Volumetric Exam: Radiographic or Ultrasonic Testing
  - Surface Exam: Liquid Penetrant or Magnetic Particle
- Valve Marking: B16.34 SPL

### **Nominal Ratings**

The ASME B16.34 tables list nominal ratings, i.e., 1500, 2500, 4500. The actual class number (1500) leads to a table or graph of pressure-temperature rating pairs.

To meet nominal rating requirements, valves must satisfy certain wall and hub thickness requirements which are derived from the maximum stress allowed in a given material. These requirements have been met for all CLAMPSEAL® valves.

CLAMPSEAL® valves which exceed the wall thickness requirements may use the excess wall thickness to increase their service rating. These enhanced ratings are called intermediate ratings. Interpolating between the wall required for a class 1500 and a class 2500 valve allows Conval to intermediate rate its 1500 nominal valves to 2155.

Example: an F22 ASME 2155 LTD valve is rated for 1086 PSIG at 1100°F but only 550 PSIG for 1500 Standard class.

Standard, Limited, or Special Class valves may be rated to either Nominal or Intermediate Ratings.

Ball valves, Gate Valves and Threaded End Valves are nominal ASME B16.34 rated. Consult factory for other ratings.

Note: Flanged valves may not be intermediate rated. Maximum flanged and threaded valve rating is 2500.

## Applications

- The modular design of the Clampseal valve family allows for easy customization to provide a wide range of special materials, design options and accessories to match your service requirements.
  - Valve configurations are available for many plants and applications including those listed here:
    - Fossil power
    - Nuclear power
    - Refineries
    - Petro chemical plants
    - Chemical plants
    - Gas separation
    - Pulp and paper plants
    - Recovery boilers
    - Marine boilers
    - Cryogenic systems
    - Oil patch steam injection
    - Thin gas service
    - Water treatment
    - Hydraulic systems
  - Conval's QA program ensures that every component receives the same control as our ASME III nuclear equipment.
  - Each order is reviewed by sales engineers to ensure compatibility with your application.
- Main Steam Lines
  - Instrumentation
  - Vents
  - Drains
  - Boiler Drums
  - Superheaters–Steam Header
  - Desuperheaters
  - Turbine Generators
  - Compressors
  - Steam Condensers
  - Chemical Fuel Lines
  - Economizer
  - Gauge Shut-off
  - Blow-down (Continuous)
  - Reheater – Inlet Header Drain
  - Reheater – Outlet Header Drain
  - Auxiliary Steam Main
  - Water Column Shut-off
  - Water Sampling
  - Steam Sampling
  - Steam Gauge Test
  - Test Loop

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## The Conval Story

In 1962, Mr. Chester Siver completed designs for a revolutionary line of high-pressure, forged steel valves. Hamilton Standard (now Hamilton Sunstrand), a division of United Technologies Corporation, was asked to use their then-new Electron Beam Welding technology for joining of parts into valves for subassemblies. Hamilton Standard became intrigued with the valve as an ideal application of the Electron Beam Welding technique, and negotiated a contract for the rights to manufacture and sell the valve. Mr. Siver served as manager of the valve project.



The first CLAMPSEAL® valves were introduced to the market by Hamilton Standard in 1964. However, in the mid-1960's, growing demand for the firm's popular aerospace products forced Hamilton Standard to make the decision to abandon its industrial products projects. The rights to the CLAMPSEAL valve reverted back to Mr. Siver. Since CLAMPSEAL valves were born in Connecticut, Mr. Siver founded "Conval" (short for Connecticut Valve) in 1967. Today, the valves are still manufactured in Connecticut, a state with a longstanding reputation for technological innovation and manufacturing excellence.

Conval has grown into a leader in valves for the world's most demanding applications. We have a global team of experts to help to meet your most challenging needs. We invite you to contact us today.

**High-pressure, high-temperature ball, bellows, bonnetless, check, gate, globe, throttling, and urea service valves for the world's most demanding applications.**

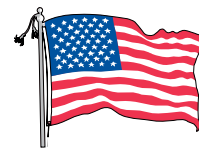


***Celebrating over 45 years of excellence!***

***Thank you for your business.***

***ISO 9001 certified since September 11, 1992***

***PED certified since 2003***



**MADE IN USA**

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