

76-100 SERIES

STAINLESS STEEL BALL VALVE W/ MOUNTING PAD
1/4" - 1"



Female NPT Thread, 2000 CWP (psig). Cold Non-Shock. (See referenced P/T chart)
150 psig Saturated Steam.
Vacuum Service to 29 inches Hg.
MSS SP-110 Compliant.

FEATURES

- Investment cast components
- Reinforced seats
- Mounting pad for easy actuator mounting
- Blowout-proof stem design
- Adjustable packing gland
- Stainless steel lever and nut

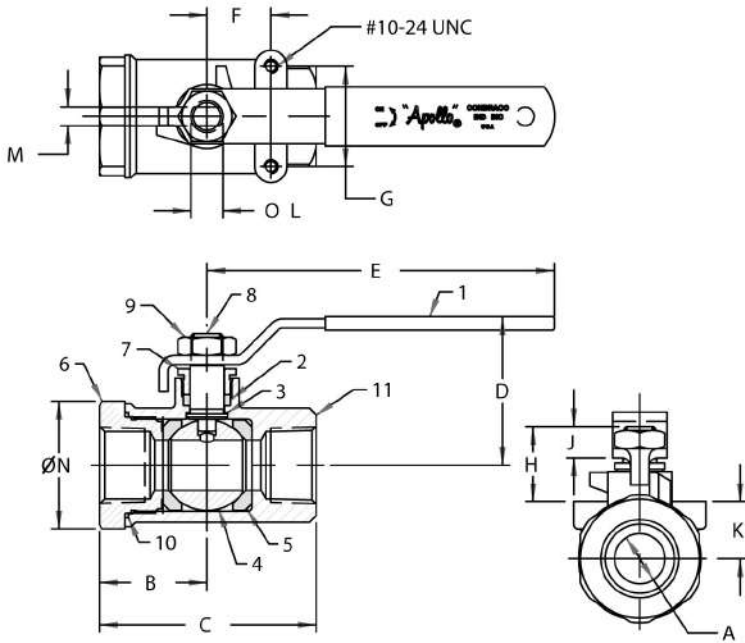
- Fire safe to API 607 (requires -24 suffix)
- Meets NACE MR0175 (2000) & MR0103 (2012)
- CSA CGA 3.16-M88 (Requires "GS" suffix)
- NSF/ANSI/CAN 61 Section 8, Annex G
- NSF/ANSI 372 - Drinking Water System Components - Lead Content

OPTIONS AVAILABLE

(MORE INFORMATION IN SECTION J)

- Minimum quantities apply
- To specify an option, replace the "01" standard suffix with the suffix of the option.
- To specify multiple options, replace the "01" suffix with the desired suffixes in the numerical order shown below. NOTE: Not all suffixes can be combined together.

| (SUFFIX) | OPTION | SIZES |
|----------|--|------------|
| -01 | Standard Configuration | All |
| -P-01 | BSPP (Parallel) Thread Connection | All |
| -T-01 | BSPT (Tapered) Thread Connection | All |
| -02- | Stem Grounded | All |
| -04- | 2-1/4" Stem Extension (Carbon Steel, Zinc Plated) | All |
| -07- | Steel Tee Handle | All |
| -08- | 90° Reversed Stem | All |
| -14- | Side Vented Ball (Uni-Directional) | All |
| -15- | Wheel Handle, Steel | All |
| -16- | Chain Lever - Vertical | 3/4" to 2" |
| -19- | Lock Plate | All |
| -21- | UHMWPE Trim (Non-PTFE) | All |
| -24- | Graphite Packing, PTFE Body Seal, RPTFE Bearing (API 607, 6th Edition, ISO 10497:2010) | All |
| -27- | SS Latch-Lock Lever & Nut | All |
| -30- | Cam-Lock and Grounded | All |
| -32- | SS Tee Handle & Nut | All |
| -35- | PTFE Trim | All |
| -39- | SS Hi-Rise Locking Wheel Handle, SS Nut | All |
| -40- | Cyl-Loc and Grounded | All |
| -44- | Seal Welded | All |
| -45- | Less Lever & Nut | All |
| -46- | Latch Lock Lever - Lock in Closed Position Only | All |
| -47- | SS Latch Lock Oval Handle | All |
| -48- | SS Oval Handle (No Latch) & Nut | All |
| -49- | No Lubrication. Assembled Dry. | All |
| -50- | 2-1/4" CS Locking Stem Extension | All |
| -57- | Oxygen Cleaned | All |
| -58- | Chain Lever - Horizontal | 3/4" to 2" |
| -60- | Static Grounded Ball & Stem | All |
| -64- | 250# Steam Trim (MPTFE Seats & Packing) | All |
| -GS- | CSA CGA 3.16 | All |
| -UA- | AIS (American Iron & Steel) Compliant | All |



STANDARD MATERIAL LIST

| PART | MATERIAL | |
|------|----------------|-----------------------------|
| 1 | Lever and grip | 304 SS w/vinyl |
| 2 | Stem packing | MPTFE |
| 3 | Stem bearing | RPTFE |
| 4 | Ball | A276-316 Stainless Steel |
| 5 | Seat (2) | RPTFE |
| 6 | Retainer | A351-CF8M SS or A276-316 SS |
| 7 | Gland nut | A276-316 Stainless Steel |
| 8 | Stem | A276-316 Stainless Steel |
| 9 | Lever nut | 18-8 Stainless Steel |
| 10 | Body seal | PTFE |
| 11 | Body | A351-CF8M Stainless Steel |

