

"Apollo"

**INDUSTRIAL**  
P R O D U C T S

**TOP ENTRY  
CRYOGENIC BALL VALVE**  
STANDARD & FULL PORT



"Apollo" Flow Controls





### ROCKER PACKING GLAND

- 316 stainless steel, rocker shaped packing gland compensates for uneven adjustment of gland bolts.

### ISO 5211 MOUNTING FLANGE

- Universal mounting dimensions simplify valve actuation.

### STEM PACKING

- Multiple chevron V-ring PTFE or low fugitive emission graphite packing rings provides positive sealing.

### STEM

- Single piece construction and blowout proof design.
- 17-4 PH stainless steel stem for high strength and corrosion resistance.
- Nitronic 50 and 316SS stems also available.

### EXTENDED BONNET

- 316L components, welded to ASME Boiler & Pressure Vessel Code requirements.
- Extended bonnets for cold box and non-cold box applications.
- Extension lengths compliant with MSS SP-134 and BS-6364 standards.
- Additional extension lengths available to meet specific application requirements.

### BEARING

- PCTFE provides stem support for cryogenic applications.

### SPRING

- 316 stainless steel or Inconel for long life and corrosion resistance.

### BALL

- 316 stainless steel.

### SEATS

- PCTFE main seal encapsulated in a 316 stainless steel ring for support that also provides a fire seal according to API 607.
- Self-adjusting seats that compensate for wear and temperature fluctuations.
- Low torque seat design to reduce operating torque with PCTFE seat material.

### BODY

- CF3M, CF8M stainless steel or other alloys.
- Robust one-piece body casting, provides minimal potential leak paths
- The special "V" seating design provides automatic compensation for pressure, temperature and wear.
- The ball and seats are continuously snugged down into the "V" resulting in positive leak-tight shutoff.
- Internal body vent provides cavity pressure relief to upstream side.
- Unidirectional flow, permanently marked on the body.

### END CONNECTIONS

- Butt Weld, Socket Weld and Flanged end connections

### STANDARDS COMPLIANCE

- ASME B16.34 Valves - Flanged, Threaded and Welding End  
ASME B16.10 Face to Face and End to End Dimensions of Valves  
(except full port valves)
- API 598 Valve Inspection and Testing  
API 607 Fire Test for Soft Seated Valves  
(depending on seat and seal selection)
- MSS SP-25 Standard Marking System for Valves

## ADVANTAGES

- Self-Adjusting Seats: Compensate for Wear & Temperature Fluctuations
- Spring Loaded Low Pressure Seals
- Built-In Antistatic Feature
- Simplified In-line Serviceability
- Minimal Potential Leak Paths
- ISO 5211 Mounting Pad
- Easy Maintenance

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## SPECIFICATIONS

Size Range:

ASME Class 150, 300, 600

Standard Port: ½"-3" (DN15 - DN80)

Full Port: 1"-2" (DN25 - DN50)

Additional sizes available. Please contact us with your requirements.

## VALVE BODY PRESSURE-TEMPERATURE RATING

The valve body is pressure-temperature rated in accordance with ASME B16.34. The seat & seal rating or body rating determines the practical limitation in actual service conditions. See Pressure-Temperature chart for the maximum working pressure rating.

## FLANGE DRILLING

Valves with flanges are drilled in accordance with ASME B16.5.

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## TESTING

Every Apollo® valve is fully tested prior to shipment. Testing includes a body shell test, a seat leak test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

## STANDARD SHELL TEST

Each Apollo® cryogenic valve is hydrostatically tested to standards that meet or exceed API 598, ASME B16.34, MSS SP-61, MSS SP-72, MSS SP-110 and the Pressure Equipment Directive.

## STANDARD SOFT SEAT TEST

Air test at 80 psi (5.5 bar) per ASME B16.34 and API-598.

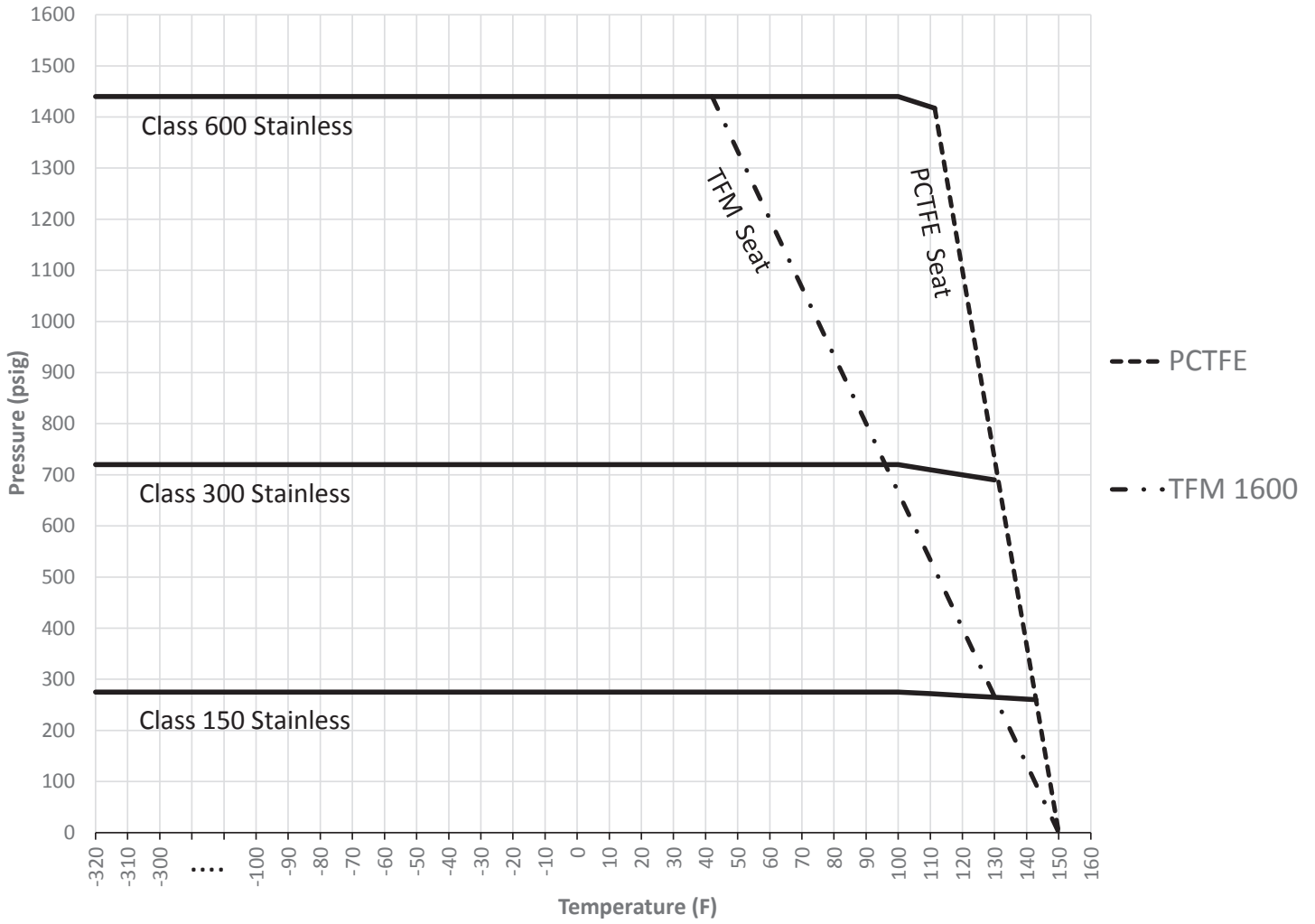
- Zero allowable leakage during the ambient temperature test.

