

87A-100 SERIES

STAINLESS STEEL ASME CLASS 150 FLANGED STD. PORT BALL VALVE
1-1/2" THRU 2"



FOR STANDARDS COMPLIANCE AND STANDARD FEATURES REFER TO PAGE D-3.

STANDARD MATERIAL LIST

| PART | MATERIAL | |
|------|------------------|--|
| 1 | Body | ASTM A351 CF8M |
| 2 | Retainer | ASTM A276 Type 316 |
| 3 | Ball | ASTM A276 Type 316 |
| 4 | Stem | ASTM A276 Type 316 |
| 5 | Packing Gland | ASTM A276 Type 316 |
| 6 | Stem Seals | PTFE |
| 7 | Seats | TFM 1700 |
| 8 | Gland Screws | ASTM A193 B8 Class 1 |
| 9 | Gland Plate | 302 or 304 Stainless Steel |
| 10 | Stem Nut | 316 Stainless Steel |
| 11 | Lever | 302 or 304 Stainless Steel with Vinyl Grip |
| 12 | Stem Bearing | RPTFE |
| 13 | Stop | ASTM A276 Type 316 |
| 14 | Stop Screw | 18-8 Stainless Steel |
| 15 | Lock Plate | 302 or 304 Stainless Steel |
| 16 | Body Seal | RPTFE |
| 17 | Lockwasher | 302 or 304 Stainless Steel |
| 18 | Grounding Spring | Stainless Steel |

VARIATIONS AVAILABLE

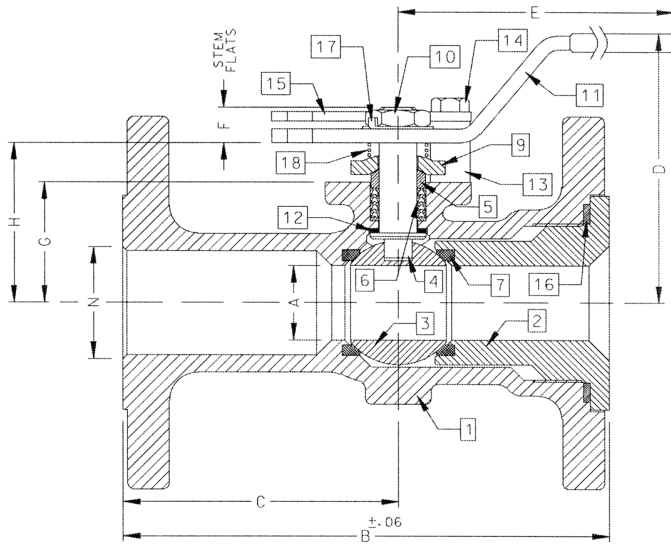
- 87H - Hastelloy
- 87M - Monel (1-1/2" to 2" only)
- 87N - Nickel
- 87S - 304L Stainless Steel

OPTIONS AVAILABLE

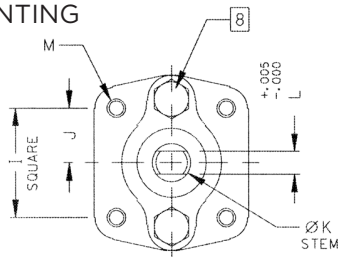
(MORE INFORMATION IN SECTION J)