DIMENSIONS

| PART NO. | SIZE | A | B | C | D | E | F | G | H | J | K | L | M | N | WT. |
|------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|------|------|
| 76-101-01A | 1/4" | 0.37 | 1.02 | 2.05 | 1.71 | 3.85 | 0.50 | 1.12 | 0.88 | 0.34 | 0.53 | 0.375 | 0.234 | 1.16 | 0.58 |
| 76-102-01A | 3/8" | 0.37 | 1.02 | 2.05 | 1.71 | 3.85 | 0.50 | 1.12 | 0.88 | 0.34 | 0.53 | 0.375 | 0.234 | 1.16 | 0.55 |
| 76-103-01A | 1/2" | 0.50 | 1.12 | 2.23 | 1.79 | 3.85 | 0.50 | 1.12 | 0.90 | 0.34 | 0.59 | 0.375 | 0.234 | 1.38 | 0.63 |
| 76-104-01A | 3/4" | 0.68 | 1.47 | 2.96 | 2.03 | 4.75 | 0.87 | 1.37 | 1.02 | 0.42 | 0.78 | 0.437 | 0.256 | 1.75 | 1.30 |
| 76-105-01A | 1" | 0.87 | 1.67 | 3.34 | 2.16 | 4.75 | 0.87 | 1.37 | 1.02 | 0.42 | 0.91 | 0.437 | 0.256 | 1.94 | 1.60 |

Pressure/Temperature Ratings - Page M-14, Graph No. 14

*LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with Federal Public Law 111-380. ANSI 3rd party approved and listed.
REV. 18JUL19

76-100 SERIES

STAINLESS STEEL BALL VALVE W/ MOUNTING PAD
1-1/4" - 2"



Female NPT Thread, 1500 CWP (psig). Cold Non-Shock. (See referenced P/T chart)
150 psig Saturated Steam.
Vacuum Service to 29 inches Hg.
MSS SP-110 Compliant.

FEATURES

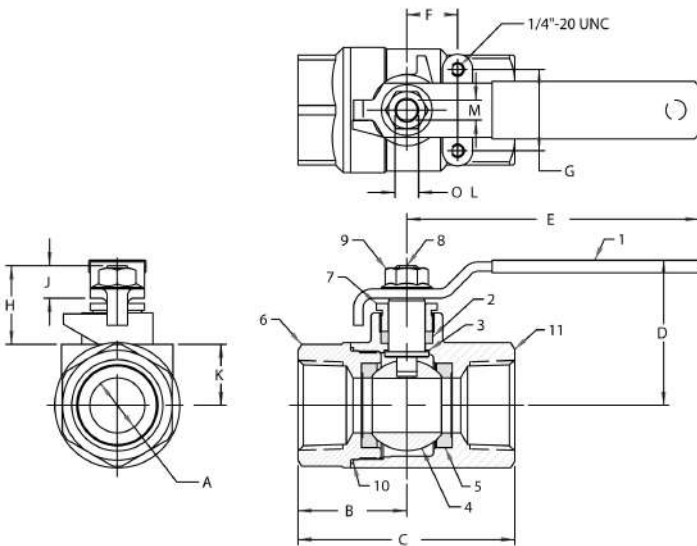
- Investment cast components
- Reinforced seats
- Mounting pad for easy actuator mounting
- Blowout-proof stem design
- Adjustable packing gland
- Stainless steel lever and nut

- Fire safe to API 607 (requires -24 suffix)
- Meets NACE MR0175 (2000) & MR0103 (2012)
- CSA CGA 3.16-M88 (Requires "GS" suffix)
- NSF/ANSI/CAN 61 Section 8, Annex G
- NSF/ANSI 372 - Drinking Water System Components - Lead Content

OPTIONS AVAILABLE

(MORE INFORMATION IN SECTION J)

- Minimum quantities apply
- To specify an option, replace the "01" standard suffix with the suffix of the option.
- To specify multiple options, replace the "01" suffix with the desired suffixes in the numerical order shown below. NOTE: Not all suffixes can be combined together.