ANSI/FCI 70-2 establishes a series of six leakage classes for control valves and defines the test procedure. Class VI allows the least leakage. Apollo's top entry valves with soft seats are bubble tight at ambient temperatures, which exceeds Class VI requirements.

## OPTIONAL COLD TEST

As an option, cryogenic valves can be helium shell and seat leak tested at -320°F (-196°C) in accordance with BS 6364.

# PRESSURE TEMPERATURE RATING



## FLOW COEFFICIENTS

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm<sup>2</sup>. To convert Cv to Kv, multiply the Cv by 0.8569.

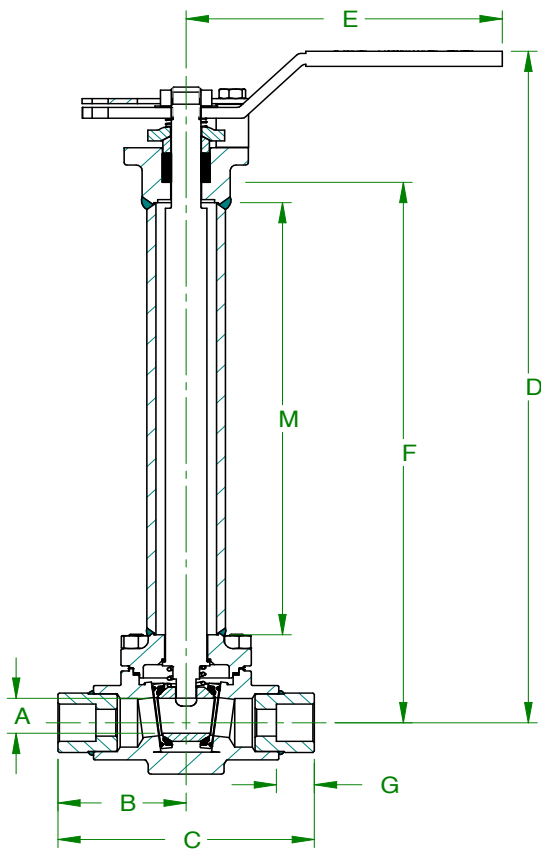
### FLOW COEFFICIENTS - STANDARD PORT

SIZE	150 CLASS	300 CLASS				600 CLASS			
	FLANGED	FLANGED	BUTTWELD	SOCKET WELD	NPT	FLANGED	BUTTWELD	SOCKET WELD	NPT
1/2"				20	20			20	20
3/4"	50	50	50	30	30	50	50	30	30
1"	60	60	60	40	40	60	60	40	40
1.5"	100	100	100	70	70	100	100	70	70
2"	180	180	180	120	120	190	190	12	120
3"	330	400	400	260	260	410	410	260	260

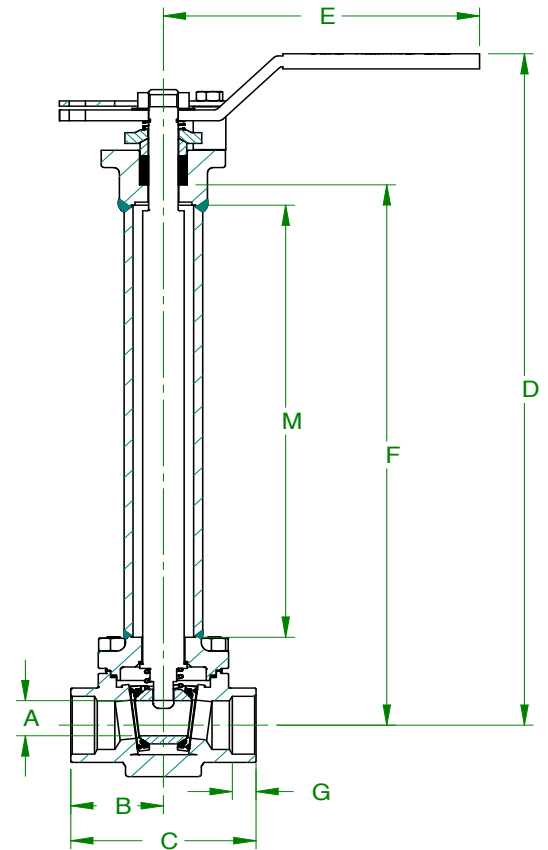
### FLOW COEFFICIENTS - FULL PORT

SIZE	150 CLASS FLANGED	300 CLASS FLANGED	600 CLASS FLANGED
1"	95	90	85
1.5"	230	225	200
2"	435	420	400

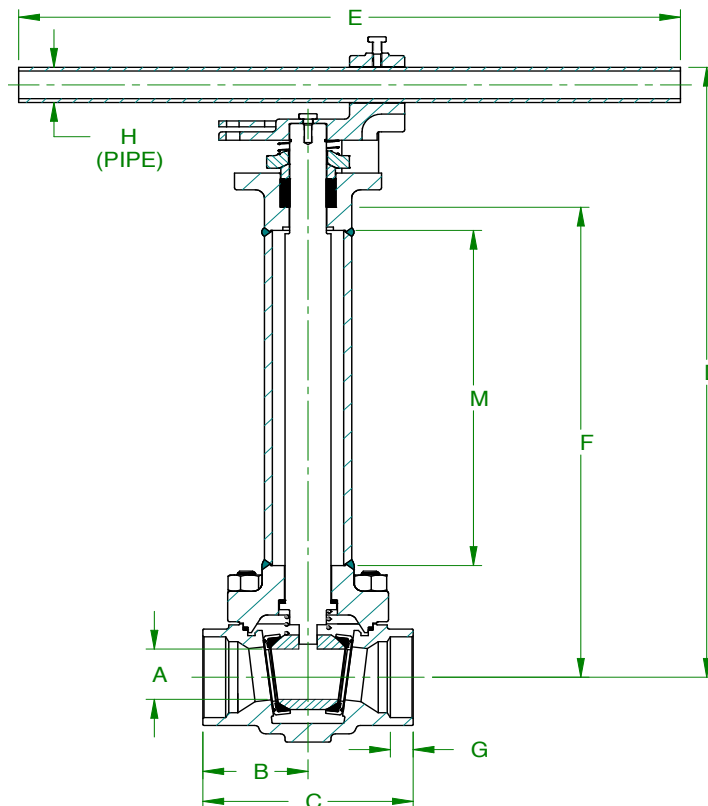
# FIGURES ASME 300/600, STANDARD/FULL PORT, SOCKET WELD