- 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 |
|----------|---|
| -01 | Standard Configuration |
| -04- | 2-1/4" Stem Extension (Carbon Steel, Zinc Plated) |
| -14- | Side Vented Ball (Uni-Directional) |
| -15- | Wheel Handle, Steel |
| -21- | UHMWPE Seats |
| -24- | Graphite Packing, Spiral Wound Graphite Body Seal, RPTFE Bearing (API 607, 6th Edition, ISO 10497:2010) |
| -35- | PTFE Seats and Seals |
| -38- | PEEK Seats and Graphite Packing |
| -49- | No Lubrication. Assembled Dry |
| -57- | Oxygen Cleaned |
| -65- | MPTFE Seats and Graphite Packing (Fire Safe) |
| -69- | Drilled and Tapped Purge Port with Plug |
| -70- | 4" Extended Bonnet |
| -73- | 316 Stainless Steel Spiral Wound Gaskets with PTFE Filler |
| -76- | Live Loaded (Lever) |
| -77- | Live Loaded (Gear, Actuator) |
| -80- | TFM 1600 Seats, PTFE Chevron Packing, Spiral Wound PTFE Body Seal PEEK Bearing |
| -82- | Flat Face Flanges |
| -90- | Double Packed 4" Extended Bonnet |
| -9P- | Double Packed 4" Extended Bonnet with Monitoring Port |
| -CE- | CE Marking. See Page D-3 "Product Approvals" for Availability |
| -EF- | Graphite Packing (API 641 Compliant) |
| -EP- | Garlock EVSP Stem Packing with Spiral Wound Graphite Gasket (Fire Safe by Design) |
| -KF- | PCTFE Stem Bearing |
| -MP- | Positive Material Identification |
| -TC- | With Test Certificate |
| -TD- | Tested to API Spec 6D |
| -UA- | AIS (American Iron & Steel) Compliant |
| -UL- | UL & CSA Listed (with Markings) |
| -ZP1- | Fugitive Emissions Packing (Viton) |
| -ZP2- | Fugitive Emissions Packing (Buna-N) |
| -ZP3- | Fugitive Emissions Packing (Kalrez) |



ACTUATOR MOUNTING



DIMENSIONS

| PART NO. | SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | WT. |
|------------|--------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|---------|------|-----|
| 87A-107-01 | 1-1/2" | 1.25 | 6.50 | 3.50 | 4.85 | 6.53 | 0.47 | 1.85 | 2.38 | 1.392 | 0.696 | 0.500 | 0.287 | 1/4-20 | 1.50 | 9 |
| 87A-108-01 | 2" | 1.50 | 7.00 | 3.69 | 4.62 | 6.65 | 0.72 | 2.41 | 3.09 | 1.949 | 0.974 | 0.625 | 0.412 | 5/16-18 | 2.00 | 18 |

Pressure/Temperature Ratings - Page M-9, Graph No. 2

87A-100 SERIES

STAINLESS STEEL ASME CLASS 150 FLANGED STD. PORT BALL VALVE
2-1/2" THRU 3"



FOR STANDARDS COMPLIANCE AND STANDARD FEATURES REFER TO PAGE D-3.

STANDARD MATERIAL LIST

| | PART | MATERIAL |
|----|------------------|---------------------------------|
| 1 | Body | ASTM A351 CF8M |
| 2 | Retainer | ASTM A351 CF8M |
| 3 | Ball | ASTM A276 Type 316 or A351 CF8M |
| 4 | Stem | ASTM A276 Type 316 |
| 5 | Packing Gland | ASTM A276 Type 316 |
| 6 | Stem Seals | PTFE |
| 7 | Seats | TFM 1700 |
| 8 | Gland Screws | ASTM A193 B8 Class 1 |
| 9 | Gland Plate | 316 Stainless Steel |
| 10 | Stem Nut | 18-8 Stainless Steel |
| 11 | Lever | 316 Stainless Steel |
| 12 | Stem Bearing | RPTFE |
| 13 | Stop | ASTM A276 Type 316 |
| 14 | Stop Screw | 316 Stainless Steel |
| 15 | Lock Plate | 302 or 304 Stainless Steel |
| 16 | Body Seal | RPTFE |
| 17 | Grounding Spring | Stainless Steel |
| 18 | Body Joint Stud | ASTM A193 Grade B8M |
| 19 | Body Joint Nut | ASTM A194 Grade 8 |
| 20 | Lockwasher | 302 or 304 Stainless Steel |