| (SUFFIX) | OPTION | SIZES |
|----------|--|-------|
| -01 | Standard Configuration | All |
| -P -01- | BSPP (Parallel) Thread Connection | All |
| -T -01- | BSPT (Tapered) Thread Connection | All |
| -02- | Stem Grounded | All |
| -04- | 2-1/4" Stem Extension (Carbon Steel, Zinc Plated) | All |
| -07- | Steel Tee Handle | All |
| -08- | 90° Reversed Stem | All |
| -14- | Side Vented Ball (Uni-Directional) | All |
| -15- | Wheel Handle, Steel | All |
| -16- | Chain Lever - Vertical | All |
| -19- | Lock Plate | All |
| -21- | UHMWPE Trim (Non-PTFE) | All |
| -24- | Graphite Packing, PTFE Body Seal, RPTFE Bearing (API 607, 6th Edition, ISO 10497:2010) | All |
| -27- | SS Latch-Lock Lever & Nut | All |
| -30- | Cam-Lock and Grounded | All |
| -32- | SS Tee Handle & Nut | All |
| -35- | PTFE Trim | All |
| -39- | SS Hi-Rise Locking Wheel Handle, SS Nut | All |
| -40- | Cyl-Loc and Grounded | All |
| -44- | Seal Welded | All |
| -45- | Less Lever & Nut | All |
| -46- | Latch Lock Lever - Lock in Closed Position Only | All |
| -47- | SS Latch Lock Oval Handle | All |
| -48- | SS Oval Handle (No Latch) & Nut | All |
| -49- | No Lubrication. Assembled Dry. | All |
| -50- | 2-1/4" CS Locking Stem Extension | All |
| -57- | Oxygen Cleaned | All |
| -58- | Chain Lever - Horizontal | All |
| -60- | Static Grounded Ball & Stem | All |
| -64- | 250# Steam Trim (MPTFE Seats & Packing) | All |
| -GS- | CSA CGA 3.16 | All |
| -UA- | AIS (American Iron & Steel) Compliant | All |

STANDARD MATERIAL LIST

| PART | PART | MATERIAL |
|------|----------------|---------------------------|
| 1 | Lever and grip | 304 SS w/vinyl |
| 2 | Stem packing | MPTFE |
| 3 | Stem bearing | RPTFE |
| 4 | Ball | A276-316 Stainless Steel |
| 5 | Seat (2) | RPTFE |
| 6 | Retainer | A351-CF8M Stainless Steel |
| 7 | Gland nut | A276-316 Stainless Steel |
| 8 | Stem | A276-316 Stainless Steel |
| 9 | Lever nut | 18-8 Stainless Steel |
| 10 | Body seal | PTFE |
| 11 | Body | A351-CF8M Stainless Steel |

DIMENSIONS

| PART NO. | SIZE | A | B | C | D | E | F | G | H | J | K | L | M | WT. |
|-----------|--------|------|------|------|------|------|------|------|------|------|------|-------|-------|------|
| 76-106-01 | 1-1/4" | 1.00 | 2.00 | 4.00 | 2.68 | 5.40 | 0.94 | 1.50 | 1.50 | 0.60 | 1.12 | 0.625 | 0.377 | 3.10 |
| 76-107-01 | 1-1/2" | 1.25 | 2.17 | 4.34 | 3.25 | 7.75 | 0.94 | 1.50 | 1.50 | 0.60 | 1.28 | 0.625 | 0.377 | 4.20 |
| 76-108-01 | 2" | 1.50 | 2.69 | 5.43 | 3.24 | 7.75 | 0.94 | 1.50 | 1.46 | 0.60 | 1.50 | 0.625 | 0.377 | 6.10 |

Pressure/Temperature Ratings - Page M-13, Graph No. 12

*LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with Federal Public Law 111-380. ANSI 3rd party approved and listed.

REV. 18JUL19

76-100 SERIES

STAINLESS STEEL BALL VALVE W/ MOUNTING PAD
2-1/2" - 3"



Female NPT Thread, 1000 CWP (psig). Cold Non-Shock. (See referenced P/T chart)
150 psig Saturated Steam.
Vacuum Service to 29 inches Hg.
MSS SP-110 Compliant.

FEATURES

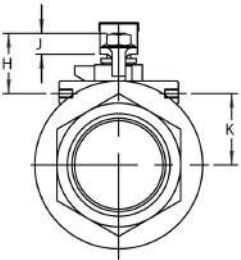
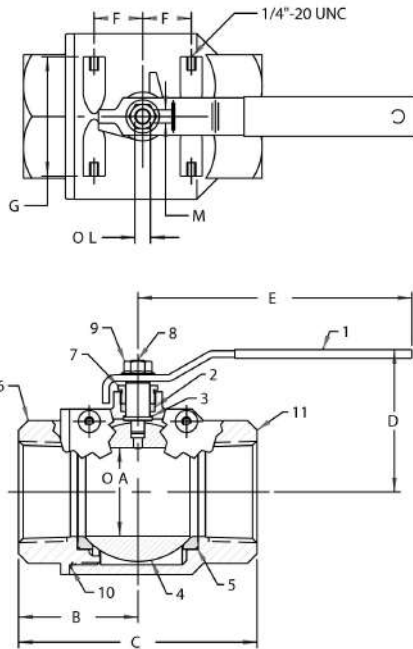
- Investment cast components
- Reinforced seats
- Mounting pad for easy actuator mounting
- Blowout-proof stem design
- Adjustable packing gland
- Stainless steel lever and nut

- Fire safe to API 607 (requires -24 suffix)
- Meets NACE MR0175 (2000) & MR0103 (2012)
- CSA CGA 3.16-M88 (Requires "GS" suffix)
- NSF/ANSI/CAN 61 Section 8, Annex G
- NSF/ANSI 372 - Drinking Water System Components - Lead Content

OPTIONS AVAILABLE

(MORE INFORMATION IN SECTION J)

- Minimum quantities apply
- To specify an option, replace the "01" standard suffix with the suffix of the option.
- To specify multiple options, replace the "01" suffix with the desired suffixes in the numerical order shown below. NOTE: Not all suffixes can be combined together.