**FIGURE 1**



**FIGURE 2**



**FIGURE 3**

See Socket Weld Valve Table with Dimensions

# DIMENSIONS

## ASME 300/600, STANDARD/FULL PORT, SOCKET WELD

### ASME CLASS 300, STANDARD PORT, SOCKET WELD

NON-COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1/2"	0.81	2.77	5.54	15.54	6.67	12.51	0.50	NA	10.00
	3/4"	0.81	1.96	3.91	15.54	6.67	12.51	0.56	NA	10.00
FIGURE 3	1"	0.81	1.96	3.91	15.54	6.67	12.51	0.50	NA	10.00
	1.5"	1.17	2.49	4.98	16.11	8.35	12.76	0.55	NA	10.00
	2"	1.50	2.86	5.72	17.05	12.00	13.52	0.62	NA	10.00
	3"	2.25	4.14	8.28	18.81	18.00	14.12	1.00	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1/2"	0.81	2.77	5.54	23.04	6.67	20.01	0.50	NA	17.50
	3/4"	0.81	1.96	3.91	23.04	6.67	20.01	0.56	NA	17.50
FIGURE 3	1"	0.81	1.96	3.91	23.04	6.67	20.01	0.50	NA	17.50
	1.5"	1.17	2.49	4.98	27.11	8.35	23.76	0.55	NA	21.00
	2"	1.50	2.86	5.72	27.30	12.00	23.77	0.62	NA	20.25
	3"	2.25	4.14	8.28	32.56	18.00	27.87	1.00	3/4" SCH.40	23.75

### ASME CLASS 600, STANDARD PORT, SOCKET WELD

NON-COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1/2"	0.81	2.99	5.98	15.84	6.67	12.81	0.50	NA	10.00
	3/4"	0.81	2.18	4.35	15.84	6.67	12.81	0.56	NA	10.00
FIGURE 3	1"	0.81	2.18	4.35	15.84	6.67	12.81	0.50	NA	10.00
	1.5"	1.17	2.62	5.23	17.05	12.00	13.50	0.55	NA	10.00
	2"	1.50	2.99	5.98	18.20	18.00	14.02	0.62	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1/2"	0.81	2.99	5.98	23.04	6.67	20.01	0.50	NA	17.50
	3/4"	0.81	2.18	4.35	23.04	6.67	20.01	0.56	NA	17.50
FIGURE 3	1"	0.81	2.18	4.35	23.04	6.67	20.01	0.50	NA	17.50
	1.5"	1.17	2.62	5.23	27.30	12.00	23.72	0.55	NA	20.25
	2"	1.50	2.99	5.98	28.45	18.00	24.27	0.62	3/4" SCH.40	20.25

### ASME CLASS 300, FULL PORT, SOCKET WELD

NON-COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1"	1.12	2.68	5.36	16.11	8.35	12.76	0.38	NA	10.00
	1.5"	1.50	3.05	6.10	17.05	12.00	13.52	0.55	NA	10.00
FIGURE 3	2"	2.25	4.34	8.67	18.81	18.00	14.12	0.62	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1"	1.12	2.68	5.36	27.11	8.35	23.76	0.38	NA	21.00
	1.5"	1.50	3.05	6.10	27.30	12.00	23.77	0.55	NA	20.25
FIGURE 3	2"	2.25	4.34	8.67	29.06	18.00	24.37	0.62	3/4" SCH.40	20.25

### ASME CLASS 600, FULL PORT, SOCKET WELD

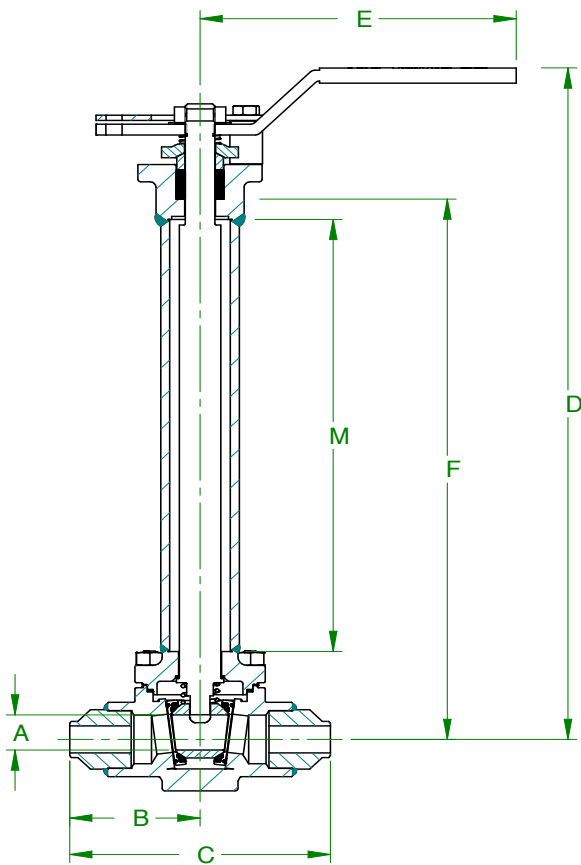
NON-COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1"	1.17	2.81	5.61	17.05	12.00	13.50	0.38	NA	10.00
	1.5"	1.50	3.18	6.36	18.20	18.00	14.02	0.55	3/4" SCH.40	10.00