VARIATIONS AVAILABLE

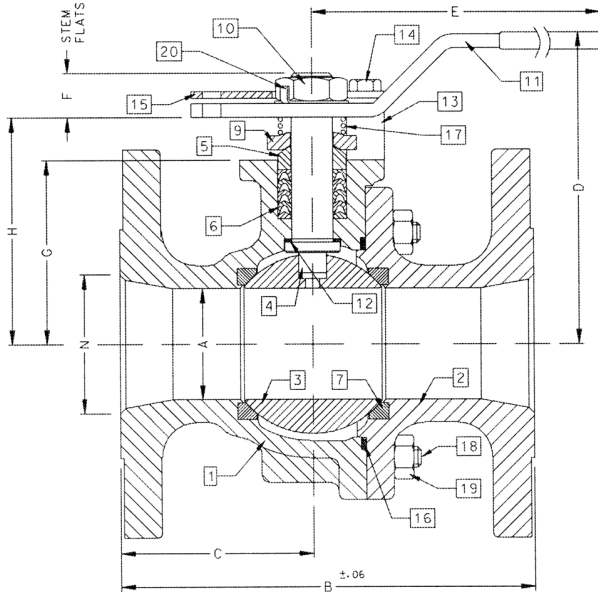
- 87H - Hastelloy
- 87N - Nickel
- 87S - 304L Stainless Steel

OPTIONS AVAILABLE

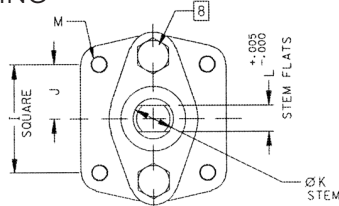
(MORE INFORMATION IN SECTION J)

- Minimum quantities apply.
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- 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 |
|----------|---|
| -01 | Standard Configuration |
| -04- | 2-1/4" Stem Extension (Carbon Steel, Zinc Plated) |
| -14- | Side Vented Ball (Uni-Directional) |
| -21- | UHMWPE Seats |
| -24- | Graphite Packing, Spiral Wound Graphite Body Seal, RPTFE Bearing (API 607, 6th Edition, ISO 10497:2010) |
| -35- | PTFE Seats and Seals |
| -38- | PEEK Seats and Graphite Packing |
| -49- | No Lubrication. Assembled Dry |
| -57- | Oxygen Cleaned |
| -65- | MPTFE Seats and Graphite Packing (Fire Safe) |
| -67- | Cleaned for Industrial Gases |
| -69- | Drilled and Tapped Purge Port with Plugs |
| -70- | 4" Extended Bonnet |
| -73- | 316 Stainless Steel Spiral Wound Gaskets with PTFE Filler |
| -76- | Live Loaded 87A/88A Series (Lever) |
| -77- | Live Loaded (Gear, Actuator) |
| -80- | TFM 1600 Seats, PTFE Chevron Packing, Spiral Wound PTFE Body Seal PEEK Bearing |
| -82- | Flat Face Flanges |
| -90- | Double Packed 4" Extended Bonnet |
| -9P- | Double Packed 4" Extended Bonnet with Monitoring Port |
| -CE- | CE Marking. See Page D-3 "Product Approvals" for Availability |
| -EF- | Graphite Packing (API 641 Compliant) |
| -EP- | Garlock EVSP Stem Packing with Spiral Wound Graphite Gasket (Fire Safe by Design) |
| -KF- | PCTFE Stem Bearing |
| -MG- | Gear Operator with Standard Handwheel |
| -MH- | Gear Operator with Standard Handwheel & Locking Device |
| -MJ- | Gear Operator with Oversize Handwheel |
| -MK- | Gear Operator with Oversize Handwheel & Locking Device |
| -MP- | Positive Material Identification |
| -TC- | With Test Certificate |
| -TD- | Tested to API Spec 6D |
| -UA- | AIS (American Iron & Steel) Compliant |
| -UL- | UL & CSA Listed (with Markings) |
| -ZP1- | Fugitive Emissions Packing (Viton) |
| -ZP2- | Fugitive Emissions Packing (Buna-N) |
| -ZP3- | Fugitive Emissions Packing (Kalrez) |



ACTUATOR MOUNTING



DIMENSIONS

| PART NO. | SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | WT. |
|------------|--------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|---------|------|-----|
| 87A-109-01 | 2-1/2" | 2.00 | 7.50 | 3.50 | 5.61 | 8.41 | 0.80 | 3.31 | 4.08 | 1.949 | 0.974 | 0.750 | 0.477 | 5/16-18 | 2.50 | 27 |
| 87A-100-01 | 3" | 2.50 | 8.00 | 3.51 | 6.24 | 8.41 | 0.80 | 3.94 | 4.71 | 1.949 | 0.974 | 0.750 | 0.477 | 5/16-18 | 3.00 | 34 |

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Pressure/Temperature Ratings - Page M-9, Graph No. 2

87A-100 SERIES

STAINLESS STEEL ASME CLASS 150 FLANGED STD. PORT BALL VALVE
4" THRU 8"



FOR STANDARDS COMPLIANCE AND STANDARD FEATURES REFER TO PAGE D-3.