| (SUFFIX) | OPTION | SIZES |
|----------|--|-------|
| -01 | Standard Configuration | All |
| -02- | Stem Grounded | All |
| -04- | 2-1/4" Stem Extension (Carbon Steel, Zinc Plated) | All |
| -07- | Steel Tee Handle | All |
| -08- | 90° Reversed Stem | All |
| -14- | Side Vented Ball (Uni-Directional) | All |
| -15- | Wheel Handle, Steel | All |
| -16- | Chain Lever - Vertical | All |
| -19- | Lock Plate | All |
| -21- | UHMWPE Trim (Non-PTFE) | All |
| -24- | Graphite Packing, PTFE Body Seal, RPTFE Bearing (API 607, 6th Edition, ISO 10497:2010) | All |
| -27- | SS Latch-Lock Lever & Nut | All |
| -30- | Cam-Lock and Grounded | All |
| -32- | SS Tee Handle & Nut | All |
| -35- | PTFE Trim | All |
| -39- | SS Hi-Rise Locking Wheel Handle, SS Nut | All |
| -40- | Cyl-Loc and Grounded | All |
| -44- | Seal Welded | All |
| -45- | Less Lever & Nut | All |
| -46- | Latch Lock Lever - Lock in Closed Position Only | All |
| -47- | SS Latch Lock Oval Handle | All |
| -48- | SS Oval Handle (No Latch) & Nut | All |
| -49- | No Lubrication. Assembled Dry. | All |
| -50- | 2-1/4" CS Locking Stem Extension | All |
| -57- | Oxygen Cleaned | All |
| -58- | Chain Lever - Horizontal | All |
| -60- | Static Grounded Ball & Stem | All |
| -64- | 250# Steam Trim (MPTFE Seats & Packing) | All |
| -GS- | CSA CGA 3.16 | All |
| -UA- | AIS (American Iron & Steel) Compliant | All |

STANDARD MATERIAL LIST

| PART | MATERIAL |
|------|---------------------------------------|
| 1 | Lever and grip 304 SS w/vinyl |
| 2 | Stem packing MPTFE |
| 3 | Stem bearing RPTFE |
| 4 | Ball A276-316 Stainless Steel |
| 5 | Seat (2) RPTFE |
| 6 | Retainer A351-CF8M Stainless Steel |
| 7 | Gland nut A276-316 Stainless Steel |
| 8 | Stem A276-316 Stainless Steel |
| 9 | Lever nut 18-8 Stainless Steel |
| 10 | Body seal PTFE |
| 11 | Body A351-CF8M Stainless Steel |

DIMENSIONS

| PART NO. | SIZE | A | B | C | D | E | F | G | H | J | K | L | M | WT. |
|-----------|--------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
| 76-109-01 | 2-1/2" | 2.50 | 3.38 | 6.75 | 4.03 | 7.75 | 1.38 | 3.37 | 1.71 | 0.60 | 2.00 | 0.625 | 0.377 | 15.60 |
| 76-100-01 | 3" | 2.50 | 3.38 | 6.75 | 4.03 | 7.75 | 1.38 | 3.37 | 1.71 | 0.60 | 2.00 | 0.625 | 0.377 | 16.50 |

Pressure/Temperature Ratings - Page M-12, Graph No. 8

*LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with Federal Public Law 111-380. ANSI 3rd party approved and listed.
REV. 18JUL19

FLOW DATA

FLOW DATA

The listed C_v "factors" are derived from actual flow testing, at Apollo's Pageland, South Carolina factory. These tests were completed using standard "off the shelf" valves with no special preparation and utilizing standard schedule 40 pipe. It should be understood that these factors are for the valve only and also include the connection configuration. The flow testing is done utilizing water as a fluid media and is a direct statement of the gallons of water flowed per minute with a 1 psig pressure differential across the valve/connection unit. Line pressure is not a factor. Because the C_v is a factor, the formula can be used to estimate flow of most media for valve sizing.

FLOW OF LIQUID

$$Q = C_v \sqrt{\frac{\Delta P}{SpGr}}$$

$$\text{or } \Delta P = \frac{(Q)^2 (SpGr)}{(C_v)^2}$$

WHERE:

- Q = Flow in US gpm
- ΔP = Pressure drop (psig)
- SpGr = Specific gravity at flowing temperature
- C_v = Valve constant

FLOW OF GAS

$$Q = 1360 C_v \sqrt{\frac{(\Delta P) (P_2)}{(SpGr) (T)}}$$

$$\text{or } \Delta P = \frac{5.4 \times 10^{-7} (SpGr) (T) (Q)^2}{(C_v)^2 (P_2)}$$

WHERE:

- Q = Flow in SCFH
- ΔP = Pressure drop (psig)
- SpGr = Specific gravity (based on air = 1.0)
- P2 = Outlet pressure-psia (psig + 14.7)
- T = (temp. °F + 460)
- C_v = Valve constant

CAUTION: The gas equation shown, is valid at very low pressure drop ratios. The gas equation is NOT valid when the ratio of pressure drop (ΔP) to inlet pressure (P1) exceeds 0.02.