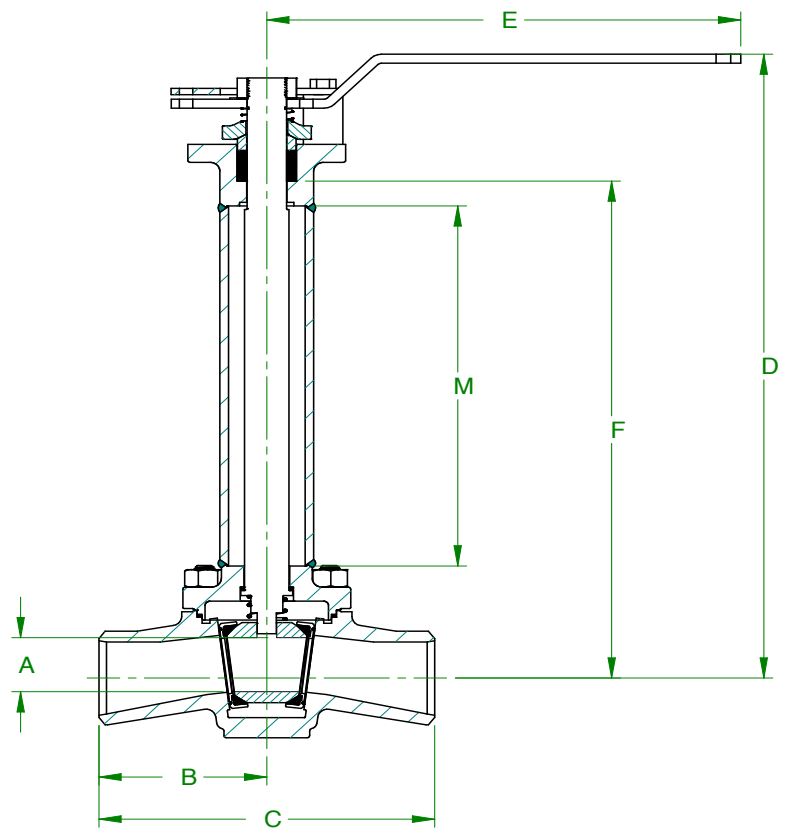
COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	H	M
FIGURE 2	1"	1.17	2.81	5.61	27.30	12.00	23.75	0.38	NA	20.25
	1.5"	1.50	3.18	6.36	28.45	18.00	24.27	0.55	3/4" SCH.40	20.25

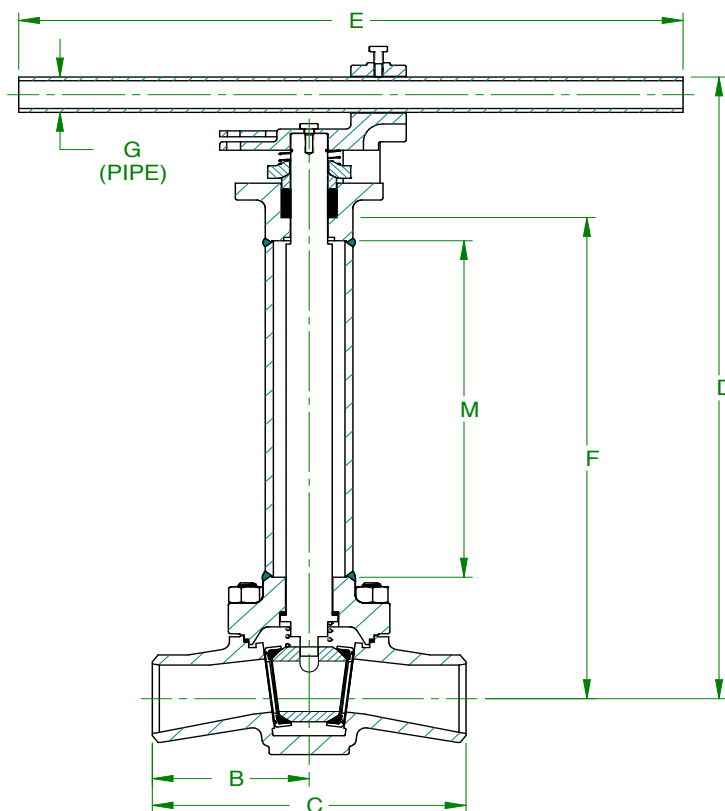
# FIGURES ASME 300/600, STANDARD/FULL PORT, BUTT WELD



**FIGURE 1**



**FIGURE 2**



**FIGURE 3**

See Butt weld Valve Table with Dimensions



# DIMENSIONS

## ASME 300/600, STANDARD/FULL PORT, BUTT WELD

### ASME CLASS 300, STANDARD PORT, BUTT WELD

NON-COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	M
FIG 1	1/2"	0.81	2.75	5.50	15.54	6.67	12.51	NA	10.00
	3/4"	0.81	3.00	6.00	15.69	6.67	12.66	NA	10.00
FIGURE 2	1"	0.81	3.25	6.50	15.72	6.67	12.69	NA	10.00
	1.5"	1.17	3.75	7.50	16.15	8.35	12.81	NA	10.00
FIGURE 3	2"	1.50	4.25	8.50	17.33	12.00	13.80	NA	10.00
	3"	2.25	5.56	11.12	18.81	18.00	14.12	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	M
FIG 1	1/2"	0.81	2.75	5.50	23.04	6.67	20.01	NA	17.50
	3/4"	0.81	3.00	6.00	23.19	6.67	20.16	NA	17.50
FIGURE 2	1"	0.81	3.25	6.50	23.22	6.67	20.19	NA	17.50
	1.5"	1.17	3.75	7.50	27.15	8.35	23.81	NA	21.00
FIGURE 3	2"	1.50	4.25	8.50	27.58	12.00	24.05	NA	20.25
	3"	2.25	5.56	11.12	32.56	18.00	27.87	3/4" SCH.40	23.75

### ASME CLASS 600, STANDARD PORT, BUTT WELD

NON-COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	M
FIG 1	1/2"	0.81	3.25	6.50	15.84	6.67	12.81	NA	10.00
	3/4"	0.81	3.75	7.50	16.08	6.67	13.05	NA	10.00
FIGURE 2	1"	0.81	4.25	8.50	16.14	6.67	13.11	NA	10.00
	1.5"	1.17	4.75	9.50	17.29	12.00	13.74	NA	10.00
FIGURE 3	2"	1.50	5.75	11.50	18.66	18.00	14.48	3/4" SCH.40	10.00
	3"	2.25	7.00	14.00	19.33	18.00	14.65	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	M
FIG 1	1/2"	0.81	3.25	6.50	23.04	6.67	20.01	NA	17.50
	3/4"	0.81	3.75	7.50	23.28	6.67	20.25	NA	17.50
FIGURE 2	1"	0.81	4.25	8.50	23.34	6.67	20.31	NA	17.50
	1.5"	1.17	4.75	9.50	27.54	12.00	23.99	NA	20.25
FIG 3	2"	1.50	5.75	11.50	28.90	18.00	24.73	3/4" SCH.40	20.25
	3"	2.25	7.00	14.00	33.08	18.00	29.71	3/4" SCH.40	23.75