STANDARD MATERIAL LIST

| PART | MATERIAL | |
|------|------------------|---------------------------------|
| 1 | Body | ASTM A351 CF8M |
| 2 | Retainer | ASTM A351 CF8M |
| 3 | Ball | ASTM A276 Type 316 or A351 CF8M |
| 4 | Stem | ASTM A276 Type 316 |
| 5 | Packing Gland | ASTM A276 Type 316 |
| 6 | Stem Seals | PTFE |
| 7 | Seats | RPTFE |
| 8 | Gland Screws | ASTM A193 B8 Class 1 |
| 9 | Gland Plate | 316 Stainless Steel |
| 10 | Adapter Screw | 18-8 Stainless Steel |
| 11 | Handle Adapter | 316 Stainless Steel |
| 12 | Stem Bearing | RPTFE |
| 13 | Stop | ASTM A276 Type 316 |
| 14 | Stop Screw | 316 Stainless Steel |
| 15 | Lock Plate | 302 or 304 Stainless Steel |
| 16 | Body Seal | RPTFE |
| 17 | Grounding Spring | Stainless Steel |
| 18 | Body Joint Stud | ASTM A193 Grade B8M |
| 19 | Body Joint Nut | ASTM A194 Grade 8 |
| 20 | Lockwasher | 302 or 304 Stainless Steel |
| 21 | Pipe Handle | Galvanized Steel (not Shown) |

VARIATIONS AVAILABLE

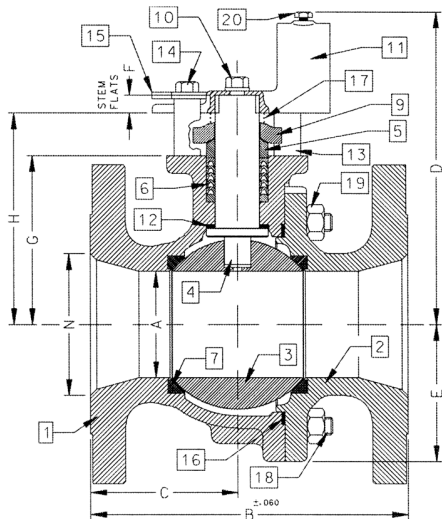
- 87H - Hastelloy
- 87N - Nickel
- 87S - 304L Stainless Steel

OPTIONS AVAILABLE

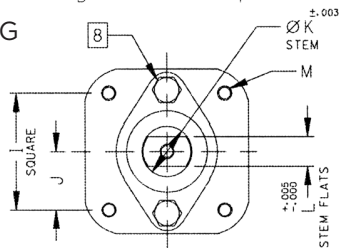
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| (SUFFIX) | OPTION |
|----------|---|
| -01 | Standard Configuration |
| -14- | Side Vented Ball (Uni-Directional) |
| -21- | UHMWPE Seats |
| -24- | Graphite Packing, Spiral Wound Graphite Body Seal, RPTFE Bearing (API 607, 6th Edition, ISO 10497:2010) |
| -35- | PTFE Seats and Seals |
| -49- | No Lubrication. Assembled Dry |
| -57- | Oxygen Cleaned |
| -65- | MPTFE Seats and Graphite Packing (Fire Safe) |
| -67- | Cleaned for Industrial Gases |
| -69- | Drilled and Tapped Purge Ports with Plugs |
| -70- | Extended Bonnet |
| -73- | 316 Stainless Steel Spiral Wound Gaskets with PTFE Filler |
| -76- | Live Loaded (Lever) |
| -77- | Live Loaded (Gear, Actuator) |
| -80- | TFM 1600 Seats, PTFE Chevron Packing, Spiral Wound PTFE Body Seal PEEK Bearing |
| -82- | Flat Face Flanges |
| -90- | Double Packed 4" Extended Bonnet |
| -9P- | Double Packed 4" Extended Bonnet with Monitoring Port |
| -CE- | CE Marking. See Page D-3 "Product Approvals" for Availability |
| -EF- | Graphite Packing (API 641 Compliant) |
| -EP- | Garlock EVSP Stem Packing with Spiral Wound Graphite Gasket (Fire Safe by Design) |
| -KF- | PCTFE Stem Bearing |
| -MG- | Gear Operator with Standard Handwheel |
| -MH- | Gear Operator with Standard Handwheel & Locking Device |
| -MJ- | Gear Operator with Oversize Handwheel |
| -MK- | Gear Operator with Oversize Handwheel & Locking Device |
| -MP- | Positive Material Identification |
| -TC- | With Test Certificate |
| -TD- | Tested to API Spec 6D |
| -UA- | AIS (American Iron & Steel) Compliant |
| -UL- | UL & CSA Listed (with Markings) |
| -ZP1- | Fugitive Emissions Packing (Viton) |
| -ZP2- | Fugitive Emissions Packing (Buna-N) |
| -ZP3- | Fugitive Emissions Packing (Kalrez) |