NOTE: Only use the gas equation shown if (P1-P2)/P1 is less than 0.02.

CV FACTORS FOR APOLLO VALVES (CONTINUED ON M-4)

| VALVE | SIZE (IN.) | | | | | | | | | | | | | | |
|--------------------------|------------|-----|-----|-----|----|------|-----|-----|-----|-----|-----|----|----|----|----|
| | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1.25 | 1.5 | 2 | 2.5 | 3 | 4 | 6 | 8 | 10 | 12 |
| 70B-140 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | 670 | -- | -- | -- | -- |
| 70-100/200 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | 670 | -- | -- | -- | -- |
| 70-300/400 Series | -- | -- | 15 | 30 | 43 | 48 | 84 | 108 | -- | -- | -- | -- | -- | -- | -- |
| 70-600 Series | 2.3 | 4.5 | 5.4 | 12 | 14 | 21 | 34 | 47 | -- | -- | -- | -- | -- | -- | -- |
| 70-800 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | -- | -- | -- | -- | -- | -- | -- | -- |
| 71-AR Series | -- | -- | -- | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 71-100/200 Series | -- | -- | -- | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 72-100/900 Series | -- | -- | 26 | 48 | 65 | 125 | 170 | 216 | -- | -- | -- | -- | -- | -- | -- |
| 72-1xx-A/72-9xx-A Series | -- | -- | 26 | 48 | 65 | 125 | 170 | 245 | -- | -- | -- | -- | -- | -- | -- |
| 73A-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | -- | -- | -- | -- | -- | -- | -- |
| 73-300/400 Series | -- | -- | 26 | 48 | 65 | 125 | 170 | 216 | -- | -- | -- | -- | -- | -- | -- |
| 74-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | 670 | -- | -- | -- | -- |
| 75-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | 670 | -- | -- | -- | -- |
| 76-AR Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | 670 | -- | -- | -- | -- |
| 76F-100 Series | 8.1 | 15 | 15 | 51 | 68 | 125 | 177 | 389 | -- | -- | -- | -- | -- | -- | -- |
| 76FJ-100 Series | 8.1 | 15 | 15 | 51 | 68 | 125 | 177 | 389 | -- | -- | -- | -- | -- | -- | -- |
| 76FK-100 Series | 8.1 | 15 | 15 | 51 | 68 | 125 | 177 | 389 | -- | -- | -- | -- | -- | -- | -- |
| 76-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 76-300/400 Series | -- | -- | 26 | 48 | 65 | 125 | 170 | 216 | -- | -- | -- | -- | -- | -- | -- |
| 76-600 Series | 2.3 | 4.5 | 5.4 | 12 | 14 | 21 | 34 | 47 | -- | -- | -- | -- | -- | -- | -- |
| 76J-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 76J-AR Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | 670 | -- | -- | -- | -- |
| 76K-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 76K-AR Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | 670 | -- | -- | -- | -- |
| 7K-100 Series | -- | -- | 15 | 51 | 68 | 125 | 177 | 389 | 503 | -- | -- | -- | -- | -- | -- |
| 77-AR Series | 8.1 | 15 | 15 | 51 | 68 | -- | 177 | 389 | -- | -- | -- | -- | -- | -- | -- |

REV. 21APR17

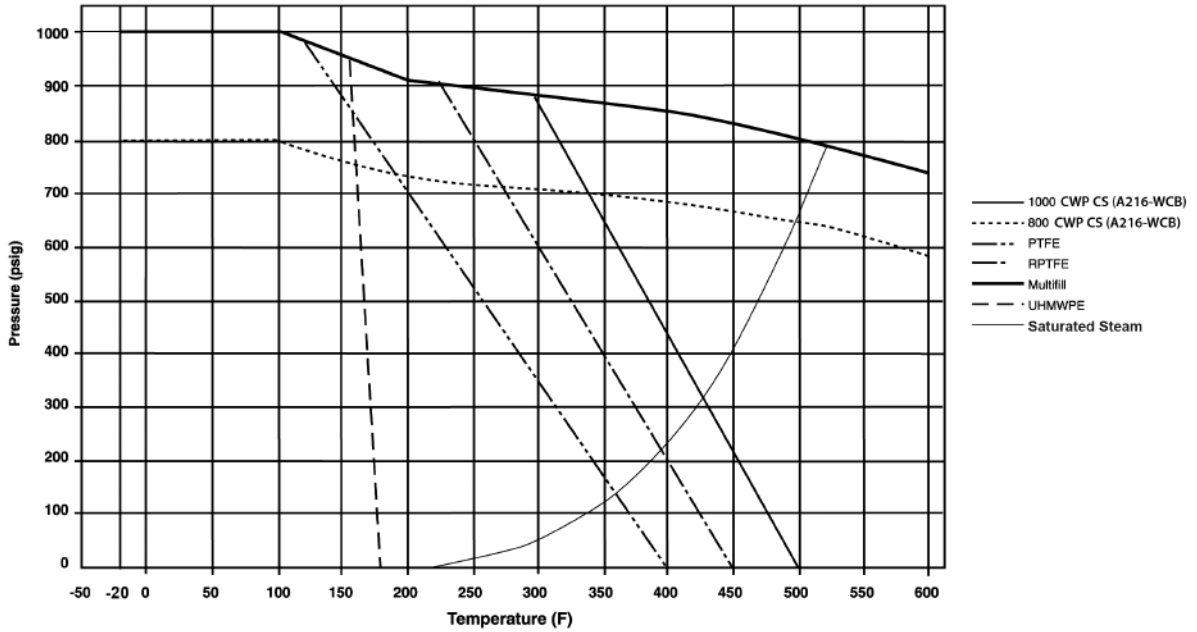
CV FACTORS FOR APOLLO VALVES (CONTINUED FROM M-3)