### ASME CLASS 300, FULL PORT, BUTT WELD

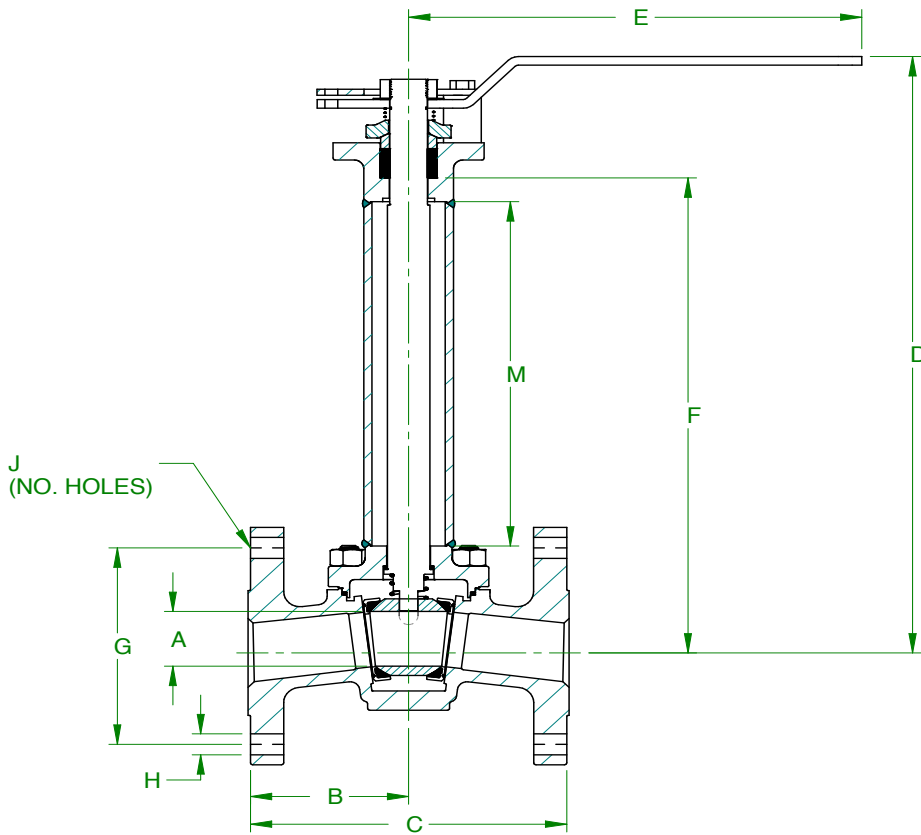
NON-COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	M
FIG 1	1"	1.17	3.75	7.50	16.11	8.35	12.76	NA	10.00
	1.5"	1.50	4.75	9.50	17.05	12.00	13.52	NA	10.00
FIG 3	2"	2.25	5.56	11.13	19.14	18.00	14.46	3/4" SCH.40	10.00

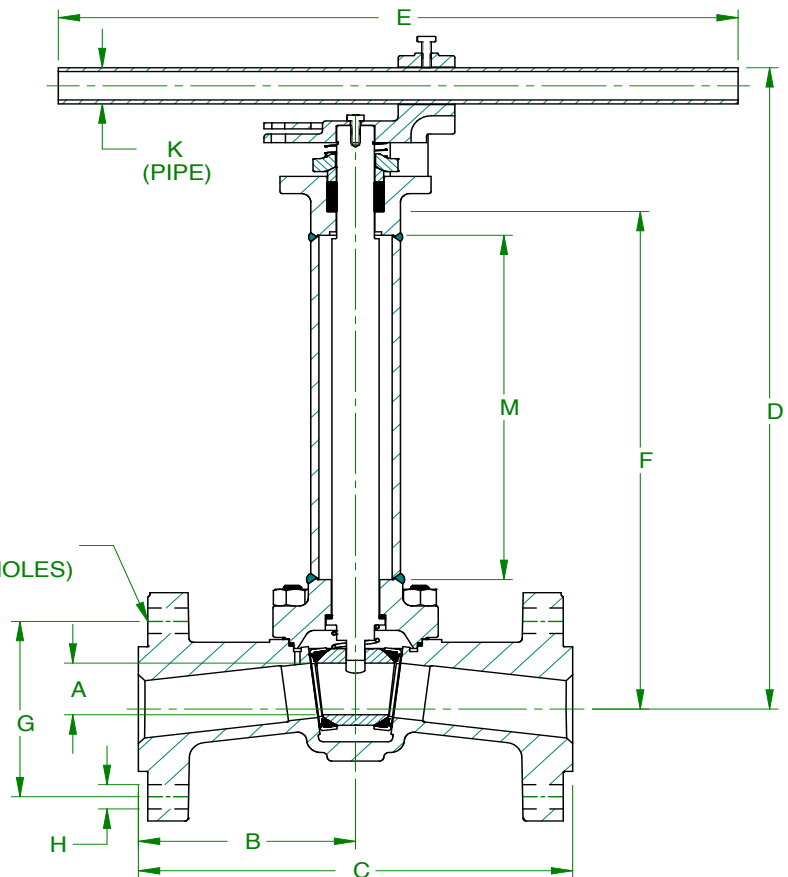
COLD BOX - DIMENSIONS (INCHES)

	SIZE	A	B	C	D	E	F	G	M
FIG 1	1"	1.17	3.75	7.50	27.11	8.35	23.76	NA	21.00
	1.5"	1.50	4.75	9.50	27.30	12.00	23.77	NA	20.25
FIG 3	2"	2.25	5.56	11.13	29.39	18.00	24.71	3/4" SCH.40	20.25

# FIGURES ASME 150/300/600, STANDARD PORT, FLANGED



**FIGURE 1**



**FIGURE 2**

See Flanged Valve Table with Dimensions

# DIMENSIONS

## ASME 150/300/600, STANDARD PORT, FLANGED

### ASME CLASS 150, STANDARD PORT, FLANGED

NON-COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1/2"	0.81	2.85	5.69	15.54	6.67	12.51	2.38	0.62	4	N/A	10.00
3/4"	0.81	2.31	4.62	15.60	6.67	12.57	2.75	0.62	4	N/A	10.00
1"	0.81	2.50	5.00	15.63	6.67	12.59	3.12	0.62	4	N/A	10.00
1.5"	1.17	3.25	6.50	16.16	8.35	12.82	3.87	0.62	4	N/A	10.00
2"	1.50	3.50	7.00	17.23	12.00	13.70	4.75	0.75	4	N/A	10.00
3"	2.25	4.00	8.00	18.81	18.00	14.12	6.00	0.75	4	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1/2"	0.81	2.85	5.69	23.04	6.67	20.01	2.38	0.62	4	NA	17.50
3/4"	0.81	2.31	4.62	23.10	6.67	20.07	2.75	0.62	4	NA	17.50
1"	0.81	2.50	5.00	23.13	6.67	20.09	3.12	0.62	4	NA	17.50
1.5"	1.17	3.25	6.50	27.16	8.35	23.82	3.87	0.62	4	NA	21.00
2"	1.50	3.50	7.00	27.48	12.00	23.95	4.75	0.75	4	NA	20.25
3"	2.25	4.00	8.00	32.56	18.00	27.87	6.00	0.75	4	3/4" SCH.40	23.75