ACTUATOR MOUNTING



DIMENSIONS

| PART NO. | SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | N | WT. |
|------------|------|------|-------|------|-------|------|------|------|------|-------|-------|-------|-------|--------|------|-----|
| 87A-10A-01 | 4" | 3.00 | 9.00 | 4.18 | 8.80 | 3.88 | 0.50 | 4.75 | 5.95 | 2.840 | 1.420 | 1.250 | 0.725 | 3/8-16 | 4.00 | 73 |
| 87A-10C-01 | 6" | 4.00 | 10.50 | 4.69 | 9.99 | 5.13 | 0.50 | 5.94 | 7.13 | 2.840 | 1.420 | 1.250 | 0.725 | 3/8-16 | 6.00 | 117 |
| 87A-10E-01 | 8" | 6.00 | 18.00 | 9.00 | 13.73 | 7.00 | 1.00 | 7.75 | 9.48 | 4.596 | 2.298 | 2.000 | 1.375 | 3/4-10 | 8.00 | 310 |

Pressure/Temperature Ratings - Page M-9, Graph No. 2

REV. 18JUL19

87A-100 SERIES

STAINLESS STEEL ASME CLASS 150 FLANGED STD. PORT BALL VALVE
10"



FOR STANDARDS COMPLIANCE AND STANDARD FEATURES REFER TO PAGE D-3.

STANDARD MATERIAL LIST

| | PART | MATERIAL |
|----|-----------------|---------------------------------|
| 1 | Body | ASTM A351 CF8M |
| 2 | Retainer | ASTM A351 CF8M |
| 3 | Ball | ASTM A276 Type 316 or A351 CF8M |
| 4 | Stem | ASTM A276 Type 316 |
| 5 | Packing Gland | ASTM A276 Type 316 |
| 6 | Stem Seals | PTFE |
| 7 | Seats | TFM 1700 |
| 8 | Gland Screws | ASTM A193 B8 Class 1 |
| 9 | Gland Plate | 316 Stainless Steel |
| 10 | Stem Bearing | RPTFE |
| 11 | Body Seal | RPTFE |
| 12 | Body Joint Stud | ASTM A193 Grade B8M |
| 13 | Body Joint Nut | ASTM A194 Grade 8 |

VARIATIONS AVAILABLE

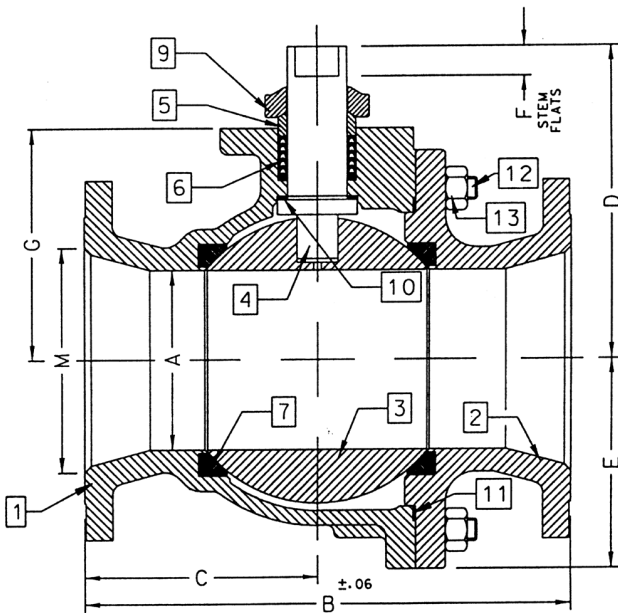
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- 87S - 304L Stainless Steel