| VALVE | SIZE (IN.) | | | | | | | | | | | | | | |
|--------------------|------------|-----|-----|-----|----|------|-----|-----|-----|------|------|------|------|-------|-------|
| | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1.25 | 1.5 | 2 | 2.5 | 3 | 4 | 6 | 8 | 10 | 12 |
| 77C-100/200 Series | 4.5 | 7.2 | 16 | 36 | 68 | 125 | 177 | 389 | 503 | -- | -- | -- | -- | -- | -- |
| 77D-140 Series | 4.5 | 7.2 | 16 | 36 | 68 | 125 | 177 | 389 | -- | -- | -- | -- | -- | -- | -- |
| 77D-640 Series | -- | -- | -- | 11 | 24 | 35 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 77G-UL Series | 4.5 | 7.2 | 16 | 36 | 68 | 125 | 177 | 389 | 503 | -- | -- | -- | -- | -- | -- |
| 77W Series | -- | -- | 16 | 36 | 68 | 125 | 177 | 389 | -- | -- | -- | -- | -- | -- | -- |
| 77-100/200 Series | 8.1 | 15 | 15 | 51 | 68 | 125 | 177 | 389 | 503 | -- | -- | -- | -- | -- | -- |
| 79 Series | 8.5 | 8.5 | 9.8 | 32 | 44 | 66 | 148 | 218 | 440 | 390 | -- | -- | -- | -- | -- |
| 80 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 82-100/200 Series | 8.1 | 14 | 26 | 51 | 68 | 120 | 170 | 376 | 510 | 996 | 1893 | -- | -- | -- | -- |
| 83A/83B Series | 8.1 | 14 | 26 | 51 | 68 | 120 | 170 | 376 | -- | -- | -- | -- | -- | -- | -- |
| 83R-100/200 Series | -- | -- | -- | -- | -- | -- | 170 | 376 | -- | 996 | 1893 | -- | -- | -- | -- |
| 86A/86B Series | 8.1 | 14 | 26 | 51 | 68 | 120 | 170 | 376 | -- | -- | -- | -- | -- | -- | -- |
| 86R-100/200 Series | -- | -- | -- | -- | -- | -- | 170 | 376 | -- | 996 | 1893 | -- | -- | -- | -- |
| 87A-100 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 87A-200 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 87A-700 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 87A-900 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 87A-F00 Series | -- | -- | -- | -- | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | -- | -- | -- |
| 87B-100 Series | -- | -- | -- | -- | -- | -- | -- | -- | -- | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 87J-100 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 87J-200 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 87J-700 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 87J-900 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 87K-100 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 87K-200 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 87K-700 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 87K-900 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 88A-100 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 88A-200 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 88A-700 Series | -- | -- | -- | -- | -- | -- | 86 | 104 | 234 | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 88A-900 Series | -- | -- | 15 | 19 | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | 9250 | 15170 | 22390 |
| 88A-F00 Series | -- | -- | -- | -- | 75 | -- | 195 | 410 | 545 | 1021 | 2016 | 4837 | -- | -- | -- |
| 88B-100 Series | -- | -- | -- | -- | -- | -- | -- | -- | -- | 375 | 673 | 1099 | 1902 | 3890 | -- |
| 89-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 9A-100 Series | 8.3 | 6.7 | 5.7 | 10 | 16 | 25 | 40 | 62 | -- | -- | -- | -- | -- | -- | -- |
| 90-100 Series | 8.3 | 6.7 | 5.7 | 10 | 16 | 25 | 40 | 62 | -- | -- | -- | -- | -- | -- | -- |
| 92-100 Series | 8.3 | 6.7 | 5.7 | 10 | 16 | 25 | 40 | 62 | -- | -- | -- | -- | -- | -- | -- |
| 93-100 Series | 8.3 | 6.7 | 5.7 | 10 | 16 | 25 | 40 | 62 | -- | -- | -- | -- | -- | -- | -- |
| 94A-100/200 Series | 6 | 7 | 19 | 34 | 50 | 104 | 268 | 309 | 629 | 1018 | 1622 | -- | -- | -- | -- |
| 96-100 Series | 8.3 | 6.7 | 5.7 | 10 | 16 | 25 | 40 | 62 | -- | -- | -- | -- | -- | -- | -- |
| 399-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |
| 489-100 Series | 8.4 | 7.2 | 15 | 30 | 43 | 48 | 84 | 108 | 190 | 370 | -- | -- | -- | -- | -- |