### ASME CLASS 300, STANDARD PORT, FLANGED

NON-COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1/2"	0.81	2.85	5.69	15.54	6.67	12.51	2.62	0.62	4	NA	10.00
3/4"	0.81	3.00	6.00	15.70	6.67	12.66	3.25	0.75	4	NA	10.00
1"	0.81	3.25	6.50	15.72	6.67	12.68	3.50	0.75	4	NA	10.00
1.5"	1.17	3.75	7.50	16.22	8.35	12.88	4.50	0.88	4	NA	10.00
2"	1.50	4.25	8.50	17.32	12.00	13.79	5.00	0.75	8	NA	10.00
3"	2.25	5.56	11.13	18.81	18.00	14.12	6.63	0.88	8	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1/2"	0.81	2.85	5.69	23.04	6.67	20.01	2.62	0.62	4	NA	17.50
3/4"	0.81	3.00	6.00	23.20	6.67	20.16	3.25	0.75	4	NA	17.50
1"	0.81	3.25	6.50	23.22	6.67	20.19	3.50	0.75	4	NA	17.50
1.5"	1.17	3.75	7.50	27.22	8.35	23.88	4.50	0.88	4	NA	21.00
2"	1.50	4.25	8.50	27.57	12.00	24.04	5.00	0.75	8	NA	20.25
3"	2.25	5.56	11.13	32.56	18.00	27.87	6.63	0.88	8	3/4" SCH.40	23.75

### ASME CLASS 600, STANDARD PORT, FLANGED

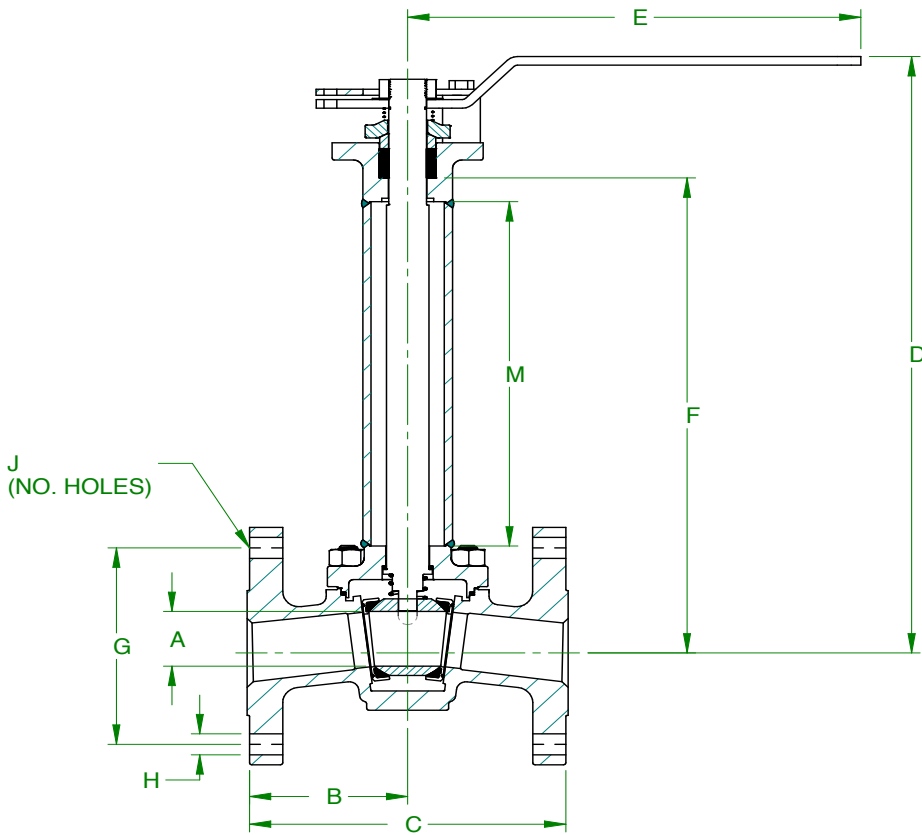
NON-COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1/2"	0.81	3.63	7.25	15.84	6.67	12.81	2.62	0.62	4	NA	10.00
3/4"	0.81	3.75	7.50	16.13	6.67	13.10	3.25	0.75	4	NA	10.00
1"	0.81	4.25	8.50	16.13	6.67	13.10	3.50	0.75	4	NA	10.00
1.5"	1.17	4.75	9.50	17.28	12.00	13.73	4.50	0.88	4	NA	10.00
2"	1.50	5.75	11.50	18.63	18.00	14.45	5.00	0.75	8	3/4" SCH.40	10.00
3"	2.25	7.00	14.00	19.33	18.00	14.65	6.63	0.88	8	3/4" SCH.40	10.00

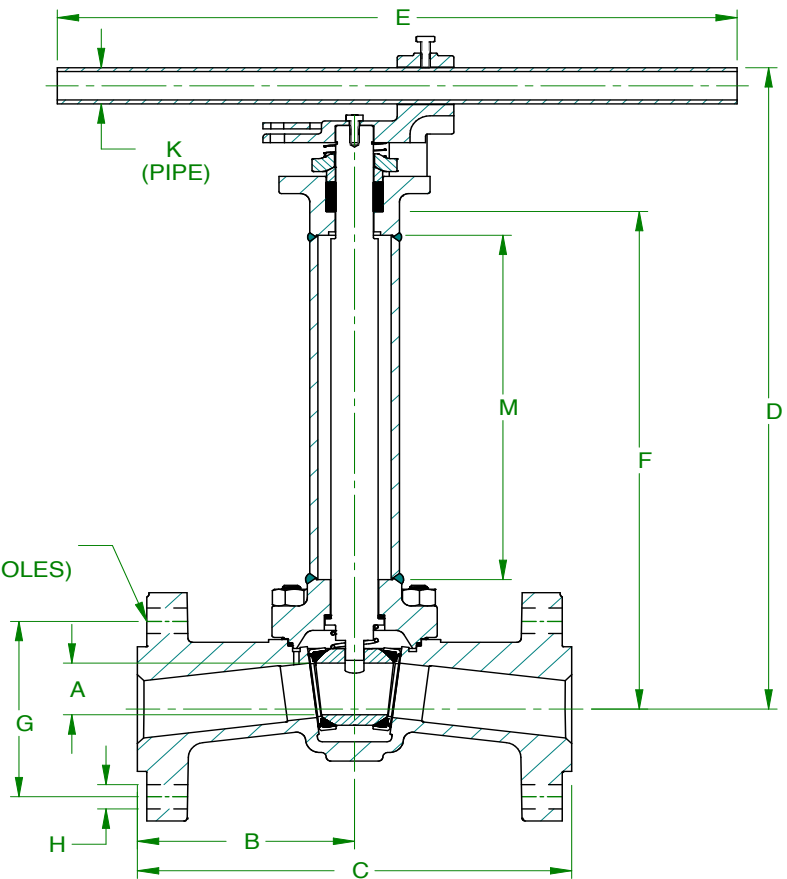
COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1/2"	0.81	3.63	7.25	23.04	6.67	20.01	2.62	0.62	4	NA	17.50
3/4"	0.81	3.75	7.50	23.34	6.67	20.30	3.25	0.75	4	NA	17.50
1"	0.81	4.25	8.50	23.34	6.67	20.30	3.50	0.75	4	NA	17.50
1.5"	1.17	4.75	9.50	27.53	12.00	23.98	4.50	0.88	4	NA	20.25
2"	1.50	5.75	11.50	28.88	18.00	24.70	5.00	0.75	8	3/4" SCH.40	20.25
3"	2.25	7.00	14.00	33.08	18.00	28.40	6.63	0.88	8	3/4" SCH.40	23.75