OPTIONS AVAILABLE

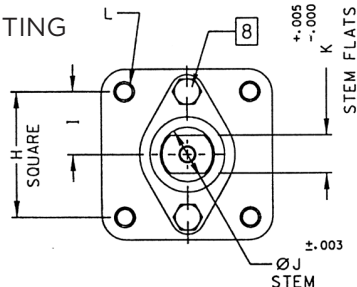
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|----------|---|
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| -14- | Side Vented Ball (Uni-Directional) |
| -21- | UHMWPE Seats |
| -24- | Graphite Packing, Spiral Wound Graphite Body Seal, RPTFE Bearing (API 607, 6th Edition, ISO 10497:2010) |
| -35- | PTFE Seats and Seals |
| -49- | No Lubrication. Assembled Dry |
| -57- | Oxygen Cleaned |
| -65- | MPTFE Seats and Graphite Packing (Fire Safe) |
| -69- | Drilled and Tapped Purge Port with Plugs |
| -70- | 4" Extended Bonnet |
| -77- | Live Loaded 87A/88A Series (Gear, Actuator) |
| -80- | TFM 1600 Seats, PTFE Chevron Packing, Spiral Wound PTFE Body Seal, PEEK Bearing |
| -82- | Flat Face Flanges |
| -90- | Double Packed 4" Extended Bonnet |
| -9P- | Double Packed 4" Extended Bonnet with Monitoring Port |
| -CE- | CE Marking. See Page D-3 "Product Approvals" for Availability |
| -EF- | Graphite Packing (API 641 Compliant) |
| -EP- | Garlock EVSP Stem Packing with Spiral Wound Graphite Gasket (Fire Safe by Design) |
| -KF- | PCTFE Stem Bearing |
| -MG- | Gear Operator with Standard Handwheel |
| -MH- | Gear Operator with Standard Handwheel & Locking Device |
| -MJ- | Gear Operator with Oversize Handwheel |
| -MK- | Gear Operator with Oversize Handwheel & Locking Device |
| -MP- | Positive Material Identification |
| -TC- | With Test Certificate |
| -TD- | Tested to API Spec 6D |
| -UA- | AIS (American Iron & Steel) Compliant |
| -UL- | UL & CSA Listed (with Markings) |
| -ZP1- | Fugitive Emissions Packing (Viton) |
| -ZP2- | Fugitive Emissions Packing (Buna-N) |
| -ZP3- | Fugitive Emissions Packing (Kalrez) |



ACTUATOR MOUNTING



DIMENSIONS

| PART NO. | SIZE | A | B | C | D | E | F | G | H | I | J | K | L | M | WT. |
|------------|------|------|-------|-------|-------|------|------|-------|-------|-------|-------|-------|--------|-------|-----|
| 87A-10G-01 | 10" | 8.00 | 21.00 | 10.37 | 12.83 | 9.18 | 1.00 | 10.22 | 4.596 | 2.298 | 2.000 | 1.375 | 3/4-10 | 10.00 | 526 |

REV. 18JUL19

Pressure/Temperature Ratings - Page M-9, Graph No. 2

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 1psig 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 (P_1) exceeds 0.02.

NOTE: Only use the gas equation shown if $(P_1 - P_2)/P_1$ 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