1000 CWP

(CS) ASTM A216-WCB

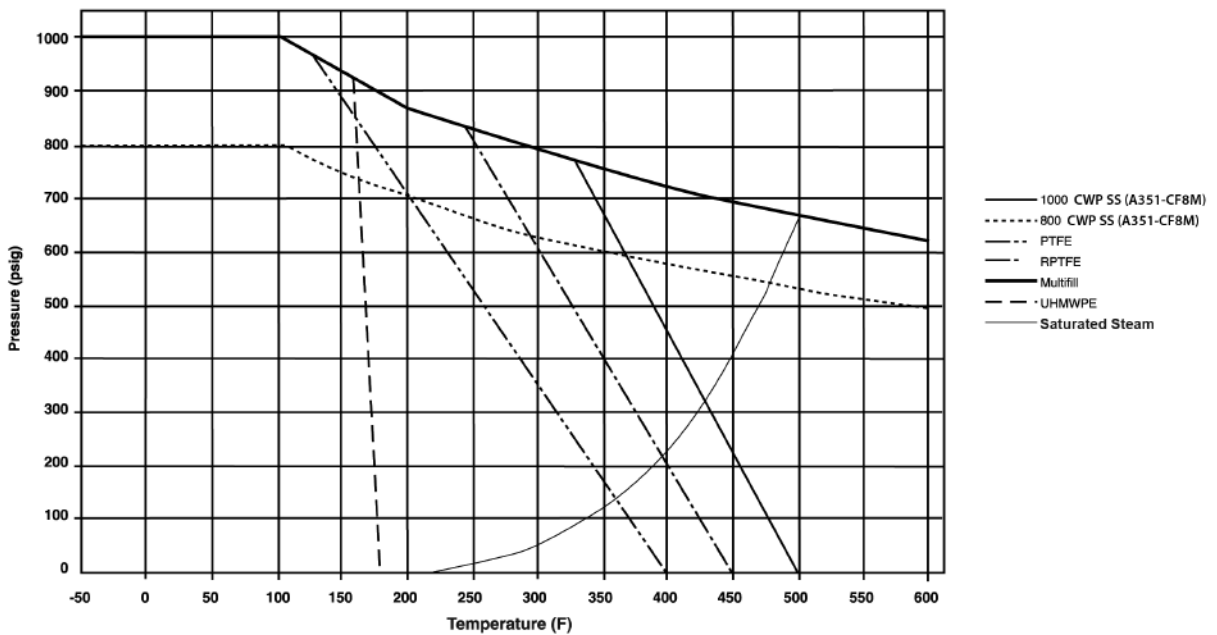
GRAPH 7



1000 CWP

(SS) ASTM A351-CF8M

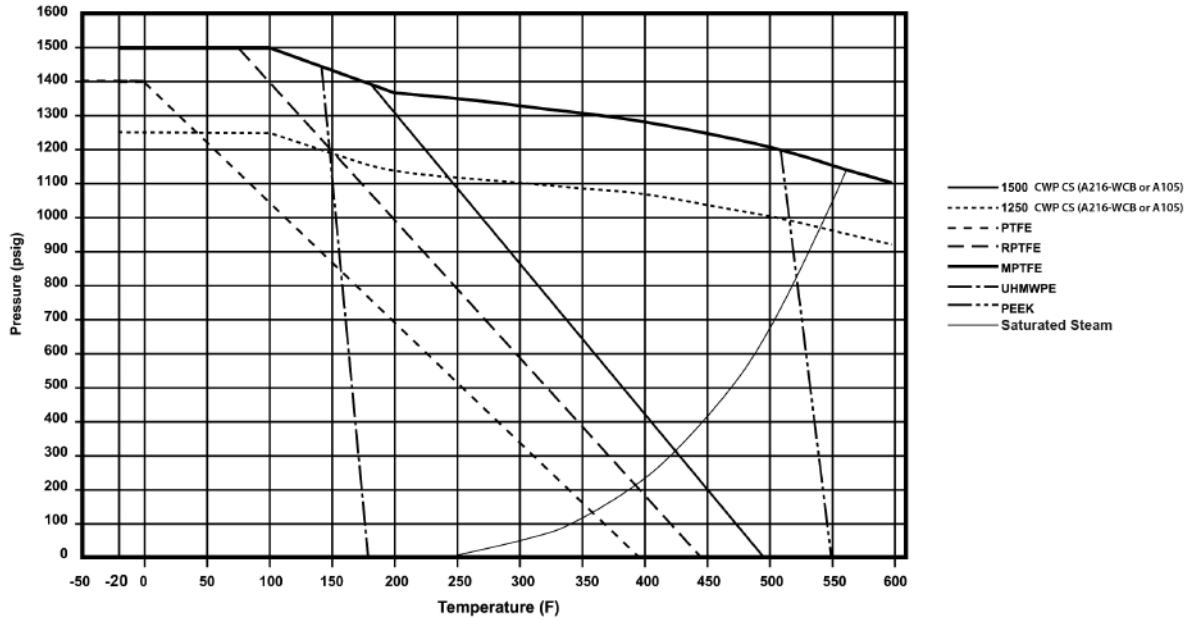
GRAPH 8



1500 CWP

(CS) ASTM A216-WCB OR ASTM A105