# FIGURES ASME 150/300/600, FULL PORT, FLANGED



**FIGURE 1**



**FIGURE 2**

See Full Port Flanged Valve Table with Dimensions

# DIMENSIONS

## ASME 150/300/600, FULL PORT, FLANGED

### ASME CLASS 150, FULL PORT, FLANGED

NON-COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1"	1.17	3.50	7.00	16.19	8.35	12.85	3.12	0.62	4	NA	10.00
1.5"	1.50	4.37	8.75	17.33	12.00	13.81	3.87	0.62	4	NA	10.00
2"	2.25	5.25	10.50	19.11	18.00	14.42	4.75	0.75	4	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1"	1.17	3.50	7.00	27.19	8.35	23.85	3.12	0.62	4	NA	21.00
1.5"	1.50	4.37	8.75	27.58	12.00	24.06	3.87	0.62	4	NA	20.25
2"	2.25	5.25	10.50	29.36	18.00	24.67	4.75	0.75	4	3/4" SCH.40	20.25

### ASME CLASS 300, FULL PORT, FLANGED

NON-COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1"	1.17	3.75	7.50	16.22	8.35	12.88	3.50	0.75	4	NA	10.00
1.5"	1.50	4.75	9.50	17.38	12.00	13.86	4.50	0.88	4	NA	10.00
2"	2.25	5.56	11.13	19.14	18.00	14.46	5.00	0.75	8	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1"	1.17	3.75	7.50	27.22	8.35	23.88	3.50	0.75	4	NA	21.00
1.5"	1.50	4.75	9.50	27.63	12.00	24.11	4.50	0.88	4	NA	20.25
2"	2.25	5.56	11.13	29.39	18.00	24.71	5.00	0.75	8	3/4" SCH.40	20.25

### ASME CLASS 600, FULL PORT, FLANGED

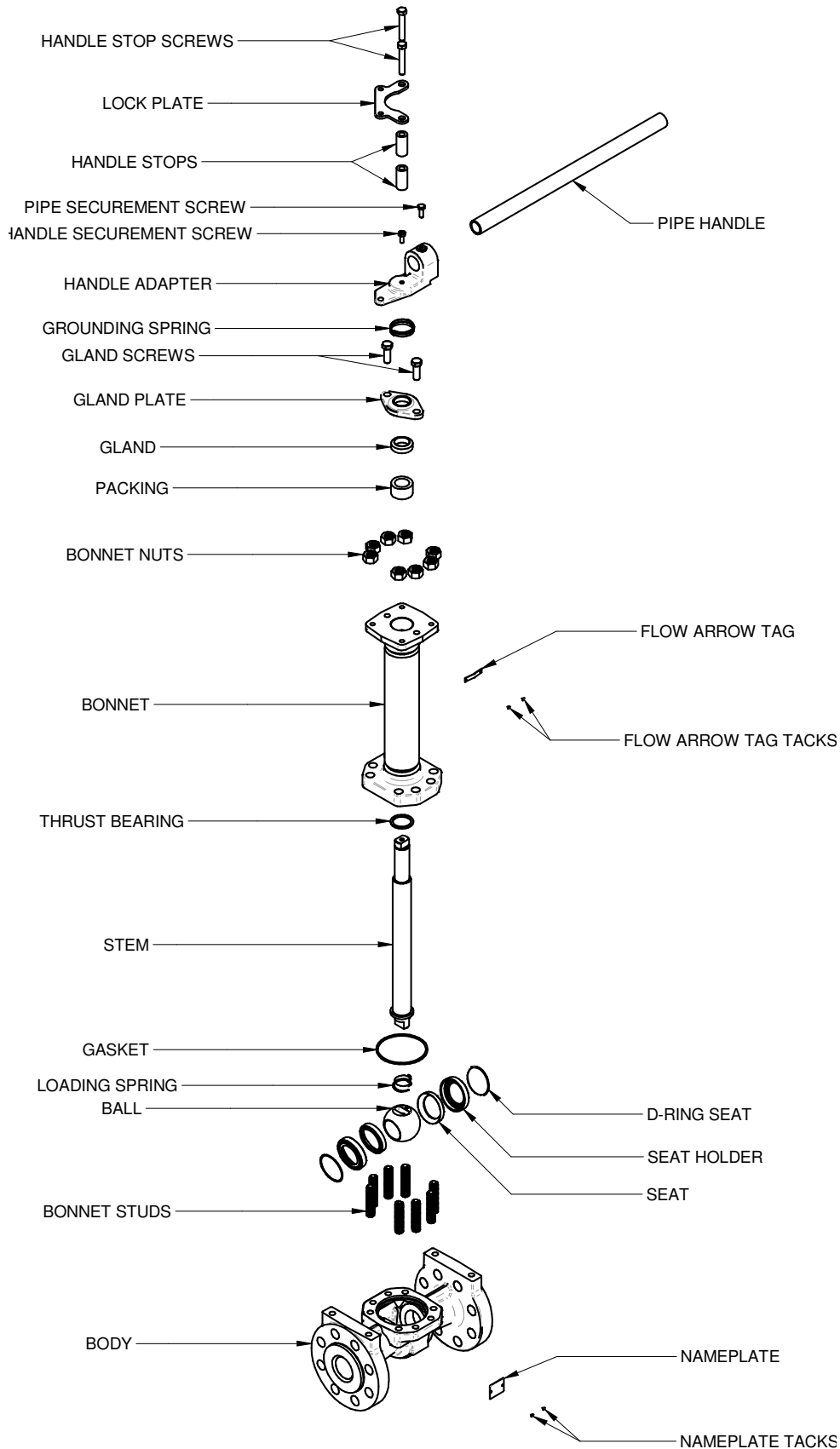
NON-COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1"	1.17	5.00	10.00	17.32	12.00	13.77	3.50	0.75	4	NA	10.00
1.5"	1.50	6.25	12.50	18.71	18.00	14.54	4.50	0.88	4	3/4" SCH.40	10.00
2"	2.25	6.50	13.00	19.56	18.00	14.88	5.00	0.75	8	3/4" SCH.40	10.00

COLD BOX - DIMENSIONS (INCHES)

SIZE	A	B	C	D	E	F	G	H	J	K	M
1"	1.17	5.00	10.00	27.57	12.00	24.02	3.50	0.75	4	NA	20.25
1.5"	1.50	6.25	12.50	28.96	18.00	24.79	4.50	0.88	4	3/4" SCH.40	20.25
2"	2.25	6.50	13.00	29.51	18.00	24.83	5.00	0.75	8	3/4" SCH.40	20.25