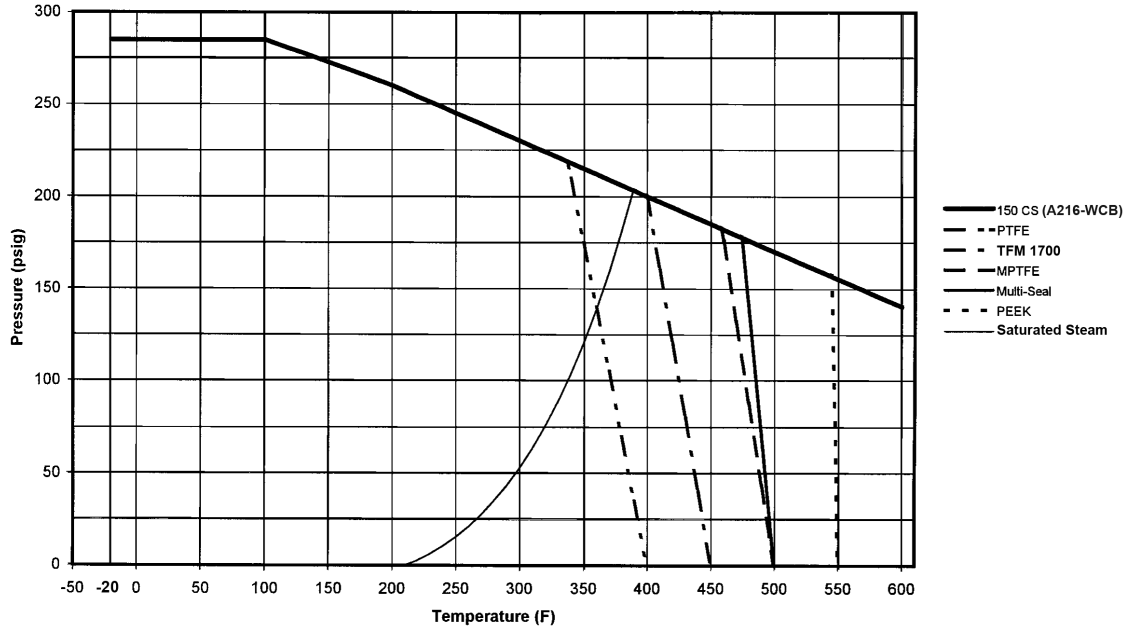
CV FACTORS FOR APOLLO VALVES (CONTINUED FROM M-3)

| 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 | -- | -- | -- | -- | -- |