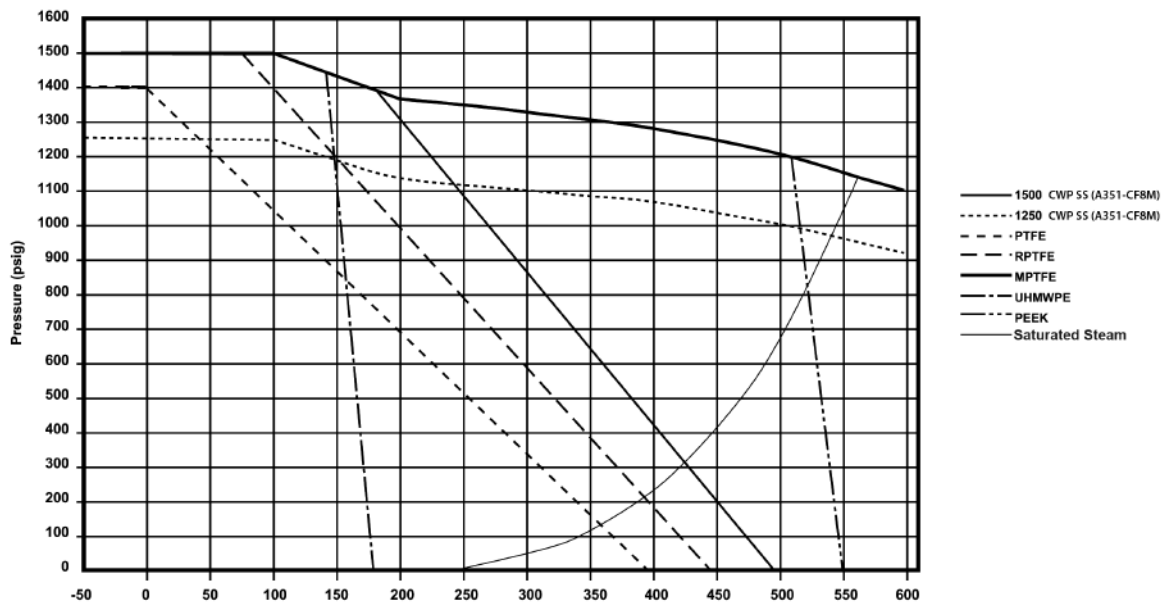
GRAPH 11



1500 CWP

(SS) ASTM A351-CF8M

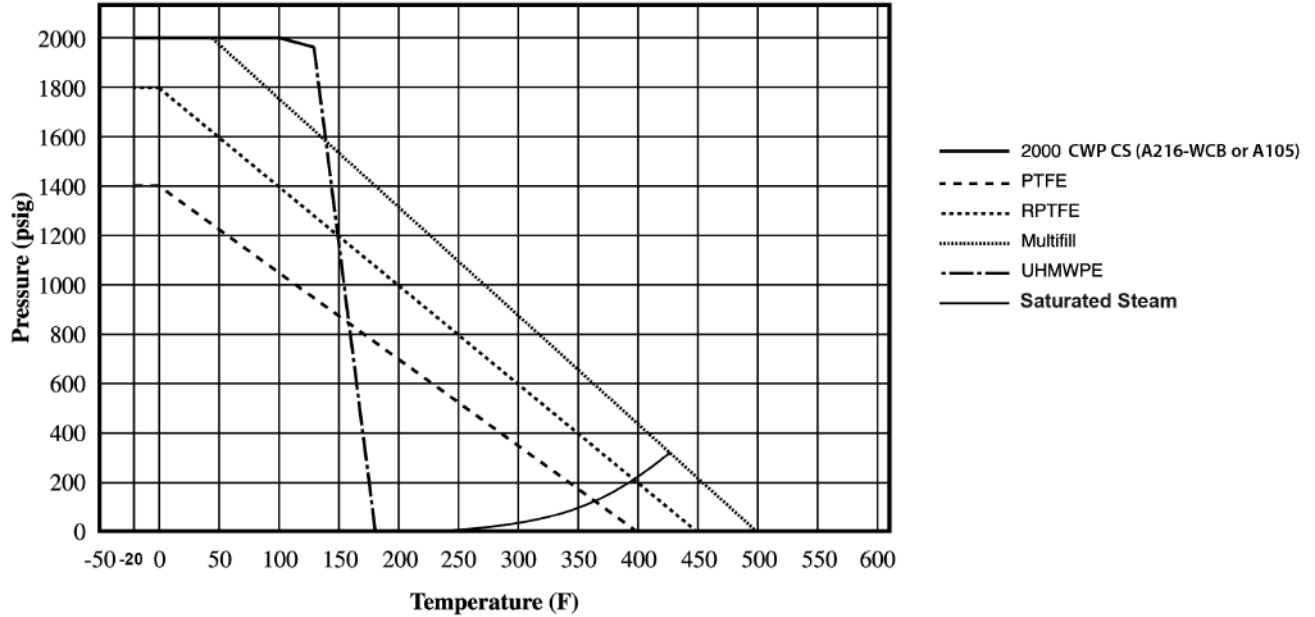
GRAPH 12



2000 CWP

(CS) ASTM A216-WCB OR ASTM A105

GRAPH 13



2000 CWP

(SS) ASTM A351-CF8M

GRAPH 14