# EXPLODED VIEW



# STANDARD MATERIALS LIST

PART NAME	MATERIAL
Handle Stop Screws	18-8 Stainless Steel
Lockplate	302 or 304 Stainless Steel
Stops	304 Stainless Steel
Pipe Securement Screw <sup>1,3</sup>	316 Stainless Steel
Nut <sup>1,2</sup>	ASTM A194 Stainless Steel
Pipe Handle/Lever <sup>1</sup>	304 SS Schedule 40 Pipe or 302/304 Stainless Steel Lever
Handle Securement Screw <sup>1,3</sup>	316 Stainless Steel
Handle Adapter <sup>1,3</sup>	CF8M Stainless Steel
L-Tab Washer <sup>1,2</sup>	304 or 316 Stainless Steel
Grounding Spring	316 Stainless Steel
Gland Screws	ASTM A193 Grade B8 (Optional ASTM A320)
Gland Plate	302 or 304 Stainless Steel or Cast CF8M
Packing Gland	316 Stainless Steel
Packing	Graphite Low Fugitive Emission or Chevron PTFE
Bonnet Nuts	ASTM A194 Stainless Steel
Bonnet	CF3M Stainless Steel
Bearing	PCTFE
Stem	316 Stainless Steel or 17-4 PH Stainless Steel or Nitronic 50
Gasket	316 SS Spiral Wound with Graphite or PTFE Filler
Loading Spring	316 Stainless Steel
Ball	316 Stainless Steel
D-Ring	TFM Multiseal
Seat Holder	316 Stainless Steel
Seats	TFM Multiseal or PCTFE
Bonnet Studs	ASTM A320 Stainless Steel
Body	CF8M or CF3M Stainless Steel (Depending on End Connections)
Namplate	Stainless Steel
Nameplate Tacks	Stainless Steel

Lever/Pipe Handle Notes

Note 1: **STANDARD PORT VALVE**

- All 1.5" & smaller valves use lever handles
- 2" ASME Class 150 & 300 valves use lever handles
- 2" ASME Class 600 valves use a pipe handle

**FULL PORT VALVES**

- All 1.5" & smaller valves use lever handles
- All 2" use pipe handles

Note 2: Used with valves having a lever handle

Note 3: Used with valves having a pipe handle

<b>X</b>	<b>S</b>	<b>S</b>	<b>J</b>	<b>P</b>
MODIFIER	BODY MATERIAL	TRIM MATERIAL	CLASS, PORT, ENDS	SEAT
<p>X - Cryogenic Valve <i>includes vented body</i></p>	<p><b>STAINLESS STEEL CASTING</b> S - ASTM A351 Grade CF8M (316 SS)  B - ASTM A351 Grade CF8M (316L)  Additional materials available. Contact customer support with your requirements.</p>	<p><b>STAINLESS STEEL</b> S - 316 SS  A - Alloy 20 B - 316L SS E - 410 SS J - 220S Duplex SS K - 2507 Super Duplex SS R - AL6XN W - 254 SMO  <b>NICKEL BASED</b> F - Inconel H - Hastelloy C M - M35-1 (Monel) D - Hastelloy C Stem, M35-1 Ball N - Nickel Y - Hastelloy</p>	<p><b>CLASS 150</b> Standard Port B - Flanged Full Port E - Flanged  <b>CLASS 300</b> Standard Port C - Flanged N - Socket Weld P - Buttweld R - FLG x Buttweld Full Port 3 - Buttweld F - Flanged M - Socket Weld  <b>CLASS 600</b> Standard Port J - Socket Weld K - Flanged Q - NPT x Socket Weld W - Buttweld Full Port 7 - Buttweld T - Socket Weld U - Flanged</p>	<p>P - PCTFE SEAT, API-607 Graphite Stem Packing - Low Fugitive Emissions Graphite Bonnet Gasket - Spiral Wound PCTFE Stem Bearing  R - MULTI-SEAL TFM, API-607 Graphite Stem Packing - Low Fugitive Emissions Graphite Bonnet Gasket - Spiral Wound PCTFE Stem Bearing</p>

\* Flanged Valves Only - CF3M  
( ) Represents Close Wrought Equivalent



8	EF PH	E13
SIZE (IN)	OPTIONS	CRYOGENIC EXTENSION LENGTH
3 - 1/2"	-EF Default Suffix	-E13 13" extension
4 - 3/4"	Optional Features may be used alone or in combination (simply add the suffixes to the Product Number in the order listed below).	Non-cold box
5 - 1"	Note: Not all combinations are available on all valves.	3" standard port & smaller
7 - 1.5"	-15- Wheel Handle, Stainless Steel	-E20 20" extension
8 - 2"	-45- No Lever or Nut -- Bare Stem	Cold box
0 - 3"	-49- Assembled Dry -- No Lubrication	1" standard port & smaller
	-57- Oxygen Cleaned	-E24 24" extension
	-82- Flat Faced Flanges	Cold box
	-BT- Teflon Coated ASTM A193 Grade B7 Fasteners	1.5 - 2" standard port
	-DF- Delta Ferrite Report (SS Only)	1" - 2" full port
	-DP- Dye Penetrant	-E28 28" extension
	-EF- Graphite Packing & Spiral Wound Graphite Gasket	Cold box
	-KB- Kolsterised Ball	3" standard port
	-LC- Includes: -DP-LS-MP-TM-TR-XT	
	All welds, Radiography to ASME B16.34	
	-LS- Cryogenic impact testing to ASTM A370	
	-MG- Manual Gear Operator	
	-MH- Manual Gear Operator with Lockout	
	-MJ- Manual Gear Operator with Oversize handwheel	
	-MK- Manual Gear Operator with Oversize handwheel & lockout	
	-MP- Positive Material Identification	
	-NC- NACE Certified (Rc 22 Max)	
	-NN- Nitronic 50 stem	
	-PG- No Plastisol Grip on Lever	
	-PH- 17-4 PH stem	
	-RS- Blow-Out Proof Welded Ball Stop with Safety Cap	
	-TC- Hydrostatic Test with Certified Report	
	-TD- Test to API 6D with Certification	
	-TM- Material Traceability	
	-TR- Hydrostatic Test with certification & MTR	
	-TW- Hydrostatic Test with Witness & Certification	
	Butt Weld } Butt Weld valves include a suffix that specifies the end preparation e.g. schedule W1(SCH10), W4(SCH40), W8(SCH80) W16(SCH160), etc...	
	-XT- BS6364 tested with test report	

NOTE: This is a very limited list of the available options. Contact the factory for specific requirements and availability.  
 \* MG is Generic for Gear Operators. Contact Factory or Price Book for Specific Application and Part No.



NOTES

Lined area for notes

Phone: (704) 841-6000

Fax: (704) 841-6020

**Regional Management List**

now available online at:

**<http://conbra.co/rmlist>**