CLASS 150

(CS) ASTM A216-WCB

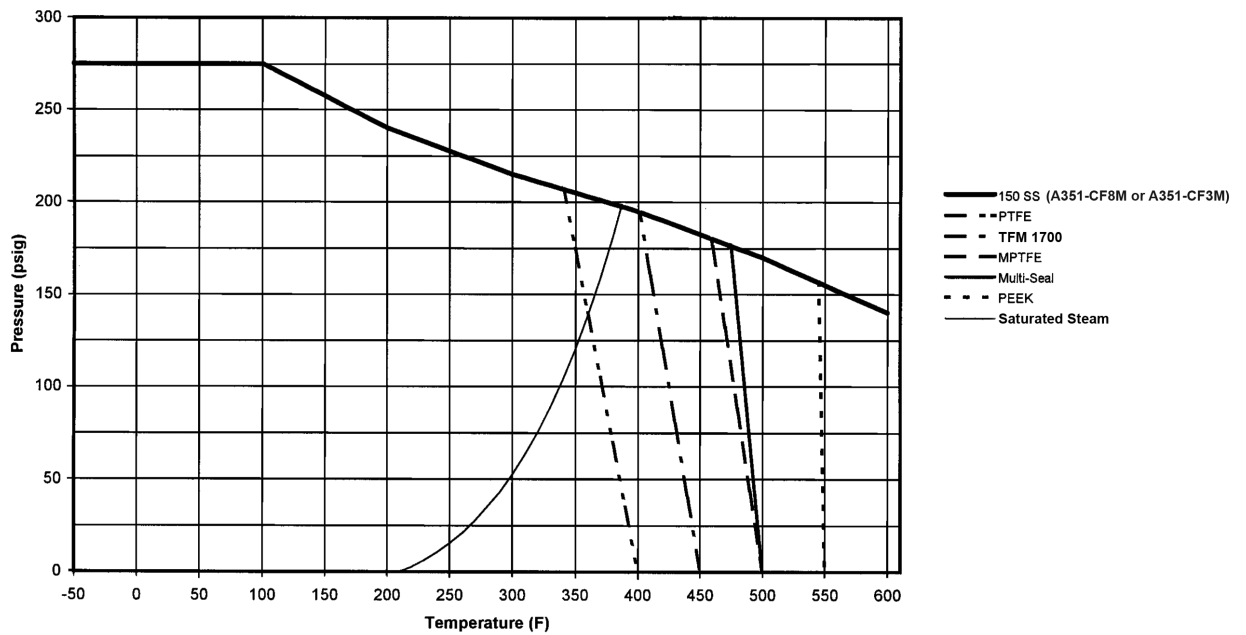
GRAPH 1



CLASS 150

(SS) ASTM A351-CF8M OR ASTM A351-CF3M

GRAPH 2





FEATURES & BENEFITS

ASME FLANGED BALL VALVES

87A, 87A-F, 87B, 88A, 88A-F, 88B, 88L, & 88L-F SERIES

STANDARDS COMPLIANCE

Except where specifically noted all valves within this family of products complies with the requirements of this listed standard.

- ASME B16.5 "Pipe Flanges and Flanged Fittings"
- ASME B16.10 "Face to Face Dimensions of Valves"
- ASME B16.34 "Valves - Flanged, Threaded, and Welding End"
- ASME B16.33 "Manual Operated Metallic Gas Valves for Use in Gas Piping Systems up to 125 psig"
- ASME B16.38 "Large Metallic Valves for Gas Distribution (Manually Operated NPS 2-1/2" to 12", 125 psig)"
- ASME B31.1 "Power Piping"
- ASME B31.3 "Chemical Plant and Petroleum Refinery Piping"
- ASME B31.8 "Gas Transmission and Distribution Piping Systems"
- API 607 "Fire Test - Soft Seated Quarter Turn Valves" (-24 Option Required). See specific tech sheet for 5th or 6th edition.
- API 608 "Ball Valves - Flanged, Threaded, and Welding End"
- MStainless Steel SP-25 "Standard Marking System for Valves"
- MStainless Steel SP-61 "Pressure Testing of Steel Valves"
- MStainless Steel SP-72 "Ball Valves with Flanged or Butt-weld Ends"
- UL 125 "Valves for Anhydrous Ammonia and LP-Gas (Other than Safety Relief)"
- NSF/ANSI/CAN 61 Section 8, Annex G (1/2" to 4" 87A Series)
- NSF/ANSI 372 Drinking Water System Components - Lead Content (1/2" to 4" 87A Series)

STANDARD FEATURES

Except where specifically noted all valves within this family of products include all listed features as standard.

- Two Position Locking Device (Valves 6" Full Port, 8" Standard Port and smaller)
- Chevron Style Adjustable Stem Seals
- ISO 5211 Mounting Pad Bolt Pattern
- Slot Vented Ball for Thermal Expansion
- Rated up to 150 psig Saturated Steam: ASME Class 150, 300, & 600 Valves
- Rated up to 250 psig Saturated Steam: ASME Class 300 Valves Require the -65 Option
- ASME Class 600 Valves Require the -24-80 Options or -38 Option
- Anti-static Grounded Ball and Stem
- Blowout-Proof Stem Design
- Cast Boss for Bleed / Drain Port
- Vacuum Service to 29 inches of Hg
- NACE MR0175 (2000) Compliance on all 87A/87B/88A/88B/88L Valves with Stainless Steel Ball & Stem
- NACE MR0103 (2003) Compliance on all 87A/87B/88A/88B/88L Valves with Stainless Steel Ball & Stem

PRODUCT APPROVALS

- **CSA* (Reference: ASME B16.33 & B16.38)**

ASME Class 150 & 300 only

- **UL* (Reference: Control Number 195H)**

ASME Class 150 & 300 only

- UL (YSDT) LP-Gas Shut-Off Valves
- UL (MHKZ) Manual Valves
- UL (YRBX) Flammable Liquid Shut-Off Valves
- UL (YRPV) Gas Shut-Off Valves
- UL (YQNZ) Compressed Gas Shut-Off Valves
- UL (YQAR) Anhydrous Ammonia Shut-Off Valves

*Requires "UL" suffix for markings.

- **CE Marking(with "-CE" suffix):**

Marking is available with all the flanged ball valves listed below

- 87A
- 87A (Alloy 20)
- 87B
- 87C
- 87G
- 87J
- 87K
- 87M
- 87R
- 88A
- 88B
- 88L